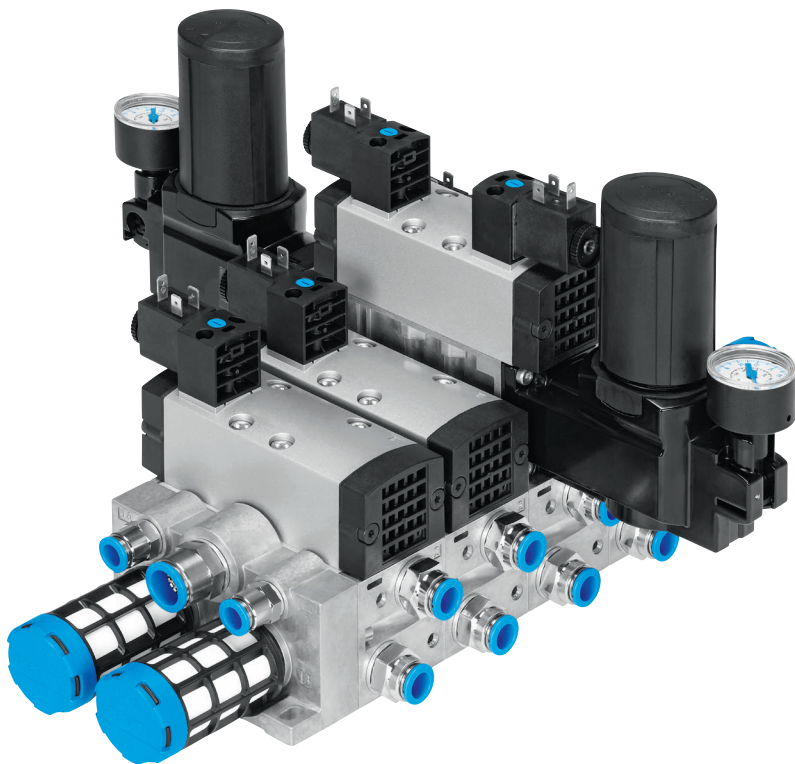


Standards-based valves to ISO 5599-1

FESTO



Key features

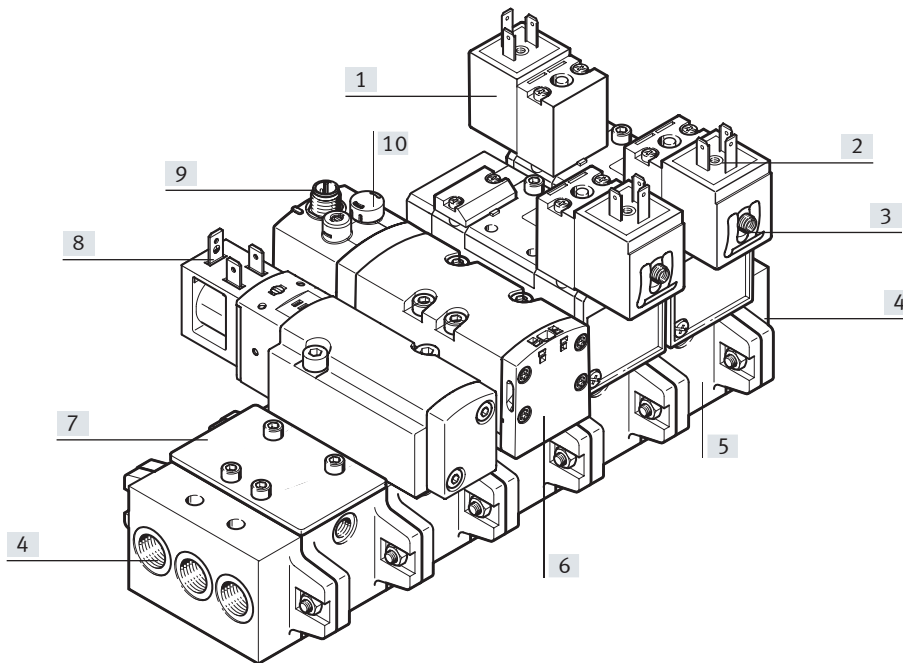


Innovative	Versatile	Reliable	Easy to install
• High-performance valves in a sturdy metal housing • Individual electrical connection via square plug sockets or centrally for each valve via round plug sockets • Valve replacement under pressure possible using vertical pressure shut-off plate • Reverse operation • Vacuum operation	• Modular system offering a range of configuration options • Conversions and extensions are possible at any time • Possible to integrate innovative function modules – 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	• 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	• Plug-in pressure gauges on the pressure regulator plate

Ordering data – Product options			
	Configurable product	The configurator can be found at	Part no.
	This product and all its product options can be ordered using the configurator.	→ www.festo.com/catalogue/... Enter the part number or the type.	8033845
			Type
			VSVA-B-.F.

Key features

Simple valve manifold assembly



- [1] Pilot valve with hole 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] Electrical connection type B to industry standard (11 mm)
- [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 section. The power section and the pneumatic control section are isolated
- For heavily lubricated air in the power section
- For manifolds 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 design, 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: high pressure in duct 3 for advancing the piston rod of a double-acting cylinder. Low pressure in duct 5 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

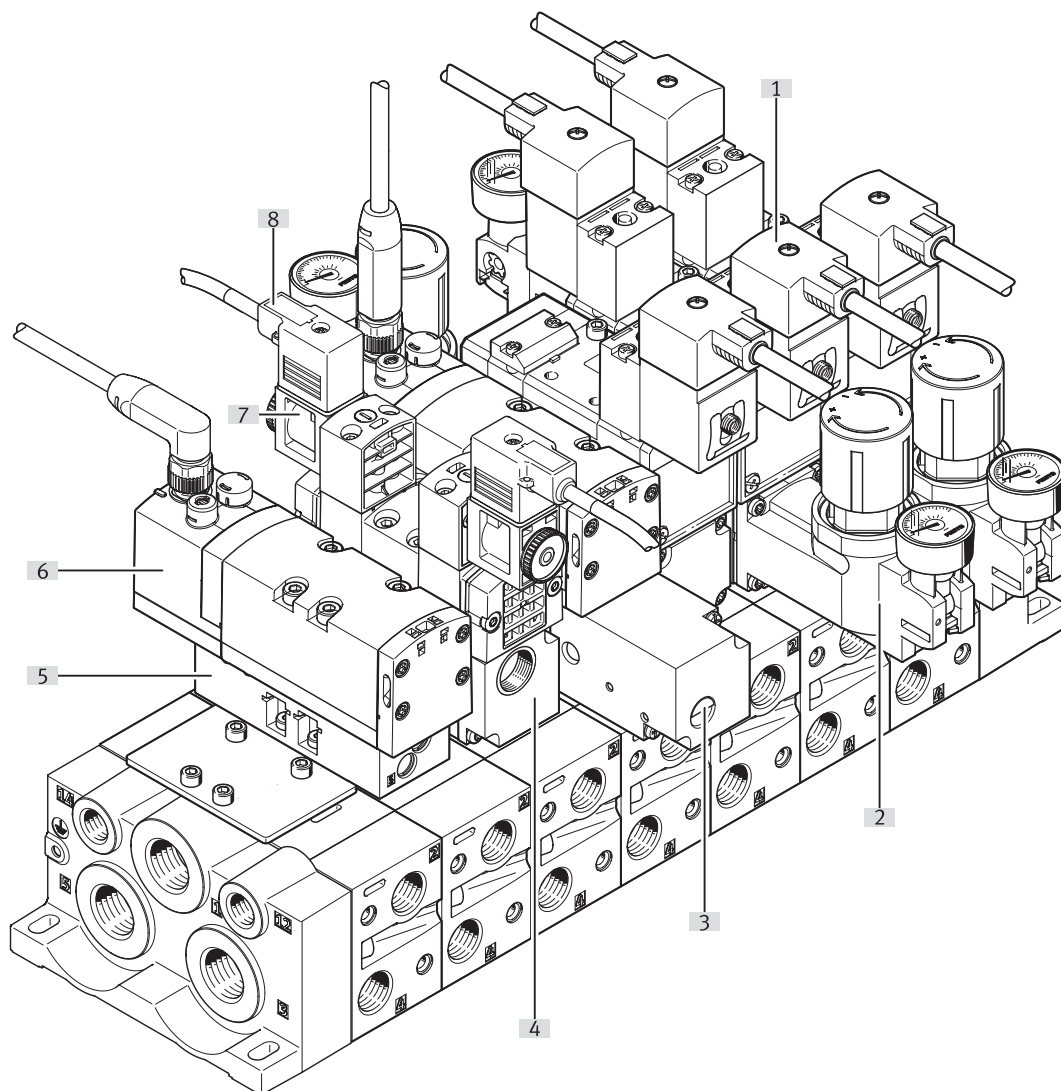
- Mid-position pressurised
- Mid-position closed
- Mid-position exhausted

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 regulating position immediately after the power supply is switched on
 - Adjustment possible at any time
 - 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 pneumatic interface to ISO 15218, can be connected using square plug sockets | [3] Vertical pressure shut-off plate for replacing solenoid valves during operation | [5] Throttle plate for adjusting the speed of the drive | [7] Valve with 8 mm armature tube |
| [2] Pressure regulator for adjusting the force of the actuated drive | [4] Vertical supply plate as separate compressed air supply for a valve | [6] Solenoid valve with central round plug | [8] Solenoid coil with connecting cable for valves with 8 mm armature tube |

Key features

Vertical stacking function

Pressure regulator

- 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 ducts 1 and 3/5 swapped internally
- 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 actuator is initiated via the manual override on the valve and the required speed is set via the throttle plate.

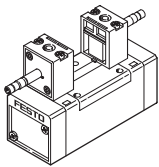
Vertical pressure shut-off plate

- This is equipped with a switch with 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

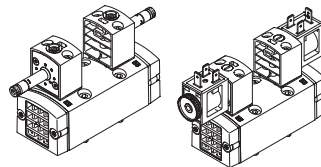
- As additional air supply for a valve
- Separates the valve from duct 1 of the manifold sub-base
- To supply an additional pressure zone

Valves with solenoid coil MSN1/MSF



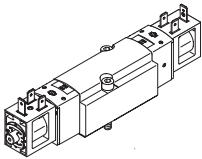
The directional control valve has a pilot control to ISO 15218. The solenoid coil plugged onto the armature tube can be chosen in different designs and operating voltages.

Valves with 8 mm armature tube



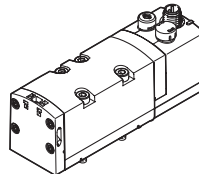
The directional control valve has a pilot control to ISO 15218 with 8 mm armature tube. The electrical connection is established via a standardised plug with plug pattern type A, B or C.

Valves with square plug type B to industry standard



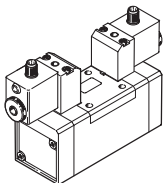
The electrical connection is established via a standardised plug with plug pattern type B, industry standard, 24 V DC.

Valves with central plug M12



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

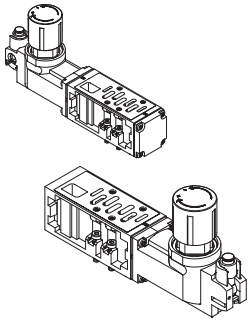
Valves with individual plug M12x1



The electrical connection is established via a standardised M12 plug, 24 V DC (2-pin or 4-pin to VDMA).

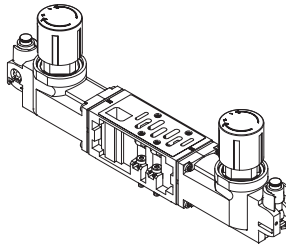
Key features

Pressure regulator with one regulated duct



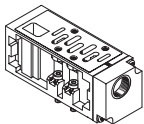
- For pressure regulation at the supply input duct 1. The set pressure is identical for ducts 2 and 4
- For pressure regulation at working port 4
 - The pressure regulator for reverse operation is supplied via duct 1 of the manifold sub-base and supplies duct 5 on the valve
 - The valve is exhausted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

Pressure regulator with 2 regulated ducts



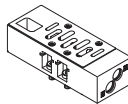
- For pressure regulation at working ports 4 and 2
- The pressure regulators for reverse operation are supplied via duct 1 of the manifold sub-base and supply ducts 5 and 3 on the valve
- The directional control valve is exhausted via duct 1 to ducts 3 and 5 of the manifold sub-base.

Vertical supply plate



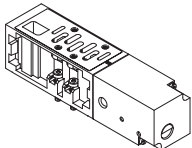
- As intermediate supply
 - For one valve
 - To supply an additional pressure zone
- Can be equipped with a valve

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

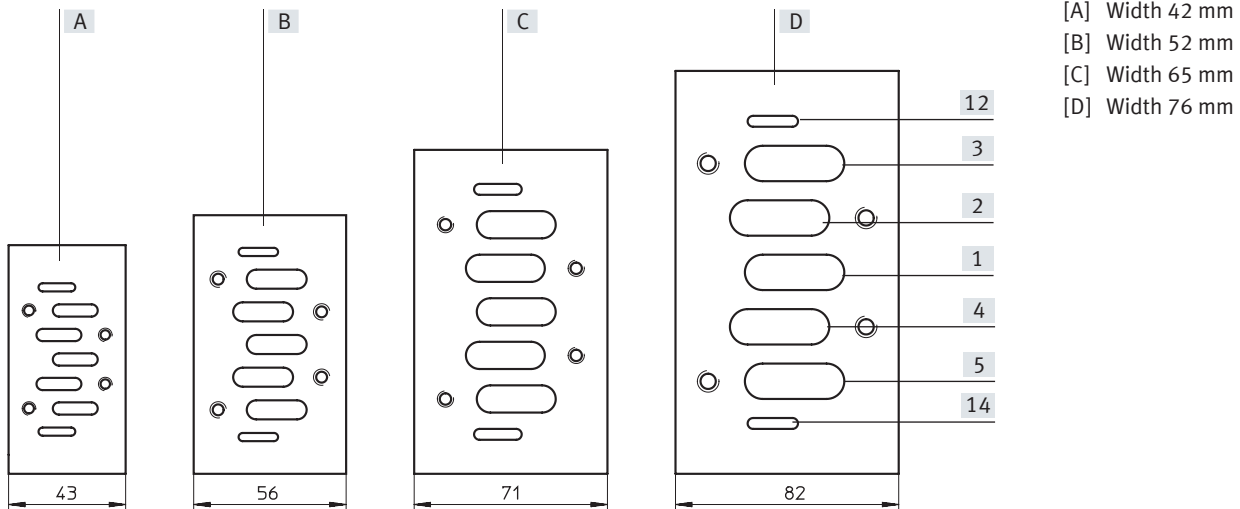
Pressure gauge



Plugs into the pressure regulators

Key features

Hole pattern on sub-base to ISO 5599-1



Sub-base port identifications

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

 **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 so that the pilot pressure is already applied in full at the point of switch-on.

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.

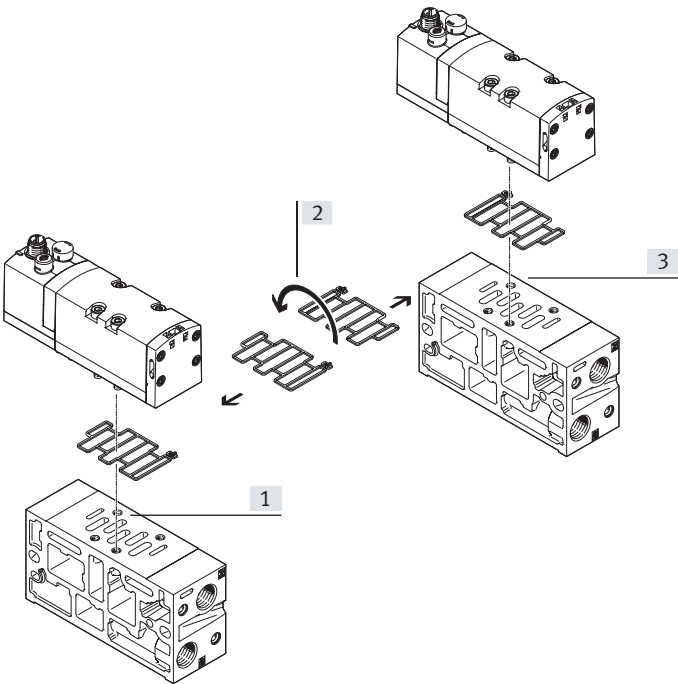
In this case the pilot air supply is branched from the compressed air supply 1 using an internal connection in the valve.

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.

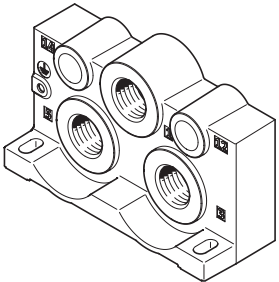
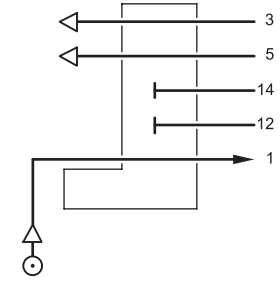
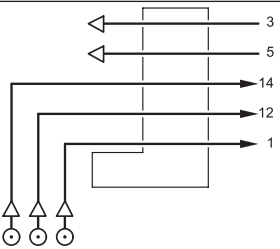
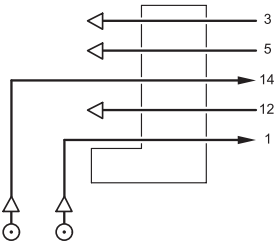
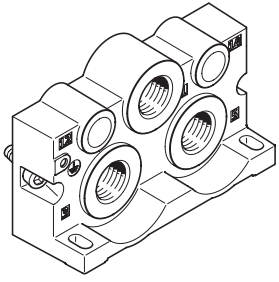
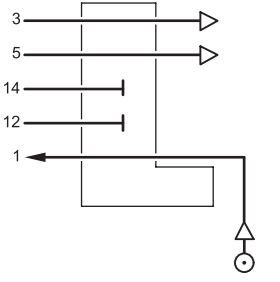
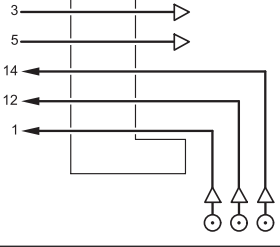
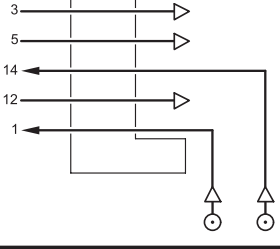
Using the seals with ducted/unducted pilot exhaust air



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

Valve manifold assemblies VSVA are delivered 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)		
		Internal pilot air supply - 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
		External pilot air supply - Pilot air supply via ports 12 and 14 - Exhaust air via ports 3 and 5 - Unducted pilot exhaust air
		External pilot air supply, ducted pilot exhaust air - 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)		
		Internal pilot air supply - 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
		External pilot air supply - Pilot air supply via ports 12 and 14 - Exhaust air via ports 3 and 5 - Unducted pilot exhaust air
		External pilot air supply, ducted pilot exhaust air - 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

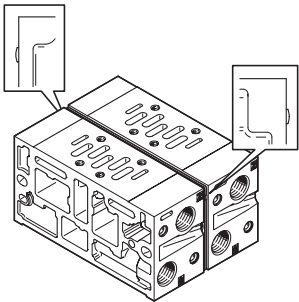
Key features

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.

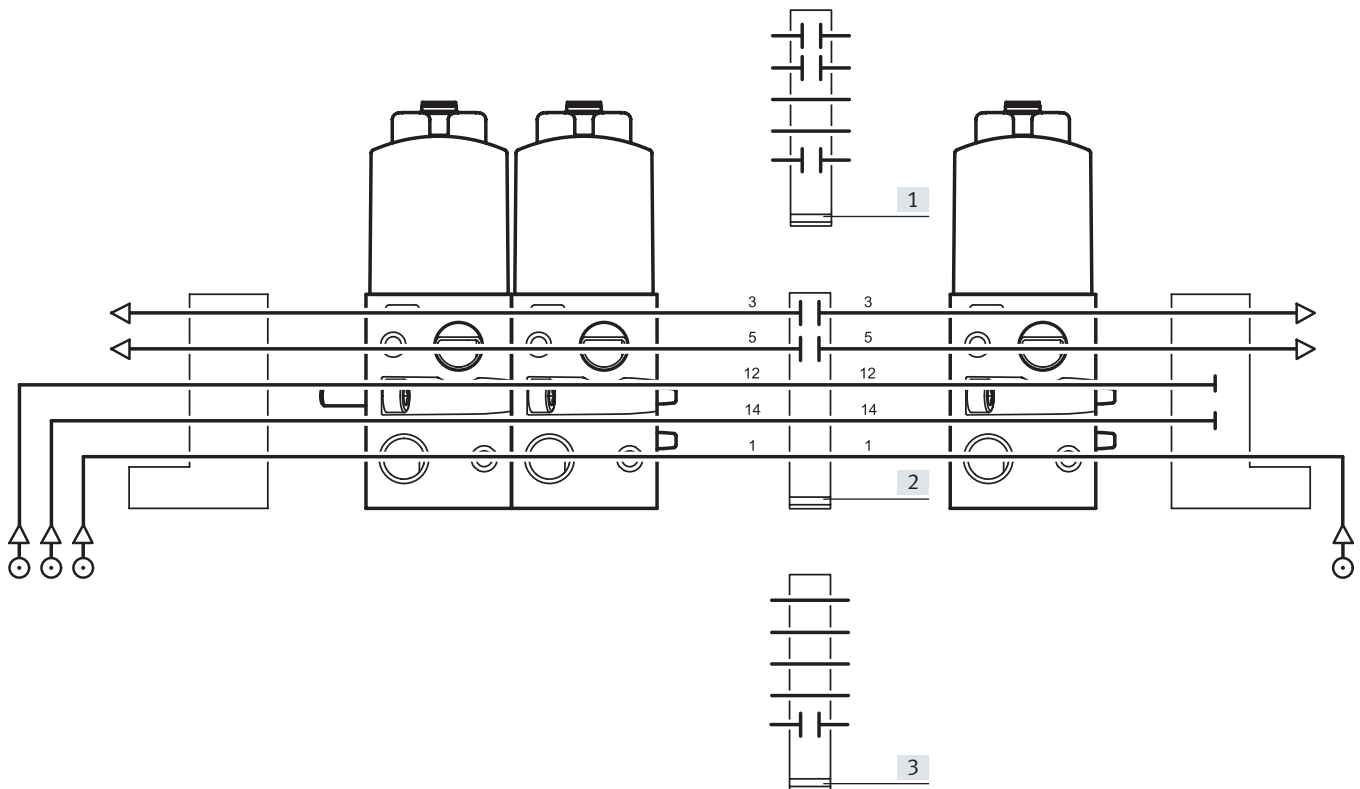
Duct separations are integrated ex-works as per your order. Duct separations can be distinguished by their coding, even when the valve terminal is assembled.



Creating pressure zones				Description
Separating seal				
Coding	Sample image	Coding	Basic representation	
				Duct 1 separated • Different supply pressure for each pressure zone • Supply pressure for each pressure zone can be switched off separately
				Ducts 3 and 5 separated • The valves (for different pressure zones) do not affect each other via the exhaust ducts
				Ducts 12 and 14 separated • 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
				Ducts 1, 3 and 5 separated • 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
				Ducts 1, 3, 5, 12 and 14 separated • 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.

Potential benefit:

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

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

Potential benefit:

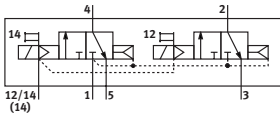
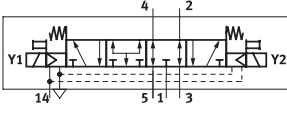
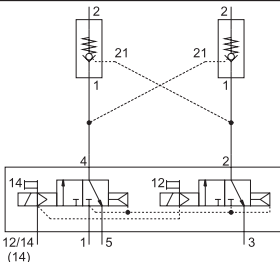
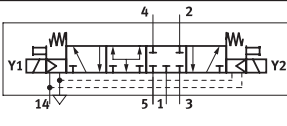
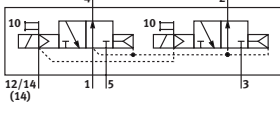
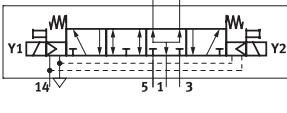
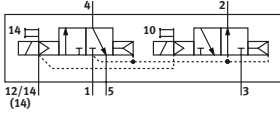
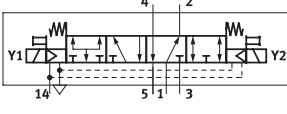
- The valves do not affect each other via the exhaust ducts

[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.

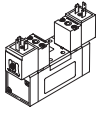
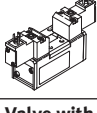
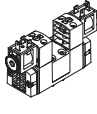
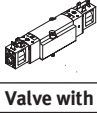
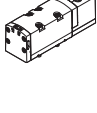
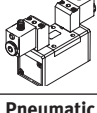
Potential benefit:

- Two different supply pressures

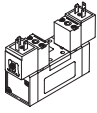
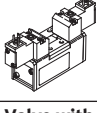
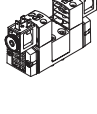
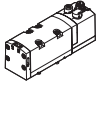
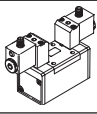
Key features

Using 2x 3/2-way valve as 5/4-way valve																			
Code	Symbol	Table of values	Equivalent circuit symbol	Function															
K		<table><tr><th>Y1</th><th>Y2</th><th>A</th></tr><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></table>	Y1	Y2	A	0	0		0	1		1	0		1	1			• 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><tr><th>Y1</th><th>Y2</th><th>A</th></tr><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></table>	Y1	Y2	A	0	0		0	1		1	0		1	1			• Normally closed (by combining valve code K and two check valves) • The 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><tr><th>Y1</th><th>Y2</th><th>A</th></tr><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></table>	Y1	Y2	A	0	0		0	1		1	0		1	1			• 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><tr><th>Y1</th><th>Y2</th><th>A</th></tr><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></table>	Y1	Y2	A	0	0		0	1		1	0		1	1			• 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 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																		

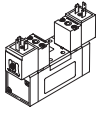
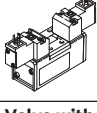
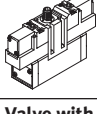
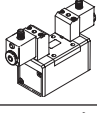
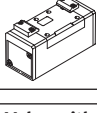
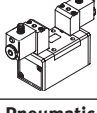
Product range overview

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	29
		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	44
		JMF	5/2-way valve, double solenoid	1200		
		MFH-5/3	5/3-way solenoid valve, mid-position valve	1200		
	Valve with 8 mm armature tube					
		VSVA-B-T32	2x 3/2-way single solenoid valve	1400	24 V DC	59
		VSVA-B-M52	5/2-way valve, single solenoid	1800		
		VSVA-B-B52	5/2-way valve, double solenoid	1800		
		VSVA-B-D52	5/2-way valve, double solenoid, with dominant signal	1800		
		VSVA-B-P53	5/3-way solenoid valve, mid-position valve	1800		
	Valve with square plug type B to industry standard					
		VSVA-B-M52...A1	5/2-way valve, single solenoid	1342	24 V DC	79
		VSVA-B-B52...A1	5/2-way valve, double-solenoid	1341		
		VSVA-B-P53...A1	5/3-way valve, mid-position valve	1289		
	Valve with central plug M12, 3-pin					
		VSVA-B-T22	2x 2/2-way single solenoid valve	1300	24 V DC	83
		VSVA-B-T32	2x 3/2-way single solenoid valve	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	98
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	–	122	
	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	34
		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	49
		JMF	5/2-way valve, double solenoid	2300		
		MFH-5/3	5/3-way solenoid valve, mid-position valve	2300		
	Valve with 8 mm armature tube					
		VSVA-B-T32	2x 3/2-way single solenoid valve	2100	24 V DC	69
		VSVA-B-M52	5/2-way valve, single solenoid	4100		
		VSVA-B-B52	5/2-way valve, double solenoid	4000		
		VSVA-B-D52	5/2-way valve, double solenoid, with dominant signal	4000		
		VSVA-B-P53	5/3-way solenoid valve, mid-position valve	3700		
	Valve with central plug M12, 3-pin					
		VSVA-B-T22	2x 2/2-way single solenoid valve	2800	24 V DC	88
		VSVA-B-T32	2x 3/2-way single solenoid valve	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	103
		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	–	128
		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	39
		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	54
		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	93
		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	108
		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	–	134	
	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	113
		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	–	138
		J	5/2-way pneumatic valve, bistable	6000		
		VL-5/3	5/3-way pneumatic valve, mid-position valve	4800		

Type code 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	

Type codes for valves with square plug type B to industry standard

001	Series	
VSVA	Standards-based valve VSVA	
002	Directional control valve type	
B	Sub-base valve	
003	Design principle	
	Piston spool	
K	Piston spool with sealing ring	
004	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	
B52	5/2-way valve, double solenoid/bistable	
M52	5/2-way valve, single solenoid/monostable	
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	
005	Reset method for monostable/single solenoid valves	
	None	
A	Pneumatic spring	
M	Mechanical spring	
006	Pilot air	
	Internal	
Z	External	
007	Manual override	
	None	
D	Non-detenting, detenting	
H	Non-detenting	
008	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	
009	Nominal operating voltage	
	None	
1	24 V DC	
1A	24 V AC/50-60 Hz	
2A	110 V AC/50-60 Hz	
3A	230 V AC/50-60 Hz	
5	12 V DC	
010	Electrical connection	
B2	Connection pattern type B, industry standard	
C1	Plug pattern type C, to EN 175301-803	
P1	Interface for pilot valve size 15 mm to ISO 15218 (CNOMO)	
R3	Individual plug M12, to EN 61076-2-101	
011	Position sensing	
	None	
APC	Proximity sensor, PNP with open cable ends	
APP	Proximity sensor, PNP with M8 plug	
APX	Proximity sensor, PNP with cable and plug M12	
ANC	Proximity sensor, NPN with open cable end	
ANP	Proximity sensor, NPN with plug M8	

Type code for valves with armature tube 8 m

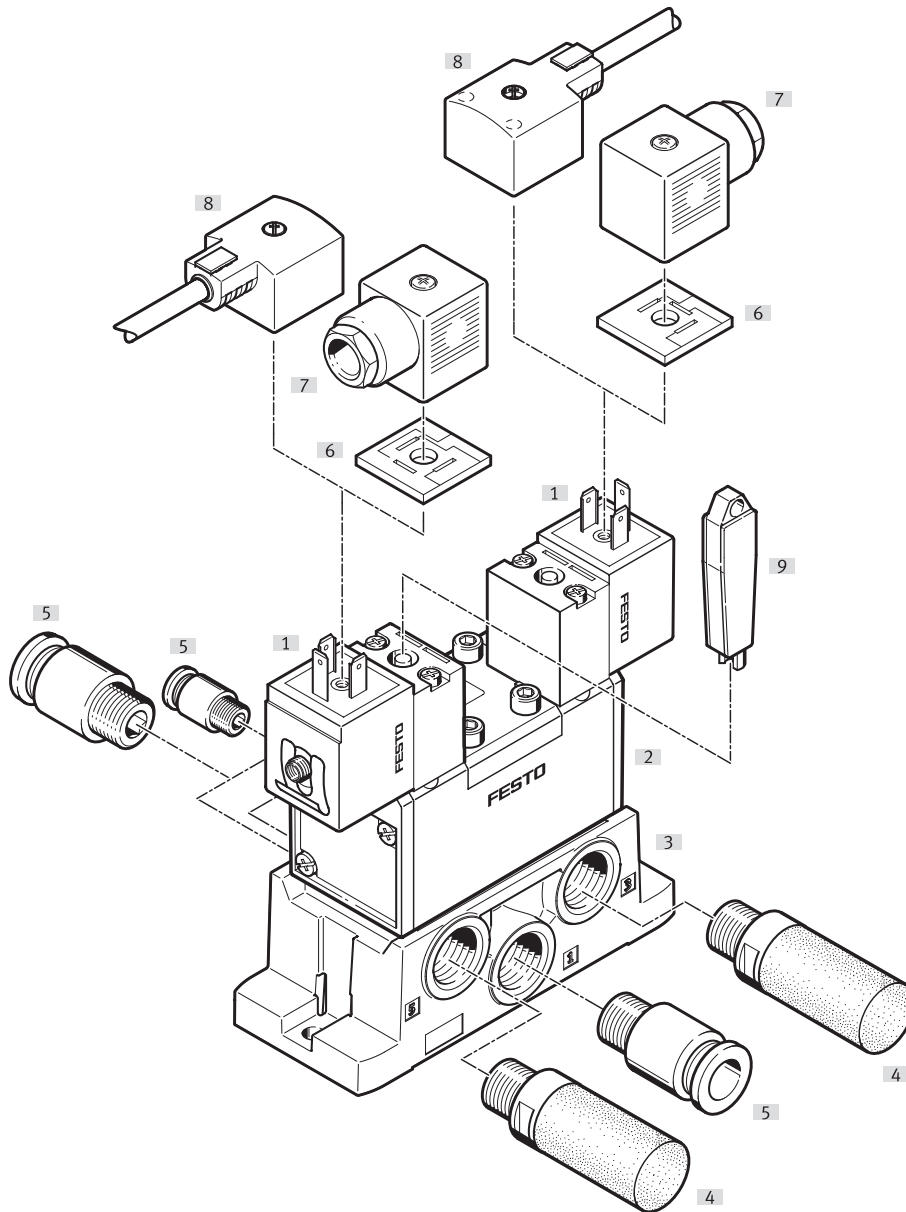
001	Series	
VSVA	Standards-based valve VSVA	
002	Directional control valve type	
B	Sub-base valve	
003	Sealing principle	
	Soft seal	
004	Valve function	
B52	5/2-way valve, double solenoid/bistable	
D52	5/2-way valve, double solenoid/bistable, dominant signal	
M52	5/2-way valve, single solenoid/monostable	
P53C	5/3-way valve, mid-position closed	
P53E	5/3-way valve, mid-position exhausted	
P53F	5/3-way valve, mid-position port 2 pressurised, port 4 closed	
P53U	5/3-way valve, mid-position pressurised	
T22C	2x2/2-way valve, normally closed	
T32C	2x3/2-way valve, normally closed	
T32H	2x3/2-way valve, 1x normally closed, 1x normally open	
T32U	2x3/2-way valve, normally open	
005	Additional characteristics	
	None	
D	Switching position 14 detenting, 12 mechanical spring	
P	Switching position 12 detenting, 14 mechanical spring	
V	1x vacuum operation	
006	Reset method for monostable/single solenoid valves	
	None	
A	Pneumatic spring	
M	Mechanical spring	
007	Pilot air	
	Internal	
Z	External	

008	Manual override	
	None	
D	Non-detenting, detenting	
H	Non-detenting	
T	Non-detenting, detenting with accessories	
009	Pneumatic connection	
D1	42 mm (1) ISO 5599-1/-2	
D2	52 mm (2) ISO 5599-1/-2	
010	Valve pilot control interface	
F8	With armature tube 8 mm, long	
011	Nominal operating voltage	
	None	
1	24 V DC	
1A	24 V AC/50-60 Hz	
3W	230 V AC/240 V AC/50-60 Hz	
5	12 V DC	
7	48 V DC	
7A	48 V AC/50-60 Hz	
16B	120 V AC/60 Hz and 110V AC/50-60 Hz	
012	Electrical connection	
	None	
A1	Plug pattern type A, to EN 175301-803	
B2	Connection pattern type B, industry standard	
C1	Plug pattern type C, to EN 175301-803	
013	EU certification	
	None	
EX2	II 3GD	

Peripherals overview

Valve on individual sub-base

Solenoid valve with solenoid coil MSN1

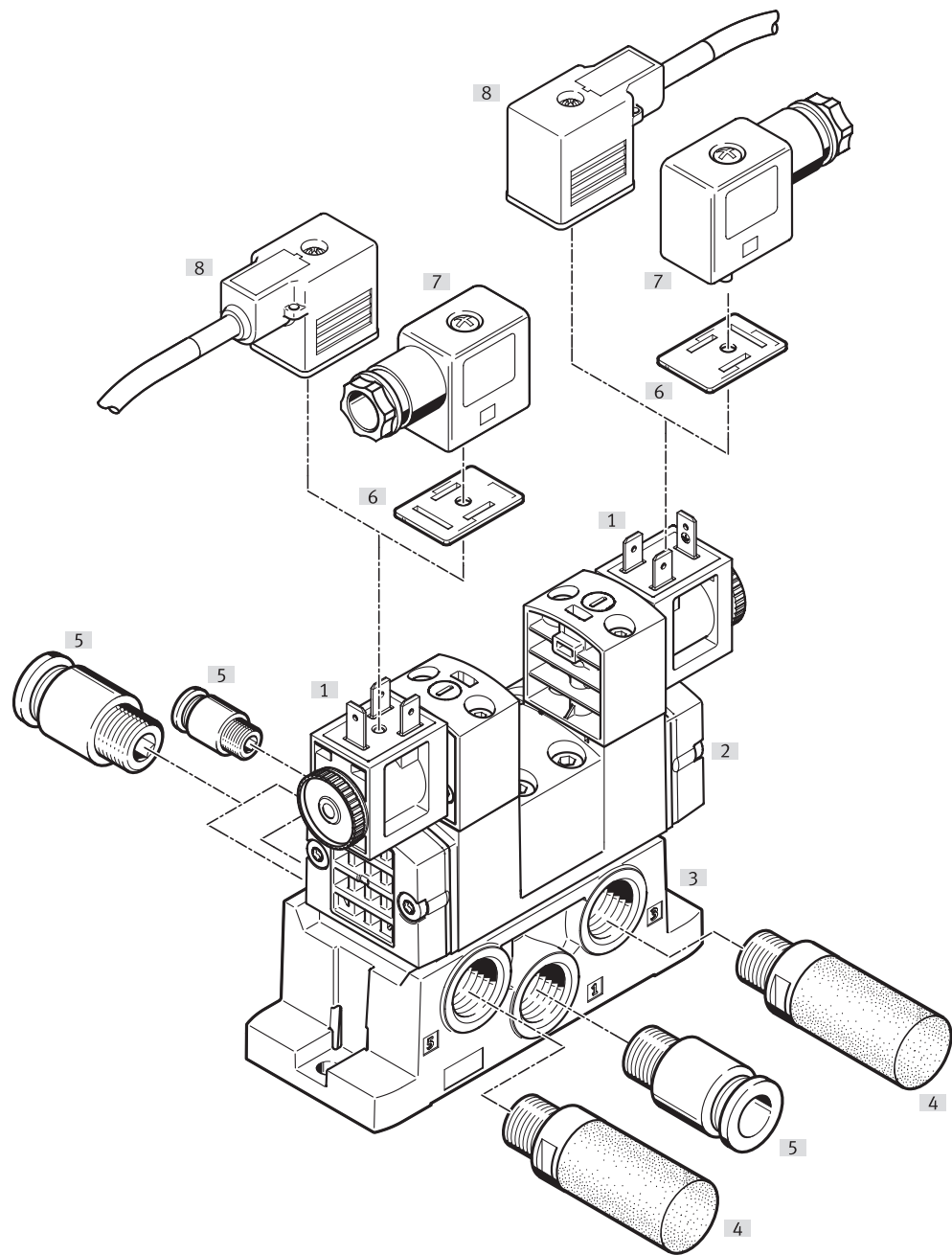


Individual components		Type	Brief description	→ Page/ Internet
[1]	Sub-base	VABS-S1-...	Pneumatic ports on the side	141
	Individual sub-base	NAS-...	Pneumatic ports on the side	141
		NAU-...	Pneumatic ports underneath	144
[2]	Solenoid valve	MN1H-...	Solenoid valve with solenoid coil, hole pattern to ISO 5599-1, corresponding solenoid coils a page 139	29
[3]	Solenoid coil	MSN1...	Solenoid coil	175
[4]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[5]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[6]	Illuminating seal	M...-LD	For displaying the signal status	<?>
[7]	Connecting cable	KMC-..., NEBV-...	With LED or without LED	<?>
[8]	Plug socket	MSSD-...	For self-assembly	<?>
[9]	Manual override	AHB-...	Tool for detenting manual override	178
[10]	Silencer	U-...	For fitting in exhaust ports	silencer
[11]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs

Peripherals overview

Valve on individual sub-base

Solenoid valve with 8 mm armature tube

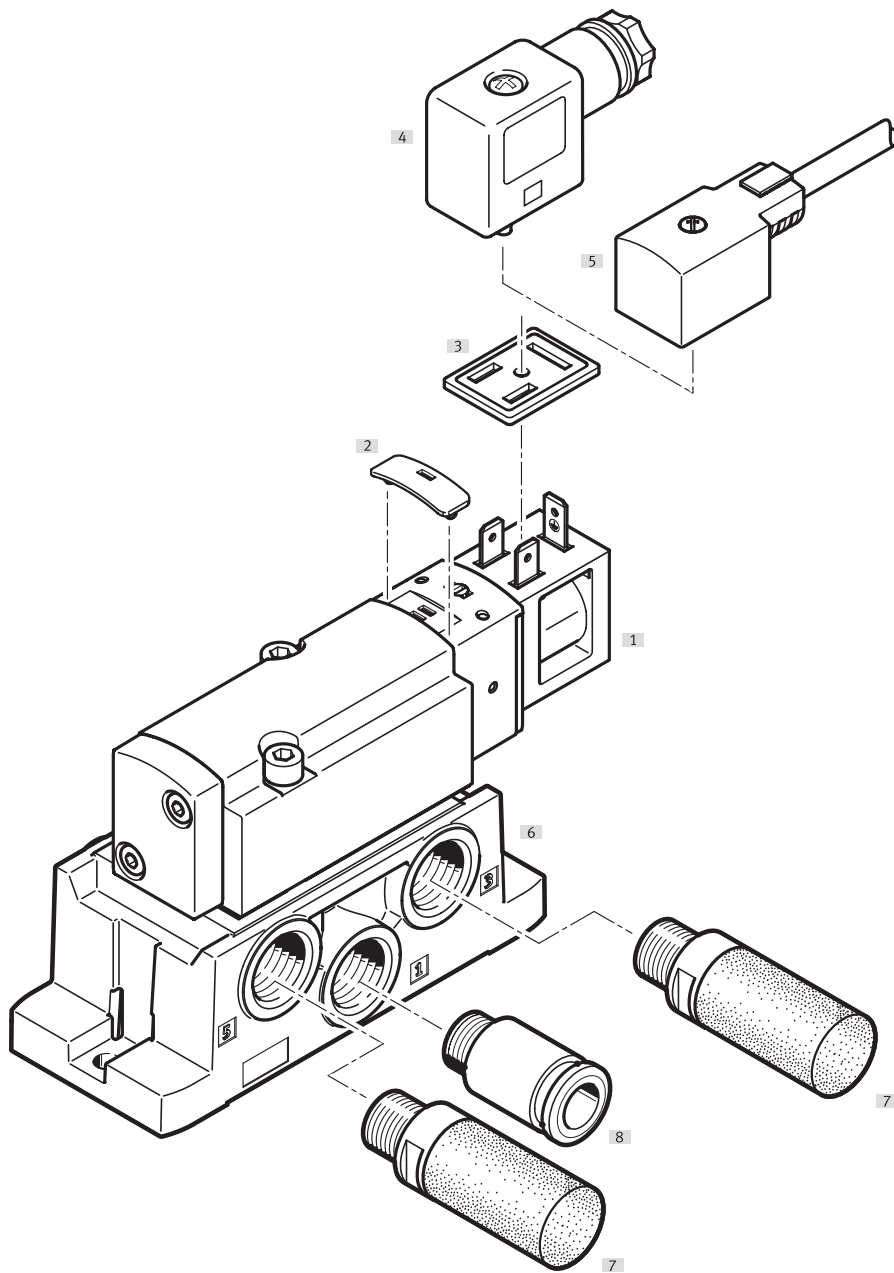


Individual components		Type	Brief description	→ Page/ Internet
[1]	Solenoid coil	VACF	Electrical connection type A, B or C or M12	175
[2]	Solenoid valve	VSVA-...F8...	Solenoid valve with 8 mm armature tube, hole pattern to ISO 5599-1	59
[3]	Sub-base	VABS-S1-...	Pneumatic ports on the side	141
		NAS-...	Pneumatic ports on the side	141
		NAU-...	Pneumatic ports underneath	144
[4]	Silencer	U-...	For fitting in exhaust ports	silencer
[5]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[6]	Illuminating seal	M...	For displaying the signal status	177
[7]	Plug socket	MSSD...	For self-assembly	177
[8]	Connecting cable	NEBV-...	–	177

Peripherals overview

Valve on individual sub-base

Solenoid valve with square plug type B to industry standard

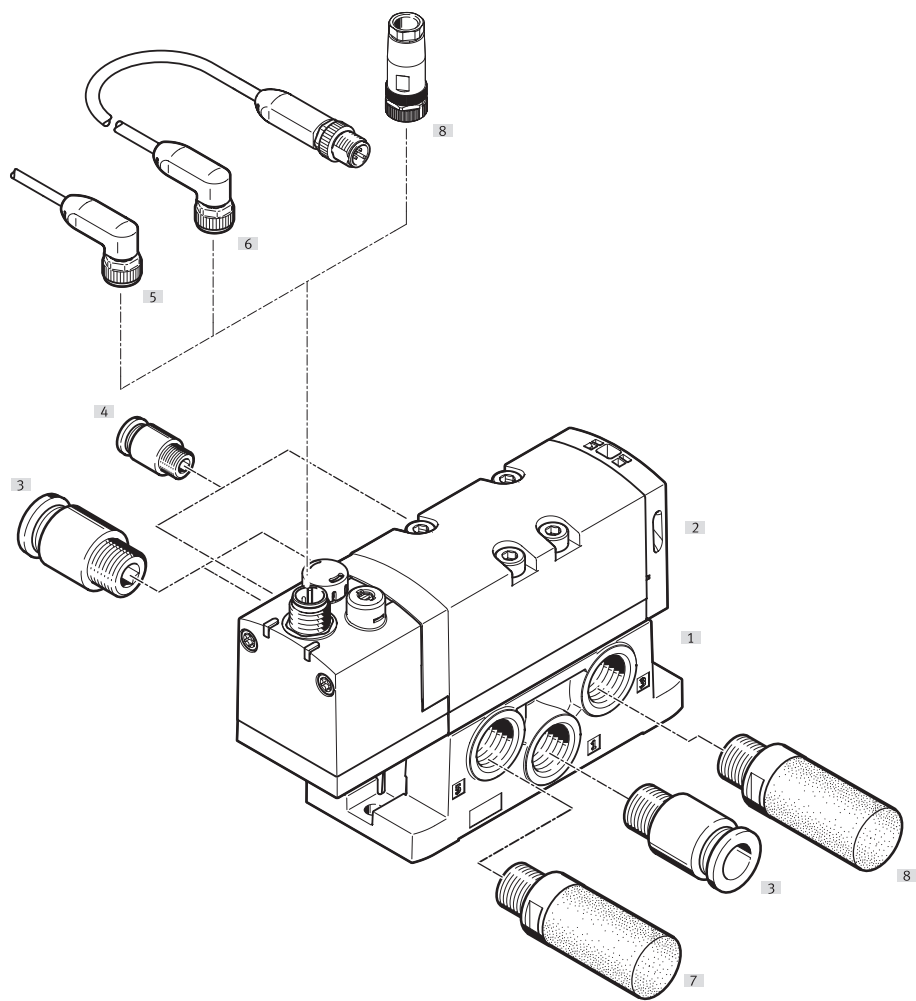


Individual components		Type	Brief description	→ Page/ Internet
[1]	Solenoid valve	VSVA-BK...	Solenoid valve with square plug type B to industry standard, hole pattern to ISO 5599-1	79
[2]	Cover cap	VAMC-...	For manual override, non-detenting or covered	178
[3]	Illuminating seal	MF-LD	For displaying the signal status	<?>
[4]	Plug socket	MSSD-F...	For self-assembly	<?>
[5]	Connecting cable	KMF-...	–	<?>
[6]	Sub-base	VABS-S1-...	Pneumatic ports on the side	141
	Individual sub-base	NAS-...	Pneumatic ports on the side	141
		NAU-...	Pneumatic ports underneath	144
[7]	Silencer	U-...	For fitting in exhaust ports	silencer
[8]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs

Peripherals overview

Valve on individual sub-base

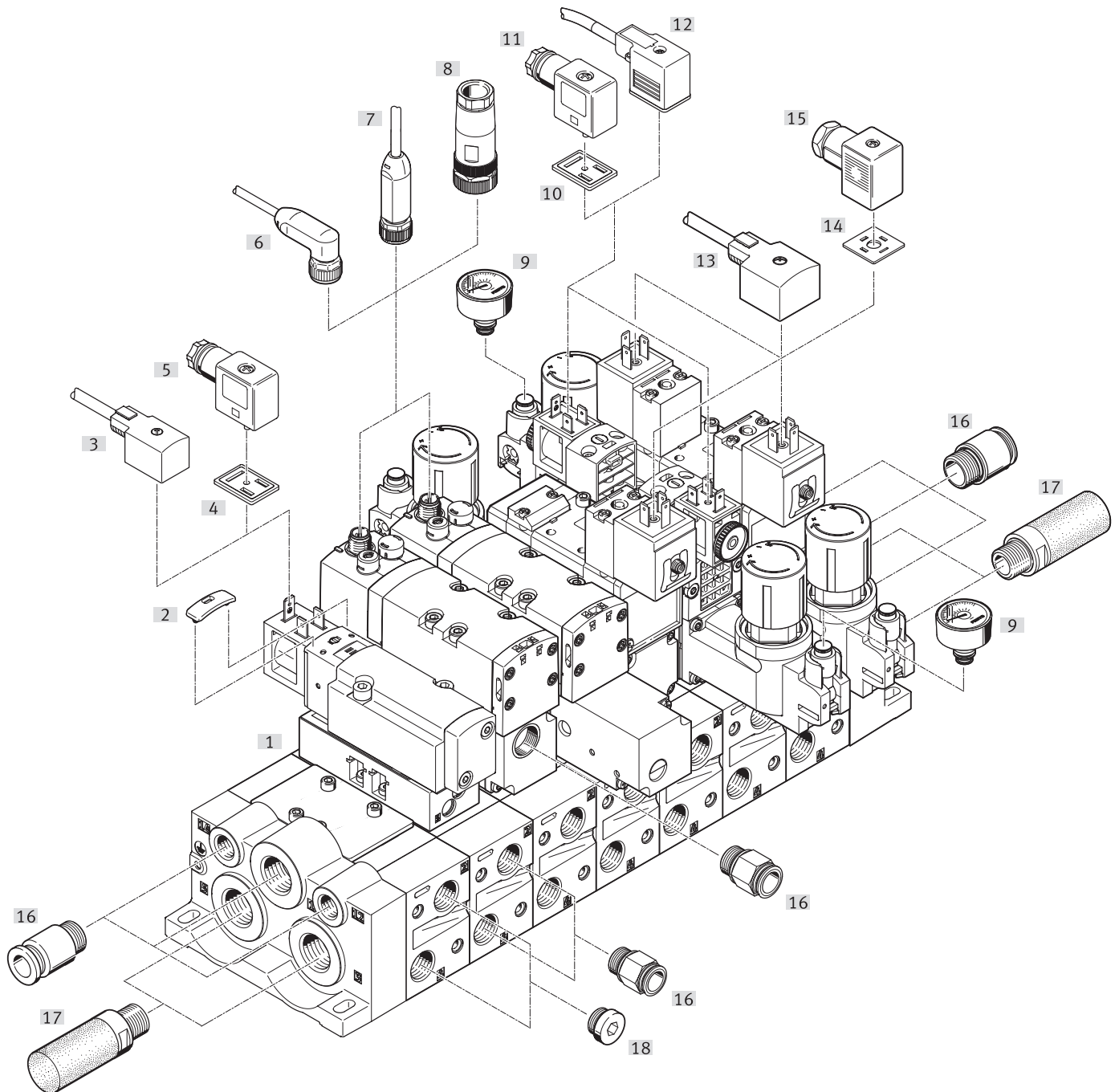
Solenoid valve with central plug M12, 3-pin



Individual components		Type	Brief description	→ Page/ Internet
[1]	Sub-base	VABS-S1-...	Pneumatic ports on the side	141
	Individual sub-base	NAS-...	Pneumatic ports on the side	141
		NAU-...	Pneumatic ports underneath	144
[2]	Solenoid valve	VSVA-B...	Solenoid valve with central plug M12, 3-pin, hole pattern to ISO 5599-1	83
[3]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[4]				
[5]	Connecting cable	NEBA-...	–	178
[6]				
[7]	Silencer	U-...	For fitting in exhaust ports	silencer
[8]	Plug socket	NECB-...	For self-assembly	178

Peripherals overview

Accessories

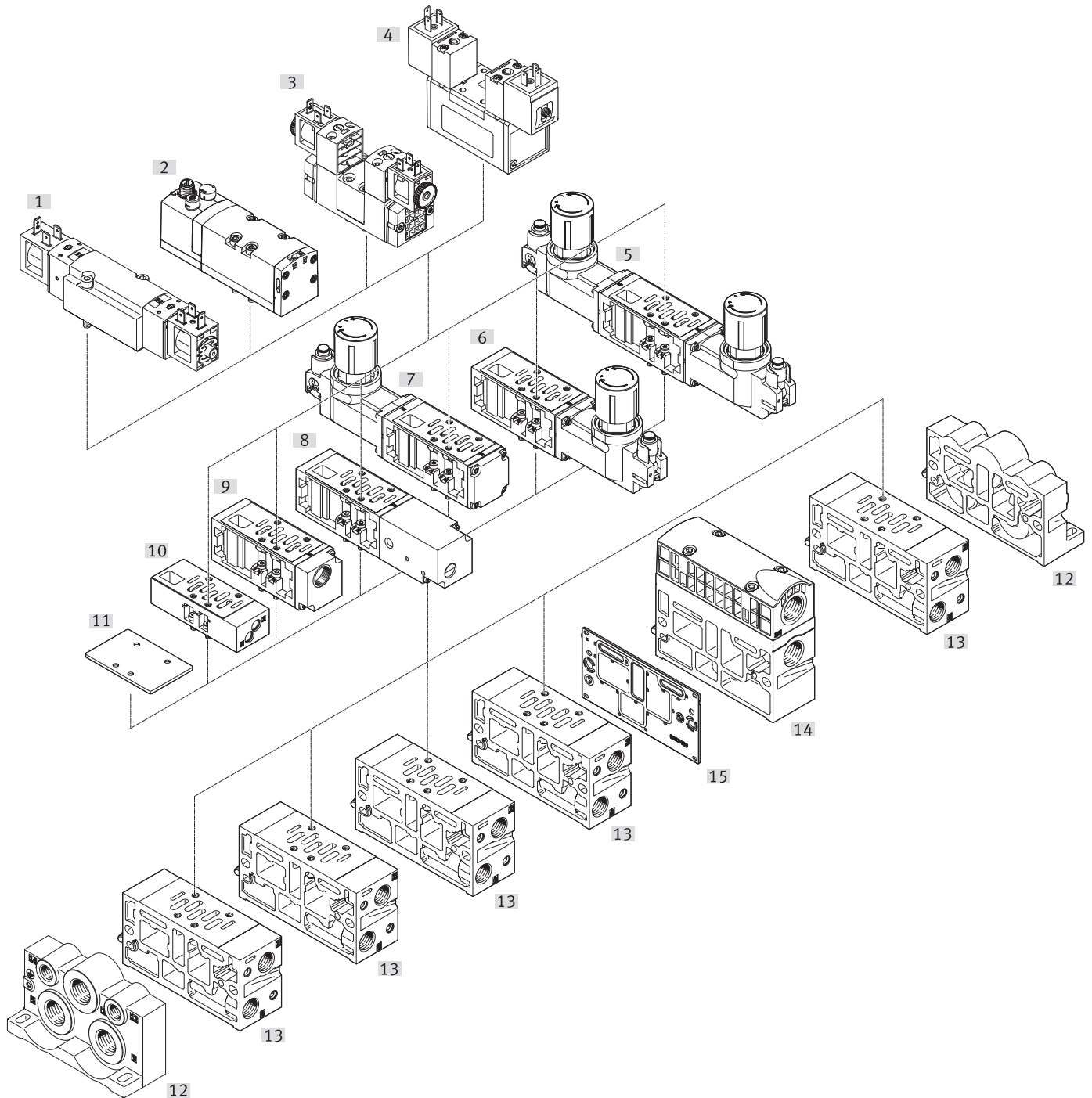


Peripherals overview

Individual components		Type	Brief description	→ Page/ Internet
[1]	Solenoid valve	MN1H-...	Solenoid valve with solenoid coil, hole pattern to ISO 5599-1, corresponding solenoid coils a page 139	29
		VSVA-B...	Solenoid valve with 8 mm armature tube	59
		VSVA-BK...	Solenoid valve with square plug type B to industry standard, hole pattern to ISO 5599-1	79
		VSVA-B...	Solenoid valve with central plug M12, 3-pin, hole pattern to ISO 5599-1	83
[2]	Cover cap	VAMC-...	For manual override, non-detenting or covered	178
[3]	Connecting cable	KMF-1...	With LED	176
[4]	Illuminating seal	MF-LD	For displaying the signal status	176
[5]	Socket	MSSD-F	Connection pattern type B, industry standard	176
[6]	Connecting cable	NEBA-...	Angled socket, M12x1, 5-pin,	178
[7]	Connecting cable	NEBA-...	Straight socket, M12x1, 5-pin	178
[8]	Socket	NECB-...	For self-assembly	178
[9]	Pressure gauge	PAGN-...	With push-in connector	178
[10]	Illuminating seal	MC-LD	For electrical connection type A according to EN 175301-803	177
		MF-LD	For electrical connection type B	177
[11]	Socket	MSSD-C	For electrical connection type A according to EN 175301-803	177
		MSSD-F	For electrical connection type B	177
		MSSD-EB	For electrical connection type C according to EN 175301-803	177
[12]	Connecting cable	KMC-1...	For electrical connection type A according to EN 175301-803	177
		NEBV-A1W3		
		KMF-1	For electrical connection type B	177
		NEBV-B2W3		
[13]	Connecting cable	NEBV-C1SW	For electrical connection type C according to EN 175301-803	177
		KMF-1	For solenoid coil MSF	176
		NEBV-B2W3		
		KMC-1...	For solenoid coil MSN1 and MD	176
[14]	Illuminating seal	NEBV-A1W3		
		MC-LD	For electrical connection type A according to EN 175301-803	176
[15]	Socket	MF-LD	For electrical connection type B	
		MSSD-C	For electrical connection type A according to EN 175301-803	176
		MSSD-F	For electrical connection type B	
[16]	Push-in fitting	MSSD-EB	For electrical connection type C according to EN 175301-803	
		QS-...	For connecting tubing with standard O.D.	qs
		U-...	For fitting in exhaust ports	silencer
[17]	Silencer	B-...	For sealing ports that are not required	b
[18]	Blanking plug			

System overview

Manifold assembly

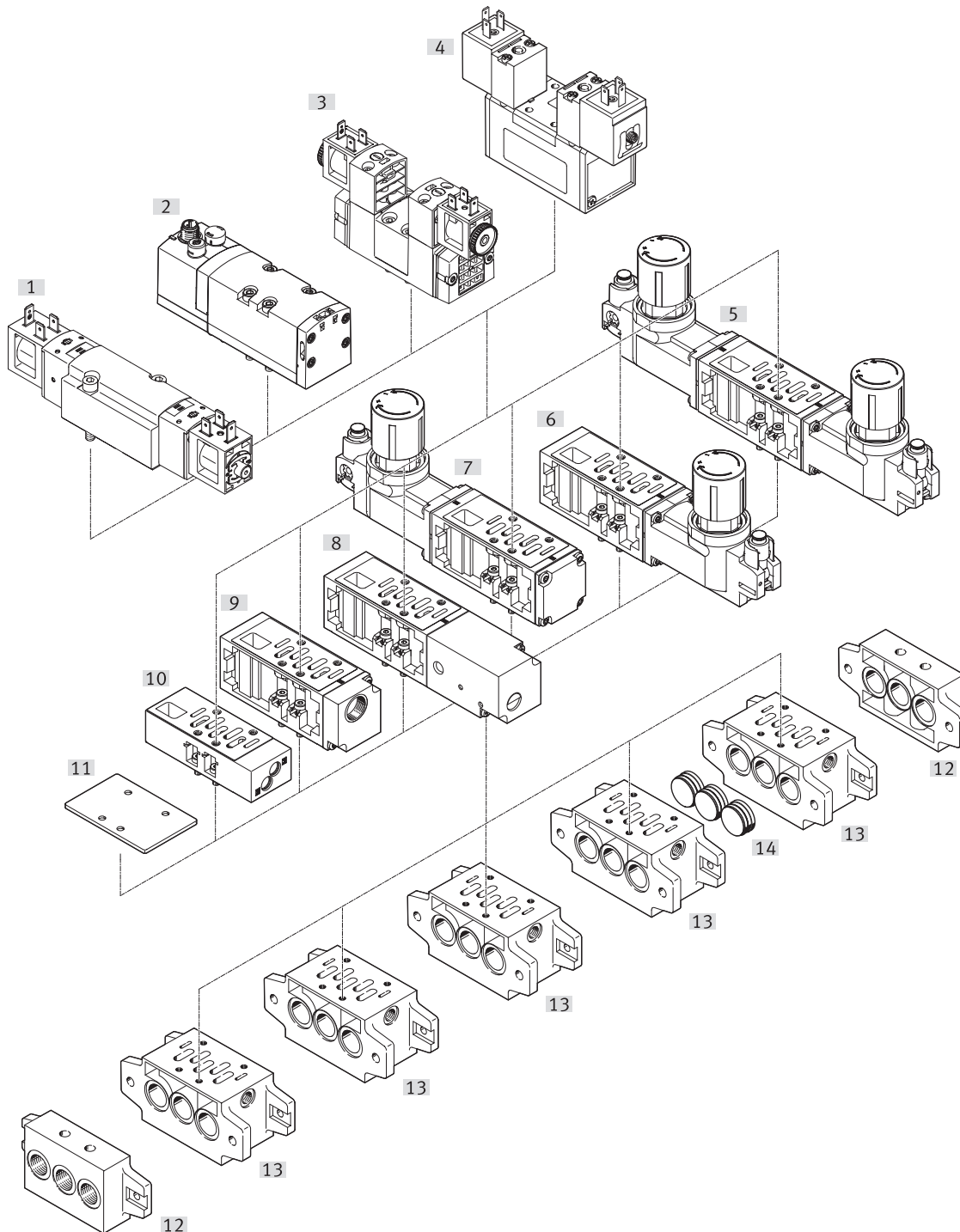


System overview

Individual components		Type	Brief description	→ Page/ Internet
[1]	Solenoid valve	VSVA-BK...	Solenoid valve with square plug type B to industry standard	79
[2]	Solenoid valve	VSVA-...	With central plug M12, 3-pin	83
		MEBH-...	With central plug M12, 4-pin	93
		JMEBH-...	With central plug M12, 4-pin	93
		JMEBDH-...	With central plug M12, 4-pin	93
[3]	Solenoid valve	VSVA-...F8...	Solenoid valve with 8 mm armature tube	59
[4]	Solenoid valve	MN1H-...	With armature tube for solenoid coil MSN1	29
		JMN1H-...	With armature tube for solenoid coil MSN1	29
		JMN1DH-...	With armature tube for solenoid coil MSN1	29
		MFH-...	With armature tube for solenoid coil MSF	44
		JMFH-...	With armature tube for solenoid coil MSF	44
		JMFDH-...	With armature tube for solenoid coil MSF	44
		MDH-...	With solenoid coil MD with round plug M12x1	98
		JMDH-...	With solenoid coil MD with round plug M12x1	98
		JMDDH-...	With solenoid coil MD with round plug M12x1	98
[5]	Regulator plate	LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	169
[6]		VABF-S1-...-R...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	169
[7]				
[8]	Vertical pressure shut-off plate	VABF-S1-...-L1D1-C	For blocking duct 1 and duct 14 upstream of a valve	167
[9]	Vertical supply plate	VABF-S1-...-P1A3-G38	Alternative compressed air supply for port 1 of the mounted valve	165
[10]	Throttle plate	VABF-S1-...-F1B1-C	Restricts the flow of exhaust air in ducts 3 and 5	162
		GRO-ZP-...	Restricts the flow of exhaust air in ducts 3 and 5	162
[11]	Cover plate	NDV-...	For sealing unused manifold sub-bases	156
[12]	End plate	VABE-S1-...	With ports for air supply 1 and exhausts 3 and 5 and pilot air supply 12 and 14	153
[13]	Manifold sub-base	VABV-S1-...	With ports 2 and 4 underneath	146
[14]	Supply plate	VABF-S1-1-...	With ports for air supply 1 and exhausts 3 and 5	148
[15]	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	157

System overview

Manifold assembly

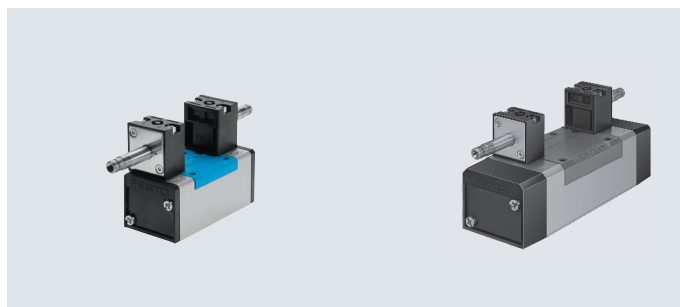


System overview

Individual components		Type	Brief description	→ Page/ Internet
[1]	Solenoid valve	VSVA-BK...	Solenoid valve with square plug type B to industry standard	79
[2]	Solenoid valve	VSVA-...	With central plug M12, 3-pin	83
		MEBH-...	With central plug M12, 4-pin	93
		JMEBH-...	With central plug M12, 4-pin	93
		JMEBDH-...	With central plug M12, 4-pin	93
[3]	Solenoid valve	VSVA-...F8...	With 8 mm armature tube	59
[4]	Solenoid valve	MN1H-...	With armature tube for solenoid coil MSN1	29
		JMN1H-...	With armature tube for solenoid coil MSN1	29
		JMN1DH-...	With armature tube for solenoid coil MSN1	29
		MFH-...	With armature tube for solenoid coil MSF	44
		JMFH-...	With armature tube for solenoid coil MSF	44
		JMFDH-...	With armature tube for solenoid coil MSF	44
		MDH-...	With solenoid coil MD with round plug M12x1	98
		JMDH-...	With solenoid coil MD with round plug M12x1	98
		JMDDH-...	With solenoid coil MD with round plug M12x1	98
[5]	Regulator plate	LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	169
[6]		VABF-S1-...-R...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	169
[7]				
[8]	Vertical pressure shut-off plate	VABF-S1-...-L1D1-C	For blocking duct 1 and duct 14 upstream of a valve	167
[9]	Vertical supply plate	VABF-S1-...-P1A3-G38	Alternative compressed air supply for port 1 of the mounted valve	165
[10]	Throttle plate	VABF-S1-...-F1B1-C	Restricts the flow of exhaust air in ducts 3 and 5	162
		GRO-ZP-...	Restricts the flow of exhaust air in ducts 3 and 5	162
[11]	Cover plate	NDV-...	For sealing unused manifold sub-bases	156
[12]	End plate kit	NEV-...	With ports for air supply 1 and exhausts 3 and 5	152
[13]	Manifold sub-base	NAV-...	With ports 2 and 4 underneath	146
[14]	Isolating disc	NSC-...	For sealing ducts 1, 3, 5 between end plate and manifold sub-base, e.g. to create pressure zones	156

Datasheet – Width 42 mm

 Flow rate
 1200 l/min



General technical data

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Flow direction	With external pilot air supply With internal pilot air supply
Exhaust air function	Reversible Not reversible
Manual override	Can be throttled
Type of mounting	Non-detenting, detenting via accessory
Mounting position	On sub-base, via through-hole
Nominal width [mm]	Any
Overlap	8
Width [mm]	Positive overlap
Grid dimension [mm]	42
Pneumatic connection	43
Pilot exhaust air port 82	1, 2, 3, 4, 5, 12, 14
Pilot exhaust air connection 84	Sub-base size 1 to ISO 5599-1
Noise level [dB (A)]	–
Conforms to standard	–
Certification	85
Maritime classification ¹⁾	ISO 5599-1
Certificate-issuing authority	c UL us - Recognized (OL)
	See certificate
	DNV-TAA000032X

1) More 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]

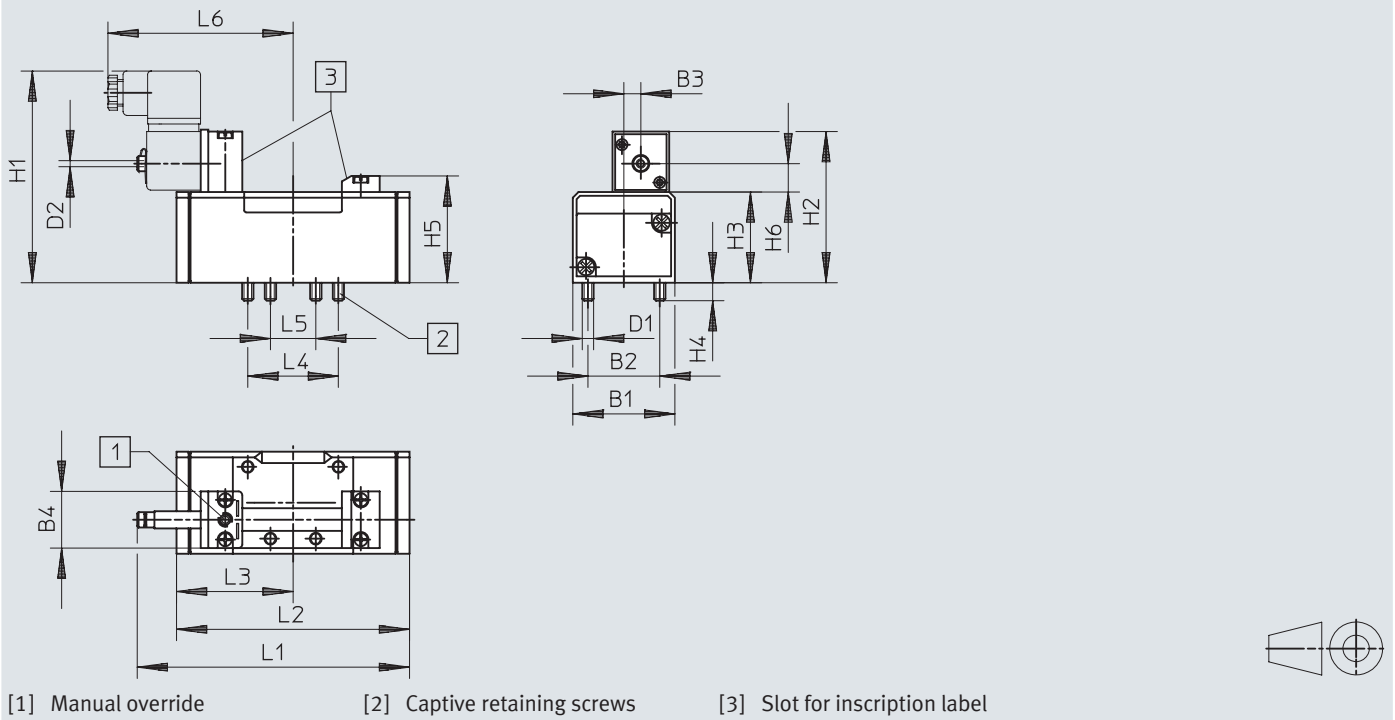
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MN1H-5/2-D-1-C	23	32	–	–
	MN1H-5/2-D-1-S-C	23	32	–	–
	MN1H-5/2-D-1-FR-C	17	39	–	–
	MN1H-5/2-D-1-FR-S-C	17	39	–	–
5/2-way valve, double solenoid	JMN1H-5/2-D-1-C	–	–	18	–
	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	–	–

Datasheet – Width 42 mm

Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air according 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 data				
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 resistant			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	
Characteristic coil data			See solenoid 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	
LABS (PWIS) conformity			VDMA24364-B1/B2-L	

Datasheet – Width 42 mm

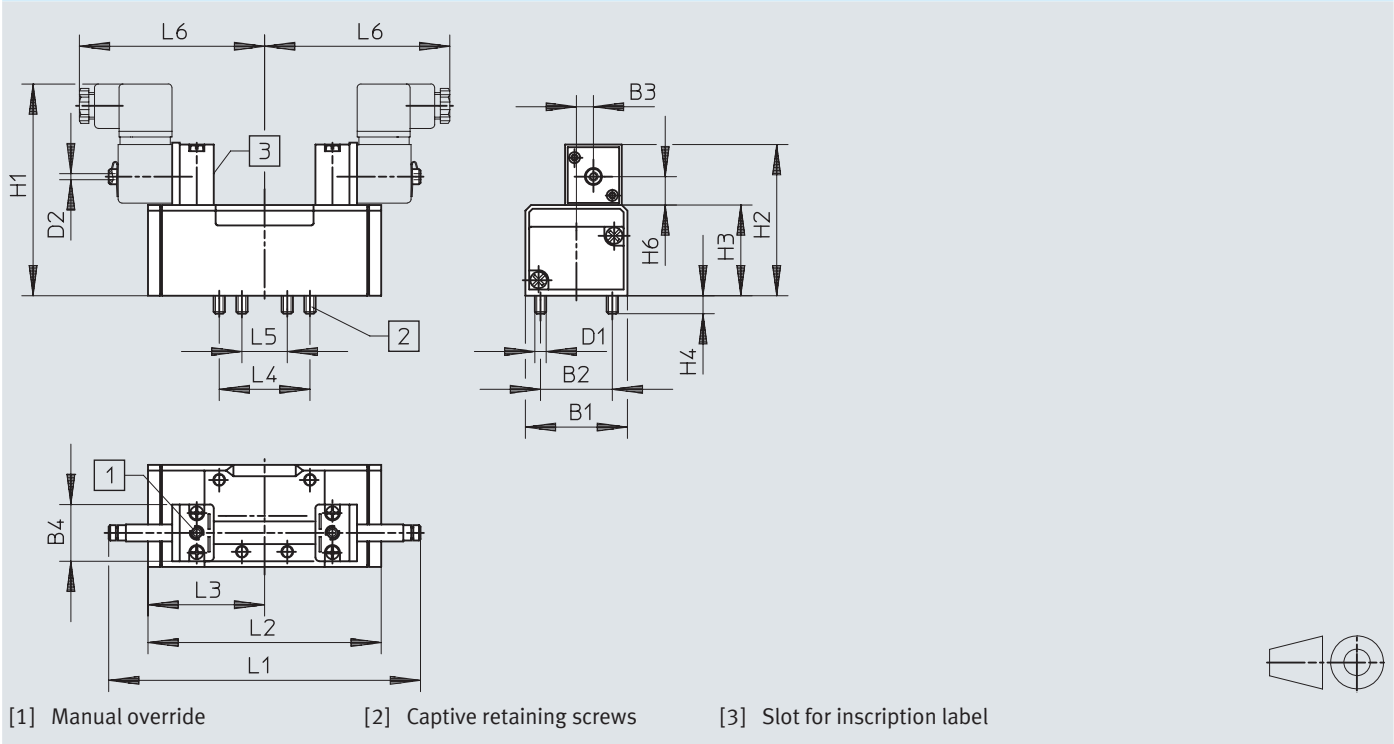
Dimensionsn – 5/2-way valves, single solenoid

Download CAD data → www.festo.com

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				

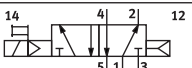
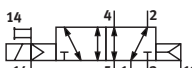
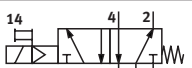
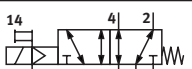
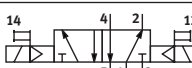
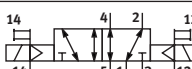
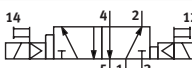
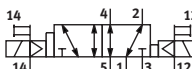
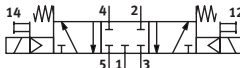
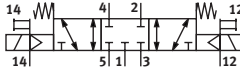
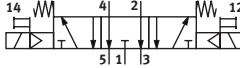
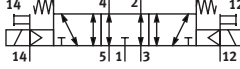
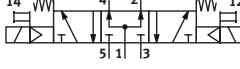
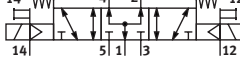
Datasheet – Width 42 mm

Dimensions – 5/2-way valves, double solenoid, 5/3-way valves Download CAD data → www.festo.com



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				

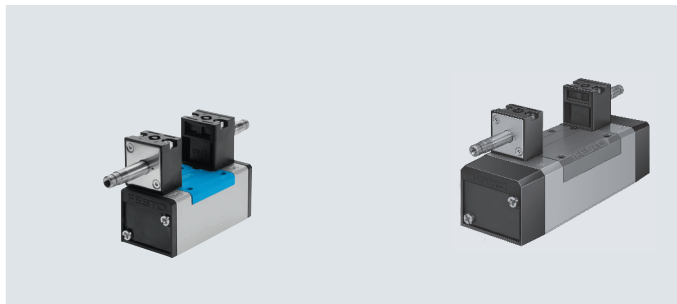
Ordering data – Width 42 mm

Ordering data – Valves with armature tube for solenoid coil MSN11)						
Circuit symbol	Description	Pilot air supply	Weight [g]	ISO code	Part no.	Type
5/2-way valve, single solenoid						
	Pneumatic spring return	Internal	450	151	159688	MN1H-5/2-D-1-C
	Pneumatic spring return	External	450	164	159686	MN1H-5/2-D-1-S-C
	Mechanical spring return	Internal	450	152	159687	MN1H-5/2-D-1-FR-C
	Mechanical spring return	External	450	169	159716	MN1H-5/2-D-1-FR-S-C
5/2-way valve, double solenoid						
	–	Internal	610	155	159690	JMN1H-5/2-D-1-C
	–	External	610	169	159689	JMN1H-5/2-D-1-S-C
	With dominant signal at 14	Internal	610	169	159691	JMN1DH-5/2-D-1-C
	With dominant signal at 14	External	610	169	159717	JMN1DH-5/2-D-1-S-C
5/3-way valve, monostable						
	Normally closed, mechanical spring return	Internal	650	156	159681	MN1H-5/3G-D-1-C
	Normally closed, mechanical spring return	External	650	169	159680	MN1H-5/3G-D-1-S-C
	Exhausted in normal position, mechanical spring return	Internal	650	157	159683	MN1H-5/3E-D-1-C
	Exhausted in normal position, mechanical spring return	External	650	169	159682	MN1H-5/3E-D-1-S-C
	Normally open, mechanical spring return	Internal	650	158	159685	MN1H-5/3B-D-1-C
	Normally open, mechanical spring return	External	650	169	159684	MN1H-5/3B-D-1-S-C

1) Solenoid coils → Page 175

Datasheet – Width 52 mm

-  - Flow rate
2300 l/min

**General technical data**

Design		Piston spool
Sealing principle		Soft
Actuation type		Electrical
Type of control		Piloted
Flow direction	With external pilot air supply	Reversible
	With internal pilot air supply	Not reversible
Exhaust air 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 width	[mm]	11.5
Overlap		Positive overlap
Width	[mm]	52
Grid dimension	[mm]	56
Pneumatic connection	1, 2, 3, 4, 5, 14	Sub-base size 2 to ISO 5599-1
Pneumatic connection 12		Sub-base size 2 to ISO 5599-1
	5/2-way valve, single solenoid	–
Pilot exhaust air port 82		M5
	5/2-way valve, single solenoid	–
Pilot exhaust air port 84		M5
Noise level	[dB (A)]	85
Conforms to standard		ISO 5599-1
Certification	With internal pilot air supply	c UL us - Recognized (OL)
Maritime classification1)		See certificate
Certificate-issuing authority		DNV-TAA000032X

1) More 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, monostable
Standard nominal flow rate	[l/min]	2300	

Datasheet – Width 52 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-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	–	–

Operating and environmental conditions					
Reset method			Pneumatic spring		Mechanical spring
Operating medium			Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium			Compressed air according 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]	0.2 ... 1	0.3 ... 1	
		[bar]	2 ... 10	3 ... 10	
	External pilot air supply	[MPa]	−0.09 ... +1.6	−0.09 ... +1.6	
		[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		

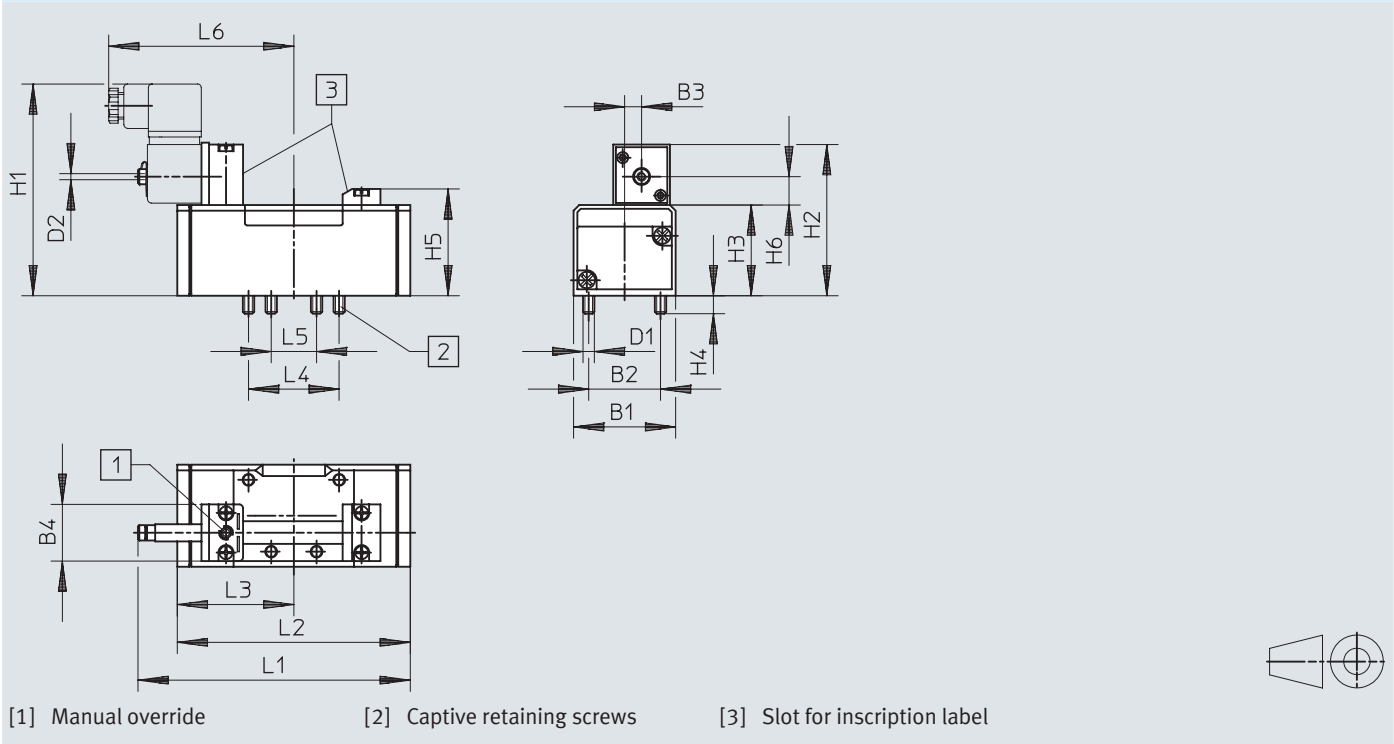
Safety data		
Max. positive test pulse with 0 signal	[µs]	3700
Max. negative test pulse with 1 signal	[µs]	4600
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	

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
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Width 52 mm

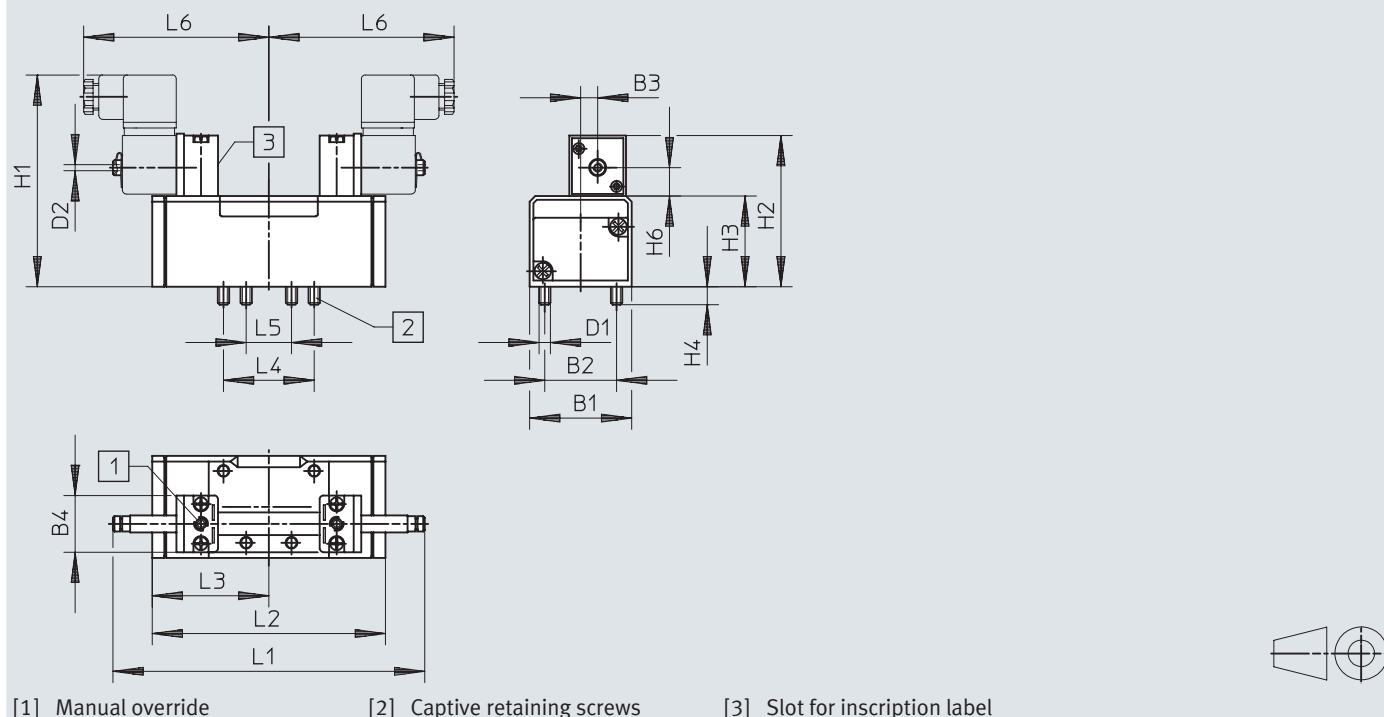
Dimensionsn – 5/2-way valves, single solenoid Download CAD data → www.festo.com



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				

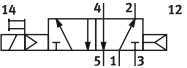
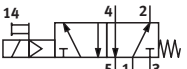
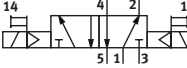
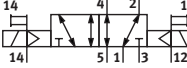
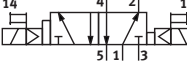
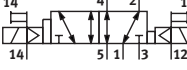
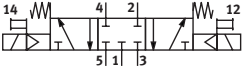
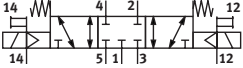
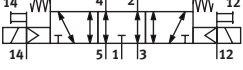
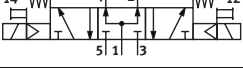
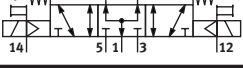
Datasheet – Width 52 mm

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

Download CAD data → www.festo.com

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			

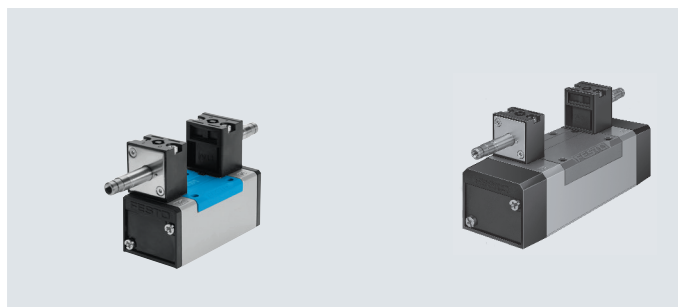
Ordering data – Width 52 mm

Ordering data – Valves with armature tube for solenoid coil MSN11						
Circuit symbol	Description	Pilot air supply	Weight [g]	ISO code	Part no.	Type
5/2-way valve, single solenoid						
	Pneumatic spring return	Internal	710	251	159700	MN1H-5/2-D-2-C
	Pneumatic spring return	External	710	264	159698	MN1H-5/2-D-2-S-C
	Mechanical spring return	Internal	710	252	159699	MN1H-5/2-D-2-FR-C
	Mechanical spring return	External	710	269	159718	MN1H-5/2-D-2-FR-S-C
5/2-way valve, double solenoid						
	–	Internal	940	255	159702	JMN1H-5/2-D-2-C
	–	External	940	269	159701	JMN1H-5/2-D-2-S-C
	With dominant signal at 14	Internal	940	269	159703	JMN1DH-5/2-D-2-C
	With dominant signal at 14	External	940	269	159719	JMN1DH-5/2-D-2-S-C
5/3-way valve, monostable						
	Normally closed, mechanical spring return	Internal	940	256	159693	MN1H-5/3G-D-2-C
	Normally closed, mechanical spring return	External	940	269	159692	MN1H-5/3G-D-2-S-C
	Exhausted in normal position, mechanical spring return	Internal	940	257	159695	MN1H-5/3E-D-2-C
	Exhausted in normal position, mechanical spring return	External	940	269	159694	MN1H-5/3E-D-2-S-C
	Normally open, mechanical spring return	Internal	940	258	159697	MN1H-5/3B-D-2-C
	Normally open, mechanical spring return	External	940	269	159696	MN1H-5/3B-D-2-S-C

1) Solenoid coils → Page 175

Datasheet – Width 65 mm

-  - Flow rate
4600 l/min



General technical data		
Design	Piston spool	
Sealing principle	Soft	
Actuation type	Electrical	
Type of control	Piloted	
Flow direction	With external pilot air supply	Reversible
	With internal pilot air supply	Not reversible
Exhaust air 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 width	[mm]	14.5
Overlap	Positive overlap	
Width	[mm]	65
Grid dimension	[mm]	71
Pneumatic connection	1, 2, 3, 4, 5, 14	Sub-base size 3 to ISO 5599-1
Pneumatic connection 12		Sub-base size 3 to ISO 5599-1
	5/2-way valve, single solenoid	–
Pilot exhaust air port 82		M5
	5/2-way valve, single solenoid	–
Pilot exhaust air connection 84		M5
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	
Certificate-issuing authority	DNV-TAA000032X	

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

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

Datasheet – 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				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air according 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]	0.2 ... 1	0.3 ... 1
		[bar]	2 ... 10	3 ... 10
	External pilot air supply	[MPa]	−0.09 ... +1.6	−0.09 ... +1.6
		[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	

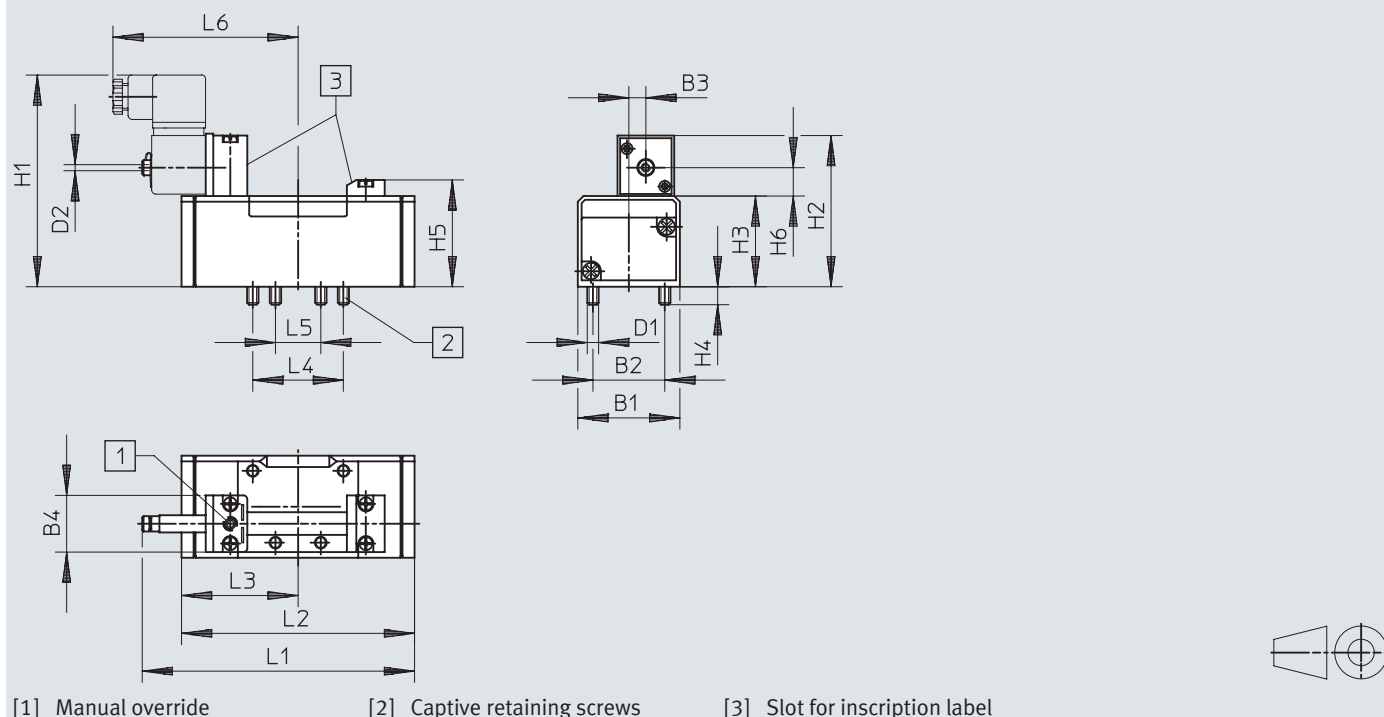
Safety data		
Max. positive test pulse with 0 signal	[µs]	3700
Max. negative test pulse with 1 signal	[µs]	4600
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	

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
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Width 65 mm

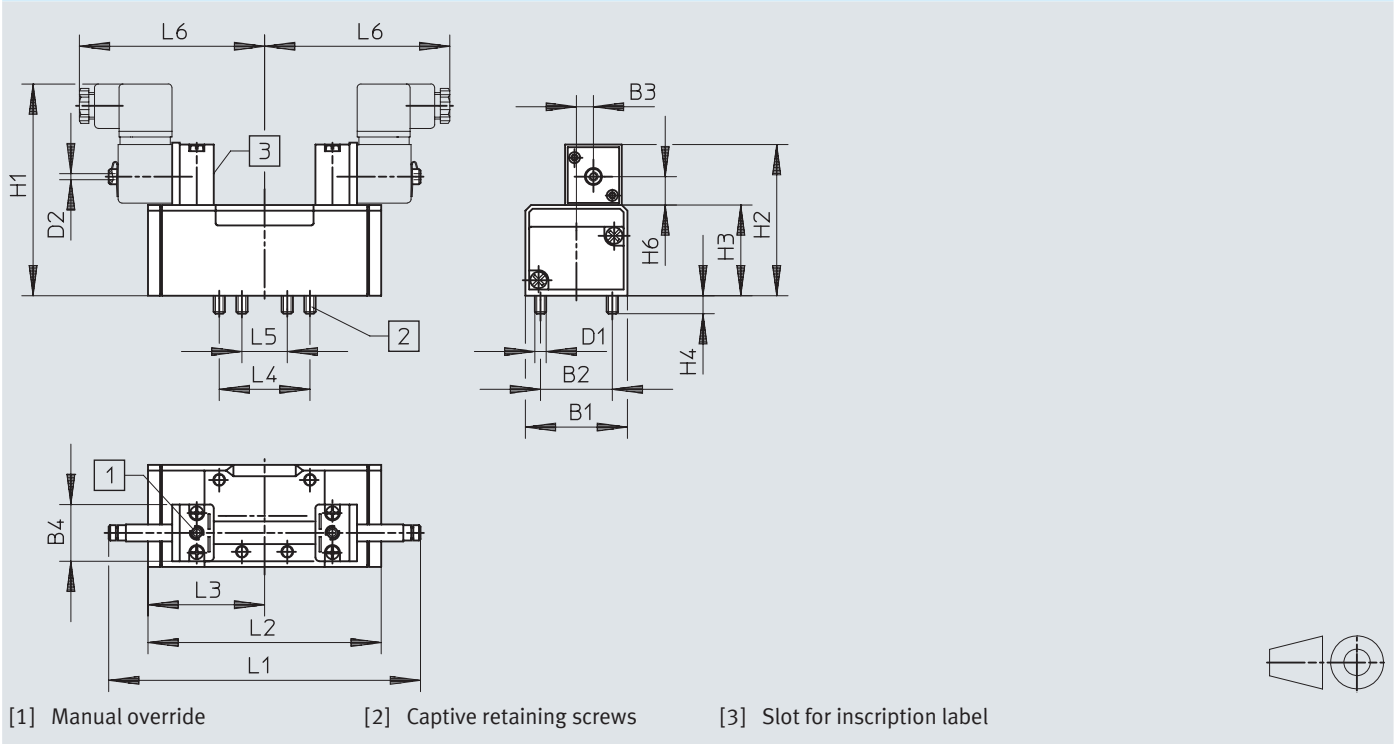
Dimensionsn – 5/2-way valves, single solenoid

Download CAD data → www.festo.com

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				

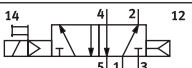
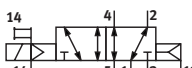
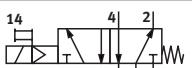
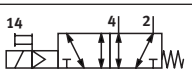
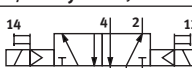
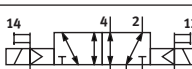
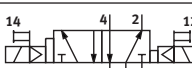
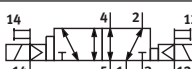
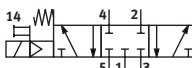
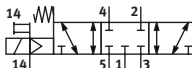
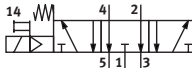
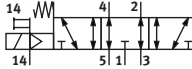
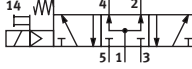
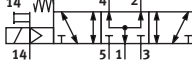
Datasheet – Width 65 mm

Dimensions – 5/2-way valves, double solenoid, 5/3-way valves Download CAD data → www.festo.com



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			

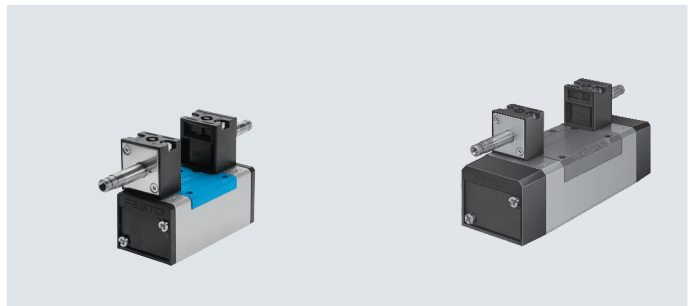
Ordering data – Width 65 mm

Ordering data – Valves with armature tube for solenoid coil MSN11)						
Circuit symbol	Description	Pilot air supply	Weight [g]	ISO code	Part no.	Type
5/2-way valve, single solenoid						
	Pneumatic spring return	Internal	1000	351	159712	MN1H-5/2-D-3-C
	Pneumatic spring return	External	1000	364	159710	MN1H-5/2-D-3-S-C
	Mechanical spring return	Internal	1000	352	159711	MN1H-5/2-D-3-FR-C
	Mechanical spring return	External	1000	369	160896	MN1H-5/2-D-3-FR-S-C
5/2-way valve, double solenoid						
	–	Internal	1090	355	159714	JMN1H-5/2-D-3-C
	–	External	1090	369	159713	JMN1H-5/2-D-3-S-C
	With dominant signal at 14	Internal	1090	369	159715	JMN1DH-5/2-D-3-C
	With dominant signal at 14	External	1090	369	160897	JMN1DH-5/2-D-3-S-C
5/3-way valve, monostable						
	Normally closed, mechanical spring return	Internal	1170	356	159705	MN1H-5/3G-D-3-C
	Normally closed, mechanical spring return	External	1170	369	159704	MN1H-5/3G-D-3-S-C
	Exhausted in normal position, mechanical spring return	Internal	1170	357	159707	MN1H-5/3E-D-3-C
	Exhausted in normal position, mechanical spring return	External	1170	369	159706	MN1H-5/3E-D-3-S-C
	Normally open, mechanical spring return	Internal	1170	358	159709	MN1H-5/3B-D-3-C
	Normally open, mechanical spring return	External	1170	369	159708	MN1H-5/3B-D-3-S-C

1) Solenoid coils → Page 175

Datasheet – Width 42 mm

 Flow rate
 1200 l/min

**General technical data**

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
Flow direction	With external pilot air supply With internal pilot air supply	Reversible Not reversible
Exhaust air 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 width [mm]	8	8
Overlap	Positive overlap	Positive overlap
Width [mm]	42	42
Grid dimension [mm]	43	43
Pneumatic connection	1, 2, 3, 4, 5, 12, 14	Sub-base size 1 to ISO 5599-1
Pilot exhaust air port 82	–	–
Pilot exhaust air connection 84	–	–
Noise level [dB (A)]	85	85
Conforms to standard	ISO 5599-1	ISO 5599-1
Maritime classification ¹⁾	See certificate	–
Certificate-issuing authority	DNV-TAA000032X	–

1) More 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, monostable
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	–	–

Datasheet – 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 IIC T4 Gb
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T105°C Db
Explosion-proof ambient temperature [°C]	-5 ≤ Ta ≤ +40
Explosion protection certification outside EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) ¹⁾	To UK explosion regulations

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

Operating and environmental conditions				
Reset method		Pneumatic spring		Mechanical spring
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium		Compressed air according 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	MFH- ... -C, JMF- ... -C	[°C]	-10 ... +60	
	MFH- ... -EX, JMF- ... -EX	[°C]	-5 ... +40	

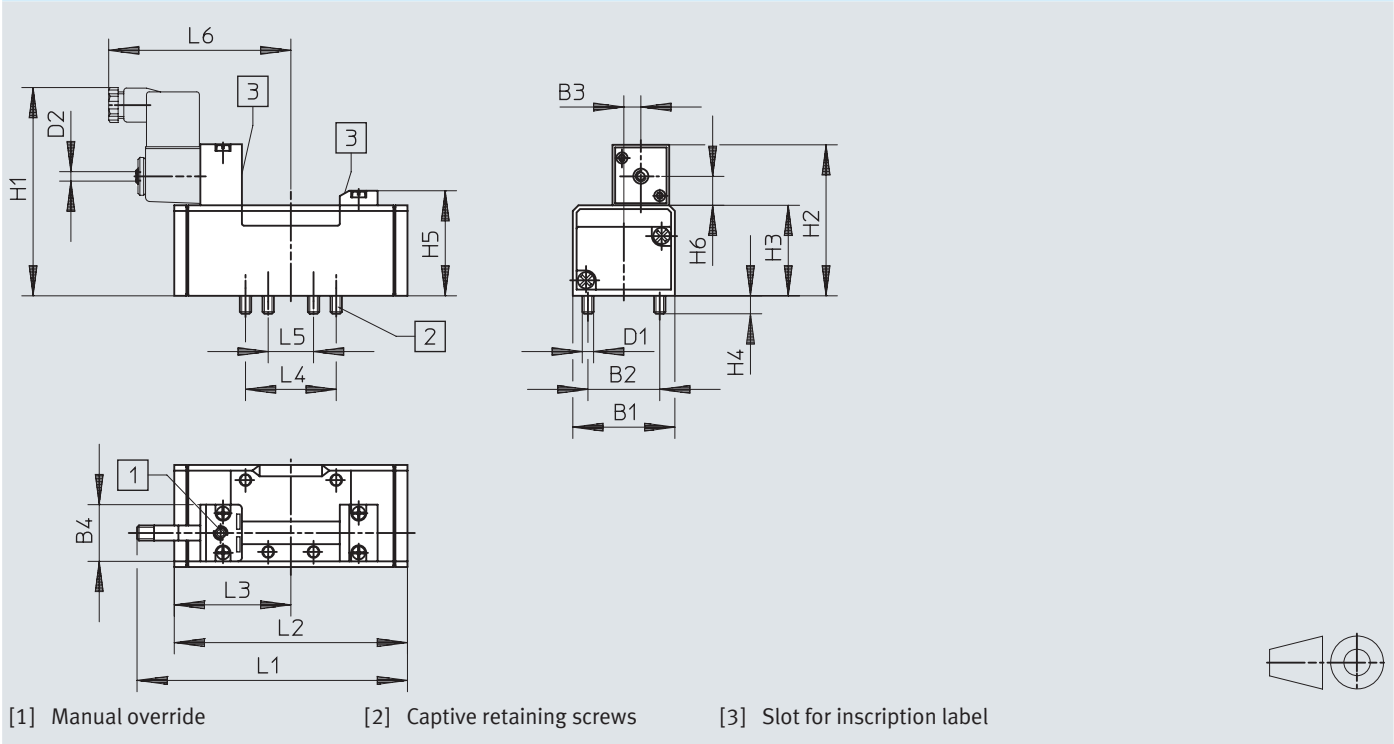
Safety data		
Max. positive test pulse with 0 signal	[µs]	2200
Max. negative test pulse with 1 signal	[µs]	3700
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	

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
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Width 42 mm

Dimensionsn – 5/2-way valves, single solenoid Download CAD data → www.festo.com

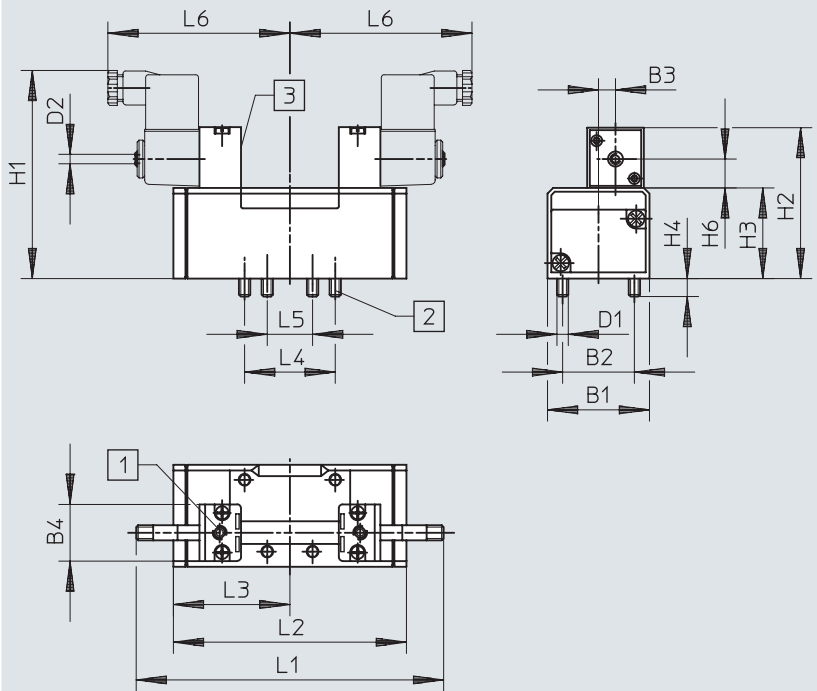


Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
MFH-5/2- ...	42	28	6	30	M5	M5	100	70.3	38	9	46.5	13.5	115	87.6	43.8	36	18	89
MFH-5/2- ... -FR- ...													125.6	98				

Datasheet – Width 42 mm

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

Download CAD data → www.festo.com

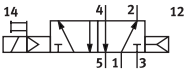
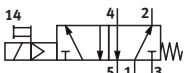
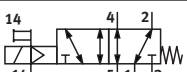
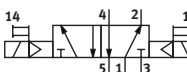
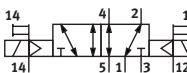
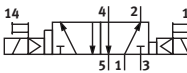
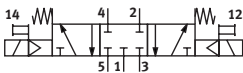
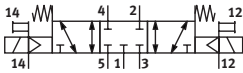
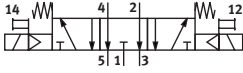
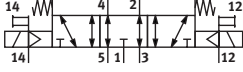
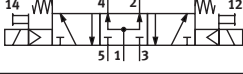
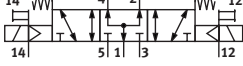


[1] Manual override [2] Captive retaining screws [3] Slot for inscription label



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			

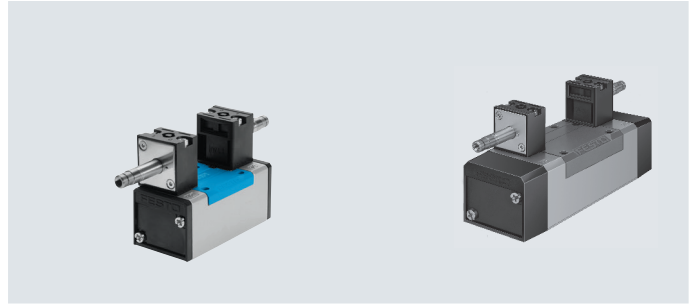
Ordering data – Width 42 mm

Ordering data – Valves with armature tube for solenoid coil MSF1)							
Circuit symbol	Description	Pilot air supply	Weight [g]	ISO code		Part no.	Type
5/2-way valve, single solenoid							
	Pneumatic spring return	Internal	390	151	–	150981	MFH-5/2-D-1-C
					ATEX category → Page 45	535954	MFH-5/2-D-1-C-EX
	Pneumatic spring return	External	390	164	–	152562	MFH-5/2-D-1-S-C
					ATEX category → Page 45	535957	MFH-5/2-D-1-S-C-EX
	Mechanical spring return	Internal	390	152	–	151016	MFH-5/2-D-1-FR-C
					ATEX category → Page 45	535960	MFH-5/2-D-1-FR-C-EX
	Mechanical spring return	External	390	169	–	188510	MFH-5/2-D-1-FR-S-C
5/2-way valve, double solenoid							
	–	Internal	490	155	–	150980	JMFH-5/2-D-1-C
					ATEX category → Page 45	535963	JMFH-5/2-D-1-C-EX
	–	External	490	169	–	152563	JMFH-5/2-D-1-S-C
					ATEX category → Page 45	535966	JMFH-5/2-D-1-S-C-EX
	With dominant signal at 14	Internal	490	169	–	151019	JMFDH-5/2-D-1-C
					ATEX category → Page 45	536071	JMFDH-5/2-D-1-C-EX
5/3-way valve, monostable							
	Normally closed, mechanical spring return	Internal	520	156	–	150982	MFH-5/3G-D-1-C
					ATEX category → Page 45	535969	MFH-5/3G-D-1-C-EX
	Normally closed, mechanical spring return	External	520	169	–	152564	MFH-5/3G-D-1-S-C
					ATEX category → Page 45	535972	MFH-5/3G-D-1-S-C-EX
	Normally exhausted, mechanical spring return	Internal	520	157	–	150983	MFH-5/3E-D-1-C
					ATEX category → Page 45	535975	MFH-5/3E-D-1-C-EX
	Normally exhausted, mechanical spring return	External	520	169	–	152565	MFH-5/3E-D-1-S-C
					ATEX category → Page 45	535978	MFH-5/3E-D-1-S-C-EX
	Normally open, mechanical spring return	Internal	520	158	–	150984	MFH-5/3B-D-1-C
					ATEX category → Page 45	535981	MFH-5/3B-D-1-C-EX
	Normally open, mechanical spring return	External	520	169	–	152566	MFH-5/3B-D-1-S-C
					ATEX category → Page 45	535984	MFH-5/3B-D-1-S-C-EX

1) Solenoid coils a Page 175

Datasheet – Width 52 mm

 Flow rate
 2300 l/min

**General technical data**

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
Flow direction	With external pilot air supply	Reversible
	With internal pilot air supply	Not reversible
Exhaust air 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 width [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
Pneumatic connection 1, 2, 3, 4, 5, 14	Sub-base size 2 to ISO 5599-1	Sub-base size 2 to ISO 5599-1
Pneumatic connection 12	Sub-base size 2 to ISO 5599-1	Sub-base size 2 to ISO 5599-1
Pilot exhaust air port 82	5/2-way valve, single solenoid	–
	5/2-way valve, single solenoid	–
Pilot exhaust air connection 84	M5	M5
Noise level [dB (A)]	85	85
Conforms to standard	ISO 5599-1	ISO 5599-1
Maritime classification ¹⁾	See certificate	–
Certificate-issuing authority	DNV-TAA000032X	–

1) More 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, monostable
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	–	–

Datasheet – Width 52 mm

ATEX		
Type	MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -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 T105°C Db	
Explosion-proof ambient temperature	[°C]	-5 ≤ Ta ≤ +40
Explosion protection certification outside EU	EPL Db (GB)	
	EPL Gb (GB)	
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)	
UKCA marking (see declaration of conformity) 1)	To UK explosion regulations	

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

Operating and environmental conditions					
Reset method			Pneumatic spring		Mechanical spring
Operating medium			Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium			Compressed air according 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]	0.2 ... 1	0.3 ... 1	
		[bar]	2 ... 10	3 ... 10	
	External pilot air supply	[MPa]	−0.09 ... +1.6	−0.09 ... +1.6	
		[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		

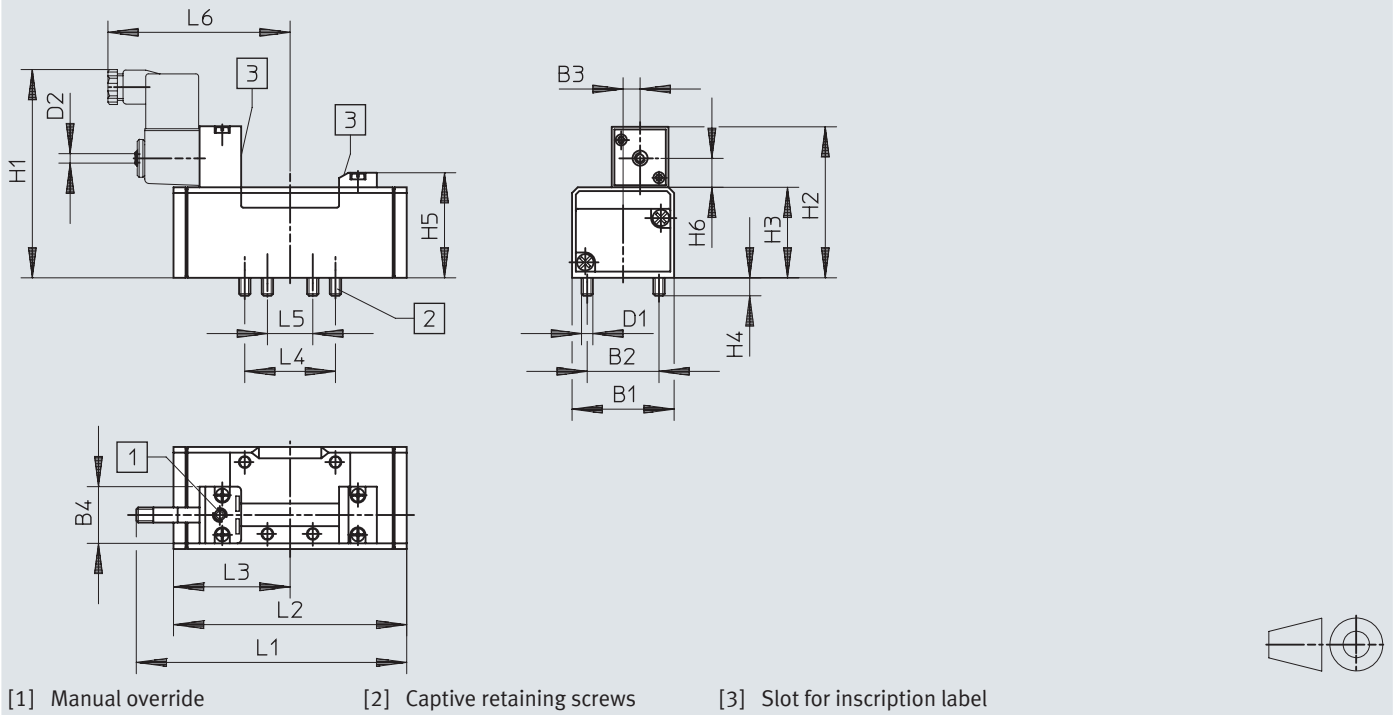
Safety data		
Max. positive test pulse with 0 signal	[µs]	2200
Max. negative test pulse with 1 signal	[µs]	3700
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	

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
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Width 52 mm

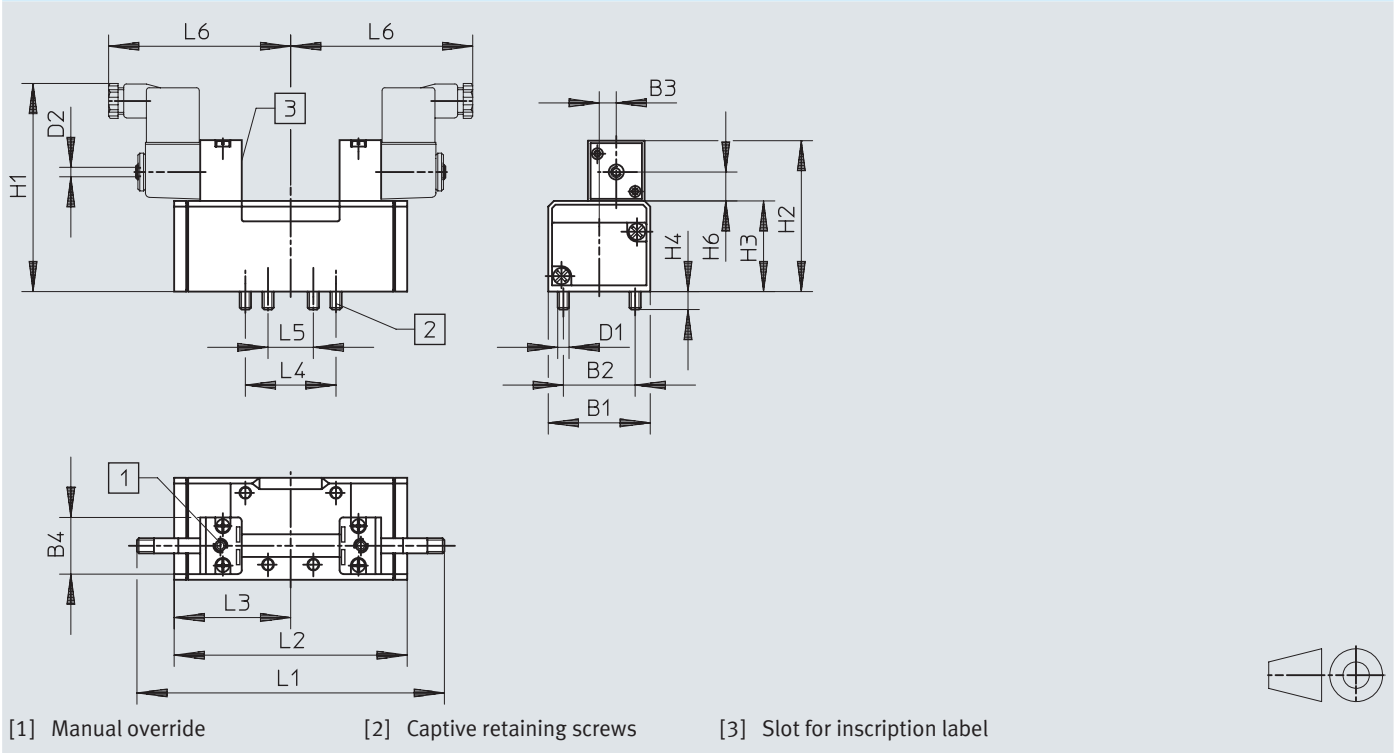
Dimensionsn – 5/2-way valves, single solenoid

Download CAD data → www.festo.com

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				

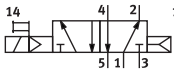
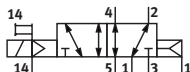
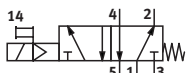
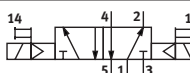
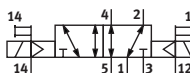
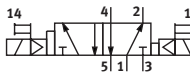
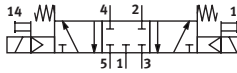
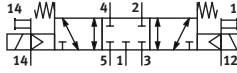
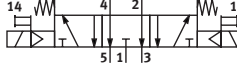
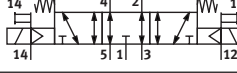
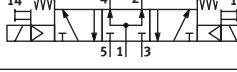
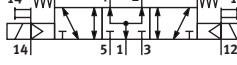
Datasheet – Width 52 mm

Dimensions – 5/2-way valves, double solenoid, 5/3-way valves Download CAD data → www.festo.com



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

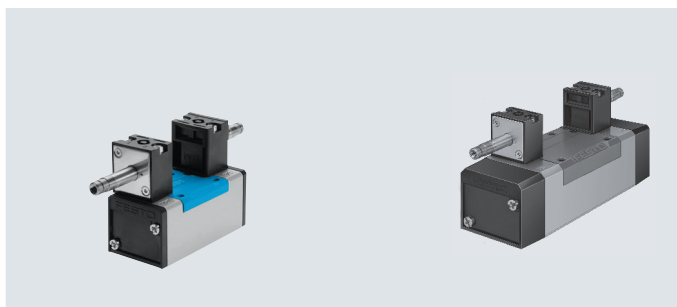
Ordering data – Width 52 mm

Ordering data – Valves with armature tube for solenoid coil MSF1)							
Circuit symbol	Description	Pilot air supply	Weight [g]	ISO code		Part no.	Type
5/2-way valve, single solenoid							
	Pneumatic spring return	Internal	650	251	–	151851	MFH-5/2-D-2-C
					ATEX category → Page 50	535955	MFH-5/2-D-2-C-EX
	Pneumatic spring return	External	650	264	–	151022	MFH-5/2-D-2-S-C
					ATEX category → Page 50	535958	MFH-5/2-D-2-S-C-EX
	Mechanical spring return	Internal	650	252	–	151709	MFH-5/2-D-2-FR-C
					ATEX category → Page 50	535961	MFH-5/2-D-2-FR-C-EX
5/2-way valve, double solenoid							
	–	Internal	820	255	–	151852	JMFH-5/2-D-2-C
					ATEX category → Page 50	535964	JMFH-5/2-D-2-C-EX
	–	External	820	269	–	151023	JMFH-5/2-D-2-S-C
					ATEX category → Page 50	535967	JMFH-5/2-D-2-S-C-EX
	With dominant signal at 14	Internal	820	269	–	151853	JMFDH-5/2-D-2-C
					ATEX category → Page 50	536072	JMFDH-5/2-D-2-C-EX
5/3-way valve, monostable							
	Normally closed, mechanical spring return	Internal	820	256	–	151854	MFH-5/3G-D-2-C
					ATEX category → Page 50	535970	MFH-5/3G-D-2-C-EX
	Normally closed, mechanical spring return	External	820	269	–	151024	MFH-5/3G-D-2-S-C
					ATEX category → Page 50	535973	MFH-5/3G-D-2-S-C-EX
	Normally exhausted, mechanical spring return	Internal	820	257	–	151855	MFH-5/3E-D-2-C
					ATEX category → Page 50	535976	MFH-5/3E-D-2-C-EX
	Normally exhausted, mechanical spring return	External	820	269	–	151025	MFH-5/3E-D-2-S-C
					ATEX category → Page 50	535979	MFH-5/3E-D-2-S-C-EX
	Normally open, mechanical spring return	Internal	820	258	–	151856	MFH-5/3B-D-2-C
					ATEX category → Page 50	535982	MFH-5/3B-D-2-C-EX
	Normally open, mechanical spring return	External	820	269	–	151026	MFH-5/3B-D-2-S-C
					ATEX category → Page 50	535985	MFH-5/3B-D-2-S-C-EX

1) Solenoid coils a Page 175

Datasheet – Width 65 mm

 Flow rate
Up to 4600 l/min

**General technical data**

Type		
Design		Piston spool
Sealing principle		Soft
Actuation type		Electrical
Type of control		Piloted
Flow direction	With external pilot air supply	Reversible
	With internal pilot air supply	Not reversible
Exhaust air 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 width	[mm]	14.5
Overlap		Positive overlap
Width	[mm]	65
Grid dimension	[mm]	71
Pneumatic connection	1, 2, 3, 4, 5, 14	Sub-base size 3 to ISO 5599-1
Pneumatic connection 12		Sub-base size 3 to ISO 5599-1
	5/2-way valve, single solenoid	–
Pilot exhaust air port 82		M5
	5/2-way valve, single solenoid	–
Pilot exhaust air port 84		M5
Noise level	[dB (A)]	85
Conforms to standard		ISO 5599-1
Maritime classification ¹⁾	MFH- ... -C, JMF ... -C	See certificate
	MFH- ... -EX, JMF ... -EX	–
Certificate-issuing authority	MFH- ... -C, JMF ... -C	DNV-TAA000032X
	MFH- ... -EX, JMF ... -EX	–

1) More 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

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-...	60	66	–	–
	MFH-5/2-...-S-C	33	74	–	–
	MFH-5/2-D-1-FR-...	28	79	–	–
5/2-way valve, double solenoid	JMFH-...	–	–	18	–
	JMFDH-...	–	–	18	18
	JMFDH-5/2-D-3-S-C	–	–	24	21
5/3-way valve	MFH-5/3G-...	36	77	–	–
	MFH-5/3E-...	37	78	–	–
	MFH-5/3B-...	36	75	–	–

Datasheet – 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 IIC T4 Gb
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T105°C Db
Explosion-proof ambient temperature	[°C] -5 ≤ Ta ≤ +40
Explosion protection certification outside EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) 1)	To UK explosion regulations

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

Operating and environmental conditions				
Reset method		Pneumatic spring		Mechanical spring
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium		Compressed air according 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]	0.2 ... 1	0.3 ... 1
		[bar]	2 ... 10	3 ... 10
	External pilot air supply	[MPa]	-0.09 ... +1.6	-0.09 ... +1.6
		[bar]	-0.9 ... +16	-0.9 ... +16
Pilot pressure		[bar]	2 ... 10	3 ... 10
Ambient temperature		[°C]	-5 ... +40	
	JMFDH-5/2-D-3-S-C	[°C]	-5 ... +50	
	MFH-5/2-D-3-FR-S-C	[°C]	-5 ... +50	
Temperature of medium		[°C]	-10 ... +60	
	JMFDH-5/2-D-3-S-C	[°C]	-5 ... +50	
	MFH-5/2-D-3-FR-S-C	[°C]	-5 ... +50	

Safety data	
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 resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

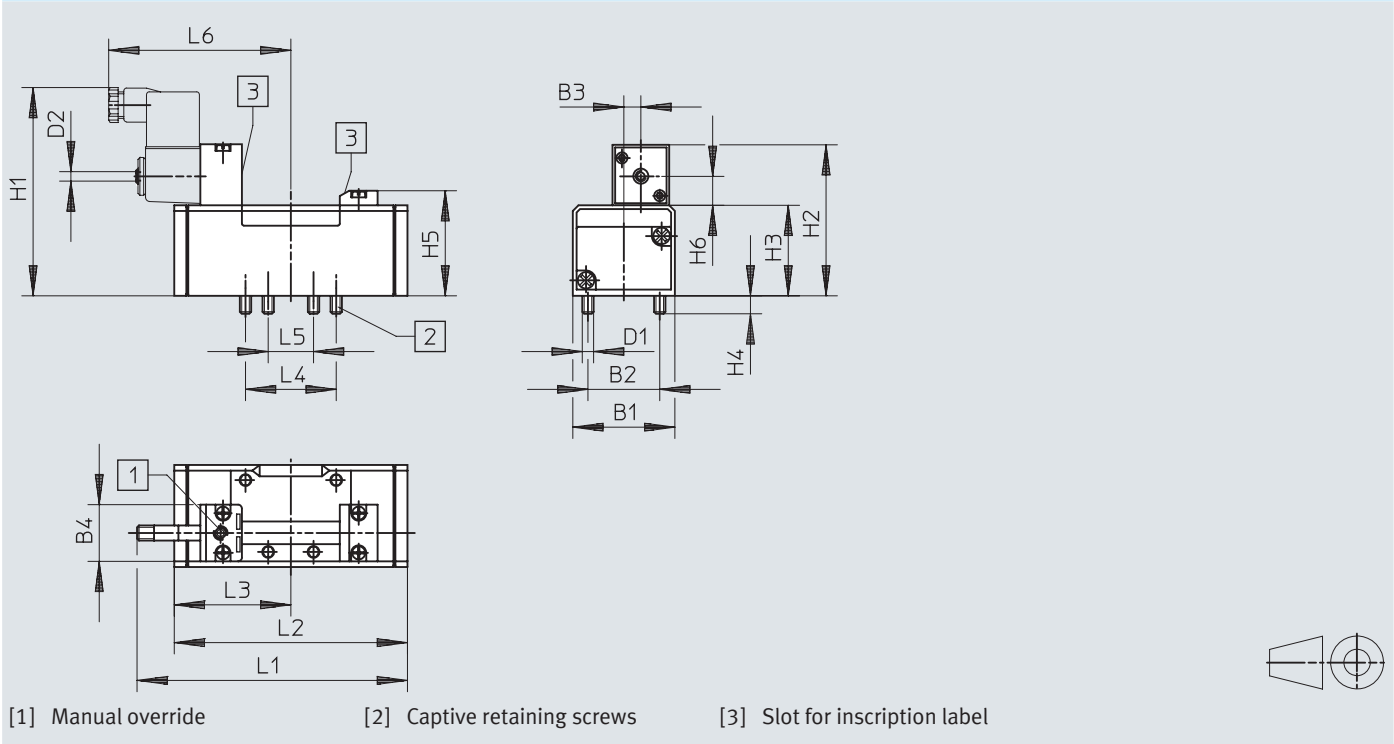
Safety data – JMFDH-5/2-D-3-S-C and MFH-5/2-D-3-FR-S-C	
Max. positive test pulse with 0 signal	[µs] 2200
Max. negative test pulse with 1 signal	[µs] 3700
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

Electrical data		
Electrical connection		Via F coil, to be ordered separately
	JMFDH-5/2-D-3-S-C	Via N1 coil, to be ordered separately
	MFH-5/2-D-3-FR-S-C	
Degree of protection to EN 60529		IP65

Materials	
Housing	Die-cast aluminium
Seals	HNBR, NBR
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Width 65 mm

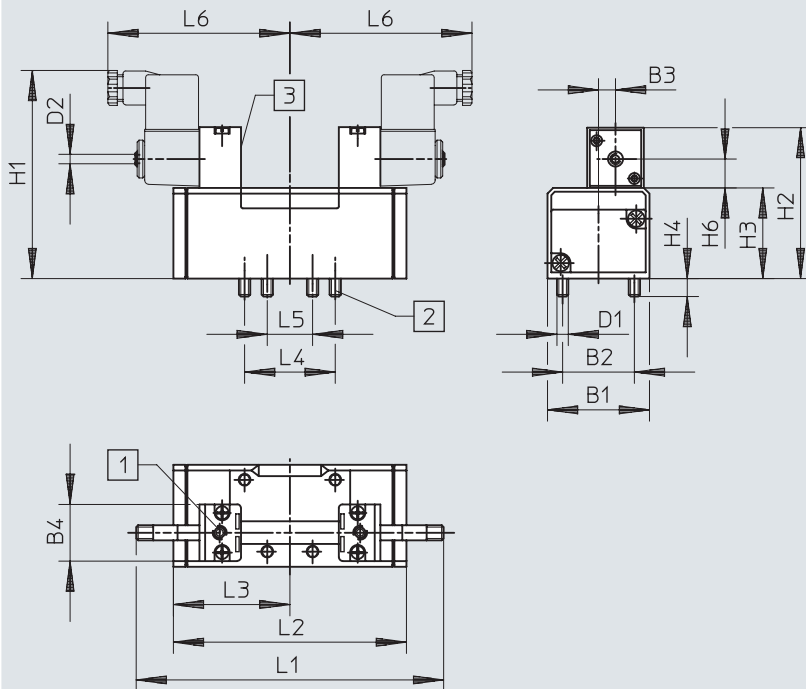
Dimensionsn – 5/2-way valves, single solenoid Download CAD data → www.festo.com



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				

Datasheet – Width 65 mm

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

Download CAD data → www.festo.com

[1] Manual override

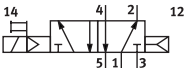
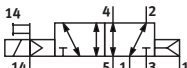
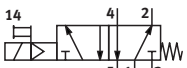
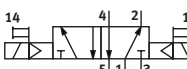
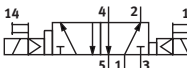
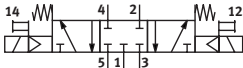
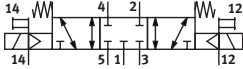
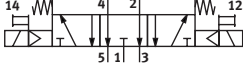
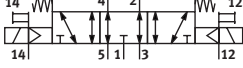
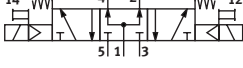
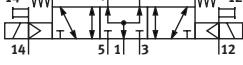
[2] Captive retaining screws

[3] 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			

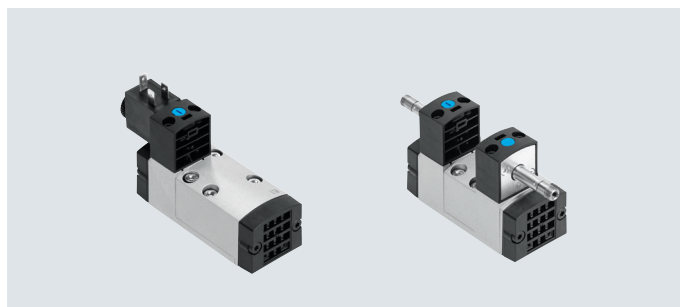
Ordering data – Width 65 mm

Ordering data – Valves with armature tube for solenoid coil MSF1)							
Circuit symbol	Description	Pilot air supply	Weight [g]	ISO code		Part no.	Type
5/2-way valve, single solenoid							
	Pneumatic spring return	Internal	960	351	–	151870	MFH-5/2-D-3-C
					ATEX category → Page 55	535956	MFH-5/2-D-3-C-EX
	Pneumatic spring return	External	960	364	–	151032	MFH-5/2-D-3-S-C
					ATEX category → Page 55	535959	MFH-5/2-D-3-S-C-EX
	Mechanical spring return	Internal	960	352	–	151711	MFH-5/2-D-3-FR-C
					ATEX category → Page 55	535962	MFH-5/2-D-3-FR-C-EX
5/2-way valve, double solenoid							
	–	Internal	1060	355	–	151871	JMFH-5/2-D-3-C
					ATEX category → Page 55	535965	JMFH-5/2-D-3-C-EX
	–	External	1060	369	–	151033	JMFH-5/2-D-3-S-C
					ATEX category → Page 55	535968	JMFH-5/2-D-3-S-C-EX
	With dominant signal at 14	Internal	1060	369	–	151872	JMFDH-5/2-D-3-C
					ATEX category → Page 55	536073	JMFDH-5/2-D-3-C-EX
5/3-way valve, monostable							
	Normally closed, mechanical spring return	Internal	1040	356	–	151873	MFH-5/3G-D-3-C
					ATEX category → Page 55	535971	MFH-5/3G-D-3-C-EX
	Normally closed, mechanical spring return	External	1040	369	–	151034	MFH-5/3G-D-3-S-C
					ATEX category → Page 55	535974	MFH-5/3G-D-3-S-C-EX
	Normally exhausted, mechanical spring return	Internal	1040	357	–	151874	MFH-5/3E-D-3-C
					ATEX category → Page 55	535977	MFH-5/3E-D-3-C-EX
	Normally exhausted, mechanical spring return	External	1040	369	–	151035	MFH-5/3E-D-3-S-C
					ATEX category → Page 55	535980	MFH-5/3E-D-3-S-C-EX
	Normally open, mechanical spring return	Internal	1040	358	–	151875	MFH-5/3B-D-3-C
					ATEX category → Page 55	535983	MFH-5/3B-D-3-C-EX
	Normally open, mechanical spring return	External	1040	369	–	151036	MFH-5/3B-D-3-S-C
					ATEX category → Page 55	535986	MFH-5/3B-D-3-S-C-EX

1) Solenoid coils a Page 175

Datasheet – Width 42 mm

-  - Flow rate
1800 l/min



General technical data		
Design		Piston spool
Sealing principle		Soft
Actuation type		Electrical
Type of control		Piloted
Flow direction	External pilot air supply	Reversible
	Internal pilot air supply	Not reversible
Suitable for vacuum	External pilot air supply, reset method: mechanical spring or bistable	Yes
	External pilot air supply, pneumatic spring return	No
	Internal pilot air supply	No
Exhaust air function		Via individual sub-base
Type of mounting		On sub-base
Mounting position		Any
Max. tightening torque for valve mounting	[Nm]	1
Nominal width	[mm]	8
Overlap		Positive overlap
Width	[mm]	42
Grid dimension	[mm]	43
Pneumatic connection	1, 2, 3, 4, 5, 12, 14	Sub-base size 1 to ISO 5599-1
Noise level	[dB (A)]	85
Conforms to standard		ISO 5599-1
Pilot interface		To ISO 15218

Datasheet – Width 42 mm

Flow rate values – 2x2/2-way valves		
Nominal flow rate standardised according to ISO 8778	[l/min]	1700
Flow rate of valve	[l/min]	1500
Flow rate of valve on individual sub-base	[l/min]	1300
Flow rate of pneumatically linked valve	[l/min]	1300
Optimised flow rate of pneumatically linked valve	[l/min]	1500
b value		0.18
C value	[l/sbar]	6.503

Flow rate values – 2x3/2-way valves		Normally closed		Normally open	
		Mechanical spring return	Pneumatic spring return	Mechanical spring return	Pneumatic spring return
Nominal flow rate standardised according to ISO 8778	[l/min]	1400	1300	1400	1300
Flow rate of valve	[l/min]	1300	1300	1300	1200
Flow rate of valve on individual sub-base	[l/min]	1100	1200	1100	1100
Flow rate of pneumatically linked valve	[l/min]	1100	1200	1100	1000
Optimised flow rate of pneumatically linked valve	[l/min]	1200	1300	1200	1100
b value		0.18	0.23	0.21	0.13
C value	[l/sbar]	5.293	5.597	5.511	5.347

Flow rate values – 5/2-way valve, single solenoid		Mechanical spring return	Pneumatic spring return
Nominal flow rate standardised according to ISO 8778	[l/min]	1800	1800
Flow rate of valve	[l/min]	1700	1700
Flow rate of valve on individual sub-base	[l/min]	1400	1400
Flow rate of pneumatically linked valve	[l/min]	1400	1400
Optimised flow rate of pneumatically linked valve	[l/min]	1600	1600
b value		1.7	1.6
C value	[l/sbar]	7.718	7.707

Flow rate values – 5/2-way valve, double solenoid		Double solenoid	Double solenoid with dominant signal
Nominal flow rate standardised according to ISO 8778	[l/min]	1800	1800
Flow rate of valve	[l/min]	1700	1700
Flow rate of valve on individual sub-base	[l/min]	1400	1400
Flow rate of pneumatically linked valve	[l/min]	1400	1400
Optimised flow rate of pneumatically linked valve	[l/min]	1600	1600
b value		1.6	1.5
C value	[l/sbar]	7.697	7.663

Flow rate values – 5/3-way valve		Normally closed	Normally exhausted	Normally pressurised
Nominal flow rate standardised according to ISO 8778	[l/min]	1800	1800	1600
Flow rate of valve	[l/min]	1600	1600	1500
Flow rate of valve on individual sub-base	[l/min]	1400	1400	1300
Flow rate of pneumatically linked valve	[l/min]	1300	1300	1200
Optimised flow rate of pneumatically linked valve	[l/min]	1500	1500	1400
b value		0.14	0.24	0.14
C value	[l/sbar]	7.482	7.141	6.799

Datasheet – Width 42 mm

Switching times		Switching time on	Switching time off	Switching time changeover	Maximum switching frequency
		[ms]	[ms]	[ms]	[Hz]
2x2/2-way valves		18	28	–	5
2x3/2-way valve, single solenoid	Mechanical spring return	22	25	–	5
	Pneumatic spring return	18	38	–	5
5/2-way valve, single solenoid	Mechanical spring return	21	52	–	1
	Pneumatic spring return	28	40	–	5
5/2-way valve, double solenoid		–	–	16	5
5/2-way valve, double solenoid, with dominant signal		–	–	16	5
5/3-way valve	Normally closed	18	55	32	5
	Normally exhausted	20	55	30	5
	Normally pressurised	22	55	27	5

Operating and environmental conditions – 2x2/2-way valves		Internal pilot air	External pilot air
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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]	0.3 ... 1	–0.09 ... 1
	[bar]	3 ... 10	–0.9 ... 10
Pilot pressure	[MPa]	0.3 ... 1	
	[bar]	3 ... 10	
Ambient temperature	[°C]	–10 ... +50	
Temperature of medium	[°C]	–10 ... +50	
Relative humidity	[%]	0 ... 90	

Datasheet – Width 42 mm

Operating and environmental conditions – 2x3/2-way valves		Internal pilot air	External pilot air	
			Pneumatic spring return	Mechanical spring return
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium		Compressed air according 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]	0.3 ... 1	0.3 ... 1	–0.09 ... 1
	[bar]	3 ... 10	3 ... 10	–0.9 ... 10
Pilot pressure	[MPa]	0.3 ... 1		
	[bar]	3 ... 10		
Ambient temperature	[°C]	–10 ... +50		
Temperature of medium	[°C]	–10 ... +50		
Relative humidity	[%]	0 ... 90		

Operating and environmental conditions – 5/2-way valves			
	Internal pilot air	External pilot air	
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium	Compressed air according 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]	0.3 ... 1.6	–0.09 ... 1.6
	[bar]	3 ... 16	–0.9 ... 16
Pilot pressure	[MPa]	0.3 ... 1	
	[bar]	3 ... 10	
Ambient temperature	[°C]	–10 ... +50	
Temperature of medium	[°C]	–10 ... +50	
Relative humidity	[%]	0 ... 90	

Operating and environmental conditions – 5/3-way valves			
	Internal pilot air	External pilot air	
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium	Compressed air according 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]	0.3 ... 1.6	–0.09 ... 1.6
	[bar]	3 ... 16	–0.9 ... 16
Pilot pressure	[MPa]	0.3 ... 1	
	[bar]	3 ... 10	
Ambient temperature	[°C]	–10 ... +50	
Temperature of medium	[°C]	–10 ... +50	
Relative humidity	[%]	0 ... 90	

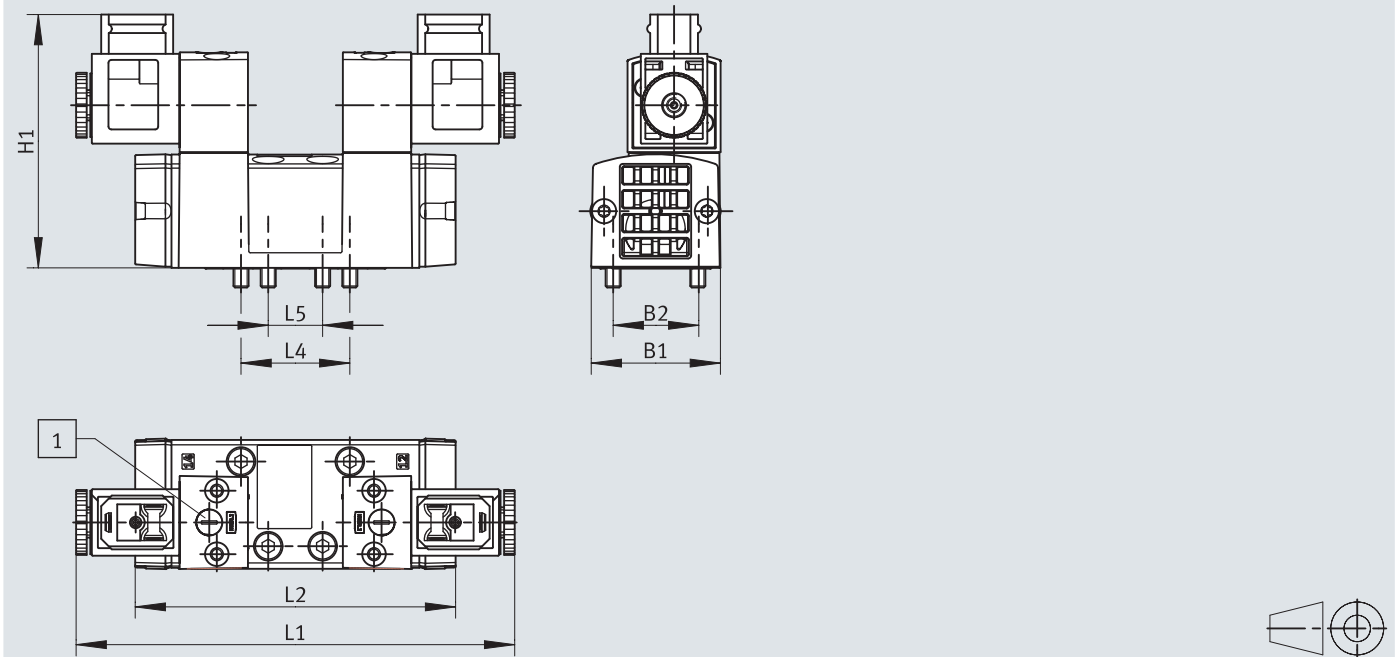
Electrical data		With 8 mm armature tube	Electrical connection type A	Electrical connection type B
			Type A	Type B
Electrical connection		–	To EN 175301-803	
Characteristic coil data		–	24 V DC: 2.6 W	24 V DC: 3.3 W
Permissible voltage fluctuations	[%]	–	±10	±10
Duty cycle	[%]	100	100	100
Degree of protection		IP65	IP65	IP65
		NEMA 4	NEMA 4	NEMA 4

Materials	
Housing	Die-cast aluminium
Seals	NBR
Screws	Steel
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Width 42 mm

Dimensionsn – 2x2/2- and 2x3/2- and double solenoid 5/2-way valves and 5/3-way valves, with solenoid coil

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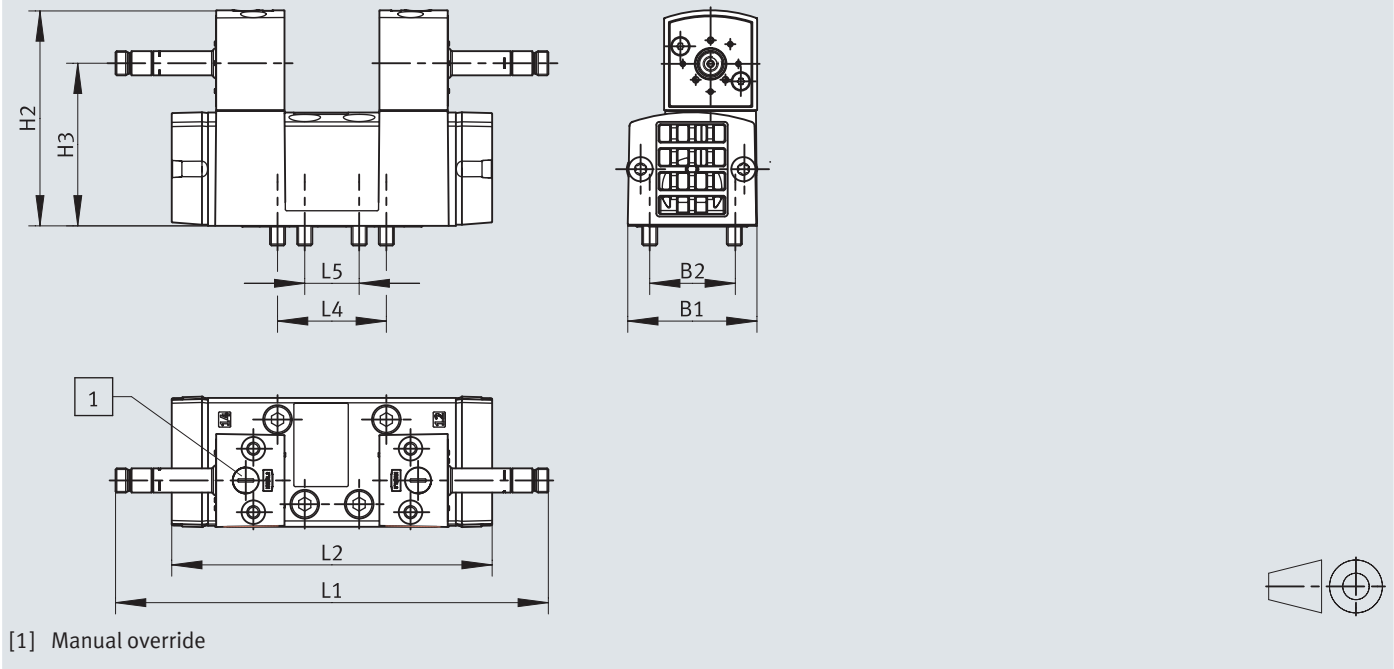
[1] Manual override

	B1	B2	H1	L1	L2	L4	L5
VSVA-B-B...-D1-F8-1A1	43.1	28	83.8	146.1	106	36	18
VSVA-B-D...-D1-F8-1A1							
VSVA-B-T...-D1-F8-1A1							
VSVA-B-B...-D1-F8-1B2							
VSVA-B-D...-D1-F8-1B2							
VSVA-B-T...-D1-F8-1B2							

Datasheet – Width 42 mm

Dimensions – 2x2/2- and 2x3/2- and double solenoid 5/2-way valves and 5/3-way valves, without solenoid coil

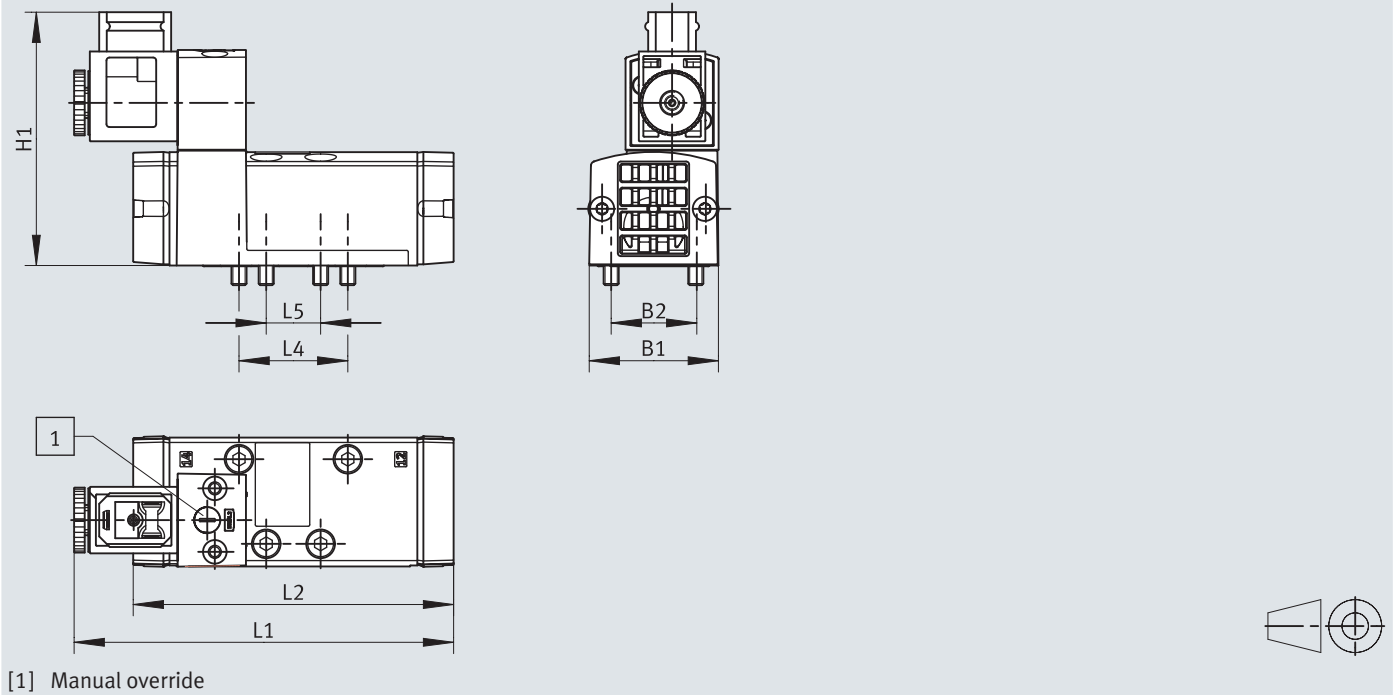
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	B1	B2	H2	H3	L1	L2	L4	L5
VSVA-B-B...-D1-F8	43.1	28	71.3	53.8	143.2	106	36	18
VSVA-B-D...-D1-F8								
VSVA-B-T...-D1-F8								

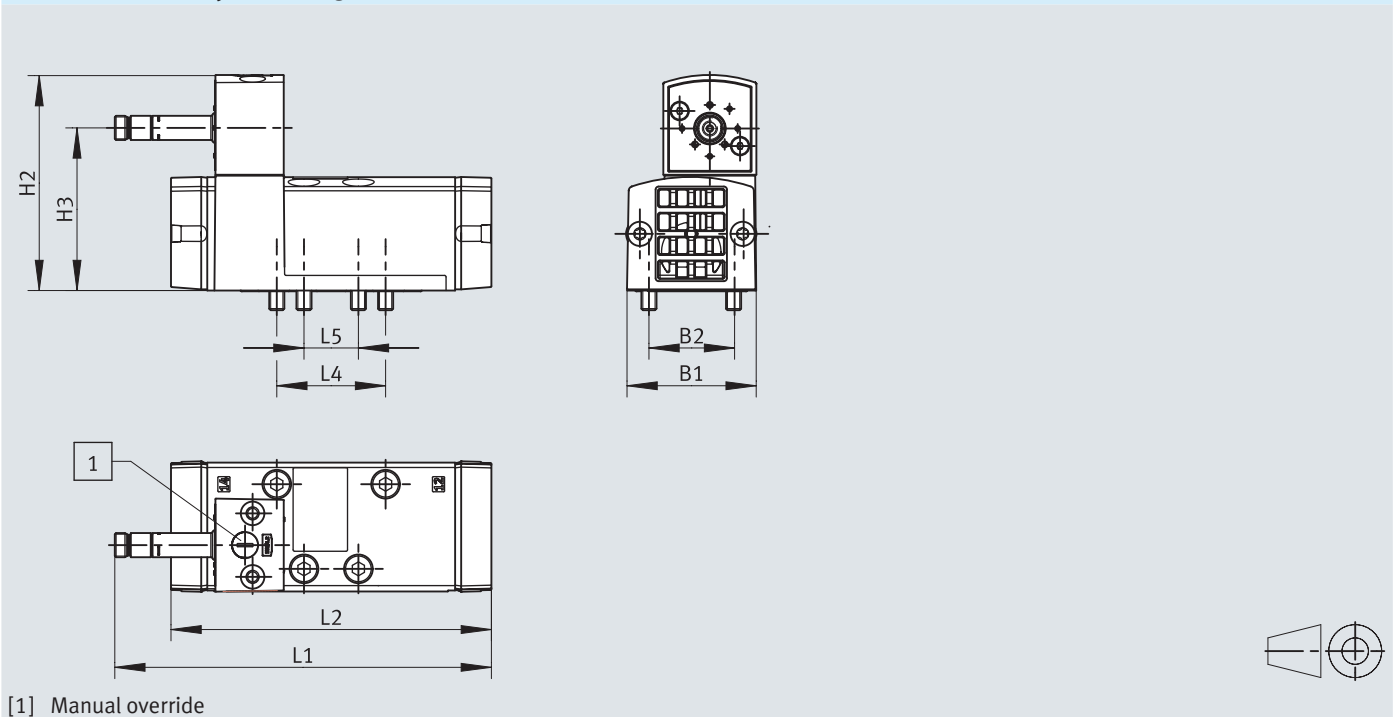
Datasheet – Width 42 mm

Dimensions – 5/2-way valve, single solenoid, with solenoid coil

Download CAD data → www.festo.com

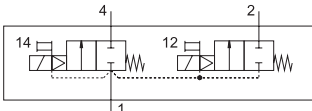
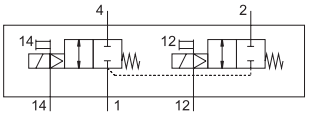
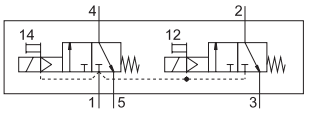
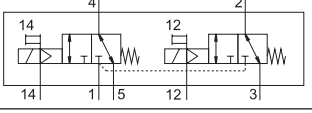
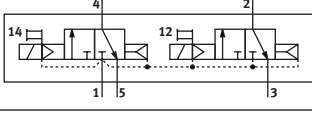
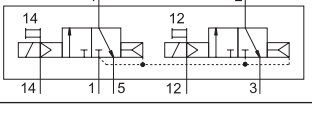
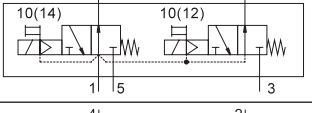
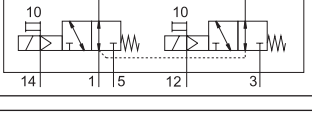
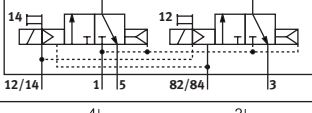
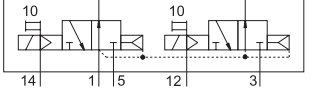
	B1	B2	H1	L1	L2	L4	L5
VSVA-B-M....D1-F8-1A1	43.1	28	83.8	126.6	106	36	18
VSVA-B-M....D1-F8-1B2							

Dimensions – 5/2-way valves, single solenoid, without solenoid coil

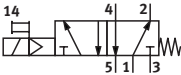
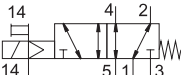
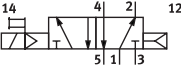
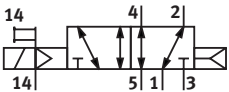
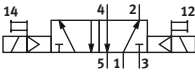
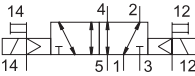
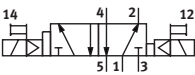
Download CAD data → www.festo.com

	B1	B2	H2	H3	L1	L2	L4	L5
VSVA-B-M....D1-F8	43.1	28	71.3	53.8	124.6	106	36	18

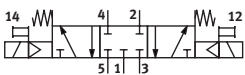
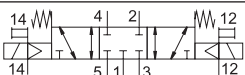
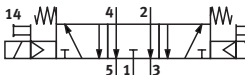
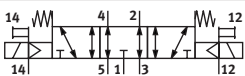
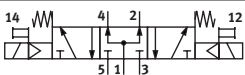
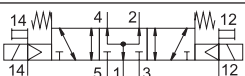
Ordering data – Width 42 mm

Ordering data – Valves with 8 mm armature tube						
Circuit symbol	Pilot air supply	Electrical connection	Manual override	Weight [g]	Part no.	Type
2x2/2-way valve, single solenoid, mechanical spring return, normally closed						
	Internal	–	Non-detenting	400	8198565	VSVA-B-T22C-MH-D1-F8
			Detenting	400	8198539	VSVA-B-T22C-MD-D1-F8
	External	–	Non-detenting	400	8198578	VSVA-B-T22C-MZH-D1-F8
			Detenting	400	8198552	VSVA-B-T22C-MZD-D1-F8
2x3/2-way valve, single solenoid, mechanical spring return, normally closed						
	Internal	Type B	Non-detenting	457	8033718	VSVA-B-T32C-MH-D1-F8-1B2
		–	Non-detenting	400	8198562	VSVA-B-T32C-MH-D1-F8
			Detenting	400	8198536	VSVA-B-T32C-MD-D1-F8
	External	Type B	Non-detenting	457	8033728	VSVA-B-T32C-MZH-D1-F8-1B2
		–	Non-detenting	400	8198575	VSVA-B-T32C-MZH-D1-F8
			Detenting	400	8198549	VSVA-B-T32C-MZD-D1-F8
2x3/2-way valve, single solenoid, pneumatic spring return, normally closed						
	Internal	–	Non-detenting	400	8198560	VSVA-B-T32C-AH-D1-F8
			Detenting	400	8198534	VSVA-B-T32C-AD-D1-F8
	External	–	Non-detenting	400	8198573	VSVA-B-T32C-AZH-D1-F8
			Detenting	400	8198547	VSVA-B-T32C-AZD-D1-F8
2x3/2-way valve, single solenoid, mechanical spring return, normally open						
	Internal	Type B	Non-detenting	457	8033719	VSVA-B-T32U-MH-D1-F8-1B2
		–	Non-detenting	400	8198563	VSVA-B-T32U-MH-D1-F8
			Detenting	400	8198537	VSVA-B-T32U-MD-D1-F8
	External	Type B	Non-detenting	457	8033729	VSVA-B-T32U-MZH-D1-F8-1B2
		–	Non-detenting	400	8198576	VSVA-B-T32U-MZH-D1-F8
			Detenting	400	8198550	VSVA-B-T32U-MZD-D1-F8
2x3/2-way valve, single solenoid, pneumatic spring return, normally open						
	Internal	–	Non-detenting	400	8198561	VSVA-B-T32U-AH-D1-F8
			Detenting	400	8198535	VSVA-B-T32U-AD-D1-F8
	External	–	Non-detenting	400	8198574	VSVA-B-T32U-AZH-D1-F8
			Detenting	400	8198548	VSVA-B-T32U-AZD-D1-F8

Ordering data – Width 42 mm

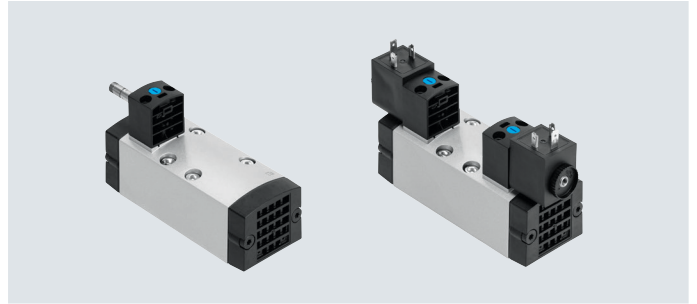
Ordering data – Valves with 8 mm armature tube						
Circuit symbol	Pilot air supply	Electrical connection	Manual override	Weight [g]	Part no.	Type
5/2-way valve, single solenoid, mechanical spring return						
	Internal	Type A to EN 175301-803	Non-detenting	433	8033734	VSVA-B-M52-MH-D1-F8-1A1
			Detenting	433	8033694	VSVA-B-M52-MD-D1-F8-1A1
		Type B	Non-detenting	407	8033714	VSVA-B-M52-MH-D1-F8-1B2
			Detenting	407	8033674	VSVA-B-M52-MD-D1-F8-1B2
		–	Non-detenting	350	8198553	VSVA-B-M52-MH-D1-F8
			Detenting	350	8198527	VSVA-B-M52-MD-D1-F8
			Detenting via accessory	350	8033660	VSVA-B-M52-MT-D1-F8
	External	Type B	Non-detenting	407	8033724	VSVA-B-M52-MZH-D1-F8-1B2
		–	Non-detenting	350	8198566	VSVA-B-M52-MZH-D1-F8
			Detenting	350	8198540	VSVA-B-M52-MZD-D1-F8
			Detenting via accessory	350	8033667	VSVA-B-M52-MZT-D1-F8
5/2-way valve, single solenoid, pneumatic spring return						
	Internal	Type A to EN 175301-803	Non-detenting	433	8033733	VSVA-B-M52-AH-D1-F8-1A1
			Detenting	433	8033693	VSVA-B-M52-AD-D1-F8-1A1
		Type B	Non-detenting	407	8033713	VSVA-B-M52-AH-D1-F8-1B2
			Detenting	407	8033673	VSVA-B-M52-AD-D1-F8-1B2
		–	Non-detenting	350	8198554	VSVA-B-M52-AH-D1-F8
			Detenting	350	8198528	VSVA-B-M52-AD-D1-F8
			Detenting via accessory	350	8033659	VSVA-B-M52-AT-D1-F8
	External	Type B	Non-detenting	407	8033723	VSVA-B-M52-AZH-D1-F8-1B2
		–	Non-detenting	350	8198567	VSVA-B-M52-AZH-D1-F8
			Detenting	350	8198541	VSVA-B-M52-AZD-D1-F8
			Detenting via accessory	350	8033666	VSVA-B-M52-AZT-D1-F8
5/2-way valve, double solenoid						
	Internal	Type A to EN 175301-803	Non-detenting	473	8033731	VSVA-B-B52-H-D1-F8-1A1
			Detenting	473	8033691	VSVA-B-B52-D-D1-F8-1A1
		Type B	Non-detenting	447	8033711	VSVA-B-B52-H-D1-F8-1B2
			Detenting	447	8033671	VSVA-B-B52-D-D1-F8-1B2
		–	Non-detenting	390	8198555	VSVA-B-B52-H-D1-F8
			Detenting	390	8198529	VSVA-B-B52-D-D1-F8
			Detenting via accessory	390	8033657	VSVA-B-B52-T-D1-F8
	External	Type B	Non-detenting	447	8033721	VSVA-B-B52-ZH-D1-F8-1B2
		–	Non-detenting	390	8198568	VSVA-B-B52-ZH-D1-F8
			Detenting	390	8198542	VSVA-B-B52-ZD-D1-F8
			Detenting via accessory	390	8033664	VSVA-B-B52-ZT-D1-F8
5/2-way valve, double solenoid, with dominant signal						
	Internal	Type B	Non-detenting	447	8033712	VSVA-B-D52-H-D1-F8-1B2
		–	Non-detenting	390	8198556	VSVA-B-D52-H-D1-F8
			Detenting	390	8198530	VSVA-B-D52-D-D1-F8
			Detenting via accessory	390	8033658	VSVA-B-D52-T-D1-F8
		Type B	Non-detenting	447	8033722	VSVA-B-D52-ZH-D1-F8-1B2
			Non-detenting	390	8198569	VSVA-B-D52-ZH-D1-F8
			Detenting	390	8198543	VSVA-B-D52-ZD-D1-F8
Detenting via accessory	390		8033665	VSVA-B-D52-ZT-D1-F8		

Ordering data – Width 42 mm

Ordering data – Valves with 8 mm armature tube						
Circuit symbol	Pilot air supply	Electrical connection	Manual override	Weight [g]	Part no.	Type
5/3-way valve, monostable, normally closed, mechanical spring return						
	Internal	Type A to EN 175301-803	Non-detenting	488	8033735	VSVA-B-P53C-H-D1-F8-1A1
			Detenting	488	8033695	VSVA-B-P53C-D-D1-F8-1A1
		Type B	Non-detenting	462	8033715	VSVA-B-P53C-H-D1-F8-1B2
			Detenting	462	8033675	VSVA-B-P53C-D-D1-F8-1B2
		–	Non-detenting	405	8198559	VSVA-B-P53C-H-D1-F8
			Detenting	405	8198533	VSVA-B-P53C-D-D1-F8
			Detenting via accessory	405	8033661	VSVA-B-P53C-T-D1-F8
	External	Type B	Non-detenting	462	8033725	VSVA-B-P53C-ZH-D1-F8-1B2
		–	Non-detenting	405	8198572	VSVA-B-P53C-ZH-D1-F8
			Detenting	405	8198546	VSVA-B-P53C-ZD-D1-F8
			Detenting via accessory	405	8033668	VSVA-B-P53C-ZT-D1-F8
5/3-way valve, monostable, normally exhausted, mechanical spring return						
	Internal	Type A to EN 175301-803	Non-detenting	488	8033736	VSVA-B-P53E-H-D1-F8-1A1
			Detenting	488	8033696	VSVA-B-P53E-D-D1-F8-1A1
		Type B	Non-detenting	462	8033716	VSVA-B-P53E-H-D1-F8-1B2
			Detenting	462	8033676	VSVA-B-P53E-D-D1-F8-1B2
		–	Non-detenting	405	8198558	VSVA-B-P53E-H-D1-F8
			Detenting	405	8198532	VSVA-B-P53E-D-D1-F8
			Detenting via accessory	405	8033662	VSVA-B-P53E-T-D1-F8
	External	Type B	Non-detenting	462	8033726	VSVA-B-P53E-ZH-D1-F8-1B2
		–	Non-detenting	405	8198571	VSVA-B-P53E-ZH-D1-F8
			Detenting	405	8198545	VSVA-B-P53E-ZD-D1-F8
			Detenting via accessory	405	8033669	VSVA-B-P53E-ZT-D1-F8
5/3-way valve, monostable, normally pressurised, mechanical spring return						
	Internal	Type A to EN 175301-803	Non-detenting	488	8033737	VSVA-B-P53U-H-D1-F8-1A1
			Detenting	488	8033697	VSVA-B-P53U-D-D1-F8-1A1
		Type B	Non-detenting	462	8033717	VSVA-B-P53U-H-D1-F8-1B2
			Detenting	462	8033677	VSVA-B-P53U-D-D1-F8-1B2
		–	Non-detenting	405	8198557	VSVA-B-P53U-H-D1-F8
			Detenting	405	8198531	VSVA-B-P53U-D-D1-F8
			Detenting via accessory	405	8033663	VSVA-B-P53U-T-D1-F8
	External	Type B	Non-detenting	462	8033727	VSVA-B-P53U-ZH-D1-F8-1B2
		–	Non-detenting	405	8198570	VSVA-B-P53U-ZH-D1-F8
			Detenting	405	8198544	VSVA-B-P53U-ZD-D1-F8
			Detenting via accessory	405	8033670	VSVA-B-P53U-ZT-D1-F8

Datasheet – Width 52 mm

-  - Flow rate
4100 l/min

**General technical data**

Design		Piston spool
Sealing principle		Soft
Actuation type		Electrical
Type of control		Piloted
Flow direction	External pilot air supply	Reversible
	Internal pilot air supply	Not reversible
Suitable for vacuum	External pilot air supply, pneumatic spring return or bistable	Yes
	External pilot air supply, pneumatic spring return	No
	Internal pilot air supply	No
Exhaust air function		Via individual sub-base
Type of mounting		On sub-base
Mounting position		Any
Max. tightening torque for valve mounting	[Nm]	2
Nominal width	[mm]	11.5
Overlap		Positive overlap
Width	[mm]	52
Grid dimension	[mm]	53
Pneumatic connection	1, 2, 3, 4, 5, 12, 14	Sub-base size 2 to ISO 5599-1
Noise level	[dB (A)]	85
Conforms to standard		ISO 5599-1
Pilot interface		To ISO 15218

Flow rate values – 2x2/2-way valves

Nominal flow rate standardised according to ISO 8778	[l/min]	2100
Flow rate of valve	[l/min]	2000
Flow rate of valve on individual sub-base	[l/min]	1500
Flow rate of pneumatically linked valve	[l/min]	1700
Optimised flow rate of pneumatically linked valve	[l/min]	–
b value		0.78
C value	[l/sbar]	3.098

Flow rate values – 2x3/2-way valves

		Normally closed		Normally open	
		Mechanical spring return	Pneumatic spring return	Mechanical spring return	Pneumatic spring return
Nominal flow rate standardised according to ISO 8778	[l/min]	2100	3100	2000	2900
Flow rate of valve	[l/min]	1900	2900	1800	2700
Flow rate of valve on individual sub-base	[l/min]	1700	2500	1800	2300
Flow rate of pneumatically linked valve	[l/min]	1100	2300	1700	2200
Optimised flow rate of pneumatically linked valve	[l/min]	–			
b value		0.57	0.34	0.69	0.32
C value	[l/sbar]	3.631	6.267	3.167	7.598

Datasheet – Width 52 mm

Flow rate values – 5/2-way valve, single solenoid		Mechanical spring return	Pneumatic spring return
Nominal flow rate standardised according to ISO 8778	[l/min]	4100	4100
Flow rate of valve	[l/min]	3800	3800
Flow rate of valve on individual sub-base	[l/min]	3200	3100
Flow rate of pneumatically linked valve	[l/min]	2700	2600
Optimised flow rate of pneumatically linked valve	[l/min]	–	
b value		0.3	0.31
C value	[l/sbar]	8.168	8.221

Flow rate values – 5/2-way valve, double solenoid		Double solenoid	Double solenoid with dominant signal
Nominal flow rate standardised according to ISO 8778	[l/min]	4000	4000
Flow rate of valve	[l/min]	3700	3700
Flow rate of valve on individual sub-base	[l/min]	3100	3100
Flow rate of pneumatically linked valve	[l/min]	2600	2700
Optimised flow rate of pneumatically linked valve	[l/min]	–	
b value		0.2	0.26
C value	[l/sbar]	8.578	8.272

Flow rate values – 5/3-way valve		Normally closed	Normally exhausted	Normally pressurised
Nominal flow rate standardised according to ISO 8778	[l/min]	3700	3600	3500
Flow rate of valve	[l/min]	3500	3400	3300
Flow rate of valve on individual sub-base	[l/min]	2800	2700	2900
Flow rate of pneumatically linked valve	[l/min]	2600	2500	2500
Optimised flow rate of pneumatically linked valve	[l/min]	–		
b value		0.26	0.23	0.33
C value	[l/sbar]	7.696	7.667	7.069

Switching times		Switching time on [ms]	Switching time off [ms]	Switching time changeover [ms]	Maximum switching frequency [Hz]
2x2/2-way valves		23	45	–	5
2x3/2-way valve, single solenoid	Mechanical spring return	33	38	–	5
	Pneumatic spring return	25	50	–	5
5/2-way valve, single solenoid	Mechanical spring return	23	83	–	1
	Pneumatic spring return	56	64	–	5
5/2-way valve, double solenoid		–	–	23	5
5/2-way valve, double solenoid, with dominant signal		–	–	22	5
5/3-way valve	Normally closed	25	78	40	5
	Normally exhausted	26	82	40	5
	Normally pressurised	26	80	34	5

Operating and environmental conditions – 2x2/2-way valves		Internal pilot air	External pilot air
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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]	0.3 ... 1	–0.09 ... 1
	[bar]	3 ... 10	–0.9 ... 10
Pilot pressure	[MPa]	0.3 ... 1	
	[bar]	3 ... 10	
Ambient temperature	[°C]	–10 ... +50	
Temperature of medium	[°C]	–10 ... +50	
Relative humidity	[%]	0 ... 90	

Datasheet – Width 52 mm

Operating and environmental conditions – 2x3/2-way valves		Internal pilot air	External pilot air	
			Pneumatic spring return	Mechanical spring return
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium		Compressed air according 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]	0.3 ... 1	0.3 ... 1	–0.09 ... 1
	[bar]	3 ... 10	3 ... 10	–0.9 ... 10
Pilot pressure	[MPa]	0.3 ... 1		
	[bar]	3 ... 10		
Ambient temperature	[°C]	–10 ... +50		
Temperature of medium	[°C]	–10 ... +50		
Relative humidity	[%]	0 ... 90		

Operating and environmental conditions – 5/2-way valves			
		Internal pilot air	External pilot air
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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]	0.3 ... 1.6	–0.09 ... 1.6
	[bar]	3 ... 16	–0.9 ... 16
Pilot pressure	[MPa]	0.3 ... 1	
	[bar]	3 ... 10	
Ambient temperature	[°C]	–10 ... +50	
Temperature of medium	[°C]	–10 ... +50	
Relative humidity	[%]	0 ... 90	

Operating and environmental conditions – 5/3-way valves			
		Internal pilot air	External pilot air
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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]	0.3 ... 1.6	–0.09 ... 1.6
	[bar]	3 ... 16	–0.9 ... 16
Pilot pressure	[MPa]	0.3 ... 1	
	[bar]	3 ... 10	
Ambient temperature	[°C]	–10 ... +50	
Temperature of medium	[°C]	–10 ... +50	
Relative humidity	[%]	0 ... 90	

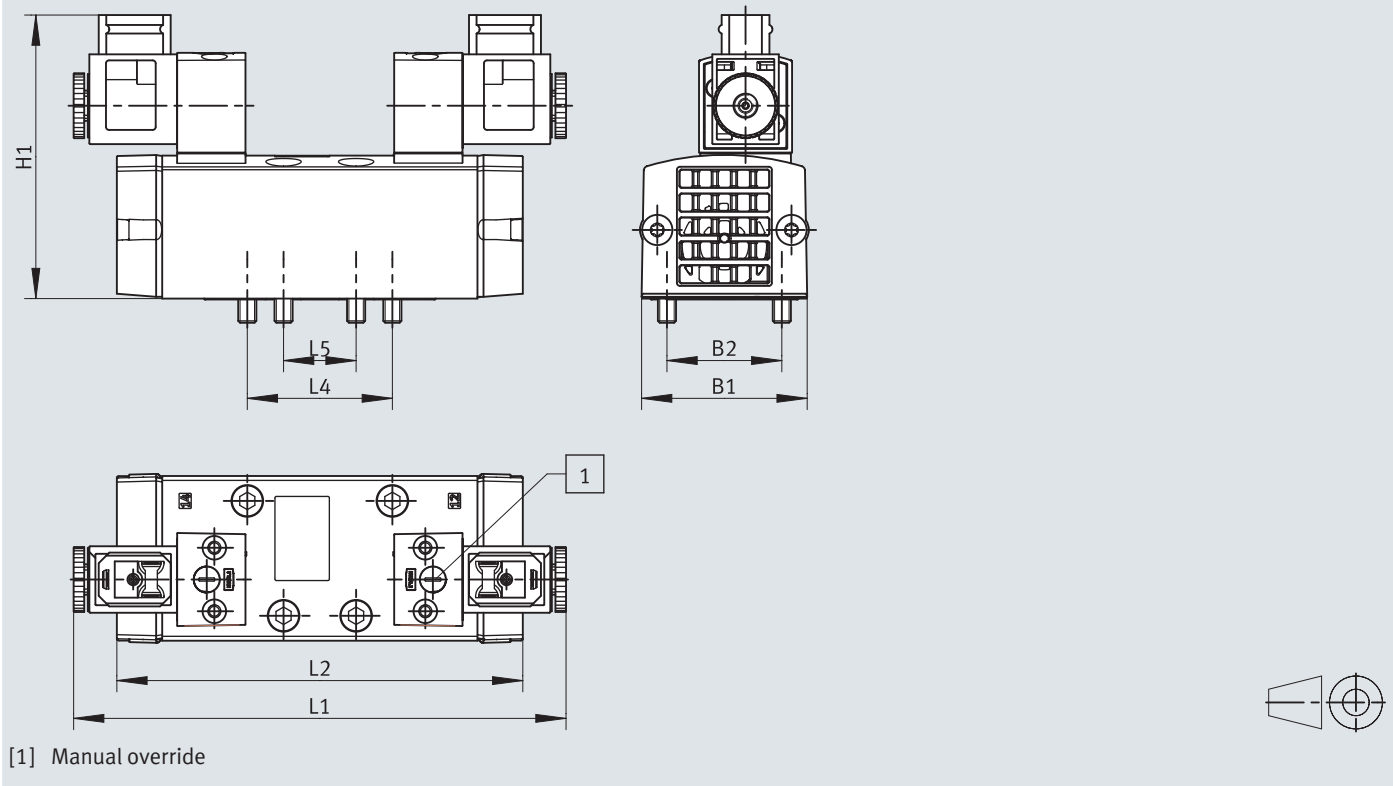
Electrical data		With 8 mm armature tube	Electrical connection	
			type A	type B
Electrical connection		–	Type A To EN 175301-803	Type B
Characteristic coil data		–	24 V DC: 2.6 W	24 V DC: 3.3 W
Permissible voltage fluctuations	[%]	–	±10	±10
Duty cycle	[%]	100	100	100
Degree of protection		IP65	IP65	IP65
		NEMA 4	NEMA 4	NEMA 4

Materials	
Housing	Die-cast aluminium
Seals	NBR
Screws	Steel
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Width 52 mm

Dimensionsn – 2x2/2- and 2x3/2- and double solenoid 5/2-way valves and 5/3-way valves, with solenoid coil

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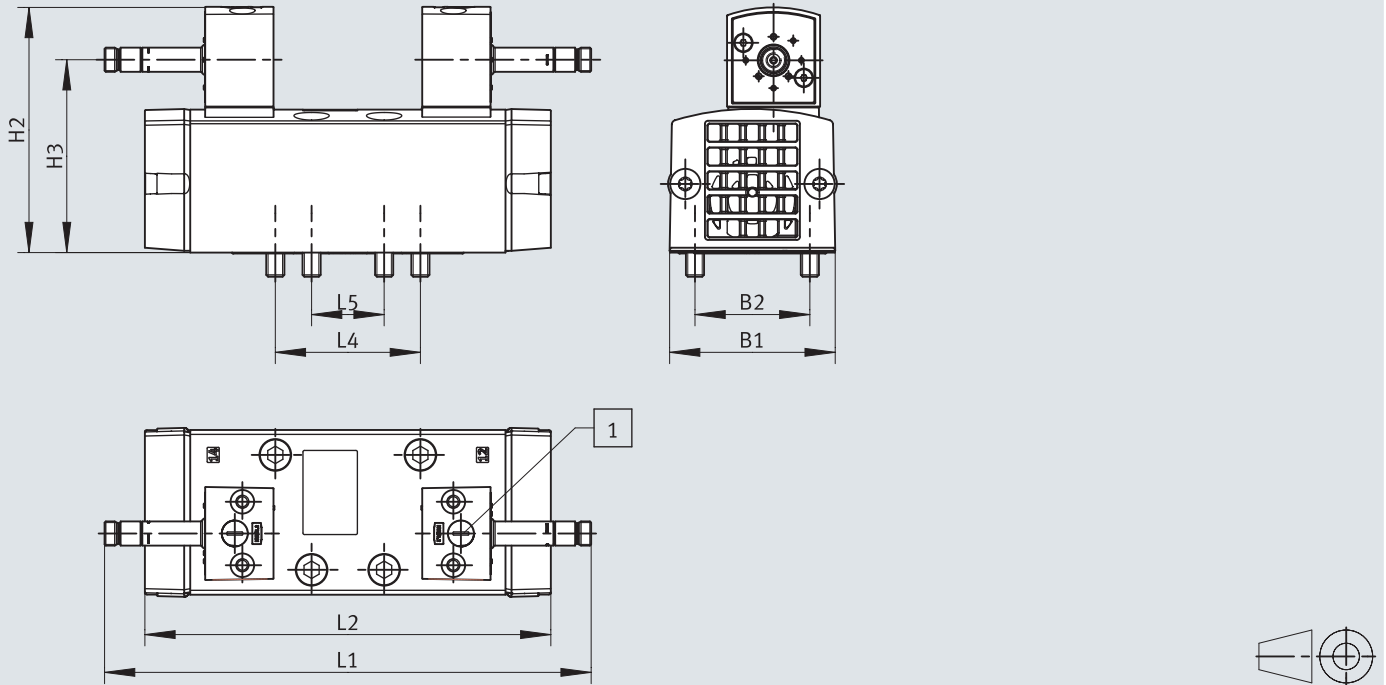


	B1	B2	H1	L1	L2	L4	L5
VSVA-B-B...-D2-F8-1A1	54.8	38	93.8	162.9	134.3	48	24
VSVA-B-D...-D2-F8-1A1							
VSVA-B-T...-D2-F8-1A1							
VSVA-B-B...-D2-F8-1B2							
VSVA-B-D...-D2-F8-1B2							
VSVA-B-T...-D2-F8-1B2							

Datasheet – Width 52 mm

Dimensions – 2x2/2- and 2x3/2- and double solenoid 5/2-way valves and 5/3-way valves, without solenoid coil

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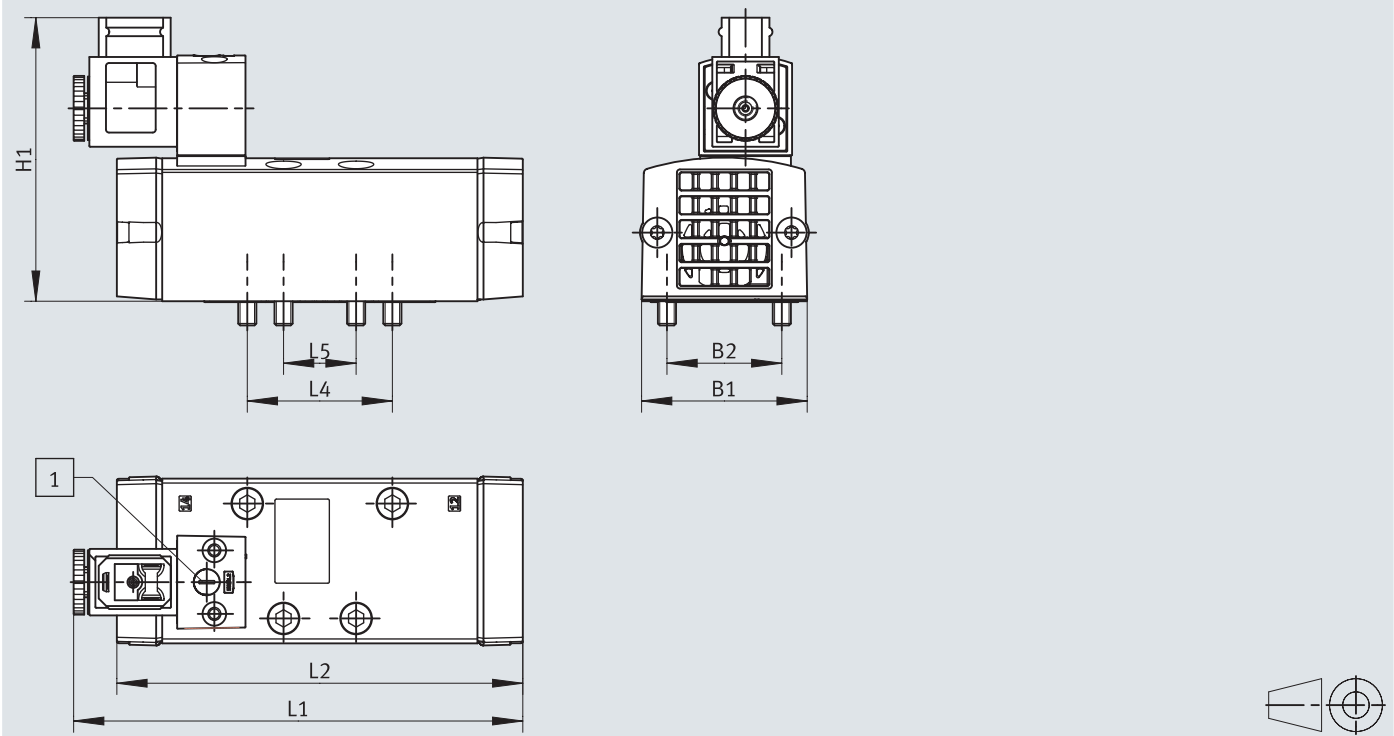
[1] Manual override

	B1	B2	H2	H3	L1	L2	L4	L5
VSVA-B-B...-D2-F8	54.8	38	81.3	63.8	161	134.3	48	24
VSVA-B-D...-D2-F8								
VSVA-B-T...-D2-F8								

Datasheet – Width 52 mm

Dimensions – 5/2-way valve, single solenoid, with solenoid coil

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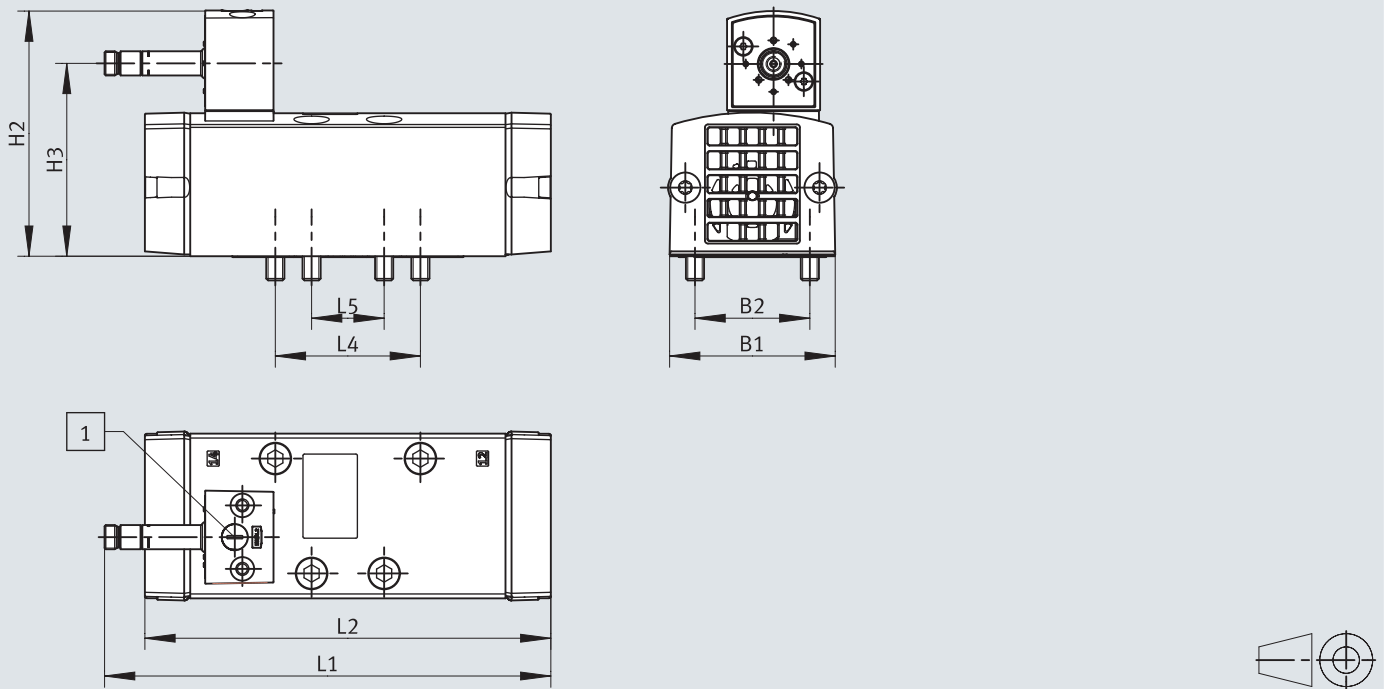


[1] Manual override

	B1	B2	H1	L1	L2	L4	L5
VSVA-B-M...-D2-F8-1A1	54.8	38	93.8	148.6	134.3	48	24
VSVA-B-M...-D2-F8-1B2							

Datasheet – Width 52 mm

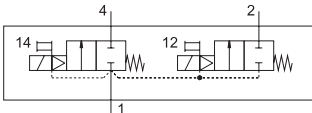
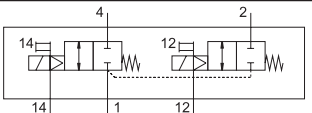
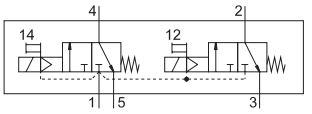
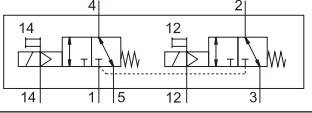
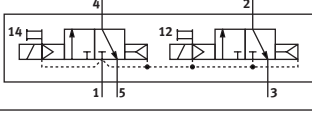
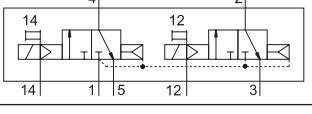
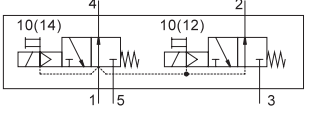
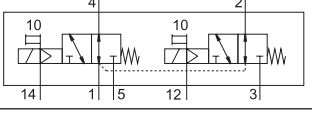
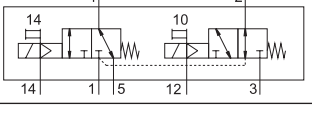
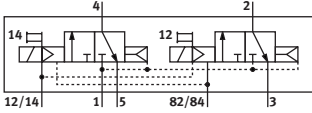
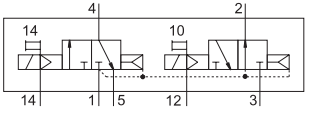
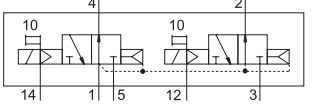
Dimensions – 5/2-way valves, single solenoid, without solenoid coil

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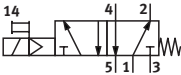
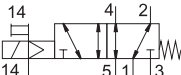
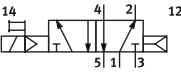
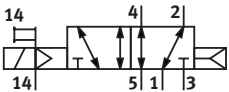
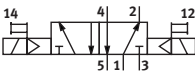
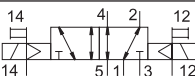
[1] Manual override

	B1	B2	H2	H3	L1	L2	L4	L5
VSVA-B-M...-D2-F8	54.8	38	81.3	63.8	147.6	134.3	48	24

Ordering data – Width 52 mm

Ordering data – Valves with 8 mm armature tube						
Circuit symbol	Pilot air supply	Electrical connection	Manual override	Weight [g]	Part no.	Type
2x2/2-way valve, single solenoid, mechanical spring return, normally closed						
	Internal	–	Non-detenting	685	8198624	VSVA-B-T22C-MH-D2-F8
			Detenting	685	8198598	VSVA-B-T22C-MD-D2-F8
	External	–	Non-detenting	685	8198637	VSVA-B-T22C-MZH-D2-F8
			Detenting	685	8198611	VSVA-B-T22C-MZD-D2-F8
2x3/2-way valve, single solenoid, mechanical spring return, normally closed						
	Internal	Type B	Non-detenting	737	8033812	VSVA-B-T32C-MH-D2-F8-1B2
		–	Non-detenting	680	8198621	VSVA-B-T32C-MH-D2-F8
			Detenting	680	8198595	VSVA-B-T32C-MD-D2-F8
	External	Type B	Non-detenting	737	8033822	VSVA-B-T32C-MZH-D2-F8-1B2
		–	Non-detenting	680	8198634	VSVA-B-T32C-MZH-D2-F8
			Detenting	680	8198608	VSVA-B-T32C-MZD-D2-F8
2x3/2-way valve, single solenoid, pneumatic spring return, normally closed						
	Internal	–	Non-detenting	680	8198619	VSVA-B-T32C-AH-D2-F8
			Detenting	680	8198593	VSVA-B-T32C-AD-D2-F8
	External	–	Non-detenting	680	8198632	VSVA-B-T32C-AZH-D2-F8
			Detenting	680	8198606	VSVA-B-T32C-AZD-D2-F8
2x3/2-way valve, single solenoid, mechanical spring return, normally open						
	Internal	Type B	Non-detenting	737	8033813	VSVA-B-T32U-MH-D2-F8-1B2
		–	Non-detenting	680	8198622	VSVA-B-T32U-MH-D2-F8
			Non-detenting	680	8198596	VSVA-B-T32U-MD-D2-F8
	External	Type B	Non-detenting	737	8033823	VSVA-B-T32U-MZH-D2-F8-1B2
		–	Detenting	680	8198609	VSVA-B-T32U-MZD-D2-F8
	External	–	Non-detenting	680	8198635	VSVA-B-T32U-MZH-D2-F8
2x3/2-way valve, single solenoid, pneumatic spring return, normally open						
	Internal	–	Non-detenting	680	8198620	VSVA-B-T32U-AH-D2-F8
			Detenting	680	8198594	VSVA-B-T32U-AD-D2-F8
	External	–	Non-detenting	680	8198633	VSVA-B-T32U-AZH-D2-F8
	External	–	Detenting	680	8198607	VSVA-B-T32U-AZD-D2-F8

Ordering data – Width 52 mm

Ordering data – Valves with 8 mm armature tube						
Circuit symbol	Pilot air supply	Electrical connection	Manual override	Weight [g]	Part no.	Type
5/2-way valve, single solenoid, mechanical spring return						
	Internal	Type A to EN 175301-803	Non-detenting	713	8033828	VSVA-B-M52-MH-D2-F8-1A1
			Detenting	713	8033788	VSVA-B-M52-MD-D2-F8-1A1
		Type B	Non-detenting	687	8033808	VSVA-B-M52-MH-D2-F8-1B2
			Detenting	687	8033768	VSVA-B-M52-MD-D2-F8-1B2
		–	Non-detenting	630	8198612	VSVA-B-M52-MH-D2-F8
			Detenting	630	8198586	VSVA-B-M52-MD-D2-F8
			Detenting via accessory	630	8033754	VSVA-B-M52-MT-D2-F8
	External	Type B	Non-detenting	687	8033818	VSVA-B-M52-MZH-D2-F8-1B2
		–	Non-detenting	630	8198625	VSVA-B-M52-MZH-D2-F8
			Detenting	630	8198599	VSVA-B-M52-MZD-D2-F8
			Detenting via accessory	630	8033761	VSVA-B-M52-MZT-D2-F8
5/2-way valve, single solenoid, pneumatic spring return						
	Internal	Type A to EN 175301-803	Non-detenting	713	8033827	VSVA-B-M52-AH-D2-F8-1A1
			Detenting	713	8033787	VSVA-B-M52-AD-D2-F8-1A1
		Type B	Non-detenting	687	8033807	VSVA-B-M52-AH-D2-F8-1B2
			Detenting	687	8033767	VSVA-B-M52-AD-D2-F8-1B2
		–	Non-detenting	630	8198613	VSVA-B-M52-AH-D2-F8
			Detenting	630	8198587	VSVA-B-M52-AD-D2-F8
			Detenting via accessory	630	8033753	VSVA-B-M52-AT-D2-F8
	External	Type B	Non-detenting	687	8033817	VSVA-B-M52-AZH-D2-F8-1B2
		–	Non-detenting	630	8198626	VSVA-B-M52-AZH-D2-F8
			Detenting	630	8198600	VSVA-B-M52-AZD-D2-F8
			Detenting via accessory	630	8033760	VSVA-B-M52-AZT-D2-F8
5/2-way valve, double solenoid						
	Internal	Type A to EN 175301-803	Non-detenting	748	8033825	VSVA-B-B52-H-D2-F8-1A1
			Detenting	748	8033785	VSVA-B-B52-D-D2-F8-1A1
		Type B	Non-detenting	722	8033805	VSVA-B-B52-H-D2-F8-1B2
			Detenting	722	8033765	VSVA-B-B52-D-D2-F8-1B2
		–	Non-detenting	665	8198614	VSVA-B-B52-H-D2-F8
			Detenting	665	8198588	VSVA-B-B52-D-D2-F8
			Detenting via accessory	665	8033751	VSVA-B-B52-T-D2-F8
	External	Type B	Non-detenting	722	8033815	VSVA-B-B52-ZH-D2-F8-1B2
		–	Non-detenting	665	8198627	VSVA-B-B52-ZH-D2-F8
			Detenting	665	8198601	VSVA-B-B52-ZD-D2-F8
			Detenting via accessory	665	8033758	VSVA-B-B52-ZT-D2-F8

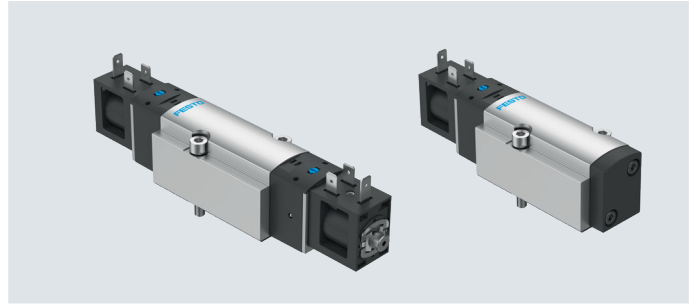
Ordering data – Width 52 mm

Ordering data – Valves with 8 mm armature tube						
Circuit symbol	Pilot air supply	Electrical connection	Manual override	Weight [g]	Part no.	Type
5/2-way valve, double solenoid, with dominant signal						
	Internal	Type B	Non-detenting	722	8033806	VSVA-B-D52-H-D2-F8-1B2
		–	Non-detenting	665	8198615	VSVA-B-D52-H-D2-F8
			Detenting	665	8198589	VSVA-B-D52-D-D2-F8
			Detenting via accessory	665	8033752	VSVA-B-D52-T-D2-F8
	External	Type B	Non-detenting	722	8033816	VSVA-B-D52-ZH-D2-F8-1B2
		–	Non-detenting	665	8198628	VSVA-B-D52-ZH-D2-F8
			Detenting	665	8198602	VSVA-B-D52-ZD-D2-F8
			Detenting via accessory	665	8033759	VSVA-B-D52-ZT-D2-F8
5/3-way valve, single solenoid, normally closed, mechanical spring return						
	Internal	Type A to EN 175301-803	Non-detenting	803	8033829	VSVA-B-P53C-H-D2-F8-1A1
			Detenting	803	8033789	VSVA-B-P53C-D-D2-F8-1A1
		Type B	Non-detenting	777	8033809	VSVA-B-P53C-H-D2-F8-1B2
			Detenting	777	8033769	VSVA-B-P53C-D-D2-F8-1B2
		–	Non-detenting	720	8198618	VSVA-B-P53C-H-D2-F8
			Detenting	720	8198592	VSVA-B-P53C-D-D2-F8
			Detenting via accessory	720	8033755	VSVA-B-P53C-T-D2-F8
				External	Type B	Non-detenting
–	Non-detenting	720			8198631	VSVA-B-P53C-ZH-D2-F8
	Detenting	720			8198605	VSVA-B-P53C-ZD-D2-F8
	Detenting via accessory	720			8033762	VSVA-B-P53C-ZT-D2-F8
5/3-way valve, monostable, normally exhausted, mechanical spring return						
	Internal	Type A to EN 175301-803	Non-detenting	803	8033830	VSVA-B-P53E-H-D2-F8-1A1
			Detenting	803	8033790	VSVA-B-P53E-D-D2-F8-1A1
		Type B	Non-detenting	777	8033810	VSVA-B-P53E-H-D2-F8-1B2
			Detenting	777	8033770	VSVA-B-P53E-D-D2-F8-1B2
		–	Non-detenting	720	8198617	VSVA-B-P53E-H-D2-F8
			Detenting	720	8198591	VSVA-B-P53E-D-D2-F8
			Detenting via accessory	720	8033756	VSVA-B-P53E-T-D2-F8
				External	Type B	Non-detenting
–	Non-detenting	720			8198630	VSVA-B-P53E-ZH-D2-F8
	Detenting	720			8198604	VSVA-B-P53E-ZD-D2-F8
	Detenting via accessory	720			8033763	VSVA-B-P53E-ZT-D2-F8
5/3-way valve, monostable, normally pressurised, mechanical spring return						
	Internal	Type A to EN 175301-803	Non-detenting	803	8033831	VSVA-B-P53U-H-D2-F8-1A1
			Detenting	803	8033791	VSVA-B-P53U-D-D2-F8-1A1
		Type B	Non-detenting	777	8033811	VSVA-B-P53U-H-D2-F8-1B2
			Detenting	777	8033771	VSVA-B-P53U-D-D2-F8-1B2
		–	Non-detenting	720	8198616	VSVA-B-P53U-H-D2-F8
			Detenting	720	8198590	VSVA-B-P53U-D-D2-F8
			Detenting via accessory	720	8033757	VSVA-B-P53U-T-D2-F8
				External	Type B	Non-detenting
–	Non-detenting	720			8198629	VSVA-B-P53U-ZH-D2-F8
	Detenting	720			8198603	VSVA-B-P53U-ZD-D2-F8
	Detenting via accessory	720			8033764	VSVA-B-P53U-ZT-D2-F8

Datasheet – Width 38 mm

-  - Flow rate
max. 1343 l/min

-  - Voltage
24 V DC

**General technical data**

Valve function	5/2-way, single solenoid		5/2-way, double solenoid	5/3-way, exhausted
Reset method	Pneumatic spring	Mechanical spring	–	Mechanical spring
Design	Piston spool with sealing ring			
Overlap	Negative overlap			
Sealing principle	Soft			
Actuation type	Electrical			
Type of control	Piloted			
Pilot air supply	Internal			
Flow direction	Not reversible			
Exhaust air function	Can be throttled			
Manual override	Non-detenting; detenting			
Type of mounting	On sub-base			
Mounting position	Any			
Nominal width [mm]	6.3			
Valve size [mm]	42			
Width [mm]	38			
Grid dimension [mm]	43			
Pneumatic connection 1, 2, 3, 4, 5	Sub-base size 1 to ISO 5599-1			
Connection for venting hole	Not ducted			
b value	0.26	0.26	0.26	0.26
C value [l/sbar]	5.87	5.88	5.91	5.63
Maximum assembly torque for valve mounting [Nm]	5			
Product weight [g]	321	324	400	402
Conforms to standard	ISO 5599-1			
ISO code	151	152	155	157

Flow rates

Valve function	5/2-way, single solenoid		5/2-way, double solenoid	5/3-way, exhausted
Reset method	Pneumatic spring	Mechanical spring	–	Mechanical spring
Flow rate of valve [l/min]	1342	1343	1341	1289
Flow rate of valve on individual sub-base [l/min]	1341	1342	1341	1289
Flow rate of pneumatically linked valve [l/min]	1313	1313	1313	1283
Standard nominal flow rate [l/min]	1200	1200	1200	1200

Switching times

Valve function	5/2-way, single solenoid		5/2-way, double solenoid	5/3-way, exhausted
Reset method	Pneumatic spring	Mechanical spring	–	Mechanical spring
Switching time on [ms]	17.3	19.9	–	12.4
Switching time off [ms]	20.7	20.9	–	37.4
Switching time changeover [ms]	–	–	10.5	18.9

Datasheet – Width 38 mm

Safety data		
Max. positive test pulse with 0 signal	[µs]	2500
Max. negative test pulse with 1 signal	[µs]	1100
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistant		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Operating and environmental conditions		
Operating medium		Compressed air according 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	[MPa]	0.3 ... 0.8
	[bar]	3 ... 8
Ambient temperature	[°C]	–5 ... +50
Temperature of medium	[°C]	–5 ... +50
Corrosion resistance class CRC ¹⁾		1 - Low corrosion stress

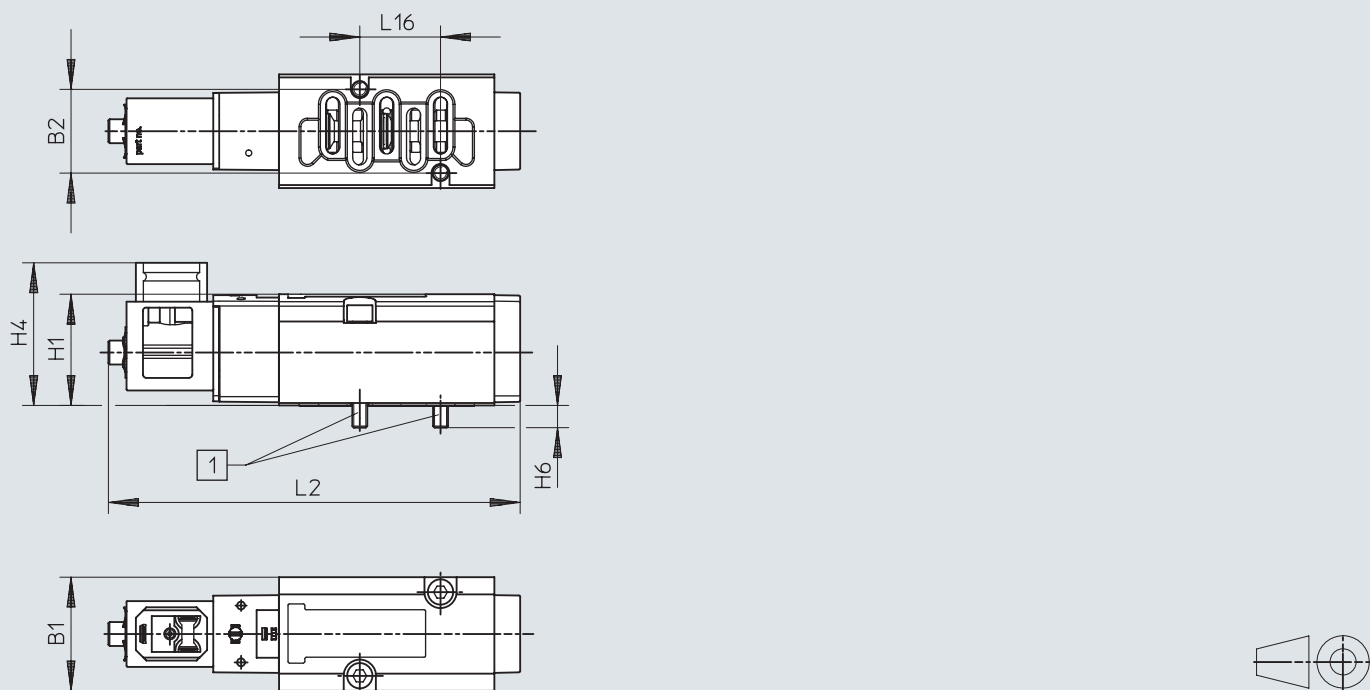
1) More information www.festo.com/x/topic/crc

Electrical data		
Electrical connection		Type B
		To industry standard (11 mm)
Nominal operating voltage	[V DC]	24
Characteristic coil data		24 V DC: 3.3 W
Permissible voltage fluctuations	[%]	±10
Duty cycle	[%]	100
Degree of protection		IP65
		With plug socket
		To IEC 60529
Signal status indication		With accessories

Materials	
Housing	Wrought aluminium alloy
Seals	NBR, HNBR
Piston spool	Wrought aluminium alloy
Screws	Galvanised steel
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-Zone III

Datasheet – Width 38 mm

Dimensions – 5/2-way valve, single solenoid, with solenoid coil

Download CAD data → www.festo.com

[1] Retaining screws M5

Type	B1	B2	H1	H4	H6	L2	L16
VSVA-BK-M52...	38	28	37.2	47.7	7.5	137.6	27

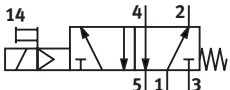
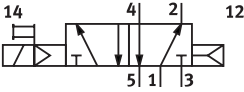
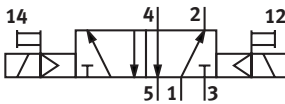
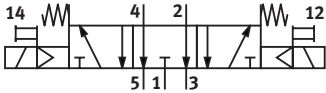
Datasheet – Width 38 mm

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

Download CAD data → www.festo.com

[1] Retaining screws M5

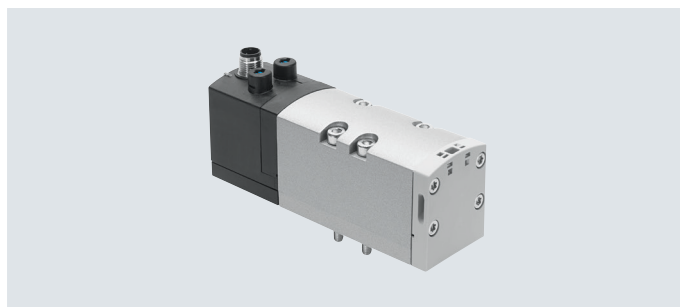
Type	B1	B2	H1	H4	H6	L1	L16
VSVA-BK-B52...	38	28	37.2	47.7	7.5	186.1	27
VSVA-BK-P53...							

Ordering data			Part no.	Type	
Code	Circuit symbol				
5/2-way valve, single solenoid					
–		Mechanical spring	Internal pilot air supply	8166594	VSVA-BK-M52-MD-D1-1B2
–		Pneumatic spring	Internal pilot air supply	8166593	VSVA-BK-M52-AD-D1-1B2
5/2-way valve, double solenoid					
–		–	Internal pilot air supply	8166592	VSVA-BK-B52-D-D1-1B2
5/3-way solenoid valve					
–		Normally exhausted	Internal pilot air supply	8166595	VSVA-BK-P53E-D-D1-1B2

Datasheet – 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 air function		Can be throttled, externally or via vertically stacked throttle plate
Manual override		Non-detenting, detenting
Type of mounting		On sub-base
Mounting position		Any
Nominal width	[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
Pneumatically linked valve		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	–	–

Datasheet – Width 42 mm

Operating and environmental conditions							
Valve function			2x 2/2-way valve	2x 3/2-way valve	2x 3/2-way valve, reversible	5/2-way valve	5/3-way valve
Operating medium			Compressed air according to ISO 8573-1:2010 [7:4:4]				
Pilot medium			Compressed air according 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 data					
Valve function		2x 3/2-way valve	5/2-way valve	5/2-way valve, with dominant signal at 14	5/3-way valve
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 resistant		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6			

Electrical data						
Valve function			2x 2/2-way valve	2x 3/2-way valve	5/2-way valve	5/3-way valve
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)			

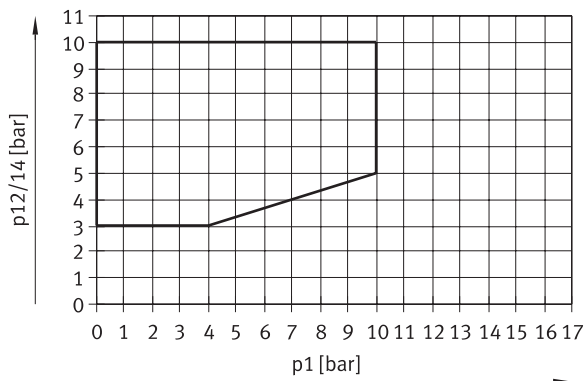
Materials	
Housing	PA
Seals	NBR, FPM
Screws	Galvanised steel
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

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

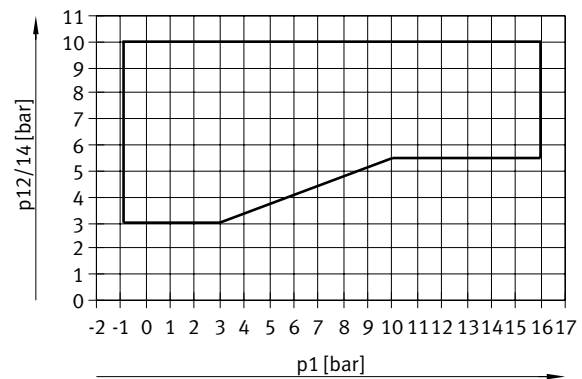
Datasheet – Width 42 mm

Pilot pressure $p_{12/14}$ as a function of working pressure p_1

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



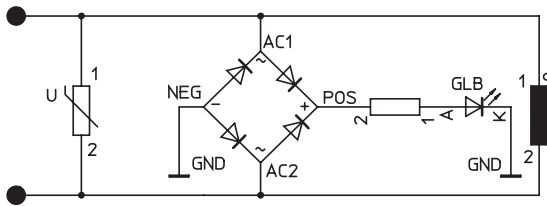
5/2-way valve and 5/3-way valve, external pilot air supply



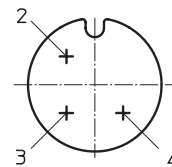
Protective circuit

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

24 V DC version

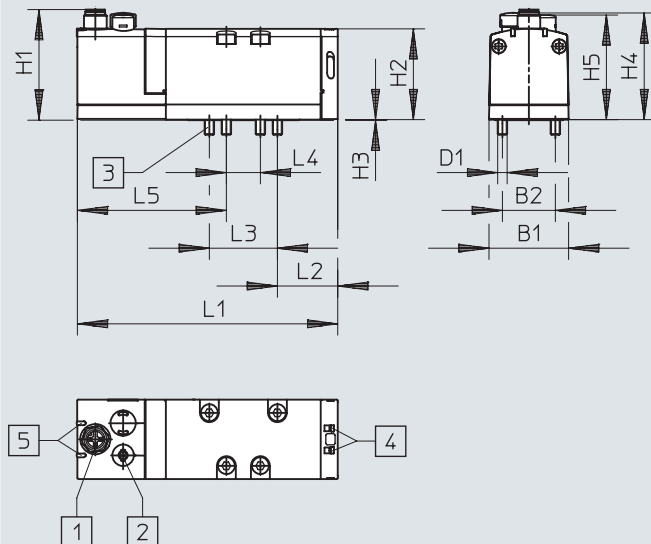


M12x1 – Pin allocation on the valve



- 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

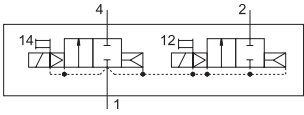
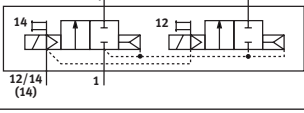
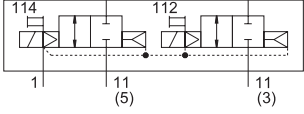
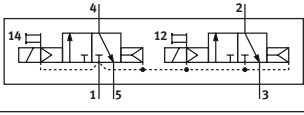
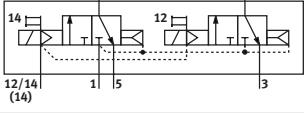
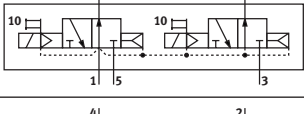
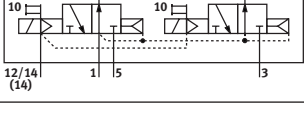
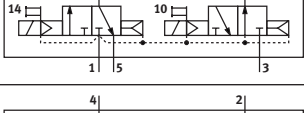
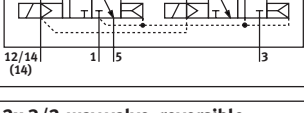
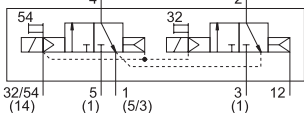
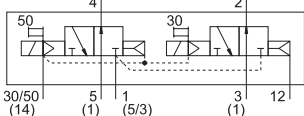
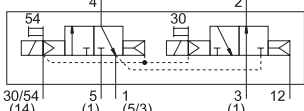
[4] Slot for inscription label

[5] LED

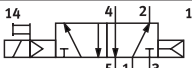
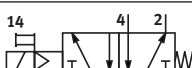
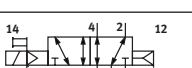
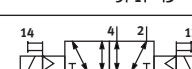
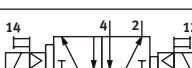
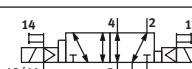
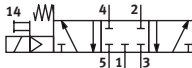
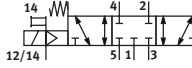
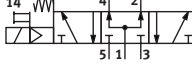
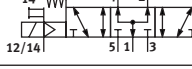
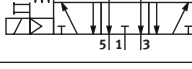
[2] Manual override

Type	B1	B2	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
VSVA-BD1-1R5L	42	28	M5	58.3	48	0.25	46.6	55.3	137.8	32	36	18	69.3

Ordering data – Width 42 mm

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

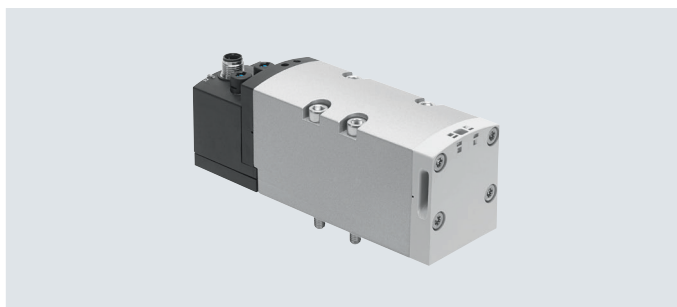
Ordering data – Width 42 mm

Ordering data					
Circuit symbol	Description	Flow direction	Pilot air supply	Part no.	Type
5/2-way valve, single solenoid					
	Pneumatic spring return	Not reversible	Internal	561362	VSVA-B-M52-AD-D1-1R5L
	Mechanical spring return	Not reversible	Internal	561363	VSVA-B-M52-MD-D1-1R5L
	Pneumatic spring return	Reversible	External	561372	VSVA-B-M52-AZD-D1-1R5L
	Mechanical spring return	Reversible	External	561373	VSVA-B-M52-MZD-D1-1R5L
5/2-way valve, double solenoid					
	Dominance at 1st signal	Not reversible	Internal	561364	VSVA-B-B52-D-D1-1R5L
	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 return	Not reversible	Internal	561366	VSVA-B-P53C-D-D1-1R5L
	Normally closed, mechanical spring return	Reversible	External	561376	VSVA-B-P53C-ZD-D1-1R5L
	Normally open, mechanical spring return	Not reversible	Internal	561368	VSVA-B-P53U-D-D1-1R5L
	Normally open, mechanical spring return	Reversible	External	561378	VSVA-B-P53U-ZD-D1-1R5L
	Exhausted in normal position, mechanical spring return	Not reversible	Internal	561367	VSVA-B-P53E-D-D1-1R5L
	Exhausted in normal position, mechanical spring return	Reversible	External	561377	VSVA-B-P53E-ZD-D1-1R5L

Datasheet – 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 air function	Can be throttled, externally or via vertically stacked throttle plate
Manual override	Non-detenting, detenting
Type of mounting	On sub-base
Mounting position	Any
Nominal width [mm]	52
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
Pneumatically linked valve	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	–	–

Datasheet – Width 52 mm

Operating and environmental conditions							
Valve function			2x 2/2-way valve	2x 3/2-way valve	2x 3/2-way valve, reversible	5/2-way valve	5/3-way valve
Operating medium			Compressed air according to ISO 8573-1:2010 [7:4:4]				
Pilot medium			Compressed air according 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				
CE marking (see declaration of conformity)			To EU EMC Directive ¹⁾				
UKCA marking (see declaration of conformity) ¹⁾			To UK EMC regulations				
			To UK RoHS regulations				
KC marking			KC EMC				

1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/catalogue/... d Support/Downloads](http://www.festo.com/catalogue/...d%20Support/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.

Safety data		
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 resistant	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6	

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)

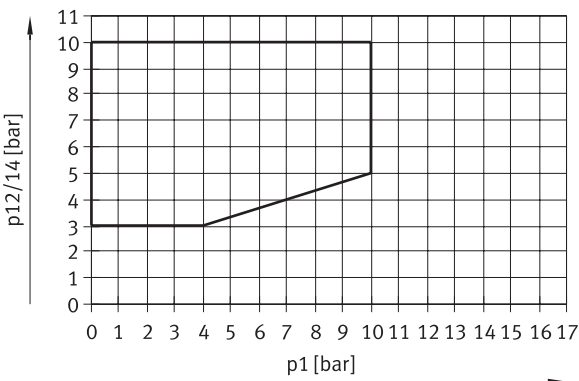
Materials	
Housing	Die-cast aluminium, PA
Seals	HNBR, NBR, FPM
Screws	Galvanised steel
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

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

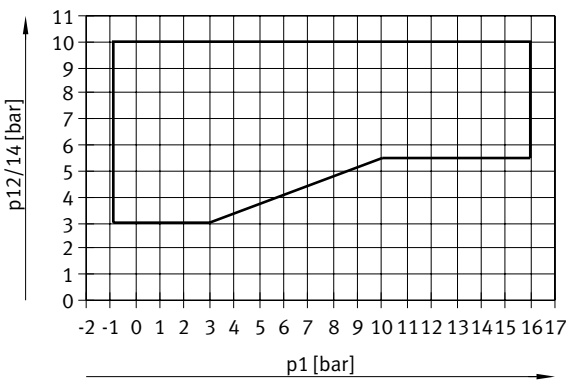
Datasheet – Width 52 mm

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

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



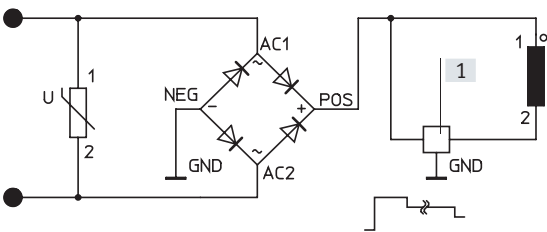
5/2-way valve and 5/3-way valve, external pilot air supply



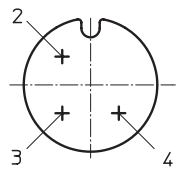
Protective circuit

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

24 V DC version



M12x1 – Pin allocation on the valve

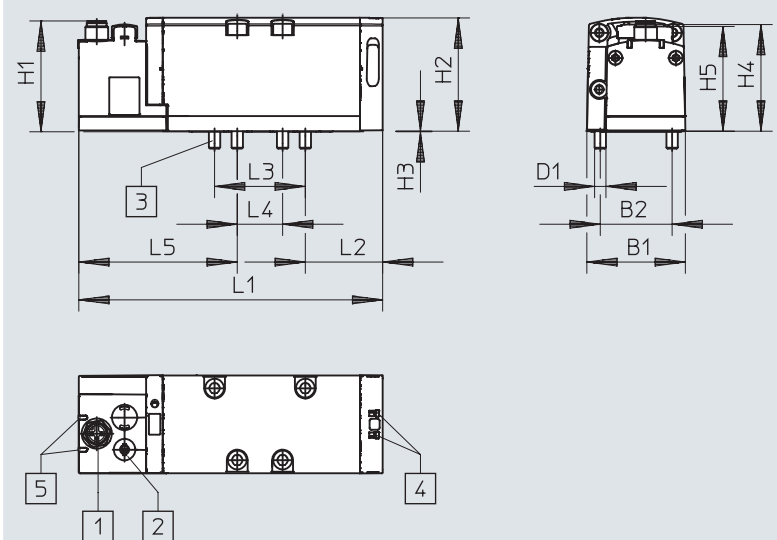


- 2 Signal (+) Solenoid 12
- 3 com (-)
- 4 Signal (+) Solenoid 14

[1] Holding current reduction

Dimensions

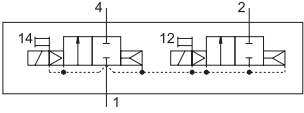
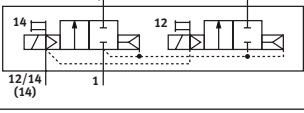
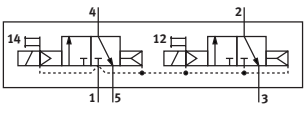
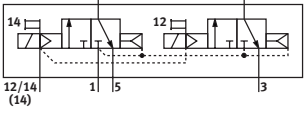
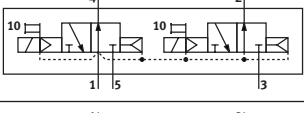
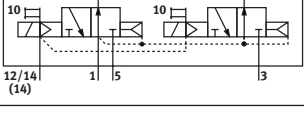
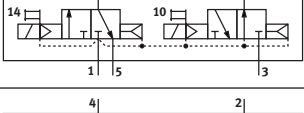
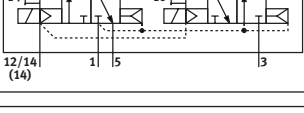
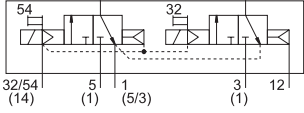
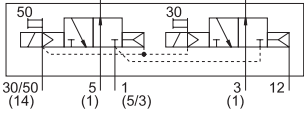
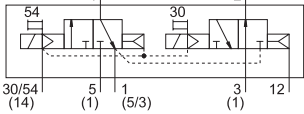
Download CAD data → www.festo.com



- [1] Plug, 3-pin
- [2] Manual override
- [3] Captive screws M6x60
- [4] Slot for inscription label
- [5] LED

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	Flow direction	Pilot air supply	Part no.	Type	
2x 2/2-way valve						
	2x normally closed, pneumatic spring return	Not reversible	Internal	Order via online configurator → Internet: vsva		
	2x normally closed, pneumatic spring return	Not reversible	External			
2x 3/2-way valve						
	2x normally closed, pneumatic spring return	Not reversible	Internal	566990	VSVA-B-T32C-AD-D2-1R5L	
	2x normally closed, pneumatic spring return	Not reversible	External	567000	VSVA-B-T32C-AZD-D2-1R5L	
	2x normally open, pneumatic spring return	Not reversible	Internal	566991	VSVA-B-T32U-AD-D2-1R5L	
	2x normally open, pneumatic spring return	Not reversible	External	567001	VSVA-B-T32U-AZD-D2-1R5L	
	1x normally closed, 1x normally open, pneumatic spring return	Not reversible	Internal	566992	VSVA-B-T32H-AD-D2-1R5L	
	1x normally closed, 1x normally open, pneumatic spring return	Not reversible	External	567002	VSVA-B-T32H-AZD-D2-1R5L	
2x 3/2-way valve, reversible						
	2x normally closed, pneumatic spring return	Reversible	External	Order via online configurator → Internet: vsva		
	2x normally open, pneumatic spring return	Reversible	External			
	1x normally closed, 1x normally open, pneumatic spring return	Reversible	External			

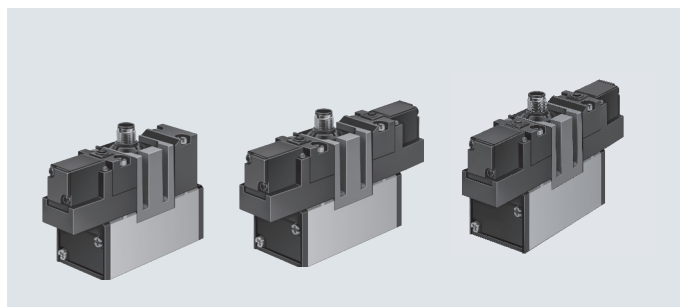
Ordering data – Width 52 mm

Ordering data					
Circuit symbol	Description	Flow direction	Pilot air supply	Part no.	Type
5/2-way valve, single solenoid					
	Pneumatic spring return	Not reversible	Internal	566993	VSVA-B-M52-AD-D2-1R5L
	Pneumatic spring return	Reversible	External	567003	VSVA-B-M52-AZD-D2-1R5L
	Mechanical spring return	Not reversible	Internal	566994	VSVA-B-M52-MD-D2-1R5L
	Mechanical spring return	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 return	Not reversible	Internal	566997	VSVA-B-P53C-D-D2-1R5L
	Normally closed, mechanical spring return	Reversible	External	567007	VSVA-B-P53C-ZD-D2-1R5L
	Normally open, mechanical spring return	Not reversible	Internal	566999	VSVA-B-P53U-D-D2-1R5L
	Normally open, mechanical spring return	Reversible	External	567009	VSVA-B-P53U-ZD-D2-1R5L
	Exhausted in normal position, mechanical spring return	Not reversible	Internal	566998	VSVA-B-P53E-D-D2-1R5L
	Exhausted in normal position, mechanical spring return	Reversible	External	567008	VSVA-B-P53E-ZD-D2-1R5L

Datasheet – 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
Flow direction	Not reversible
Exhaust air function	Can be throttled
Manual override	Non-detenting
Type of mounting	With through-hole
Mounting position	Any
Nominal width [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]

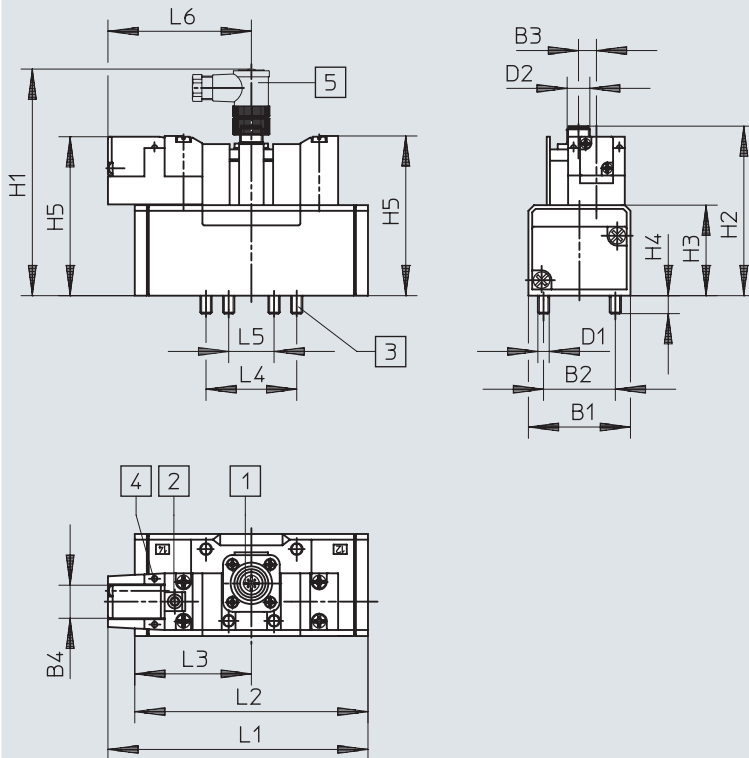
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MEBH-5/2-...	59	87	–	–
	MEBH-5/2-D-1-ZSR-FR-...	28	109	–	–
5/2-way valve, double solenoid	JMEBH-...	–	–	16	–
	JMEBDH-...	–	–	–	20
5/3-way valve	MEBH-5/3G-...	38	130	–	–
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

Datasheet – Width 65 mm

Operating and environmental conditions			
Reset method		Pneumatic spring	Mechanical spring
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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]	0.2 ... 1	0.3 ... 1
	[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	
LABS (PWIS) conformity		VDMA24364-B1/B2-L	

Datasheet – Width 65 mm

Dimensionsn – 5/2-way valves, single solenoid

Download CAD data → www.festo.com[1] Plug socket mounting
adjustable by 3x30°

[3] Captive retaining screws

[4] LED indicator

[5] Angled socket NECB → page
178

[2] Manual override

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				

Datasheet – Width 65 mm

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

Download CAD data → www.festo.com

[1] Plug socket mounting adjustable by 3x30°

[2] Manual override

[3] Captive retaining screws

[4] LED indicator

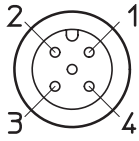
[5] Angled socket NECB → page 178

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

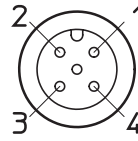
Central plug M12 – Pin allocation

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

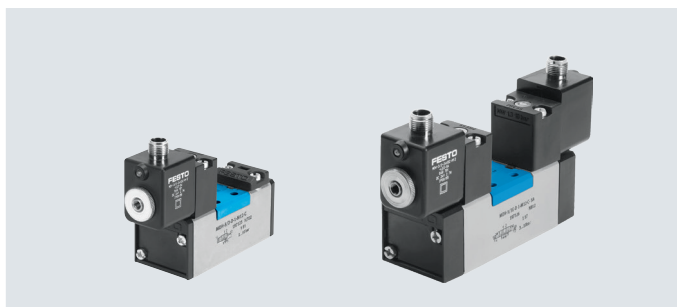
Ordering data

Circuit symbol	Description	Pilot air supply	Weight [g]	Part no.	Type
5/2-way valve, single solenoid					
	Pneumatic spring return	Internal	1000	184507	MEBH-5/2-D-3-ZSR-C
	Mechanical spring return	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, monostable					
	Normally closed, mechanical spring return	Internal	1120	184512	MEBH-5/3G-D-3-ZSR-C
	Exhausted in normal position, mechanical spring return	Internal	1120	184511	MEBH-5/3E-D-3-ZSR-C
	Normally open, mechanical spring return	Internal	1120	184513	MEBH-5/3B-D-3-ZSR-C

Datasheet – 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
Flow direction	With external pilot air supply Reversible
	With internal pilot air supply Not reversible
Exhaust air function	Can be throttled
Manual override	Non-detenting
Type of mounting	On sub-base via through-hole
Mounting position	Any
Nominal width	[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
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Switching times [ms]

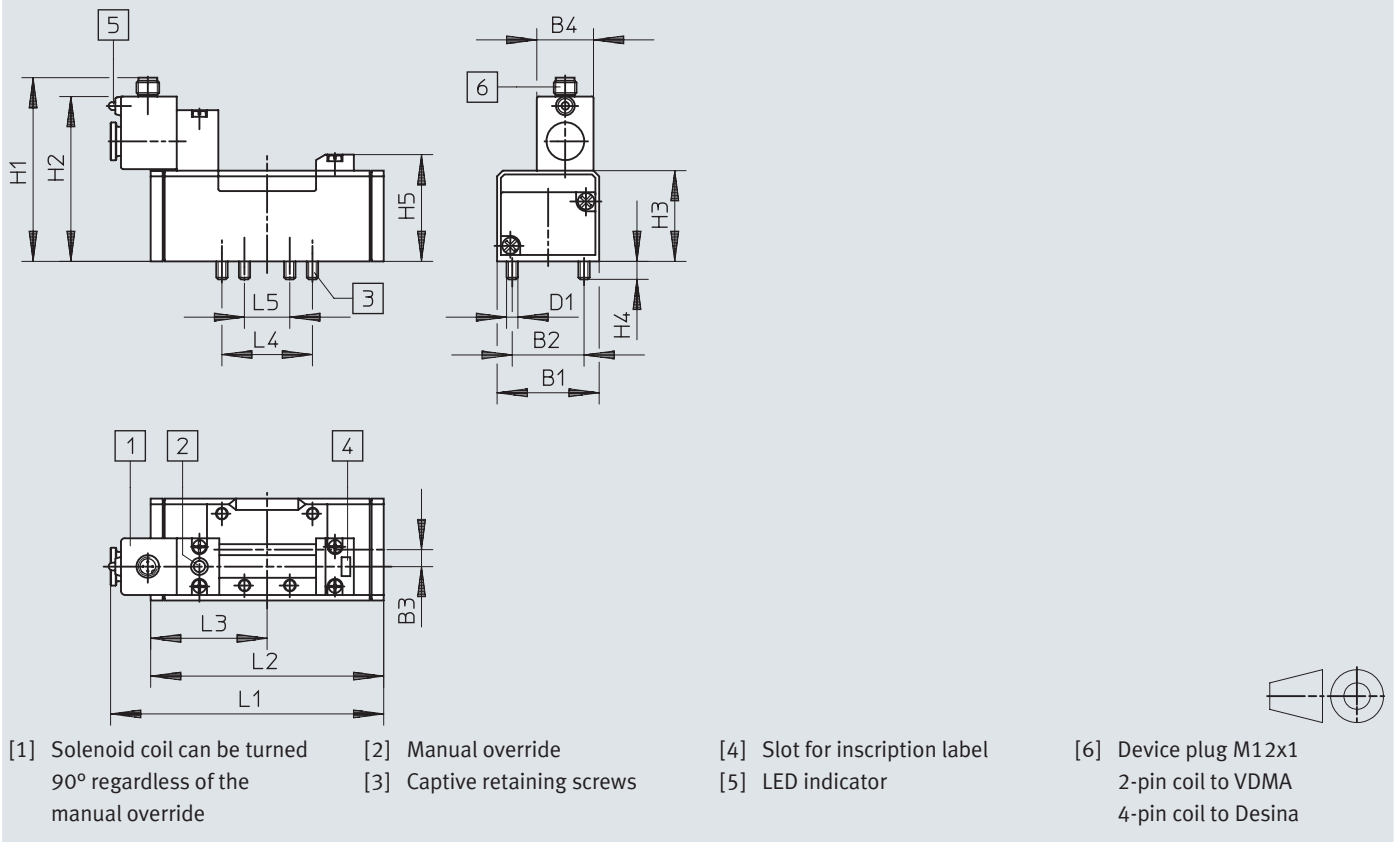
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MDH-5/2-...	25	36	–	–
	MDH-5/2-...-FR-...	20	42	–	–
5/2-way valve, double solenoid	JMDH-...	–	–	18	–
	JMDDH-...	–	–	18	18
5/3-way valve	MDH-5/3G-...	25	55	–	–
	MDH-5/3E-...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

Datasheet – Width 42 mm

Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air according 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	Internal pilot air supply	[bar]	2 ... 10	3 ... 10
	External pilot air supply	[bar]	3 ... 10	3 ... 10
Ambient temperature		[°C]	−10 ... +50	
Temperature of medium		[°C]	−10 ... +50	
Safety data				
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 resistant			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	
LABS (PWIS) conformity			VDMA24364-B1/B2-L	

Datasheet – Width 42 mm

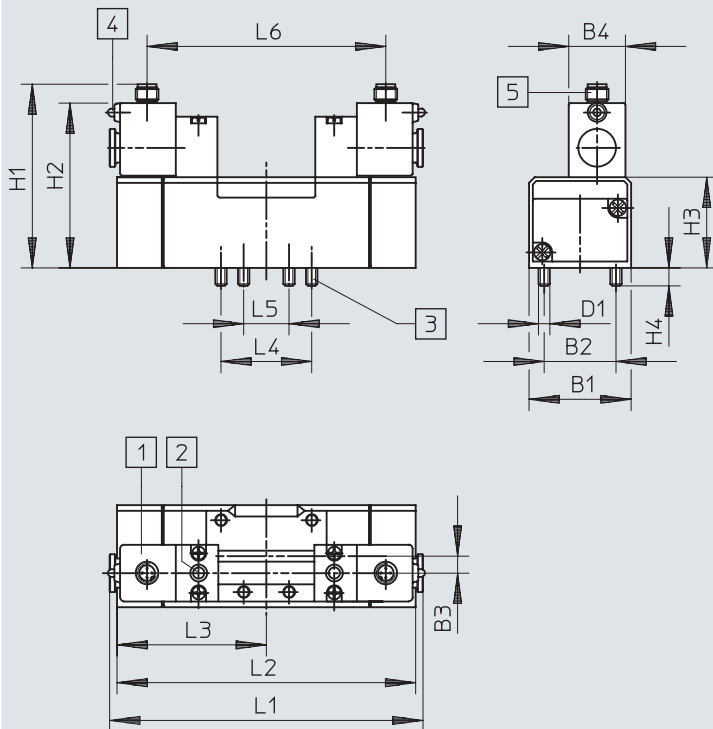
Dimensionsn – 5/2-way valves, single solenoid Download CAD data → www.festo.com



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				

Datasheet – Width 42 mm

Dimensions – 5/2-way valves, single solenoid, 5/3-way valves

Download CAD data → www.festo.com

[1] Solenoid coil can be turned
90° regardless of the
manual override

[2] Manual override
[3] Captive retaining screws

[4] LED indicator

[5] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina

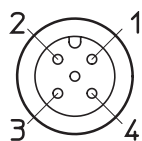


Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMDH-5/2- ...	42	28	6	30	M5	87.2	77.2	38	9	–	148	87.6	43.8	36	18	108.5
JMDDH-5/2- ...												87.6	43.8			
MDH-5/3...												108.4	54.3			

Ordering data – Width 42 mm

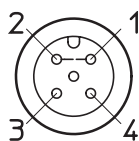
Terminal assignment

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 (+)

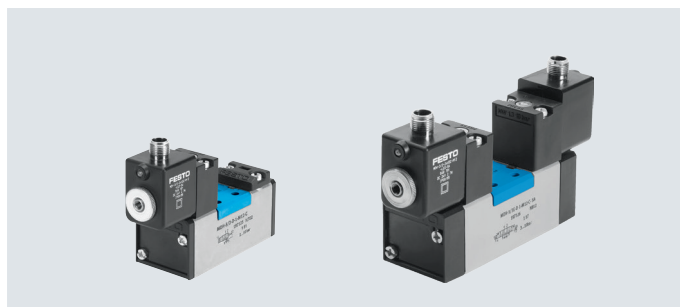
Ordering data – Solenoid valves

Circuit symbol	Description	Coil	Pilot air supply	Weight [g]	Part no.	Type
5/2-way valve, single solenoid						
	Pneumatic spring return	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 return	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 return	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 return	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, monostable						
	Normally closed, mechanical spring return	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
	Exhausted in normal position, mechanical spring return	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 return	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

Datasheet – 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
Flow direction	Not reversible
Exhaust air function	Can be throttled
Manual override	Non-detenting
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal width [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]

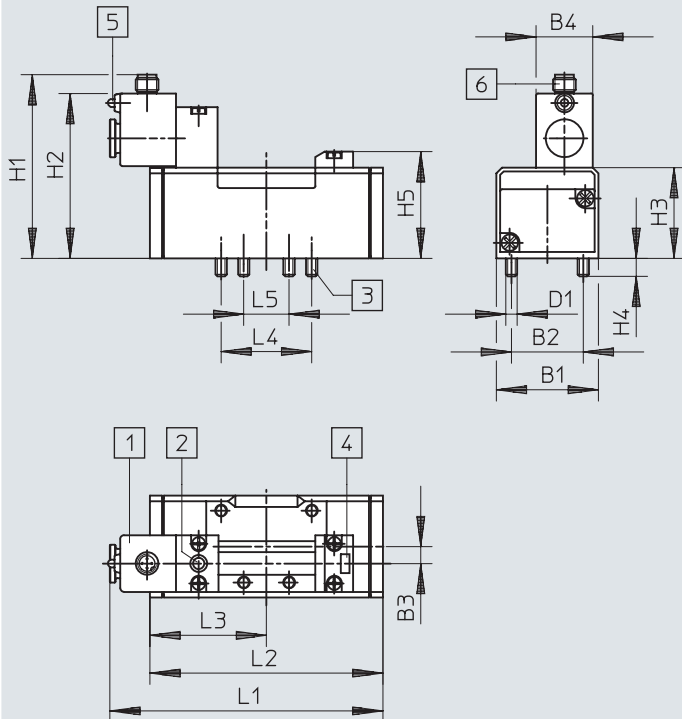
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MDH-5/2-...	45	60	–	–
	MDH-5/2-...-FR-...	25	60	–	–
5/2-way valve, double solenoid	JMDH-...	–	–	20	–
	JMDDH-...	–	–	20	20
5/3-way valve	MDH-5/3G-...	35	70	–	–
	MDH-5/3E-...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

Datasheet – Width 52 mm

Operating and environmental conditions			
Reset method		Pneumatic spring	Mechanical spring
Operating medium		Compressed air according 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 data			
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 resistant		Transport application test with severity level 1 to FN 942017-4 and EN 60068-26	
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	
LABS (PWIS) conformity		VDMA24364-B1/B2-L	

Datasheet – Width 52 mm

Dimensionsn – 5/2-way valves, single solenoid

Download CAD data → www.festo.com

[1] Solenoid coil can be turned
90° regardless of the
manual override

[2] Manual override
[3] Captive retaining screws

[4] Slot for inscription label
[5] LED indicator

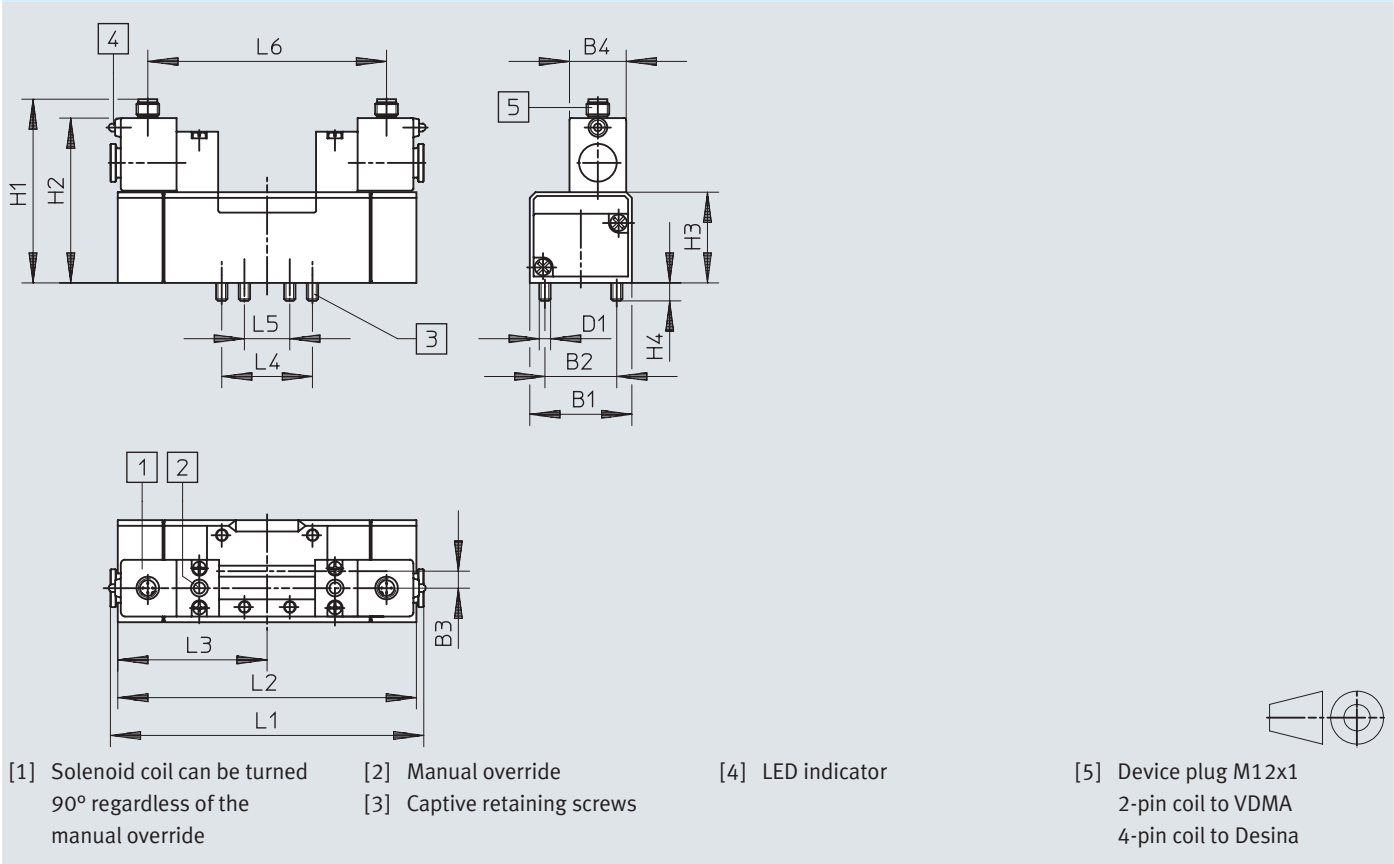
[6] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina



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				

Datasheet – Width 52 mm

Dimensions – 5/2-way valves, double solenoid, 5/3-way valves Download CAD data → www.festo.com

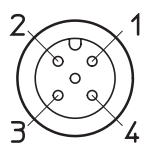


Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMDH-5/2- ...	54	38	9	30	M6	97.2	87.2	48	9.5	–	165.8	123.4	61.7	48	24	126.3
JMDDH-5/2- ...												123.4	61.7			
MDH-5/3...												158	79			

Ordering data – Width 52 mm

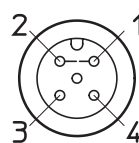
Terminal assignment

M12 plug – 2-pin to VDMA



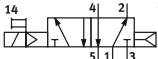
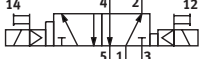
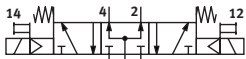
- 1 Unused
- 2 Unused
- 3 com (-)
- 4 Signal (+)

M12 plug – 4-pin to Desina



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

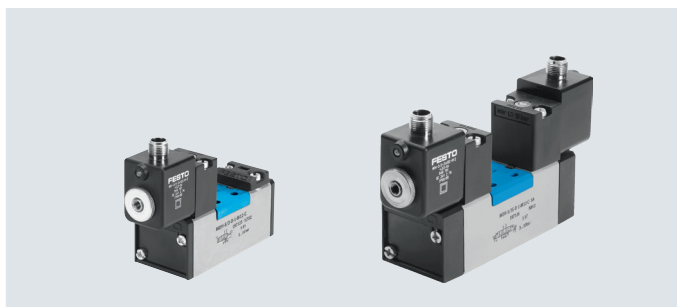
Ordering data

Circuit symbol	Description	Coil	Pilot air supply	Weight [g]	Part no.	Type
5/2-way valve, single solenoid						
	Pneumatic spring return	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 return	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	JMDDH-5/2-D-2-M12-C
		4-pin to Desina	Internal	940	540817	JMDDH-5/2-D-2-M12D-C
5/3-way valve, monostable						
	Normally closed, mechanical spring return	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
	Exhausted in normal position, mechanical spring return	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 return	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

Datasheet – 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
Flow direction	Not reversible
Exhaust air function	Can be throttled
Manual override	Non-detenting
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal width [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]

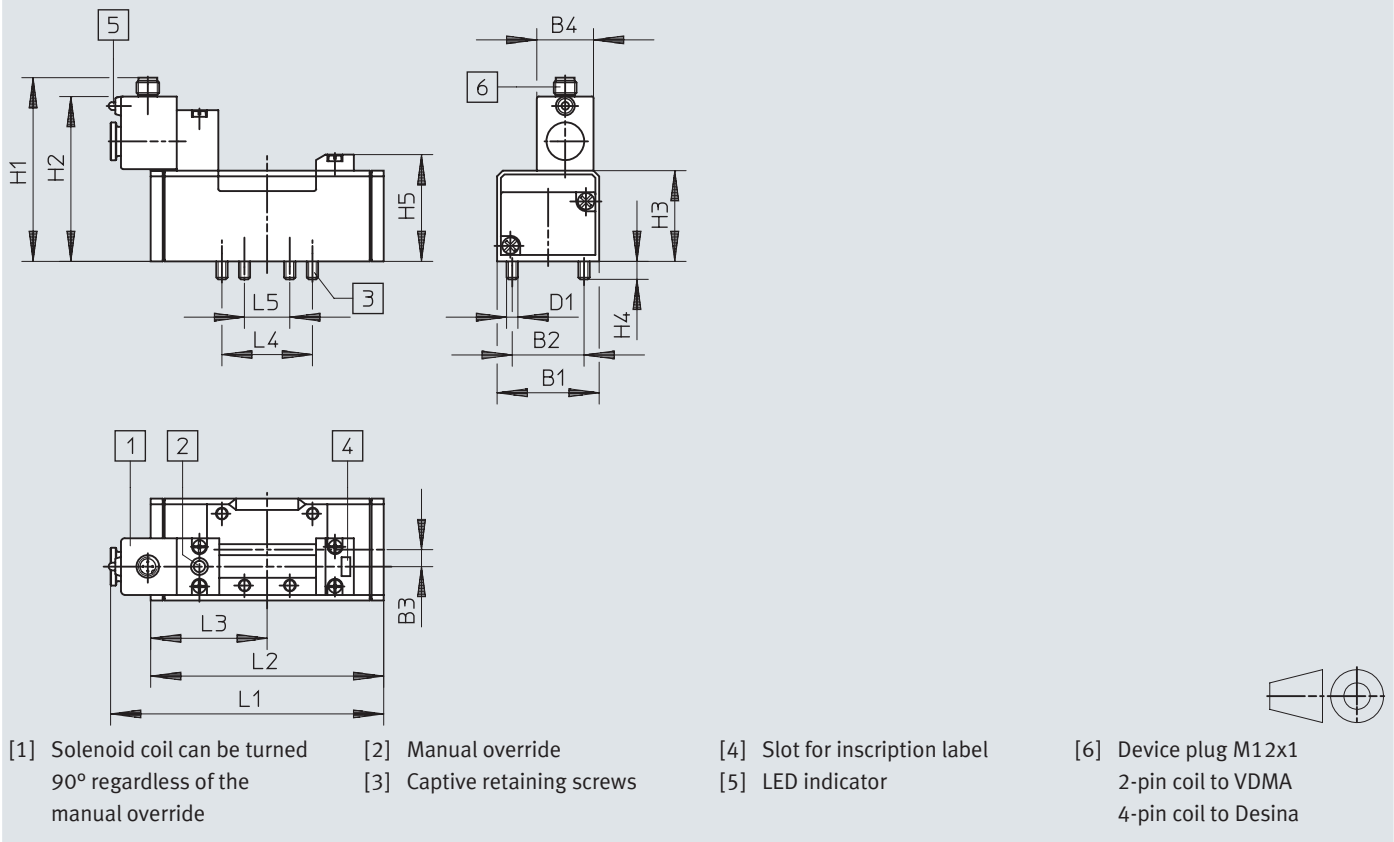
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way valve, single solenoid	MDH-5/2-...	54	57	–	–
	MDH-5/2-...-FR-...	28	68	–	–
5/2-way valve, double solenoid	JMDH-...	–	–	21	–
	JMDDH-...	–	–	23	23
5/3-way valve	MDH-5/3G-...	35	79	–	–
	MDH-5/3E-...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

Datasheet – Width 65 mm

Operating and environmental conditions					
Reset method		Pneumatic spring		Mechanical spring	
Operating medium		Compressed air according 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 data					
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 resistant		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			
LABS (PWIS) conformity		VDMA24364-B1/B2-L			

Datasheet – Width 65 mm

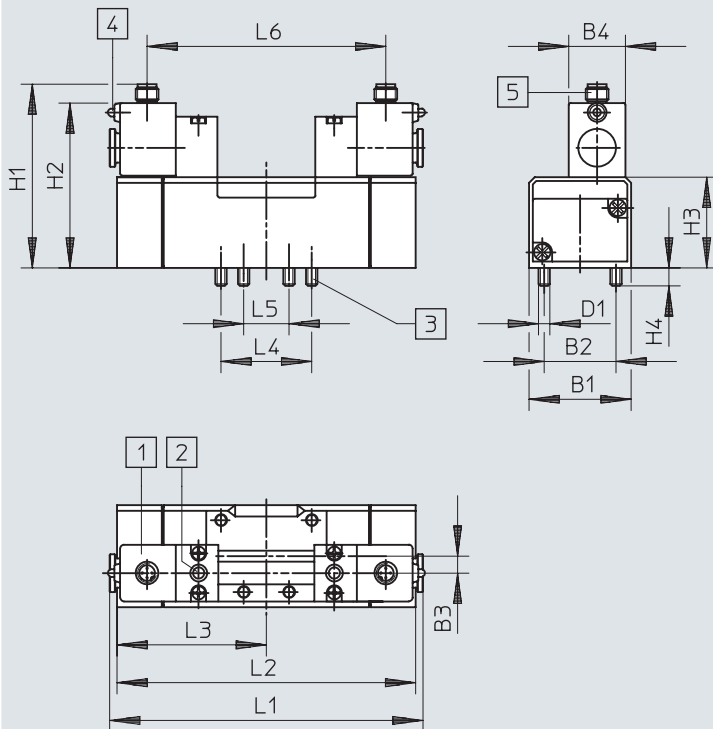
Dimensionsn – 5/2-way valves, single solenoid Download CAD data → www.festo.com



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				

Datasheet – Width 65 mm

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

Download CAD data → www.festo.com

[1] Solenoid coil can be turned
90° regardless of the
manual override

[2] Manual override
[3] Captive retaining screws

[4] LED indicator

[5] Device plug M12x1
2-pin coil to VDMA
4-pin coil to Desina

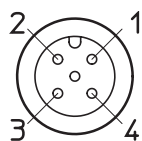


Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMDH-5/2- ...	65	48	12	30	M8	104.2	94.2	55	12	–	186.4	145.4	72.7	64	32	146.9
JMDDH-5/2- ...												145.4	72.7			
MDH-5/3...												184	92			

Ordering data – Width 65 mm

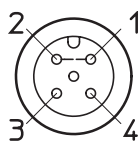
Terminal assignment

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 return	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 return	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	JMDDH-5/2-D-3-M12-C
		4-pin to Desina	Internal	1100	540824	JMDDH-5/2-D-3-M12D-C
5/3-way valve, monostable						
	Normally closed, mechanical spring return	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
	Exhausted in normal position, Mechanical spring return	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 return	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

Datasheet – Width 76 mm

-  - Flow rate
Up to 6000 l/min

-  - Repair service

-  - Voltage
24 V DC
48 V AC

**General technical data**

Design	Piston spool
Sealing principle	Soft
Actuation type	Electrical
Type of control	Piloted
Flow direction	Not reversible
Exhaust air function	Can be throttled
Manual override	Non-detenting
Type of mounting	On sub-base, with through-hole and screw
Mounting position	Any
Nominal width [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	Monostable	120	160	–
	Bistable	–	–	40
5/3-way valve		85	290	–

Datasheet – Width 76 mm

Operating and environmental conditions			
Valve function		MDH-...-D-4-24DC, JMDH-...-D-4-24DC	MDH-...-D-4, JMDH-...-D-4
Operating medium		Compressed air according 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	5/2-way valve, single solenoid	[bar]	3 ... 16
	5/2-way valve, double solenoid	[bar]	2 ... 16
	5/3-way valve	[bar]	3 ... 16
Ambient temperature		[°C]	-10 ... +50
Temperature of medium		[°C]	-10 ... +60
CE marking (see declaration of conformity) ¹⁾		To EU Low Voltage Directive	–
UKCA marking (see declaration of conformity) ¹⁾		To UK regulations for electrical equipment	–

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

Safety data			
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

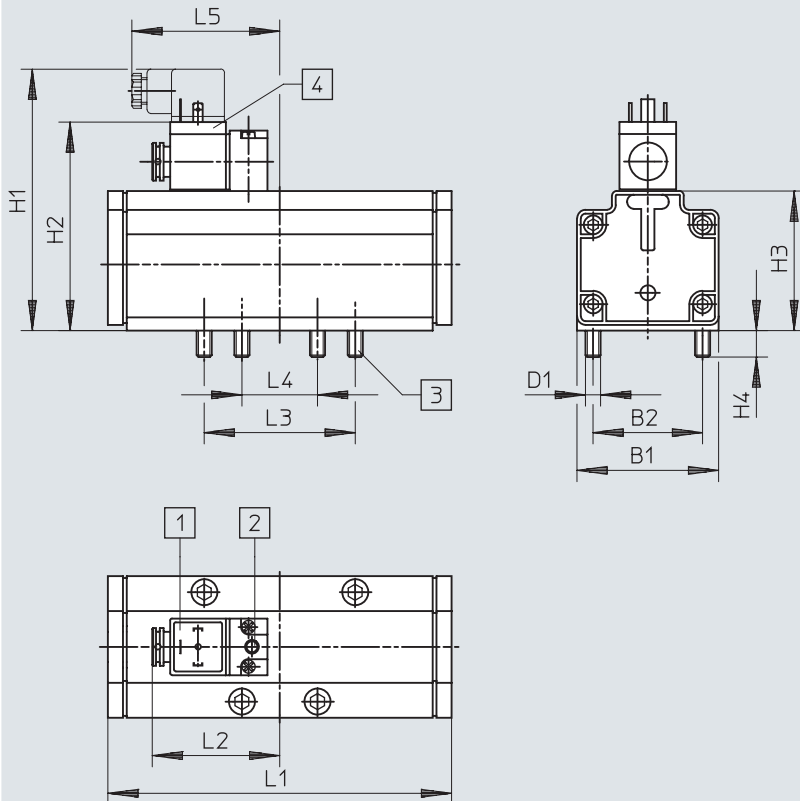
Electrical data – MDH-...-24DC, JMDH-...-24DC			
		DC voltage	Alternating voltage
Electrical connection		To DIN EN 175301-803	
Characteristic coil data	Voltage	[V DC]	24
		[V AC]	–
	Frequency	[Hz]	–
	Power	[W]	6.8
	Pickup power	[VA]	–
	Holding power	[VA]	14.5
Duty cycle		[%]	100
Degree of protection 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	–	–
	Pickup 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
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet – Width 76 mm

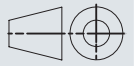
Dimensionsn – 5/2-way valves, single solenoid

Download CAD data → www.festo.com

[1] Connection for plug socket with
plug pattern to EN 175301-803,
type A d page <?>

[2] Manual override
[3] Captive retaining screws

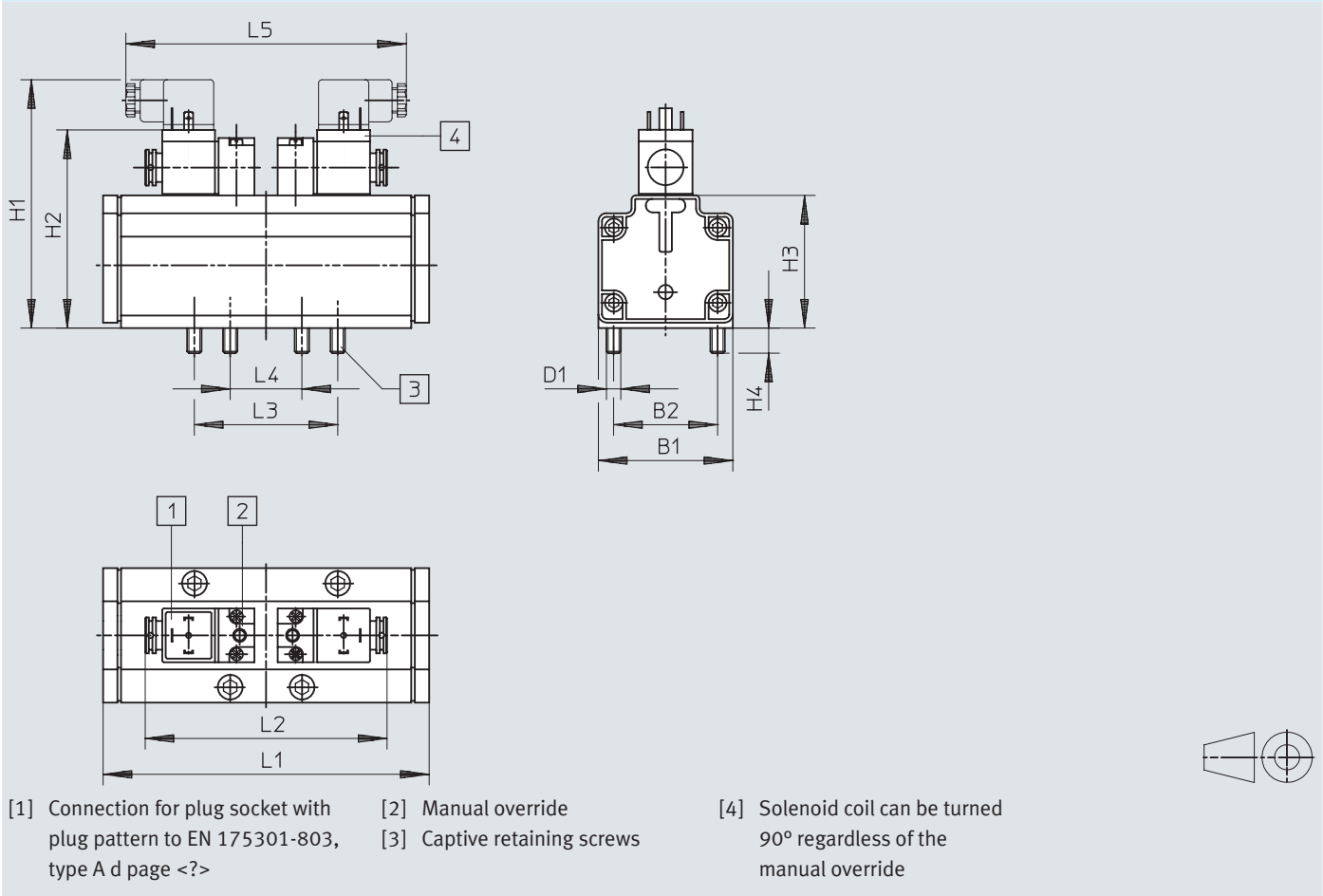
[4] Solenoid coil can be turned
90° regardless of the
manual override



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

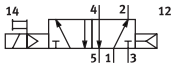
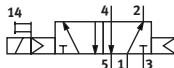
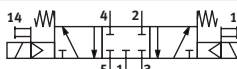
Datasheet – Width 76 mm

Dimensions - 5/2-way valves, double solenoid, 5/3-way valves Download CAD data → www.festo.com



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...												

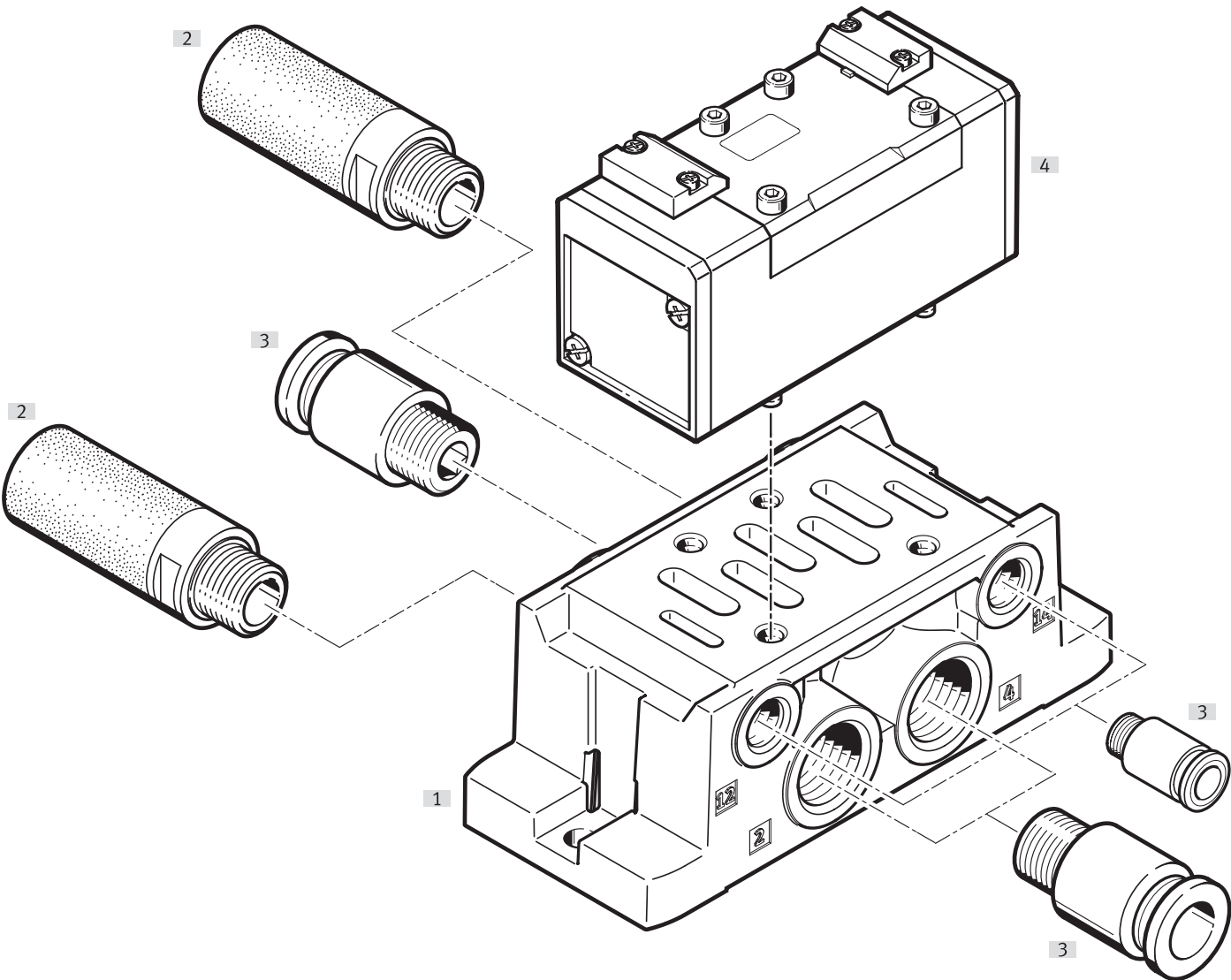
Ordering data – Width 76 mm

Ordering data						
Circuit symbol	Description	Voltage	Pilot air supply	Weight [g]	Part no.	Type
5/2-way valve, single solenoid						
	Pneumatic spring return	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 return	24 V DC	Internal	2600	12459	MDH-5/3G-3/4-D-4-24DC
		–	Internal	2600	14546	MDH-5/3G-3/4-D-4¹⁾
	Exhausted in normal position, Mechanical spring return	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

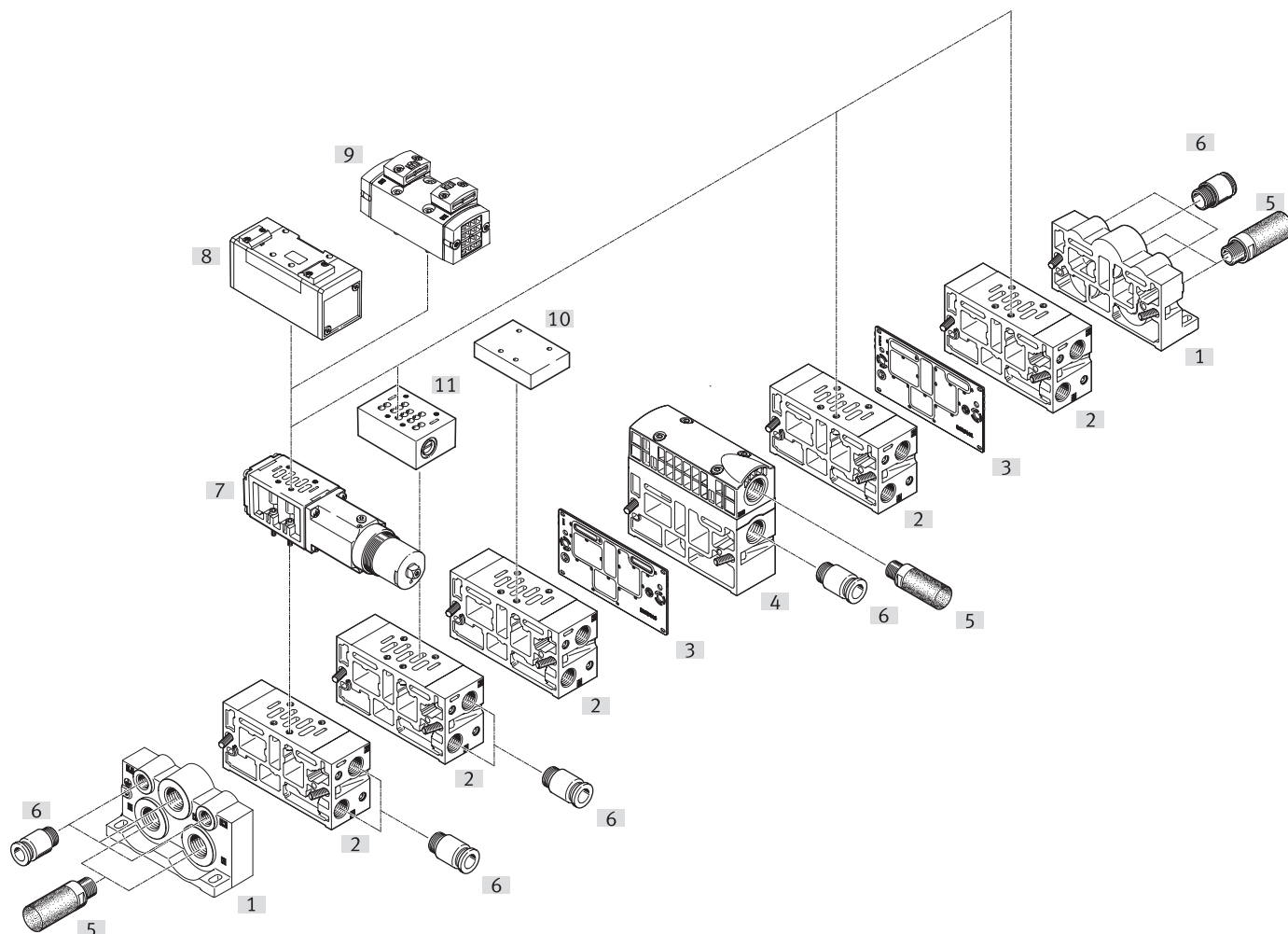
Valve on individual sub-base



Individual components		Type	Brief description	→ Page/Internet
[1]	Sub-base	VABS-S1-...	Pneumatic ports on the side	141
	Individual sub-base	NAS-...	Pneumatic ports on the side	141
		NAU-...	Pneumatic ports underneath	144
[2]	Silencer	U-...	For fitting in exhaust ports	silencer
[3]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[4]	Pneumatic valve	VL-...	Hole pattern to ISO 5599-1	122
		J-...	Hole pattern to ISO 5599-1	122
		JD-...	Hole pattern to ISO 5599-1	122

Peripherals overview

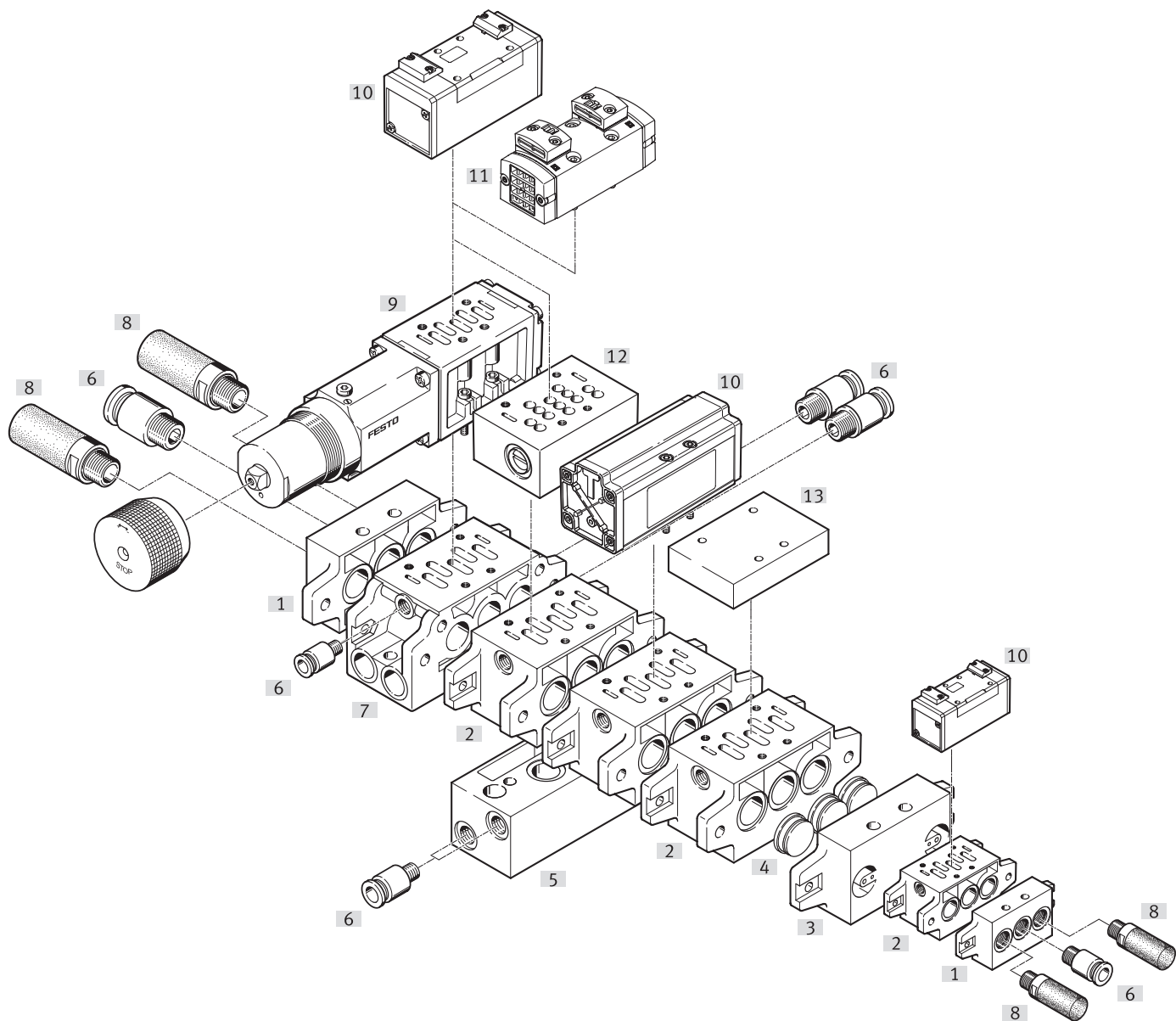
Manifold assembly



Individual components		Type	Brief description	→ Page/Internet
[1]	End plates	VABE-S1-...	For sealing the manifold sub-bases	153
[2]	Manifold sub-base	VABV-S1-...	With ports 2 and 4	146
[3]	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	157
[4]	Supply plate	VABF-S1-1-...	With ports for air supply 1 and exhausts 3 and 5	148
[5]	Silencer	U-...	For fitting in exhaust ports	silencer
[6]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[7]	Regulator plate	VABF-S1-...-R...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	169
		LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	169
[8]	Pneumatic valve	VL-...	Hole pattern to ISO 5599-1	122
		J-...	Hole pattern to ISO 5599-1	122
		JD-...	Hole pattern to ISO 5599-1	122
		VSPA	Hole pattern to ISO 5599-1	122
[10]	Cover plate	NDV-...	For sealing unused manifold sub-bases	156
[11]	Throttle plate	VABF-S1-...-F1B1-C	Restricts the flow of exhaust air in ducts 3 and 5	162
		GRO-ZP-...	Restricts the flow of exhaust air in ducts 3 and 5	162

Peripherals overview

manifold assembly

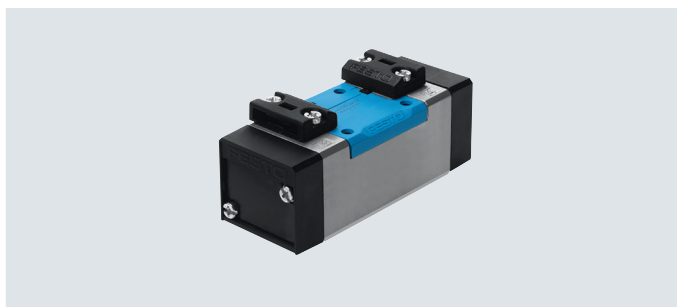


Peripherals overview

Individual components		Type	Brief description	→ Page/Internet
[1]	End plate kit	NEV-...	For sealing the manifold sub-bases	152
[2]	Manifold sub-base	NAV-...	With ports 2 and 4 underneath	146
[3]	Intermediate plate	NZV-...	For connecting manifold sub-bases of different sizes	158
[4]	Isolating disc	NSC-...	For sealing ducts 1, 3, 5 between end plate and manifold sub-base, e.g. to create pressure zones	156
[5]	Angled sub-base	NAW-...	For routing ports 2 and 4 to the front	151
[6]	Push-in fitting	QS-...	For connecting tubing with standard O.D.	qs
[7]	Angled manifold sub-base	NAVW-...	With ports 2 and 4 either underneath or to the front	151
[8]	Silencer	U-...	For fitting in exhaust ports	silencer
[9]	Regulator plate	VABF-S1-...-R...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	169
		LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	169
[10]	Pneumatic valve	VL-...	Hole pattern to ISO 5599-1	122
		J-...	Hole pattern to ISO 5599-1	122
		JD-...	Hole pattern to ISO 5599-1	122
[11]		VSPA	Hole pattern to ISO 5599-1	122
[12]	Throttle plate	VABF-S1-...-F1B1-C	Restricts the flow of exhaust air in ducts 3 and 5	162
		GRO-ZP-...	Restricts the flow of exhaust air in ducts 3 and 5	162
[13]	Cover plate	NDV-...	For sealing unused manifold sub-bases	156

Datasheet – Width 42 mm

 Flow rate
 1200 l/min
 1400 ... 1800 l/min



General technical data

Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX	VSPA
Design	Piston spool	Piston spool	Piston spool
Sealing principle	Soft	Soft	Soft
Actuation type	Pneumatic	Pneumatic	Pneumatic
Type of control	Direct	Direct	Direct
Pilot air supply	–	–	External
Flow direction	Reversible VL-5/2-D-1-C: non-reversible	Reversible VL-5/2-D-1-C-EX: non-reversible	Reversible 3/2-way valves: not reversible
Exhaust air function	Can be throttled	Can be throttled	Via individual sub-base
Suitable for vacuum	–	–	Yes Pneumatic spring return: none
Manual override	None	None	–
Type of mounting	On sub-base via through-hole	On sub-base via through-hole	On sub-base
Mounting position	Any	Any	Any
Max. tightening torque for valve mounting [Nm]	–	–	1
Nominal width [mm]	8	8	8
Overlap	Positive overlap	Positive overlap	Positive overlap
Width [mm]	42	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	Sub-base size 1 to ISO 5599-1
Noise level [dB (A)]	85	85	85
Conforms to standard	ISO 5599-1	ISO 5599-1	–

Flow rates

	Standard nominal flow rate (standardised to DIN 1343) [l/min]	Nominal flow rate standardised according to ISO 8778 [l/min]	Flow rate of valve [l/min]	Flow rate of valve on individual sub-base [l/min]	b value	C value [l/sbar]
VL- ... -C	1200	–	–	–	–	–
J ... -C	1200	–	–	–	–	–
VL- ... -EX	1200	–	–	–	–	–
J ... -EX	1200	–	–	–	–	–
VSPA						
2x 3/2-way valve, normally closed	–	1400	1300	1100	0.18	5293
2x 3/2-way valve, normally open	–	1400	1300	1100	0.21	5511
2x3/2-way valve, normally open/closed	–	1400	1300	1100	0.2	5479
5/2-way valve, single solenoid, pneumatic spring	–	1800	1700	1400	1.6	7706
5/2-way valve, single solenoid, mechanical spring	–	1800	1700	1400	1.7	7718
5/2-way valve, double solenoid	–	1800	1700	1400	1.6	7697
5/2-way valve, double solenoid, with dominant signal	–	1800	1700	1400	1.5	7663
5/3-way valve, normally closed	–	1800	1600	1400	0.14	7482
5/3 directional control valve, normally exhausted	–	1800	1600	1400	0.24	7141
5/3-way valve, normally pressurised	–	1600	1500	1300	0.14	6799

Datasheet – Width 42 mm

Switching times [ms]		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
2x3/2-way valve	VSPA	–	–	–	–
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	–	–
	VSPA	–	–	–	–
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
	VSPA	–	–	–	–
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	–	–
	VSPA	–	–	–	–

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 IIC T130°C Db
Explosion-proof ambient temperature [°C]	–10 ≤ Ta ≤ +60
Explosion protection certification outside EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) 1)	To UK explosion regulations

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

Safety data			
Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX	VSPA
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Materials			
Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX	VSPA
Housing	Die-cast aluminium	Die-cast aluminium	Die-cast aluminium
Seals	HNBR, NBR	HNBR, NBR	NBR
Screws	–	–	Galvanised steel
Note on materials	RoHS-compliant	RoHS-compliant	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L	VDMA24364-B1/B2-L	VDMA24364-B1/B2-L

Datasheet – Width 42 mm

Operating and ambient conditions, 2x3/2-way valves, double solenoid		VSPA
Type		
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]
Pilot medium		Compressed air according 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
Pilot pressure	[MPa]	0.3 ... 1.6
	[bar]	3 ... 16
Ambient temperature	[°C]	–
Temperature of medium	[°C]	–10 ... +60
Corrosion resistance class CRC ¹⁾		0 - no corrosion stress

1) More information www.festo.com/x/topic/crc

Operating and ambient conditions, 5/2-way valves, single solenoid		VL		VSPA	
Type		Mechanical spring return	Pneumatic spring return	Mechanical spring return	Pneumatic spring return
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]			
Pilot medium		Compressed air according 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 ... +1.6	0.2 ... 1.6	–0.09 ... +1.6	0.3 ... 1.6
	[bar]	–0.9 ... +16	2 ... 16	–0.9 ... +16	3 ... 16
Pilot pressure	[MPa]	–	–	0.3 ... 1.6	–
	[bar]	3 ... 16	2 ... 16	3 ... 16	–
Ambient temperature	[°C]	–10 ... +60		–	
Temperature of medium	[°C]	–10 ... +60		–10 ... +60	
Corrosion resistance class CRC ¹⁾		–		0 - no corrosion stress	

1) More information www.festo.com/x/topic/crc

Operating and ambient conditions, 5/2-way valves, double solenoid		J	VSPA
Type			
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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 ... +1.6	–0.09 ... +1.6
	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure	[MPa]	–	0.3 ... 1.6
	[bar]	2 ... 16	3 ... 16
Ambient temperature	[°C]	–10 ... +60	
Temperature of medium	[°C]	–10 ... +60	
Corrosion resistance class CRC ¹⁾		0 - no corrosion stress	

1) More information www.festo.com/x/topic/crc

Operating and ambient conditions – 5/3-way valves		VL	VSPA
Type			
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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 ... +1.6	–0.09 ... +1.6
	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure	[MPa]	–	0.3 ... 1.6
	[bar]	3 ... 16	3 ... 16
Ambient temperature	[°C]	–10 ... +60	
Temperature of medium	[°C]	–10 ... +60	
Corrosion resistance class CRC ¹⁾		0 - no corrosion stress	

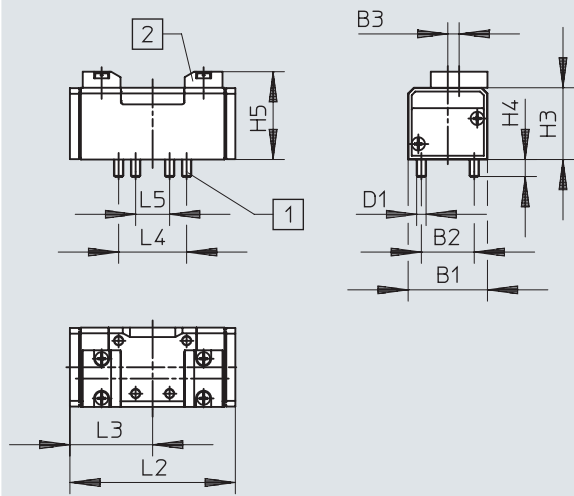
1) More information www.festo.com/x/topic/crc

Datasheet – Width 42 mm

Dimensions

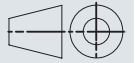
Download CAD data → www.festo.com

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



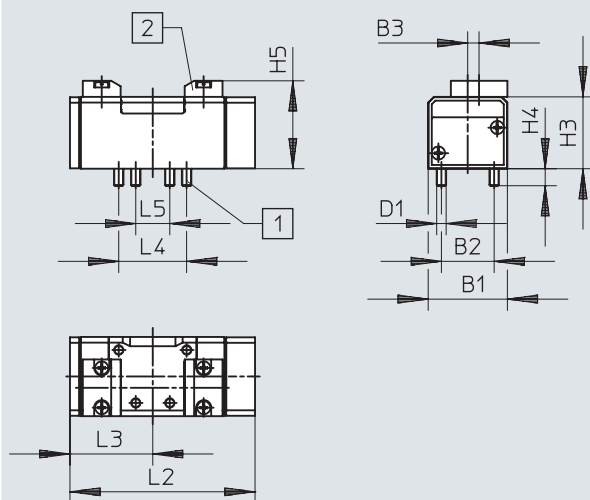
[1] Captive retaining screws

[2] 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 return



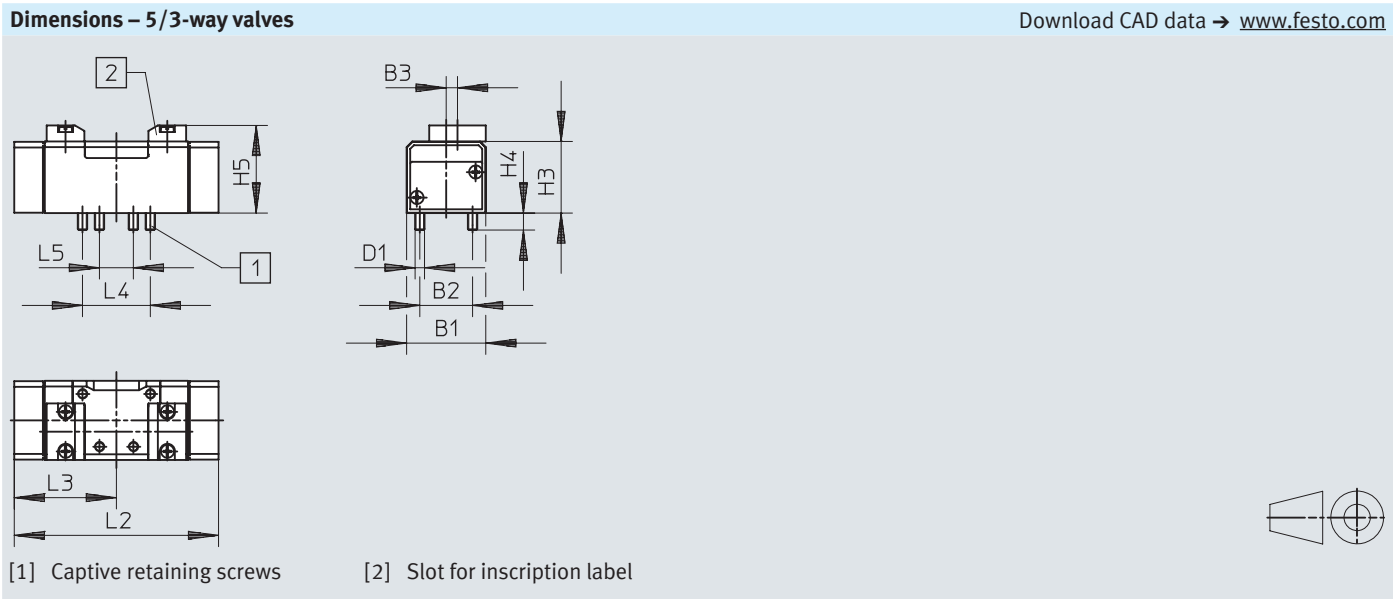
[1] Captive retaining screws

[2] Slot for inscription label



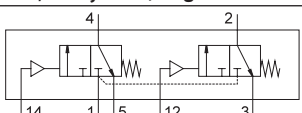
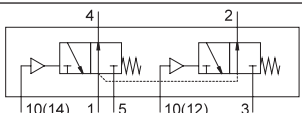
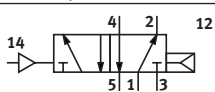
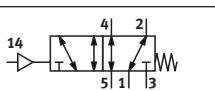
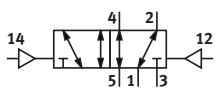
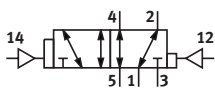
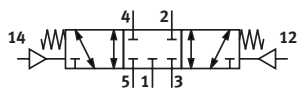
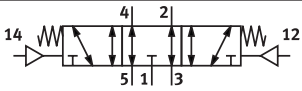
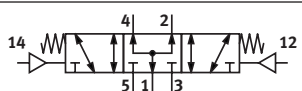
Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/2- ... -FR- ...	42	28	6	M5	38	9	46.5	98	43.8	36	18

Datasheet – Width 42 mm



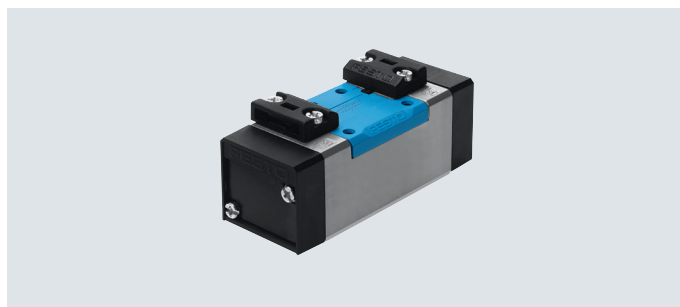
Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/3...	42	28	6	M5	38	9	46.5	108.4	54.2	36	18

Datasheet – Width 42 mm

Ordering data		Description	ISO code	Weight [g]	Part no.	Type
Circuit symbol						
2x3/2-way valve, single solenoid						
	Mechanical spring return	Normally closed	–	360	8033644	VSPA-B-T32C-M-D1
	Mechanical spring return	Normally open	–	360	8033645	VSPA-B-T32U-M-D1
5/2-way valve, single solenoid						
	Pneumatic spring return	–	–	340	8033639	VSPA-B-M52-A-D1
			102	290	151009	VL-5/2-D-1-C
		ATEX category → Page 123	102	290	536007	VL-5/2-D-1-C-EX
	Mechanical spring return	–	–	340	8033640	VSPA-B-M52-M-D1
			104	290	151014	VL-5/2-D-1-FR-C
		ATEX category a Page 123	104	290	536010	VL-5/2-D-1-FR-C-EX
5/2-way valve, double solenoid						
	–	–	–	330	8033637	VSPA-B-B52-D1
			101	290	151007	J-5/2-D-1-C
		ATEX category a Page 123	101	290	536013	J-5/2-D-1-C-EX
	With dominant signal at 14	–	–	330	8033638	VSPA-B-D52-D1
			103	290	151008	JD-5/2-D-1-C
		ATEX category a Page 123	103	290	536016	JD-5/2-D-1-C-EX
5/3-way valve, monostable						
	Normally closed	–	–	345	8033641	VSPA-B-P53C-D1
	Normally closed	–	106	320	151010	VL-5/3G-D-1-C
	Mechanical spring return	ATEX category a Page 123	106	320	536019	VL-5/3G-D-1-C-EX
	Normally exhausted	–	–	345	8033642	VSPA-B-P53E-D1
	Normally exhausted	–	108	320	151011	VL-5/3E-D-1-C
	Mechanical spring return	ATEX category a Page 123	108	320	536022	VL-5/3E-D-1-C-EX
	Normally pressurised	–	–	345	8033643	VSPA-B-P53U-D1
	Normally pressurised	–	107	320	151012	VL-5/3B-D-1-C
	Mechanical spring return	ATEX category a Page 123	107	320	536025	VL-5/3B-D-1-C-EX

Datasheet – Width 52 mm

 Flow rate
 2300 l/min
 1900 ... 4100 l/min



General technical data			
Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX	VSPA
Design	Piston spool	Piston spool	Piston spool
Sealing principle	Soft	Soft	Soft
Actuation type	Pneumatic	Pneumatic	Pneumatic
Type of control	Direct	Direct	Direct
Pilot air supply	–	–	External
Flow direction	Reversible VL-5/2-D-2-C: non-reversible	Reversible VL-5/2-D-2-C-EX: non-reversible	Reversible 3/2-way valves: not reversible
Exhaust air function	Can be throttled	Can be throttled	Via individual sub-base
Suitable for vacuum	–	–	Yes Pneumatic spring return: none
Manual override	None	None	–
Type of mounting	On sub-base, with through-hole and screw	On sub-base, with through-hole and screw	On sub-base
Mounting position	Any	Any	Any
Max. tightening torque for valve mounting [Nm]	–	–	2
Nominal width [mm]	11.5	11.5	11.5
Overlap	Positive overlap	Positive overlap	Positive overlap
Width [mm]	54	54	52
Grid dimension [mm]	56	56	–
Pneumatic connections	Sub-base size 2 to ISO 5599-1	Sub-base size 2 to ISO 5599-1	Sub-base size 2 to ISO 5599-1
Noise level [dB (A)]	85	85	85
Conforms to standard	ISO 5599-1	ISO 5599-1	–

Flow rates						
		Standard nominal flow rate (standardised to DIN 1343) [l/min]	Nominal flow rate standardised according to ISO 8778 [l/min]	Flow rate of valve [l/min]	Flow rate of valve on individual sub-base [l/min]	b value C value [l/sbar]
VL- ... -C		2300	–	–	–	–
J ... -C		2300	–	–	–	–
VL- ... -EX		2300	–	–	–	–
J ... -EX		2300	–	–	–	–
VSPA	2x 3/2-way valve, normally closed	–	2100	1900	1700	0.569 3631
	2x 3/2-way valve, normally open	–	2000	1800	1800	0.69 3167
	2x3/2-way valve, normally open/closed	–	1900	1800	1800	0.65 3208
	5/2-way valve, single solenoid, pneumatic spring	–	4100	3800	3100	0.31 8221
	5/2-way valve, single solenoid, mechanical spring	–	4100	3800	3200	0.3 8167
	5/2-way valve, double solenoid	–	4000	3700	3100	0.2 8577
	5/2-way valve, double solenoid, with dominant signal	–	4000	3700	3100	0.26 8272
	5/3-way valve, normally closed	–	3700	3500	2800	0.26 7695
	5/3 directional control valve, normally exhausted	–	3600	3400	2700	0.23 7667
	5/3-way valve, normally pressurised	–	3500	3300	2900	0.33 7069

Datasheet – Width 52 mm

Switching times [ms]		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
2x3/2-way valve	VSPA	–	–	–	–
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	–	–
	VSPA	–	–	–	–
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
	VSPA	–	–	–	–
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	–	–
	VSPA	–	–	–	–

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 IIC T130°C Db
Explosion-proof ambient temperature [°C]	–10 ≤ Ta ≤ +60
Explosion protection certification outside EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) 1)	To UK explosion regulations

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

Safety data			
Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX	VSPA
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Materials			
Type	VL- ... -C, J ... -C	VL- ... -EX, J ... -EX	VSPA
Housing	Die-cast aluminium	Die-cast aluminium	Die-cast aluminium
Seals	HNBR, NBR	HNBR, NBR	NBR
Screws	–	–	Galvanised steel
Note on materials	RoHS-compliant	RoHS-compliant	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L	VDMA24364-B1/B2-L	VDMA24364-B1/B2-L

Datasheet – Width 52 mm

Operating and ambient conditions – 2x3/2-way valves		VSPA
Type		
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]
Pilot medium		Compressed air according 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
Pilot pressure	[MPa]	0.3 ... 1.6
	[bar]	3 ... 16
Ambient temperature	[°C]	–
Temperature of medium	[°C]	–10 ... +60
Corrosion resistance class CRC ¹⁾		0 - no corrosion stress

1) More information www.festo.com/x/topic/crc

Operating and ambient conditions – 5/2-way valves, single solenoid		VL		VSPA	
Type		Mechanical spring return	Pneumatic spring return	Mechanical spring return	Pneumatic spring return
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]			
Pilot medium		Compressed air according 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 ... +1.6	0.2 ... 1.6	–0.09 ... +1.6	0.3 ... 1.6
	[bar]	–0.9 ... +16	2 ... 16	–0.9 ... +16	3 ... 16
Pilot pressure	[MPa]	–	–	0.3 ... 1.6	–
	[bar]	3 ... 16	2 ... 16	3 ... 16	–
Ambient temperature	[°C]	–10 ... +60	–	–	–
Temperature of medium	[°C]	–10 ... +60	–	–10 ... +60	–
Corrosion resistance class CRC ¹⁾		–	–	0 - no corrosion stress	–

1) More information www.festo.com/x/topic/crc

Operating and ambient conditions – 5/2-way valves, double solenoid		J	VSPA
Type			
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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 ... +1.6	–0.09 ... +1.6
	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure	[MPa]	–	0.3 ... 1.6
	[bar]	2 ... 16	3 ... 16
Ambient temperature	[°C]	–10 ... +60	–
Temperature of medium	[°C]	–10 ... +60	–10 ... +60
Corrosion resistance class CRC ¹⁾		–	0 - no corrosion stress

1) More information www.festo.com/x/topic/crc

Operating and ambient conditions – 5/3-way valves		VL	VSPA
Type			
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]	
Pilot medium		Compressed air according 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 ... +1.6	–0.09 ... +1.6
	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure	[MPa]	–	0.3 ... 1.6
	[bar]	3 ... 16	3 ... 16
Ambient temperature	[°C]	–10 ... +60	–
Temperature of medium	[°C]	–10 ... +60	–10 ... +60
Corrosion resistance class CRC ¹⁾		–	0 - no corrosion stress

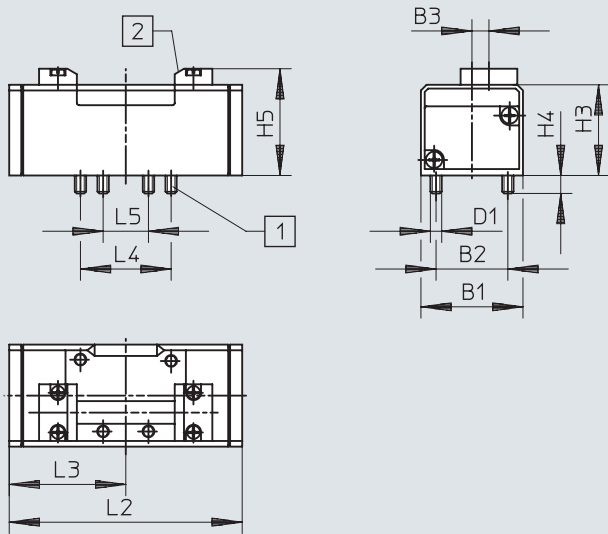
1) More information www.festo.com/x/topic/crc

Datasheet – Width 52 mm

Dimensions

Download CAD data → www.festo.com

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

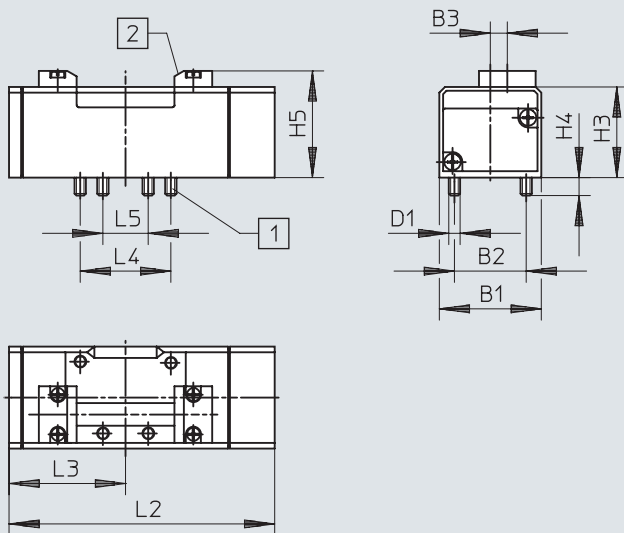


[1] Captive retaining screws

[2] 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 return

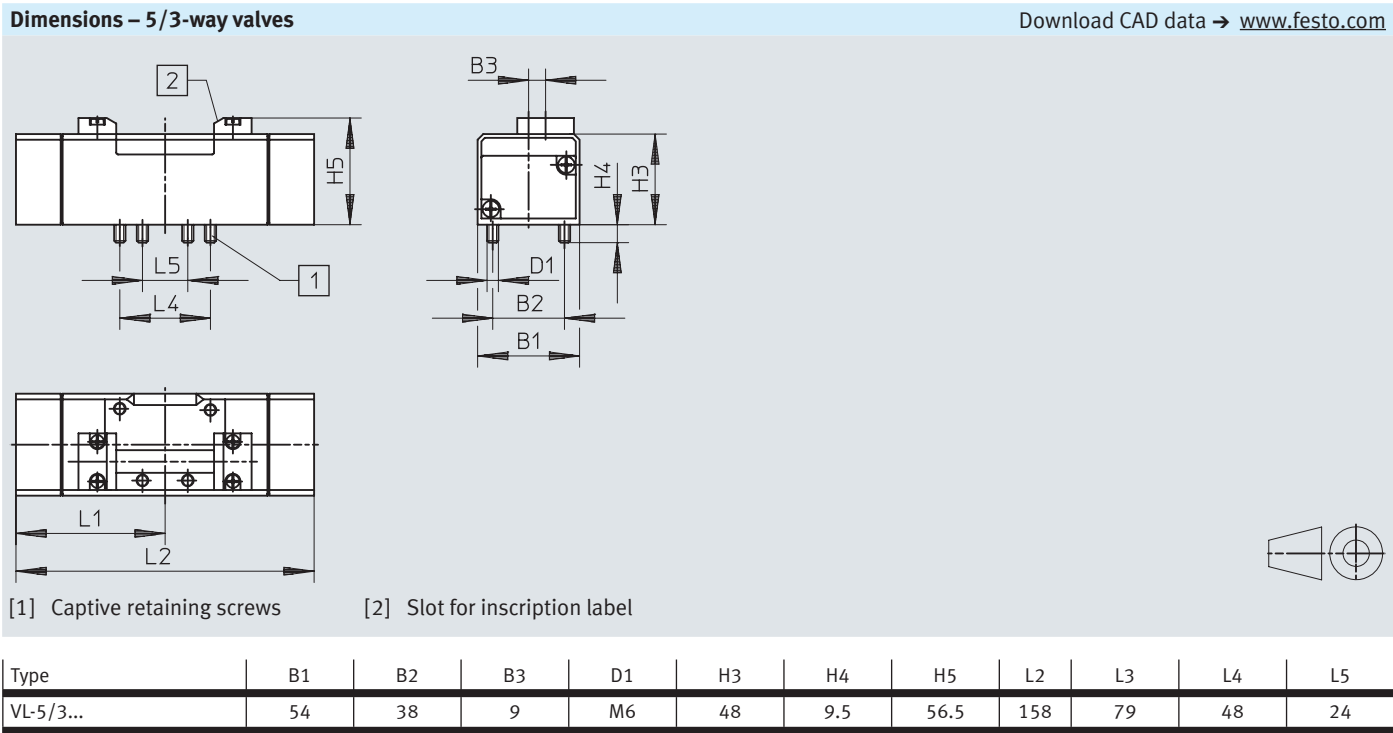


[1] Captive retaining screws

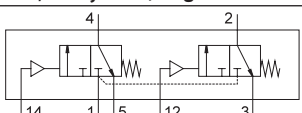
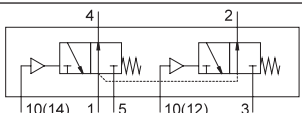
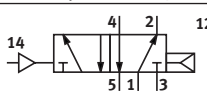
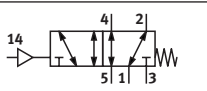
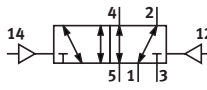
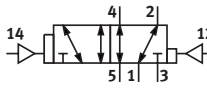
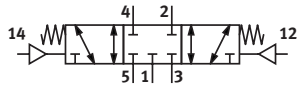
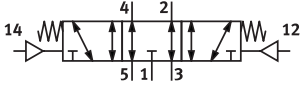
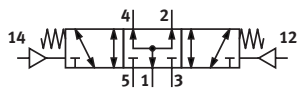
[2] Slot for inscription label

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

Datasheet – Width 52 mm

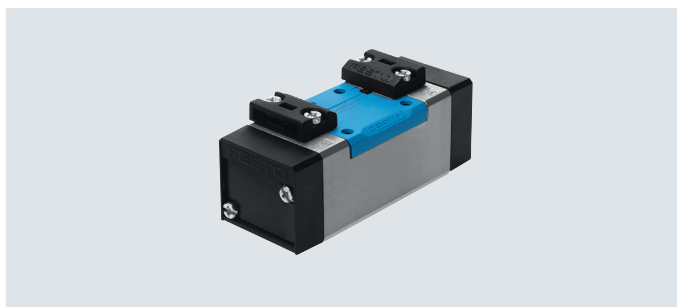


Datasheet – Width 52 mm

Ordering data		Description		ISO code	Weight [g]	Part no.	Type
Circuit symbol							
2x3/2-way valve, single solenoid							
	Mechanical spring return	Normally closed	–	680	8033654	VSPA-B-T32C-M-D2	
	Mechanical spring return	Normally open	–	680	8033655	VSPA-B-T32U-M-D2	
5/2-way valve, single solenoid							
	Pneumatic spring return	–	–	600	8033649	VSPA-B-M52-A-D2	
		UL – Recognized (OL)	202	550	151845	VL-5/2-D-2-C	
		ATEX category a Page 129	202	550	536008	VL-5/2-D-2-C-EX	
	Mechanical spring return	–	–	600	8033650	VSPA-B-M52-M-D2	
		UL – Recognized (OL)	204	550	151844	VL-5/2-D-2-FR-C	
		ATEX category a Page 129	204	550	536011	VL-5/2-D-2-FR-C-EX	
5/2-way valve, double solenoid							
	–	–	–	610	8033647	VSPA-B-B52-D2	
		–	201	550	151846	J-5/2-D-2-C	
		ATEX category a Page 129	201	550	536014	J-5/2-D-2-C-EX	
	With dominant signal at 14	–	–	610	8033648	VSPA-B-D52-D2	
		UL – Recognized (OL)	203	550	151847	JD-5/2-D-2-C	
		ATEX category a Page 129	203	550	536017	JD-5/2-D-2-C-EX	
5/3-way valve, monostable							
	Normally closed	–	–	655	8033651	VSPA-B-P53C-D2	
	Normally closed	UL – Recognized (OL)	206	825	151848	VL-5/3G-D-2-C	
	Mechanical spring return	ATEX category a Page 129	206	825	536020	VL-5/3G-D-2-C-EX	
	Normally exhausted	–	–	655	8033652	VSPA-B-P53E-D2	
	Normally exhausted	UL – Recognized (OL)	208	825	151849	VL-5/3E-D-2-C	
	Mechanical spring return	ATEX category a Page 129	208	825	536023	VL-5/3E-D-2-C-EX	
	Normally pressurised	–	–	655	8033653	VSPA-B-P53U-D2	
	Normally pressurised	UL – Recognized (OL)	207	825	151850	VL-5/3B-D-2-C	
	Mechanical spring return	ATEX category a Page 129	207	825	536026	VL-5/3B-D-2-C-EX	

Datasheet – 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
Flow direction	Reversible	Reversible
	VL-5/2-D-3-C: non-reversible	VL-5/2-D-3-C-EX: non-reversible
Exhaust air 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 width [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

Datasheet – 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
Explosion protection certification outside EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) 1)	To UK explosion regulations

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

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 according to ISO 8573-1:2010 [7:4:4]			
Pilot medium		Compressed air according 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]	0.2 ... 1.6	−0.09 ... +1.6	−0.09 ... +1.6	−0.09 ... +1.6
	[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			

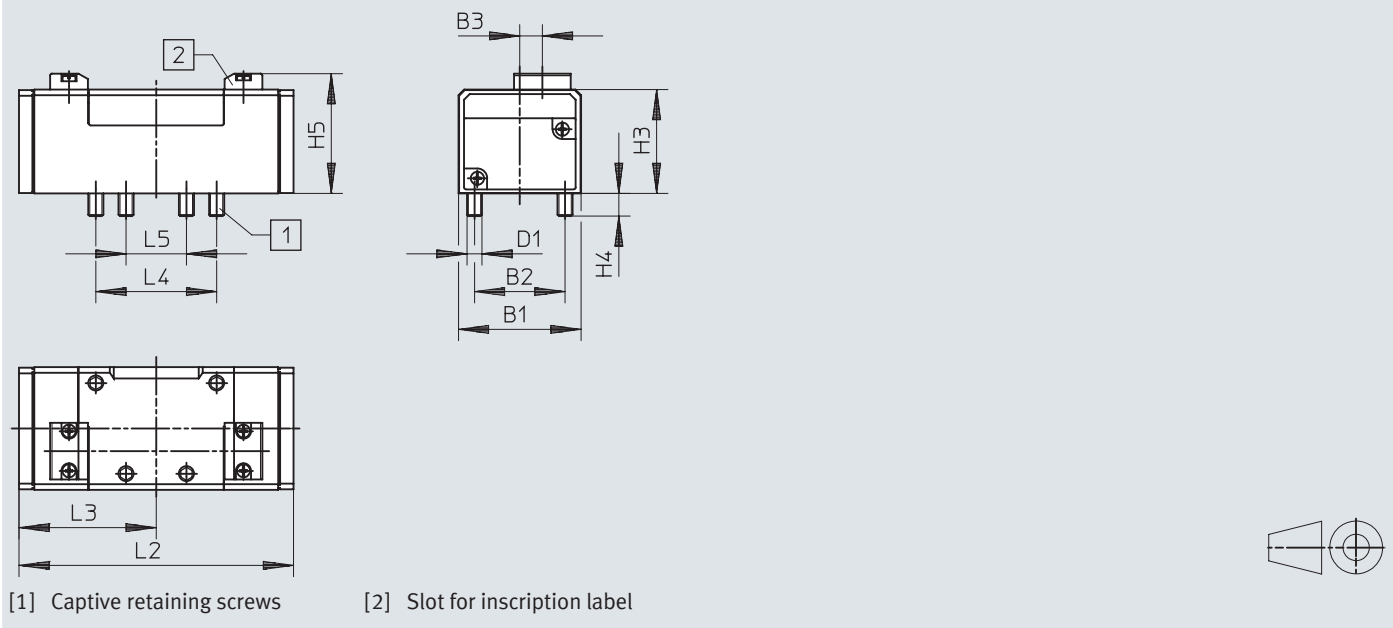
Safety data	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistant	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

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

Datasheet – Width 65 mm

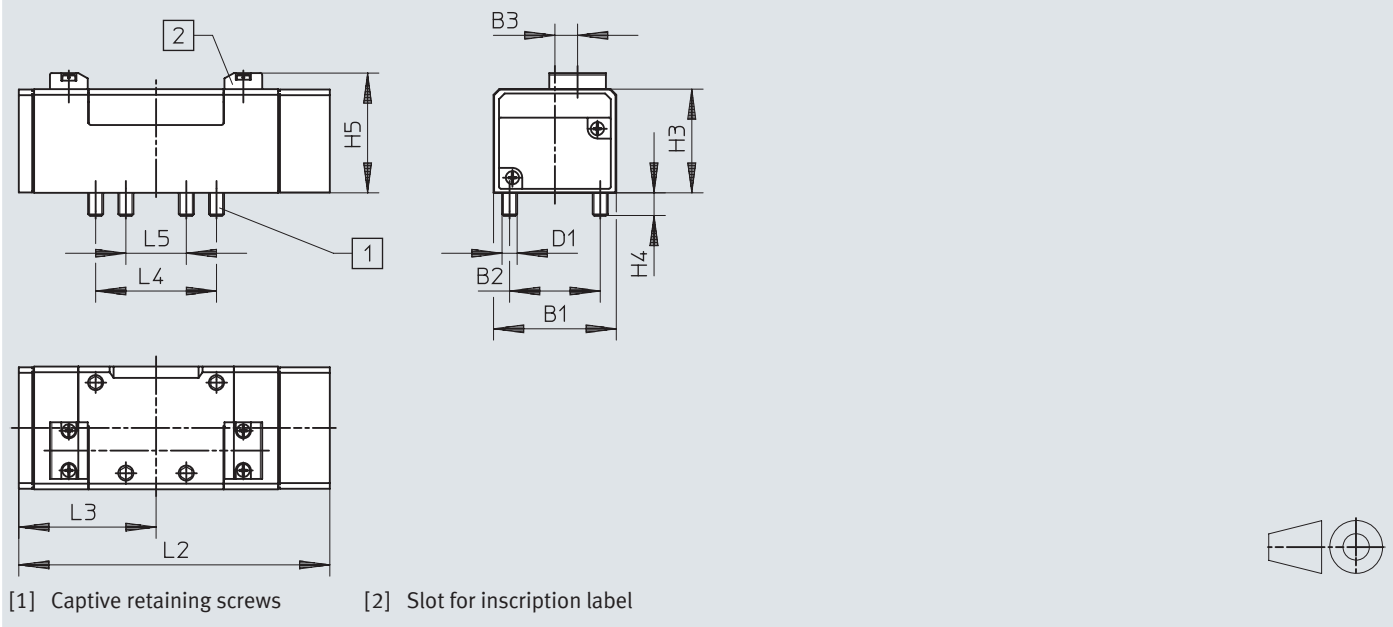
Dimensions Download CAD data → www.festo.com

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



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- ...											

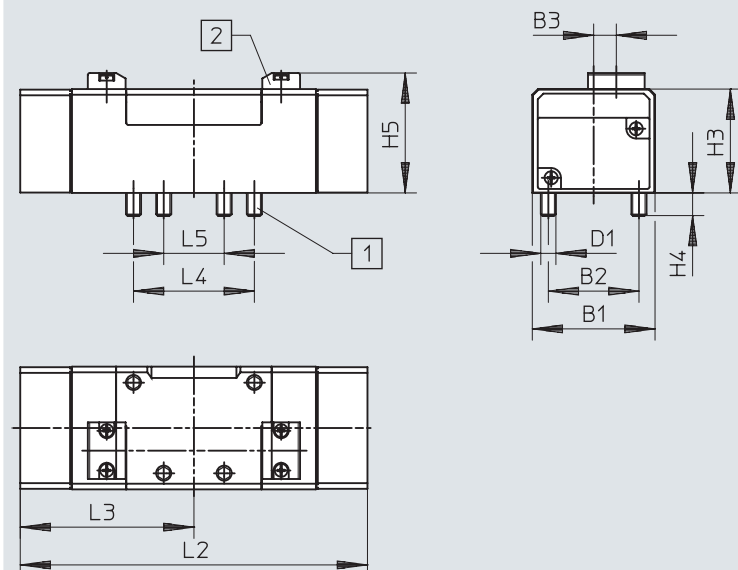
5/2-way valves, mechanical spring return



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

Datasheet – Width 65 mm

Dimensions – 5/3-way valves

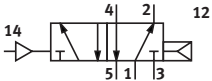
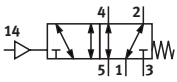
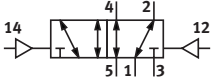
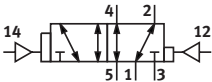
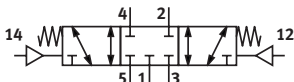
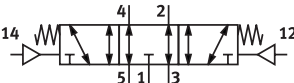
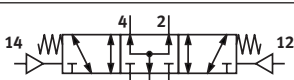
Download CAD data → www.festo.com

[1] Captive retaining screws

[2] 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

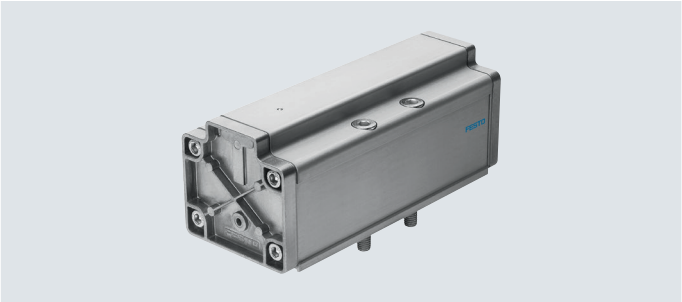
Ordering data

Circuit symbol	Description	Weight [g]	Part no.	Type	
5/2-way valve, single solenoid					
	Pneumatic spring return	c UL us - Recognized (OL)	810	151864	VL-5/2-D-3-C
		ATEX category a Page 135	810	536009	VL-5/2-D-3-C-EX
	Mechanical spring return	c UL us - Recognized (OL)	810	151863	VL-5/2-D-3-FR-C
		ATEX category a Page 135	810	536012	VL-5/2-D-3-FR-C-EX
5/2-way valve, double solenoid					
	–	–	810	151865	J-5/2-D-3-C
		ATEX category a Page 135	810	536015	J-5/2-D-3-C-EX
	With dominant signal at 14	c UL us - Recognized (OL)	810	151866	JD-5/2-D-3-C
		ATEX category a Page 135	810	536018	JD-5/2-D-3-C-EX
5/3-way valve, monostable					
	Normally closed	c UL us - Recognized (OL)	910	151867	VL-5/3G-D-3-C
	Mechanical spring return	ATEX category a Page 135	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 return	ATEX category a Page 135	910	536024	VL-5/3E-D-3-C-EX
	Normally pressurised	–	910	151869	VL-5/3B-D-3-C
	Mechanical spring return	ATEX category a Page 135	910	536027	VL-5/3B-D-3-C-EX

Datasheet – Width 76 mm

 Flow rate
Up to 6000 l/min

 Repair service



General technical data		
Design	Piston spool	
Sealing principle	Soft	
Actuation type	Pneumatic	
Type of control	Direct	
Flow direction	Reversible	
Exhaust air function	Can be throttled	
Manual override	None	
Type of mounting	On sub-base, with through-hole and screw	
Mounting position	Any	
Nominal width	[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

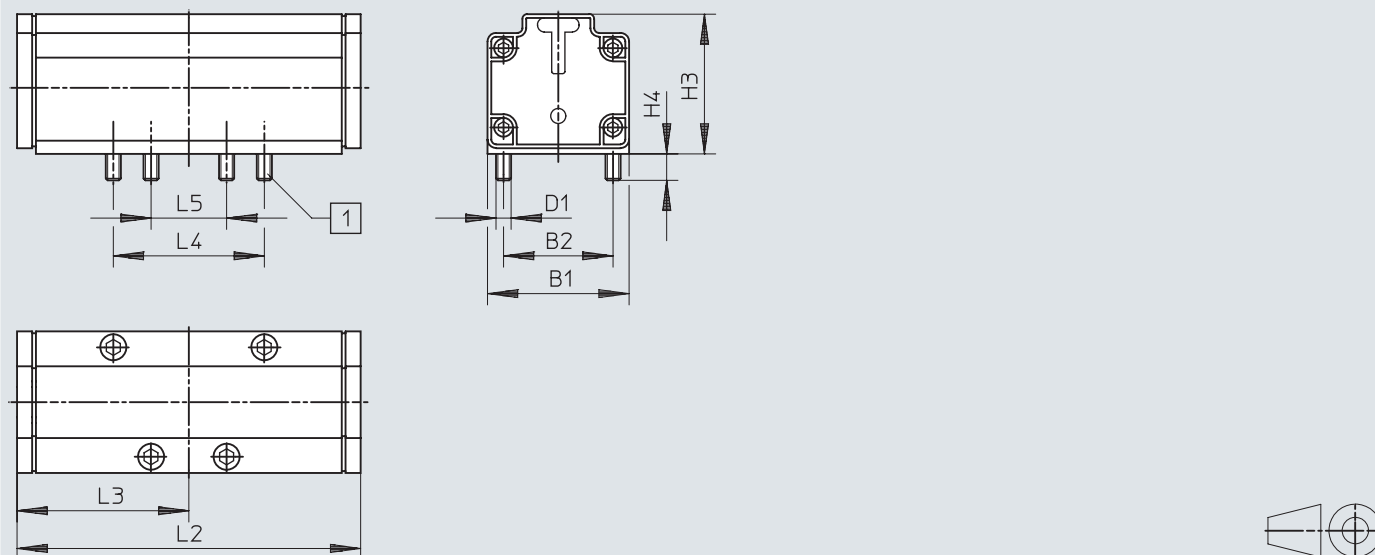
Switching times [ms]		Switching times		
		Switching time on	Switching time off	Switching time changeover
5/2-way valve, single solenoid	VL-5/2-3/4-D-4	25	90	–
5/2-way valve, double solenoid	J-5/2-3/4-D-4	–	–	20
5/3-way valve	VL-5/3G-3/4-D-4	40	130	–
	VL-5/3E-3/4-D-4	50	170	–

Datasheet – Width 76 mm

Operating and environmental conditions				
Valve function		5/2-way valve		5/3-way valve
		Monostable	Double solenoid	
Operating medium		Compressed air according to ISO 8573-1:2010 [7:4:4]		
Pilot medium		Compressed air according 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
LABS (PWIS) conformity	VDMA24364-B1/B2-L

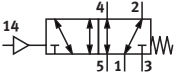
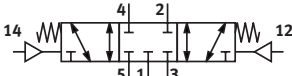
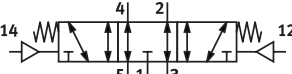
Dimensions – 5/3-way valves

Download CAD data → www.festo.com

[1] 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									

Datasheet – Width 76 mm

Ordering data				
Circuit symbol	Description	Weight [g]	Part no.	Type
5/2-way valve, single solenoid				
	Mechanical spring return	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 return	2000	12463	VL-5/3G-3/4-D-4
	Normally exhausted Mechanical spring return	2000	12464	VL-5/3E-3/4-D-4

Accessories

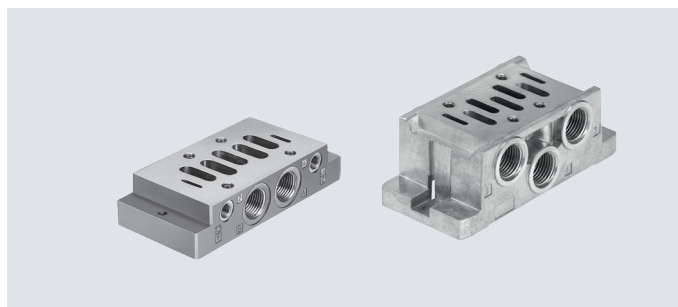
Individual sub-base NAS
Sub-base VABS

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
Maximum number of valve positions	–				1
Suitable for vacuum	–				Yes
Exhaust air function	–				Can be throttled
Type of mounting	With through-hole				With through-hole for M5 screw

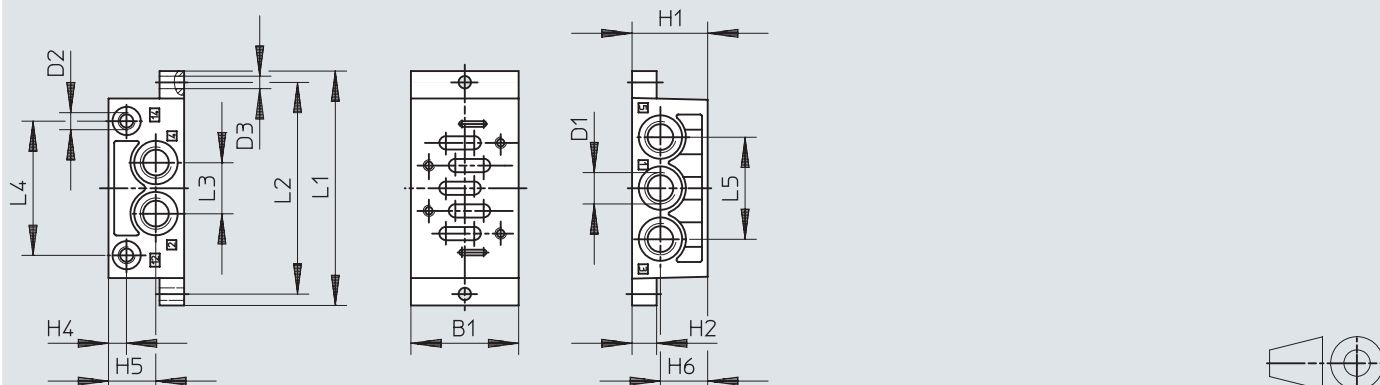
Materials					
Type	NAS-1/4	NAS-3/8	NAS-1/2	NAS-3/4	VABS
Sub-base	Die-cast aluminium			Anodised aluminium	Die-cast aluminium
Note on materials	–			–	RoHS-compliant
LABS (PWIS) conformity	–			–	VDMA24364-B1/B2-L

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)
Pilot pressure	[MPa]	–			0 ... 1.6
	[bar]	–			0 ... 16
Ambient temperature	[°C]	–			–10 ... +60
Temperature of medium	[°C]	–			–10 ... +60
Storage temperature	[°C]	–			–20 ... +60
Corrosion resistance class CRC ¹⁾	–			–	0 - no corrosion stress
Certification	c UL - Recognized (OL)			–	–

1) More information www.festo.com/x/topic/crc

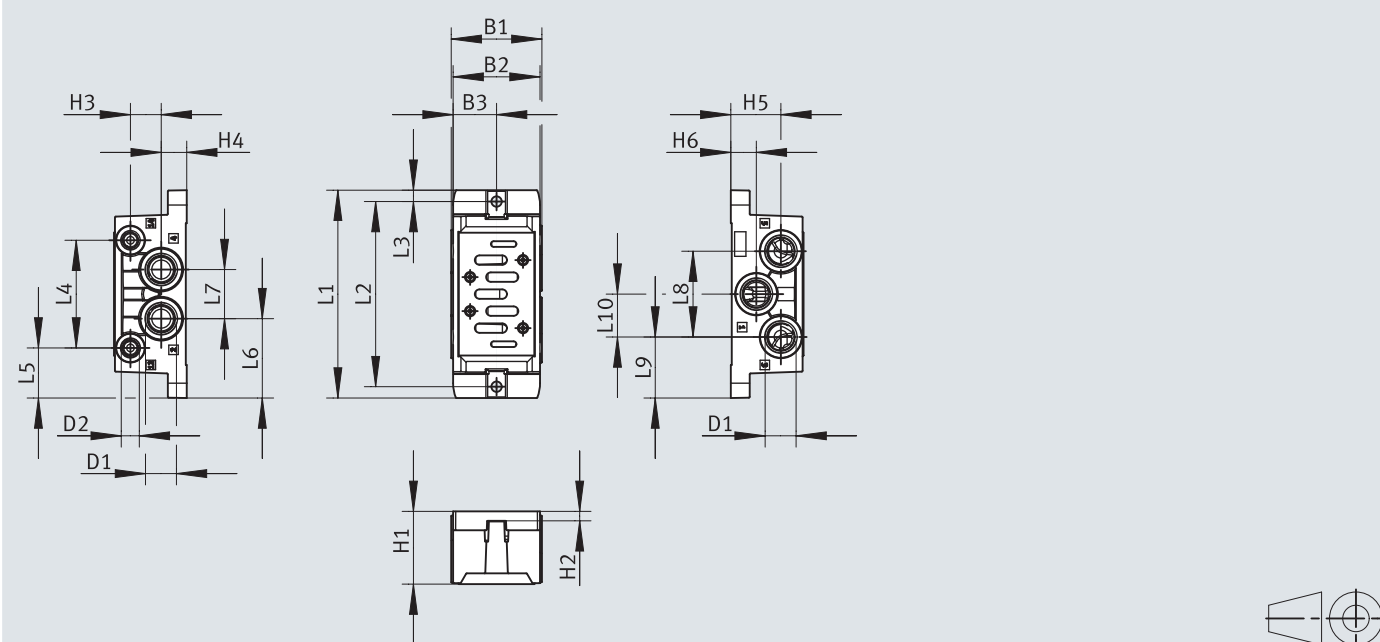
Accessories

Dimensions – Individual sub-base NAS

Download CAD data → www.festo.com

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

Download CAD data → www.festo.com

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-S1-1HS-G38				3/8 NPT	1/8 NPT						
VABS-S1-1S-N38											
VABS-S1-1HS-N38											
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-S1-1HS-G38										
VABS-S1-1S-N38										
VABS-S1-1HS-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		Operating pressure		Weight [g]	Part no.	Type
		1, 2, 3, 4, 5	12/14	[MPa]	[bar]			
VDMA 24345-A-1	–	G1/4	G1/8	–	–	190	9484	NAS-1/4-1A-ISO
–	48 mm	G3/8	G1/8	–0.09 ... +1.6	–0.9 ... +16	230	8032642	VABS-S1-1S-G38
				–0.09 ... +1	–0.9 ... +10		8032646	VABS-S1-1HS-G38
		3/8 NPT	1/8 NPT	–0.09 ... +1.6	–0.9 ... +16	230	8032643	VABS-S1-1S-N38
				–0.09 ... +1	–0.9 ... +10		8032647	VABS-S1-1HS-N38
VDMA 24345-A-2	–	G3/8	G1/8	–	–	300	11310	NAS-3/8-2A-ISO
–	58 mm	G1/2	G1/8	–0.09 ... +1.6	–0.9 ... +16	380	8032644	VABS-S1-2S-G12
		1/2 NPT	1/8 NPT	–0.09 ... +1.6	–0.9 ... +16	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

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

Accessories

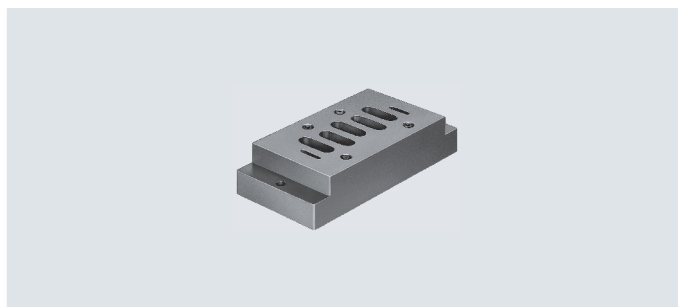
Individual sub-base NAU

Connections underneath

Materials:

Die-cast aluminium

Anodised aluminium



General technical data

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

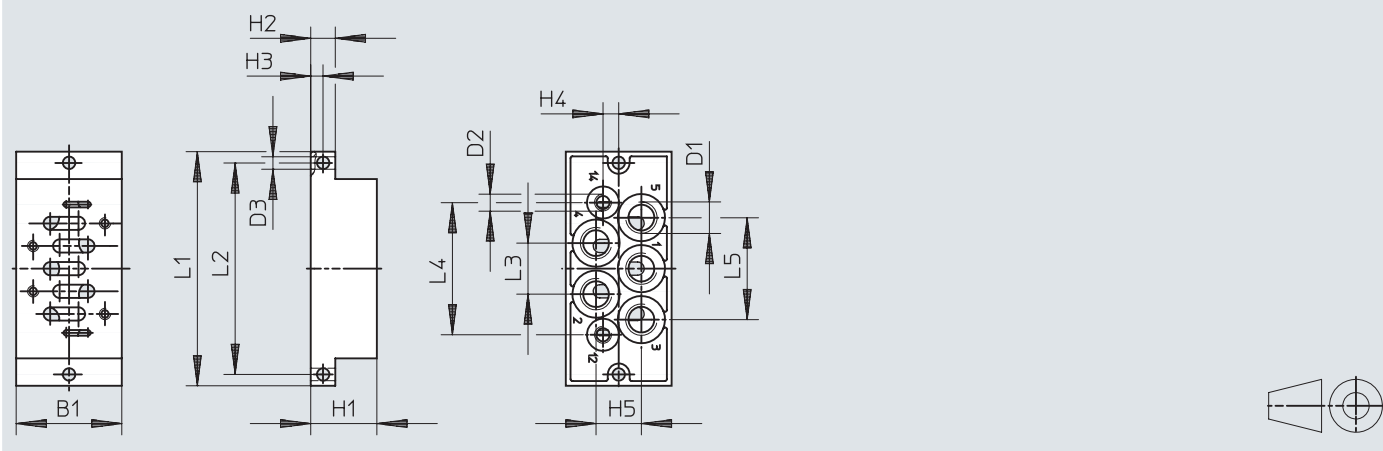
Materials

Type	NAU-1/4	NAU-3/8	NAU-1/2	NAU-3/4
Sub-base	Die-cast aluminium			Anodised aluminium

Operating and environmental conditions

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

Dimensions – Individual sub-base NAU

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

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

Accessories

Manifold sub-base**NAV****VABV**

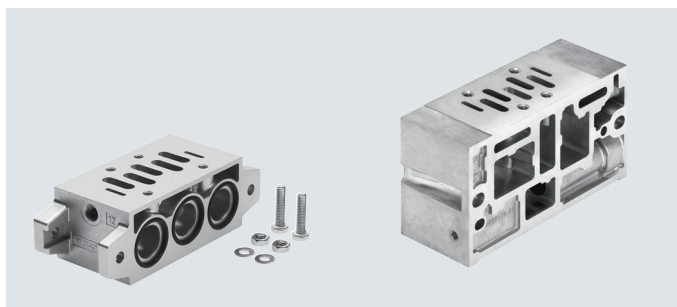
Connections underneath

Materials:

Die-cast aluminium

Anodised aluminium

Dimensions NAV a page 160

**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
Suitable for vacuum	–				Yes
Exhaust air function	–				Can be throttled

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
LABS (PWIS) conformity	–			–	VDMA24364-B1/B2-L

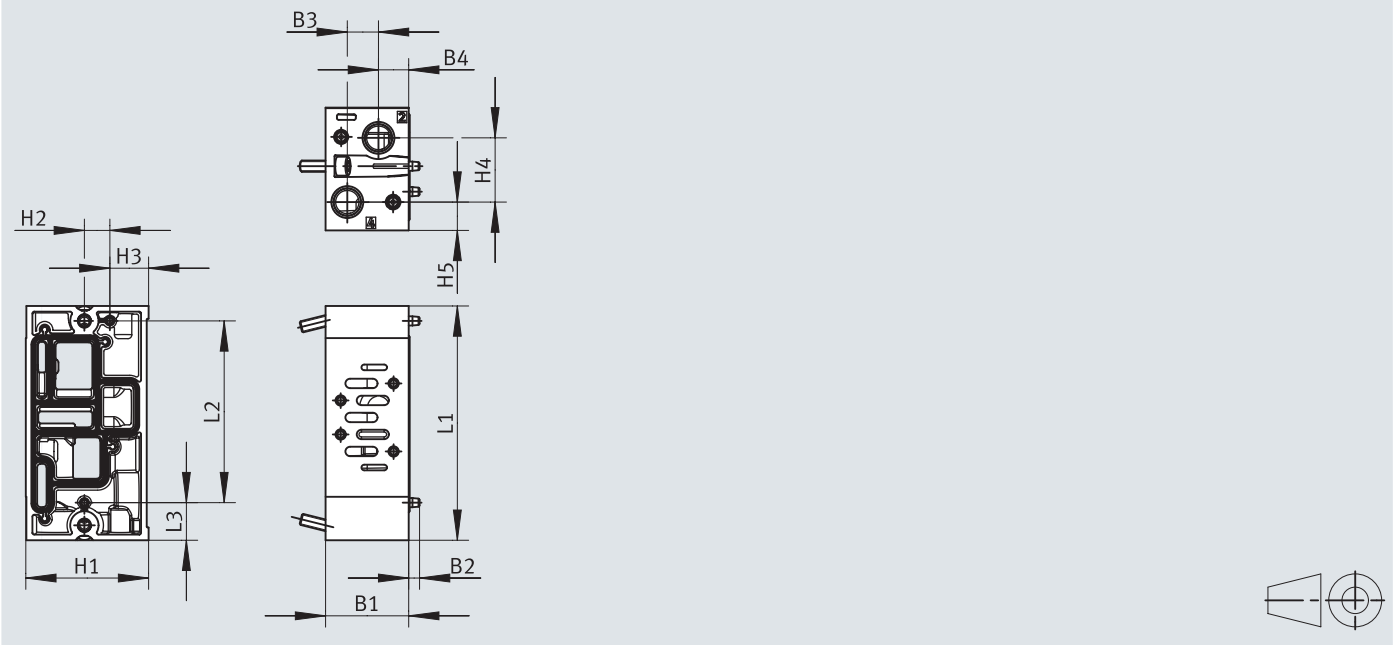
Operating and environmental conditions

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)
Ambient temperature [°C]	–	–	–	–	–10 ... +50
Temperature of medium [°C]	–	–	–	–	–10 ... +50
Storage temperature [°C]	–	–	–	–	–20 ... +60
Corrosion resistance class CRC ¹⁾	–	–	–	–	0 - no corrosion stress
Certification	–	UL – Recognized (OL)		–	–

1) More information www.festo.com/x/topic/crc

Accessories

Dimensions – Manifold sub-base 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-S1-1HSB-G38							34.5				
VABV-S1-1SB-N38							34				
VABV-S1-1HSB-N38							34.5				
VABV-S1-2SB-G12	59	19.5	22				35.5	14.5			
VABV-S1-2SB-N12											

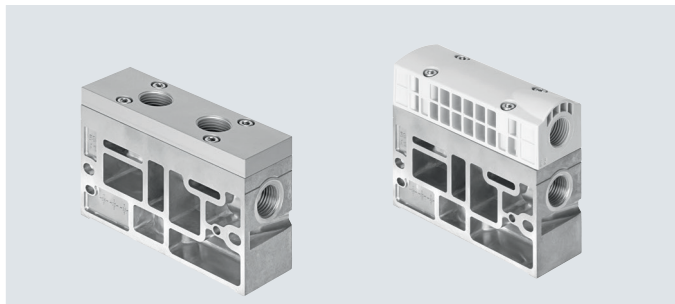
Ordering data

Designation to VDMA	Width	Pneumatic connection		Operating pressure		Weight [g]	Part no.	Type
		2, 4	12/14	[MPa]	[bar]			
VDMA 24345-C-1	–	G1/4	G1/8	–	–	240	10173	NAV-1/4-1C-ISO
–	44 mm	G3/8	–	–0.09 ... +1.6	–0.9 ... +16	490	8029812	VABV-S1-1SB-G38
		3/8 NPT	–	–0.09 ... +1	–0.9 ... +10	490	8030650	VABV-S1-1HSB-G38
				–0.09 ... +1.6	–0.9 ... +16		8029813	VABV-S1-1SB-N38
				–0.09 ... +1	–0.9 ... +10		8030651	VABV-S1-1HSB-N38
VDMA 24345-C-2	–	G3/8	G1/8	–	–	400	11305	NAV-3/8-2C-ISO
–	59 mm	G1/2	–	–0.09 ... +1.6	–0.9 ... +16	670	8029814	VABV-S1-2SB-G12
		1/2 NPT	–	–0.09 ... +1.6	–0.9 ... +16	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
Suitable for vacuum	Yes
Exhaust air function	Can be throttled

Materials

Type	VABF-S1-1-P1A11	VABF-S1-1-P1A12
Exhaust air plate	Wrought aluminium alloy	PA
Supply plate	Anodised aluminium	Die-cast aluminium
Note on materials	RoHS-compliant	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L	VDMA24364-B1/B2-L

Operating and environmental conditions

Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]
Pilot medium	Compressed air according 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 ... +1.6
	[bar] -0.9 ... +16
Ambient temperature	[°C] -10 ... +50
Temperature of medium	[°C] -10 ... +50
Storage temperature	[°C] -20 ... +60
Corrosion resistance class CRC ¹⁾	0 - no corrosion stress

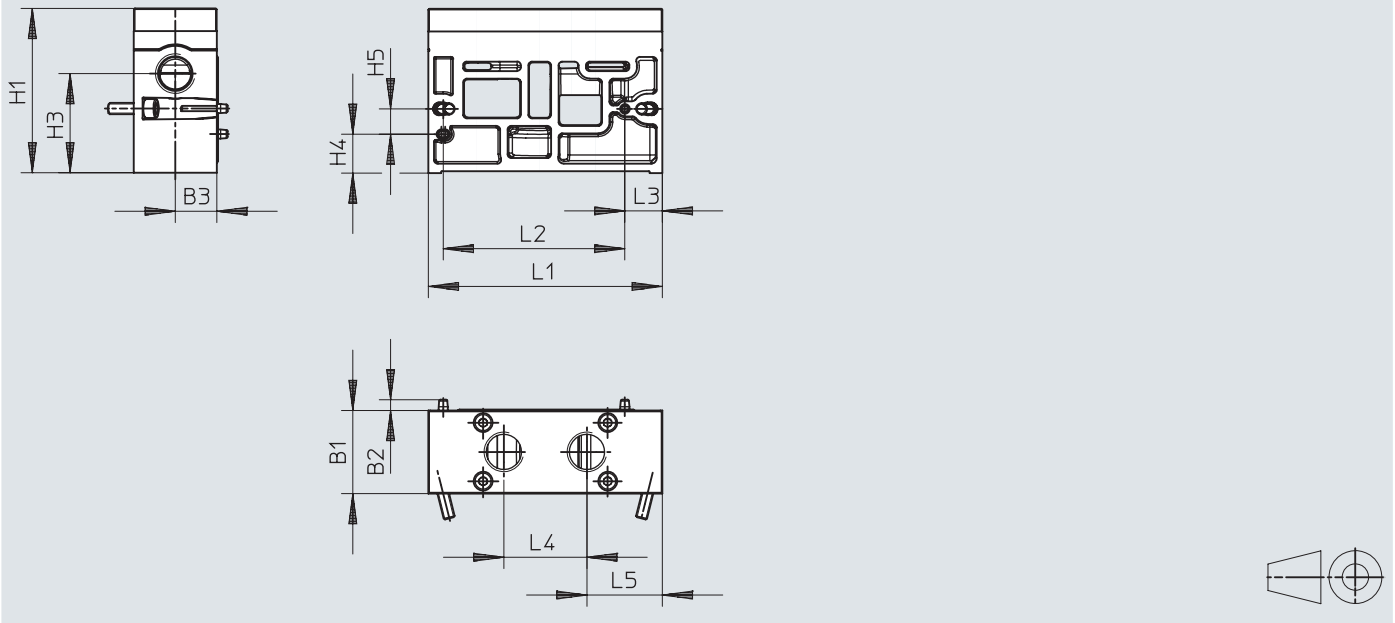
1) More information www.festo.com/x/topic/crc

Accessories

Dimensions

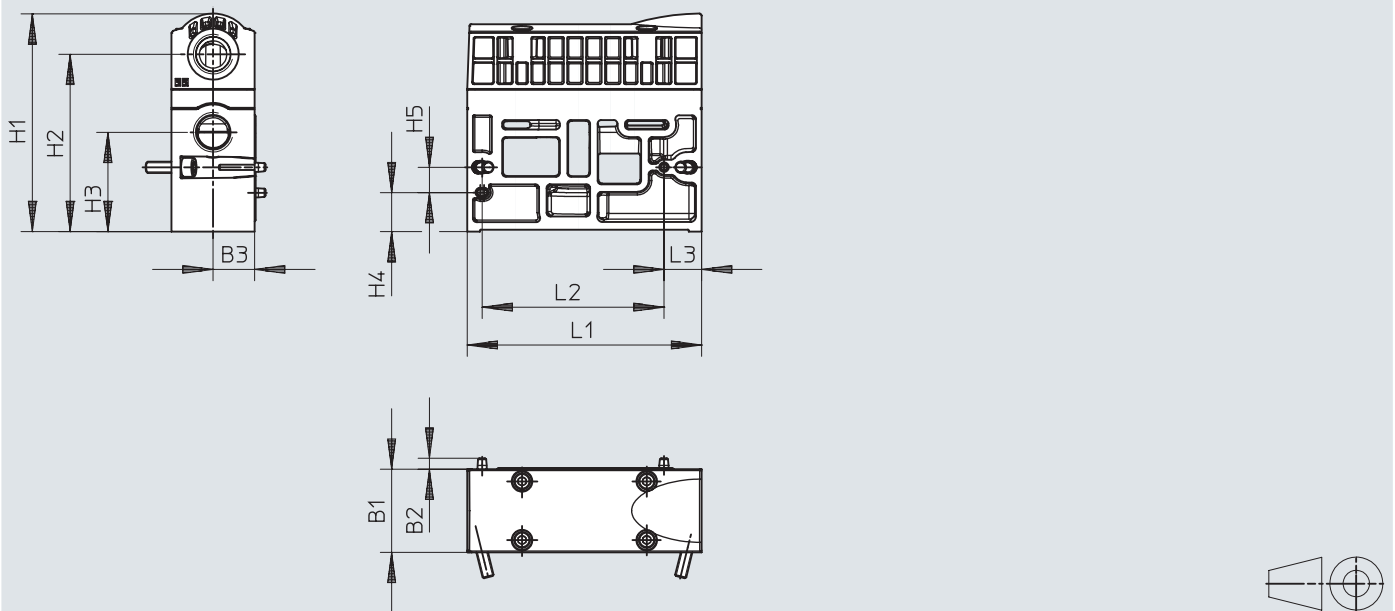
Download CAD data → www.festo.com

Port 3 and 5 separated



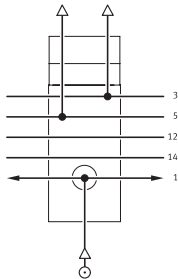
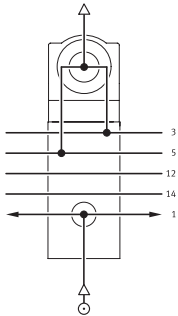
Type	B1	B2	B3	H1	H3	H4	H5	L1	L2	L3	L4	L5
VABF-S1-1-P1A11	44	5.5	22	87	52.5	20.5	13.5	124	96.2	19.9	44	40

Port 3 and 5 combined



Type	B1	B2	B3	H1	H2	H3	H4	H5	L1	L2	L3
VABF-S1-1-P1A12	44	5.8	22	115.2	93.8	52.5	20.5	13.5	124	96.2	19.9

Accessories

Ordering data						
Width	Description	Pneumatic connection	Weight	Part no.	Type	
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

Angled sub-base NAW

Ports on the side and on top

Materials:

Die-cast aluminium

Anodised aluminium

Dimensions a page 160



General technical data

Conforms to standard	ISO 5599-1
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Operating and environmental conditions

Type	NAW-1/4	NAW-3/8	NAW-1/2	NAW-3/4
Sub-base material	Die-cast aluminium			Anodised aluminium

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

Angled manifold sub-base NAVW

Connections on the side and underneath

Materials:

Die-cast aluminium

Dimensions a page 160



General technical data

Conforms to standard	ISO 5599-1
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Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
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Ordering data

Pneumatic connection		Weight [g]	Part no.	Type
1, 2, 4	12, 14			
G1/4	G1/8	320	152789	NAVW-1/4-1-ISO
G3/8	G1/8	550	152790	NAVW-3/8-2-ISO
G1/2	G1/8	1020	152791	NAVW-1/2-3-ISO

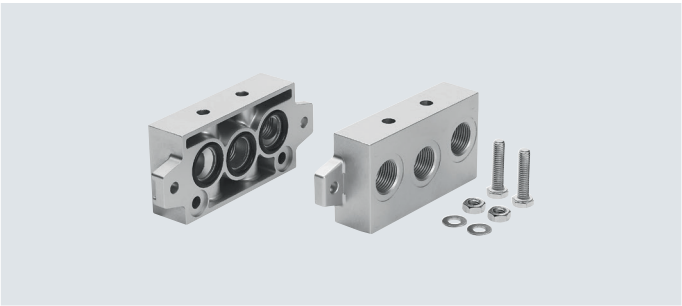
-H- Note: This product conforms to ISO 1179-1 and ISO 228-1.

Accessories

End plate kit NEV

Materials:
Die-cast aluminium
Anodised aluminium

Dimensions NEV a page 160



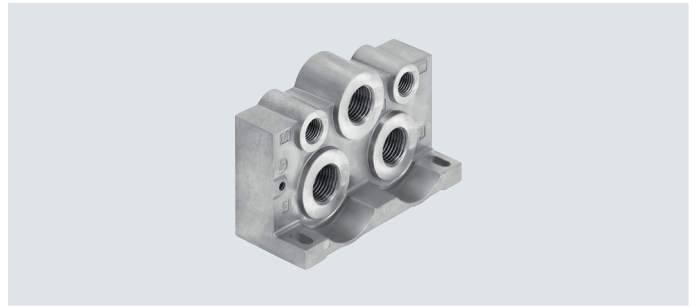
General technical data				
Conforms to standard		ISO 5599-1		
Ordering data				
Designation to VDMA	Pneumatic connection	Weight	Part no.	Type
	1, 3, 5	[g]		
VDMA 24345-D-1	G3/8	280	10174	NEV-1DA/DB-ISO
VDMA 24345-D-2	G1/2	450	11306	NEV-2DA/DB-ISO
VDMA 24345-D-3	G1	760	10176	NEV-3DA/DB-ISO
VDMA 24345-D-4	G1	1390	11140	NEV-4DA/DB-ISO

-H- 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
Suitable for vacuum	Yes
Exhaust air function	Can be throttled
Type of mounting	With through-hole for M6 screw

Materials

End plate	Die-cast aluminium
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

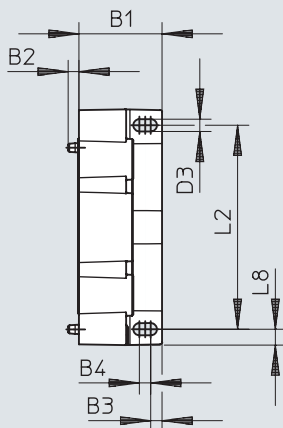
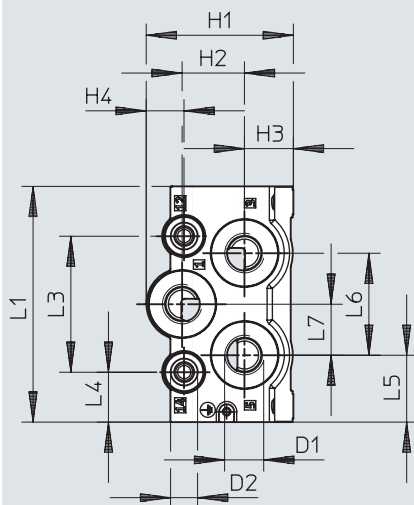
Operating and environmental conditions

Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]
Pilot medium	Compressed air according 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 ... +1.6
	[bar] -0.9 ... +16
Ambient temperature	[°C] -10 ... +50
Temperature of medium	[°C] -10 ... +50
Storage temperature	[°C] -20 ... +60
Corrosion resistance class CRC ¹⁾	0 - no corrosion stress

1) More information www.festo.com/x/topic/crc

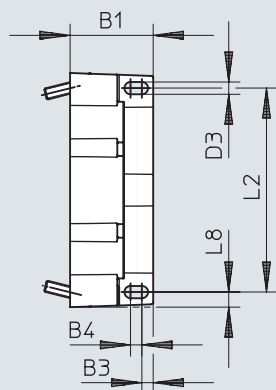
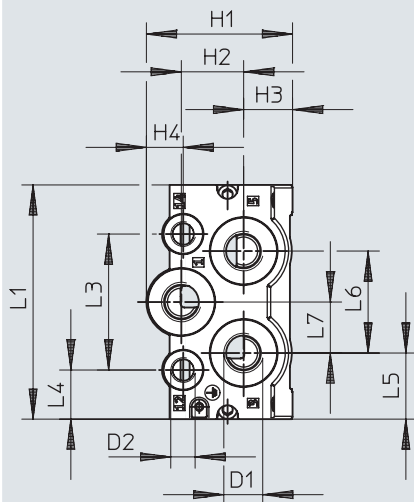
Accessories

Dimensions – End plate left

Download CAD data → www.festo.com

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	–	6.5	77.9	33	25.9	20	124.9	108	72	26.4	35.4	54	27	8.4
VABE-S1-1LZ-G12					G1/2	G1/4													
VABE-S1-1L-N12					1/2 NPT	–													
VABE-S1-1LZ-N12					1/2 NPT	1/4 NPT													
VABE-S1-2L-G34					G3/4	–													
VABE-S1-2LZ-G34					G3/4	G1/4													
VABE-S1-2L-N34					3/4 NPT	–													
VABE-S1-2LZ-N34					3/4 NPT	1/4 NPT													

Dimensions – End plate, right

Download CAD data → www.festo.com

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	–	6.5	77.4	33	25.9	19.5	124	108	72	26	35	54	27	8
VABE-S1-1RZ-G12				G1/2	G1/4													
VABE-S1-1R-N12				1/2 NPT	–													
VABE-S1-1RZ-N12				1/2 NPT	1/4 NPT													
VABE-S1-2R-G34				G3/4	–													
VABE-S1-2RZ-G34				G3/4	G1/4													
VABE-S1-2R-N34				3/4 NPT	–													
VABE-S1-2RZ-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				
End plate, left						
44 mm	G1/2	–	400	Internal	8032662	VABE-S1-1L-G12
		G1/4		External	8032660	VABE-S1-1LZ-G12
	1/2 NPT	–	400	Internal	8032663	VABE-S1-1L-N12
		1/4 NPT		External	8032661	VABE-S1-1LZ-N12
	G3/4	–	360	Internal	8032666	VABE-S1-2L-G34
		G1/4		External	8032664	VABE-S1-2LZ-G34
	3/4 NPT	–	360	Internal	8032667	VABE-S1-2L-N34
		1/4 NPT		External	8032665	VABE-S1-2LZ-N34
End plate, right						
44 mm	G1/2	–	410	Internal	8032670	VABE-S1-1R-G12
		G1/4		External	8032668	VABE-S1-1RZ-G12
	1/2 NPT	–	410	Internal	8032671	VABE-S1-1R-N12
		1/4 NPT		External	8032669	VABE-S1-1RZ-N12
	G3/4	–	370	Internal	8032674	VABE-S1-2R-G34
		G1/4		External	8032672	VABE-S1-2RZ-G34
	3/4 NPT	–	370	Internal	8032675	VABE-S1-2R-N34
		1/4 NPT		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 a page 160



General technical data

Conforms to standard	ISO 5599-1
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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 a 160



General technical data

Conforms to standard	ISO 5599-1
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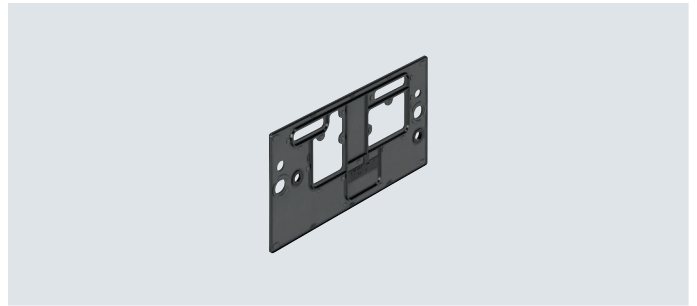
Ordering data

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
Suitable for vacuum	Yes
Type of mounting	With through-hole for M6 screw

Materials

Separator plate	Steel
	NBR
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Operating and environmental conditions

Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]
Pilot medium	Compressed air according 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
Ambient temperature	[°C] -10 ... +50
Temperature of medium	[°C] -10 ... +50
Storage temperature	[°C] -20 ... +60
Corrosion resistance class CRC ¹⁾	0 - no corrosion stress

1) More information www.festo.com/x/topic/crc

Ordering data

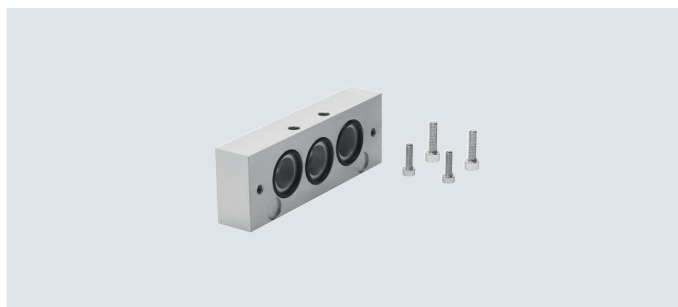
Duct separation	Weight [g]	Part no.	Type
Duct 1	60	8029438	VABD-S1-1-P1-C
Duct 3 and duct 5	70	8029439	VABD-S1-1-P2-C
Ducts 1, 3 and 5	75	8029440	VABD-S1-1-P3-C
Ducts 1, 3, 5, 12 and 14	75	8029441	VABD-S1-1-P6-C
Duct 12 and duct 14	60	8036068	VABD-S1-1-P7-C

Accessories

Intermediate plate NZV

For connecting manifold sub-bases of different sizes

Materials:
Die-cast aluminium, anodised



General technical data

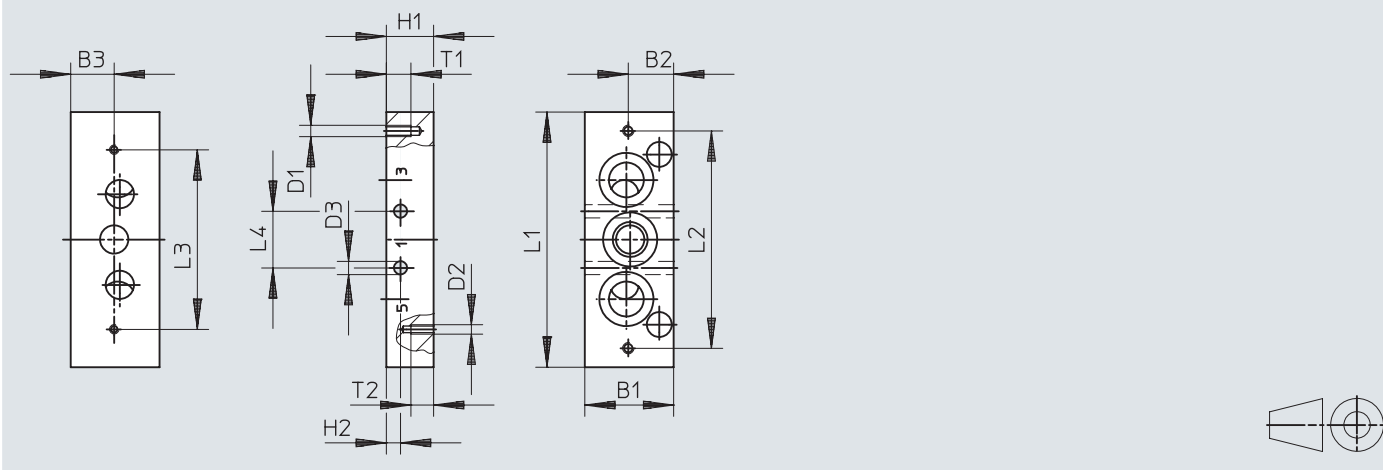
Based on standard

ISO 5599-1

Dimensions

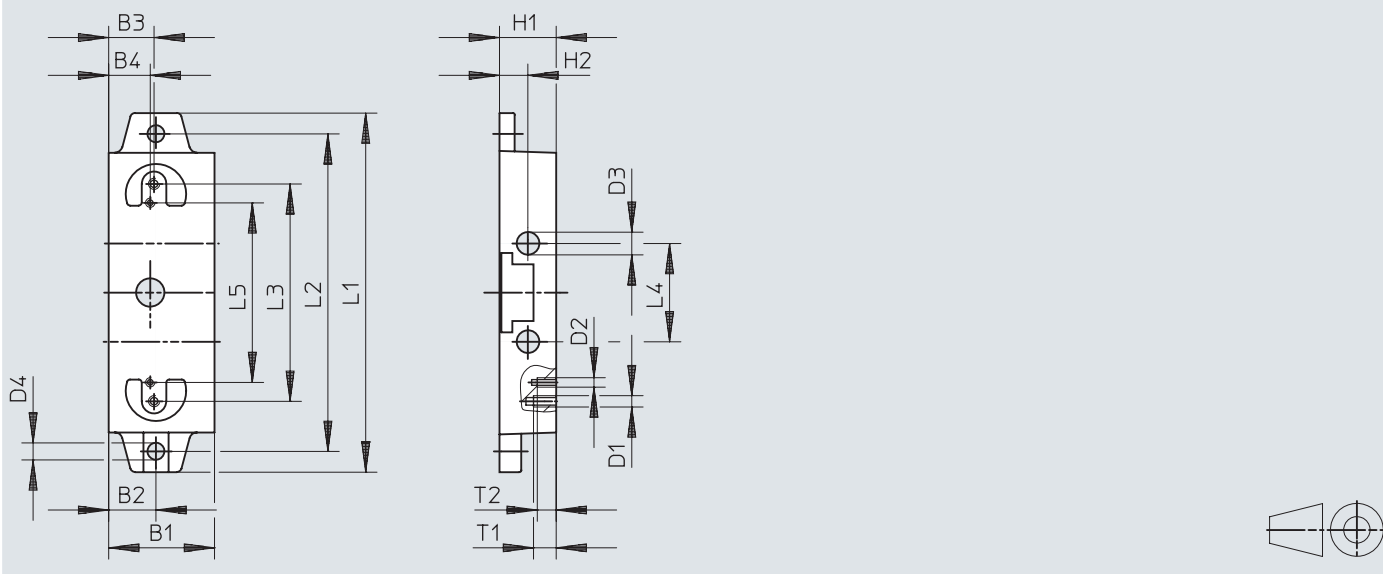
Download CAD data → www.festo.com

For manifold sub-bases of width 42 mm, 52 mm



	B1	B2	B3	D1	D2	D3	H1	H2	L1	L2	L3	L4	T1	T2
NZV-1-2	47	24	23	M6	M5	7	25	7.5	135	115	95	30	13	12

For manifold sub-bases of width 42 mm and 65 mm or 52 mm and 65 mm



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

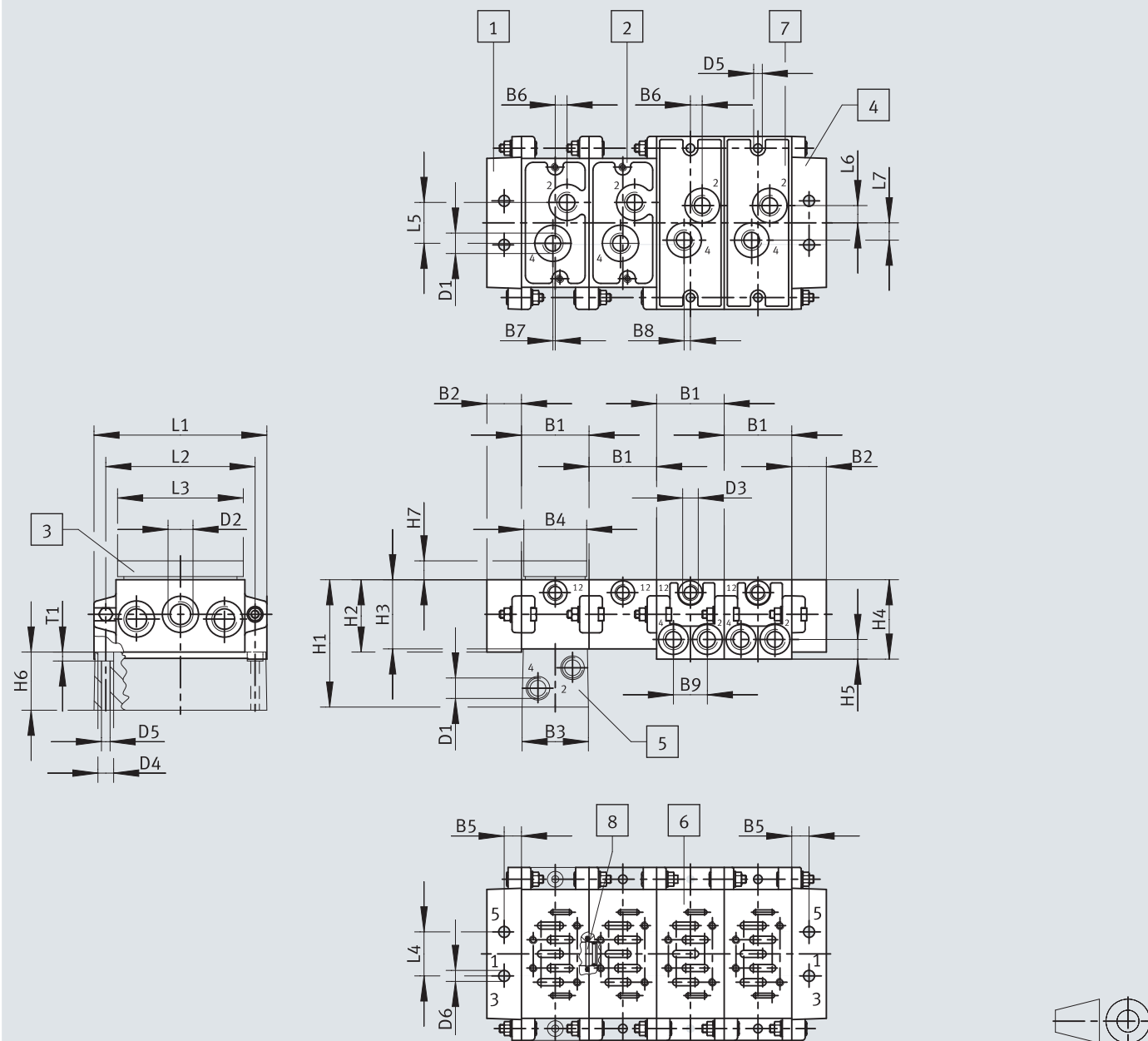
Accessories

Ordering data	Weight	Part no.	Type
	[g]		
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
- [2] Manifold sub-base NAV

- [3] Cover plate NDV
- [4] Right end plate, end plate kit NEV

- [5] Angled sub-base NAW
- [6] Hole pattern to ISO 5599-1

- [7] Angled manifold sub-base NAVW
- [8] Isolating disc NSC

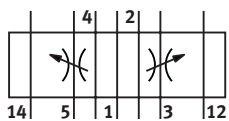
Accessories

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

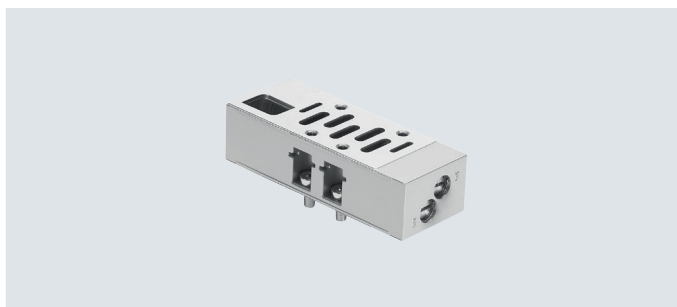
Width	H1	H2	H3	H4	H5	H6	H7	L1	L2	L3	L4	L5	L6	L7	T1
42 mm	81	46	44	50.5	12.5	37	5	110	95	80	28	26	11	11	5.7
52 mm	85	47	45	60	15	40	5	135	115	96	35	30	15	14	6.8
65 mm	99	56	54	66	17.5	45	5	190	168	120	52	38	19	19	9
76 mm	120	58	55	–	–	65	5	215	184	–	56	52	–	–	9

-H- 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	VABF-S1-1-F1B1-C	VABF-S1-2-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	With through-hole		
Standard nominal flow rate	[l/min]	1100	–
Degree of protection	IP65	IP65	–
	NEMA4	NEMA4	–

Materials

Housing	Die-cast aluminium
Note on materials	RoHS-compliant

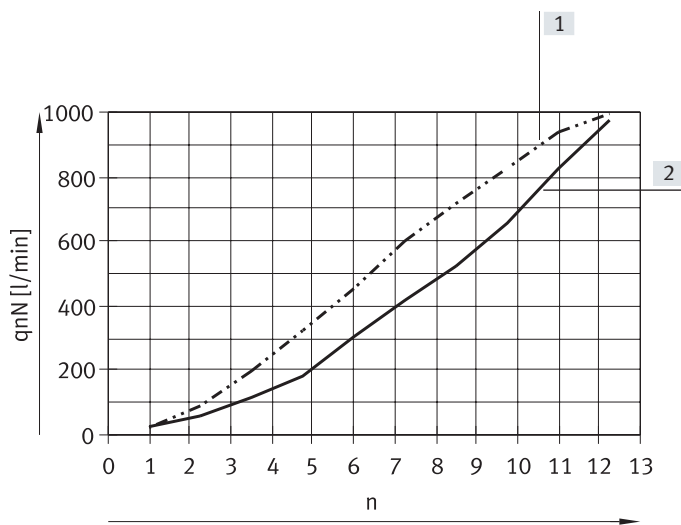
Operating and environmental conditions

Type	VABF-S1-1-F1B1-C	VABF-S1-2-F1B1-C	GRO-ZP-3-ISO
Operating medium	Compressed air according 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]	–	–
	[psi]	–	–
Ambient temperature	[°C]	–5 ... +50	–20 ... +80
Temperature of medium	[°C]	–	–20 ... +80

Accessories

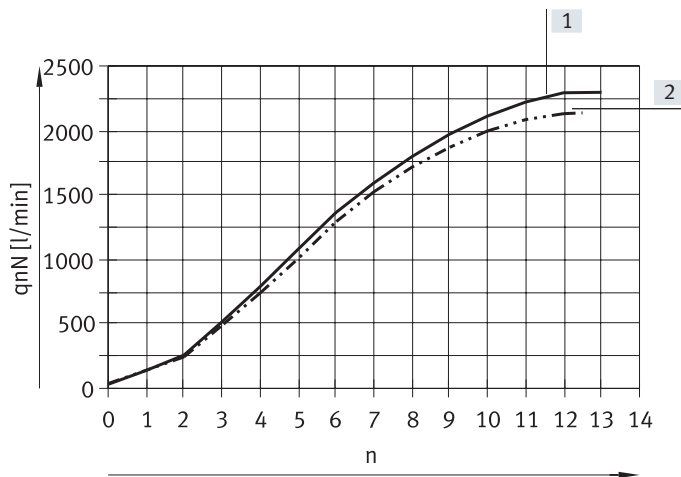
Standard nominal flow rate q_{nN} as a function of the turns n of the regulating screw

VABF-S1-1-F1B1-C



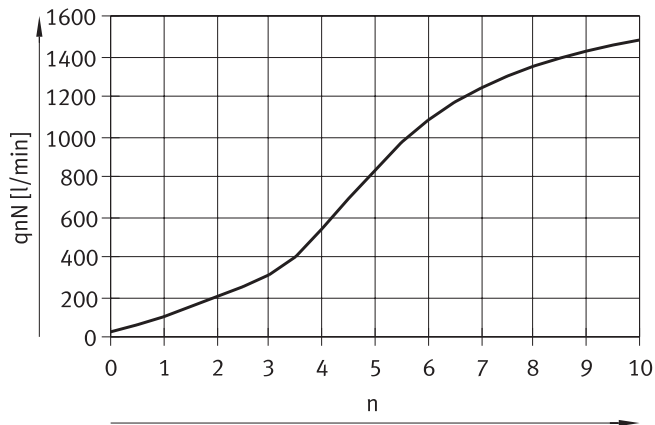
- [1] Flow control screw from 4 to 5
[2] Flow control screw from 2 to 3

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

Download CAD data → www.festo.com

Throttle plate VABF-S1-...

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

Width	B1	B2	B3	D1	H1	H2	H4	L1	L6	T1
42 mm	39.9	24.3	16.1	9.3	17.5	9.2	28	105.3	32	7.3
52 mm	52	32.5	22.5	13.4	29.5	13.5	45	131	40.9	10

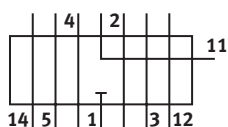
Throttle plate GRO-ZP-3-ISO

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

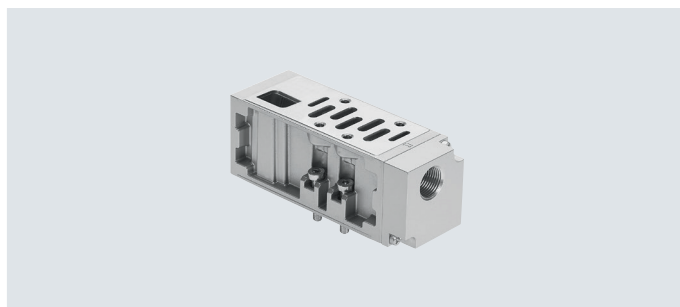
Width	B1	B2	D1	H1	H2	H3	L1	L2	L3	L5
65 mm	70	48	M8	33	12	16.5	132	64	32	7

Ordering data					
Circuit symbol	Description	Width	Weight [g]	Part no.	Type
	Exhaust air flow control	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 port 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 according 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

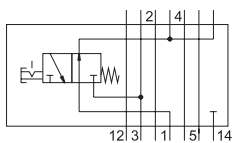
Download CAD data → www.festo.com

[1] Captive retaining screws [2] Hole 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		
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 port 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-L1D1-C	VABF-S1-2-L1D1-C
Operating medium		Compressed air according 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

Download CAD data → www.festo.com

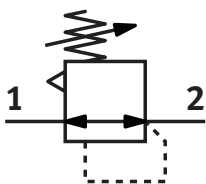
[1] Captive retaining screws

[2] Hole pattern to ISO 5599-1

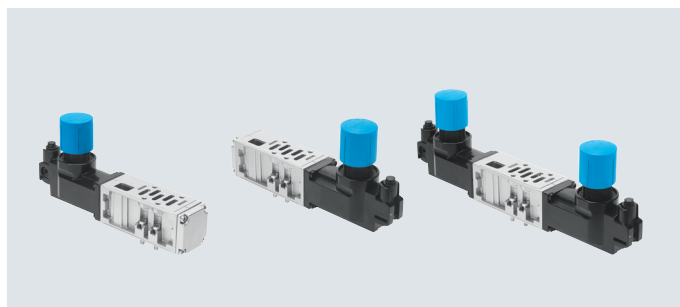
Type	B1	B2	D1	H1	H2	H4	L1	L6	T1
VABF-S1-1-L1D1-C	42.1	26.7	12.8	15.6	1.6	45.3	173.8	92	7.9
VABF-S1-2-L1D1-C	54	32.6	14	21.3	1.6	58.7	191.2	93.2	10

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		VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Type				
Width	[mm]	42	52	65
Based on standard		ISO 5599-1	ISO 5599-1	ISO 5599-1
Pneumatic vertical stacking		Pressure regulator	Pressure regulator	Pressure regulator
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		VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Type				
Regulator housing		Die-cast aluminium	Die-cast aluminium	Die-cast aluminium, steel
Control section		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		VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Type				
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)

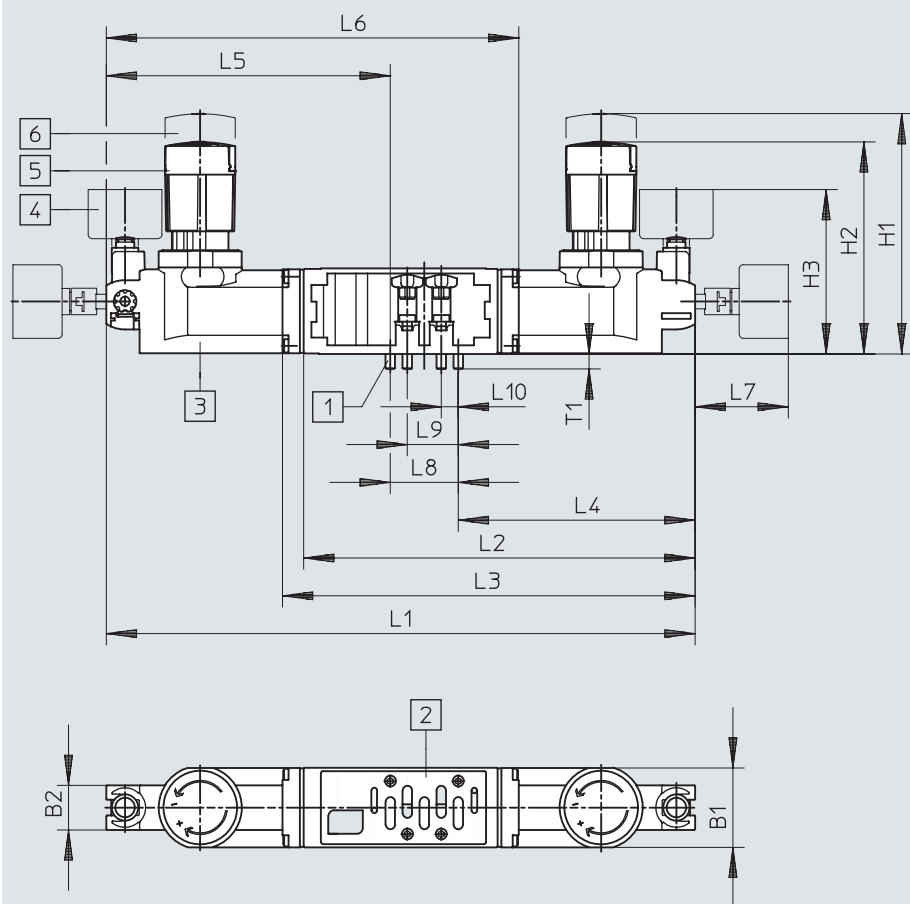
Product weight		VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Type				
Regulated port	1	640 g	1190 g	1220 g
	2	640 g	1230 g	1220 g
	4	640 g	1230 g	1220 g
	2 and 4	920 g	1990 g	1770 g

Accessories

Dimensions

Download CAD data → www.festo.com

VABF-S1-1-..., VABF-S1-2-...



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

[3] Regulator housing
[4] Pressure gauge

[5] Regulator knob, locked

[6] Regulator knob during
pressure adjustment

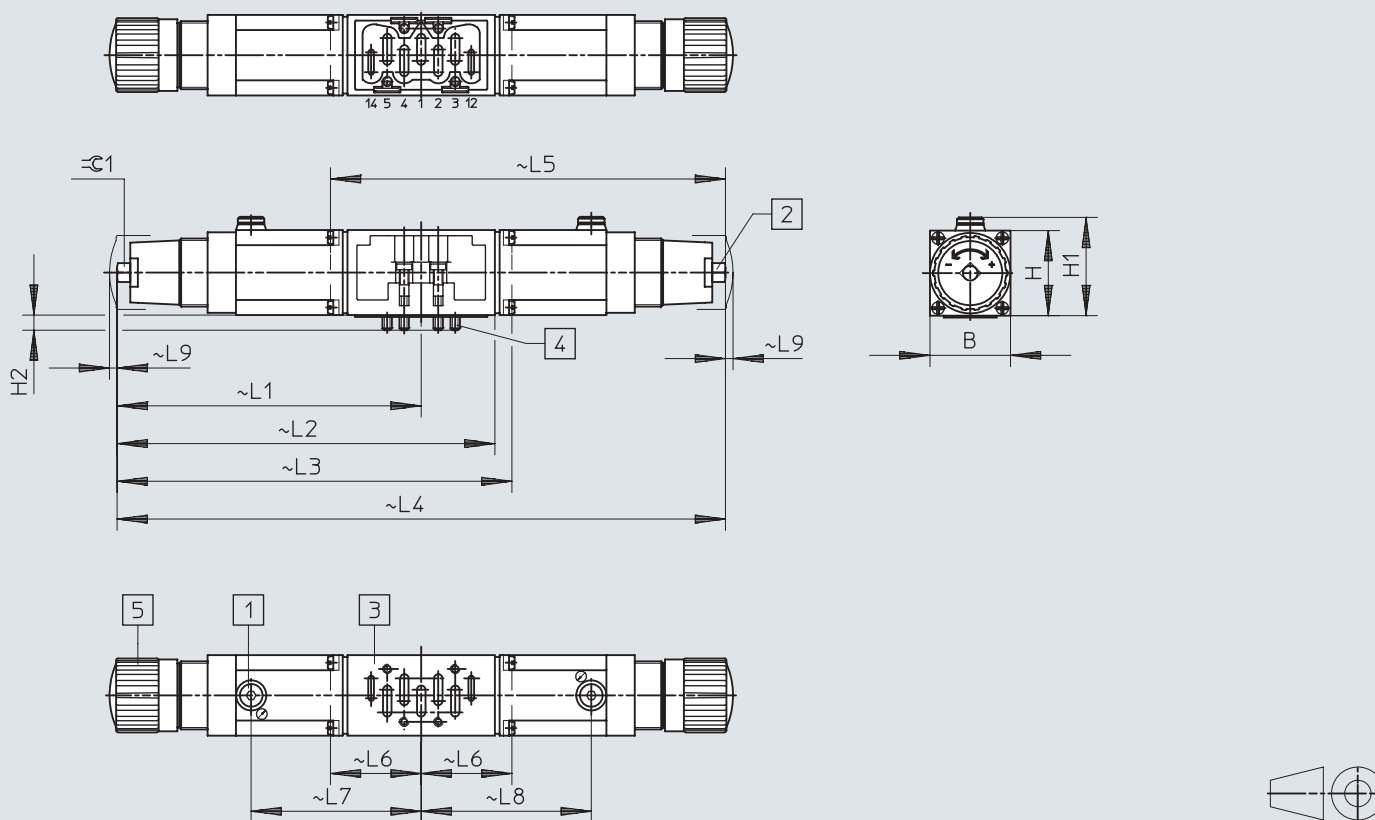
Type	B1	B2	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	T1
Regulator plate, width 42 mm																
VABF-S1-1-R1...	42.1	23.6	115	112	87.1	—	207.1	—	125.3	—	—	49.4	36	27	9	7.9
VABF-S1-1-R2...						—	—	216.2	125.3	—	—					
VABF-S1-1-R3...						—	—	—	125.3	150.3	216.1					
VABF-S1-1-R4...						311.6	—	—	—	—	—					
VABF-S1-1-R5...						311.6	—	—	—	—	—					
VABF-S1-1-R6...						—	—	216.2	125.3	—	—					
VABF-S1-1-R7...						—	—	—	125.3	150.3	216.1					
Regulator plate, width 52 mm																
VABF-S1-2-R1...	54	23.6	182	167	94.4	—	250.2	—	152.2	—	—	49.4	48	38	12	10
VABF-S1-2-R2...						—	—	264.2	152.2	—	—					
VABF-S1-2-R3...						—	—	—	152.2	180.2	264.2					
VABF-S1-2-R4...						380.4	—	—	—	—	—					
VABF-S1-2-R5...						380.4	—	—	—	—	—					
VABF-S1-2-R6...						—	—	264.2	152.2	—	—					
VABF-S1-2-R7...						—	—	—	152.2	180.2	264.2					

Accessories

Dimensions

Download CAD data → www.festo.com

LR-ZP-...-3



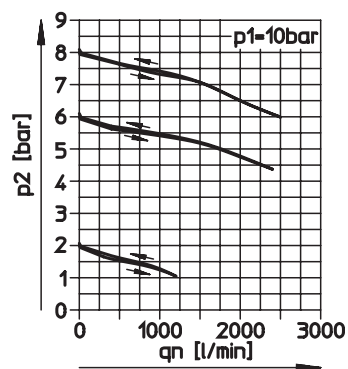
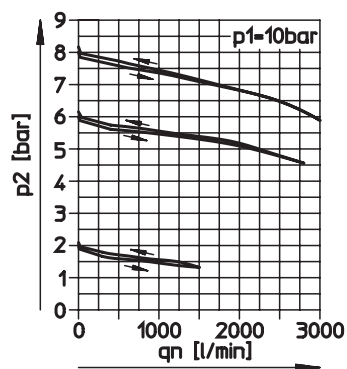
- [1] Pressure gauge connection G1/8 [3] Hole pattern to ISO 5599-1 [4] Captive retaining screws [5] Rotary knob
 [2] Adjusting screw

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	—

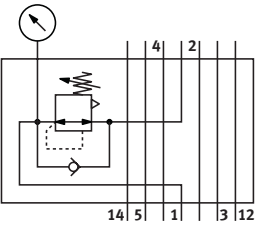
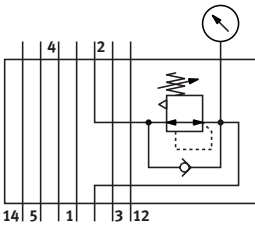
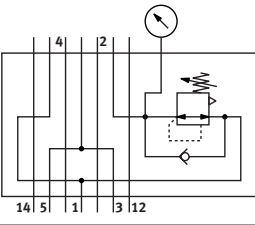
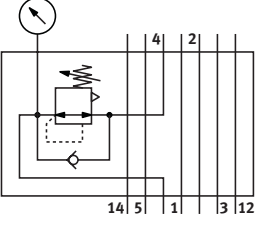
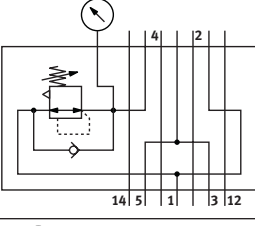
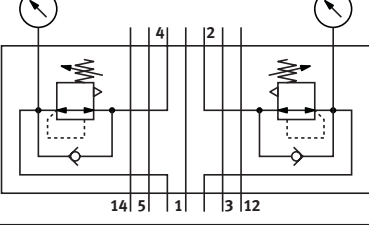
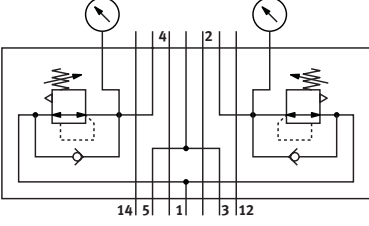
Flow rate q_n as a function of output pressure p_2

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

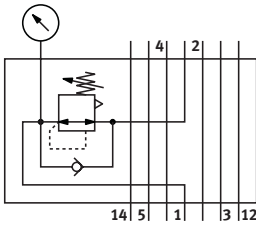
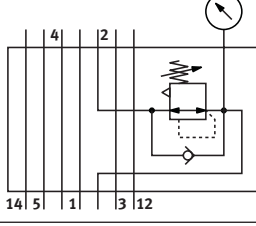
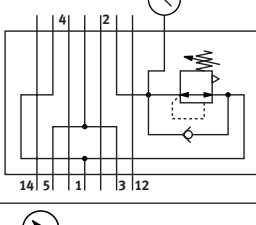
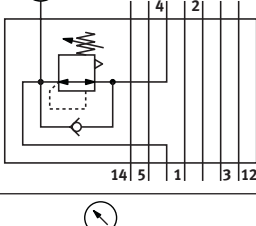
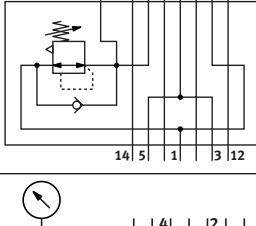
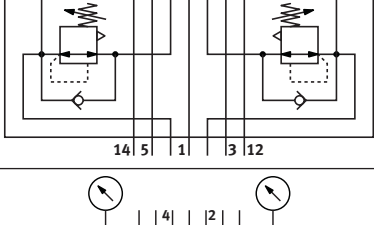
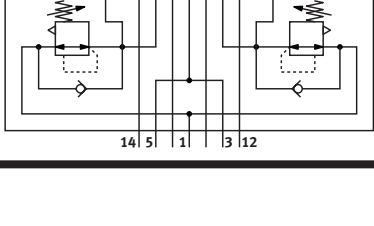
LR-ZP-P-D-3



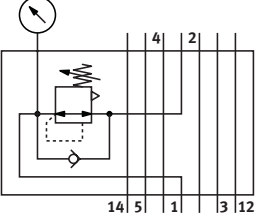
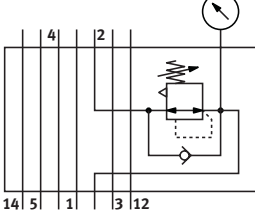
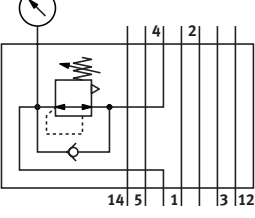
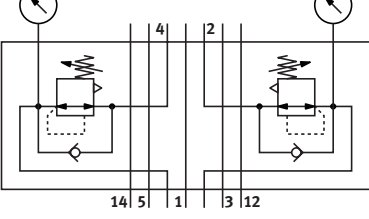
Accessories

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

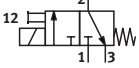
Accessories

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

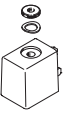
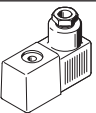
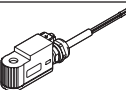
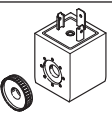
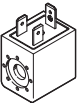
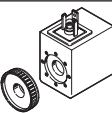
Ordering data		Regulated port	Regulator	Control range	Part no.	Type
Regulator plate, width 65 mm						
	1	P	0 ... 12 bar	35968	LR-ZP-P-D-3	
	2	B	0.5 ... 12 bar	35426	LR-ZP-B-D-3	
	4	A	0.5 ... 12 bar	35971	LR-ZP-A-D-3	
	2, 4	AB	0.5 ... 12 bar	35429	LR-ZP-A/B-D-3	

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

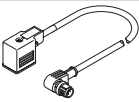
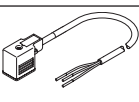
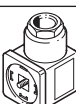
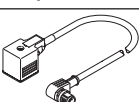
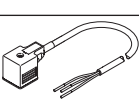
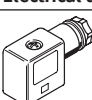
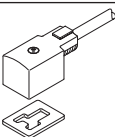
Ordering data		Description	Cable length [m]	Part no.	Type
Pilot valve for valves with 8 mm armature tube					
	Conforms to ISO 15218	Manual override: detenting, non-detenting	–	8028540	VSCS-B-M32C-MD-WB-F8
		Manual override with accessory, non-detenting	–	8028541	VSCS-B-M32C-MT-WB-F8
		Non-detenting manual override	–	8028539	VSCS-B-M32C-MH-WB-F8
		Manual override, concealed	–	8028542	VSCS-B-M32C-M-WB-F8

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

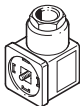
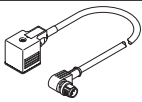
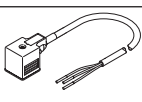
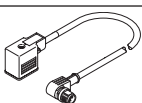
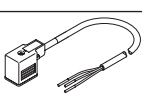
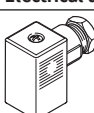
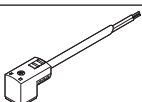
Accessories

Ordering data		Description	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-24-5 0/60-OD
		48 V AC, 50 ... 60 Hz	–	34418	MSFW-48-5 0/60-OD
		110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz	–	34420	MSFW-110-5 0/60-OD
		230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz	–	34422	MSFW-230-5 0/60-OD
		240 V AC, 50 ... 60 Hz	–	34424	MSFW-240-5 0/60-OD
	Solenoid coil with socket MSSD	12 V DC	–	4526	MSFG-12
		24 V DC and 42 V AC, 50 ... 60 Hz	–	4527	MSFG-2 4/42-5 0/60
		24 V AC	–	4534	MSFW-24-5 0/60
		110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz	–	6720	MSFW-110-5 0/60
		230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz	–	4540	MSFW-230-5 0/60
	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
			110 V AC, 50 ... 60 Hz	1	8059811
			5	8059812	VACF-B-K1-16B-5-EX4-M
			230 V AC, 50 ... 60 Hz	1	8059809
		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
Solenoid coils for valves with armature tube 8 mm					
	Plug pattern to EN 175301- 803, type A	12 V DC	–	8030821	VACF-A-A1-5
		24 V DC	–	8030822	VACF-A-A1-1
		48 V DC	–	8030823	VACF-A-A1-7
		24 V AC	–	8030824	VACF-A-A1-1A
		48 V AC	–	8030825	VACF-A-A1-7A
		110/120 V AC	–	8030826	VACF-A-A1-16B
		230/240 V AC	–	8030828	VACF-A-A1-3W
	Plug pattern to industry standard type B (11 mm)	12 V DC	–	8030801	VACF-B-B2-5
		24 V DC	–	8030802	VACF-B-B2-1
		48 V DC	–	8030803	VACF-B-B2-7
		24 V AC	–	8030804	VACF-B-B2-1A
		48 V AC	–	8030805	VACF-B-B2-7A
		110/120 V AC	–	8030806	VACF-B-B2-16B
		230/240 V AC	–	8030808	VACF-B-B2-3W
	Plug pattern to EN 175301- 803, type C	12 V DC	–	8030810	VACF-B-C1-5
		24 V DC	–	8030811	VACF-B-C1-1
		48 V DC	–	8030812	VACF-B-C1-7
		24 V AC	–	8030813	VACF-B-C1-1A
		48 V AC	–	8030814	VACF-B-C1-7A
		110/120 V AC	–	8030815	VACF-B-C1-16B
		230/240 V AC	–	8030817	VACF-B-C1-3W
	Plug M12x1, A-coded to EN 61076-2-101, 2-pin	24 V DC: 3.4 W	–	8150876	VACF-B-R3-1L
		24VDC: LV1.2: HV3.3	–	8150873	VACF-B-R3-1RAL
	Plug M12x1 A-coded according to EN 61076-2-101 4-pin, assignment according to DESINA	24 V DC: 3.4 W	–	8150877	VACF-B-R4-1L
		24VDC: LV1.2: HV3.3	–	8150880	VACF-B-R4-1RAL

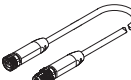
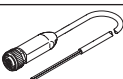
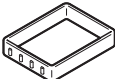
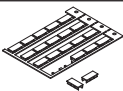
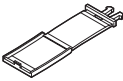
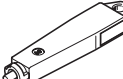
Accessories

Ordering data						
	Description			Cable length [m]	Part no.	Type
Electrical accessories for solenoid coil MSF						
	Angled socket	Screw terminal	Cable fitting Pg9	–	34431	MSSD-F
			Cable fitting M16	–	59710	MSSD-F-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	–	0.6	3579468	NEBV-B2W3-K-0.6-N-LE3
	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 coils MSN1 and MD						
	Angled socket	Screw terminal	Cable fitting Pg9	–	34583	MSSD-C
			Cable fitting M16	–	539709	MSSD-C-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	–	0.6	3579466	NEBV-A1W3-K-0.6-N-LE3
	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
Electrical accessories for valves with square plug type B to industry standard						
	Angled socket	Via screw terminals	Cable fitting Pg9	–	34431	MSSD-F
			Cable fitting M16	–	539710	MSSD-F-M16
	PVC cable sheath	24 V DC	Signal status indication	2.5 m	30935	KMF-1-24DC-2.5-LED
				5 m	30937	KMF-1-24DC-5-LED
				10 m	193458	KMF-1-24-10-LED
	Illuminating seal	24 V DC	Signal status indication	–	19143	MF-LD-12-24DC

Accessories

Ordering data		Description		Cable length [m]	Part no.	Type
Electrical accessories for electrical connection Type A according to EN 175301-803						
	Angled socket	Screw terminal	Cable fitting Pg9	–	34583	MSSD-C
			Cable fitting M16	–	539709	MSSD-C-M16
			Cable connector M20x1.5	–	550067	MSSD-N
	PUR cable sheath, connection technology M12x1 A-coded	24 AC/DC	• Signal status indication • Protective circuit	0.3	3679771	NEBV-A1W3F-P-K-0.3-N-M12W3
				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 • Protective circuit	0.6	3679776	NEBV-A1W3F-P-K-0.6-N-LE3
		230 AC/DC	–	0.6	3579466	NEBV-A1W3-K-0.6-N-LE3
	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
Electrical accessories for electrical connection Type B						
	Angled socket	Screw terminal	Cable fitting Pg9	–	34431	MSSD-F
			Cable fitting M16	–	59710	MSSD-F-M16
	PUR cable sheath, connection technology M12x1 A-coded	24 AC/DC	• Signal status indication • Protective circuit	0.3	3679773	NEBV-B2W3F-P-K-0.3-N-M12W3
				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 • Protective circuit	0.6	3679778	NEBV-B2W3F-P-K-0.6-N-LE3
		230 AC/DC	–	0.6	3579468	NEBV-B2W3-K-0.6-N-LE3
	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 electrical connection Type C according to EN 175301-803						
	Angled socket	0 ... 30 V DC	Cable fitting M12	–	570367	MSSD-EB-M12-24VDC-SD-EX
		0 ... 300 V DC	Cable connector Pg7	–	151687	MSSD-EB
		–	Cable fitting M12	–	539712	MSSD-EB-M12
	PVC cable sheath	24 V DC	• Signal status indication • Protective circuit	2.5 m	8032623	NEBV-C1SW2L-P-K-2.5-N-LE2-S9
				5 m	8032626	NEBV-C1SW2L-P-K-5-N-LE2-S9
				10 m	8032627	NEBV-C1SW2L-P-K-10-N-LE2-S9
		230 V DC/V AC	Signal status indication	2.5 m	8032628	NEBV-C1SW3-K-2.5-N-LE3-S9
				5 m	8032629	NEBV-C1SW3-K-5-N-LE3-S9

Accessories

Ordering data		Description	Part no.	Type	
Electrical accessories for valves with central plug					
	Angled socket, M12x1 A-coded according to EN 61076-2-101, 4-pin, screw terminal		8162292	NECB-M12W4-C2	
	Modular system for a choice of connecting cables → Internet: neba	0.1 ... 20 m	8078221	NEBA-...	
	Straight socket, M12x1, 5-pin Open end, 4-core	2.5 m	8078239	NEBA-M12G5-U-2.5-N-LE4	
		5 m	8078240	NEBA-M12G5-U-5-N-LE4	
	Angled socket, M12x1, 5-pin, Open end, 4-core	2.5 m	8078248	NEBA-M12W5-U-2.5-N-LE4	
		5 m	8078249	NEBA-M12W5-U-5-N-LE4	
Pressure gauge					
	With cartridge connector, for pressure regulator	Display range 0 ... 16 bar	543487	PAGN-26-16-P10	
		Display range 0 ... 10 bar	543488	PAGN-26-10-P10	
Seal					
	Enables the valves with central plug M12, 3-pin, to be mounted on the sub-bases of the valve terminal VTS/VTSA-F		571343	VABD-S2-1-S-C	
Inscription label					
	Inscription labels	6x10 mm	Labelling 64	18576	IBS-6X10
	Inscription label for valves	17x9 mm	Labelling 24	161937	IBS-9x17
	Inscription label for manifold sub-bases		Container size 5	8037164	ASCF-M-S1
	Clip-on inscription label holder for valve cap, for valves with central plug M12, 3-pin		540888	ASCF-T-S6	
	Inscription label holders for inscription labels 6x10 mm, for valves		Pack size 10	561109	VMPAL-ST-AP-10
Manual override					
	For manual override, non-detenting or covered	For valves with square plug type B to industry standard	8049538	VAMC-B10-20-CH2-S	
	Cover cap for manual override, non-detenting	For valves with central plug M12, 3-pin	541010	VAMC-S6-CH	
	Cover cap for manual override, concealed	For valves with central plug M12, 3-pin	541011	VAMC-S6-CS	
	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	
	Tool for manual override	For MN1H/MFH valves	157651	AHB-MD/MF/MV	
		For heavy-duty cover cap, detenting position	1662543	AHB-MEB-B	