

Standards-based valves, to ISO 5599-1

FESTO



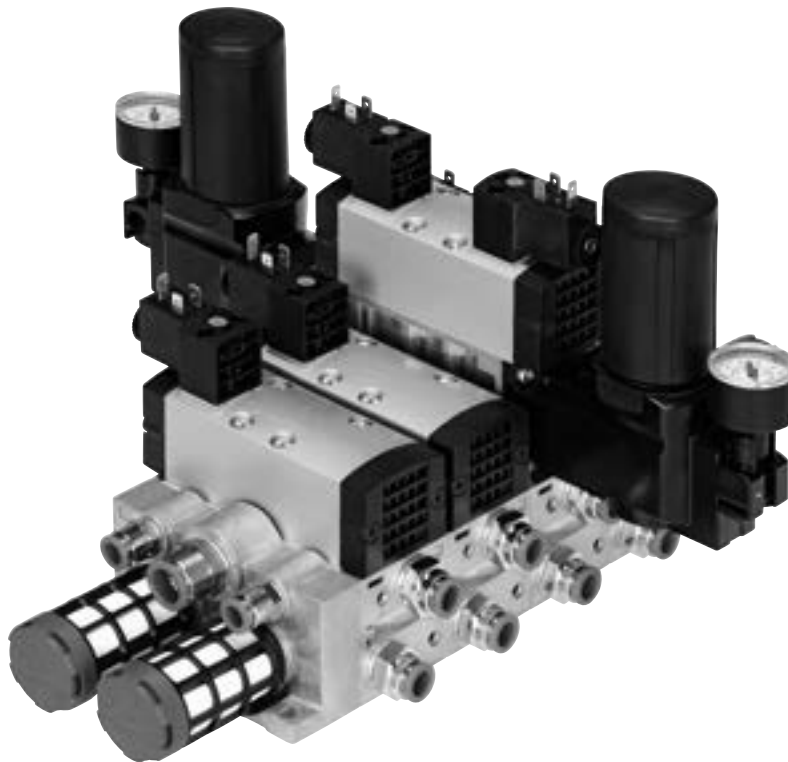
Festo Core Range
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With the Festo Core Range, we have selected the most important products and functions from our broad product catalogue, and added the quickest delivery.
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Just look
for the
star!

Key features



Innovative

- High-performance valves in a sturdy metal housing
- Individual electrical connection via square plug sockets or centrally for each valve via round plug sockets
- Valve replacement under pressure possible using vertical pressure shut-off plate
- Reverse operation
- Vacuum operation

Flexible

- Modular system offering a range of configuration options
- Conversions and extensions are possible at any time
- Integration of innovative function modules possible
 - Pressure regulator plate
 - Throttle plate
 - Vertical pressure shut-off plate
 - Vertical supply plate
- Vertical supply plates permit a flexible air supply and variable pressure zones
- Wide range of valve functions
- Extensive operating voltage range from 12 V DC to 230 V AC

Reliable

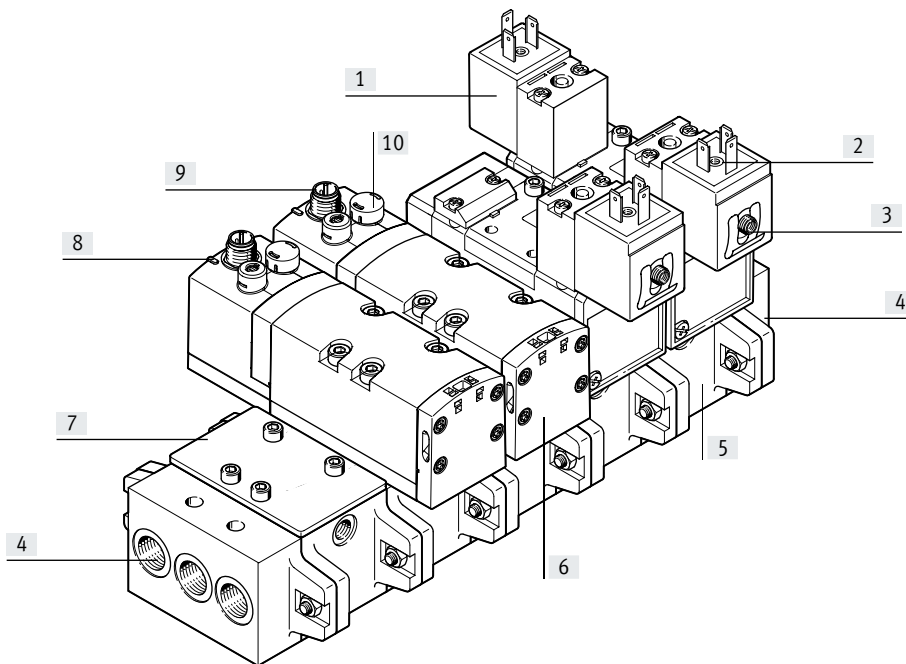
- Sturdy and durable metal components
 - Valves
 - Horizontally linked sub-bases
 - Vertically stacked sub-bases
- Fast troubleshooting thanks to LED in the plug socket or illuminating seal
- LED integrated in the valve with the round plug variant
- Reliable servicing thanks to valves that can be replaced quickly and easily
- Manual override
- Durable thanks to tried-and-tested piston spool valves

Easy to install

- Plug-in pressure gauges on the pressure regulator plate

Key features

Simple valve manifold assembly



- [1] Pilot valve with port pattern to ISO 15218
- [2] Various voltages
- [3] Armature tube for plug-on solenoid coils
- [4] End plate
- [5] Manifold sub-base
- [6] Various valve functions
- [7] Cover plate for vacant/expansion position
- [8] Signal status display via LED
- [9] 3-pin round plug
- [10] Manual override

Equipment options

2x 2/2-way valve, single solenoid

- Normally closed
- Normally closed, vacuum operation possible at port 3 and 5

Operation with external pilot air supply

- For vacuum applications
- For working pressures lower than 3 bar
- For significant pressure fluctuations in the power unit. Power unit and pneumatic control unit are isolated
- For heavily lubricated air in the power section
- For manifold assemblies where the pressure zones are created via ducts 3 and 5 (not possible with 2x 3/2-way valves)
- For manifolds or pressure zones that are equipped with reversible 2x 3/2-way valves (valves on request)

2x 3/2-way valve, single solenoid

- Normally open
- Normally closed
- 1x normally open, 1x normally closed
- Reverse operation possible

Operation with internal pilot air supply

- For small pressure fluctuations in the power section
- For using pressure regulator plates in a vertical stacking construction, also in reverse operation
- As a low-cost solution

5/2-way valve

- Single solenoid, mechanical or pneumatic spring return
- Double solenoid
- Double solenoid, with dominant signal at port 14

Reverse operation with compressed air supply via ducts 3 and 5

- Pressure zone separation via ducts 3 and 5
 - Example: duct 3 vacuum, duct 5 ejector pulse
 - Example: duct 3 high pressure for advancing the piston rod of a double-acting cylinder. Duct 5 low pressure for retracting the piston rod with low energy consumption
- 2x 3/2-way valves used as 5/4-way valve with controllable overlap and pressure zone separation with the reversible variant

5/3-way valve

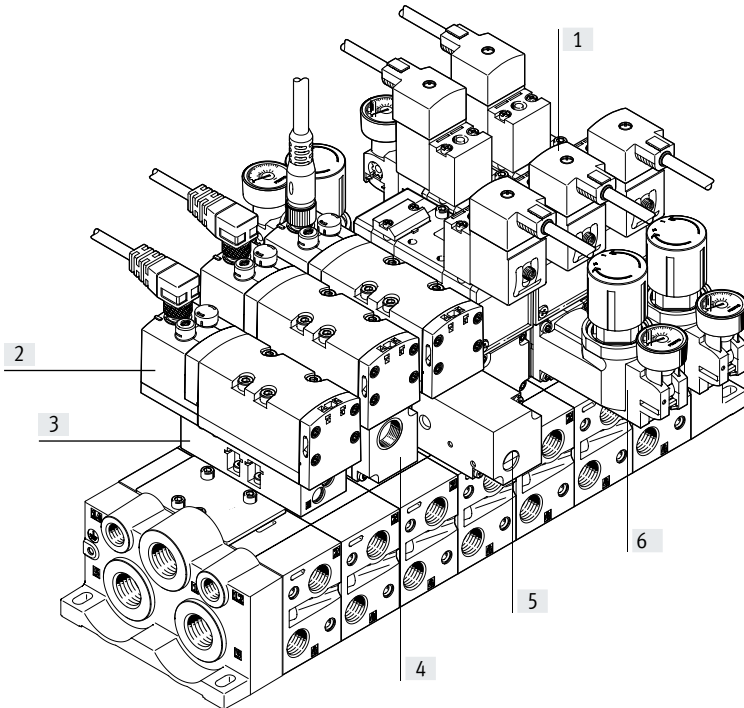
- Mid-position pressurised
- Mid-position closed
- Mid-position exhausted

Reverse operation with a pressure regulator plate, compressed air supply via duct 1

- Reversible pressure regulator combined with a reversible 2x 3/2-way valve regulates outputs 2 and 4
 - AB regulator for each of outputs 2 and 4
 - A regulator for output 4
 - B regulator for output 2
- Reversible pressure regulators are in the control position immediately after the power supply is switched on
 - Adjustment possible at all times
 - Dynamic response characteristics
 - Reduced regulator load because the supply pressure is maintained when the valve is switched
 - Not exhausted via the regulator

Key features

Valve manifold assembly with vertical stacking



- [1] Solenoid valve with individual pilot valves and port pattern to ISO 15218, can be connected using square plug sockets
- [2] Solenoid valve with central round plug
- [3] Throttle plate for adjusting the speed of the drive
- [4] Vertical supply plate as separate compressed air supply for a valve
- [5] Vertical pressure shut-off plate for replacing solenoid valves during operation
- [6] Pressure regulator for adjusting the force of the actuated drive

Vertical stacking function

Pressure regulators

- Single variant to regulate the pressure in duct 4 or 2 or 1 at the valve
- Dual variant to regulate the pressure in ducts 4 and 2 individually
- As reversible version with internally replaced ducts 1 and 3/5
- With pressure gauge connection

Throttle plate

- Designed with two throttle valves, at which the exhaust air flow rate at ducts 5 or 3 can be adjusted.
- The movement of the drive is initiated and the required speed is set via the throttle plate using the manual override on the valve.

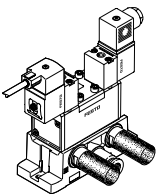
Vertical pressure shut-off plate

- Equipped with a switch via which the compressed air supply can be shut off. As a result, components mounted on the vertical pressure shut-off plate (e.g. a valve) can be replaced without switching off the overall air supply.
- If the control chain has a redundant connection, the cycle can continue even in the case of a cyclical control system.

Vertical supply plate

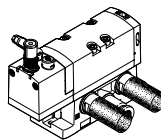
- As additional air supply for a valve
- Separates the valve from duct 1 of the manifold sub-base
- To supply an additional pressure zone

Individual connection with square plug



The directional control valve has a pilot control to ISO 15218. The solenoid coil plugged onto the armature tube can be chosen in different designs and operating voltages.

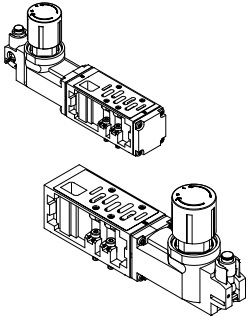
Individual connection with central round plug



The electrical connection is established via a standardised M12 plug, 24 V DC (EN 61076-2-101).

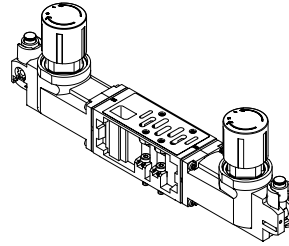
Key features

Pressure regulator with one regulated duct



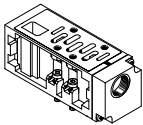
- For pressure regulation at the supply input duct 1. The set pressure is identical for ducts 2 and 4
- For pressure regulation at working port 4
 - The pressure regulator for reverse operation is supplied via duct 1 of the manifold sub-base and supplies duct 5 on the valve
 - The valve is exhausted via duct 1 to ducts 3 and 5 of the manifold sub-base
- For pressure regulation at working port 2
 - In reverse operation duct 3 is supplied here

Pressure regulator with 2 regulated ducts



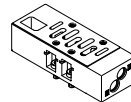
- For pressure regulation at working ports 4 and 2
- The pressure regulators for reverse operation are supplied via duct 1 of the manifold sub-base and supply ducts 5 and 3 on the valve
- The directional control valve is exhausted via duct 1 to ducts 3 and 5 of the manifold sub-base.

Vertical supply plate



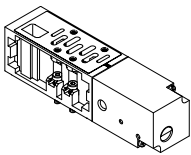
- As intermediate supply
 - For one valve
 - To supply an additional pressure zone
- Can be equipped with a valve

Throttle plate



- Exhaust air flow control valves in ducts 3 and 5
- The throttle plates act as supply-air flow control for pressure zones that are created via ducts 3 and 5

Vertical pressure shut-off plate



- A switch activated with a slotted screwdriver shuts off duct 1:
- The throttle plates, pressure regulators or valves positioned above it can be replaced
 - Other components of the control chain such as drives, for example, can be replaced once the valve has been exhausted

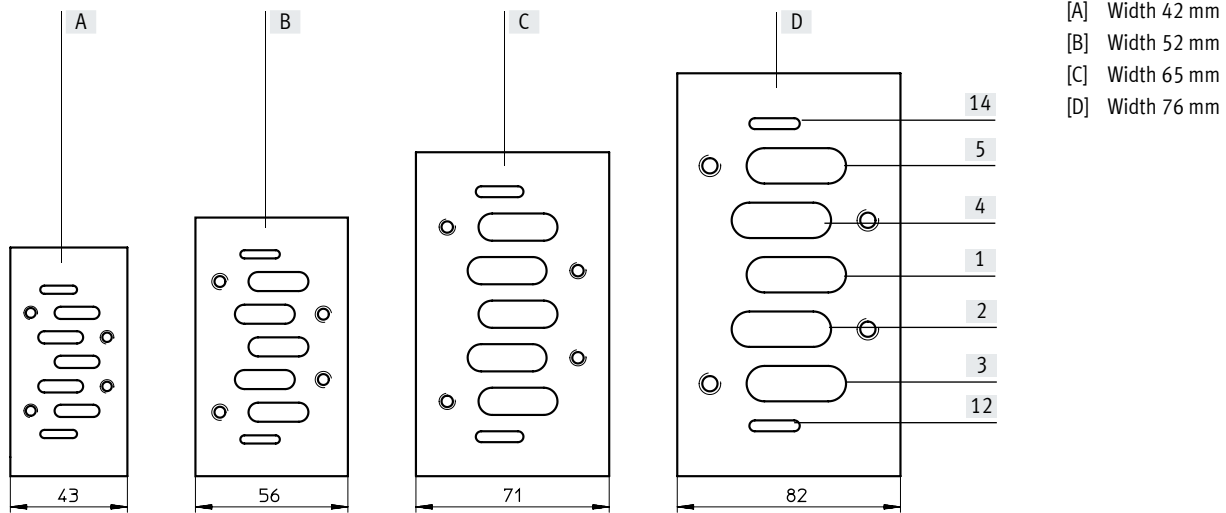
Pressure gauge



Plugs into the pressure regulators

Key features

Port pattern on sub-base to ISO 5599-1



Sub-base port designations

Duct	Function	Description
[14]	Control unit	Pilot air supply for pilot valves 12 and 14
[5]	Power unit	Exhaust port
[4]	Power unit	Working port
[1]	Power unit	Working air supply port
[2]	Power unit	Working port
[3]	Power unit	Exhaust port
[12]	Control unit	Exhaust port for pilot air supply

Key features

Pilot air supply

The pneumatic supply ports are located on the right and left end plates and on supply plates.

The ports differ for the following types of pilot air supply:

- Internal pilot air supply
- External pilot air supply

The port for the external pilot air supply is on the right and left end plates. Internal pilot air supply takes place in the valve itself and the ports for pilot air supply are not provided on the end plates.

Internal pilot air supply

Internal pilot air supply can be selected if the working pressure is between 2 and 10 bar, 3 and 10 bar, 2 and 16 bar or 3 and 16 bar, depending on the valve.

In this case the pilot air supply is branched from the compressed air supply 1 using an internal connection in the valve.

Note

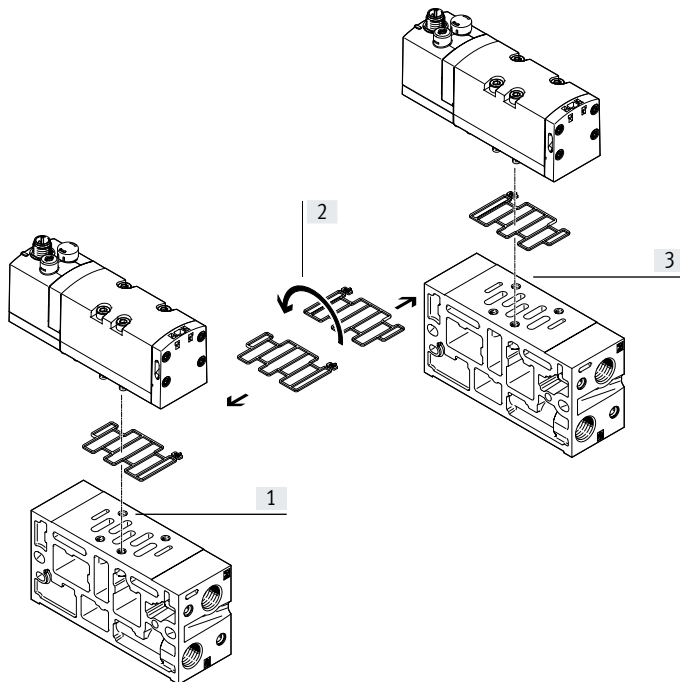
If a gradual pressure build-up is required in the system by using a soft-start valve, then external pilot air should be selected whereby the pilot pressure is already applied at the point of switch-on.

External pilot air supply

If the supply pressure is less than 2 or 3 bar, you must operate your valve manifold assembly VSVA using external pilot air supply.

The pilot air supply is then supplied via ports 12 and 14 on the end plates.

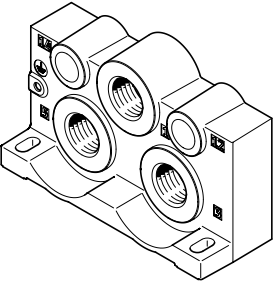
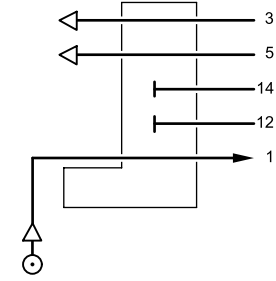
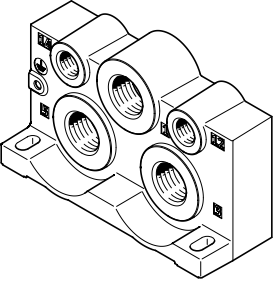
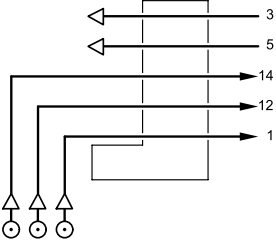
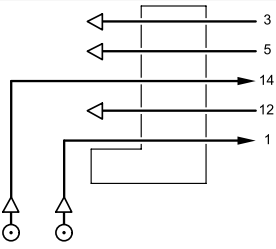
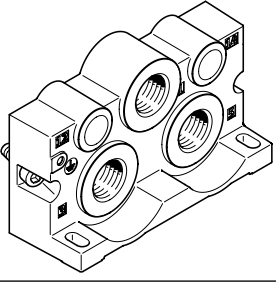
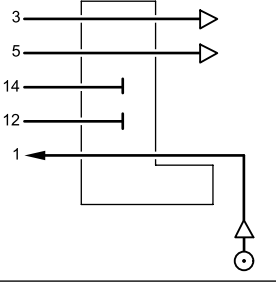
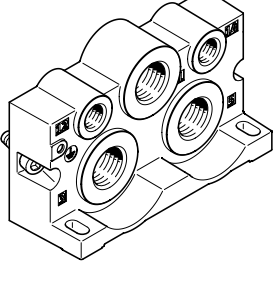
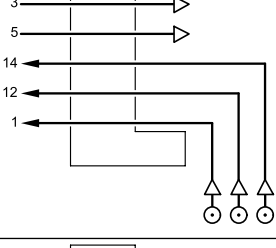
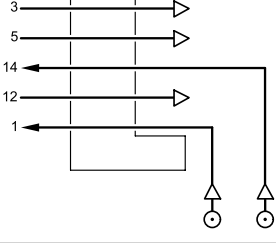
Using the seals with ducted/unducted pilot exhaust air



- [1] Ducted pilot air exhaust
- [2] Turning the seal by 180°
- [3] Unducted pilot air exhaust (as supplied)

Valve manifold assemblies VSVA are supplied with unducted pilot air exhaust. By turning the seal between the valve and manifold block, exhaust air (pilot air) can be diverted into pilot duct 12 and can thus be ducted and silenced (see illustration).

Key features

Pilot air supply via end plates		Description
Left end plate (graphical illustration)		
		<p>Internal pilot air supply</p> <ul style="list-style-type: none"> • Pilot air supply is branched within the valve from port 1 • Port 12 is not available • Port 14 is not available • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12
		<p>External pilot air supply</p> <ul style="list-style-type: none"> • Pilot air supply via ports 12 and 14 • Exhaust air via ports 3 and 5 • Unducted pilot exhaust air
		<p>External pilot air supply, ducted pilot exhaust air</p> <ul style="list-style-type: none"> • Pilot air supply via port 14 • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12 • For valves with central plug M12, 3-pin
Right end plate (graphical representation)		
		<p>Internal pilot air supply</p> <ul style="list-style-type: none"> • Pilot air supply is branched within the valve from port 1 • Port 12 is not available • Port 14 is not available • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12
		<p>External pilot air supply</p> <ul style="list-style-type: none"> • Pilot air supply via ports 12 and 14 • Exhaust air via ports 3 and 5 • Unducted pilot exhaust air
		<p>External pilot air supply, ducted pilot exhaust air</p> <ul style="list-style-type: none"> • Pilot air supply via port 14 • Exhaust air via ports 3 and 5 • Pilot exhaust air via port 12 • For valves with central plug M12, 3-pin

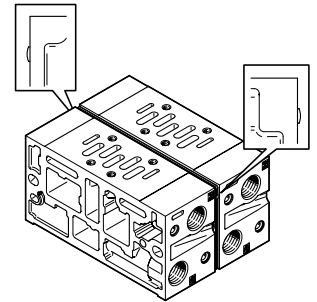
Key features

Creating pressure zones and separating exhaust air

The valve manifold assembly VSVA offers a number of options for creating pressure zones if different working pressures are required. Pressure zones are created by isolating the internal supply ducts between the manifold sub-bases by appropriate duct separation.

Compressed air is supplied and exhausted via the end plates and supply plates. The position of the supply plates and duct separations can be freely selected.

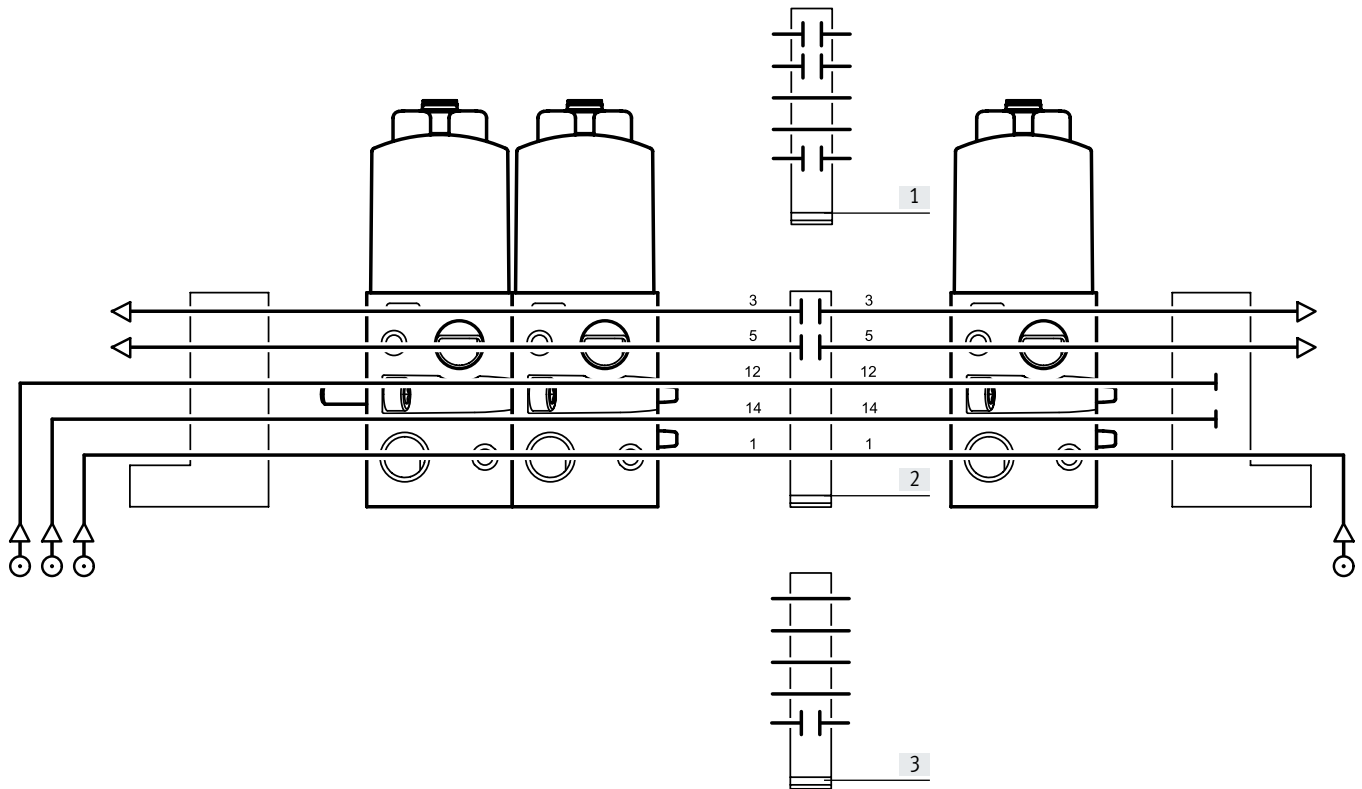
Duct separations are integrated ex-works as per your order. Duct separations can be distinguished by their coding, even when the valve manifold assembly is assembled.



Creating pressure zones				Description
Separating seal				
Coding	Sample image	Coding	Basic representation	
			3 ——— 5 ——— 12 ——— 14 ——— 1 ———	Duct 1 separate <ul style="list-style-type: none"> • Different supply pressure for each pressure zone • Supply pressure for each pressure zone can be switched off separately
			3 ——— 5 ——— 12 ——— 14 ——— 1 ———	Ducts 3 and 5 separated <ul style="list-style-type: none"> • The valves (for different pressure zones) do not affect each other via the exhaust ducts
			3 ——— 5 ——— 12 ——— 14 ——— 1 ———	Ducts 12 and 14 separated <ul style="list-style-type: none"> • Different pilot pressure for each supply zone • Operation with internal and external pilot air supply possible according to pressure zone • Pilot pressure for each pressure zone can be switched off separately
			3 ——— 5 ——— 12 ——— 14 ——— 1 ———	Ducts 1, 3 and 5 separated <ul style="list-style-type: none"> • Different supply pressure for each pressure zone • The valves (for different pressure zones) do not affect each other via the exhaust ducts • Supply pressure for each pressure zone can be switched off separately
			3 ——— 5 ——— 12 ——— 14 ——— 1 ———	Ducts 1, 3, 5, 12 and 14 separated <ul style="list-style-type: none"> • Different supply pressure for each pressure zone • Supply pressure for each pressure zone can be switched off separately • The valves (for different pressure zones) do not affect each other via the exhaust ducts • Different pilot pressure for each supply zone • Operation with internal and external pilot air supply possible according to pressure zone • Pilot pressure for each pressure zone can be switched off separately

Key features

Examples: Creating pressure zones



[1] Pressure zone separation in ducts 1, 3 and 5. Pressure supply and exhausting via the respective end plate for each of the two pressure zones. Pilot air is supplied jointly via the left end plate.

[2] Pressure zone separation in ducts 3 and 5. The pressure for both pressure zones is supplied jointly via the end plates. Exhausting for each of the two pressure zones takes places separately via the respective end plate. Pilot air is supplied jointly via the left end plate.

[3] Pressure zone separation in duct 1. Pressure supply via the respective end plate for each of the two pressure zones. Both pressure zones are exhausted jointly via the end plates. Pilot air supplied jointly via the left end plate.

Potential benefit:

- Two different supply pressures
- The valves do not affect each other via the exhaust ducts

Potential benefit:

- The valves do not affect each other via the exhaust ducts

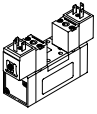
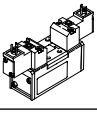

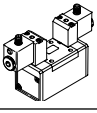

Potential benefit:

- Two different supply pressures

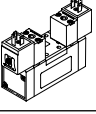
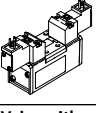
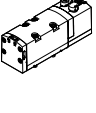
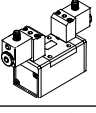

Key features

Use of 2x 3/2-way valve as 5/4-way valve																			
Code	Symbol	Table of values	Equivalent circuit symbol	Function															
K		<table border="1"> <thead> <tr> <th>Y1</th> <th>Y2</th> <th>A</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td></td> </tr> <tr> <td>0</td> <td>1</td> <td></td> </tr> <tr> <td>1</td> <td>0</td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td></td> </tr> </tbody> </table>	Y1	Y2	A	0	0		0	1		1	0		1	1			<ul style="list-style-type: none"> • Normally exhausted • The double-acting drive connected to ducts 2 and 4 is unpressurised when the valve is in the normal position and can be moved by an external force • If there is a signal at Y1(14) and Y2(12), there is pressure at ducts 2 and 4
Y1	Y2	A																	
0	0																		
0	1																		
1	0																		
1	1																		
		<table border="1"> <thead> <tr> <th>Y1</th> <th>Y2</th> <th>A</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td></td> </tr> <tr> <td>0</td> <td>1</td> <td></td> </tr> <tr> <td>1</td> <td>0</td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td></td> </tr> </tbody> </table>	Y1	Y2	A	0	0		0	1		1	0		1	1			<ul style="list-style-type: none"> • Normally closed (by combining valve code K and two piloted check valves) • The piloted check valves connected to ducts 2 and 4 are unpressurised when the valve is in the normal position and the pressures in the drive close the check valves leak-tight • The drive remains stationary when the forces are in equilibrium • Leakages can only occur via the drive seals • If there is a signal at Y1(14) and Y2(12), the pressure at ducts 2 and 4 is the same
Y1	Y2	A																	
0	0																		
0	1																		
1	0																		
1	1																		
N		<table border="1"> <thead> <tr> <th>Y1</th> <th>Y2</th> <th>A</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td></td> </tr> <tr> <td>0</td> <td>1</td> <td></td> </tr> <tr> <td>1</td> <td>0</td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td></td> </tr> </tbody> </table>	Y1	Y2	A	0	0		0	1		1	0		1	1			<ul style="list-style-type: none"> • Normally open • The double-acting drive connected to ducts 2 and 4 is supplied with the same pressure at both ends when the valve is in the normal position and remains stationary when the forces are balanced • If there is a signal at Y1(10) and Y2(10), ducts 2 and 4 are exhausted, the drive is unpressurised and can be moved by an external force
Y1	Y2	A																	
0	0																		
0	1																		
1	0																		
1	1																		
H		<table border="1"> <thead> <tr> <th>Y1</th> <th>Y2</th> <th>A</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td></td> </tr> <tr> <td>0</td> <td>1</td> <td></td> </tr> <tr> <td>1</td> <td>0</td> <td></td> </tr> <tr> <td>1</td> <td>1</td> <td></td> </tr> </tbody> </table>	Y1	Y2	A	0	0		0	1		1	0		1	1			<ul style="list-style-type: none"> • Normally open to duct 2 • The double-acting drive connected to ducts 2 and 4 is supplied with pressure via duct 2 when the valve is in the normal position. Duct 4 is exhausted. When the system is in its initial position, the drive is thus in a clearly defined position, as would also be the case with a 5/2-way single solenoid valve • If there is a signal at Y1(14) and Y2(10), duct 2 is exhausted and there is pressure at duct 4. The drive leaves the initial position • A closed circuit can be created with this 2x 3/2-way valve by combining it with piloted check valves. However, this is then selected by an active signal at Y2(10).
Y1	Y2	A																	
0	0																		
0	1																		
1	0																		
1	1																		

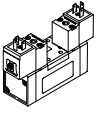
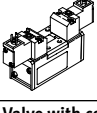
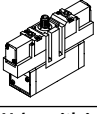
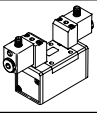

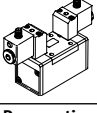

Product range overview

Function	Type	Valve function	Flow rate Valve [l/min]	Operating voltage	→ Page/ Internet	
Width 42 mm Working port G1/4	Valve with armature tube for solenoid coil MSN					
		MN1H-5/2	5/2-way valve, single solenoid	1200	12 V DC, 24 V DC, 24 V AC, 110 V AC, 230 V AC	22
		JMN1	5/2-way valve, double solenoid	1200		
		MN1H-5/3	5/3-way solenoid valve, mid-position valve	1200		
	Valve with armature tube for solenoid coil MSF					
		MFH-5/2	5/2-way valve, single solenoid	1200	12 V DC, 24 V DC, 42 V DC, 24 V AC, 42 V AC, 48 V AC, 110 V AC, 120 V AC, 230 V AC, 240 V AC	34
		JMF	5/2-way valve, double solenoid	1200		
		MFH-5/3	5/3-way solenoid valve, mid-position valve	1200		
	Valve with central plug M12, 3-pin					
		VSVA-B-T22	2x 2/2-way valve, single solenoid	1300	24 V DC	46
		VSVA-B-T32	2x 3/2-way valve, single solenoid	1100		
		VSVA-B-M52	5/2-way valve, single solenoid	1300		
		VSVA-B-B52	5/2-way valve, double solenoid	1300		
		VSVA-B-D52	5/2-way valve, double solenoid	1300		
		VSVA-B-P53	5/3-way solenoid valve, mid-position valve	1300		
	Valve with individual plug M12					
		MDH-5/2	5/2-way valve, single solenoid	1200	24 V DC, 42 V AC, 110 V AC, 230 V AC	61
		JMD	5/2-way valve, double solenoid	1200		
		MDH-5/3	5/3-way solenoid valve, mid-position valve	1200		
	Pneumatic valve					
		VL-5/2	5/2-way pneumatic valve, monostable	1200	-	80
		J	5/2-way pneumatic valve, bistable	1200		
		VL-5/3	5/3-way pneumatic valve, mid-position valve	1200		

Product range overview

Function	Type	Valve function	Flow rate Valve [l/min]	Operating voltage	→ Page/ Internet	
Width 52 mm Working port G3/8	Valve with armature tube for solenoid coil MSN					
		MN1H-5/2	5/2-way valve, single solenoid	2300	12 V DC, 24 V DC, 24 V AC, 110 V AC, 230 V AC	26
		JMN1	5/2-way valve, double solenoid	2300		
		MN1H-5/3	5/3-way solenoid valve, mid-position valve	2300		
	Valve with armature tube for solenoid coil MSF					
		MFH-5/2	5/2-way valve, single solenoid	2300	12 V DC, 24 V DC, 42 V DC, 24 V AC, 42 V AC, 48 V AC, 110 V AC, 120 V AC, 230 V AC, 240 V AC	38
		JMF	5/2-way valve, double solenoid	2300		
		MFH-5/3	5/3-way solenoid valve, mid-position valve	2300		
	Valve with central plug M12, 3-pin					
		VSVA-B-T22	2x 2/2-way valve, single solenoid	2800	24 V DC	52
		VSVA-B-T32	2x 3/2-way valve, single solenoid	2200		
		VSVA-B-M52	5/2-way valve, single solenoid	2800		
		VSVA-B-B52	5/2-way valve, double solenoid	2800		
		VSVA-B-D52	5/2-way valve, double solenoid	2800		
		VSVA-B-P53	5/3-way solenoid valve, mid-position valve	2700		
	Valve with individual plug M12					
		MDH-5/2	5/2-way valve, single solenoid	2300	24 V DC, 42 V AC, 110 V AC, 230 V AC	65
		JMD	5/2-way valve, double solenoid	2300		
		MDH-5/3	5/3-way solenoid valve, mid-position valve	2300		
	Pneumatic valve					
		VL-5/2	5/2-way pneumatic valve, monostable	2300	–	85
		J	5/2-way pneumatic valve, bistable	2300		
		VL-5/3	5/3-way pneumatic valve, mid-position valve	2300		

Product range overview

Function	Type	Valve function	Flow rate Valve [l/min]	Operating voltage	→ Page/ Internet	
Width 65 mm Working port G1/2	Valve with armature tube for solenoid coil MSN					
		MN1H-5/2	5/2-way valve, single solenoid	4500	12 V DC, 24 V DC, 24 V AC, 110 V AC, 230 V AC	30
		JMN1	5/2-way valve, double solenoid	4500		
		MN1H-5/3	5/3-way solenoid valve, mid-position valve	4000		
	Valve with armature tube for solenoid coil MSF					
		MFH-5/2	5/2-way valve, single solenoid	4500	12 V DC, 24 V DC, 42 V DC, 24 V AC, 42 V AC, 48 V AC, 110 V AC, 120 V AC, 230 V AC, 240 V AC	42
		JMF	5/2-way valve, double solenoid	4500		
		MFH-5/3	5/3-way solenoid valve, mid-position valve	4000		
	Valve with central plug M12, 4-pin					
		MEBH-5/2	5/2-way valve, single solenoid	4500	24 V DC	57
		JMEB	5/2-way valve, double solenoid	4500		
		MEBH-5/3	5/3-way solenoid valve, mid-position valve	4000		
	Valve with individual plug M12					
		MDH-5/2	5/2-way valve, single solenoid	4500	24 V DC, 42 V AC, 110 V AC, 230 V AC	69
		JMD	5/2-way valve, double solenoid	4500		
		MDH-5/3	5/3-way solenoid valve, mid-position valve	4000		
	Pneumatic valve					
		VL-5/2	5/2-way pneumatic valve, monostable	4500	-	90
		J	5/2-way pneumatic valve, bistable	4500		
		VL-5/3	5/3-way pneumatic valve, mid-position valve	4100		
	Width 76 mm Working port G3/4	Valve with individual plug M12				
		MDH-5/2	5/2-way valve, single solenoid	6000	24 V DC, 42 V AC, 110 V AC, 230 V AC	73
		JMD	5/2-way valve, double solenoid	6000		
		MDH-5/3	5/3-way solenoid valve, mid-position valve	4800		
Pneumatic valve						
		VL-5/2	5/2-way pneumatic valve, monostable	6000	-	94
		J	5/2-way pneumatic valve, bistable	6000		
	VL-5/3	5/3-way pneumatic valve, mid-position valve	4800			

Type codes for valves with round plug

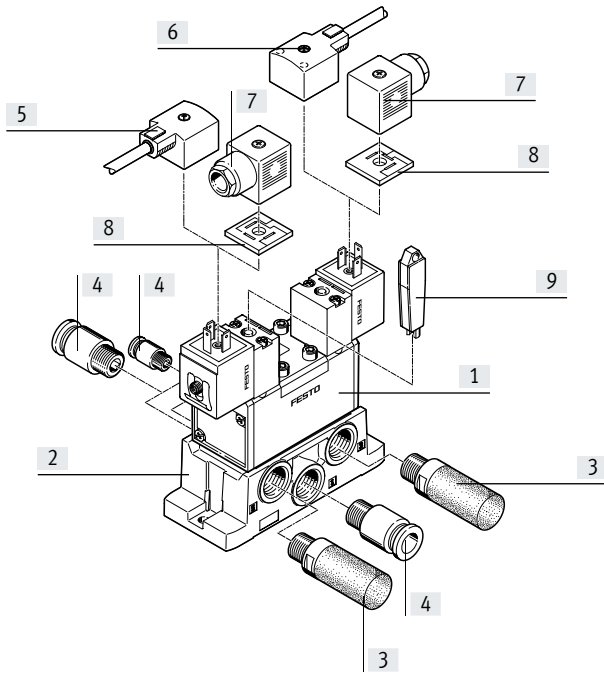
001	Series	
VSVA	Standards-based valve to ISO 5599-1	
002	Directional control valve type	
B	Sub-base valve	
003	Valve function	
T22C	2x2/2-way valve, normally closed	
T32U	2x3/2-way valve, normally open	
T32F	2x3/2-way valve, normally open, reversible	
T32C	2x3/2-way valve, normally closed	
T32N	2x3/2-way valve, normally closed, reversible	
T32H	2x3/2-way valve, 1x normally closed, 1x normally open	
T32W	2x3/2-way valve, 1x normally closed, 1x normally open, reversible	
M52	5/2-way valve, single solenoid/monostable	
B52	5/2-way valve, double solenoid/bistable	
D52	5/2-way valve, double solenoid/bistable, dominant signal	
P53U	5/3-way valve, mid-position pressurised	
P53E	5/3-way valve, mid-position exhausted	
P53C	5/3-way valve, mid-position closed	
004	Reset method for monostable/single solenoid valves	
	None	
A	Pneumatic spring	
M	Mechanical spring	

005	Pilot air	
	Internal	
Z	External	
006	Manual override	
H	Non-detenting	
D	Non-detenting, detenting	
007	Pneumatic connection	
A2	18 mm (02) ISO 15407-1/-2	
A1	26 mm (01) ISO 15407-1/-2	
D1	42 mm (1) ISO 5599-1/-2	
D2	52 mm (2) ISO 5599-1/-2	
008	Nominal operating voltage	
1	24 V DC	
009	Electrical connection	
R2	Central connector M8	
R5	Central plug M12	
010	Display	
L	LED	

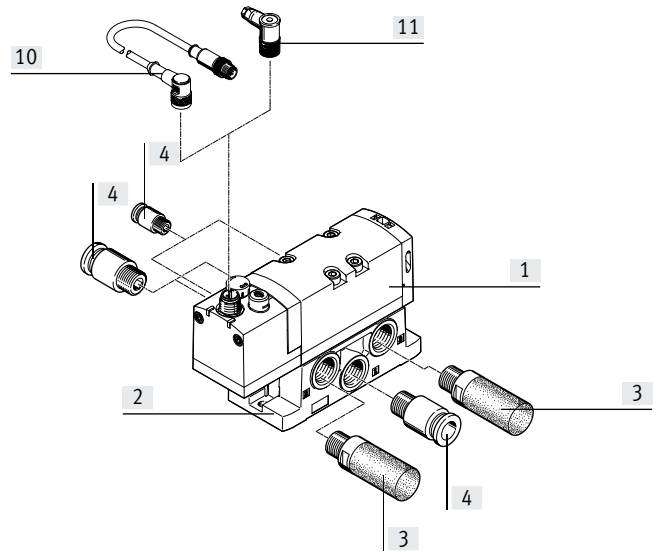
Peripherals overview

Valve on individual sub-base

Solenoid valve with solenoid coil MSN1



Solenoid valve with central plug M12, 3-pin



Individual components

	Type	Brief description	→ Page/ Internet	
[1]	Solenoid valve	MN1H-...	Solenoid valve with solenoid coil, port pattern to ISO 5599-1, corresponding solenoid coils → page 139	22
	Solenoid valve	VSVA-...	Solenoid valve with central plug M12, 3-pin, port pattern to ISO 5599-1	46
[2]	Sub-base	VABS-S1-...	Lateral pneumatic connections	97
	Individual sub-base	NAS-...	Lateral pneumatic connections	97
		NAU-...	Pneumatic connections underneath	100
[3]	Silencer	U-...	For mounting in exhaust ports	silencer
[4]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[5]	Connecting cable	KMC-..., NEBV-...	Without LED	130
[6]	Connecting cable	KMC-..., NEBV-...	With LED	130
[7]	Plug socket	MSSD-...	For self-assembly	130
[8]	Illuminating seal	M...LD	For displaying the signal status	130
[9]	Manual override	AHB-...	Tool for detenting manual override	131
[10]	Connecting cable	NEBU-...	-	131
[11]	Plug socket	SIE-...	For self-assembly	131

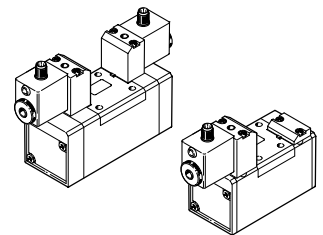
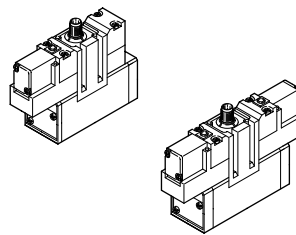
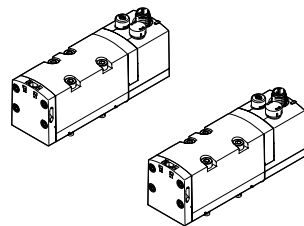
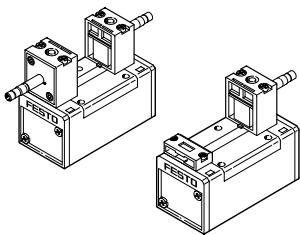
Valve variants

MN1H, JMN1H, MFH, JMFH

VSVA

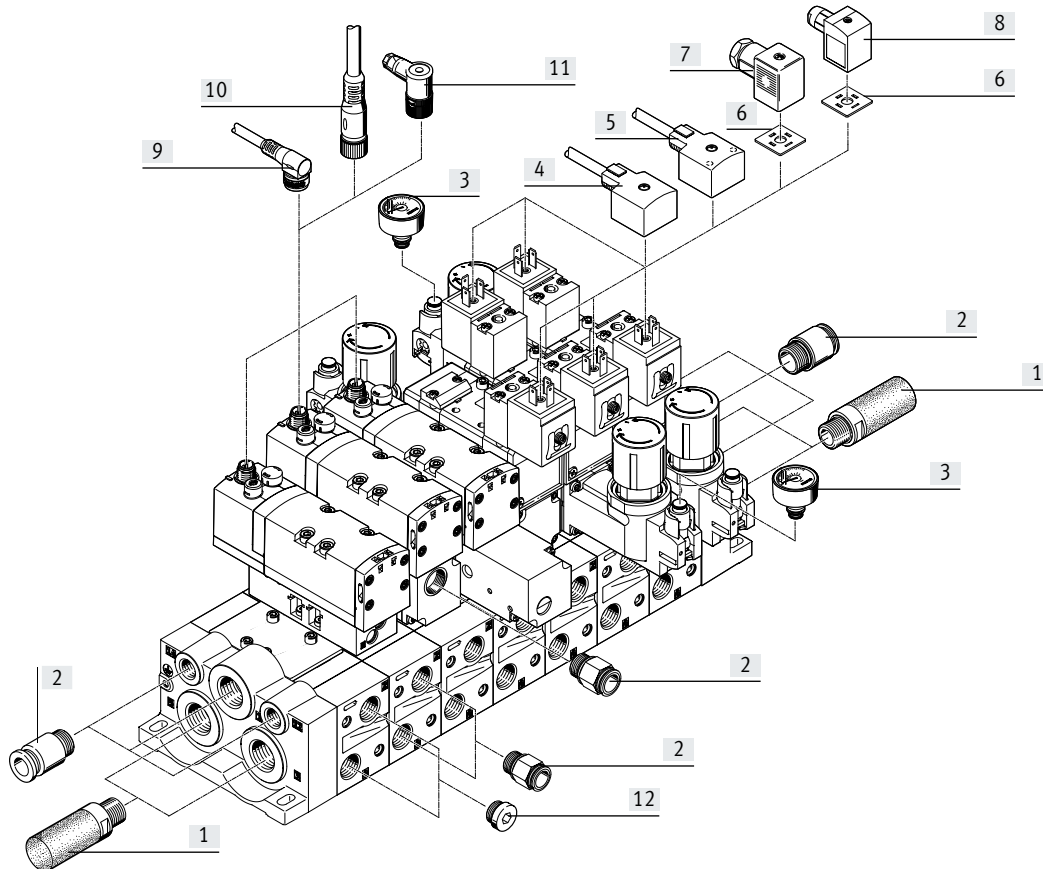
MEBH, JMEBH

MDH, JMDH



Peripherals overview

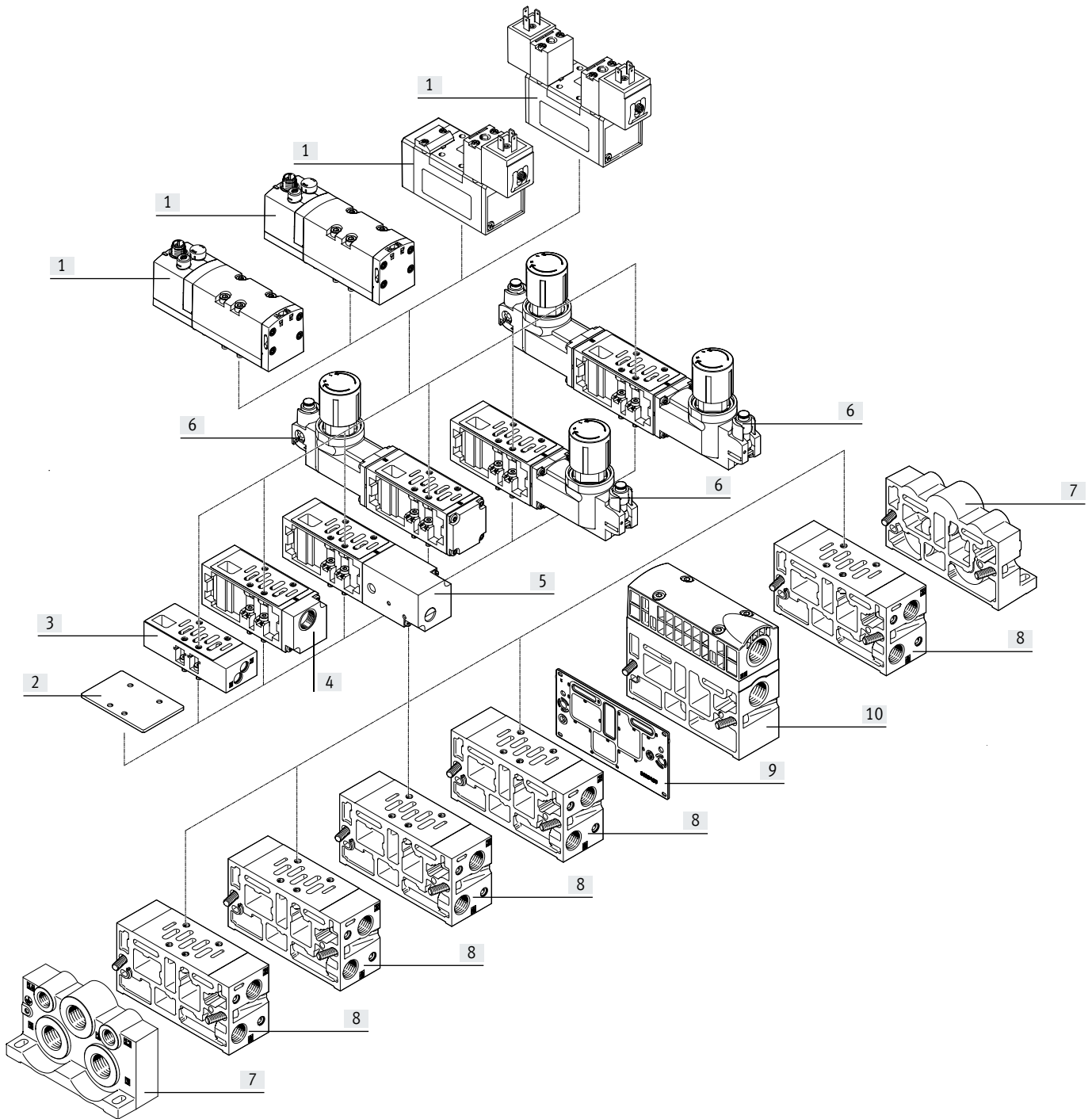
Accessories



Individual components		Type	Brief description	→ Page/ Internet
[1]	Silencer	U-...	For mounting in exhaust ports	silencer
[2]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[3]	Pressure gauge	PAGN-...	With push-in connector	131
[4]	Connecting cable	KMC-..., NEBV-...	Without LED	130
[5]	Connecting cable	KMC-...LED, NEBV-...	With LED	130
[6]	Illuminating seal	M...-LD	For displaying the signal status	130
[7]	Socket	MSSD-C-M16	With screw terminal connection	130
[8]	Socket	MSSD-CS-M16	With insulation displacement connection	130
[9]	Connecting cable	NEBU-...	Angled socket, M12x1, 5-pin	131
[10]	Socket	SIE-...	For self-assembly	131
[11]	Connecting cable	NEBU-...	Straight socket, M12x1, 5-pin	131
[12]	Blanking plug	B-...	For sealing unused connections	b

System overview

Manifold assembly

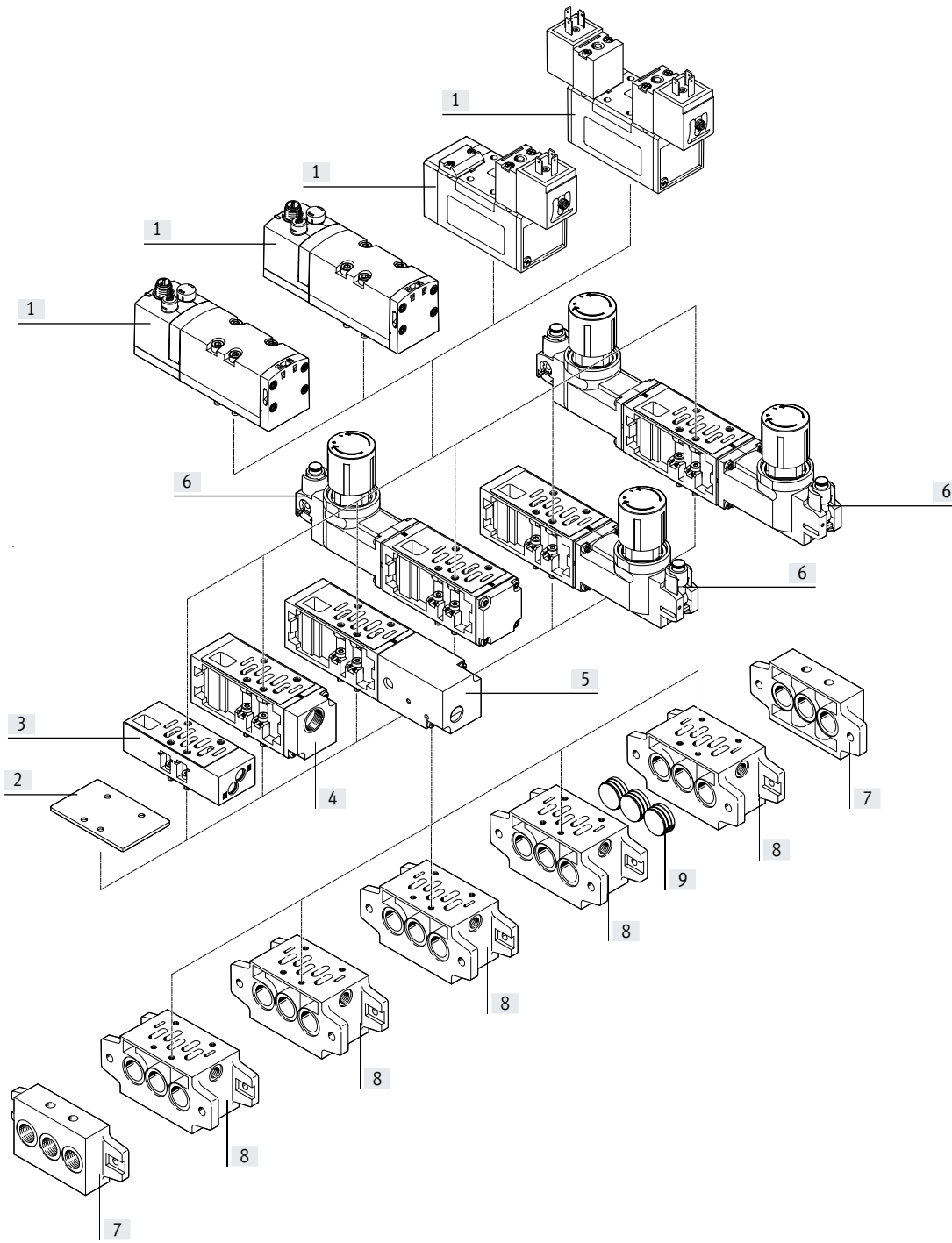


System overview

Individual components		Type	Brief description	→ Page/ Internet
[1]	Solenoid valve	MN1H-...	With armature tube for solenoid coil MSN1	22
		JMN1H-...	With armature tube for solenoid coil MSN1	22
		JMN1DH-...	With armature tube for solenoid coil MSN1	22
		MFH-...	With armature tube for solenoid coil MSF	34
		JMFH-...	With armature tube for solenoid coil MSF	34
		JMFDH-...	With armature tube for solenoid coil MSF	34
		VSVA-...	With central plug M12, 3-pin	46
		MEBH-...	With central plug M12, 4-pin	57
		JMEBH-...	With central plug M12, 4-pin	57
		JMEBDH-...	With central plug M12, 4-pin	57
		MDH-...	With solenoid coil MD with round plug M12x1	61
		JMDH-...	With solenoid coil MD with round plug M12x1	61
		JMDDH-...	With solenoid coil MD with round plug M12x1	61
	Pneumatic valve	VL-...	Port pattern to ISO 5599-1	80
J-...		Port pattern to ISO 5599-1	80	
JD-...		Port pattern to ISO 5599-1	80	
[2]	Cover plate	NDV-...	For sealing unused manifold sub-bases	112
[3]	Throttle plate	VABF-S1-...-F1B1-C	Controls the flow of exhaust air in ducts 3 and 5	116
		GRO-ZP-...	Controls the flow of exhaust air in ducts 3 and 5	116
[4]	Vertical supply plate	VABF-S1-...-P1A3-G38	Alternative compressed air supply for port 1 of the mounted valve	119
[5]	Vertical pressure shut-off plate	VABF-S1-...-L1D1-C	For blocking duct 1 and duct 14 upstream of a valve	121
[6]	Regulator plate	VABF-S1-...-R-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	123
		LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	123
[7]	End plate	VABE-S1-...	With ports for air supply 1 and exhausts 3 and 5 and pilot air supply 12 and 14	109
[8]	Manifold sub-base	VABV-S1-...	With ports 2 and 4 underneath	102
[9]	Duct separation	VABD-S1-1-...	For sealing ducts 1, 3, 5, 12 and 14 between end plate and manifold sub-base, e.g. to create pressure zones	113
[10]	Supply plate	VABF-S1-1-...	With ports for air supply 1 and exhausts 3 and 5	104

System overview


Manifold assembly

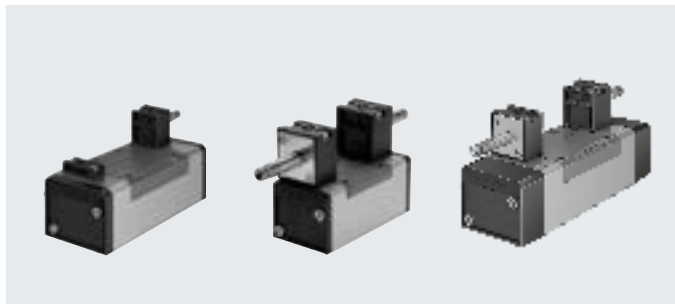


System overview

Individual components		Type	Brief description	→ Page/ Internet
[1]	Solenoid valve	MN1H-...	With armature tube for solenoid coil MSN1	22
		JMN1H-...	With armature tube for solenoid coil MSN1	22
		JMN1DH-...	With armature tube for solenoid coil MSN1	22
		MFH-...	With armature tube for solenoid coil MSF	34
		JMFH-...	With armature tube for solenoid coil MSF	34
		JMFDH-...	With armature tube for solenoid coil MSF	34
		VSVA-...	With central plug M12, 3-pin	46
		MEBH-...	With central plug M12, 4-pin	57
		JMEBH-...	With central plug M12, 4-pin	57
		JMEBDH-...	With central plug M12, 4-pin	57
		MDH-...	With solenoid coil MD with round plug M12x1	61
		JMDH-...	With solenoid coil MD with round plug M12x1	61
		JMDDH-...	With solenoid coil MD with round plug M12x1	61
		Pneumatic valve	VL-...	Port pattern to ISO 5599-1
J-...	Port pattern to ISO 5599-1		80	
JD-...	Port pattern to ISO 5599-1		80	
[2]	Cover plate	NDV-...	For sealing unused manifold sub-bases	112
[3]	Throttle plate	VABF-S1-...-F1B1-C	Controls the flow of exhaust air in ducts 3 and 5	116
		GRO-ZP-...	Controls the flow of exhaust air in ducts 3 and 5	116
[4]	Vertical supply plate	VABF-S1-...-P1A3-G38	Alternative compressed air supply for port 1 of the mounted valve	119
[5]	Vertical pressure shut-off plate	VABF-S1-...-L1D1-C	For blocking duct 1 and duct 14 upstream of a valve	121
[6]	Regulator plate	VABF-S1-...-R-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	123
		LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	123
[7]	End plate kit	NEV-...	With ports for air supply 1 and exhausts 3 and 5	108
[8]	Manifold sub-base	NAV-...	With ports 2 and 4 underneath	102
[9]	Isolating disc	NSC-...	For sealing ducts 1, 3, 5 between end plate and manifold sub-base, e.g. to create pressure zones	112

Technical data – Width 42 mm

-  - Flow rate
1200 l/min



General technical data

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Direction of flow	With external pilot air supply Reversible With internal pilot air supply Not reversible
Exhaust function	Can be throttled
Manual override	Non-detenting, detenting via accessory
Type of mounting	On sub-base, via through-hole
Mounting position	Any
Nominal size	[mm] 8
Overlap	Positive overlap
Width	[mm] 42
Grid dimension	[mm] 43
Pneumatic connections	Sub-base size 1 to ISO 5599-1
Noise level	[dB (A)] 85
Conforms to standard	ISO 5599-1
Certification	With internal pilot air supply c UL us - Recognized (OL)
Maritime classification ¹⁾	See certificate

1) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Flow rates

Valve function	5/2-way valve, single solenoid	5/2-way valve, double solenoid	5/3-way valve
Standard nominal flow rate	[l/min] 1200		

Switching times [ms]

		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MN1H-5/2-D-1-C	23	32	–	–
	MN1H-5/2-D-1-S-C	23	32	–	–
	MN1H-5/2-D-1-FR-C	17	39	–	–
	MN1H-5/2-D-1-FR-S-C	17	39	–	–
5/2-way valve, double solenoid	JMN1H-5/2-D-1-C	–	–	18	–
	JMN1H-5/2-D-1-S-C	–	–	18	–
	JMN1DH-5/2-D-1-C	–	–	18	15
	JMN1DH-5/2-D-1-S-C	–	–	18	15
5/3-way valve	MN1H-5/3G-D-1-C	20	44	–	–
	MN1H-5/3G-D-1-S-C	20	44	–	–
	MN1H-5/3E-D-1-C	20	46	–	–
	MN1H-5/3E-D-1-S-C	20	46	–	–
	MN1H-5/3B-D-1-C	20	46	–	–
	MN1H-5/3B-D-1-S-C	20	46	–	–

Technical data – Width 42 mm

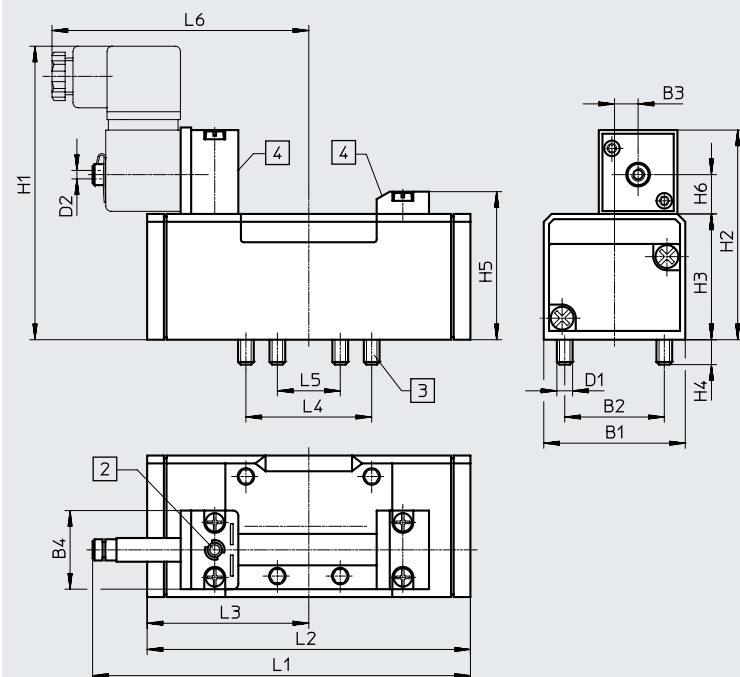
Operating and environmental conditions			Pneumatic spring	Mechanical spring
Reset method				
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
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	
Safety characteristics				
Max. positive test pulse with 0 signal		[µs]	3700	
Max. negative test pulse with 1 signal		[µs]	4600	
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistance			Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	
Electrical data				
Electrical connection			Via N1 coil, to be ordered separately	
Degree of protection to EN 60529			IP65	
Materials				
Housing			Die-cast aluminium	
Seals			HNBR, NBR	
Note on materials			RoHS-compliant	

Technical data – Width 42 mm

Dimensions

Download CAD data → www.festo.com

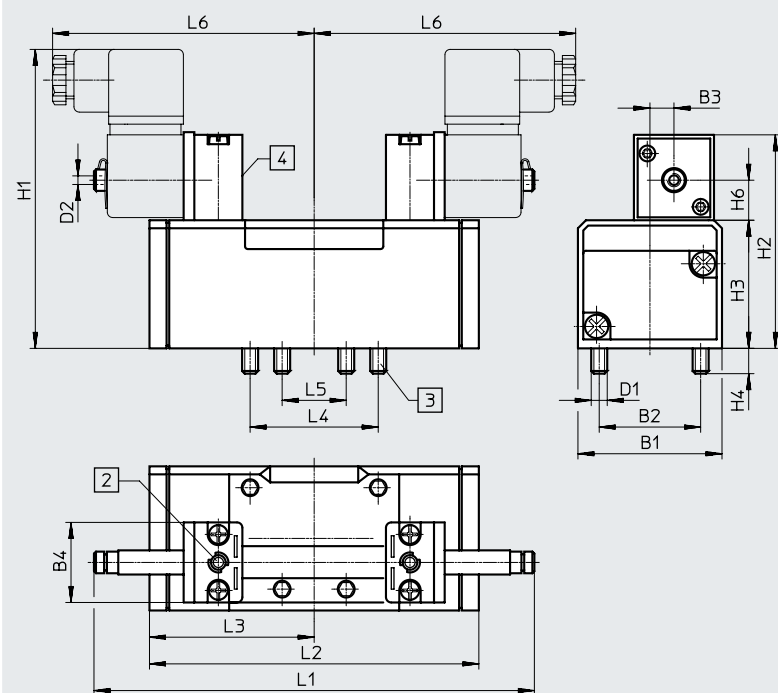
5/2-way valves, single solenoid



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
MN1H-5/2- ...	42	28	6	30	M5	M5	106	74	38	9	46.5	15.3	117.5	87.6	43.8	36	18	89
MN1H-5/2- ... -FR- ...													128	98				

5/2-way double solenoid valves, 5/3-way valves



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label


Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
JMN1H-5/2- ...	42	28	6	30	M5	M5	106	74	38	9	46.5	15.3	147.3	87.6	43.8	36	18	89
JMN1DH-5/2- ...														87.6				
MN1H-5/3- ...														108.4				

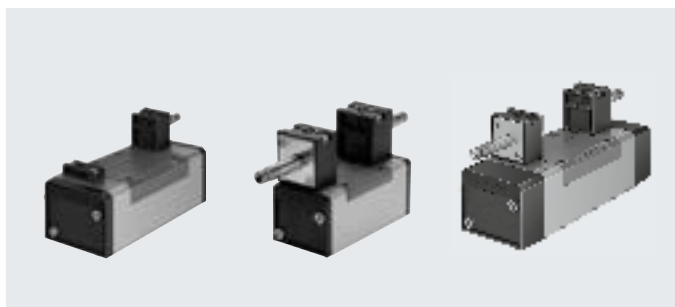
Ordering data – Width 42 mm

Ordering data – Valves with armature tube for solenoid coil MSN1 ¹⁾					
Circuit symbol	Description	Pilot air supply	Weight [g]	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	Internal	450	159688	MN1H-5/2-D-1-C
	Pneumatic spring reset	External	450	159686	MN1H-5/2-D-1-S-C
	Mechanical spring reset	Internal	450	159687	MN1H-5/2-D-1-FR-C
	Mechanical spring reset	External	450	159716	MN1H-5/2-D-1-FR-S-C
5/2-way valve, double solenoid					
	–	Internal	610	159690	JMN1H-5/2-D-1-C
	–	External	610	159689	JMN1H-5/2-D-1-S-C
	With dominant signal at 14	Internal	610	159691	JMN1DH-5/2-D-1-C
	With dominant signal at 14	External	610	159717	JMN1DH-5/2-D-1-S-C
5/3-way valve					
	Normally closed, Mechanical spring reset	Internal	650	159681	MN1H-5/3G-D-1-C
	Normally closed, Mechanical spring reset	External	650	159680	MN1H-5/3G-D-1-S-C
	Normally exhausted, Mechanical spring reset	Internal	650	159683	MN1H-5/3E-D-1-C
	Normally exhausted, Mechanical spring reset	External	650	159682	MN1H-5/3E-D-1-S-C
	Normally open, Mechanical spring reset	Internal	650	159685	MN1H-5/3B-D-1-C
	Normally open, Mechanical spring reset	External	650	159684	MN1H-5/3B-D-1-S-C

1) Solenoid coils → page 129

Technical data – Width 52 mm

-  - Flow rate
2300 l/min



General technical data

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Direction of flow	With external pilot air supply Reversible With internal pilot air supply Not reversible
Exhaust function	Can be throttled
Manual override	Non-detenting, detenting via accessory
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal size [mm]	11.5
Overlap	Positive overlap
Width [mm]	52
Grid dimension [mm]	56
Pneumatic connections	Sub-base size 2 to ISO 5599-1
Noise level [dB (A)]	85
Conforms to standard	ISO 5599-1
Certification	With internal pilot air supply c UL us - Recognized (OL)
Maritime classification ¹⁾	See certificate

1) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Flow rates

Valve function	5/2-way valve, single solenoid	5/2-way valve, double solenoid	5/3-way valve
Standard nominal flow rate [l/min]	2300		

Switching times [ms]

		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MN1H-5/2-D-2-C	46	69	–	–
	MN1H-5/2-D-2-S-C	43	62	–	–
	MN1H-5/2-D-2-FR-C	24	62	–	–
	MN1H-5/2-D-2-FR-S-C	24	62	–	–
5/2-way valve, double solenoid	JMN1H-5/2-D-2-C	–	–	21	–
	JMN1H-5/2-D-2-S-C	–	–	21	–
	JMN1DH-5/2-D-2-C	–	–	24	21
	JMN1DH-5/2-D-2-S-C	–	–	24	21
5/3-way valve	MN1H-5/3G-D-2-C	33	82	–	–
	MN1H-5/3G-D-2-S-C	33	82	–	–
	MN1H-5/3E-D-2-C	36	84	–	–
	MN1H-5/3E-D-2-S-C	36	84	–	–
	MN1H-5/3B-D-2-C	35	78	–	–
	MN1H-5/3B-D-2-S-C	35	78	–	–

Technical data – Width 52 mm

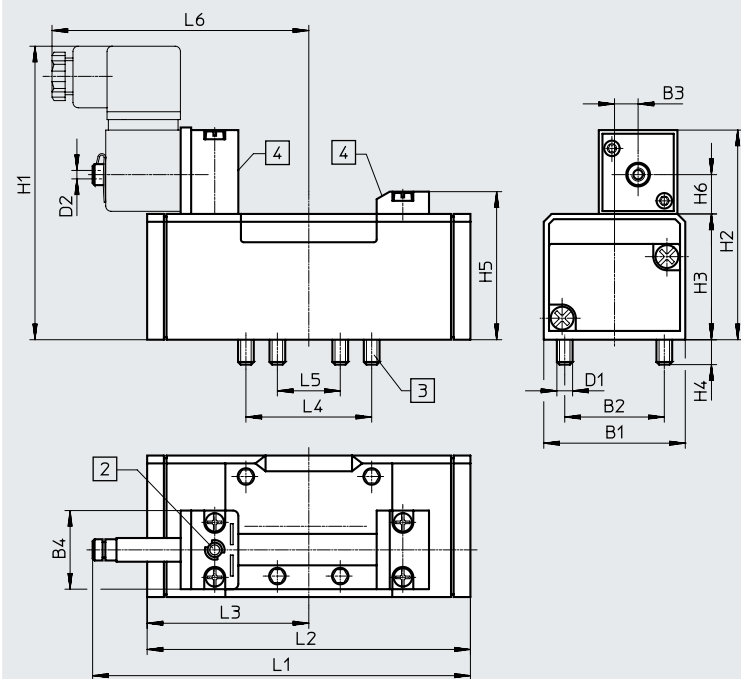
Operating and environmental conditions			Pneumatic spring	Mechanical spring
Reset method				
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
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	
Safety characteristics				
Max. positive test pulse with 0 signal		[µs]	3700	
Max. negative test pulse with 1 signal		[µs]	4600	
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistance			Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	
Electrical data				
Electrical connection			Via N1 coil, to be ordered separately	
Degree of protection to EN 60529			IP65	
Materials				
Housing			Die-cast aluminium	
Seals			HNBR, NBR	
Note on materials			RoHS-compliant	

Technical data – Width 52 mm

Dimensions

Download CAD data → www.festo.com

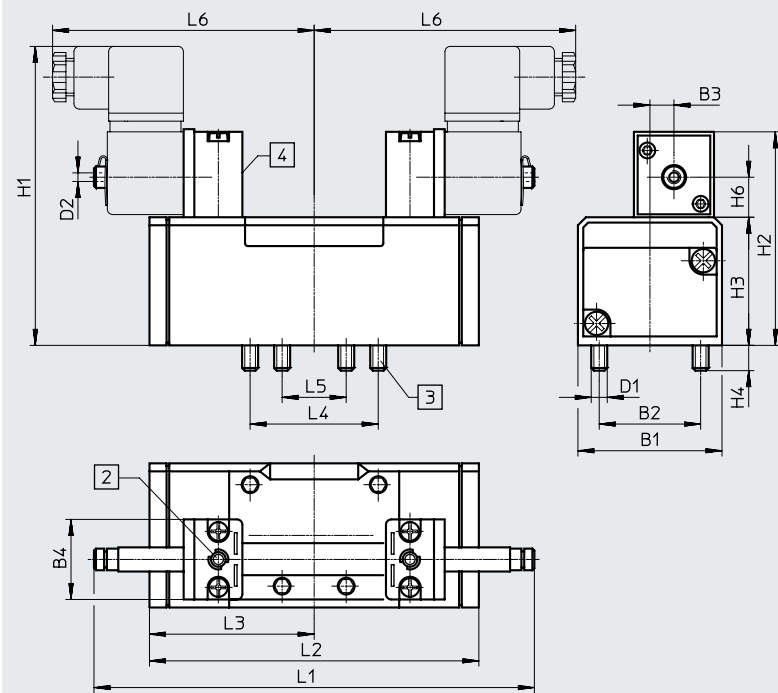
5/2-way valves, single solenoid



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
MN1H-5/2- ...	54	38	9	30	M6	M5	116	84	48	9.5	56.5	15.3	147.6	123.4	61.7	48	24	98
MN1H-5/2- ... -FR- ...													161.5	140.7				

5/2-way double solenoid valves, 5/3-way valves



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label


Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
JMN1H-5/2- ...	54	38	9	30	M6	M5	116	84	48	9.5	56.5	15.3	165	123.4	61.7	48	24	98
JMN1DH-5/2- ...														123.4	61.7			
MN1H-5/3- ...														158	79			

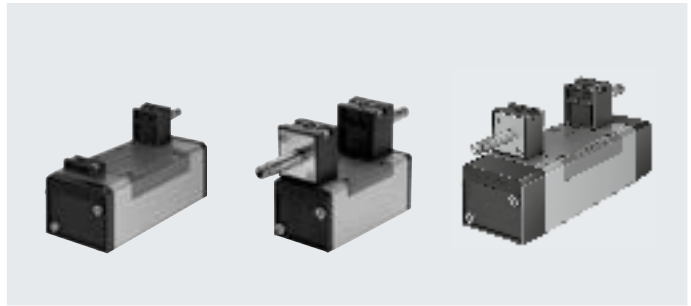
Ordering data – Width 52 mm

Ordering data – Valves with armature tube for solenoid coil MSN1 ¹⁾					
Circuit symbol	Description	Pilot air supply	Weight [g]	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	Internal	710	159700	MN1H-5/2-D-2-C
	Pneumatic spring reset	External	710	159698	MN1H-5/2-D-2-S-C
	Mechanical spring reset	Internal	710	159699	MN1H-5/2-D-2-FR-C
	Mechanical spring reset	External	710	159718	MN1H-5/2-D-2-FR-S-C
5/2-way valve, double solenoid					
	–	Internal	940	159702	JMN1H-5/2-D-2-C
	–	External	940	159701	JMN1H-5/2-D-2-S-C
	With dominant signal at 14	Internal	940	159703	JMN1DH-5/2-D-2-C
	With dominant signal at 14	External	940	159719	JMN1DH-5/2-D-2-S-C
5/3-way valve					
	Normally closed, Mechanical spring reset	Internal	940	159693	MN1H-5/3G-D-2-C
	Normally closed, Mechanical spring reset	External	940	159692	MN1H-5/3G-D-2-S-C
	Normally exhausted, Mechanical spring reset	Internal	940	159695	MN1H-5/3E-D-2-C
	Normally exhausted, Mechanical spring reset	External	940	159694	MN1H-5/3E-D-2-S-C
	Normally open, Mechanical spring reset	Internal	940	159697	MN1H-5/3B-D-2-C
	Normally open, Mechanical spring reset	External	940	159696	MN1H-5/3B-D-2-S-C

1) Solenoid coils → page 129

Technical data – Width 65 mm

-  - Flow rate
4600 l/min



General technical data	
Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Direction of flow	With external pilot air supply Reversible With internal pilot air supply Not reversible
Exhaust function	Can be throttled
Manual override	Non-detenting, detenting via accessory
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal size [mm]	14.5
Overlap	Positive overlap
Width [mm]	65
Grid dimension [mm]	71
Pneumatic connections	Sub-base size 3 to ISO 5599-1
Noise level [dB (A)]	85
Conforms to standard	ISO 5599-1
Certification	With internal pilot air supply c UL us - Recognized (OL)
Maritime classification ¹⁾	See certificate

1) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Flow rates					
Valve function		5/2-way valve	5/3-way valve		
			Normally closed	Normally exhausted	Normally open
Standard nominal flow rate	[l/min]	4500	4100	4600	4000

Technical data – Width 65 mm

Switching times [ms]		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MN1H-5/2-D-3-C	49	71	–	–
	MN1H-5/2-D-3-S-C	49	71	–	–
	MN1H-5/2-D-3-FR-C	33	74	–	–
	MN1H-5/2-D-3-FR-S-C	33	74	–	–
5/2-way valve, double solenoid	JMN1H-5/2-D-3-C	–	–	21	–
	JMN1H-5/2-D-3-S-C	–	–	21	–
	JMN1DH-5/2-D-3-C	–	–	24	21
	JMN1DH-5/2-D-3-S-C	–	–	24	21
5/3-way valve	MN1H-5/3G-D-3-C	33	82	–	–
	MN1H-5/3G-D-3-S-C	33	82	–	–
	MN1H-5/3E-D-3-C	36	84	–	–
	MN1H-5/3E-D-3-S-C	36	84	–	–
	MN1H-5/3B-D-3-C	35	78	–	–
	MN1H-5/3B-D-3-S-C	35	78	–	–

Operating and environmental conditions			Pneumatic spring	Mechanical spring
Reset method				
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
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	

Safety characteristics		
Max. positive test pulse with 0 signal	[µs]	3700
Max. negative test pulse with 1 signal	[µs]	4600
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

Electrical data	
Electrical connection	Via N1 coil, to be ordered separately
Degree of protection to EN 60529	IP65

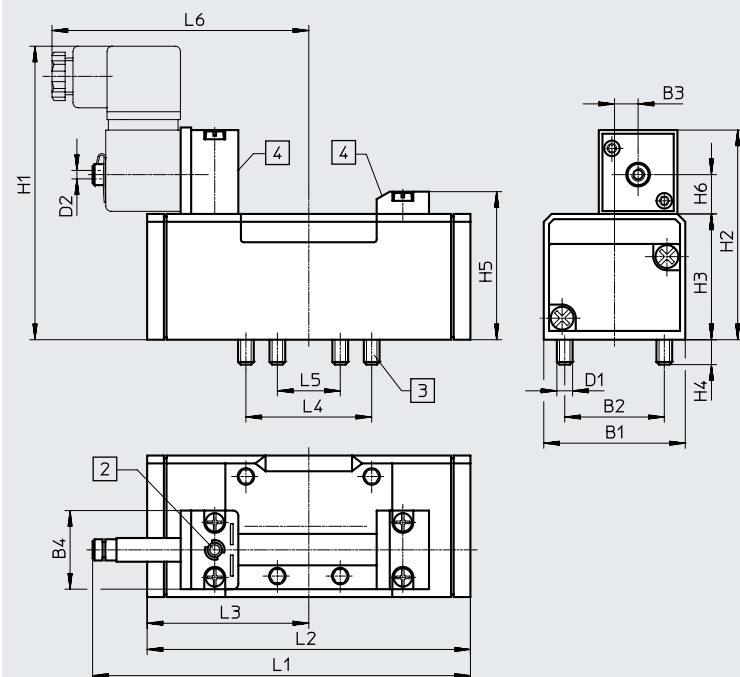
Materials	
Housing	Die-cast aluminium
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Technical data – Width 65 mm

Dimensions

Download CAD data → www.festo.com

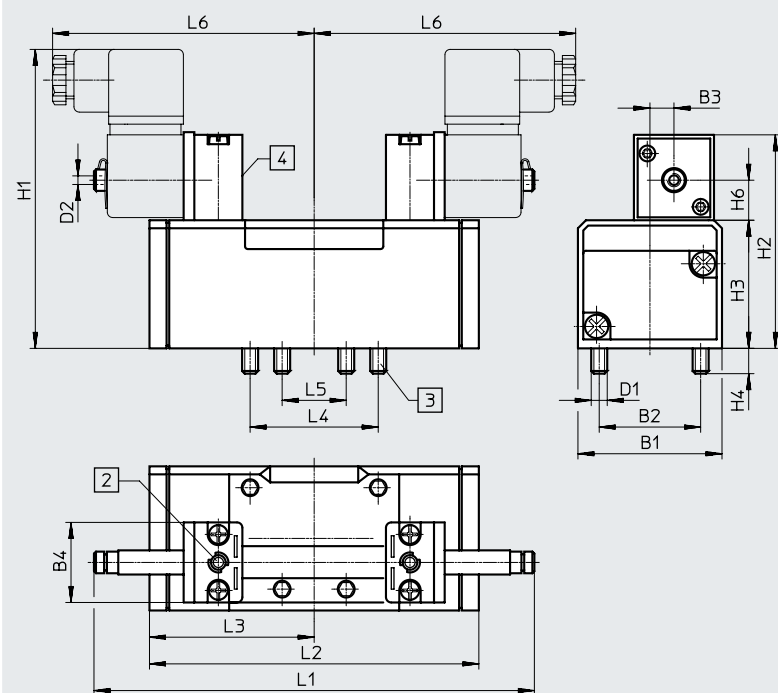
5/2-way valves, single solenoid



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
MN1H-5/2- ...	65	48	12	30	M8	M5	123	87.3	55	12	63.5	15.3	169	145.4	72.7	64	32	109
MN1H-5/2- ... -FR- ...													184.8	164.7				

5/2-way double solenoid valves, 5/3-way valves



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label


Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
JMN1H-5/2- ...	65	48	12	30	M8	M5	123	87.3	55	12	-	15.3	185.7	145.4	72.7	64	32	109
JMN1DH-5/2- ...											-			145.4	72.7			
MN1H-5/3...											63.5			184	92			

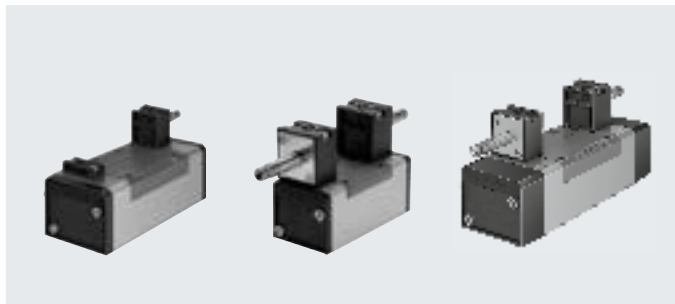
Ordering data – Width 65 mm

Ordering data – Valves with armature tube for solenoid coil MSN1 ¹⁾					
Circuit symbol	Description	Pilot air supply	Weight [g]	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	Internal	1000	159712	MN1H-5/2-D-3-C
	Pneumatic spring reset	External	1000	159710	MN1H-5/2-D-3-S-C
	Mechanical spring reset	Internal	1000	159711	MN1H-5/2-D-3-FR-C
	Mechanical spring reset	External	1000	160896	MN1H-5/2-D-3-FR-S-C
5/2-way valve, double solenoid					
	–	Internal	1090	159714	JMN1H-5/2-D-3-C
	–	External	1090	159713	JMN1H-5/2-D-3-S-C
	With dominant signal at 14	Internal	1090	159715	JMN1DH-5/2-D-3-C
	With dominant signal at 14	External	1090	160897	JMN1DH-5/2-D-3-S-C
5/3-way valve					
	Normally closed, Mechanical spring reset	Internal	1170	159705	MN1H-5/3G-D-3-C
	Normally closed, Mechanical spring reset	External	1170	159704	MN1H-5/3G-D-3-S-C
	Normally exhausted, Mechanical spring reset	Internal	1170	159707	MN1H-5/3E-D-3-C
	Normally exhausted, Mechanical spring reset	External	1170	159706	MN1H-5/3E-D-3-S-C
	Normally open, Mechanical spring reset	Internal	1170	159709	MN1H-5/3B-D-3-C
	Normally open, Mechanical spring reset	External	1170	159708	MN1H-5/3B-D-3-S-C

1) Solenoid coils → page 129

Technical data – Width 42 mm

 Flow rate
 1200 l/min



General technical data		MFH- ... -C, JMF- ... -C	MFH- ... -EX, JMF- ... -EX
Type		MFH- ... -C, JMF- ... -C	MFH- ... -EX, JMF- ... -EX
Design		Piston spool	Piston spool
Sealing principle		Soft	Soft
Actuation type		Electrical	Electrical
Type of control		Piloted	Piloted
Direction of flow	With external pilot air supply	Reversible	Reversible
	With internal pilot air supply	Not reversible	Not reversible
Exhaust function		Can be throttled	Can be throttled
Manual override		Non-detenting, detenting via accessory	Non-detenting, detenting via accessory
Type of mounting		On sub-base, via through-hole	
Mounting position		Any	Any
Nominal size	[mm]	8	8
Overlap		Positive overlap	Positive overlap
Width	[mm]	42	42
Grid dimension	[mm]	43	43
Pneumatic connections		Sub-base size 1 to ISO 5599-1	Sub-base size 1 to ISO 5599-1
Noise level	[dB (A)]	85	85
Conforms to standard		ISO 5599-1	ISO 5599-1
Maritime classification ¹⁾		See certificate	–

1) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Flow rates		5/2-way valve, single solenoid	5/2-way valve, double solenoid	5/3-way valve
Valve function		5/2-way valve, single solenoid	5/2-way valve, double solenoid	5/3-way valve
Standard nominal flow rate	[l/min]	1200		

Switching times [ms]		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MFH-5/2-...	23	35	–	–
	MFH-5/2-D-1-FR...	16	45	–	–
5/2-way valve, double solenoid	JMFH-...	–	–	16	–
	JMFDH-...	–	–	16	13
5/3-way valve	MFH-5/3G-D-1-C	18	35	–	–
	MFH-5/3G-D-1-C-EX	18	35	–	–
	MFH-5/3G-D-1-S-C	18	36	–	–
	MFH-5/3G-D-1-S-C-EX	18	36	–	–
	MFH-5/3E-D-1-C	18	36	–	–
	MFH-5/3E-D-1-C-EX	18	36	–	–
	MFH-5/3E-D-1-S-C	18	36	–	–
	MFH-5/3E-D-1-S-C-EX	18	36	–	–
	MFH-5/3B-D-1-C	18	36	–	–
	MFH-5/3B-D-1-C-EX	18	36	–	–
	MFH-5/3B-D-1-S-C	18	36	–	–
MFH-5/3B-D-1-S-C-EX	18	36	–	–	

Technical data – Width 42 mm

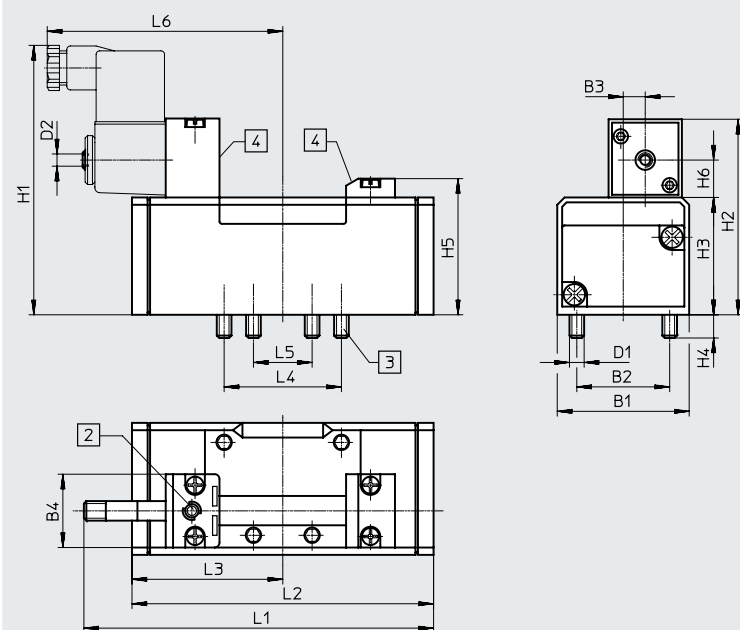
ATEX			
Type	MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX		
ATEX category for gas	II 2G		
Type of ignition protection for gas	Ex h IICT4 Gb		
ATEX category for dust	II 2D		
Type of ignition protection for dust	Ex h IICT105°C Db		
Explosion-proof ambient temperature	[°C]	-5 ≤ Ta ≤ +40	
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)		
Operating and environmental conditions			
Reset method	Pneumatic spring		Mechanical spring
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	Internal pilot air supply	[bar]	2 ... 10
	External pilot air supply	[bar]	-0.9 ... +16
Pilot pressure	[bar]	2 ... 10	3 ... 10
Ambient temperature	[°C]	-5 ... +40	
Temperature of medium	[°C]	-10 ... +60	
	[°C]	-5 ... +40 (MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX)	
Safety characteristics			
Max. positive test pulse with 0 signal	[µs]	2200	
Max. negative test pulse with 1 signal	[µs]	3700	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6		
Electrical data			
Electrical connection	Via F coil, to be ordered separately		
Degree of protection to EN 60529	IP65		
Materials			
Housing	Die-cast aluminium		
Seals	HNBR, NBR		
Note on materials	RoHS-compliant		

Technical data – Width 42 mm

Dimensions

Download CAD data → www.festo.com

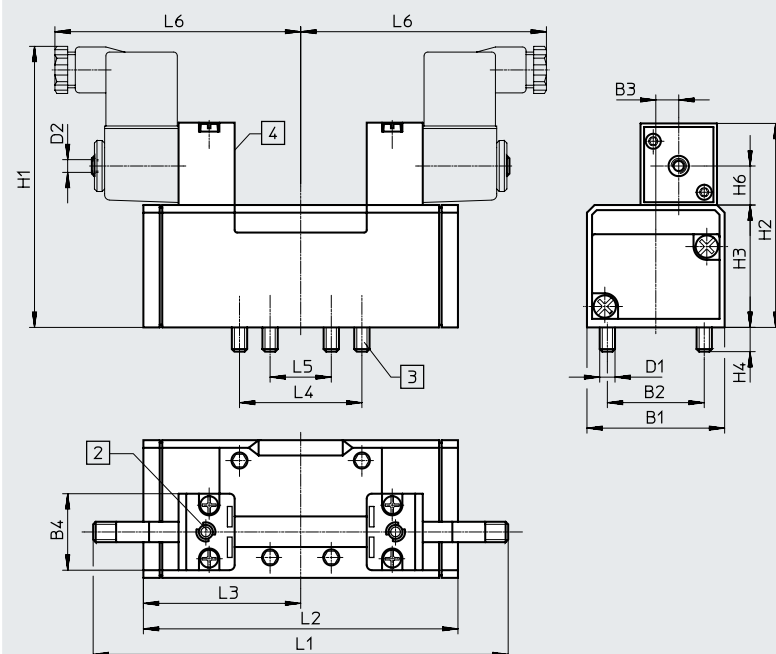
5/2-way valves, single solenoid



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
MFH-5/2- ...	42	28	6	30	M5	M5	100	70.3	38	9	46.5	13.5	115	87.6	43.8	36	18	89
MFH-5/2- ... -FR- ...													125.6	98				

5/2-way double solenoid valves, 5/3-way valves



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label


Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
JMFH-5/2- ...	42	28	6	30	M5	M5	100	70.3	38	9	-	13.5	142.6	87.6	43.8	36	18	89
JMFDH-5/2- ...														87.6	43.8			
MFH-5/3- ...														108.4	54.2			

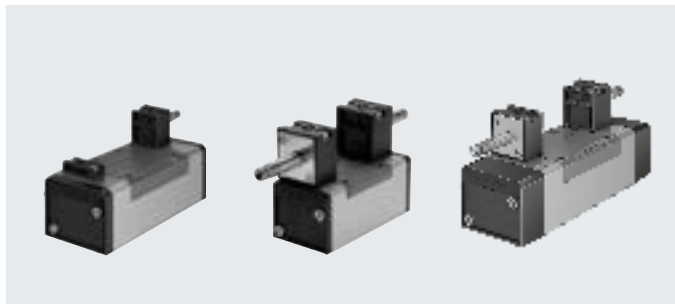
Ordering data – Width 42 mm

Ordering data – Valves with armature tube for solenoid coil MSF ¹⁾						
Circuit symbol	Description	Pilot air supply	Weight [g]		Part No.	Type
5/2-way valve, single solenoid						
	Pneumatic spring reset	Internal	390	–	150981	MFH-5/2-D-1-C
				ATEX category → page 35	535954	MFH-5/2-D-1-C-EX
	Pneumatic spring reset	External	390	–	152562	MFH-5/2-D-1-S-C
				ATEX category → page 35	535957	MFH-5/2-D-1-S-C-EX
	Mechanical spring reset	Internal	390	–	151016	MFH-5/2-D-1-FR-C
				ATEX category → page 35	535960	MFH-5/2-D-1-FR-C-EX
	Mechanical spring reset	External	390	–	188510	MFH-5/2-D-1-FR-S-C
5/2-way valve, double solenoid						
	–	Internal	490	–	150980	JMFH-5/2-D-1-C
				ATEX category → page 35	535963	JMFH-5/2-D-1-C-EX
	–	External	490	–	152563	JMFH-5/2-D-1-S-C
				ATEX category → page 35	535966	JMFH-5/2-D-1-S-C-EX
	With dominant signal at 14	Internal	490	–	151019	JMFDH-5/2-D-1-C
				ATEX category → page 35	536071	JMFDH-5/2-D-1-C-EX
5/3-way valve						
	Normally closed, Mechanical spring reset	Internal	520	–	150982	MFH-5/3G-D-1-C
				ATEX category → page 35	535969	MFH-5/3G-D-1-C-EX
	Normally closed, Mechanical spring reset	External	520	–	152564	MFH-5/3G-D-1-S-C
				ATEX category → page 35	535972	MFH-5/3G-D-1-S-C-EX
	Normally exhausted, Mechanical spring reset	Internal	520	–	150983	MFH-5/3E-D-1-C
				ATEX category → page 35	535975	MFH-5/3E-D-1-C-EX
	Normally exhausted, Mechanical spring reset	External	520	–	152565	MFH-5/3E-D-1-S-C
				ATEX category → page 35	535978	MFH-5/3E-D-1-S-C-EX
	Normally open, Mechanical spring reset	Internal	520	–	150984	MFH-5/3B-D-1-C
				ATEX category → page 35	535981	MFH-5/3B-D-1-C-EX
	Normally open, Mechanical spring reset	External	520	–	152566	MFH-5/3B-D-1-S-C
				ATEX category → page 35	535984	MFH-5/3B-D-1-S-C-EX

1) Solenoid coils → page 129

Technical data – Width 52 mm

 Flow rate
 2300 l/min



General technical data		MFH- ... -C, JMF- ... -C	MFH- ... -EX, JMF- ... -EX
Type		MFH- ... -C, JMF- ... -C	MFH- ... -EX, JMF- ... -EX
Design		Piston spool	Piston spool
Sealing principle		Soft	Soft
Actuation type		Electrical	Electrical
Type of control		Piloted	Piloted
Direction of flow	With external pilot air supply	Reversible	Reversible
	With internal pilot air supply	Not reversible	Not reversible
Exhaust function		Can be throttled	Can be throttled
Manual override		Non-detenting, detenting via accessory	Non-detenting, detenting via accessory
Type of mounting		On sub-base, with through-hole and screw	
Mounting position		Any	Any
Nominal size	[mm]	11.5	11.5
Overlap		Positive overlap	Positive overlap
Width	[mm]	52	52
Grid dimension	[mm]	56	56
Pneumatic connections		Sub-base size 2 to ISO 5599-1	Sub-base size 2 to ISO 5599-1
Noise level	[dB (A)]	85	85
Conforms to standard		ISO 5599-1	ISO 5599-1
Maritime classification ¹⁾		See certificate	–

1) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Flow rates		5/2-way valve, single solenoid	5/2-way valve, double solenoid	5/3-way valve
Valve function		5/2-way valve, single solenoid	5/2-way valve, double solenoid	5/3-way valve
Standard nominal flow rate	[l/min]	2300		

Switching times [ms]		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MFH-5/2-...	48	71	–	–
	MFH-5/2-D-2-FR-...	27	73	–	–
5/2-way valve, double solenoid	JMFH-...	–	–	18	–
	JMFDH-...	–	–	18	18
5/3-way valve	MFH-5/3G-...	33	63	–	–
	MFH-5/3E-...	35	67	–	–
	MFH-5/3B-...	35	69	–	–

ATEX		MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX
Type		MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX
ATEX category for gas		II 2G
Type of ignition protection for gas		Ex h IICT4 Gb
ATEX category for dust		II 2D
Type of ignition protection for dust		Ex h IICT105°C Db
Explosion-proof ambient temperature	[°C]	-5 ≤ Ta ≤ +40
CE marking (see declaration of conformity)		To EU Explosion Protection Directive (ATEX)

Technical data – Width 52 mm

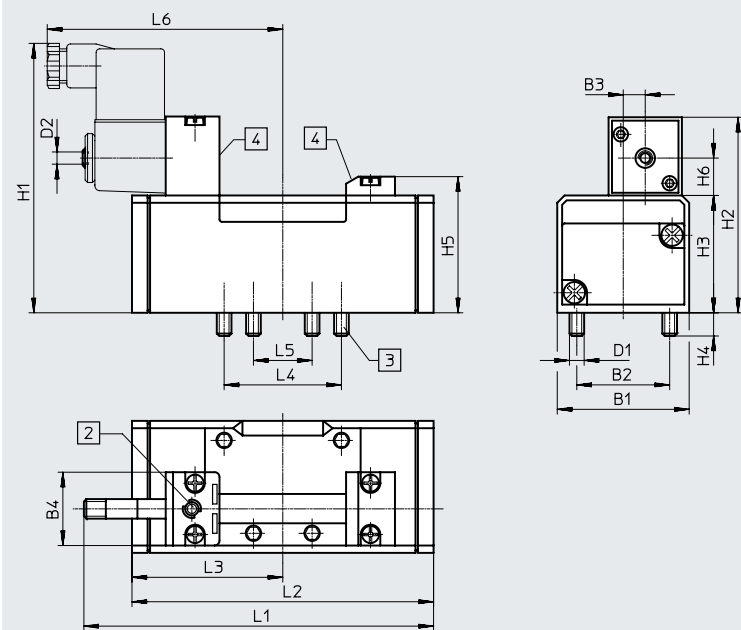
Operating and environmental conditions			Pneumatic spring	Mechanical spring
Reset method				
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10	3 ... 10
Operating pressure	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	
Safety characteristics				
Max. positive test pulse with 0 signal		[µs]	2200	
Max. negative test pulse with 1 signal		[µs]	3700	
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistance			Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	
Electrical data				
Electrical connection			Via F coil, to be ordered separately	
Degree of protection to EN 60529			IP65	
Materials				
Housing			Die-cast aluminium	
Seals			HNBR, NBR	
Note on materials			RoHS-compliant	

Technical data – Width 52 mm

Dimensions

Download CAD data → www.festo.com

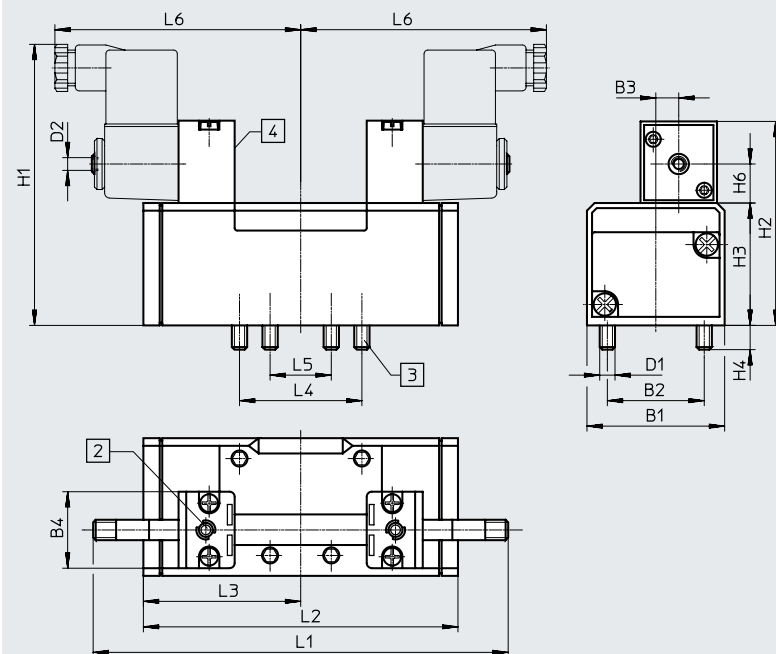
5/2-way valves, single solenoid



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
MFH-5/2- ...	54	38	9	30	M6	M5	110	80.3	48	9.5	56.5	13.5	142	123.4	61.7	48	24	98
MFH-5/2- ... -FR- ...													159.4	140.7				

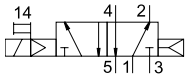
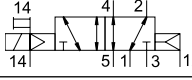
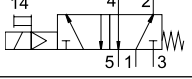
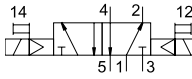
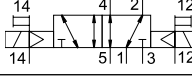
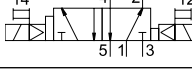
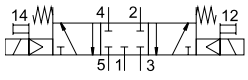
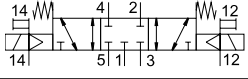
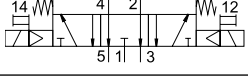
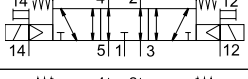
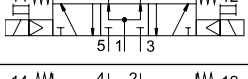
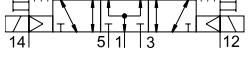
5/2-way double solenoid valves, 5/3-way valves



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label


Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
JMFH-5/2- ...	54	38	9	30	M6	M5	110	80.3	48	9.5	-	13.5	160.4	123.4	61.7	48	24	97
JMFDH-5/2- ...													160.4	123.4	61.7			97
MFH-5/3...													160	158	79			98

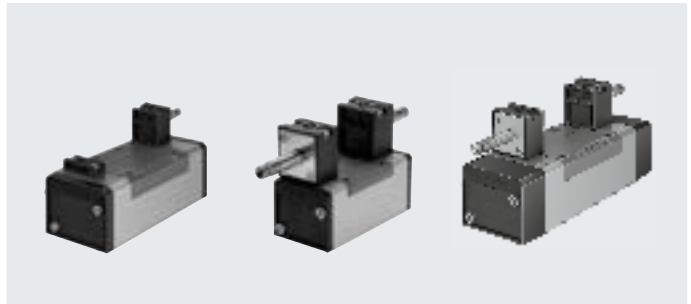
Ordering data – Width 52 mm

Ordering data – Valves with armature tube for solenoid coil MSF ¹⁾						
Circuit symbol	Description	Pilot air supply	Weight [g]		Part No.	Type
5/2-way valve, single solenoid						
	Pneumatic spring reset	Internal	650	–	151851	MFH-5/2-D-2-C
				ATEX category → page 38	535955	MFH-5/2-D-2-C-EX
	Pneumatic spring reset	External	650	–	151022	MFH-5/2-D-2-S-C
				ATEX category → page 38	535958	MFH-5/2-D-2-S-C-EX
	Mechanical spring reset	Internal	650	–	151709	MFH-5/2-D-2-FR-C
				ATEX category → page 38	535961	MFH-5/2-D-2-FR-C-EX
5/2-way valve, double solenoid						
	–	Internal	820	–	151852	JMFH-5/2-D-2-C
				ATEX category → page 38	535964	JMFH-5/2-D-2-C-EX
	–	External	820	–	151023	JMFH-5/2-D-2-S-C
				ATEX category → page 38	535967	JMFH-5/2-D-2-S-C-EX
	With dominant signal at 14	Internal	820	–	151853	JMFDH-5/2-D-2-C
				ATEX category → page 38	536072	JMFDH-5/2-D-2-C-EX
5/3-way valve						
	Normally closed, Mechanical spring reset	Internal	820	–	151854	MFH-5/3G-D-2-C
				ATEX category → page 38	535970	MFH-5/3G-D-2-C-EX
	Normally closed, Mechanical spring reset	External	820	–	151024	MFH-5/3G-D-2-S-C
				ATEX category → page 38	535973	MFH-5/3G-D-2-S-C-EX
	Normally exhausted, Mechanical spring reset	Internal	820	–	151855	MFH-5/3E-D-2-C
				ATEX category → page 38	535976	MFH-5/3E-D-2-C-EX
	Normally exhausted, Mechanical spring reset	External	820	–	151025	MFH-5/3E-D-2-S-C
				ATEX category → page 38	535979	MFH-5/3E-D-2-S-C-EX
	Normally open, Mechanical spring reset	Internal	820	–	151856	MFH-5/3B-D-2-C
				ATEX category → page 38	535982	MFH-5/3B-D-2-C-EX
	Normally open, Mechanical spring reset	External	820	–	151026	MFH-5/3B-D-2-S-C
				ATEX category → page 38	535985	MFH-5/3B-D-2-S-C-EX

1) Solenoid coils → page 129

Technical data – Width 65 mm

-  - Flow rate
Up to 4600 l/min



General technical data		MFH- ... -C, JMF- ... -C	MFH- ... -EX, JMF- ... -EX
Type			
Design		Piston spool	Piston spool
Sealing principle		Soft	Soft
Actuation type		Electrical	Electrical
Type of control		Piloted	Piloted
Direction of flow	With external pilot air supply	Reversible	Reversible
	With internal pilot air supply	Not reversible	Not reversible
Exhaust function		Can be throttled	Can be throttled
Manual override		Non-detenting, detenting via accessory	Non-detenting, detenting via accessory
Type of mounting		On sub-base, with through-hole and screw	
Mounting position		Any	Any
Nominal size	[mm]	14.5	14.5
Overlap		Positive overlap	Positive overlap
Width	[mm]	65	65
Grid dimension	[mm]	71	71
Pneumatic connections		Sub-base size 3 to ISO 5599-1	Sub-base size 3 to ISO 5599-1
Noise level	[dB (A)]	85	85
Conforms to standard		ISO 5599-1	ISO 5599-1
Maritime classification ¹⁾		See certificate	-

1) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Flow rates		5/3-way valve			
Valve function		5/2-way valve	Normally closed	Normally exhausted	Normally open
			Standard nominal flow rate	[l/min]	4500

Switching times [ms]		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MFH-5/2-...				
	MFH-5/2-D-1-FR-...	28	79	-	-
5/2-way valve, double solenoid	JMFH-...	-	-	18	-
	JMFDH-...	-	-	18	18
5/3-way valve	MFH-5/3G-...	36	77	-	-
	MFH-5/3E-...	37	78	-	-
	MFH-5/3B-...	36	75	-	-

Technical data – Width 65 mm

ATEX	
Type	MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IICT4 Gb
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IICT105°C Db
Explosion-proof ambient temperature	[°C] $-5 \leq T_a \leq +40$
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Operating and environmental conditions			
Reset method		Pneumatic spring	Mechanical spring
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
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	

Safety characteristics	
Max. positive test pulse with 0 signal	[µs] 2200
Max. negative test pulse with 1 signal	[µs] 3700
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

Electrical data	
Electrical connection	Via F coil, to be ordered separately
Degree of protection to EN 60529	IP65

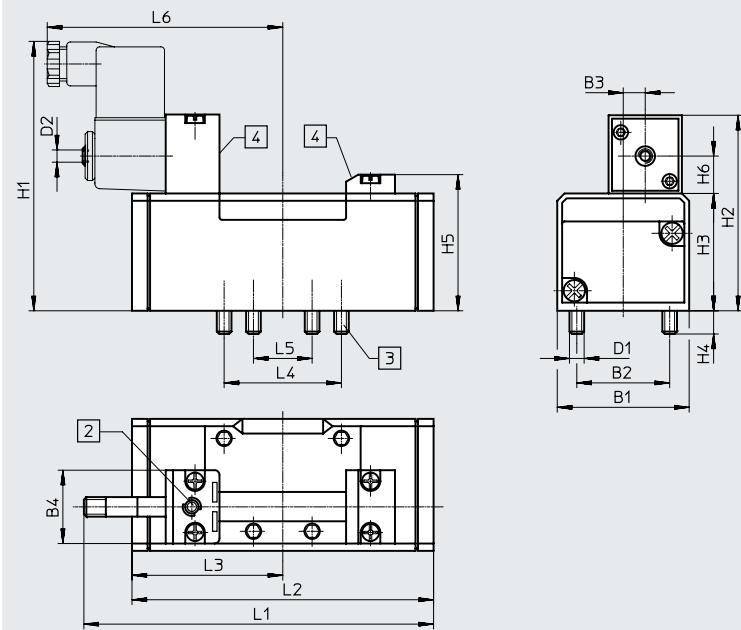
Materials	
Housing	Die-cast aluminium
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Technical data – Width 65 mm

Dimensions

Download CAD data → www.festo.com

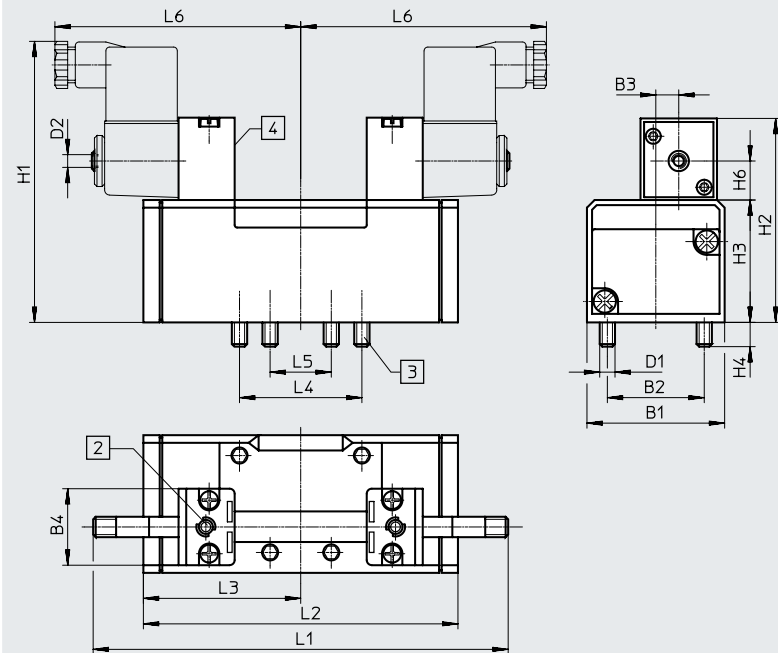
5/2-way valves, single solenoid



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
MFH-5/2- ...	65	48	12	30	M8	M5	117	87.3	55	12	63.5	13.5	163	145.4	72.7	64	32	109
MFH-5/2- ... -FR- ...													182	164.7				

5/2-way double solenoid valves, 5/3-way valves



- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label


Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
JMFH-5/2- ...	65	48	12	30	M8	M5	117	87.3	55	12	-	13.5	181	145.4	72.7	64	32	109
JMFDH-5/2- ...														145.4	72.7			
MFH-5/3...														184	92			


Ordering data – Width 65 mm

Ordering data – Valves with armature tube for solenoid coil MSF ¹⁾						
Circuit symbol	Description	Pilot air supply	Weight [g]		Part No.	Type
5/2-way valve, single solenoid						
	Pneumatic spring reset	Internal	960	–	151870	MFH-5/2-D-3-C
				ATEX category → page 43	535956	MFH-5/2-D-3-C-EX
	Pneumatic spring reset	External	960	–	151032	MFH-5/2-D-3-S-C
				ATEX category → page 43	535959	MFH-5/2-D-3-S-C-EX
	Mechanical spring reset	Internal	960	–	151711	MFH-5/2-D-3-FR-C
				ATEX category → page 43	535962	MFH-5/2-D-3-FR-C-EX
5/2-way valve, double solenoid						
	–	Internal	1060	–	151871	JMFH-5/2-D-3-C
				ATEX category → page 43	535965	JMFH-5/2-D-3-C-EX
	–	External	1060	–	151033	JMFH-5/2-D-3-S-C
				ATEX category → page 43	535968	JMFH-5/2-D-3-S-C-EX
	With dominant signal at 14	Internal	1060	–	151872	JMFDH-5/2-D-3-C
				ATEX category → page 43	536073	JMFDH-5/2-D-3-C-EX
5/3-way valve						
	Normally closed, Mechanical spring reset	Internal	1040	–	151873	MFH-5/3G-D-3-C
				ATEX category → page 43	535971	MFH-5/3G-D-3-C-EX
	Normally closed, Mechanical spring reset	External	1040	–	151034	MFH-5/3G-D-3-S-C
				ATEX category → page 43	535974	MFH-5/3G-D-3-S-C-EX
	Normally exhausted, Mechanical spring reset	Internal	1040	–	151874	MFH-5/3E-D-3-C
				ATEX category → page 43	535977	MFH-5/3E-D-3-C-EX
	Normally exhausted, Mechanical spring reset	External	1040	–	151035	MFH-5/3E-D-3-S-C
				ATEX category → page 43	535980	MFH-5/3E-D-3-S-C-EX
	Normally open, Mechanical spring reset	Internal	1040	–	151875	MFH-5/3B-D-3-C
				ATEX category → page 43	535983	MFH-5/3B-D-3-C-EX
	Normally open, Mechanical spring reset	External	1040	–	151036	MFH-5/3B-D-3-S-C
				ATEX category → page 43	535986	MFH-5/3B-D-3-S-C-EX

1) Solenoid coils → page 129

Technical data – Width 42 mm

-  - Flow rate
Up to 1300 l/min

-  - Voltage
24 V DC



General technical data

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Exhaust function	Flow control, external or via vertically stacked throttle plate
Manual override	Non-detenting, detenting
Type of mounting	On sub-base
Mounting position	Any
Nominal size [mm]	11
Overlap	Positive overlap
Width [mm]	42
Grid dimension [mm]	43
Pneumatic connections	Sub-base size 1 to ISO 5599-1
Conforms to standard	ISO 5599-1
Certification	c UL us – Recognized (OL)

Flow rates

Valve function	2/2-way valve	3/2-way valve	5/2-way valve	5/3-way valve
Standard nominal flow rate [l/min]	1300	1100	1300	1300
Valve	1600	1600	2000	1900
Valve on individual sub-base	1400	1200	1400	1400
Valve pneumatically linked	1300	1100	1300	1400

Switching times [ms]

		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
2x 2/2-way valve	VSVA-B-T22...	20	38	–	–
2x 3/2-way valve	VSVA-B-T32...	20	38	–	–
2x 3/2-way valve, reversible	VSVA-B-T32...	34	28	–	–
5/2-way valve, single solenoid	VSVA-B-M52-A...	27	45	–	–
	VSVA-B-M52-M...	22	60	–	–
5/2-way valve, double solenoid	VSVA-B-B52...	–	–	16	–
	VSVA-B-D52...	–	–	–	19
5/3-way valve	VSVA-B-P53...	22	65	–	–

Technical data – Width 42 mm

Operating and environmental conditions			2x 2/2-way valve	2x 3/2-way valve	2x 3/2-way valve, reversible	5/2-way valve	5/3-way valve
Valve function							
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]				
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on the operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure	Internal pilot air supply	[MPa]	0.3 ... 1	0.3 ... 1	–	0.3 ... 1	0.3 ... 1
		[bar]	3 ... 10	3 ... 10	–	3 ... 10	3 ... 10
	External pilot air supply	[MPa]	0.3 ... 1	0.3 ... 1	–0.09 ... +1	–0.09 ... +1.6	–0.09 ... +1.6
		[bar]	3 ... 10	3 ... 10	–0.9 ... +10	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[MPa]	0.3 ... 1				
		[bar]	3 ... 10				
Ambient temperature		[°C]	–5 ... +50				
Relative humidity		[%]	0 ... 90				

Safety characteristics			2x 3/2-way valve	5/2-way valve	5/2-way valve, with dominant signal at 14	5/3-way valve
Valve function						
Max. positive test pulse with 0 signal		[µs]	1600	1400	1600	1400
Max. negative test pulse with 1 signal		[µs]	1100	900	1100	900
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27			
Vibration resistance			Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6			

Electrical data			2x 2/2-way valve	2x 3/2-way valve	5/2-way valve	5/3-way valve
Valve function						
Electrical connection			Central plug, round design M12x1, 3-pin			
Signal status indication			LED			
Characteristic coil data	Voltage	[V DC]	24			
	Power	[W]	1.3	1.3	1.6	1.6
Permissible voltage fluctuations			±10			
Duty cycle			100			
Degree of protection to EN 60529			IP65, NEMA4 (in combination with a plug socket)			

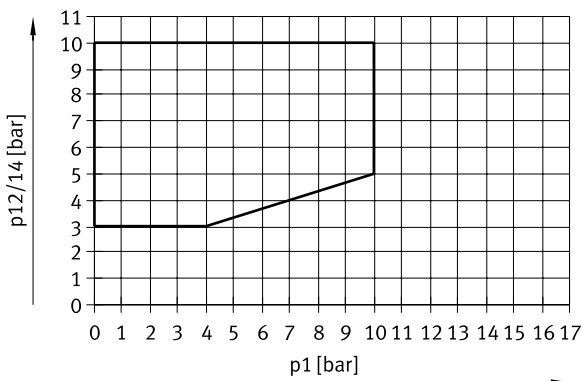
Materials	
Housing	PA
Seals	NBR, FPM
Screws	Galvanised steel
Note on materials	RoHS-compliant

Product weight		
2x 2/2-way valve	[g]	442
2x 3/2-way valve	[g]	442
5/2-way valve, single solenoid	[g]	426
5/2-way valve, double solenoid	[g]	439
5/3-way valve	[g]	456

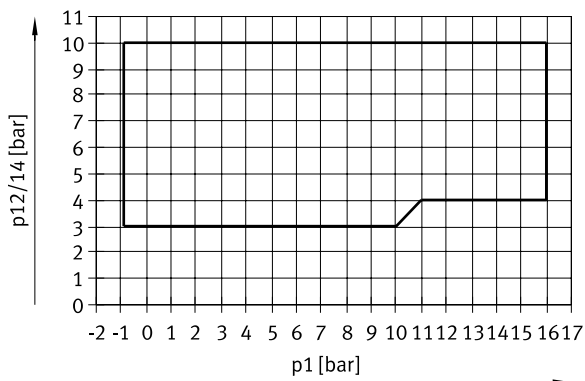
Technical data – Width 42 mm

Pilot pressure p12/14 as a function of working pressure p1

2x 2/2-way valve and 2x 3/2-way valve



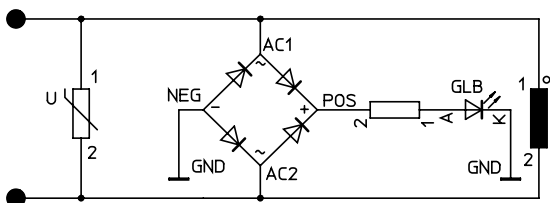
5/2-way valve and 5/3-way valve, external pilot air supply



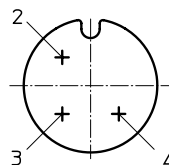
Protective circuit

Each VSVA solenoid coil is provided with a spark arresting protective circuit and protected against polarity reversal.

24 V DC version



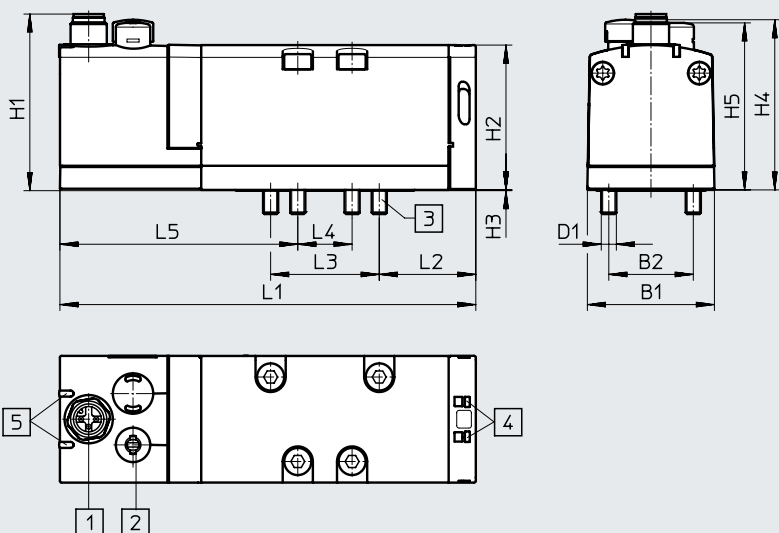
M12x1 – Pin allocation on the valve



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

Dimensions

Download CAD data → www.festo.com



[1] Plug, 3-pin

[3] Captive screws M5x48

[4] Slot for inscription label

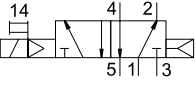
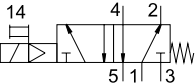
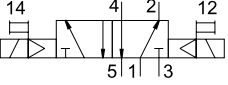
[5] LED

[2] Manual override

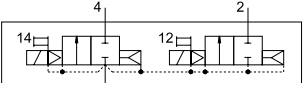
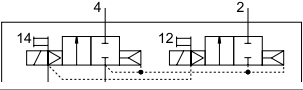
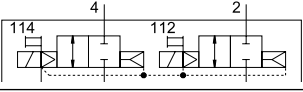
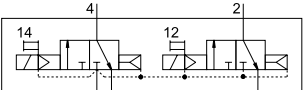
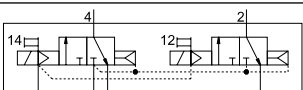
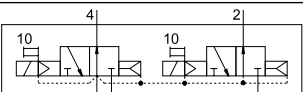
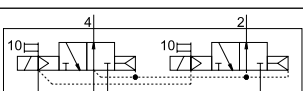
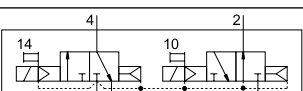
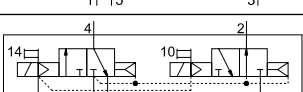
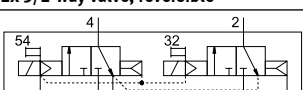
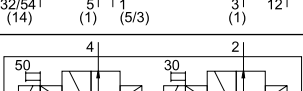
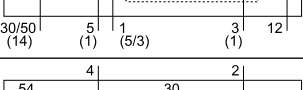
Type	B1	B2	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
VSVA-B-...-D1-1R5L	42	28	M5	58.3	48	0.25	46.6	55.3	137.8	32	36	18	69.3

Ordering data – Width 42 mm

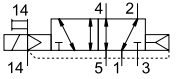
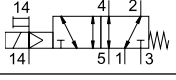
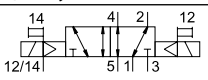
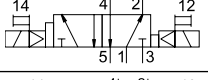
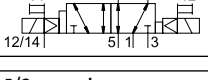
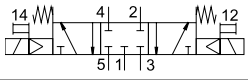
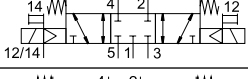
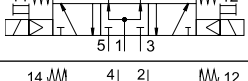
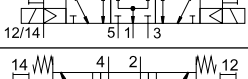
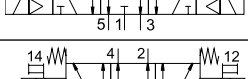
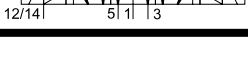
★ Core Range

Ordering data					
Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	Not reversible	Internal	★ 561362	VSVA-B-M52-AD-D1-1R5L
	Mechanical spring reset	Not reversible	Internal	★ 561363	VSVA-B-M52-MD-D1-1R5L
5/2-way valve, double solenoid					
	Dominance at 1st signal	Not reversible	Internal	★ 561364	VSVA-B-B52-D-D1-1R5L


Ordering data – Width 42 mm

Ordering data Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
2x 2/2-way valve					
	2x normally closed, Pneumatic spring reset	Not reversible	Internal	Order via online configurator → Internet: vsva	
	2x normally closed, Pneumatic spring reset	Not reversible	External		
	2x normally closed, Vacuum operation possible at 3 and 5, Pneumatic spring reset	Reversible	Internal		
2x 3/2-way valve					
	2x normally closed, Pneumatic spring reset	Not reversible	Internal	561359	VSVA-B-T32C-AD-D1-1R5L
	2x normally closed, Pneumatic spring reset	Not reversible	External	561369	VSVA-B-T32C-AZD-D1-1R5L
	2x normally open, Pneumatic spring reset	Not reversible	Internal	561360	VSVA-B-T32U-AD-D1-1R5L
	2x normally open, Pneumatic spring reset	Not reversible	External	561370	VSVA-B-T32U-AZD-D1-1R5L
	1x normally closed, 1x normally open, Pneumatic spring reset	Not reversible	Internal	561361	VSVA-B-T32H-AD-D1-1R5L
	1x normally closed, 1x normally open, Pneumatic spring reset	Not reversible	External	561371	VSVA-B-T32H-AZD-D1-1R5L
2x 3/2-way valve, reversible					
	2x normally closed, Pneumatic spring reset	Reversible	External	Order via online configurator → Internet: vsva	
	2x normally open, Pneumatic spring reset	Reversible	External		
	1x normally closed, 1x normally open, Pneumatic spring reset	Reversible	External		

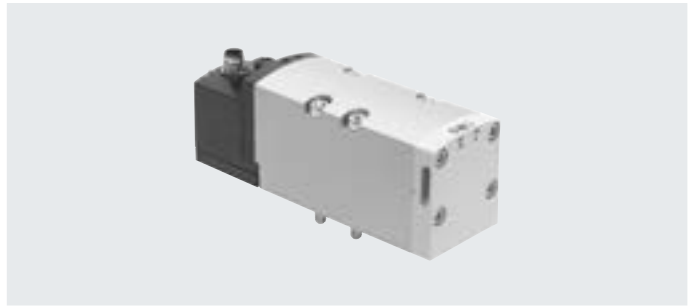
Ordering data – Width 42 mm

Ordering data Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	Reversible	External	561372	VSVA-B-M52-AZD-D1-1R5L
	Mechanical spring reset	Reversible	External	561373	VSVA-B-M52-MZD-D1-1R5L
5/2-way valve, double solenoid					
	Dominance at 1st signal	Reversible	External	561374	VSVA-B-B52-ZD-D1-1R5L
	With dominant signal at 14	Not reversible	Internal	561365	VSVA-B-D52-D-D1-1R5L
	With dominant signal at 14	Reversible	External	561375	VSVA-B-D52-ZD-D1-1R5L
5/3-way valve					
	Normally closed, Mechanical spring reset	Not reversible	Internal	561366	VSVA-B-P53C-D-D1-1R5L
	Normally closed, Mechanical spring reset	Reversible	External	561376	VSVA-B-P53C-ZD-D1-1R5L
	Normally open, Mechanical spring reset	Not reversible	Internal	561368	VSVA-B-P53U-D-D1-1R5L
	Normally open, Mechanical spring reset	Reversible	External	561378	VSVA-B-P53U-ZD-D1-1R5L
	Normally exhausted, Mechanical spring reset	Not reversible	Internal	561367	VSVA-B-P53E-D-D1-1R5L
	Normally exhausted, Mechanical spring reset	Reversible	External	561377	VSVA-B-P53E-ZD-D1-1R5L

Technical data – Width 52 mm

-  - Flow rate
Up to 2800 l/min

-  - Voltage
24 V DC



General technical data

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Exhaust function	Flow control, external or via vertically stacked throttle plate
Manual override	Non-detenting, detenting
Type of mounting	On sub-base
Mounting position	Any
Nominal size [mm]	15
Overlap	Positive overlap
Width [mm]	52
Grid dimension [mm]	59
Pneumatic connections	Sub-base size 2 to ISO 5599-1
Conforms to standard	ISO 5599-1
Certification	c CSA us (OL)
	c UL us – Recognized (OL)
	C-Tick

Flow rates

Valve function	2/2-way valve	3/2-way valve	5/2-way valve	5/3-way valve
Standard nominal flow rate [l/min]	2800	2200	2800	2700
Valve	4000	3000	4000	3600
Valve on individual sub-base	2400	2000	2400	2300
Valve pneumatically linked	2800	2200	2800	2700

Switching times [ms]

		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
2x 2/2-way valve	VSVA-B-T22...	14	35	–	–
2x 3/2-way valve	VSVA-B-T32...	20	35	–	–
2x 3/2-way valve, reversible	VSVA-B-T32...	30	30	–	–
5/2-way valve, single solenoid	VSVA-B-M52-A...	40	45	–	–
	VSVA-B-M52-M...	20	60	–	–
5/2-way valve, double solenoid	VSVA-B-B52...	–	–	18	–
	VSVA-B-D52...	–	–	–	18
5/3-way valve	VSVA-B-P53...	23	60	–	–

Technical data – Width 52 mm

Operating and environmental conditions			2x 2/2-way valve	2x 3/2-way valve	2x 3/2-way valve, reversible	5/2-way valve	5/3-way valve
Valve function							
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]				
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on the operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure	Internal pilot air supply	[MPa]	0.3 ... 1	0.3 ... 1	–	0.3 ... 1	0.3 ... 1
		[bar]	3 ... 10	3 ... 10	–	3 ... 10	3 ... 10
	External pilot air supply	[MPa]	0.3 ... 1	0.3 ... 1	–0.09 ... +1	–0.09 ... +1.6	–0.09 ... +1.6
		[bar]	3 ... 10	3 ... 10	–0.9 ... +10	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[MPa]	0.3 ... 1				
		[bar]	3 ... 10				
Ambient temperature		[°C]	–5 ... +50				
Relative humidity		[%]	0 ... 90				

Safety characteristics

CE marking (see declaration of conformity)	To EU EMC Directive ¹⁾
KC mark	KC EMC
Max. positive test pulse with 0 signal	[µs] 1000
Max. negative test pulse with 1 signal	[µs] 3500
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Electrical data

Electrical connection	Central plug, round design M12x1, 3-pin		
Signal status indication	LED		
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	4.6
Permissible voltage fluctuations	[%]	±10	
Nominal pick-up current per solenoid coil	[mA]	165	
Nominal current with current reduction	[mA]	35	
Time until current reduction	[ms]	30	
Duty cycle	[%]	100	
Degree of protection to EN 60529	IP65, NEMA4 (in combination with a plug socket)		

Materials

Housing	Die-cast aluminium, PA
Seals	HNBR, NBR, FPM
Screws	Galvanised steel
Note on materials	RoHS-compliant

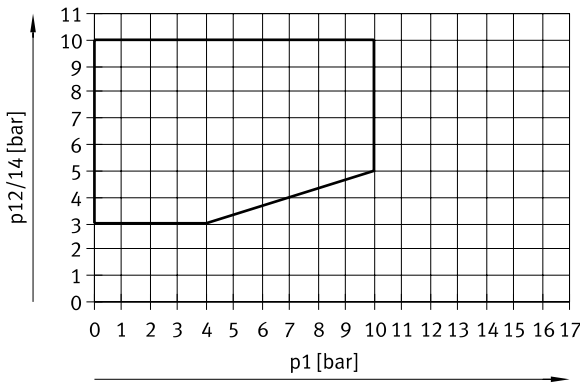
Product weight

2x 2/2-way valve	[g]	740
2x 3/2-way valve	[g]	740
5/2-way valve, single solenoid	[g]	702
5/2-way valve, double solenoid	[g]	732
5/3-way valve	[g]	780

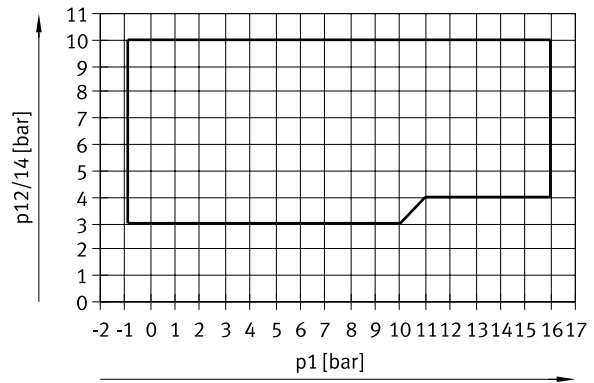
Technical data – Width 52 mm

Pilot pressure p12/14 as a function of working pressure p1

2x 2/2-way valve and 2x 3/2-way valve



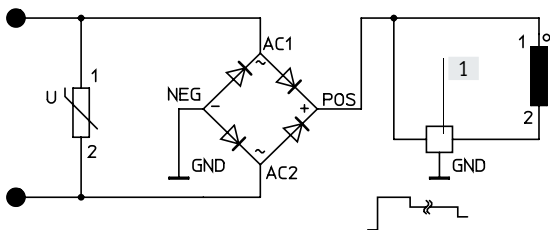
5/2-way valve and 5/3-way valve, external pilot air supply



Protective circuit

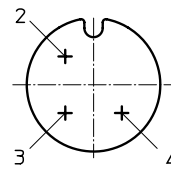
Each VSVA solenoid coil is provided with a spark arresting protective circuit and protected against polarity reversal.

24 V DC version



[1] Holding current reduction

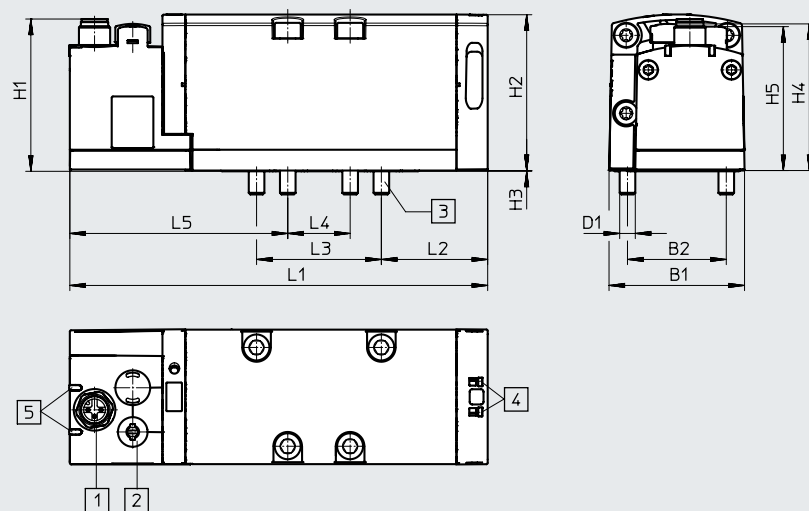
M12x1 – Pin allocation on the valve



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

Dimensions

Download CAD data → www.festo.com



[1] Plug, 3-pin

[3] Captive screws M6x60

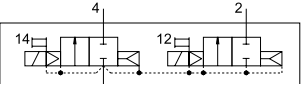
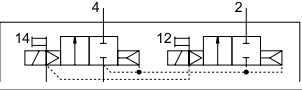
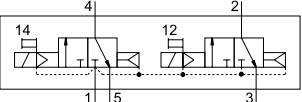
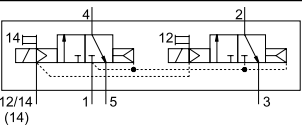
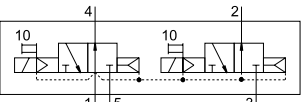
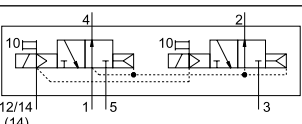
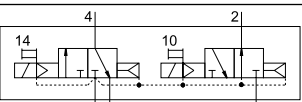
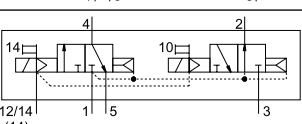
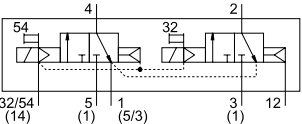
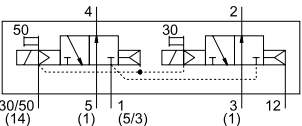
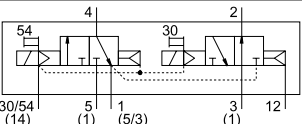
[4] Slot for inscription label

[5] LED

[2] Manual override

Type	B1	B2	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
VSVA-B-...-D2-1R5L	52	38	M6	58.3	60	0.3	56.4	55.3	160.7	40.9	48	24	64.3


Ordering data – Width 52 mm

Ordering data Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
2x 2/2-way valve					
	2x normally closed, Pneumatic spring reset	Not reversible	Internal	Order via online configurator → Internet: vsva	
	2x normally closed, Pneumatic spring reset	Not reversible	External		
2x 3/2-way valve					
	2x normally closed, Pneumatic spring reset	Not reversible	Internal	566990	VSVA-B-T32C-AD-D2-1R5L
	2x normally closed, Pneumatic spring reset	Not reversible	External	567000	VSVA-B-T32C-AZD-D2-1R5L
	2x normally open, Pneumatic spring reset	Not reversible	Internal	566991	VSVA-B-T32U-AD-D2-1R5L
	2x normally open, Pneumatic spring reset	Not reversible	External	567001	VSVA-B-T32U-AZD-D2-1R5L
	1x normally closed, 1x normally open, Pneumatic spring reset	Not reversible	Internal	566992	VSVA-B-T32H-AD-D2-1R5L
	1x normally closed, 1x normally open, Pneumatic spring reset	Not reversible	External	567002	VSVA-B-T32H-AZD-D2-1R5L
2x 3/2-way valve, reversible					
	2x normally closed, Pneumatic spring reset	Reversible	External	Order via online configurator → Internet: vsva	
	2x normally open, Pneumatic spring reset	Reversible	External		
	1x normally closed, 1x normally open, Pneumatic spring reset	Reversible	External		

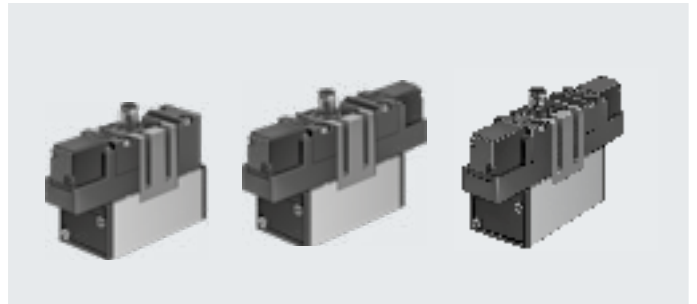
Ordering data – Width 52 mm

Ordering data Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	Not reversible	Internal	566993	VSVA-B-M52-AD-D2-1R5L
	Pneumatic spring reset	Reversible	External	567003	VSVA-B-M52-AZD-D2-1R5L
	Mechanical spring reset	Not reversible	Internal	566994	VSVA-B-M52-MD-D2-1R5L
	Mechanical spring reset	Reversible	External	567004	VSVA-B-M52-MZD-D2-1R5L
5/2-way valve, double solenoid					
	Dominance at 1st signal	Not reversible	Internal	566995	VSVA-B-B52-D-D2-1R5L
	Dominance at 1st signal	Reversible	External	567005	VSVA-B-B52-ZD-D2-1R5L
	With dominant signal at 14	Not reversible	Internal	566996	VSVA-B-D52-D-D2-1R5L
	With dominant signal at 14	Reversible	External	567006	VSVA-B-D52-ZD-D2-1R5L
5/3-way valve					
	Normally closed, Mechanical spring reset	Not reversible	Internal	566997	VSVA-B-P53C-D-D2-1R5L
	Normally closed, Mechanical spring reset	Reversible	External	567007	VSVA-B-P53C-ZD-D2-1R5L
	Normally open, Mechanical spring reset	Not reversible	Internal	566999	VSVA-B-P53U-D-D2-1R5L
	Normally open, Mechanical spring reset	Reversible	External	567009	VSVA-B-P53U-ZD-D2-1R5L
	Normally exhausted, Mechanical spring reset	Not reversible	Internal	566998	VSVA-B-P53E-D-D2-1R5L
	Normally exhausted, Mechanical spring reset	Reversible	External	567008	VSVA-B-P53E-ZD-D2-1R5L

Technical data – Width 65 mm

-  - Flow rate
Up to 4600 l/min

-  - Voltage
24 V DC



General technical data

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Direction of flow	Not reversible
Exhaust function	Can be throttled
Manual override	Non-detenting
Type of mounting	Via through-hole
Mounting position	Any
Nominal size [mm]	14.5
Width [mm]	65
Grid dimension [mm]	71
Pneumatic connections	Sub-base size 3 to ISO 5599-1
Conforms to standard	ISO 5599-1

Flow rates

Valve function	5/2-way valve	5/3-way valve		
		Normally closed	Normally exhausted	Normally open
Standard nominal flow rate [l/min]	4500	4100	4600	4000

Switching times [ms]

		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MEBH-5/2-...	59	87	–	–
	MEBH-5/2-D-1-ZSR-FR...	28	109	–	–
5/2-way valve, double solenoid	JMEBH-...	–	–	16	–
	JMEBDH-...	–	–	–	20
5/3-way valve	MEBH-5/3G-...	38	130	–	–
	MEBH-5/3E-...	38	130	–	–
	MEBH-5/3B-...	38	130	–	–

Technical data – Width 65 mm

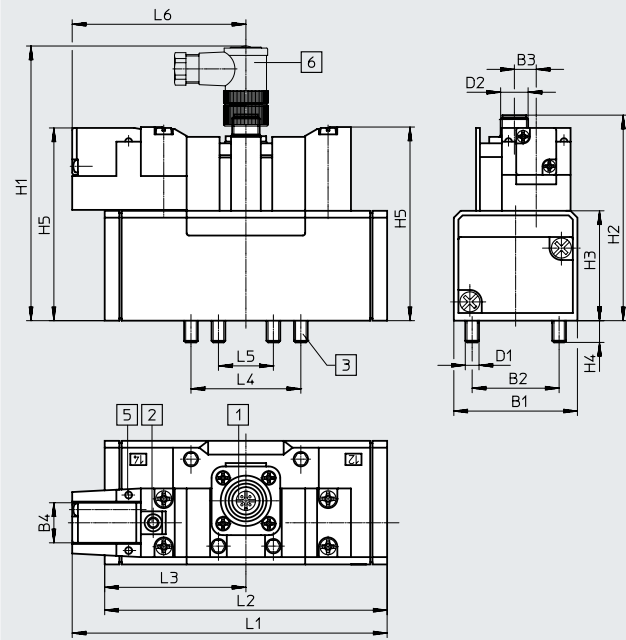
Operating and environmental conditions			
Reset method		Pneumatic spring	Mechanical spring
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	2 ... 10	3 ... 10
Ambient temperature	[°C]	-5 ... +50	
Temperature of medium	[°C]	-5 ... +50	
Relative humidity	[%]	0 ... 90	
Electrical data			
Electrical connection		Central plug, round design M12x1, 4-pin	
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	2.5
Degree of protection to EN 60529		IP65	
Materials			
Housing		Die-cast aluminium	
Seals		NBR	

Technical data – Width 65 mm

Dimensions

Download CAD data → www.festo.com

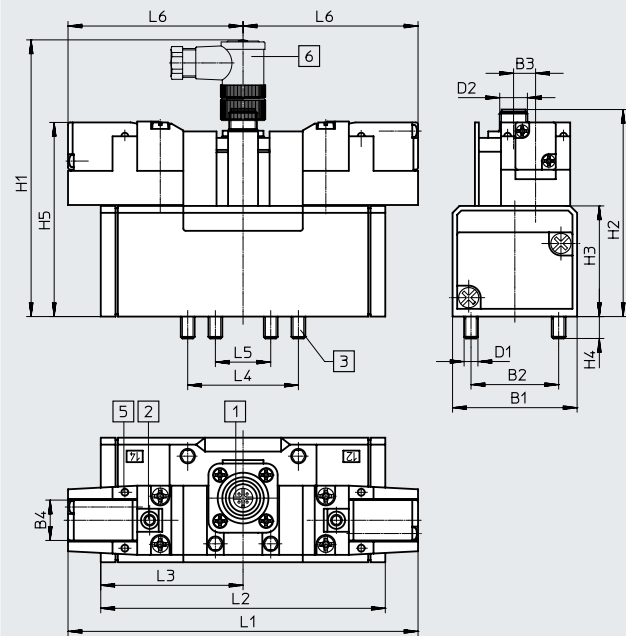
5/2-way valves, single solenoid



- [1] Plug socket mounting adjustable by 3x30°
- [2] Manual override
- [3] Captive retaining screws
- [5] LED indicator
- [6] Angled plug socket SIE-WD-TR → page 131

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
MEBH-5/2-...	65	48	12	17.5	M8	M12	130	97.8	55	12	93.1	158.7	145.4	72.7	64	32	86
MEBH-5/2-...-FR-C												178	164.7				

5/2-way double solenoid valves, 5/3-way valves



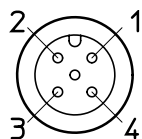
- [1] Plug socket mounting adjustable by 3x30°
- [2] Manual override
- [3] Captive retaining screws
- [5] LED indicator
- [6] Angled plug socket SIE-WD-TR → page 131

Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMEBH-5/2-...	65	48	12	17.5	M8	M12	130	97.8	55	12	93.1	171.9	145.4	72.7	64	32	86
JMEBDH-5/2-...												145.4	72.7				
MEBH-5/3-...												184	92				

Ordering data – Width 65 mm

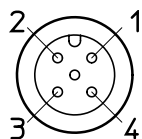
Central plug M12 – Pin allocation

5/2-way valve, single solenoid



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


5/2-way double solenoid valve and 5/3-way valve



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

Ordering data					
Circuit symbol	Description	Pilot air supply	Weight [g]	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	Internal	1000	184507	MEBH-5/2-D-3-ZSR-C
	Mechanical spring reset	Internal	1000	184508	MEBH-5/2-D-3-ZSR-FR-C
5/2-way valve, double solenoid					
	-	Internal	1080	184509	JMEBH-5/2-D-3-ZSR-C
	With dominant signal at 14	Internal	1080	184510	JMEBDH-5/2-D-3-ZSR-C
5/3-way valve					
	Normally closed, Mechanical spring reset	Internal	1120	184512	MEBH-5/3G-D-3-ZSR-C
	Normally exhausted, Mechanical spring reset	Internal	1120	184511	MEBH-5/3E-D-3-ZSR-C
	Normally open, Mechanical spring reset	Internal	1120	184513	MEBH-5/3B-D-3-ZSR-C

Technical data – Width 42 mm

-  - Flow rate
Up to 1200 l/min

-  - Voltage
24 V DC



General technical data

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Direction of flow	With external pilot air supply Reversible With internal pilot air supply Not reversible
Exhaust function	Can be throttled
Manual override	Non-detenting
Type of mounting	On sub-base via through-hole
Mounting position	Any
Nominal size [mm]	8
Overlap	Positive overlap
Width [mm]	42
Grid dimension [mm]	43
Pneumatic connections	Sub-base size 1 to ISO 5599-1
Noise level [dB (A)]	85
Conforms to standard	ISO 5599-1

Flow rates

Standard nominal flow rate [l/min]	1200
------------------------------------	------

Switching times [ms]

		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MDH-5/2-...	25	36	-	-
	MDH-5/2-...-FR-...	20	42	-	-
5/2-way valve, double solenoid	JMDH-...	-	-	18	-
	JMDDH-...	-	-	18	18
5/3-way valve	MDH-5/3G-...	25	55	-	-
	MDH-5/3E-...	25	55	-	-
	MDH-5/3B-...	25	55	-	-

Technical data – Width 42 mm

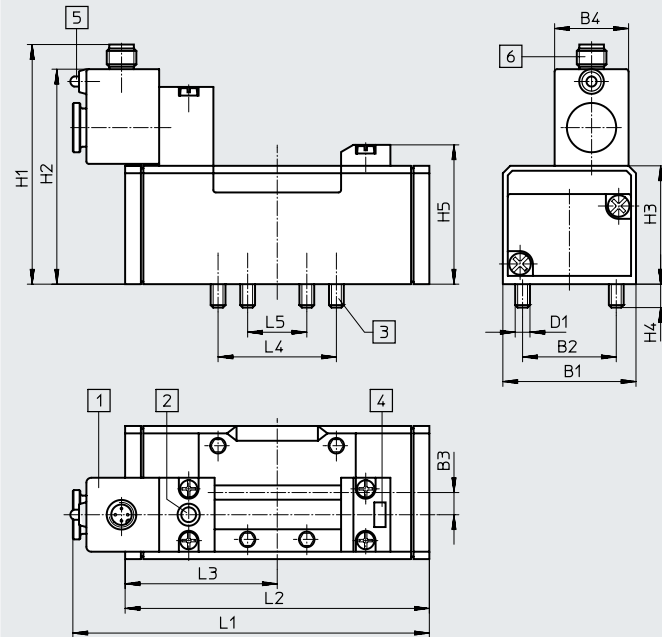
Operating and environmental conditions			
Reset method		Pneumatic spring	Mechanical spring
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10
	External pilot air supply	[bar]	-0.9 ... +16
Pilot pressure	Internal pilot air supply	[bar]	2 ... 10
	External pilot air supply	[bar]	3 ... 10
Ambient temperature		[°C]	-10 ... +50
Temperature of medium		[°C]	-10 ... +50
Safety characteristics			
Max. positive test pulse with 0 signal		[µs]	3800
Max. negative test pulse with 1 signal		[µs]	4900
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistance		Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	
Electrical data			
Electrical connection		M12x1	
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	2.7
Permissible voltage fluctuations		[%]	±10
Duty cycle		[%]	100
Degree of protection to EN 60529		IP65	
Materials			
Housing		Die-cast aluminium	
Seals		HNBR, NBR	

Technical data – Width 42 mm

Dimensions

Download CAD data → www.festo.com

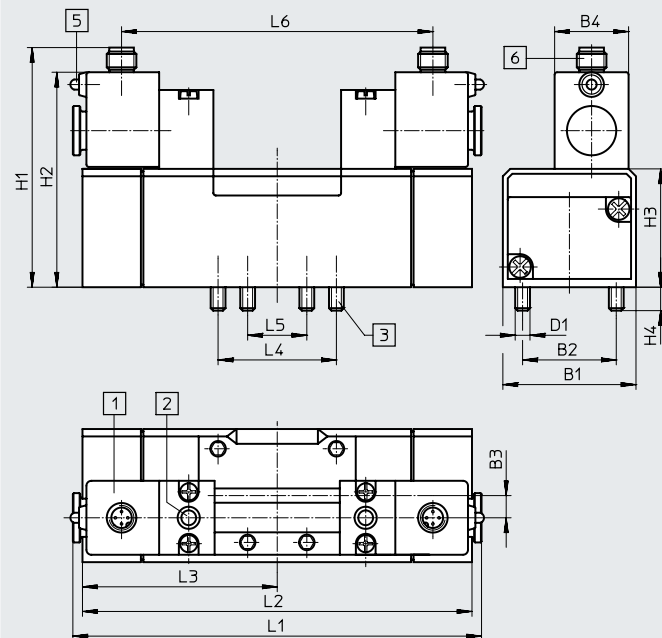
5/2-way valves, single solenoid



- [1] Solenoid coil can be repositioned by 90° regardless of the manual override
- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label
- [5] LED indicator
- [6] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina

Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
MDH-5/2 ...	42	28	6	30	M5	87.2	77.2	38	9	46.5	121.8	87.6	43.8	36	18	-
MDH-5/2- ... -FR...											132.2	98				

5/2-way double solenoid valves, 5/3-way valves



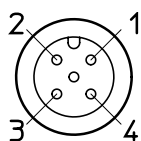
- [1] Solenoid coil can be repositioned by 90° regardless of the manual override
- [2] Manual override
- [3] Captive retaining screws
- [5] LED indicator
- [6] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina

Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMDH-5/2- ...	42	28	6	30	M5	87.2	77.2	38	9	-	148	87.6	43.8	36	18	108.5
JMDDH-5/2- ...												87.6	43.8			
MDH-5/3...												108.4	54.3			

Ordering data – Width 42 mm

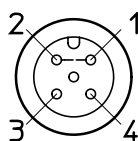
Pin allocation

M12 plug – 2-pin to VDMA



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

M12 plug – 4-pin to Desina




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

Ordering data – Solenoid valves

Circuit symbol	Description	Coil	Pilot air supply	Weight [g]	Part No.	Type
5/2-way valve, single solenoid						
	Pneumatic spring reset	2-pin to VDMA	Internal	420	197125	MDH-5/2-D-1-M12-C
		4-pin to Desina	Internal	420	540803	MDH-5/2-D-1-M12D-C
	Pneumatic spring reset	2-pin to VDMA	External	420	533332	MDH-5/2-D-1-S-M12-C
		4-pin to Desina	External	420	540810	MDH-5/2-D-1-S-M12D-C
	Mechanical spring reset	2-pin to VDMA	Internal	420	533010	MDH-5/2-D-1-FR-M12-C
		4-pin to Desina	Internal	420	540804	MDH-5/2-D-1-FR-M12D-C
	Mechanical spring reset	2-pin to VDMA	External	420	533761	MDH-5/2-D-1-S-FR-M12-C
		4-pin to Desina	External	420	540811	MDH-5/2-D-1-S-FR-M12D-C
5/2-way valve, double solenoid						
	-	2-pin to VDMA	Internal	550	532687	JMDH-5/2-D-1-M12-C
		4-pin to Desina	Internal	550	540809	JMDH-5/2-D-1-M12D-C
	With dominant signal at 14	2-pin to VDMA	Internal	550	539079	JMDDH-5/2-D-1-M12-C
		4-pin to Desina	Internal	550	540808	JMDDH-5/2-D-1-M12D-C
5/3-way valve						
	Normally closed, mechanical spring reset	2-pin to VDMA	Internal	580	525307	MDH-5/3G-D-1-M12-C
		4-pin to Desina	Internal	580	540806	MDH-5/3G-D-1-M12D-C
	Normally exhausted, Mechanical spring reset	2-pin to VDMA	Internal	580	197126	MDH-5/3E-D-1-M12-C
		4-pin to Desina	Internal	580	540805	MDH-5/3E-D-1-M12D-C
	Normally open, Mechanical spring reset	2-pin to VDMA	Internal	580	533005	MDH-5/3B-D-1-M12-C
		4-pin to Desina	Internal	580	540807	MDH-5/3B-D-1-M12D-C

Technical data – Width 52 mm

-  - Flow rate
Up to 2300 l/min

-  - Voltage
24 V DC

**General technical data**

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Direction of flow	Not reversible
Exhaust function	Can be throttled
Manual override	Non-detenting
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal size [mm]	11.5
Overlap	Positive overlap
Width [mm]	52
Grid dimension [mm]	56
Pneumatic connections	Sub-base size 2 to ISO 5599-1
Noise level [dB (A)]	85
Conforms to standard	ISO 5599-1

Flow rates

Standard nominal flow rate [l/min]	2300
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Switching times [ms]

		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MDH-5/2-...	45	60	–	–
	MDH-5/2-...-FR-...	25	60	–	–
5/2-way valve, double solenoid	JMDH-...	–	–	20	–
	JMDDH-...	–	–	20	20
5/3-way valve	MDH-5/3G-...	35	70	–	–
	MDH-5/3E-...	35	70	–	–
	MDH-5/3B-...	35	70	–	–

Technical data – Width 52 mm

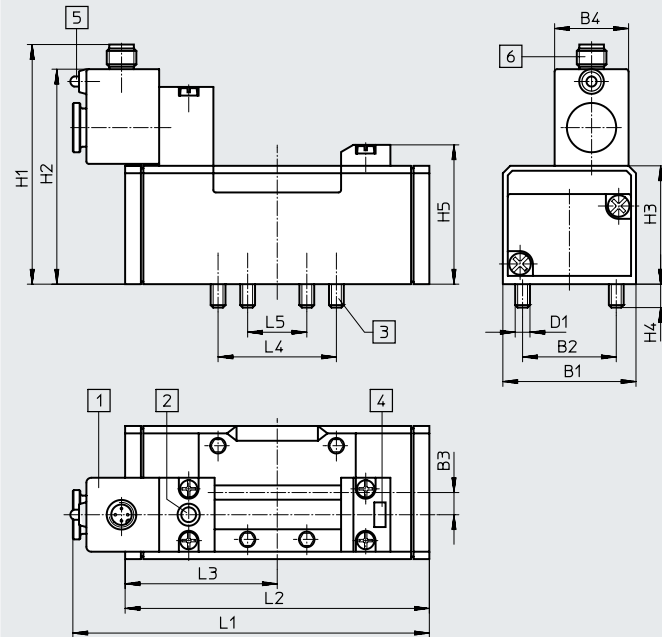
Operating and environmental conditions			
Reset method		Pneumatic spring	Mechanical spring
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	2 ... 10	3 ... 10
Ambient temperature	[°C]	-10 ... +50	
Temperature of medium	[°C]	-10 ... +50	
Safety characteristics			
Max. positive test pulse with 0 signal	[µs]	3800	
Max. negative test pulse with 1 signal	[µs]	4900	
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	
Electrical data			
Electrical connection		M12x1	
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	2.7
Permissible voltage fluctuations		[%]	±10
Duty cycle		[%]	100
Degree of protection to EN 60529		IP65	
Materials			
Housing		Die-cast aluminium	
Seals		HNBR, NBR	
Note on materials		RoHS-compliant	

Technical data – Width 52 mm

Dimensions

Download CAD data → www.festo.com

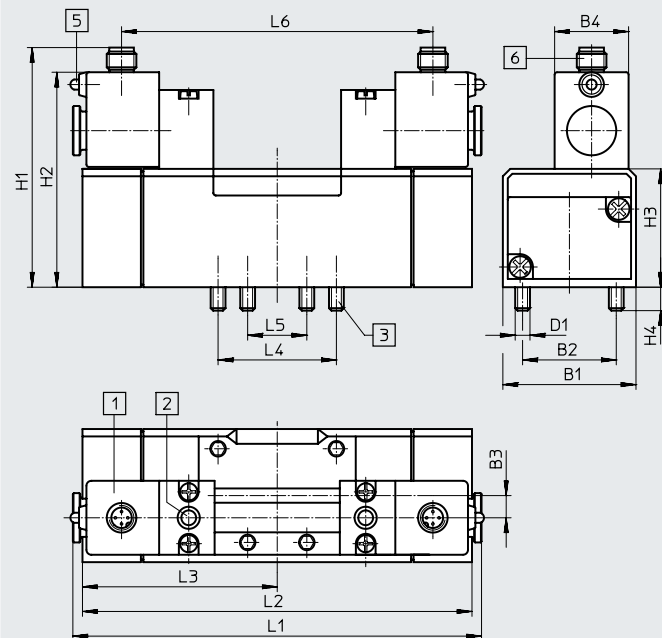
5/2-way valves, single solenoid



- [1] Solenoid coil can be repositioned by 90° regardless of the manual override
- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label
- [5] LED indicator
- [6] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina

Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
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				

5/2-way double solenoid valves, 5/3-way valves



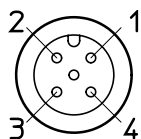
- [1] Solenoid coil can be repositioned by 90° regardless of the manual override
- [2] Manual override
- [3] Captive retaining screws
- [5] LED indicator
- [6] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina

Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMDH-5/2- ...	54	38	9	30	M6	97.2	87.2	48	9.5	-	165.8	123.4	61.7	48	24	126.3
JMDDH-5/2- ...												123.4	61.7			
MDH-5/3...												158	79			

Ordering data – Width 52 mm

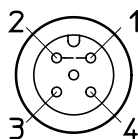
Pin allocation

M12 plug – 2-pin to VDMA



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

M12 plug – 4-pin to Desina




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

Ordering data

Circuit symbol	Description	Coil	Pilot air supply	Weight [g]	Part No.	Type
5/2-way valve, single solenoid						
	Pneumatic spring reset	2-pin to VDMA	Internal	810	533008	MDH-5/2-D-2-M12-C
		4-pin to Desina	Internal	810	540812	MDH-5/2-D-2-M12D-C
	Mechanical spring reset	2-pin to VDMA	Internal	810	533011	MDH-5/2-D-2-FR-M12-C
		4-pin to Desina	Internal	810	540813	MDH-5/2-D-2-FR-M12D-C
5/2-way valve, double solenoid						
	-	2-pin to VDMA	Internal	940	533013	JMDH-5/2-D-2-M12-C
		4-pin to Desina	Internal	940	540818	JMDH-5/2-D-2-M12D-C
	With dominant signal at 14	2-pin to VDMA	Internal	940	539077	JMDH-5/2-D-2-M12-C
		4-pin to Desina	Internal	940	540817	JMDH-5/2-D-2-M12D-C
5/3-way valve						
	Normally closed, mechanical spring reset	2-pin to VDMA	Internal	1000	539078	MDH-5/3G-D-2-M12-C
		4-pin to Desina	Internal	1000	540815	MDH-5/3G-D-2-M12D-C
	Normally exhausted, Mechanical spring reset	2-pin to VDMA	Internal	1000	533016	MDH-5/3E-D-2-M12-C
		4-pin to Desina	Internal	1000	540814	MDH-5/3E-D-2-M12D-C
	Normally open, Mechanical spring reset	2-pin to VDMA	Internal	1000	533006	MDH-5/3B-D-2-M12-C
		4-pin to Desina	Internal	1000	540816	MDH-5/3B-D-2-M12D-C

Technical data – Width 65 mm

-  - Flow rate
Up to 4500 l/min

-  - Voltage
24 V DC



General technical data

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Direction of flow	Not reversible
Exhaust function	Can be throttled
Manual override	Non-detenting
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal size [mm]	14.5
Overlap	Positive overlap
Width [mm]	65
Grid dimension [mm]	71
Pneumatic connections	Sub-base size 3 to ISO 5599-1
Noise level [dB (A)]	85
Conforms to standard	ISO 5599-1

Flow rates

Valve function	5/2-way valve	5/3-way valve		
		Normally closed	Normally exhausted	Normally open
Standard nominal flow rate [l/min]	4500	4100	4600	4000

Switching times [ms]

		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MDH-5/2-...	54	57	–	–
	MDH-5/2-...-FR-...	28	68	–	–
5/2-way valve, double solenoid	JMDH-...	–	–	21	–
	JMDDH-...	–	–	23	23
5/3-way valve	MDH-5/3G-...	35	79	–	–
	MDH-5/3E-...	36	84	–	–
	MDH-5/3B-...	36	84	–	–

Technical data – Width 65 mm

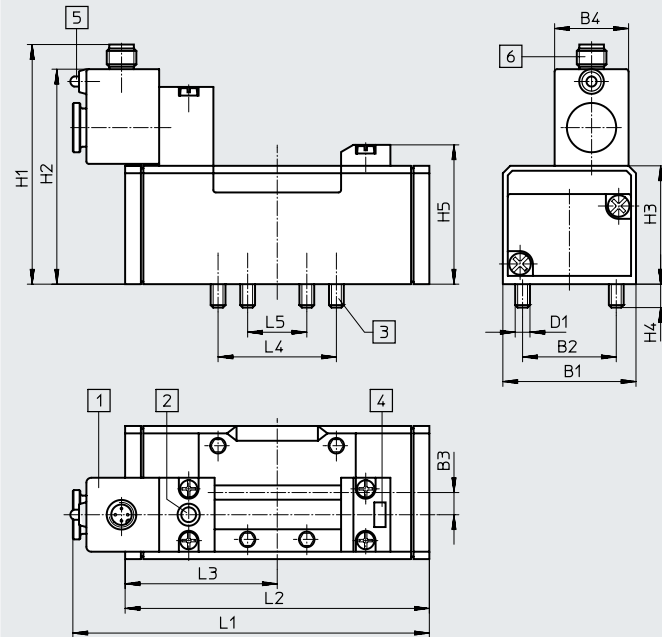
Operating and environmental conditions			
Reset method		Pneumatic spring	Mechanical spring
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[bar]	2 ... 10	3 ... 10
Ambient temperature	[°C]	-10 ... +50	
Temperature of medium	[°C]	-10 ... +50	
Safety characteristics			
Max. positive test pulse with 0 signal	[µs]	3800	
Max. negative test pulse with 1 signal	[µs]	4900	
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistance		Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	
Electrical data			
Electrical connection		M12x1	
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	2.7
Permissible voltage fluctuations		[%]	±10
Duty cycle		[%]	100
Degree of protection to EN 60529			IP65
Materials			
Housing		Die-cast aluminium	
Seals		HNBR, NBR	
Note on materials		RoHS-compliant	

Technical data – Width 65 mm

Dimensions

Download CAD data → www.festo.com

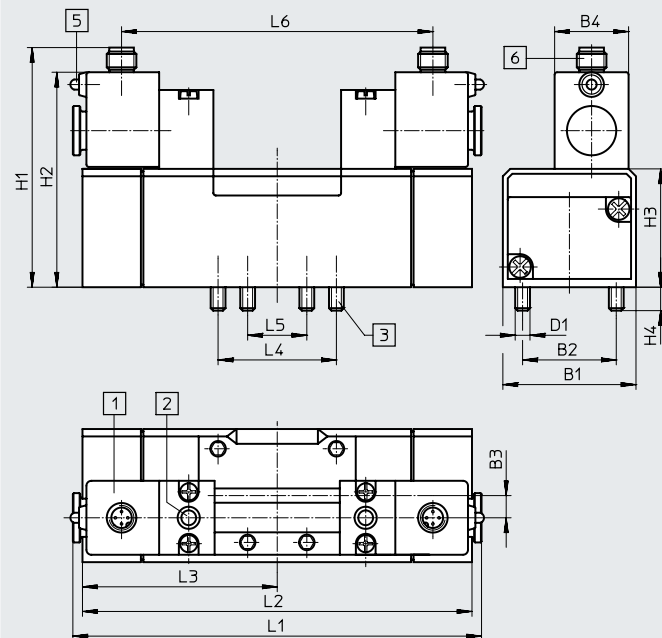
5/2-way valves, single solenoid



- [1] Solenoid coil can be repositioned by 90° regardless of the manual override
- [2] Manual override
- [3] Captive retaining screws
- [4] Slot for inscription label
- [5] LED indicator
- [6] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina

Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
MDH-5/2 ...	65	48	12	30	M8	104.2	94.2	55	12	62.5	165.9	145.4	72.7	64	32	-
MDH-5/2- ... -FR...											182.5	140.6				

5/2-way double solenoid valves, 5/3-way valves



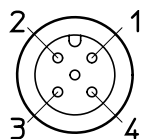
- [1] Solenoid coil can be repositioned by 90° regardless of the manual override
- [2] Manual override
- [3] Captive retaining screws
- [5] LED indicator
- [6] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina

Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMDH-5/2- ...	65	48	12	30	M8	104.2	94.2	55	12	-	186.4	145.4	72.7	64	32	146.9
JMDDH-5/2- ...												145.4	72.7			
MDH-5/3...												184	92			

Ordering data – Width 65 mm

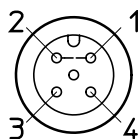
Pin allocation

M12 plug – 2-pin to VDMA



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

M12 plug – 4-pin to Desina





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

Ordering data

Circuit symbol	Description	Coil	Pilot air supply	Weight [g]	Part No.	Type
5/2-way valve, single solenoid						
	Pneumatic spring reset	2-pin to VDMA	Internal	1000	533009	MDH-5/2-D-3-M12-C
		4-pin to Desina	Internal	1000	540819	MDH-5/2-D-3-M12D-C
	Mechanical spring reset	2-pin to VDMA	Internal	1000	533012	MDH-5/2-D-3-FR-M12-C
		4-pin to Desina	Internal	1000	540820	MDH-5/2-D-3-FR-M12D-C
5/2-way valve, double solenoid						
	-	2-pin to VDMA	Internal	1100	533015	JMDH-5/2-D-3-M12-C
		4-pin to Desina	Internal	1100	540825	JMDH-5/2-D-3-M12D-C
	With dominant signal at 14	2-pin to VDMA	Internal	1100	539081	JMDH-5/2-D-3-M12-C
		4-pin to Desina	Internal	1100	540824	JMDH-5/2-D-3-M12D-C
5/3-way valve						
	Normally closed, mechanical spring reset	2-pin to VDMA	Internal	1120	539080	MDH-5/3G-D-3-M12-C
		4-pin to Desina	Internal	1120	540822	MDH-5/3G-D-3-M12D-C
	Normally exhausted, Mechanical spring reset	2-pin to VDMA	Internal	1120	533017	MDH-5/3E-D-3-M12-C
		4-pin to Desina	Internal	1120	540821	MDH-5/3E-D-3-M12D-C
	Normally open, Mechanical spring reset	2-pin to VDMA	Internal	1120	533007	MDH-5/3B-D-3-M12-C
		4-pin to Desina	Internal	1120	540823	MDH-5/3B-D-3-M12D-C

Technical data – Width 76 mm

-  - Flow rate
Up to 6000 l/min

-  - Voltage
24 V DC
48 V AC

**General technical data**

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Direction of flow	Not reversible
Exhaust function	Can be throttled
Manual override	Non-detenting
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal size [mm]	18
Overlap	Positive overlap
Width [mm]	76
Grid dimension [mm]	82
Pneumatic connections	Sub-base size 4 to ISO 5599-1
Noise level [dB (A)]	85
Conforms to standard	ISO 5599-1

Flow rates

Valve function	5/2-way valve	5/3-way valve
Standard nominal flow rate [l/min]	6000	4800

Switching times [ms]

		Switching time on	Switching time off	Switching time changeover
5/2-way valve	Single solenoid	120	160	–
	Double solenoid	–	–	40
5/3-way valve		85	290	–

Technical data – Width 76 mm

Operating and environmental conditions				
Valve function		5/2-way valve, single solenoid	5/2-way valve, double solenoid	5/3-way valve
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	3 ... 16	2 ... 16	3 ... 16
Ambient temperature	[°C]	-10 ... +50		
Temperature of medium	[°C]	-10 ... +60		

Safety characteristics			
Type		MDH-...-D-4-24DC, JMDH-...-D-4-24DC	MDH-...-D-4, JMDH-...-D-4
Max. positive test pulse with 0 signal	[µs]	4300	-
Max. negative test pulse with 1 signal	[µs]	2100	-

Electrical data – MDH-...-24DC, JMDH-...-24DC				
		Direct voltage	Alternating voltage	
Electrical connection		To DIN EN 175301-803		
Characteristic coil data	Voltage	[V DC]	24	-
		[V AC]	-	48
	Frequency	[Hz]	-	50/60
	Power	[W]	6.8	-
	Pick-up power	[VA]	-	14.5
	Holding power	[VA]	-	9.9
Duty cycle	[%]	100		
Degree of protection to EN 60529		IP65		

Electrical data – Pilot valve MDH-3/2-...													
Type		MDH-3/2-24DC			MDH-3/2-24DC/42AC			MDH-3/2-110AC		MDH-3/2-230AC			
Electrical connection		Plug, square design to EN 175301-803, type A											
Characteristic coil data	Voltage	[V DC]	24	-	-	24	-	-	-	-	110	-	-
		[V AC]	-	48	53	-	42	42	110	110	-	230	230
	Frequency	[Hz]	-	50	60	-	50	60	50	60	-	50	60
	Power	[W]	6.8	-	-	8.4	-	-	-	-	6.3	-	-
	Pick-up power	[VA]	-	14.5	15	-	14	12	14.5	12	-	14.5	12
	Holding power	[VA]	-	9.9	9.3	-	10	7	10.5	7.6	-	10.5	7.6
Permissible voltage fluctuations	[%]	±10	±10	±10	±10	±10	±10	±10	±10	±10	±10	±10	
Permissible frequency fluctuations	[%]	-	-	-	±10	±10	±10	±10	±10	±10	±10	±10	
Duty cycle	[%]	100											
Degree of protection to EN 60529		IP65											

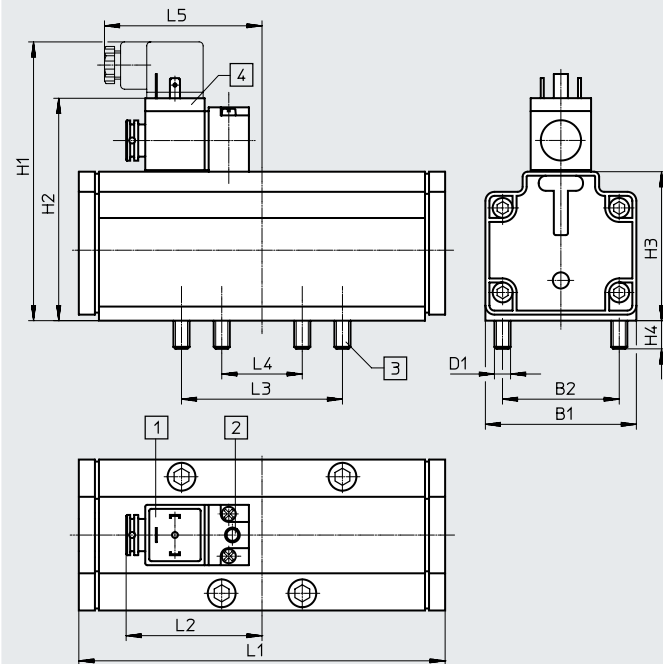
Materials	
Housing	Aluminium
Seals	NBR
Note on materials	RoHS-compliant

Technical data – Width 76 mm

Dimensions

Download CAD data → www.festo.com

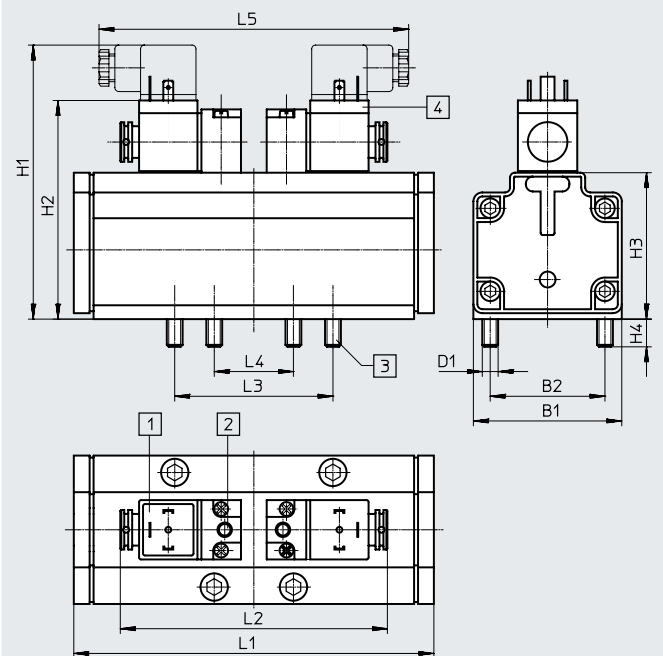
5/2-way valves, single solenoid



- [1] Connection for plug socket with plug pattern to EN 175301-803, type A → page 130
- [2] Manual override
- [3] Captive retaining screws
- [4] Solenoid coil can be repositioned by 90° regardless of the manual override

Type	B1	B2	D1	H1	H2	H3	H4	L1	L2	L3	L4	L5
MDH-5/2...	76	58	M8	139	110.5	74	14	182	67.5	80	40	81

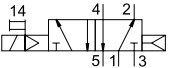
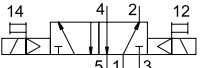
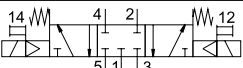
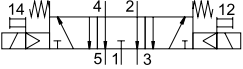

5/2-way double solenoid valves, 5/3-way valves



- [1] Connection for plug socket with plug pattern to EN 175301-803, type A → page 130
- [2] Manual override
- [3] Captive retaining screws
- [4] Solenoid coil can be repositioned by 90° regardless of the manual override

Type	B1	B2	D1	H1	H2	H3	H4	L1	L2	L3	L4	L5
JMDH-5/2-...	76	58	M8	139	110.5	74	14	182	135	80	40	162
MDH-5/3...									182			

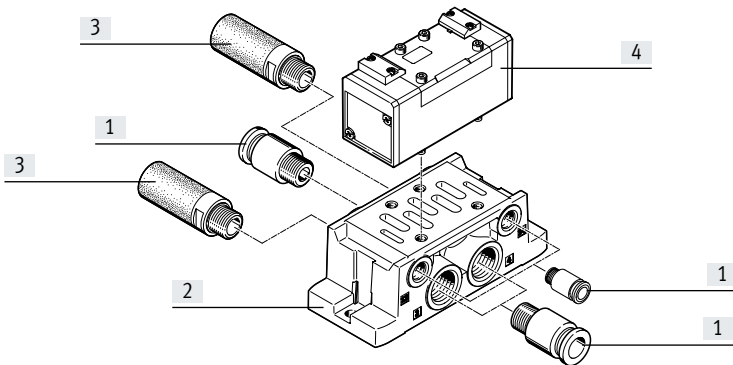
Ordering data – Width 76 mm

Ordering data						
Circuit symbol	Description	Voltage	Pilot air supply	Weight [g]	Part No.	Type
5/2-way valve, single solenoid						
	Pneumatic spring reset	24 V DC	Internal	2600	12457	MDH-5/2-3/4-D-4-24DC
		–	Internal	2600	14544	MDH-5/2-3/4-D-4¹⁾
5/2-way valve, double solenoid						
	–	24 V DC	Internal	2600	12458	JMDH-5/2-3/4-D-4-24DC
		–	Internal	2600	14545	JMDH-5/2-3/4-D-4¹⁾
5/3-way valve						
	Normally closed, mechanical spring reset	24 V DC	Internal	2600	12459	MDH-5/3G-3/4-D-4-24DC
		–	Internal	2600	14546	MDH-5/3G-3/4-D-4¹⁾
	Normally exhausted, Mechanical spring reset	24 V DC	Internal	2600	12460	MDH-5/3E-3/4-D-4-24DC
		–	Internal	2600	14547	MDH-5/3E-3/4-D-4¹⁾
Usable pilot valves						
	Electrical connection to EN 175301-803 type A	24 V DC	–	140	119600	MDH-3/2-24DC
		24 V DC/ 42 V AC	–	140	119603	MDH-3/2-24DC/42AC
		110 V AC	–	140	119601	MDH-3/2-110AC
		110 V DC/ 230 V AC	–	140	119602	MDH-3/2-230AC

1) Without pilot valve. The part number of the pilot valve must be added after the type code when ordering.
Order example: 14546 MDH-5/3G-3/4-D-4-119602 (for MDH-3/2-230AC with part no. 119602)

Peripherals overview

Valve on individual sub-base

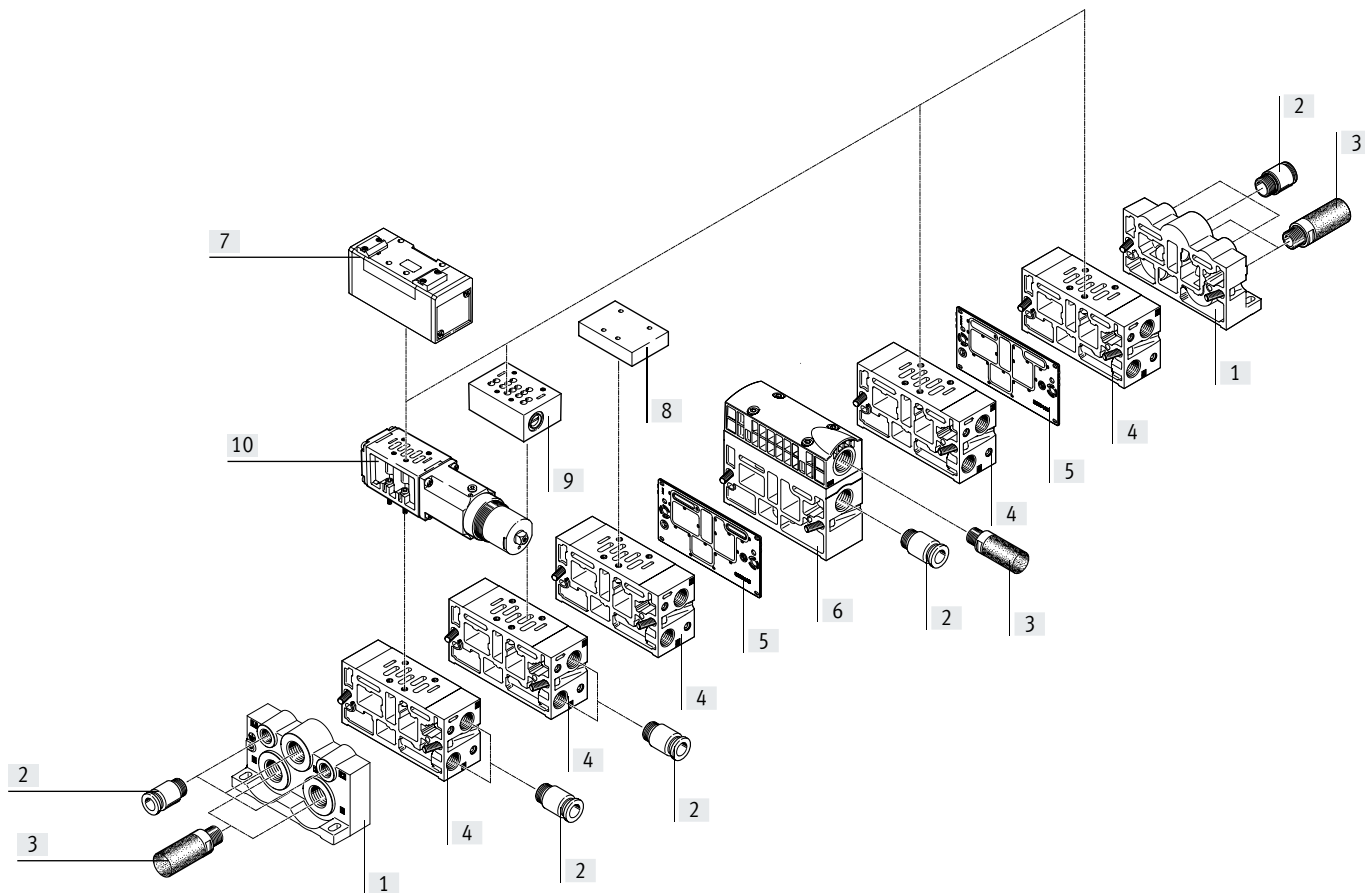


Individual components

		Type	Brief description	→ Page/Internet
[1]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[2]	Sub-base	VABS-S1-...	Lateral pneumatic connections	97
	Individual sub-base	NAS-...	Lateral pneumatic connections	97
		NAU-...	Pneumatic connections underneath	100
[3]	Silencer	U-...	For mounting in exhaust ports	silencer
[4]	Pneumatic valve	VL-...	Port pattern to ISO 5599-1	80
		J-...	Port pattern to ISO 5599-1	80
		JD-...	Port pattern to ISO 5599-1	80

Peripherals overview

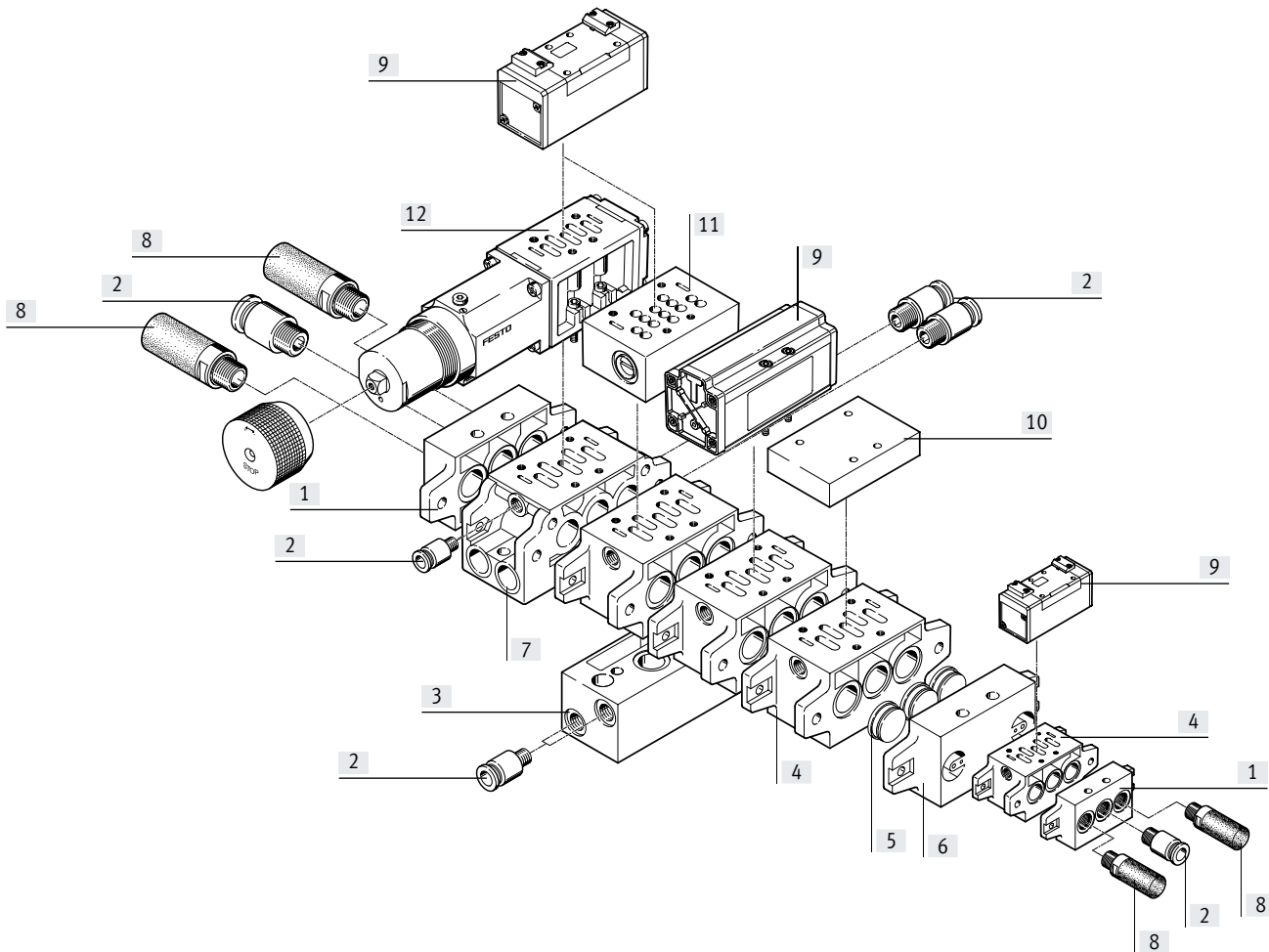
Manifold assembly



Individual components		Type	Brief description	→ Page/Internet
[1]	End plates	VABE-S1-...	For sealing the manifold sub-bases	109
[2]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[3]	Silencer	U-...	For mounting in exhaust ports	silencer
[4]	Manifold sub-base	VABV-S1-...	With ports 2 and 4	102
[5]	Duct separation	VABD-S1-1-...	For sealing ducts 1, 3, 5, 12 and 14 between end plate and manifold sub-base, e.g. to create pressure zones	113
[6]	Supply plate	VABF-S1-1-...	With ports for air supply 1 and exhausts 3 and 5	104
[7]	Pneumatic valve	VL-...	Port pattern to ISO 5599-1	80
		J-...	Port pattern to ISO 5599-1	80
		JD-...	Port pattern to ISO 5599-1	80
[8]	Cover plate	NDV-...	For sealing unused manifold sub-bases	112
[9]	Throttle plate	VABF-S1-...-F1B1-C	Controls the flow of exhaust air in ducts 3 and 5	116
		GRO-ZP-...	Controls the flow of exhaust air in ducts 3 and 5	116
[10]	Regulator plate	VABF-S1-...-R-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	123
		LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	123


Peripherals overview

Manifold assembly



Individual components		Type	Brief description	→ Page/Internet
[1]	End plate kit	NEV-...	For sealing the manifold sub-bases	108
[2]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[3]	90° connection plate	NAW-...	For routing ports 2 and 4 to the front	107
[4]	Manifold sub-base	NAV-...	With ports 2 and 4 underneath	102
[5]	Isolating disc	NSC-...	For sealing ducts 1, 3, 5 between end plate and manifold sub-base, e.g. to create pressure zones	112
[6]	Intermediate plate	NZV-...	For connecting manifold sub-bases of different sizes	114
[7]	Manifold sub-base with 90° connections	NAWV-...	With ports 2 and 4 either underneath or to the front	107
[8]	Silencer	U-...	For mounting in exhaust ports	silencer
[9]	Pneumatic valve	VL-...	Port pattern to ISO 5599-1	80
		J-...	Port pattern to ISO 5599-1	80
		JD-...	Port pattern to ISO 5599-1	80
[10]	Cover plate	NDV-...	For sealing unused manifold sub-bases	112
[11]	Throttle plate	VABF-S1-...-F1B1-C	Controls the flow of exhaust air in ducts 3 and 5	116
		GRO-ZP-...	Controls the flow of exhaust air in ducts 3 and 5	116
[12]	Regulator plate	VABF-S1-...-R-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	123
		LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	123

Technical data – Width 42 mm

-  - Flow rate
1200 l/min



General technical data		
Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX
Design	Piston spool	Piston spool
Sealing principle	Soft	Soft
Actuation type	Pneumatic	Pneumatic
Type of control	Direct	Direct
Direction of flow	Reversible	Reversible
	VL-5/2-D-1-C: non-reversible	VL-5/2-D-1-C-EX: non-reversible
Exhaust function	Can be throttled	Can be throttled
Manual override	None	None
Type of mounting	On sub-base via through-hole	On sub-base via through-hole
Mounting position	Any	Any
Nominal size	[mm] 8	8
Overlap	Positive overlap	Positive overlap
Width	[mm] 42	42
Grid dimension	[mm] 43	43
Pneumatic connections	Sub-base size 1 to ISO 5599-1	Sub-base size 1 to ISO 5599-1
Noise level	[dB (A)] 85	85
Conforms to standard	ISO 5599-1	ISO 5599-1

Flow rates		
Standard nominal flow rate	[l/min]	1200

Switching times [ms]		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	VL-5/2-D-1-C	9	18	–	–
	VL-5/2-D-1-C-EX	9	18	–	–
	VL-5/2-D-1-FR-C	6	23	–	–
	VL-5/2-D-1-FR-C-EX	6	23	–	–
5/2-way valve, double solenoid	J-5/2-D-1-C	–	–	6	–
	J-5/2-D-1-C-EX	–	–	6	–
	JD-5/2-D-1-C	–	–	6	4
	JD-5/2-D-1-C-EX	–	–	6	4
5/3-way valve	VL-5/3G-D-1-C	7	44	–	–
	VL-5/3G-D-1-C-EX	7	44	–	–
	VL-5/3E-D-1-C	7	45	–	–
	VL-5/3E-D-1-C-EX	7	45	–	–
	VL-5/3B-D-1-C	7	44	–	–
	VL-5/3B-D-1-C-EX	7	44	–	–

Technical data – Width 42 mm

ATEX	
Type	VL- ... -EX, J ... -EX
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IICT4 Gb
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T130°C Db
Explosion-proof ambient temperature [°C]	-10 ≤ Ta ≤ +60
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Operating and environmental conditions					
Valve function	5/2-way valve				5/3-way valve
	Single solenoid		Double solenoid		
	Pneumatic spring	Mechanical spring			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure [bar]	2 ... 16	-0.9 ... +16	-0.9 ... +16	-0.9 ... +16	
Pilot pressure [bar]	2 ... 16	3 ... 16	2 ... 16	3 ... 16	
Ambient temperature [°C]	-10 ... +60				
Temperature of medium [°C]	-10 ... +60				

Safety characteristics					
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27				
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6				

Materials					
Housing	Die-cast aluminium				
Seals	HNBR, NBR				
Note on materials	RoHS-compliant				

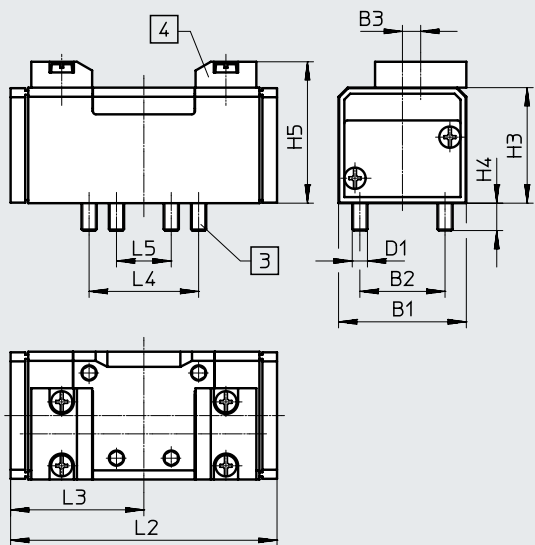
Technical data – Width 42 mm

Dimensions

Download CAD data → www.festo.com

5/2-way valves, pneumatic spring reset, 5/2-way bistable valves

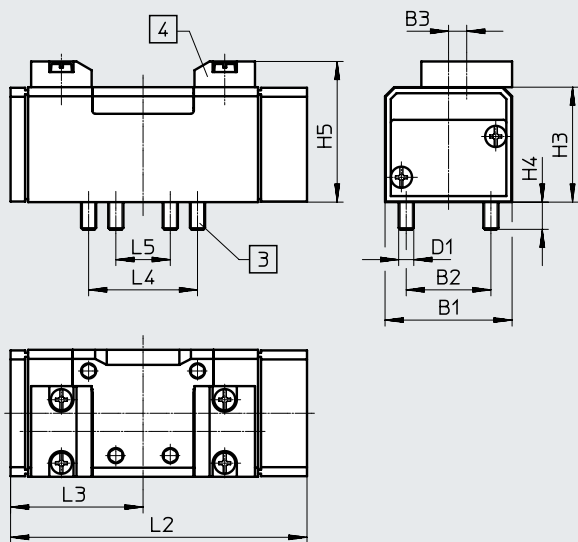
- [3] Captive retaining screws
- [4] Slot for inscription label



Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/2- ...	42	28	6	M5	38	9	46.5	87.6	43.8	36	18
J-5/2- ...											
JD-5/2- ...											

5/2-way valves, mechanical spring reset

- [3] Captive retaining screws
- [4] Slot for inscription label



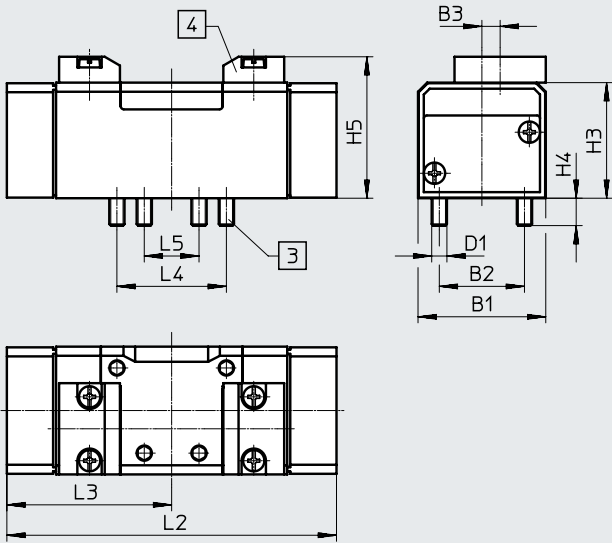
Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/2- ... -FR- ...	42	28	6	M5	38	9	46.5	98	43.8	36	18

Technical data – Width 42 mm

Dimensions

Download CAD data → www.festo.com

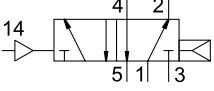
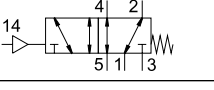
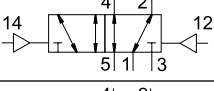
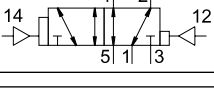
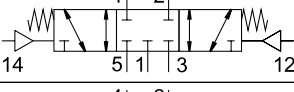
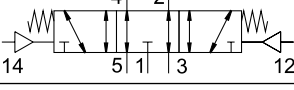
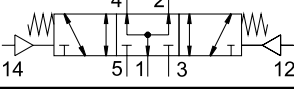
5/3-way valves




- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/3...	42	28	6	M5	38	9	46.5	108.4	54.2	36	18

Technical data – Width 42 mm

Ordering data		Description	Weight [g]	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	–	290	151009	VL-5/2-D-1-C
		ATEX category → page 81	290	536007	VL-5/2-D-1-C-EX
	Mechanical spring reset	–	290	151014	VL-5/2-D-1-FR-C
		ATEX category → page 81	290	536010	VL-5/2-D-1-FR-C-EX
5/2-way valve, double solenoid					
	–	–	290	151007	J-5/2-D-1-C
		ATEX category → page 81	290	536013	J-5/2-D-1-C-EX
	With dominant signal at 14	UL – Recognized (OL)	290	151008	JD-5/2-D-1-C
		ATEX category → page 81	290	536016	JD-5/2-D-1-C-EX
5/3-way valve					
	Normally closed Mechanical spring reset	UL – Recognized (OL)	320	151010	VL-5/3G-D-1-C
		ATEX category → page 81	320	536019	VL-5/3G-D-1-C-EX
	Normally exhausted Mechanical spring reset	–	320	151011	VL-5/3E-D-1-C
		ATEX category → page 81	320	536022	VL-5/3E-D-1-C-EX
	Normally pressurised Mechanical spring reset	UL – Recognized (OL)	320	151012	VL-5/3B-D-1-C
		ATEX category → page 81	320	536025	VL-5/3B-D-1-C-EX

Technical data – Width 52 mm

-  - Flow rate
2300 l/min



General technical data		
Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX
Design	Piston spool	Piston spool
Sealing principle	Soft	Soft
Actuation type	Pneumatic	Pneumatic
Type of control	Direct	Direct
Direction of flow	Reversible	Reversible
	VL-5/2-D-2-C: non-reversible	VL-5/2-D-2-C-EX: non-reversible
Exhaust function	Can be throttled	Can be throttled
Manual override	None	None
Type of mounting	On sub-base, with through-hole and screw	On sub-base, with through-hole and screw
Mounting position	Any	Any
Nominal size	[mm] 11.5	11.5
Overlap	Positive overlap	Positive overlap
Width	[mm] 52	52
Grid dimension	[mm] 56	56
Pneumatic connections	Sub-base size 2 to ISO 5599-1	Sub-base size 2 to ISO 5599-1
Noise level	[dB (A)] 85	85
Conforms to standard	ISO 5599-1	ISO 5599-1

Flow rates		
Standard nominal flow rate	[l/min]	2300

Switching times [ms]					
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	VL-5/2-D-2-C	23	39	–	–
	VL-5/2-D-2-C-EX	23	39	–	–
	VL-5/2-D-2-FR-C	11	39	–	–
	VL-5/2-D-2-FR-C-EX	11	39	–	–
5/2-way valve, double solenoid	J-5/2-D-2-C	–	–	8	–
	J-5/2-D-2-C-EX	–	–	8	–
	JD-5/2-D-2-C	–	–	8	8
	JD-5/2-D-2-C-EX	–	–	8	8
5/3-way valve	VL-5/3G-D-2-C	15	56	–	–
	VL-5/3G-D-2-C-EX	15	56	–	–
	VL-5/3E-D-2-C	16	59	–	–
	VL-5/3E-D-2-C-EX	16	59	–	–
	VL-5/3B-D-2-C	15	57	–	–
	VL-5/3B-D-2-C-EX	15	57	–	–

Technical data – Width 52 mm

ATEX					
Type	VL- ... -EX, J ... -EX				
ATEX category for gas	II 2G				
Type of ignition protection for gas	Ex h IICT4 Gb				
ATEX category for dust	II 2D				
Type of ignition protection for dust	Ex h IICT130°C Db				
Explosion-proof ambient temperature	[°C]	-10 ≤ Ta ≤ +60			
CE marking (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)				
Operating and environmental conditions					
Valve function	5/2-way valve				5/3-way valve
	Single solenoid		Double solenoid		
	Pneumatic spring	Mechanical spring			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure	[bar]	2 ... 16	-0.9 ... +16	-0.9 ... +16	-0.9 ... +16
Pilot pressure	[bar]	2 ... 16	3 ... 16	2 ... 16	3 ... 16
Ambient temperature	[°C]	-10 ... +60			
Temperature of medium	[°C]	-10 ... +60			
Safety characteristics					
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27				
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6				
Materials					
Housing	Die-cast aluminium				
Seals	HNBR, NBR				
Note on materials	RoHS-compliant				

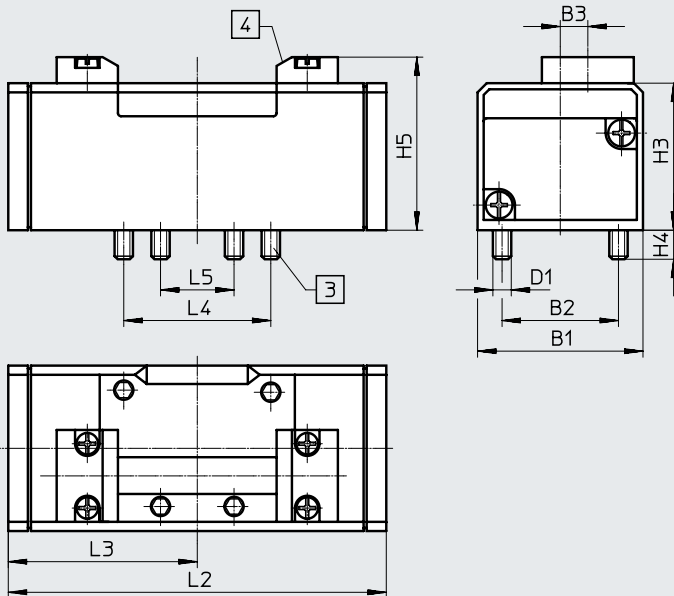
Technical data – Width 52 mm

Dimensions

Download CAD data → www.festo.com

5/2-way valves, pneumatic spring reset, 5/2-way bistable valves

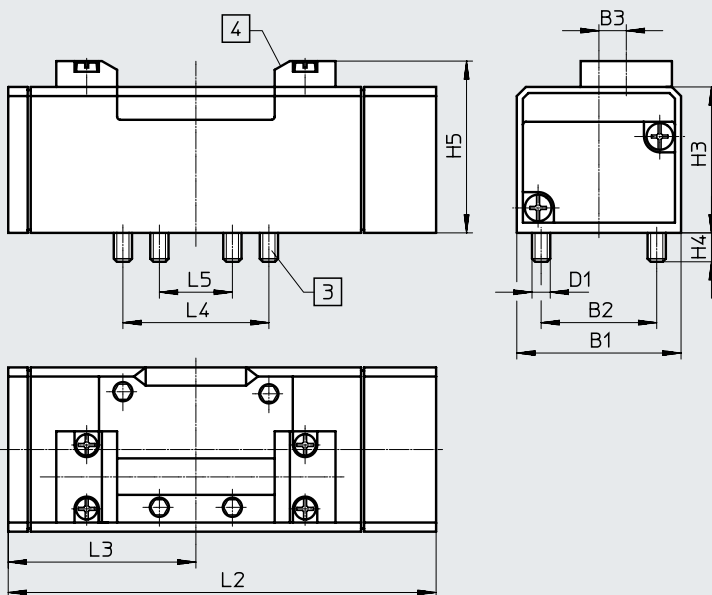
- [3] Captive retaining screws
- [4] Slot for inscription label



Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/2- ...	54	38	9	M6	48	9.5	56.5	123.4	61.7	48	24
J-5/2- ...											
JD-5/2- ...											

5/2-way valves, mechanical spring reset

- [3] Captive retaining screws
- [4] Slot for inscription label



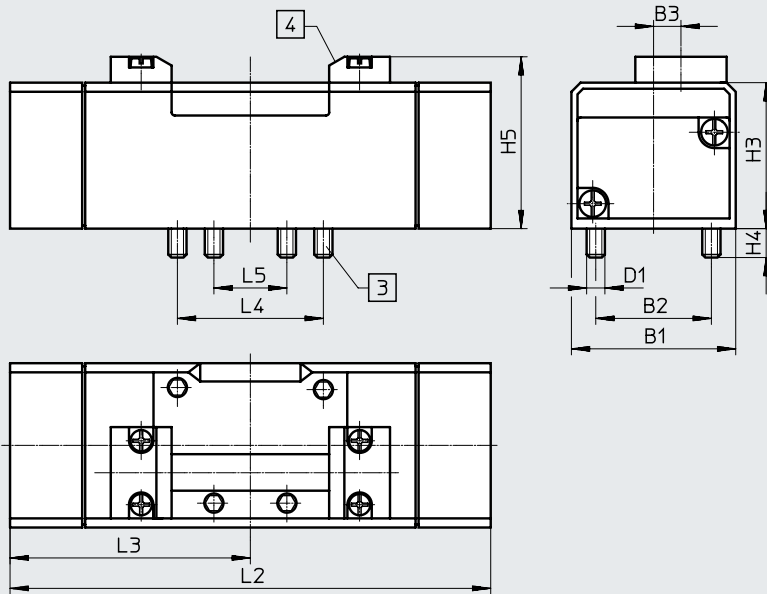
Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/2- ... -FR- ...	54	38	9	M6	48	9.5	56.5	140.7	61.7	48	24

Technical data – Width 52 mm

Dimensions

5/3-way valves

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- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/3...	54	38	9	M6	48	9.5	56.5	158	79	48	24

Technical data – Width 52 mm

Ordering data					
Circuit symbol	Description		Weight [g]	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	UL – Recognized (OL)	550	151845	VL-5/2-D-2-C
		ATEX category → page 86	550	536008	VL-5/2-D-2-C-EX
	Mechanical spring reset	UL – Recognized (OL)	550	151844	VL-5/2-D-2-FR-C
		ATEX category → page 86	550	536011	VL-5/2-D-2-FR-C-EX
5/2-way valve, double solenoid					
	–	–	550	151846	J-5/2-D-2-C
		ATEX category → page 86	550	536014	J-5/2-D-2-C-EX
	With dominant signal at 14	UL – Recognized (OL)	550	151847	JD-5/2-D-2-C
		ATEX category → page 86	550	536017	JD-5/2-D-2-C-EX
5/3-way valve					
	Normally closed Mechanical spring reset	UL – Recognized (OL)	825	151848	VL-5/3G-D-2-C
		ATEX category → page 86	825	536020	VL-5/3G-D-2-C-EX
	Normally exhausted Mechanical spring reset	UL – Recognized (OL)	825	151849	VL-5/3E-D-2-C
		ATEX category → page 86	825	536023	VL-5/3E-D-2-C-EX
	Normally pressurised Mechanical spring reset	UL – Recognized (OL)	825	151850	VL-5/3B-D-2-C
		ATEX category → page 86	825	536026	VL-5/3B-D-2-C-EX

Technical data – Width 65 mm

-  - Flow rate
Up to 4600 l/min



General technical data			
Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX	
Design	Piston spool	Piston spool	
Sealing principle	Soft	Soft	
Actuation type	Pneumatic	Pneumatic	
Type of control	Direct	Direct	
Direction of flow	Reversible	Reversible	
	VL-5/2-D-3-C: non-reversible	VL-5/2-D-3-C-EX: non-reversible	
Exhaust function	Can be throttled	Can be throttled	
Manual override	None	None	
Type of mounting	On sub-base, with through-hole and screw	On sub-base, with through-hole and screw	
Mounting position	Any	Any	
Nominal size	[mm] 14.5	14.5	
Overlap	Positive overlap	Positive overlap	
Width	[mm] 65	65	
Grid dimension	[mm] 71	71	
Pneumatic connections	Sub-base size 3 to ISO 5599-1	Sub-base size 3 to ISO 5599-1	
Noise level	[dB (A)] 85	85	
Conforms to standard	ISO 5599-1	ISO 5599-1	

Flow rates				
Valve function	5/2-way valve	5/3-way valve		
		Normally closed	Normally exhausted	Normally pressurised
Standard nominal flow rate	[l/min] 4500	4100	4600	4100

Technical data – Width 65 mm

Switching times [ms]		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	VL-5/2-D-1-C	29	36	–	–
	VL-5/2-D-1-C-EX	29	36	–	–
	VL-5/2-D-1-FR-C	13	43	–	–
	VL-5/2-D-1-FR-C-EX	13	43	–	–
5/2-way valve, double solenoid	J-5/2-D-1-C	–	–	8	–
	J-5/2-D-1-C-EX	–	–	8	–
	JD-5/2-D-1-C	–	–	8	8
	JD-5/2-D-1-C-EX	–	–	8	8
5/3-way valve	VL-5/3G-D-1-C	17	61	–	–
	VL-5/3G-D-1-C-EX	17	61	–	–
	VL-5/3E-D-1-C	18	63	–	–
	VL-5/3E-D-1-C-EX	18	63	–	–
	VL-5/3B-D-1-C	16	60	–	–
	VL-5/3B-D-1-C-EX	16	60	–	–

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

Operating and environmental conditions					
Valve function	5/2-way valve			5/3-way valve	
	Single solenoid		Double solenoid		
	Pneumatic spring	Mechanical spring			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure [bar]	2 ... 16	–0.9 ... +16	–0.9 ... +16	–0.9 ... +16	
Pilot pressure [bar]	2 ... 16	3 ... 16	2 ... 16	3 ... 16	
Ambient temperature [°C]	–10 ... +60				
Temperature of medium [°C]	–10 ... +60				

Safety characteristics	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

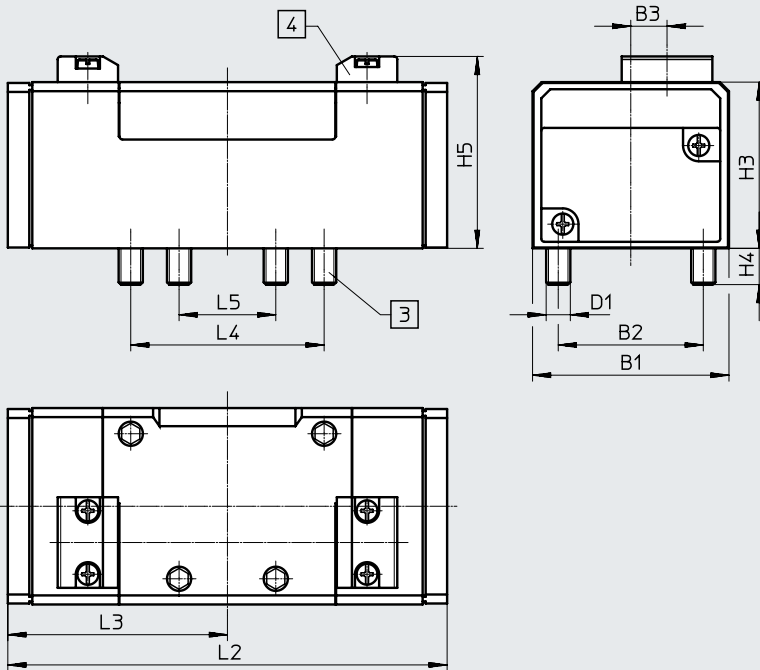
Materials	
Housing	Die-cast aluminium
Seals	HNBR, NBR
Note on materials	RoHS-compliant

Technical data – Width 65 mm

Dimensions

Download CAD data → www.festo.com

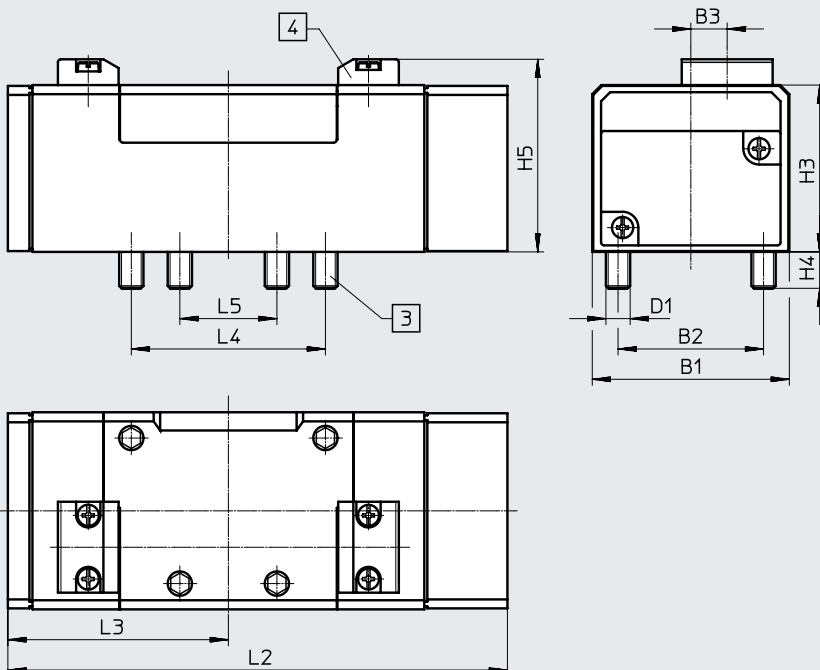
5/2-way valves, pneumatic spring reset, 5/2-way bistable valves



- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/2- ...	65	48	12	M8	55	12	63.5	145.4	72.7	64	32
J-5/2- ...											
JD-5/2- ...											

5/2-way valves, mechanical spring reset



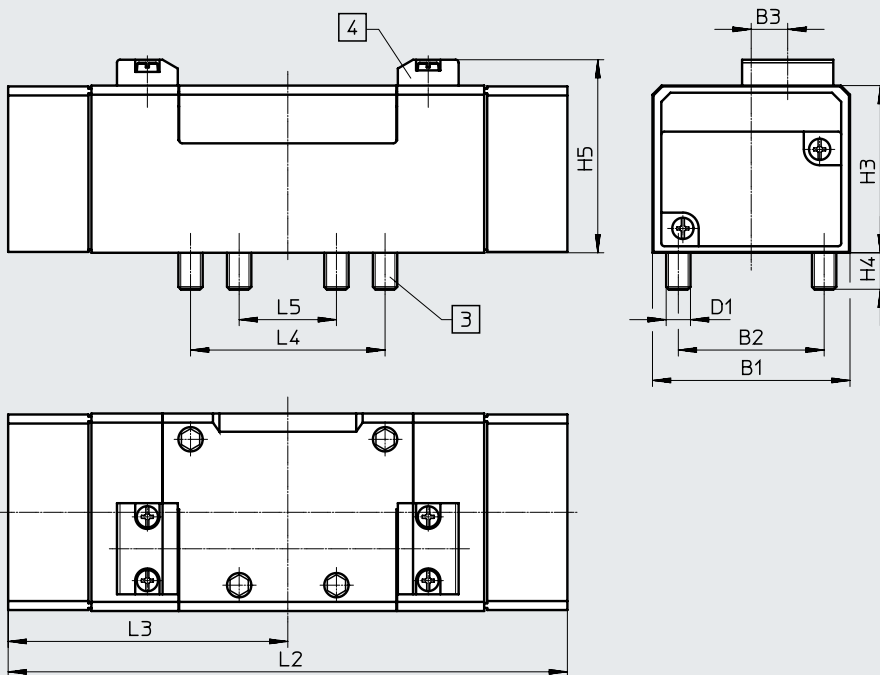
- [3] Captive retaining screws
- [4] Slot for inscription label

Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/2- ... -FR- ...	65	48	12	M8	55	12	63.5	164.7	72.7	64	32

Technical data – Width 65 mm

Dimensions

5/3-way valves

Download CAD data → www.festo.com


- [3] Captive retaining screws
[4] Slot for inscription label

Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/3...	65	48	12	M8	55	12	63.5	184	92	64	32

Ordering data

Circuit symbol	Description		Weight [g]	Part No.	Type
5/2-way valve, single solenoid					
	Pneumatic spring reset	c UL us - Recognized (OL) ATEX category → page 91	810	151864 536009	VL-5/2-D-3-C VL-5/2-D-3-C-EX
	Mechanical spring reset	c UL us - Recognized (OL) ATEX category → page 91	810	151863 536012	VL-5/2-D-3-FR-C VL-5/2-D-3-FR-C-EX
5/2-way valve, double solenoid					
	-	-	810	151865 536015	J-5/2-D-3-C J-5/2-D-3-C-EX
	With dominant signal at 14	c UL us - Recognized (OL) ATEX category → page 91	810	151866 536018	JD-5/2-D-3-C JD-5/2-D-3-C-EX
5/3-way valve, single solenoid					
	Normally closed	c UL us - Recognized (OL)	910	151867	VL-5/3G-D-3-C
	Mechanical spring reset	ATEX category → page 91	910	536021	VL-5/3G-D-3-C-EX
	Normally exhausted	c UL us - Recognized (OL)	910	151868	VL-5/3E-D-3-C
	Mechanical spring reset	ATEX category → page 91	910	536024	VL-5/3E-D-3-C-EX
	Normally pressurised	-	910	151869	VL-5/3B-D-3-C
	Mechanical spring reset	ATEX category → page 91	910	536027	VL-5/3B-D-3-C-EX

Technical data – Width 76 mm

-  - Flow rate
Up to 6000 l/min



General technical data	
Design	Piston spool
Sealing principle	Soft
Actuation type	Pneumatic
Type of control	Direct
Direction of flow	Reversible
Exhaust function	Can be throttled
Manual override	None
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal size [mm]	18
Overlap	Positive overlap
Width [mm]	76
Grid dimension [mm]	82
Pneumatic connections	Sub-base size 4 to ISO 5599-1
Noise level [dB (A)]	85
Conforms to standard	ISO 5599-1

Flow rates		
Valve function	5/2-way valve	5/3-way valve
Standard nominal flow rate [l/min]	6000	4800

Switching times [ms]		Switching time on	Switching time off	Switching time changeover
5/2-way valve, single solenoid	VL-5/2-3/4-D-4	25	90	–
5/2-way valve, double solenoid	J-5/2-3/4-D-4	–	–	20
5/3-way valve	VL-5/3G-3/4-D-4	40	130	–
	VL-5/3E-3/4-D-4	50	170	–

Technical data – Width 76 mm

Operating and environmental conditions		5/2-way valve		5/3-way valve
		Single solenoid	Double solenoid	
Valve function				
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure	[bar]	-0.9 ... +16	-0.9 ... +16	-0.9 ... +16
Pilot pressure	[bar]	3 ... 16	2 ... 16	3 ... 16
Ambient temperature	[°C]	-10 ... +60		
Temperature of medium	[°C]	-10 ... +60		

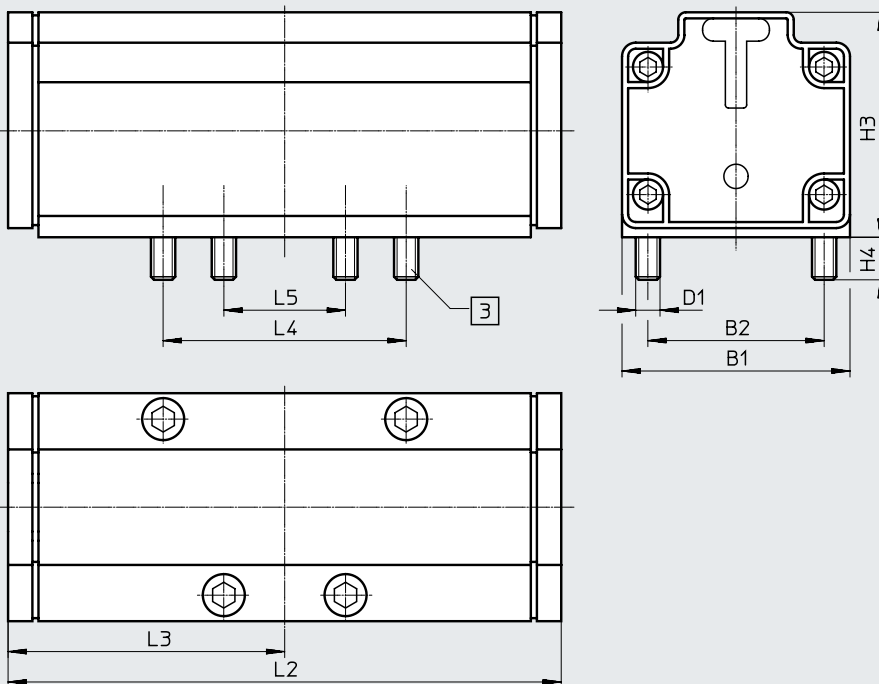
Materials	
Housing	Aluminium
Seals	NBR
Note on materials	RoHS-compliant

Dimensions

Download CAD data → www.festo.com

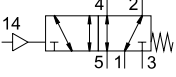
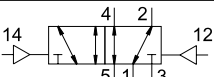
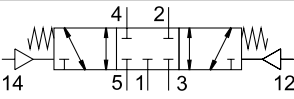
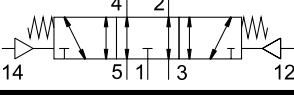
5/3-way valves

[3] Captive retaining screws



Type	B1	B2	D1	H3	H4	L2	L3	L4	L5
VL-5/2-3/4-D-4	76	58	M8	74	14	182	91	80	40
J-5/2-3/4-D-4									
VL-5/3E-3/4-D-4									
VL-5/3G-3/4-D-4									

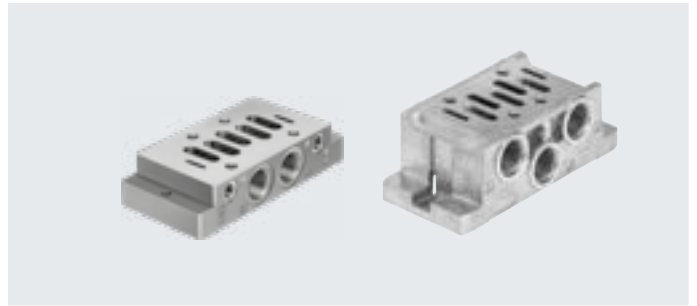
Technical data – Width 76 mm

Ordering data			
Circuit symbol	Description	Weight [g]	Part No. Type
5/2-way valve, single solenoid			
	Mechanical spring reset	1800	12461 VL-5/2-3/4-D-4
5/2-way valve, double solenoid			
	-	1800	12462 J-5/2-3/4-D-4
5/3-way valve			
	Normally closed Mechanical spring reset	2000	12463 VL-5/3G-3/4-D-4
	Normally exhausted Mechanical spring reset	2000	12464 VL-5/3E-3/4-D-4

Accessories

Individual sub-base NAS
Sub-base VABS

Lateral connections

Materials:
Die-cast aluminium
Anodised aluminium

General technical data					
Type	NAS-1/4	NAS-3/8	NAS-1/2	NAS-3/4	VABS
Conforms to standard	ISO 5599-1				–
Based on standard	–				ISO 5599-1
Actuation type	–				Electrical
Sealing principle	–				Soft
Mounting position	–				Any
Suitability for vacuum	–				Yes
Type of mounting	Via through-hole				Via through-hole for M5 screw

Materials					
Type	NAS-1/4	NAS-3/8	NAS-1/2	NAS-3/4	VABS
Sub-base	Die-cast aluminium			Anodised aluminium	Die-cast aluminium
Note on materials	–			–	RoHS-compliant
	Free of copper and PTFE			–	–

Operating and environmental conditions					
Type	NAS-1/4	NAS-3/8	NAS-1/2	NAS-3/4	VABS
Operating medium	–			–	Compressed air to ISO 8573-1:2010 [7:4:4]
Pilot medium	–			–	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	–			–	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	–			–	0 ... 16
Pilot pressure [bar]	–			–	0 ... 10
Ambient temperature [°C]	–			–	–10 ... +60
Temperature of medium [°C]	–			–	–10 ... +60
Storage temperature [°C]	–			–	–20 ... +60
Corrosion resistance class CRC ¹⁾	–			–	0
CE marking (see declaration of conformity) ²⁾	–			–	To EU Low Voltage Directive
Certification	c UL - Recognized (OL)			–	–

1) Corrosion resistance class CRC 0 to Festo standard FN 940070

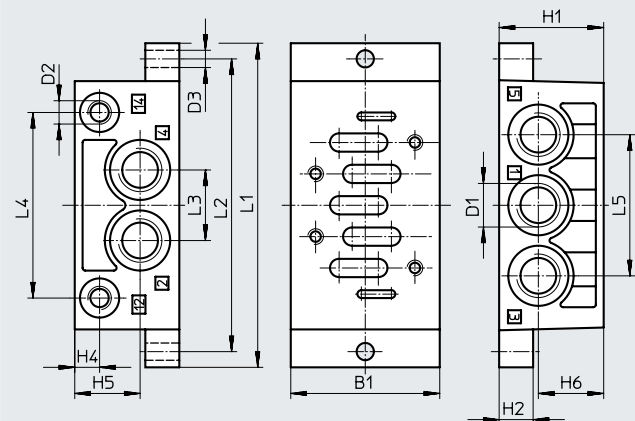
No corrosion stress. Applies to small, visually unimportant standards-based parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

2) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Accessories

Dimensions – Individual sub-base NAS

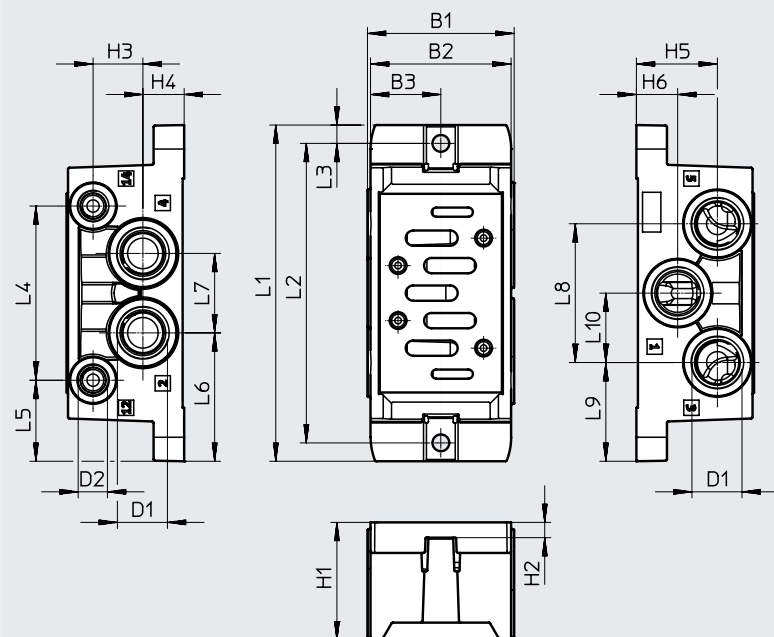
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Type	B1	D1	D2	D3	H1	H2	H4	H5	H6	L1	L2	L3	L4	L5
NAS-1/4-1A-ISO	48	G1/4	G1/8	5.5	32	10	9	20.3	20.3	110	98	23	60	46
NAS-3/8-2A-ISO	57	G3/8	G1/8	6.6	40	13	9	25	25	124	112	27	71	54
NAS-1/2-3A-ISO	71	G1/2	G1/8	6.6	32	18	9	16	16	149	136	32	91	64
NAS-3/4-4A-ISO	85	G3/4	G1/8	9	42	19	9	21	21	186	170	42	111	84

Dimensions – Sub-base VABS

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Type	B1	B2	B3	D1	D2	H1	H2	H3	H4	H5	H6
VABS-S1-1S-G38	48	46	23	G3/8	G1/8	38.5	5	16.3	13.5	26.5	13.5
VABS-S1-1S-N38				3/8 NPT	1/8 NPT						
VABS-S1-2S-G12	58	56	28	G1/2	G1/8	45	10	18	16	29	16
VABS-S1-2S-N12				1/2 NPT	1/8 NPT						

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
VABS-S1-1S-G38	110	98	6	57	26.5	42	26	45.4	32.3	22.7
VABS-S1-1S-N38										
VABS-S1-2S-G12	124	112	6	72	26	46	32	55	34.5	27.5
VABS-S1-2S-N12										

Accessories

Ordering data Designation to VDMA	Width	Pneumatic connection		Weight [g]	Part No.	Type
		1, 2, 3, 4, 5	12, 14			
VDMA 24345-A-1	–	G1/4	G1/8	190	★ 9484	NAS-1/4-1A-ISO
–	48 mm	G3/8	–	230	8032642	VABS-S1-1S-G38
		3/8 NPT	–	230	8032643	VABS-S1-1S-N38
VDMA 24345-A-2	–	G3/8	G1/8	300	11310	NAS-3/8-2A-ISO
–	58 mm	G1/2	–	380	8032644	VABS-S1-2S-G12
		1/2 NPT	–	380	8032645	VABS-S1-2S-N12
VDMA 24345-A-3	–	G1/2	G1/8	360	10336	NAS-1/2-3A-ISO
VDMA 24345-A-4	–	G3/4	G1/8	1260	152813	NAS-3/4-4A-ISO

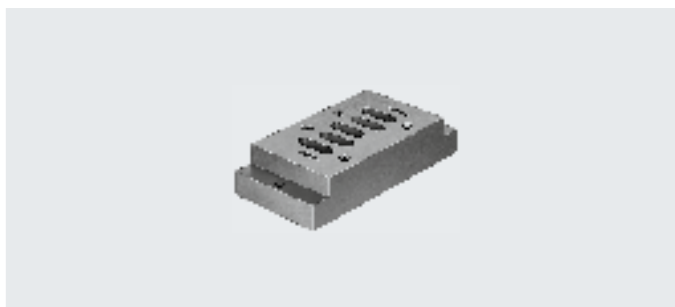
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Accessories

Individual sub-base NAU

Connections underneath

Materials:
Die-cast aluminium
Anodised aluminium



General technical data

Conforms to standard	ISO 5599-1
Type of mounting	Via through-hole

Materials

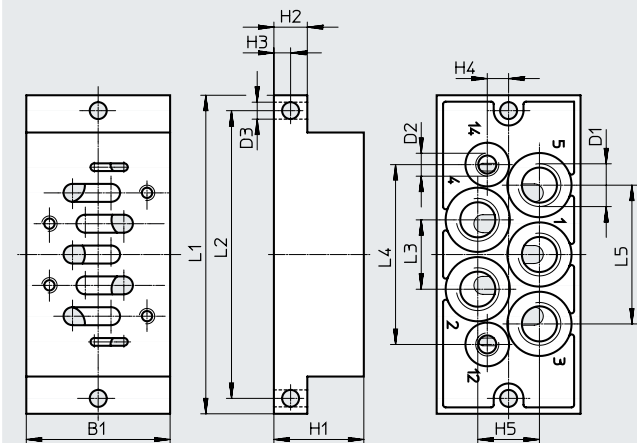
Type	NAU-1/4	NAU-3/8	NAU-1/2	NAU-3/4
Sub-base	Die-cast aluminium			Anodised aluminium
Note on materials	Free of copper and PTFE			-

Operating and environmental conditions

Type	NAU-1/4	NAU-3/8	NAU-1/2	NAU-3/4
Certification	c UL - Recognized (OL)		-	-

Dimensions

Download CAD data → www.festo.com



Type	B1	D1	D2	D3	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
NAU-1/4-1B-ISO	46	G1/4	G1/8	5.5	30	10	5	7.5	20	110	98	23	60.7	46
NAU-3/8-2B-ISO	56	G3/8	G1/8	6.6	35	13	6.5	8.3	24	124	112	27	70	54
NAU-1/2-3B-ISO	71	G1/2	G1/8	6.6	32	18	9	10	30	149	136	33	90	66
NAU-3/4-4B-ISO	85	G3/4	G1/8	9	28	19	9.5	12	37	186	170	42	111	84

Accessories

Ordering data Designation to VDMA	Pneumatic connection		Weight [g]	Part No.	Type
	1, 2, 3, 4, 5	12, 14			
VDMA 24345-B-1	G1/4	G1/8	–	★ 9485	NAU-1/4-1B-ISO
VDMA 24345-B-2	G3/8	G1/8	450	11416	NAU-3/8-2B-ISO
VDMA 24345-B-3	G1/2	G1/8	660	10337	NAU-1/2-3B-ISO
VDMA 24345-B-4	G3/4	G1/8	1080	152814	NAU-3/4-4B-ISO

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

Accessories

Manifold sub-base

NAV

VABV

Connections underneath

Materials:

Die-cast aluminium

Anodised aluminium

Dimensions NAV → page115



General technical data					
Type	NAV-1/4	NAV-3/8	NAV-1/2	NAV-3/4	VABV
Conforms to standard	ISO 5599-1				–
Based on standard	–				ISO 5599-1
Maximum number of valve positions	–				1
Suitability for vacuum	–				Yes
Exhaust function	–				Via throttle plate

Materials					
Type	NAV-1/4	NAV-3/8	NAV-1/2	NAV-3/4	VABV
Sub-base	Die-cast aluminium			Anodised aluminium	Die-cast aluminium
Note on materials	–			–	RoHS-compliant

Operating and environmental conditions					
Type	NAV-1/4	NAV-3/8	NAV-1/2	NAV-3/4	VABV
Operating medium	–	–	–	–	Compressed air to ISO 8573-1:2010 [7:4:4]
Pilot medium	–	–	–	–	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	–	–	–	–	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	–	–	–	–	0 ... 10
Ambient temperature [°C]	–	–	–	–	–10 ... +50
Temperature of medium [°C]	–	–	–	–	–10 ... +50
Storage temperature [°C]	–	–	–	–	–20 ... +60
Corrosion resistance class CRC ¹⁾	–	–	–	–	0
CE marking (see declaration of conformity) ²⁾	–	–	–	–	To EU Low Voltage Directive
Certification	–	UL – Recognized (OL)	–	–	–

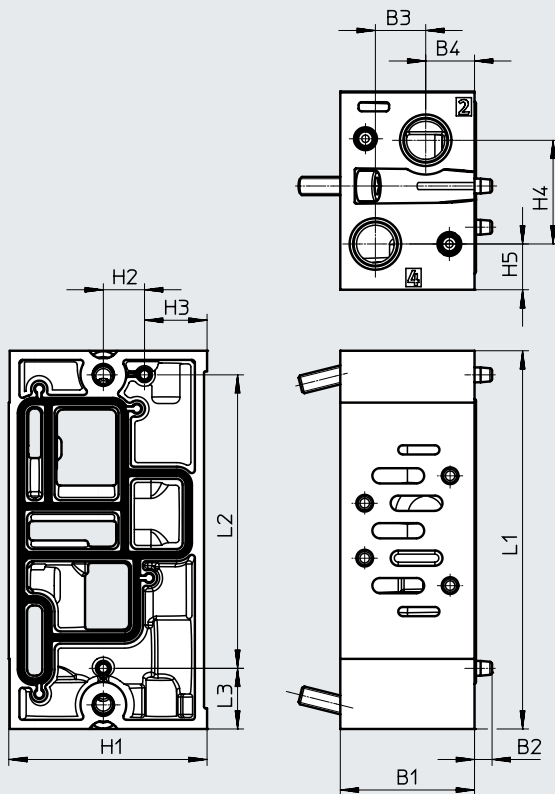
1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually unimportant standards-based parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

2) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Accessories

Dimensions – VABV

Download CAD data → www.festo.com

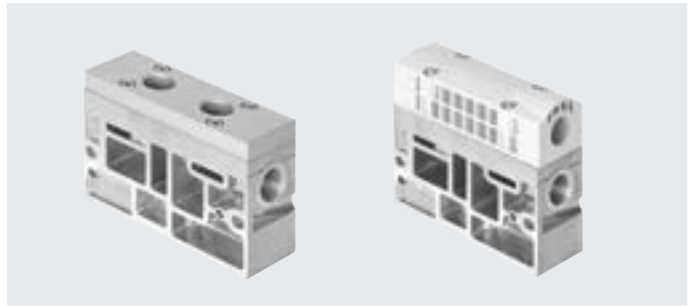
Type	B1	B2	B3	H1	H2	H3	H4	H5	L1	L2	L3
VABV-S1-1SB-G38	44	16.5	16	65	13.5	20.5	34	15	124	96.2	19.9
VABV-S1-1SB-N38											
VABV-S1-2SB-G12	59	19.5	22				35.5	14.5			
VABV-S1-2SB-N12											

Ordering data						
Designation to VDMA	Width	Pneumatic connection		Weight [g]	Part No.	Type
		2, 4	12, 14			
VDMA 24345-C-1	–	G1/4	G1/8	240	★ 10173	NAV-1/4-1C-ISO
–	44 mm	G3/8	–	490	8029812	VABV-S1-1SB-G38
–	–	3/8 NPT	–	490	8029813	VABV-S1-1SB-N38
VDMA 24345-C-2	–	G3/8	G1/8	400	11305	NAV-3/8-2C-ISO
–	59 mm	G1/2	–	670	8029814	VABV-S1-2SB-G12
–	–	1/2 NPT	–	670	8029815	VABV-S1-2SB-N12
VDMA 24345-C-3	–	G1/2	G1/8	700	10175	NAV-1/2-3C-ISO
VDMA 24345-C-4	–	G3/4	G1/8	1400	11139	NAV-3/4-4C-ISO

Accessories

Supply plate VABF

Materials:
Die-cast aluminium
Wrought aluminium alloy
PA



General technical data

Based on standard	ISO 5599-1
Maximum number of valve positions	1
Suitability for vacuum	Yes
Exhaust function	Via throttle plate

Materials

Type	VABF-S1-1-P1A11	VABF-S1-1-P1A12
Exhaust plate	Wrought aluminium alloy	PA
Supply plate	Anodised aluminium	Die-cast aluminium
Note on materials	RoHS-compliant	RoHS-compliant

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[bar] 0 ... 10
Ambient temperature	[°C] -10 ... +50
Temperature of medium	[°C] -10 ... +50
Storage temperature	[°C] -20 ... +60
Corrosion resistance class CRC ¹⁾	0
CE marking (see declaration of conformity) ²⁾	To EU Low Voltage Directive

1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually unimportant standards-based parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

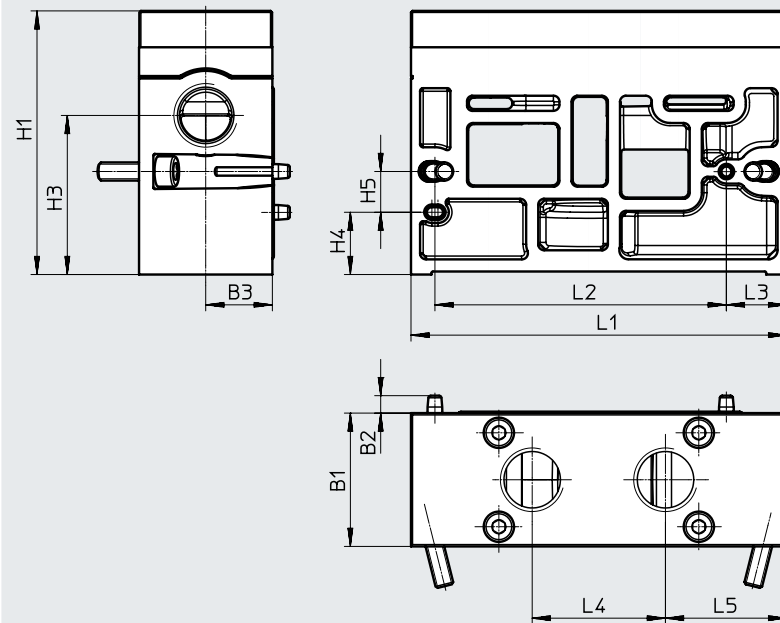
2) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Accessories

Dimensions

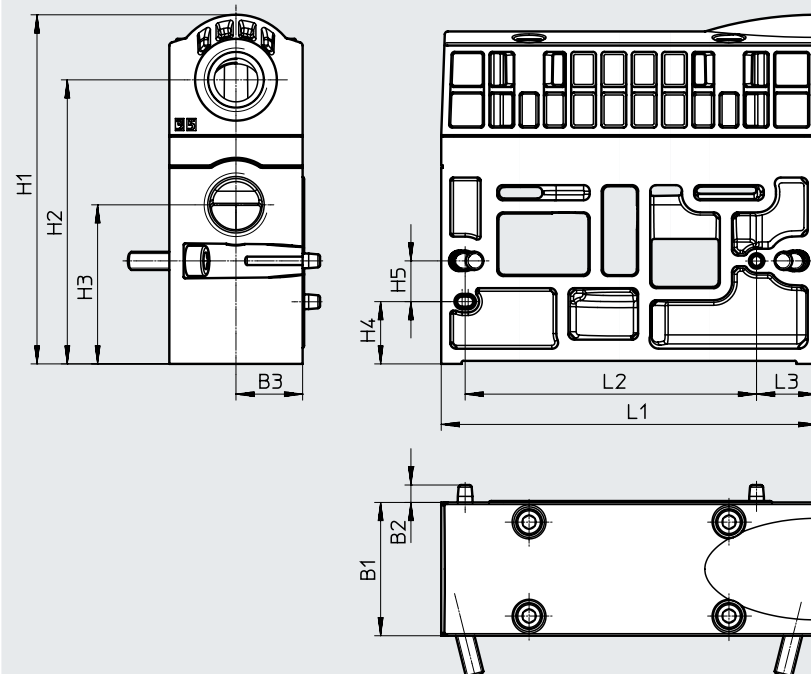
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Port 3 and 5 separated



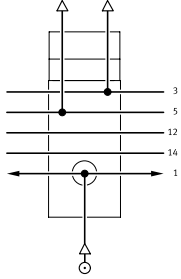
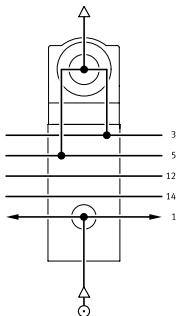
Type	B1	B2	B3	H1	H3	H4	H5	L1	L2	L3	L4	L5
VABFS1-1-P1A11	44	5.5	22	87	52.5	20.5	13.5	124	96.2	19.9	44	40

Port 3 and 5 combined



Type	B1	B2	B3	H1	H2	H3	H4	H5	L1	L2	L3
VABFS1-1-P1A12	44	5.8	22	115.2	93.8	52.5	20.5	13.5	124	96.2	19.9

Accessories

Ordering data		Description	Pneumatic connection	Weight [g]	Part No.	Type
Width	1, 3, 5					
44 mm		Port 3 and 5 separated	G1/2	660	8037655	VABF-S1-1-P1A11-G12
			1/2 NPT	660	8037656	VABF-S1-1-P1A11-N12
		Port 3 and 5 combined	G1/2	650	8037653	VABF-S1-1-P1A12-G12
			1/2 NPT	650	8037654	VABF-S1-1-P1A12-N12

Accessories

90°-connection plate NAW

Ports at the side and on top

Materials:
Die-cast aluminium
Anodised aluminium

Dimensions → page 115



General technical data					
Conforms to standard		ISO 5599-1			
Operating and environmental conditions					
Type	NAW-1/4	NAW-3/8	NAW-1/2	NAW-3/4	
Note on materials	Free of copper and PTFE			-	
Ordering data					
Designation to VDMA	Pneumatic connection		Weight [g]	Part No.	Type
	2	4			
VDMA 24345-E-1	G1/4	G1/4	360	11304	NAW-1/4-1E-ISO
VDMA 24345-E-2	G3/8	G3/8	600	11307	NAW-3/8-2E-ISO
VDMA 24345-E-3	G1/2	G1/2	920	11309	NAW-1/2-3E-ISO
VDMA 24345-E-4	G3/4	G3/4	1550	11141	NAW-3/4-4E-ISO

Manifold sub-base with 90° connections NAWW

Connections at the side and underneath

Materials:
Die-cast aluminium

Dimensions → page 115



General technical data					
Conforms to standard		ISO 5599-1			
Operating and environmental conditions					
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]			
Ordering data					
Pneumatic connection			Weight [g]	Part No.	Type
	1, 2, 4	12, 14			
G1/4	G1/8		320	152789	NAWW-1/4-1-ISO
G3/8	G1/8		550	152790	NAWW-3/8-2-ISO
G1/2	G1/8		1020	152791	NAWW-1/2-3-ISO

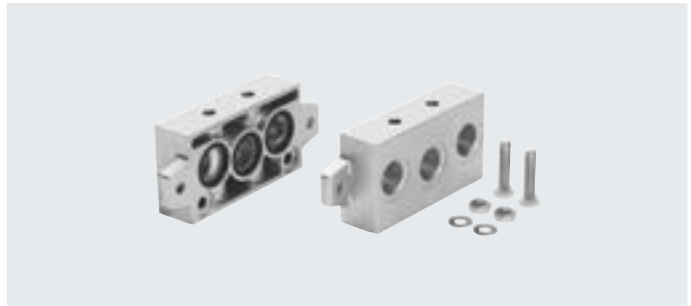
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Accessories

End plate kit NEV

Materials:
Die-cast aluminium
Anodised aluminium

Dimensions NEV → page 115



General technical data

Conforms to standard	ISO 5599-1
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Operating and environmental conditions

Type	NEV-1DA	NEV-2DA	NEV-3DA	NEV-4DA
Note on materials	Free of copper and PTFE			-

Ordering data

Designation to VDMA	Pneumatic connection	Weight [g]	Part No.	Type
	1, 3, 5			
VDMA 24345-D-1	G3/8	280	★ 10174	NEV-1DA/DB-ISO
VDMA 24345-D-2	G1/2	450	11306	NEV-2DA/DB-ISO
VDMA 24345-D-3	G1	760	10176	NEV-3DA/DB-ISO
VDMA 24345-D-4	G1	1390	11140	NEV-4DA/DB-ISO

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

Accessories

End plate VABE

Materials:
Die-cast aluminium



General technical data	
Based on standard	ISO 5599-1
Suitability for vacuum	Yes
Exhaust function	Via throttle plate
Type of mounting	Via through-hole for M6 screw

Materials	
End plate	Die-cast aluminium
Note on materials	RoHS-compliant

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[bar] 0 ... 10
Ambient temperature	[°C] -10 ... +50
Temperature of medium	[°C] -10 ... +50
Storage temperature	[°C] -20 ... +60
Corrosion resistance class CRC ¹⁾	0
CE marking (see declaration of conformity) ²⁾	To EU Low Voltage Directive

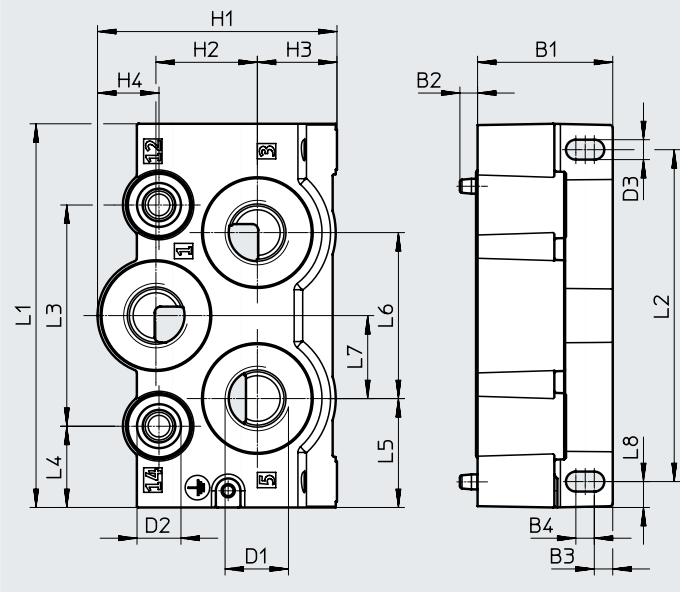
- 1) Corrosion resistance class CRC 0 to Festo standard FN 940070
No corrosion stress. Applies to small, visually unimportant standards-based parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.
- 2) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Accessories

Dimensions

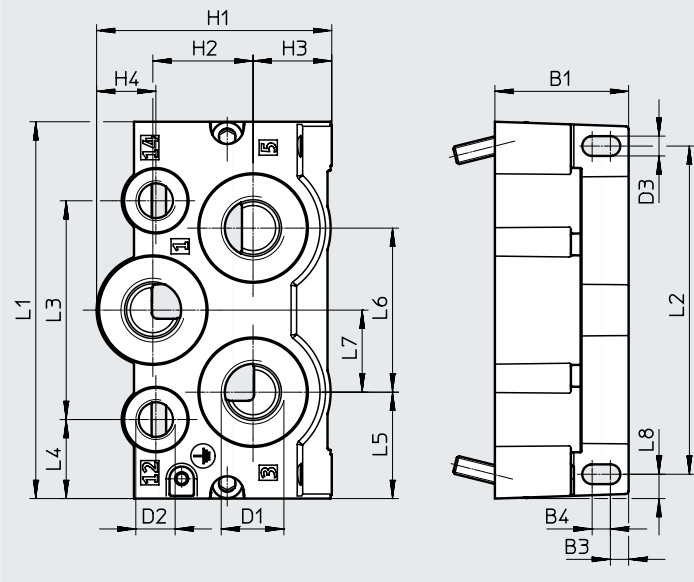
Download CAD data → www.festo.com

Left end plate



Type	B1	B2	B3	B4	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	L4	L5	L6	L7	L8
VABE-S1-1L...-G12	44	5.8	6	6	G1/2	G1/4	6.5	77.9	33	25.9	20	124.9	108	72	26.4	35.4	54	27	8.4
VABE-S1-1L...-N12					1/2 NPT	1/4 NPT													
VABE-S1-2L...-G34					G3/4	G1/4													
VABE-S1-2L...-N34					3/4 NPT	1/4 NPT													

Right end plate



Type	B1	B3	B4	D1	D2	D3	H1	H2	H3	H4	L1	L2	L3	L4	L5	L6	L7	L8
VABE-S1-1R...-G12	44	6	6	G1/2	G1/4	6.5	77.4	33	25.9	19.5	124	108	72	26	35	54	27	8
VABE-S1-1R...-N12				1/2 NPT	1/4 NPT													
VABE-S1-2R...-G34				G3/4	G1/4													
VABE-S1-2R...-N34				3/4 NPT	1/4 NPT													

Accessories

Ordering data						
Width	Pneumatic connection		Weight [g]	Pilot air supply	Part No.	Type
	1, 3, 5	12, 14				
Left end plate						
44 mm	G1/2	G1/4	400	Internal	8032662	VABE-S1-1L-G12
				External	8032660	VABE-S1-1LZ-G12
	1/2 NPT	1/4 NPT	400	Internal	8032663	VABE-S1-1L-N12
				External	8032661	VABE-S1-1LZ-N12
	G3/4	G1/4	360	Internal	8032666	VABE-S1-2L-G34
				External	8032664	VABE-S1-2LZ-G34
	3/4 NPT	1/4 NPT	360	Internal	8032667	VABE-S1-2L-N34
				External	8032665	VABE-S1-2LZ-N34
Right end plate						
44 mm	G1/2	G1/4	410	Internal	8032670	VABE-S1-1R-G12
				External	8032668	VABE-S1-1RZ-G12
	1/2 NPT	1/4 NPT	410	Internal	8032671	VABE-S1-1R-N12
				External	8032669	VABE-S1-1RZ-N12
	G3/4	G1/4	370	Internal	8032674	VABE-S1-2R-G34
				External	8032672	VABE-S1-2RZ-G34
	3/4 NPT	1/4 NPT	370	Internal	8032675	VABE-S1-2R-N34
				External	8032673	VABE-S1-2RZ-N34

Accessories

Cover plate NDV

Materials:
Width 42 mm, 52 mm, 65 mm:
Steel

Width 76 mm:
Wrought aluminium alloy

Dimensions → page 115



General technical data	
Conforms to standard	ISO 5599-1

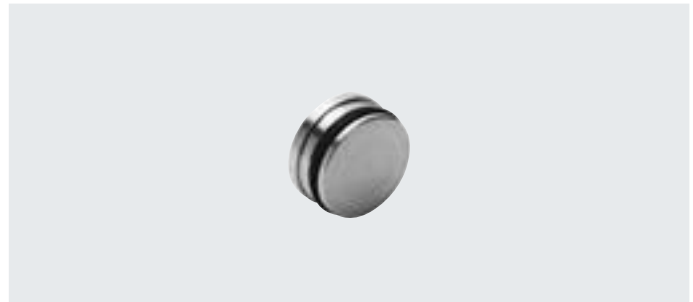
Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)

Ordering data			
Width	Weight [g]	Part No.	Type
42 mm	113	★ 9489	NDV-1-ISO
52 mm	166	11308	NDV-2-ISO
65 mm	314	10340	NDV-3-ISO
76 mm	1480	11142	NDV-4-ISO

Isolating disc NSC

Materials:
Wrought aluminium alloy

Dimensions → 115



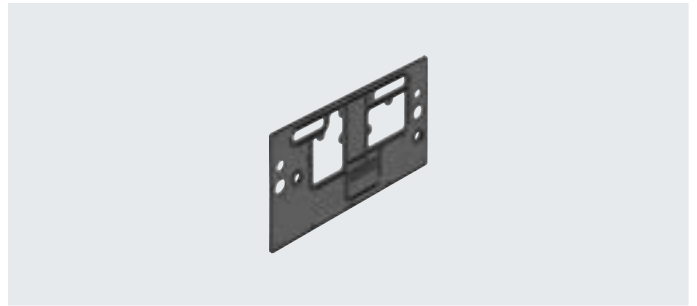
General technical data	
Conforms to standard	ISO 5599-1

Operating and environmental conditions				
Width	42 mm	52 mm	65 mm	76 mm
Note on materials	Free of copper and PTFE			-

Ordering data				
Width	Pneumatic connection	Weight [g]	Part No.	Type
42 mm	G1/4	6	★ 11550	NSC-1/4-1-ISO
52 mm	G3/8	9.2	11908	NSC-3/8-2-ISO
65 mm	G1/2	20	11551	NSC-1/2-3-ISO
76 mm	G3/4	24	11699	NSC-3/4-4-ISO

Accessories

Duct separation VABD

Materials:
Steel, NBR

General technical data

Based on standard	ISO 5599-1
Suitability for vacuum	Yes
Exhaust function	Via throttle plate
Type of mounting	Via through-hole for M6 screw

Materials

Separator plate	Steel
	NBR
Note on materials	RoHS-compliant

Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure [bar]	0 ... 10
Ambient temperature [°C]	-10 ... +50
Temperature of medium [°C]	-10 ... +50
Storage temperature [°C]	-20 ... +60
Corrosion resistance class CRC ¹⁾	0
CE marking (see declaration of conformity) ²⁾	To EU Low Voltage Directive

1) Corrosion resistance class CRC 0 to Festo standard FN 940070

No corrosion stress. Applies to small, visually unimportant standards-based parts such as threaded pins, circlips and clamping sleeves which are usually only available on the market in a phosphated or burnished version (and possibly oiled) as well as to ball bearings (for components < CRC 3) and plain bearings.

2) Additional information: www.festo.com/catalogue/... → Support/Downloads.

Ordering data

Duct separation	Weight [g]	Part No.	Type
Duct 1	60	8029438	VABD-S1-1-P1-C
Duct 3 and duct 5	70	8029439	VABD-S1-1-P2-C
Ducts 1, 3 and 5	75	8029440	VABD-S1-1-P3-C
Ducts 1, 3, 5, 12 and 14	75	8029441	VABD-S1-1-P6-C
Duct 12 and duct 14	60	8036068	VABD-S1-1-P7-C

Accessories

Intermediate plate NZV

For connecting manifold sub-bases of different sizes

Materials:
Die-cast aluminium, anodised



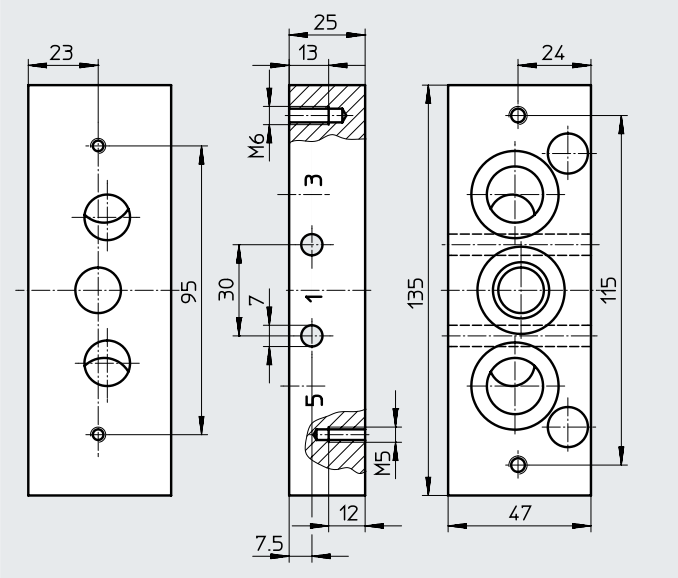
General technical data

Based on standard	ISO 5599-1
Note on materials	Free of copper and PTFE

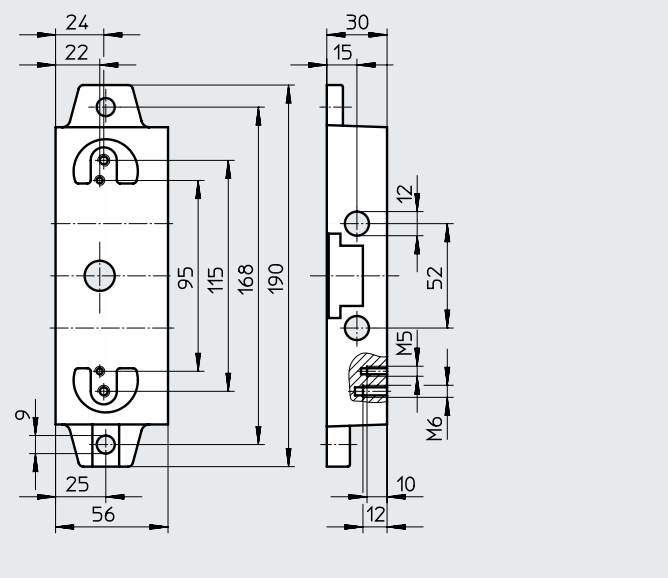
Dimensions

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NZV-1-2



NZV-3-2/1



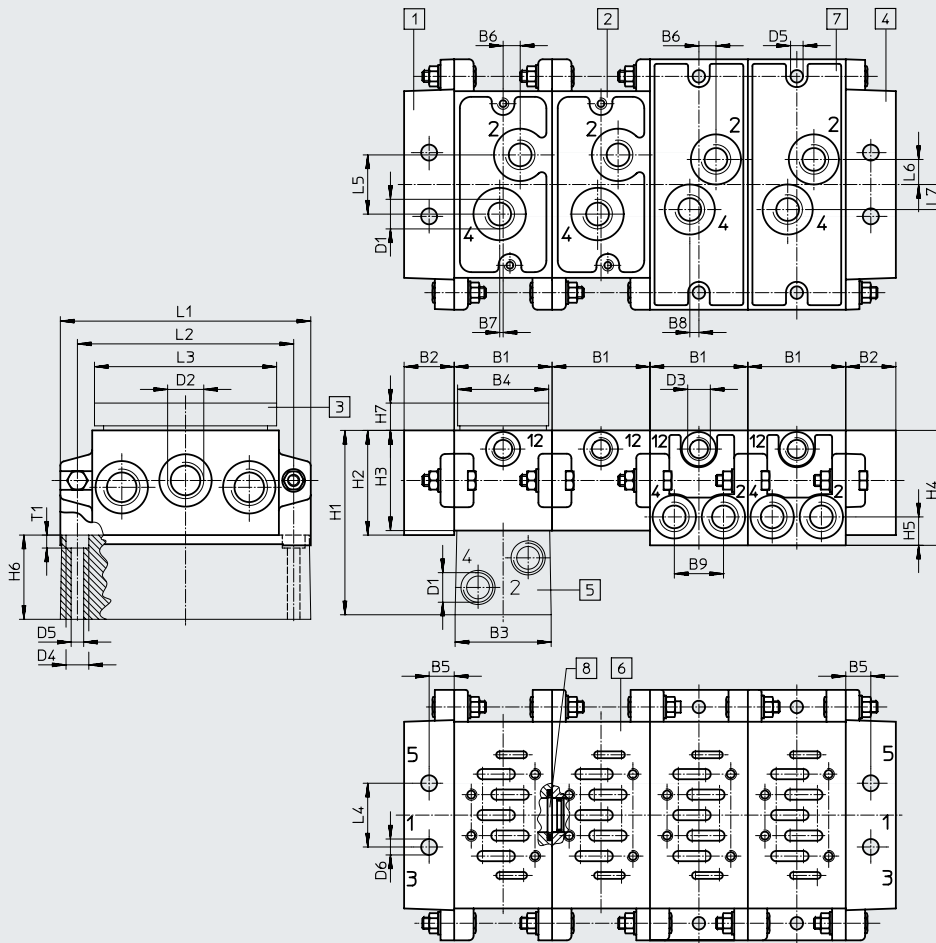
Type	B1	B2	B3	B4	D1	D2	D3	D4	H1	H2	L1	L2	L3	L4	L5	T1	T2
NZV-1-2	47	24	23	-	M6	M5	7	-	25	7.5	135	115	95	30	-	13	12
NZV-3-2/1	56	25	24	22	M6	M5	12	9	30	15	190	168	115	52	95	12	10

Ordering data

	Weight [g]	Part No.	Type
For manifold sub-bases of width 42 mm, 52 mm	393	164940	NZV-1-2
For manifold sub-bases of width 42 mm and 65 mm or 52 mm and 65 mm	473	12911	NZV-3-2/1

Accessories

Dimensions – Manifold assembly

Download CAD data → www.festo.com

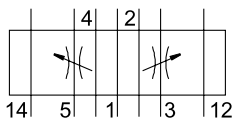
- [1] Left end plate, end plate kit NEV [3] Cover plate NDV [5] 90° connection plate NAW [7] Manifold sub-base with 90° connections NAWW
 [2] Manifold sub-base NAV [4] Right end plate, end plate kit NEV [6] Port pattern to ISO 5599-1 [8] Isolating disc NSC

Width	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1	D2	D3	D4 ∅	D5 ∅	D6 ∅
42 mm	43	22	42	40	11	7.5	1.5	4	21.6	G1/4	G3/8	G1/8	10	5.5	7
52 mm	56	26	55	50	13	6	5	6	27	G3/8	G1/2	G1/8	11	6.6	9
65 mm	71	30	70	70	15	8	6	6	35.5	G1/2	G1	G1/8	15	9	12
76 mm	82	30	80	80	15	9	8	-	-	G3/4	G1	G1/8	15	9	12

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

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

Accessories



Exhaust air flow control for 3 and 5.



General technical data			
Type	VABFS1-1-F1B1-C	VABFS1-2-F1B1-C	GRO-ZP-3-ISO
Based on standard	ISO 5599-1		
Pneumatic vertical stacking	Throttle plate, exhaust air flow control		
Mounting position	Any		
Type of mounting	Via through-hole		
Standard nominal flow rate	[l/min]	1100	–
Degree of protection		IP65	–
		NEMA4	–

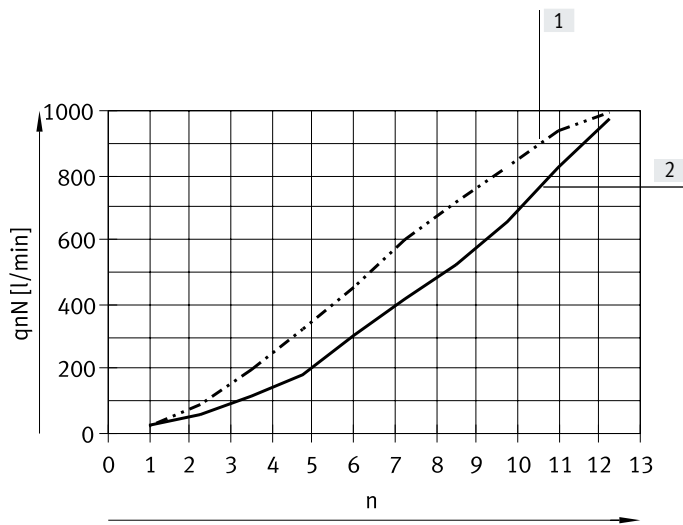
Materials	
Housing	Die-cast aluminium
Note on materials	RoHS-compliant

Operating and environmental conditions			
Type	VABFS1-1-F1B1-C	VABFS1-2-F1B1-C	GRO-ZP-3-ISO
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		Compressed air to ISO 8573-1:2010 [7:--:--]
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[MPa]	–0.09 ... +1	–
	[bar]	–0.9 ... +10	0 ... +16
Input pressure 1	[MPa]	–	–
	[bar]	–	+0.5 ... +10
	[psi]	–	7.25 ... 145
Ambient temperature	[°C]	–5 ... +50	–20 ... +80
Temperature of medium	[°C]	–	–20 ... +80

Accessories

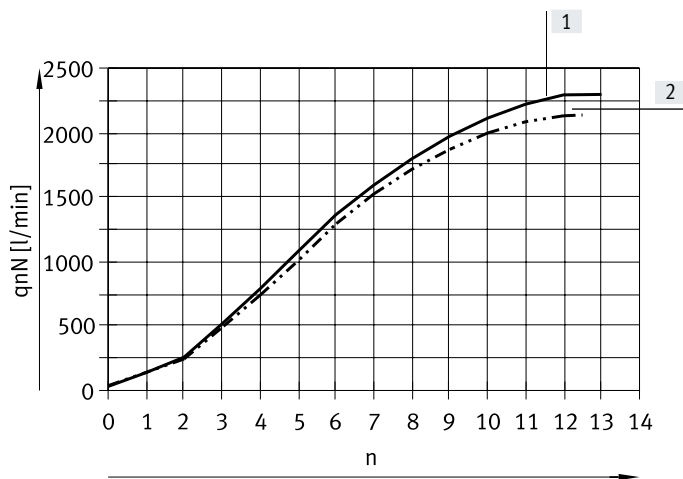
Standard nominal flow rate q_{nN} as a function of the turns n of the regulating screw

VABF-S1-1-F1B1-C



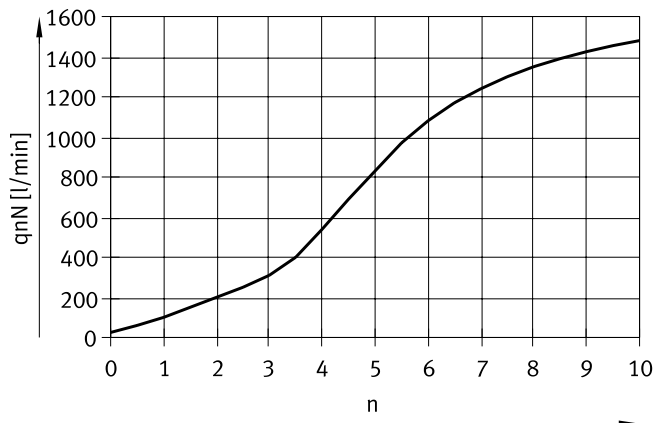
- [1] Flow control screw from 4 to 5
- [2] Flow control screw from 2 to 3

VABF-S1-2-F1B1-C



- [1] Flow control screw from 2 to 3
- [2] Flow control screw from 4 to 5

GRO-ZP-3-ISO

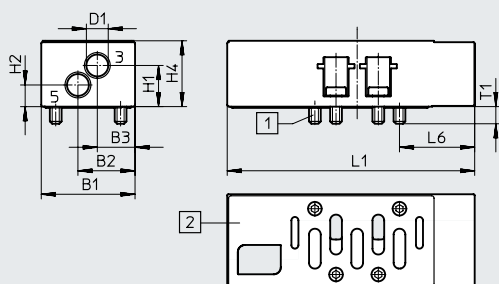


Accessories

Dimensions

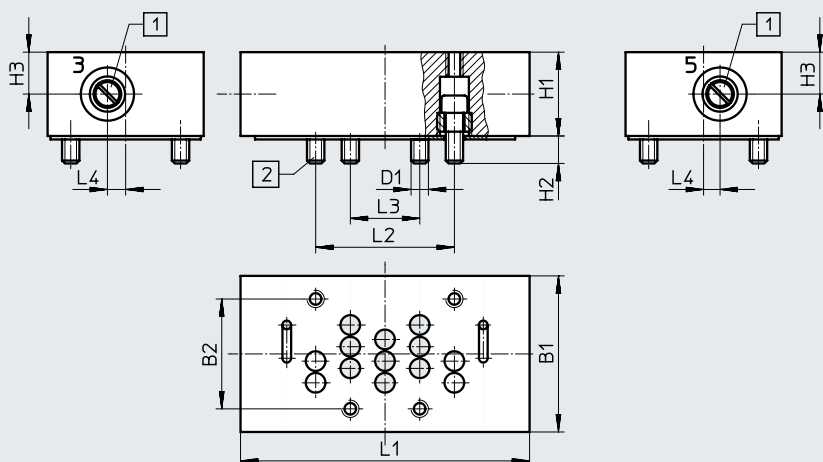
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VABF-S1-...



- [1] Captive retaining screws
- [2] Port pattern to ISO 5599-1

GRO-ZP-3-ISO



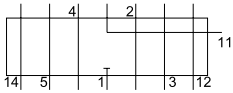
- [1] Adjusting screw for flow control
- [2] Captive retaining screws

Type	Width	B1	B2	B3	D1	H1	H2	H3	H4	L1	L2	L3	L5	L6	T1
VABF-S1-1-F1B1-C	42 mm	39.9	24.3	16.1	9.3	17.5	9.2	-	28	105.3	-	-	-	32	7.3
VABF-S1-2-F1B1-C	52 mm	52	32.5	22.5	13.4	29.5	13.5	-	45	131	-	-	-	40.9	10
GRO-ZP-3-ISO	65 mm	70	48	-	M8	33	12	16.5	-	132	64	32	7	-	-

Ordering data

Circuit symbol	Description	Width	Weight [g]	Part No.	Type
	Exhaust air flow control valve	42 mm	220	549102	VABF-S1-1-F1B1-C
		52 mm	565	555788	VABF-S1-2-F1B1-C
		65 mm	850	119674	GRO-ZP-3-ISO

Accessories



Alternative compressed air supply for port 1 of the mounted valve.



General technical data		
Type	VABF-S1-1-P1A3-G38	VABF-S1-2-P1A3-G12
Based on standard	ISO 5599-1	
Pneumatic vertical stacking	Alternative compressed air supply for 1	
Mounting position	Any	
Type of mounting	On individual sub-base, on manifold sub-base	
Standard nominal flow rate	[l/min] 1300	2800
Pneumatic connection 1	G3/8	G1/2
Degree of protection	IP65	IP65
	NEMA4	NEMA4

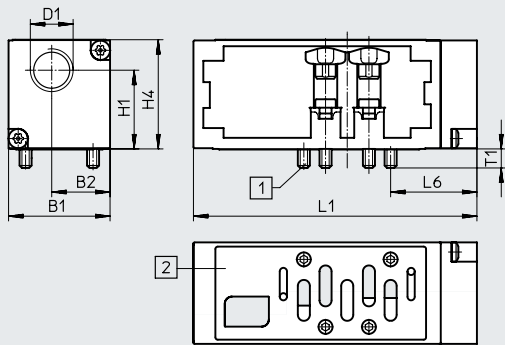
Materials	
Housing	Die-cast aluminium
Note on materials	RoHS-compliant

Operating and environmental conditions		
Type	VABF-S1-1-P1A3-G38	VABF-S1-2-P1A3-G12
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[MPa]	-0.09 ... +1
	[bar]	-0.9 ... +10
Input pressure 1	[MPa]	+0.05 ... +1
	[bar]	+0.5 ... +10
	[psi]	7.25 ... 145
Ambient temperature	[°C]	-5 ... +50

Accessories

Dimensions

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[1] Captive screws

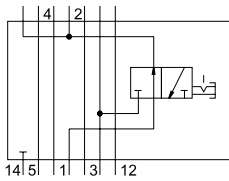
[2] Port pattern to ISO 5599-1

Type	B1	B2	D1	H1	H4	L1	L6	T1
VABF-S1-1-P1A3-G38	42.1	24.2	G3/8	32.7	45.3	117.6	35.8	7.9
VABF-S1-2-P1A3-G12	54	31	G1/2	42.4	58.9	136	38	10

Ordering data

Circuit symbol	Description	Width	Standard nominal flow rate [l/min]	Weight [g]	Part No.	Type
	Vertical supply plate	42 mm	1300	340	549100	VABF-S1-1-P1A3-G38
		52 mm	2800	605	555785	VABF-S1-2-P1A3-G12

Accessories



Vertical pressure shut-off plate for blocking duct 1 and duct 14 upstream of a valve.



General technical data		VABF-S1-1-L1D1-C	VABF-S1-2-L1D1-C
Type		VABF-S1-1-L1D1-C	VABF-S1-2-L1D1-C
Based on standard		ISO 5599-1	
Pneumatic vertical stacking		Shut-off for 1	Alternative compressed air supply for 1
Mounting position		Any	
Type of mounting		On individual sub-base, on manifold sub-base	
Standard nominal flow rate	[l/min]	1200	1950
Pneumatic connection 1		G3/8	G1/2
Degree of protection		IP65	IP65
		NEMA4	NEMA4

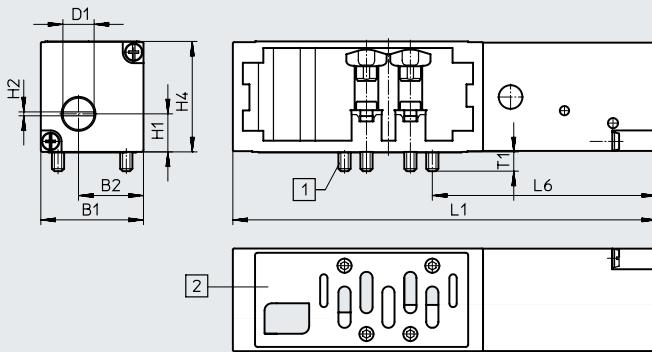
Materials	
Housing	Die-cast aluminium
Note on materials	RoHS-compliant

Operating and environmental conditions		VABF-S1-1-L1D1-C	VABF-S1-2-L1D1-C
Type		VABF-S1-1-L1D1-C	VABF-S1-2-L1D1-C
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	[MPa]	-0.09 ... +1	-0.09 ... +1
	[bar]	-0.9 ... +10	-0.9 ... +10
Input pressure 1	[MPa]	-	+0.05 ... +1
	[bar]	-	+0.5 ... +10
	[psi]	-	7.25 ... 145
Ambient temperature	[°C]	-5 ... +50	-5 ... +50

Accessories

Dimensions

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[1] Captive screws

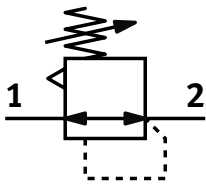
[2] Port pattern to ISO 5599-1

Type	B1	B2	D1	H1	H2	H4	L1	L6	T1
VABF-S1-1-L1D1-C	42.1	26.7	12.8	15.6	1.6	45.3	173.8	92	7.9
VABF-S1-2-L1D1-C	54	32.6	14	21.3	1.6	58.7	191.2	93.2	10

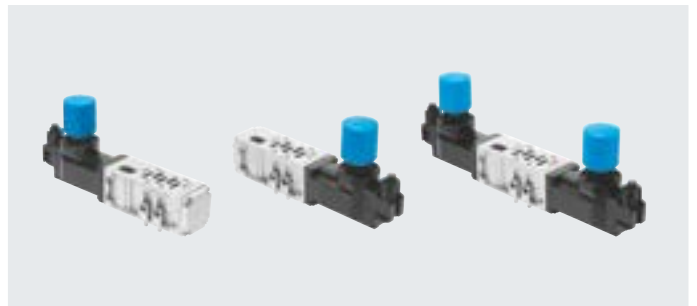
Ordering data

Circuit symbol	Description	Width	Standard nominal flow rate [l/min]	Weight [g]	Part No.	Type
	Vertical pressure shut-off plate	42 mm	1200	600	549103	VABF-S1-1-L1D1-C
		52 mm	1950	1030	555790	VABF-S1-2-L1D1-C

Accessories



The pressure regulator enables a particular pressure in the regulated port to be set manually upstream or downstream of the valve.



General technical data				
Type		VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Width	[mm]	42	52	65
Based on standard		ISO 5599-1	ISO 5599-1	ISO 5599-1
Pneumatic vertical stacking		Pressure regulators	Pressure regulators	Pressure regulators
Design		–	–	Piston
Regulator function		Output pressure constant	Output pressure constant	–
		With secondary exhausting	With secondary exhausting	–
Mounting position		Any	Any	–
Type of mounting		On individual sub-base	On individual sub-base	–
		On manifold sub-base	On manifold sub-base	–
Optional pressure gauge		Possible	Possible	–
Pressure gauge connection		With retaining clamp	With retaining clamp	–
Degree of protection		IP65	IP65	–
		NEMA4	NEMA4	–

Materials				
Type		VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Regulator housing		Die-cast aluminium	Die-cast aluminium	Die-cast aluminium, steel
Control unit		PA	PA	–
Seals		–	–	NBR
Note on materials		RoHS-compliant	RoHS-compliant	RoHS-compliant
		Free of paint-wetting impairment substances	Free of paint-wetting impairment substances	Contains paint-wetting impairment substances

Operating and environmental conditions				
Type		VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		–
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		–
Input pressure 1	[MPa]	0.05 ... 1	0.05 ... 1	–
	[bar]	+0.5 ... +10	+0.5 ... +10	Max. 14
	[psi]	7.25 ... 145	7.25 ... 145	–
Ambient temperature	[°C]	–5 ... +50	–5 ... +50	–
Certification		–	–	UL – Recognized (OL)

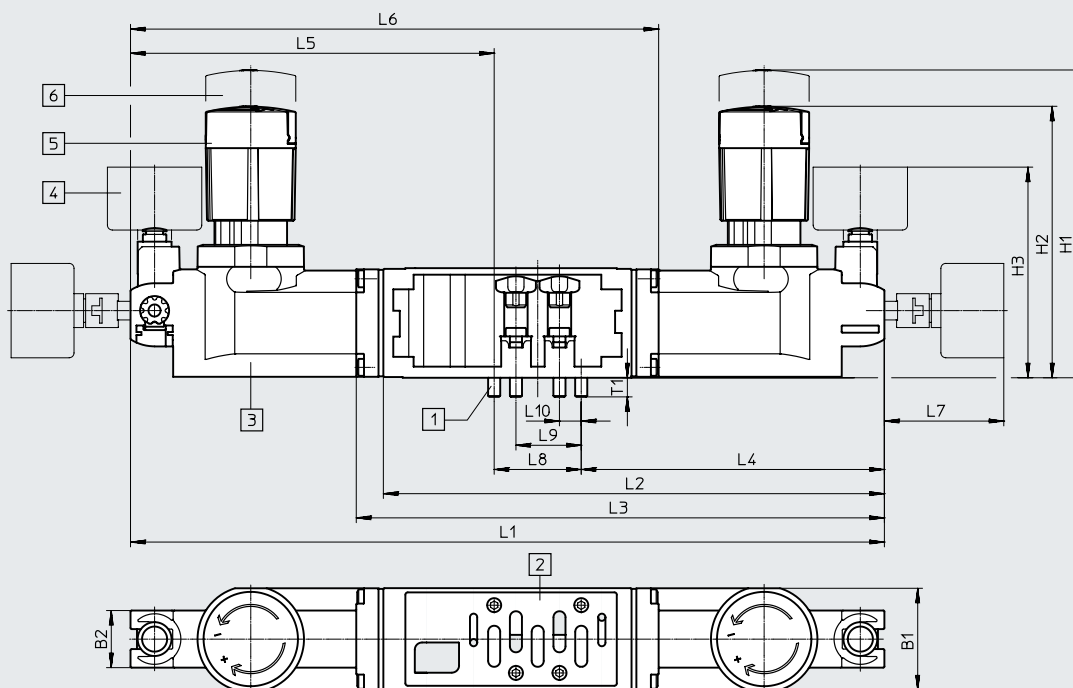
Product weight				
Type		VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Regulated port	1	640 g	1190 g	1220 g
	2	640 g	1230 g	1220 g
	4	640 g	1230 g	1220 g
	2 and 4	920 g	1990 g	1770 g

Accessories

Dimensions

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VABFS1-1-..., VABFS1-2-...



- [1] Captive retaining screws
- [2] Port pattern to ISO 5599-1
- [3] Regulator housing
- [4] Pressure gauge
- [5] Regulator knob, locked
- [6] Regulator knob during pressure setting

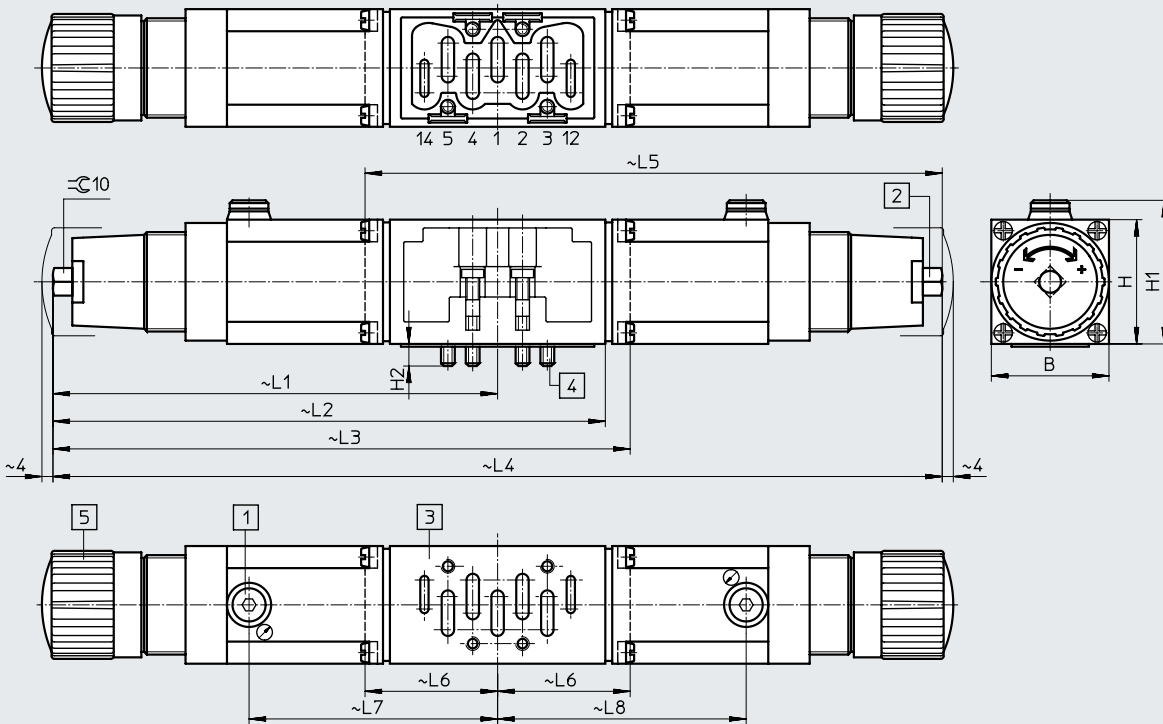
Type	B1	B2	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	T1
Regulator plate, width 42 mm																
VABFS1-1-R1...	42.1	23.6	115	112	87.1	-	207.1	-	125.3	-	-	49.4	36	27	9	7.9
VABFS1-1-R2...						-	-	216.2	125.3	-	-					
VABFS1-1-R3...						-	-	-	125.3	150.3	216.1					
VABFS1-1-R4...						311.6	-	-	-	-	-					
VABFS1-1-R5...						311.6	-	-	-	-	-					
VABFS1-1-R6...						-	-	216.2	125.3	-	-					
VABFS1-1-R7...						-	-	-	125.3	150.3	216.1					
Regulator plate, width 52 mm																
VABFS1-2-R1...	54	23.6	182	167	94.4	-	250.2	-	152.2	-	-	49.4	48	38	12	10
VABFS1-2-R2...						-	-	264.2	152.2	-	-					
VABFS1-2-R3...						-	-	-	152.2	180.2	264.2					
VABFS1-2-R4...						380.4	-	-	-	-	-					
VABFS1-2-R5...						380.4	-	-	-	-	-					
VABFS1-2-R6...						-	-	264.2	152.2	-	-					
VABFS1-2-R7...						-	-	-	152.2	180.2	264.2					

Accessories

Dimensions

LR-ZP...-3

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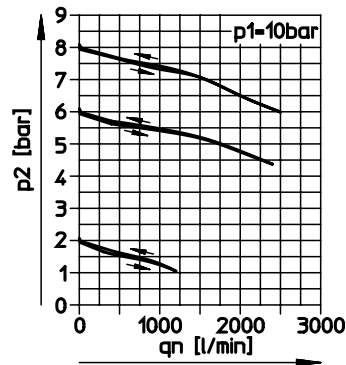
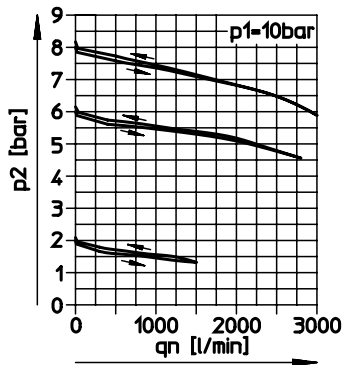
- [1] Pressure gauge connection G1/8
- [2] Adjusting screw
- [3] Port pattern to ISO 5599-1
- [4] Captive retaining screws
- [5] Rotary knob

Type	B	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
Regulator plate, width 65 mm												
LR-ZP-P-D-3	70	63	65	14	201.5	-	274	-	-	-	119	-
LR-ZP-B-D-3					201.5	-	-	-	274	72.5	-	119
LR-ZP-A-D-3					201.5	-	-	403	-	-	119	119
LR-ZP-A/B-D-3					201.5	260	-	-	-	-	119	-

Flow rate q_n as a function of output pressure p_2

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

LR-ZP-P-D-3



Accessories

Ordering data	Regulated port	Regulator	Control range	Part No.	Type
Regulator plate, width 42 mm					
	1	P	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	546817	VABF-S1-1-R1C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	546818	VABF-S1-1-R1C2-C-10
	2	B	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	546821	VABF-S1-1-R2C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	546822	VABF-S1-1-R2C2-C-10
	2, reversible	B	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	546827	VABF-S1-1-R6C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	546828	VABF-S1-1-R6C2-C-10
	4	A	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	546819	VABF-S1-1-R3C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	546820	VABF-S1-1-R3C2-C-10
	4, reversible	A	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	546829	VABF-S1-1-R7C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	546830	VABF-S1-1-R7C2-C-10
	2 and 4	AB	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	546823	VABF-S1-1-R4C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	546824	VABF-S1-1-R4C2-C-10
	2 and 4, reversible	AB	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	546825	VABF-S1-1-R5C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	546826	VABF-S1-1-R5C2-C-10

Accessories

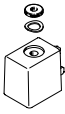
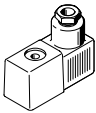
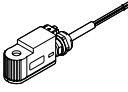

Ordering data	Regulated port	Regulator	Control range	Part No.	Type
Regulator plate, width 52 mm					
	1	P	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	555757	VABF-S1-2-R1C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	555758	VABF-S1-2-R1C2-C-10
	2	B	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	555759	VABF-S1-2-R2C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	555760	VABF-S1-2-R2C2-C-10
	2, reversible	B	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	555767	VABF-S1-2-R6C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	555768	VABF-S1-2-R6C2-C-10
	4	A	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	555761	VABF-S1-2-R3C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	555762	VABF-S1-2-R3C2-C-10
	4, reversible	A	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	555769	VABF-S1-2-R7C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	555770	VABF-S1-2-R7C2-C-10
	2 and 4	AB	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	555763	VABF-S1-2-R4C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	555764	VABF-S1-2-R4C2-C-10
	2 and 4, reversible	AB	0.05 ... 0.6 MPa 0.5 ... 6 bar 7.25 ... 87 psi	555765	VABF-S1-2-R5C2-C-6
			0.05 ... 1 MPa 0.5 ... 10 bar 7.25 ... 145 psi	555766	VABF-S1-2-R5C2-C-10

Accessories


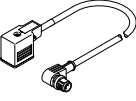
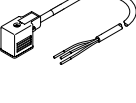


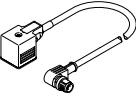
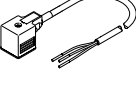

Ordering data		Regulated port	Regulator	Control range	Part No.	Type
Regulator plate, width 65 mm						
	1	P	0 ... 12 bar	35968	LR-ZP-P-D-3	
	2	B	0.5 ... 12 bar	35426	LR-ZP-B-D-3	
	4	A	0.5 ... 12 bar	35971	LR-ZP-A-D-3	
	2, 4	AB	0.5 ... 12 bar	35429	LR-ZP-A/B-D-3	
Ordering data – Accessories						
		Width	Weight [g]	Part No.	Type	
Pressure gauge for intermediate pressure regulator plates LR-ZP		65 mm	64.5	345395	MA-40-16-1/8	

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


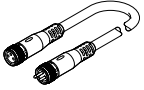
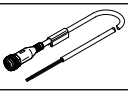
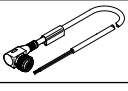

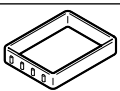
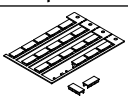




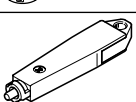
Accessories

Ordering data	Description	Voltage	Cable length [m]	Part No.	Type
Solenoid coil MSF					
	Solenoid coil	12 V DC	–	34410	MSFG-12-OD
		24 V DC and 42 V AC, 50 ... 60 Hz	–	34411	MSFG-24/42-50/60-OD
		42 V DC	–	34413	MSFG-42-OD
		24 V AC	–	34415	MSFW-24-50/60-OD
		48 V AC, 50 ... 60 Hz	–	34418	MSFW-48-50/60-OD
		110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz	–	34420	MSFW-110-50/60-OD
		230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz	–	34422	MSFW-230-50/60-OD
		240 V AC, 50 ... 60 Hz	–	34424	MSFW-240-50/60-OD
	Solenoid coil with socket MSSD	12 V DC	–	4526	MSFG-12
		24 V DC and 42 V AC, 50 ... 60 Hz	–	4527	MSFG-24/42-50/60
		24 V AC	–	4534	MSFW-24-50/60
		110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz	–	6720	MSFW-110-50/60
		230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz	–	4540	MSFW-230-50/60
	Solenoid coil for ATEX environment	24 V DC	1	8059804	VACF-B-K1-1-1-EX4-M
			5	8059805	VACF-B-K1-1-5-EX4-M
		24 V AC, 50 ... 60 Hz	1	8059808	VACF-B-K1-1A-1-EX4-M
			5	8059812	VACF-B-K1-16B-5-EX4-M
		110 V AC, 50 ... 60 Hz	1	8059811	VACF-B-K1-16B-1-EX4-M
			5	8059812	VACF-B-K1-16B-5-EX4-M
		230 V AC, 50 ... 60 Hz	1	8059809	VACF-B-K1-3A-1-EX4-M
5	8059810		VACF-B-K1-3A-5-EX4-M		
Solenoid coil MSN1					
	Solenoid coil	24 V DC	–	123060	MSN1G-24DC-OD
		12 V DC and 24 V AC, 50 ... 60 Hz	–	170152	MSN1W-24AC/12DC
		110 V AC, 50 ... 60 Hz	–	123061	MSN1W-110AC-OD
		230 V AC, 50 ... 60 Hz	–	123062	MSN1W-230AC-OD

Accessories

Ordering data		Description	Cable length [m]	Part No.	Type	
Electrical accessories for solenoid coil MSF						
	Angled socket	Screw terminal	Cable connector Pg9	–	34431	MSSD-F
			Cable connector M16	–	59710	MSSD-F-M16
		Insulation displacement technology	Cable connector M16	–	192746	MSSD-F-S-M16
	PUR cable sheath, connection technology M12x1 A-coded	24 AC/DC	• Signal status indication	0.3	3679773	NEBV-B2W3F-P-K-0.3-N-M12W3
			• Protective circuit	0.6	3679774	NEBV-B2W3F-P-K-0.6-N-M12W3
		110 AC/DC	–	0.3	3579463	NEBV-B2W3-K-0.3-N-M12W3
			–	0.6	3579464	NEBV-B2W3-K-0.6-N-M12W3
	PUR cable sheath	24 AC/DC	• Signal status indication	0.6	3679778	NEBV-B2W3F-P-K-0.6-N-LE3
		230 AC/DC	–			
	PVC cable sheath	24 V DC	Signal status indication	2.5	30935	KMF-1-24DC-2.5-LED
				5	30937	KMF-1-24DC-5-LED
				10	193458	KMF-1-24DC-10-LED
230 V AC	–	–	2.5	30936	KMF-1-230AC-2.5	
			5	30938	KMF-1-230AC-5	
	Illuminating seal	12 ... 24 V DC	Signal status indication	–	19143	MF-LD-12-24DC
		230 V DC/V AC	Signal status indication	–	19144	MF-LD-230AC
Electrical accessories for solenoid coil MSN1 and MD						
	Angled socket	Screw terminal	Cable connector Pg9	–	34583	MSSD-C
			Cable connector M16	–	539709	MSSD-C-M16
		Insulation displacement technology	Cable connector M16	–	192748	MSSD-C-S-M16
	PUR cable sheath, connection technology M12x1 A-coded	24 AC/DC	• Signal status indication	0.3	3679771	NEBV-A1W3F-P-K-0.3-N-M12W3
			• Protective circuit	0.6	3679772	NEBV-A1W3F-P-K-0.6-N-M12W3
		110 AC/DC	–	0.3	3579461	NEBV-A1W3-K-0.3-N-M12W3
			–	0.6	3579462	NEBV-A1W3-K-0.6-N-M12W3
	PUR cable sheath	24 AC/DC	• Signal status indication	0.6	3679776	NEBV-A1W3F-P-K-0.6-N-LE3
		230 AC/DC	–			
	PVC cable sheath	24 V DC	Signal status indication	2.5	30931	KMC-1-24DC-2.5-LED
				5	30933	KMC-1-24DC-5-LED
				10	193459	KMC-1-24DC-10-LED
230 V AC	–	–	2.5	30932	KMC-1-230AC-2.5	
			5	30934	KMC-1-230AC-5	
	Illuminating seal	12 ... 24 V DC	Signal status indication	–	19145	MC-LD-12-24DC
		230 V DC/V AC	Signal status indication	–	19146	MC-LD-230AC

Accessories

Ordering data		Description	Part No.	Type	PU ¹⁾
Electrical accessories for valves with central plug					
	Angled socket, M12, 4-pin, type A, screw terminal	–	12956	SIE-WD-TR	1
	Modular system for a choice of connecting cables → Internet: nebu	0.1 ... 30 m	–	NEBU-...	–
	Connecting cable, straight socket, M12x1, 5-pin, open cable end, 4-wire	2.5	550326	NEBU-M12G5-K-2.5-LE4	1
		5	541328	NEBU-M12G5-K-5-LE4	1
	Connecting cable, angled socket, M12x1, 5-pin, open cable end, 4-wire	2.5	550325	NEBU-M12W5-K-2.5-LE4	1
		5	541329	NEBU-M12W5-K-5-LE4	1
Pressure gauge					
	With cartridge connection for regulator	10 bar	543487	PAGN-26-16-P10	1
		6 bar	543488	PAGN-26-10-P10	1
Seal					
	Enables the valves with central plug M12, 3-pin, to be assembled on the sub-bases of the valve terminal VTS/VTSA-F		571343	VABD-S2-1-S-C	2
Inscription label					
	Inscription label for valves		161937	IBS-9x17	24
	Clip-on inscription label holder for valve cap, for valves with central plug M12, 3-pin		540888	ASCF-T-S6	5
Manual override					
	Cover cap for manual override, non-detenting	For valves with central plug M12, 3-pin	541010	VAMC-S6-CH	10
	Cover cap for manual override, concealed	For valves with central plug M12, 3-pin	541011	VAMC-S6-CS	10
	Heavy-duty cover cap for manual override, non-detenting, detenting via accessory	For valves with central plug M12, 3-pin	4105147	VAMC-B-S6-CTR	10
	Tool for manual override	For MN1H/MFH valves	157651	AHB-MD/MF/MV	1
		For heavy-duty cover cap, detenting position	1662543	AHB-MEB-B	1

1) Packaging unit