Standard valves to ISO 5599-1

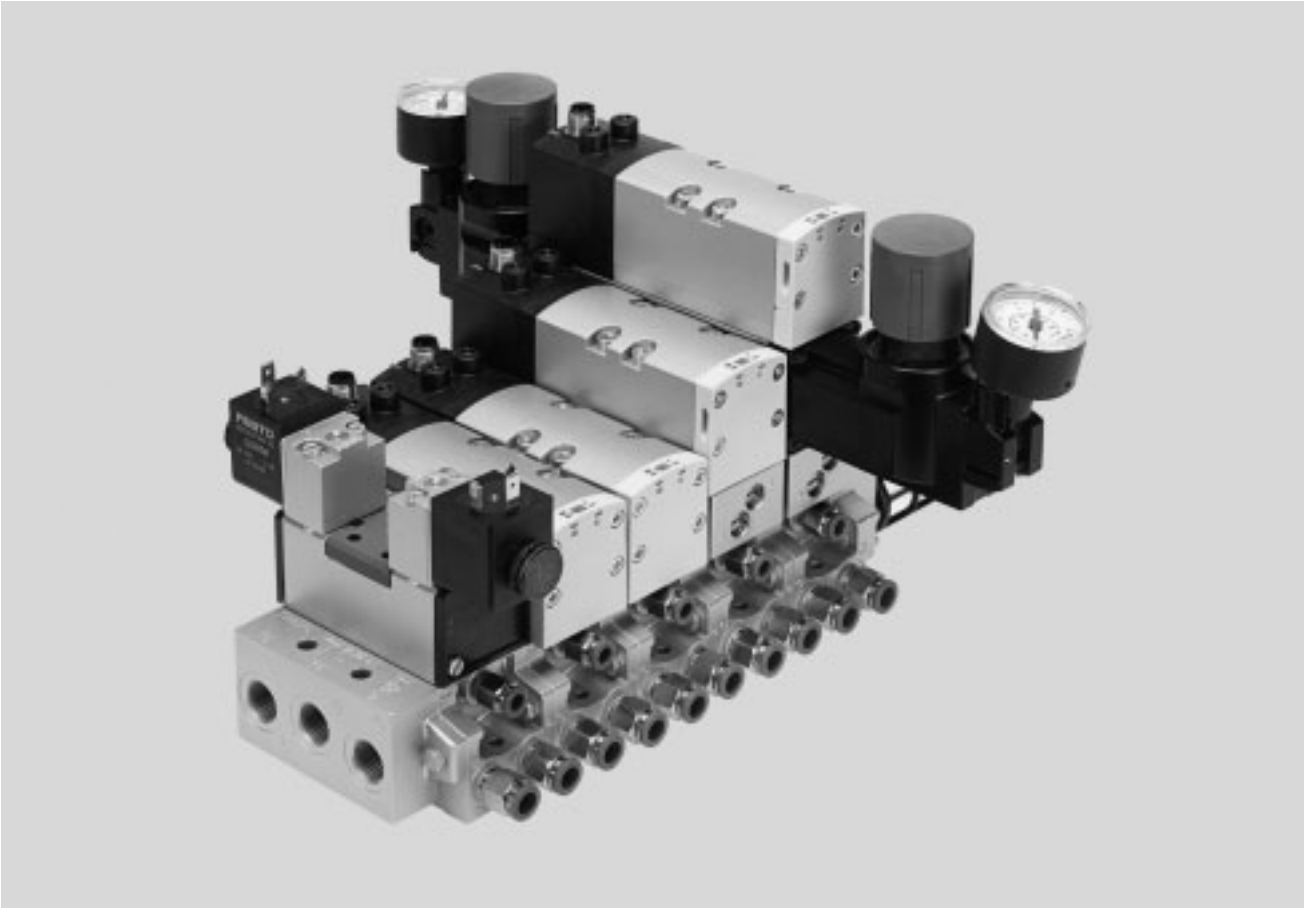
FESTO

★/☆	Festo core product range Covers 80% of your automation tasks	★	Ready for dispatch from the Festo factory in 24 hours Held in stock in 13 service centres worldwide More than 2200 products
Worldwide:	Always in stock	☆	Ready for dispatch in 5 days maximum from stock
Superb:	Festo quality at an attractive price		Assembled for you in 4 service centres worldwide
Easy:	Reduces procurement and storing complexity		Up to 6 x 10^{12} variants per product series

Look for the star!

Standard valves to ISO 5599-1

Key features



Innovative

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

Versatile

- Modular system offering a range of configuration options
- Easy to convert or extend at a later date
- Integration of innovative function modules possible
  - Pressure regulator plate
  - Flow control plate
  - Vertical pressure shut-off plate
  - Vertical supply plate
- Vertical supply plates permit a flexible air supply and variable pressure zones
- Wide range of valve functions
- Extensive operating voltage range from 12 V DC to 230 V AC

Reliable

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

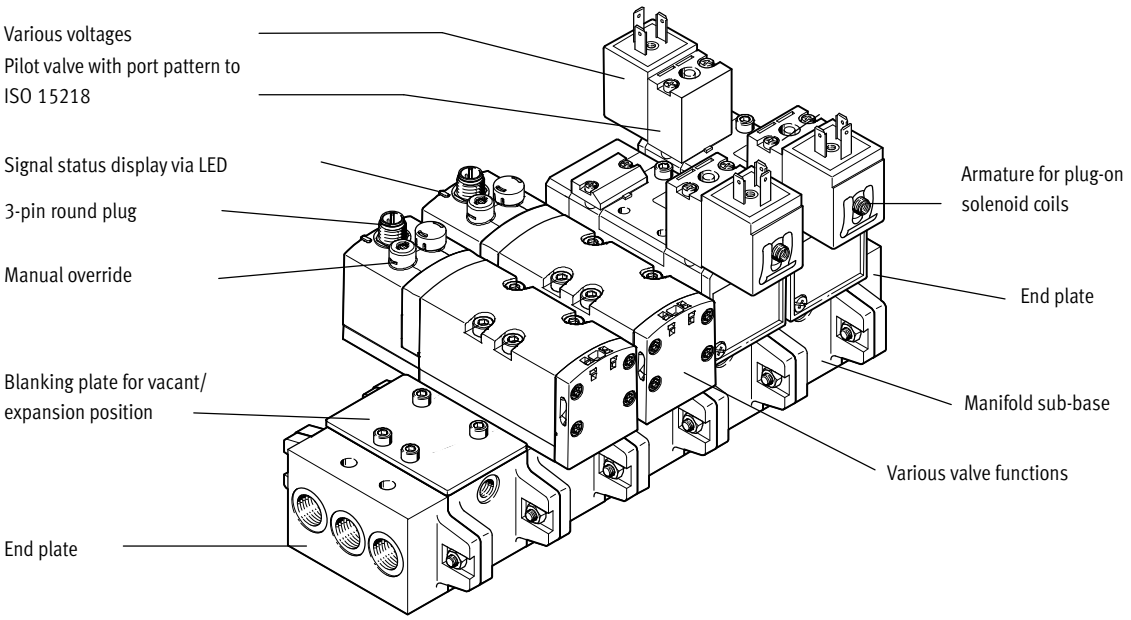
Easy to install

- Plug-in pressure gauges on the pressure regulator plate

Standard valves to ISO 5599-1

Key features

Individual manifold assembly



Equipment options

2x 2/2-way valve, single solenoid

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

2x 3/2-way valve, single solenoid

- Normally open
- Normally closed
- 1x normally open, 1x normally closed
- Reverse operation possible (➔11)

5/2-way valve

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

5/3-way valve

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

Special characteristics

Operation with external pilot air supply

- For vacuum applications
- For working pressures lower than 3 bar
- For significant pressure fluctuations in the power section. Power section and 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)

Operation with internal pilot air supply

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

Reverse operation with compressed air supply via ducts 3 and 5

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

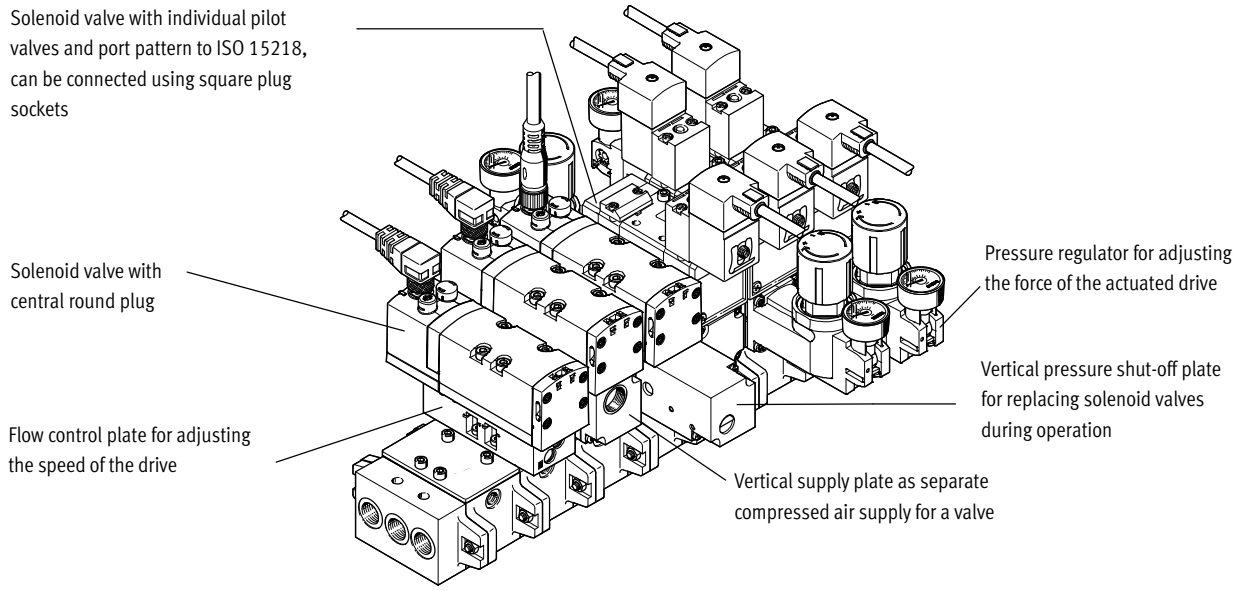
Reverse operation with a pressure regulator plate, compressed air supply via duct 1

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

Standard valves to ISO 5599-1

Key features

Manifold assembly with vertical stacking



Vertical stacking function

Pressure regulator

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

Flow control plate

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

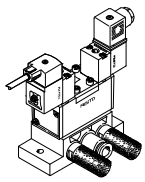
Vertical pressure shut-off plate

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

Vertical supply plate

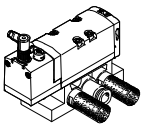
- As additional air supply for a valve
- Separates the valve from duct 1 of the manifold sub-base
- To supply an additional pressure zone

Individual connection with square plug



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

Individual connection with central round plug

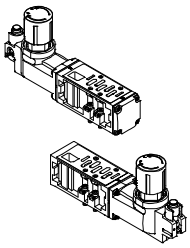


The electrical connection is established via a standardised M12 plug, 24 V DC (EN 61076-2-101).

Standard valves to ISO 5599-1

Key features

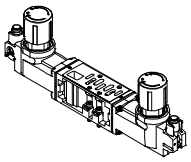
Pressure regulator with one regulated duct



Versions

- For pressure regulation at the supply input (P), duct 1. Set pressure is identical for ducts 2 and 4
- For pressure regulation at the working port (A), duct 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 the working port (B), duct 2
  - In reverse operation duct 3 is supplied here

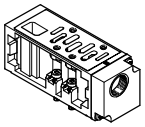
Pressure regulator with 2 regulated ducts



Versions

- For pressure regulation at the working ports (A and B), ducts 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

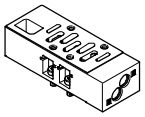
Vertical supply plate



Versions

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

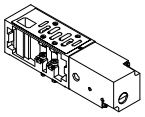
Flow control plate



Versions

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

Vertical pressure shut-off plate



Versions

- A switch activated with a slotted screwdriver shuts off duct 1.
  - The flow control 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 following venting via the valve

Pressure gauge

Version

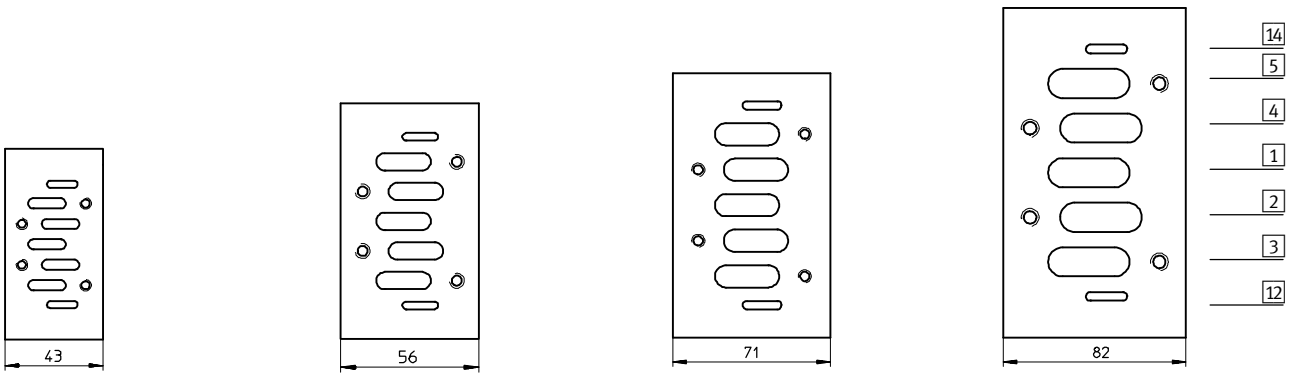
- Plugs into the pressure regulators

Standard valves to ISO 5599-1

Key features

Port pattern on sub-base to ISO 5599-1

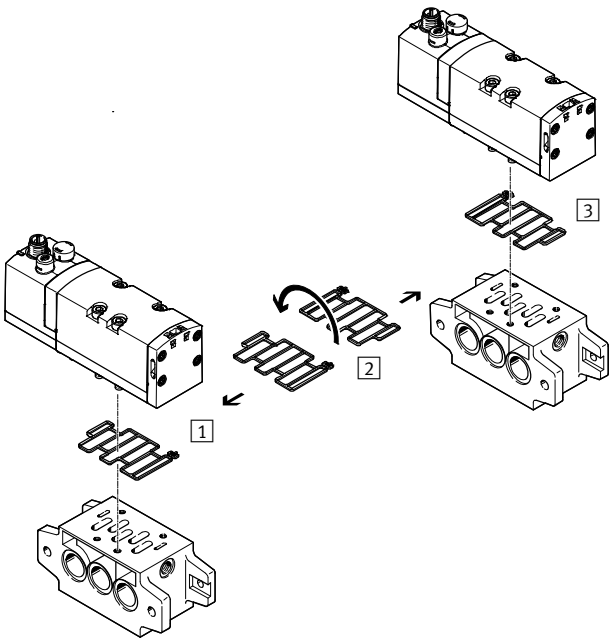
Width 42 mm (ISO 1)	Width 52 mm (ISO 2)	Width 65 mm (ISO 3)	Width 76 mm (ISO 4)



Sub-base port designations

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

Conversion of pilot air exhaust



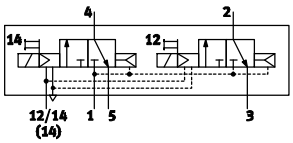
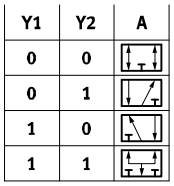
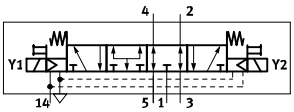
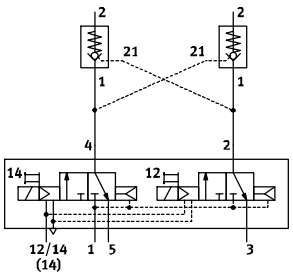
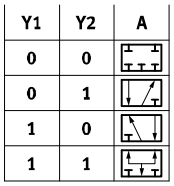
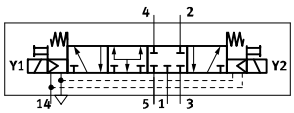
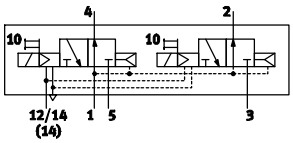
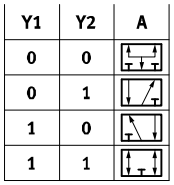
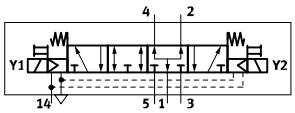
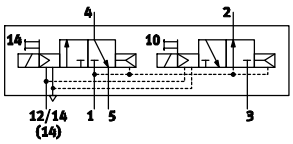
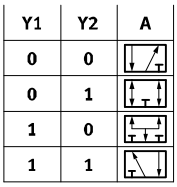
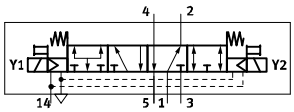
1 Ducted pilot air exhaust
2 Turning the seal by 180°
3 Unducted pilot air exhaust (delivery status)

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

Standard valves to ISO 5599-1

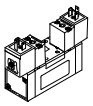
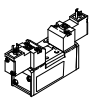
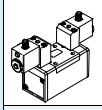
Key features

Use of 2x 3/2-way valve as 5/4-way valve

Code	Symbol	Table of values	Equivalent circuit symbol	Function
K				• 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 present at Y1(14) and Y2(12), there is pressure at ducts 2 and 4
				• Normally closed (by combining valve code K and two piloted non-return valves) • The piloted non-return 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 non-return valves leak-tight • The drive remains stationary when the forces are balanced • Leakages can only occur via the drive seals • If there is a signal present at Y1(14) and Y2(12), the same pressure is present at ducts 2 and 4
N				• 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 present at Y1(10) and Y2(10), ducts 2 and 4 are exhausted, the drive is unpressurised and can be moved by an external force
H				• 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 present at Y1(14) and Y2(10), duct 2 is exhausted and there is pressure at duct 4. The drive leaves the initial position • A closed circuit can be created with this 2x 3/2-way valve by combining it with piloted non-return valves. However, this is then selected by an active signal at Y2(10).

Standard valves to ISO 5599-1

Product range overview

Function		Type	Valve function	Flow rate Valve [l/min]	Operating voltage	➔ Page/ Internet
Width 42 mm	**Valve with armature for solenoid coil MSN**					
Working port G¼		**MN1H-5/2**	5/2-way single solenoid valve	1200	12 V DC, 24 V DC, 24 V AC, 110 V AC, 230 V AC	20
		JMN1	5/2-way double solenoid valve	1200		
		MN1H-5/3	5/3-way solenoid valve, mid-position valve	1200		
	Valve with armature for solenoid coil MSF					
		**MFH-5/2**	5/2-way single solenoid valve	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	32
		JMF	5/2-way double solenoid valve	1200		
		MFH-5/3	5/3-way solenoid valve, mid-position valve	1200		
	Valve with central plug M12, 3-pin					
		**VSVA-B-T22**	2x 2/2-way single solenoid valve	1300	24 V DC	44
		VSVA-B-T32	2x 3/2-way single solenoid valve	1100		
		VSVA-B-M52	5/2-way single solenoid valve	1300		
		VSVA-B-B52	5/2-way double solenoid valve	1300		
		VSVA-B-D52	5/2-way double solenoid valve	1300		
		VSVA-B-P53	5/3-way solenoid valve, mid-position valve	1300		
	Valve with individual plug M12					
		**MDH-5/2**	5/2-way single solenoid valve	1200	24 V DC, 42 V AC, 110 V AC, 230 V AC	61
		JMD	5/2-way double solenoid valve	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	–	82
		J	5/2-way pneumatic valve, bistable	1200		
		VL-5/3	5/3-way pneumatic valve, mid-position valve	1200		

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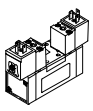
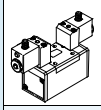
Product range overview

Function		Type	Valve function	Flow rate Valve [l/min]	Operating voltage	➔ Page/ Internet
Width 52 mm **Working port G3/8**	**Valve with armature for solenoid coil MSN**					
		**MN1H-5/2**	5/2-way single solenoid valve	2300	12 V DC, 24 V DC, 24 V AC, 110 V AC, 230 V AC	24
		JMN1	5/2-way double solenoid valve	2300		
		MN1H-5/3	5/3-way solenoid valve, mid-position valve	2300		
	Valve with armature for solenoid coil MSF					
		**MFH-5/2**	5/2-way single solenoid valve	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	36
		JMF	5/2-way double solenoid valve	2300		
		MFH-5/3	5/3-way solenoid valve, mid-position valve	2300		
	Valve with central plug M12, 3-pin					
		**VSVA-B-T22**	2x 2/2-way single solenoid valve	2800	24 V DC	52
		VSVA-B-T32	2x 3/2-way single solenoid valve	2200		
		VSVA-B-M52	5/2-way single solenoid valve	2800		
		VSVA-B-B52	5/2-way double solenoid valve	2800		
		VSVA-B-D52	5/2-way double solenoid valve	2800		
		VSVA-B-P53	5/3-way solenoid valve, mid-position valve	2700		
	Valve with individual plug M12					
		**MDH-5/2**	5/2-way single solenoid valve	2300	24 V DC, 42 V AC, 110 V AC, 230 V AC	66
		JMD	5/2-way double solenoid valve	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	–	87
		J	5/2-way pneumatic valve, bistable	2300		
		VL-5/3	5/3-way pneumatic valve, mid-position valve	2300		

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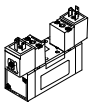
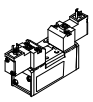
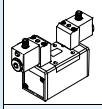
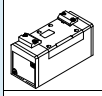
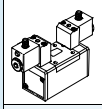
Product range overview

Function		Type	Valve function	Flow rate Valve [l/min]	Operating voltage	➔ Page/ Internet
Width 65 mm	**Valve with armature for solenoid coil MSN**					
Working port G½		**MN1H-5/2**	5/2-way single solenoid valve	4500	12 V DC, 24 V DC, 24 V AC, 110 V AC, 230 V AC	28
		JMN1	5/2-way double solenoid valve	4500		
		MN1H-5/3	5/3-way solenoid valve, mid-position valve	4000		
	Valve with armature for solenoid coil MSF					
		**MFH-5/2**	5/2-way single solenoid valve	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	40
		JMF	5/2-way double solenoid valve	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 single solenoid valve	4500	24 V DC	57
		JMEB	5/2-way double solenoid valve	4500		
		MEBH-5/3	5/3-way solenoid valve, mid-position valve	4000		
	Valve with individual plug M12					
		**MDH-5/2**	5/2-way single solenoid valve	4500	24 V DC, 42 V AC, 110 V AC, 230 V AC	70
		JMD	5/2-way double solenoid valve	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	–	92
		J	5/2-way pneumatic valve, bistable	4500		
		VL-5/3	5/3-way pneumatic valve, mid-position valve	4100		
Width 76 mm	**Valve with individual plug M12**					
Working port G¾		**MDH-5/2**	5/2-way single solenoid valve	6000	24 V DC, 42 V AC, 110 V AC, 230 V AC	74
		JMD	5/2-way double solenoid valve	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	–	97
		J	5/2-way pneumatic valve, bistable	6000		
		VL-5/3	5/3-way pneumatic valve, mid-position valve	4800		

Standard valves to ISO 5599-1, central plug M12

Type codes for valves with round plug

VSVA	–	B	–	T32F		–	A	Z	D	–	D1	–	1	R5	L

Valve	
VSVA	Standard valves to ISO 5599-1

Valve type	
B	Sub-base valve

Valve function	
M52	5/2-way single solenoid valve
B52	5/2-way double solenoid valve
D52	5/2-way double solenoid valve, with dominant signal at 14
P53U	5/3-way valve, mid-position pressurised
P53E	5/3-way valve, mid-position exhausted
P53C	5/3-way valve, mid-position closed
T32U	2x 3/2-way valve, normally open
T32C	2x 3/2-way valve, normally closed
T32H	2x 3/2-way valve, 1x normally open, 1x normally closed
T32F	2x 3/2-way valve, normally open, reverse operation
T32N	2x 3/2-way valve, normally closed, reverse operation
T32W	2x 3/2-way valve, 1x normally closed, 1x normally open, reverse operation
T22C	2x 2/2-way valve, normally closed

Additional function	
	No additional function
V	2x 2/2-way valve with vacuum operation

Reset method	
A	Pneumatic spring
M	Mechanical spring

Pilot air supply	
Z	External
	Internal

Manual override	
D	Non-detenting/detenting
H	Non-detenting

Pneumatic port (width)	
D1	Width 42 mm/ISO size 1
D2	Width 52 mm/ISO size 2

Operating voltage	
1	24 V DC

Electrical connection	
R5	Central plug M12x1

Signal status display	
L	LED (integrated)

Standard valves to ISO 5599-1, solenoid coil MSN1

Type codes for valves with armature for solenoid coil MSN

MN1H	–	5/2	–	D-1	–		–		–	C

Type	
MN1H	Single solenoid
JMN1H	Double solenoid
JMN1DH	Double solenoid, with dominant signal at 14

Valve function	
5/2	5/2-way valve
5/3G	5/3-way valve, mid-position closed
5/3E	5/3-way valve, mid-position exhausted
5/3B	5/3-way valve, mid-position pressurised

Pneumatic port (width)	
D-1	Width 42 mm/ISO size 1
D-2	Width 52 mm/ISO size 2
D-3	Width 65 mm/ISO size 3

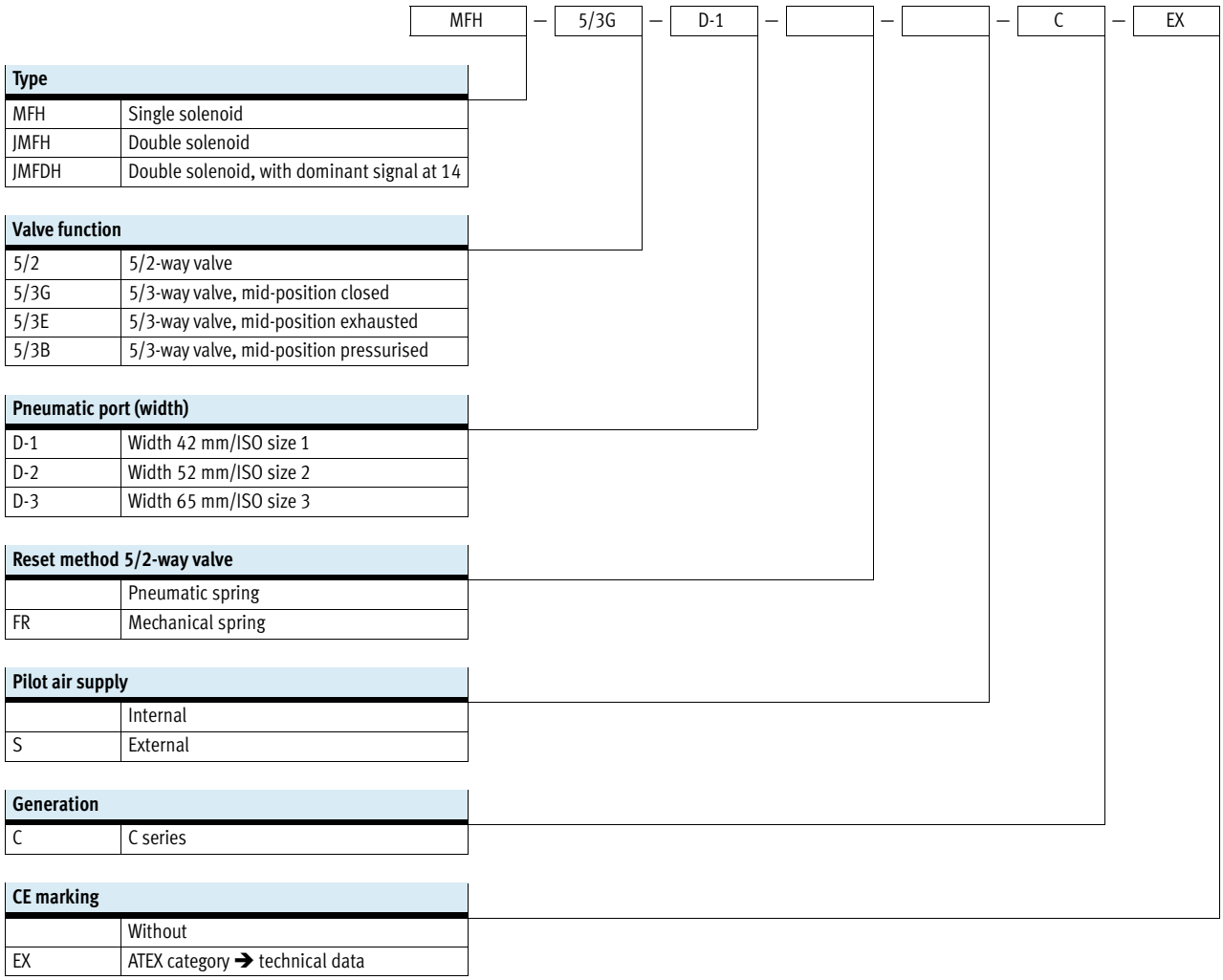
Reset method 5/2-way valve	
	Pneumatic spring
FR	Mechanical spring

Pilot air supply	
	Internal
S	External

Generation	
C	C series

Standard valves to ISO 5599-1, solenoid coil MSF

Type codes for valves with armature for solenoid coil MSF



Type	
MFH	Single solenoid
JMFH	Double solenoid
JMFDH	Double solenoid, with dominant signal at 14

Valve function	
5/2	5/2-way valve
5/3G	5/3-way valve, mid-position closed
5/3E	5/3-way valve, mid-position exhausted
5/3B	5/3-way valve, mid-position pressurised

Pneumatic port (width)	
D-1	Width 42 mm/ISO size 1
D-2	Width 52 mm/ISO size 2
D-3	Width 65 mm/ISO size 3

Reset method 5/2-way valve	
	Pneumatic spring
FR	Mechanical spring

Pilot air supply	
	Internal
S	External

Generation	
C	C series

CE marking	
	Without
EX	ATEX category ➔ technical data

Standard valves to ISO 5599-1, central plug M12, 4-pin

Type codes for valves with central plug M12, 4-pin

MEBH	–	5/3G	–	D-1	–		–		–	C

Type	
MEBH	Single solenoid
JMEBH	Double solenoid
JMEBDH	Double solenoid, with dominant signal at 14

Valve function	
5/2	5/2-way valve
5/3G	5/3-way valve, mid-position closed
5/3E	5/3-way valve, mid-position exhausted
5/3B	5/3-way valve, mid-position pressurised

Pneumatic port (width)	
D-3	Width 65 mm/ISO size 3

Electrical connection, operating voltage	
ZSR	Central plug, round design, M12x1, 24 V DC

Reset method 5/2-way valve	
	Pneumatic spring
FR	Mechanical spring

Generation	
C	C series

Standard valves to ISO 5599-1, solenoid coil MD

Type codes for valves with individual plug M12

MDH	–	5/3G	–	D-1	–		–		–		–	C

Type	
MDH	Single solenoid
JMDH	Double solenoid
JMDDH	Double solenoid, with dominant signal at 14

Valve function	
5/2	5/2-way valve
5/3G	5/3-way valve, mid-position closed
5/3E	5/3-way valve, mid-position exhausted
5/3B	5/3-way valve, mid-position pressurised

Pneumatic port (width)	
D-1	Width 42 mm/ISO size 1
D-2	Width 52 mm/ISO size 2
D-3	Width 65 mm/ISO size 3
¾-D-4	Width 76 mm/ISO size 4

Electrical connection, operating voltage	
	No pilot control
24 DC	Individual plug, square design, 3-pin socket with port pattern to EN 175301-803, type A, 24 V DC
M12	Individual plug, round design, M12x1, 2-pin to VDMA, 24 V DC
M12D	Individual plug, round design, M12x1, 4-pin to Desina, 24 V DC

Pilot air supply	
	Internal
S	External

Reset method 5/2-way valve	
	Pneumatic spring
FR	Mechanical spring

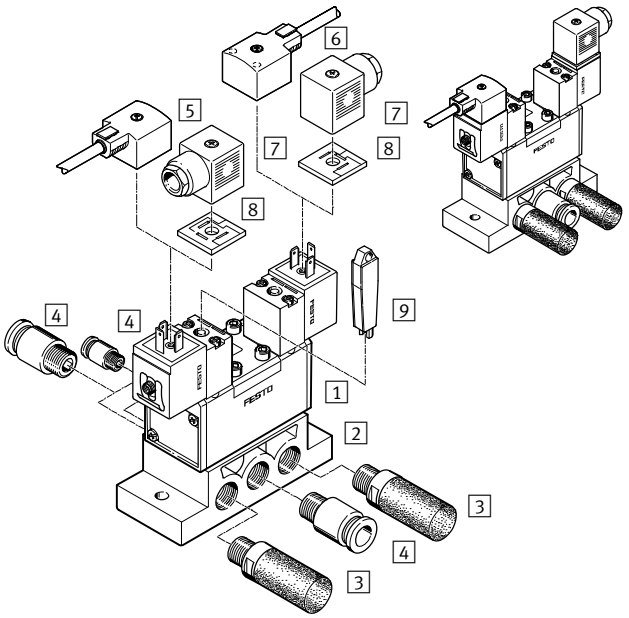
Generation	
	Width 76 mm/ISO size 4
C	C series

Standard valves to ISO 5599-1

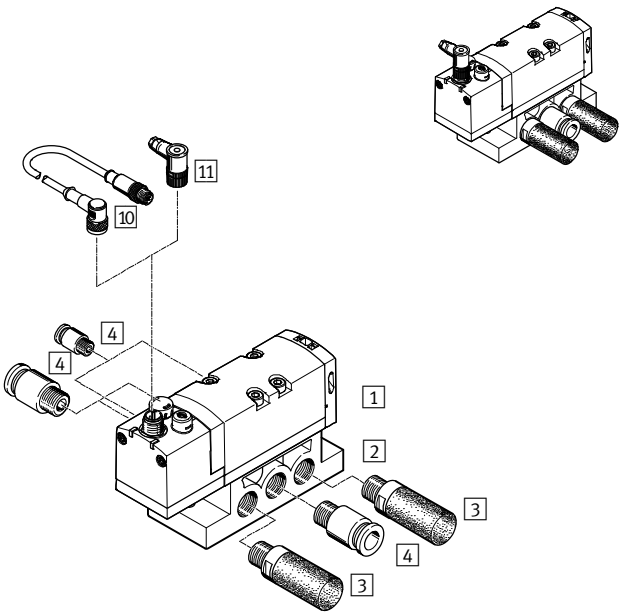
Peripherals overview

Valve on individual sub-base

Solenoid valve with solenoid coil MSN1



Solenoid valve with central plug M12, 3-pin

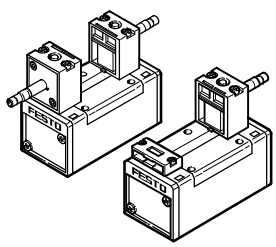


Individual components

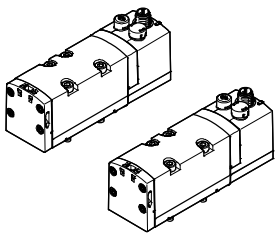
		Type	Brief description	➔ Page/Internet
1	Solenoid valve	MN1H-...	Solenoid valve with solenoid coil, port pattern to ISO 5599-1, corresponding solenoid coils ➔ 121	20
	Solenoid valve	VSVA-...	Solenoid valve with central plug M12, 3-pin, port pattern to ISO 5599-1	44
2	Individual sub-base	NAS-...	Pneumatic ports, side	101
		NAU-...	Pneumatic ports, underneath	102
3	Silencer	U-...	For fitting in exhaust ports	silencer
4	Push-in fitting	QS-...	For connecting O.D. tubing	qs
5	Connecting cable	KMC-..., NEBV-...	Without LED	122
6	Connecting cable	KMC-..., NEBV-...	With LED	122
7	Plug socket	MSSD-...	For self-assembly	122
8	Illuminating seal	M...-LD	For indicating the signal status	122
9	Manual override	AHB-...	Tool for detenting manual override	123
10	Connecting cable	NEBU-...	–	123
11	Plug socket	SEA-...	For self-assembly	123

Valve variants

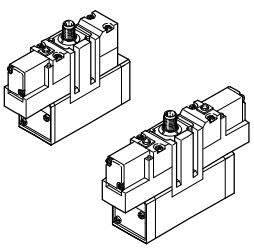
MN1H, JMN1H, MFH, JMFH



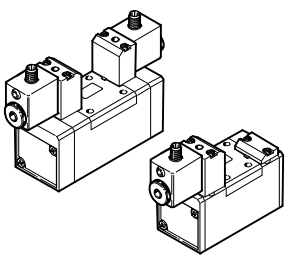
VSVA



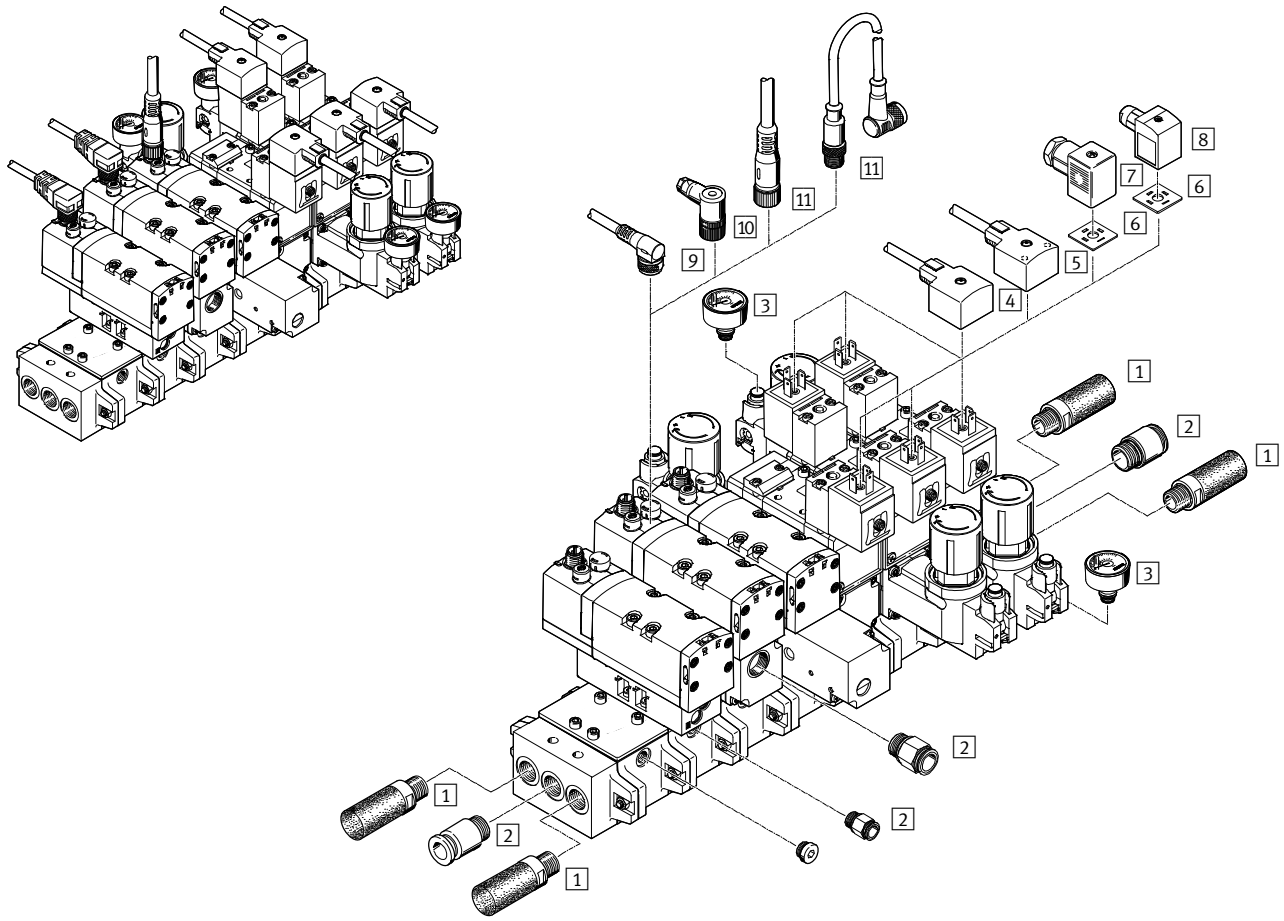
MEBH, JMEBH



MDH, JMDH



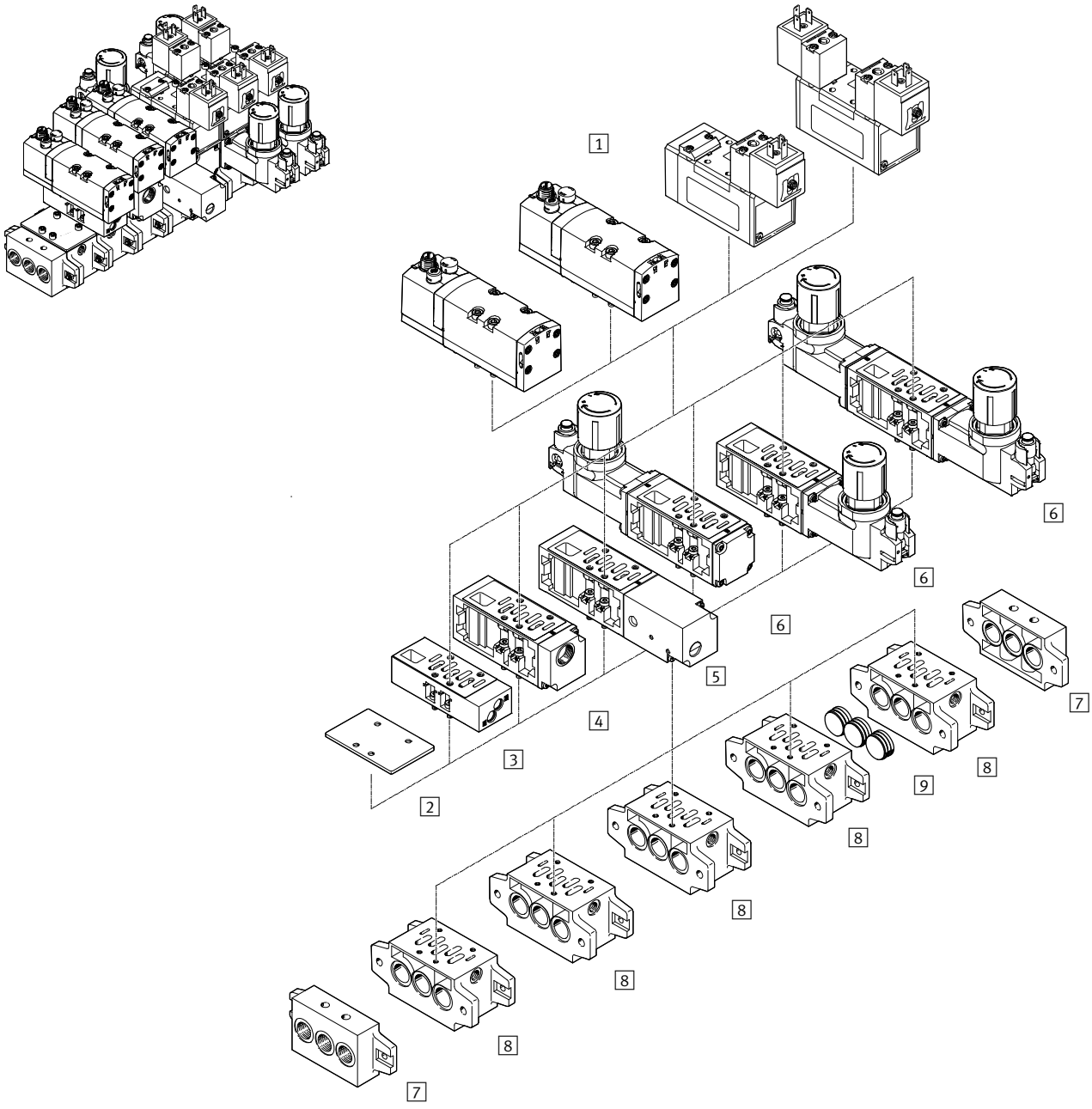
Accessories



Individual components

		Type	Brief description	➔ Page/ Internet
1	Silencer	U-...	For fitting in exhaust ports	silencer
2	Push-in fitting	QS-...	For connecting O.D. tubing	qs
3	Pressure gauge	PAGN-...	With push-in connector	123
4	Plug socket with cable	KMC-..., NEBV-...	Without LED	122
5	Plug socket with cable	KMC-...LED, NEBV-...	With LED	122
6	Illuminating seal	M...-LD	For indicating the signal status	122
7	Socket	MSSD-C-M16	With screw terminal connection	122
8	Socket	MSSD-C-S-M16	With insulation displacement connection	122
9	Connecting cable	NEBU-...	Angled socket, M12x1, 5-pin	123
10	Socket	SAE-...	For self-assembly	123
11	Connecting cable	NEBU-...	Straight socket, M12x1, 5-pin	123

Manifold assembly



Standard valves to ISO 5599-1

System overview

FESTO

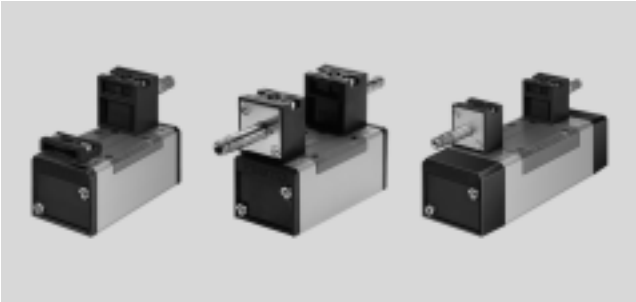
Individual components				
		Type	Brief description	➔ Page/ Internet
1	Solenoid valve	MN1H-...	With armature for solenoid coil MSN1	20
		JMN1H-...	With armature for solenoid coil MSN1	20
		JMN1DH-...	With armature for solenoid coil MSN1	20
		MFH-...	With armature for solenoid coil MSF	32
		JMFH-...	With armature for solenoid coil MSF	32
		JMFDH-...	With armature for solenoid coil MSF	32
		VSVA-...	With central plug M12, 3-pin	44
		MEBH-...	With central plug M12, 4-pin	57
		JMEBH-...	With central plug M12, 4-pin	57
		JMEBDH-...	With central plug M12, 4-pin	57
		MDH-...	With solenoid coil MD with round plug M12x1	61
		JMDH-...	With solenoid coil MD with round plug M12x1	61
		JMDDH-...	With solenoid coil MD with round plug M12x1	61
	Pneumatic valve	VL-...	Port pattern to ISO 5599-1	82
		J-...	Port pattern to ISO 5599-1	82
		JD-...	Port pattern to ISO 5599-1	82
2	Blanking plate	NDV-...	For sealing unused manifold sub-bases	105
3	Flow control plate	VABF-S1-...-F1B1-C	Controls the flow of exhaust air in ducts 3 and 5	108
		GRO-ZP-...	Controls the flow of exhaust air in ducts 3 and 5	108
4	Vertical supply plate	VABF-S1-...-P1A3-G38	Alternative compressed air supply for port 1 of the assembled valve	111
5	Vertical pressure shut-off plate	VABF-S1-...-L1D1-C	For blocking duct 1 and duct 14 upstream of a valve	113
6	Regulator plate	VABF-S1-...-R...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	115
		LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	115
7	End plate kit	NEV-...	With ports for air supply 1 and exhausts 3 and 5	104
8	Manifold sub-base	NAV-...	With ports 2 and 4 underneath	103
9	Isolating disc	NSC-...	For sealing ducts 1, 3, 5 between end plate and manifold sub-base, e.g. to create pressure zones	105

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 42 mm

FESTO

- Flow rate
  1200 l/min



General technical data			
Design			Piston spool valve
Sealing principle			Soft
Actuation type			Electric
Type of control			Piloted
Direction of flow	With external pilot air supply		Reversible
	With internal pilot air supply		Non-reversible
Exhaust function			With flow control
Manual override			Non-detenting, detenting via accessory
Type of mounting			On sub-base, via through-hole
Mounting position			Any
Nominal size		[mm]	8
No overlap			Yes
Width		[mm]	42
Grid dimension		[mm]	43
Pneumatic ports			Sub-base size 1 to ISO 5599-1
Noise level		[dB (A)]	85
Conforms to standard			ISO 5599-1
Certification			Germanischer Lloyd
	With internal pilot air supply		c UL us Recognised (OL)

Flow rates				
Valve function		5/2-way single solenoid valve	5/2-way double solenoid valve	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 single solenoid valve	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 double solenoid valve	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	–	–

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 42 mm

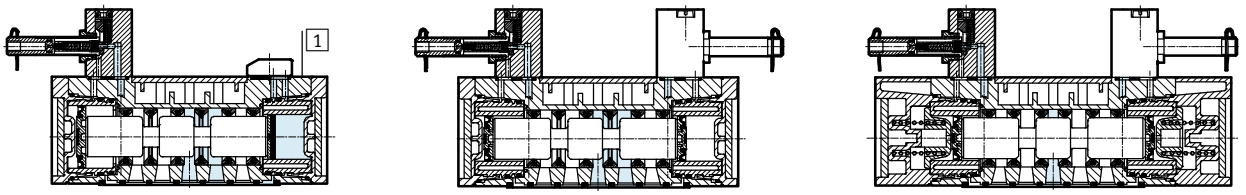
Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10	3 ... 10
	External pilot air supply	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	2 ... 10	3 ... 10
Ambient temperature		[°C]	–5 ... +50	
Temperature of medium		[°C]	–5 ... +50	

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

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

Materials

Sectional view



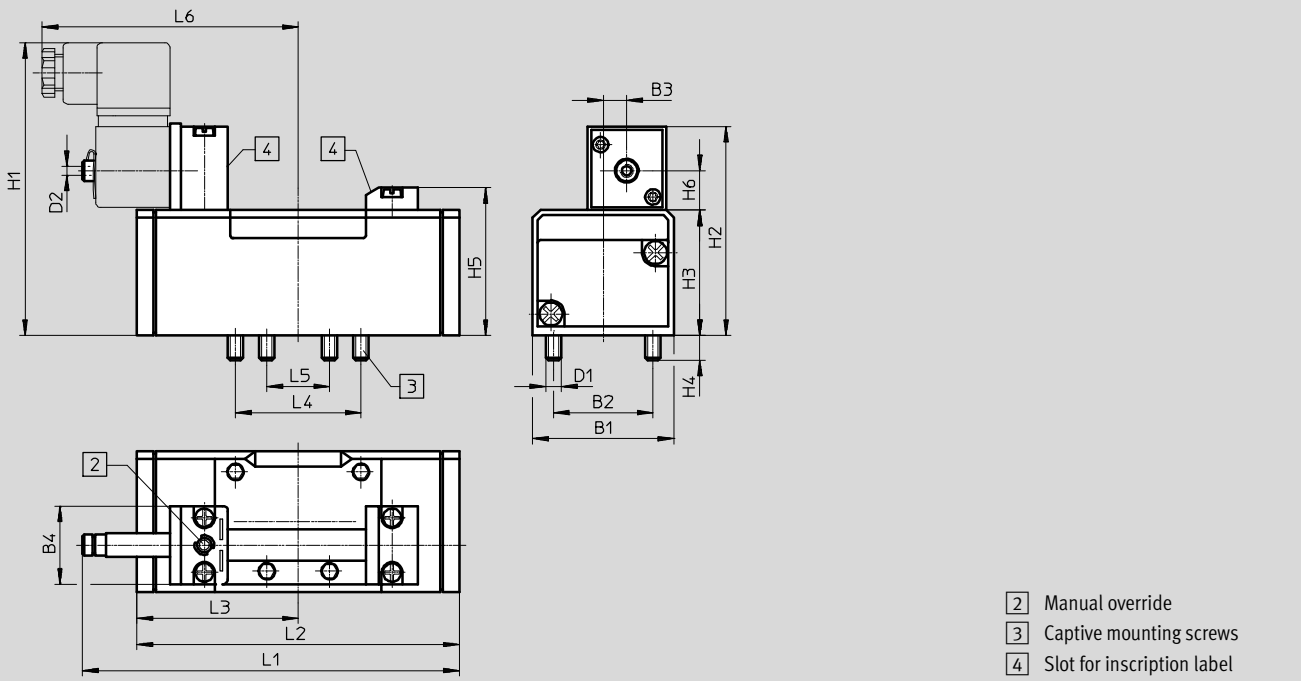
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 42 mm

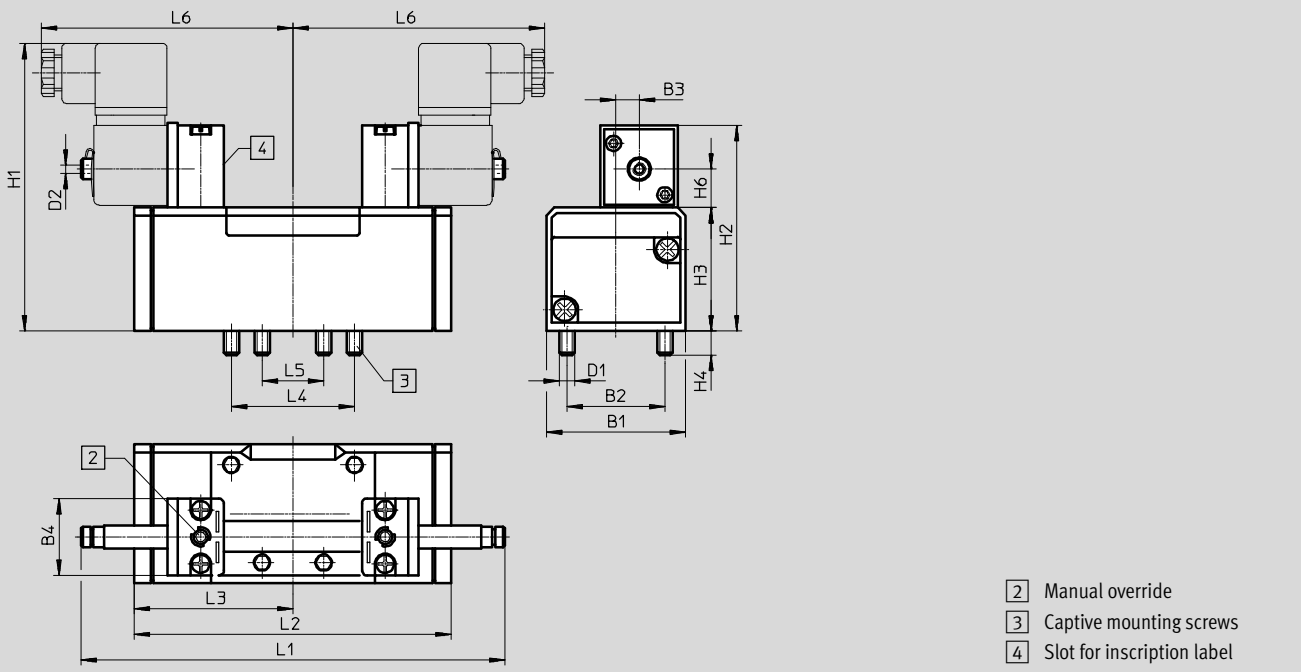
Dimensions Download CAD data ➔ **www.festo.com**

5/2-way single solenoid valves



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

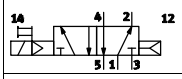
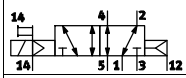
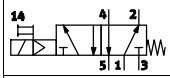
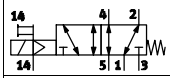
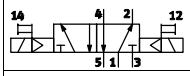
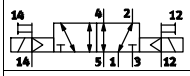
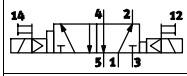
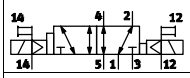
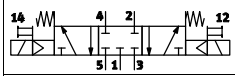
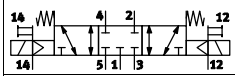
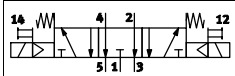
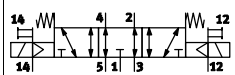
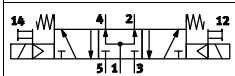
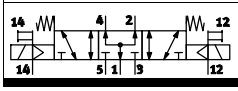
5/2-way double solenoid valves, 5/3-way valves



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				

Standard valves to ISO 5599-1, solenoid coil MSN1

Ordering data – Width 42 mm

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

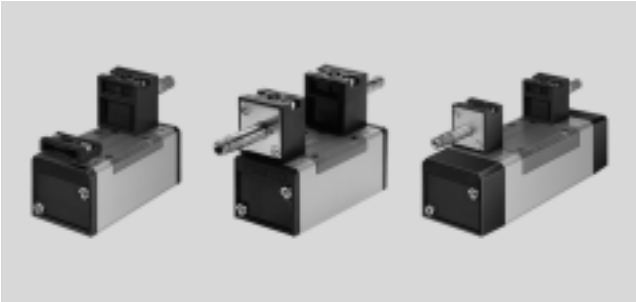
1) Solenoid coils ➔ 121

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 52 mm

FESTO

- Flow rate
  2300 l/min



General technical data			
Design			Piston spool valve
Sealing principle			Soft
Actuation type			Electric
Type of control			Piloted
Direction of flow	With external pilot air supply		Reversible
	With internal pilot air supply		Non-reversible
Exhaust function			With flow control
Manual override			Non-detenting, detenting via accessory
Type of mounting			On sub-base, with through-hole and screw
Mounting position			Any
Nominal size		[mm]	11.5
No overlap			Yes
Width		[mm]	52
Grid dimension		[mm]	56
Pneumatic ports			Sub-base size 2 to ISO 5599-1
Noise level		[dB (A)]	85
Conforms to standard			ISO 5599-1
Certification			Germanischer Lloyd
	With internal pilot air supply		c UL us Recognised (OL)

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

Switching times [ms]					
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way single solenoid valve	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 double solenoid valve	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	–	–

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 52 mm

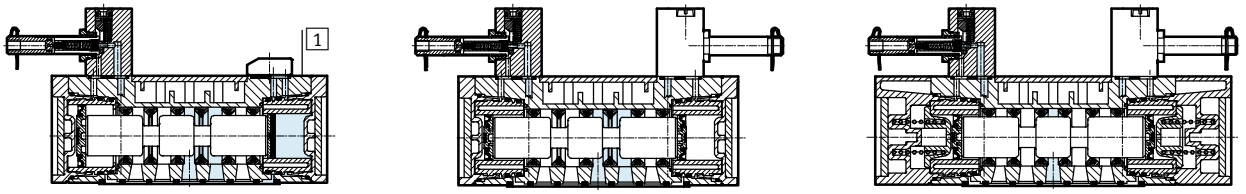
Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10	3 ... 10
	External pilot air supply	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	2 ... 10	3 ... 10
Ambient temperature		[°C]	–5 ... +50	
Temperature of medium		[°C]	–5 ... +50	

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

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

Materials

Sectional view



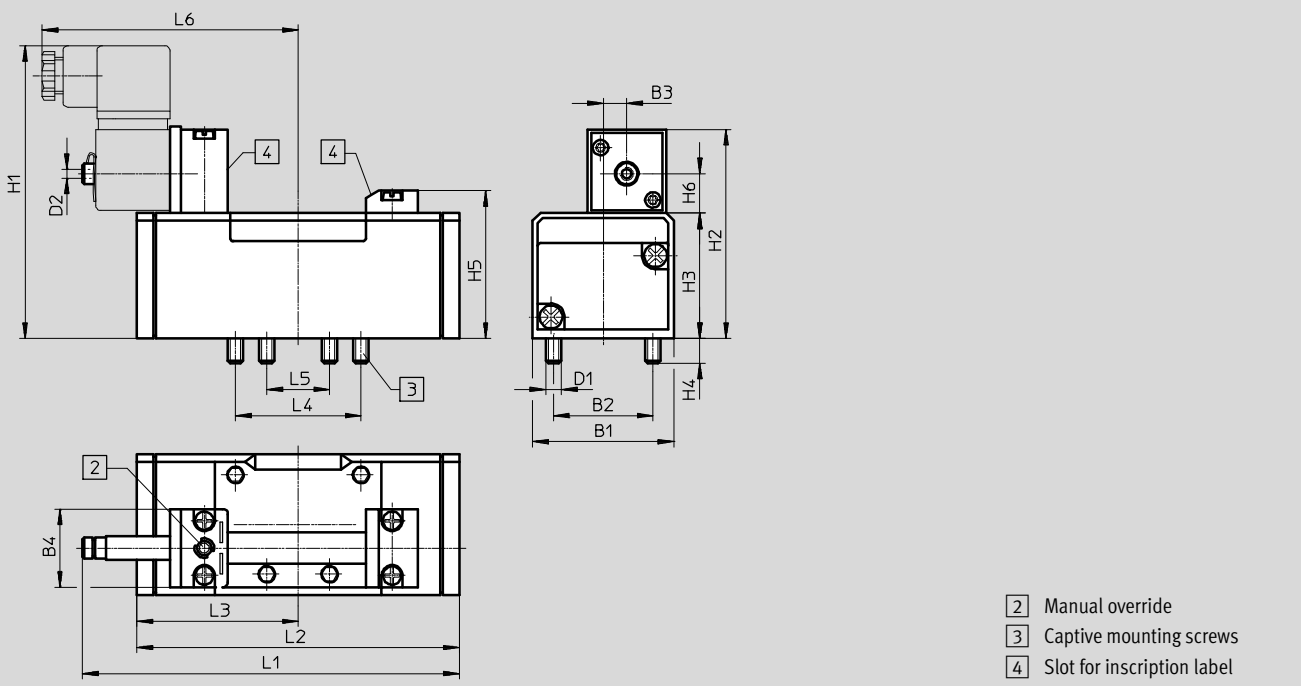
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 52 mm

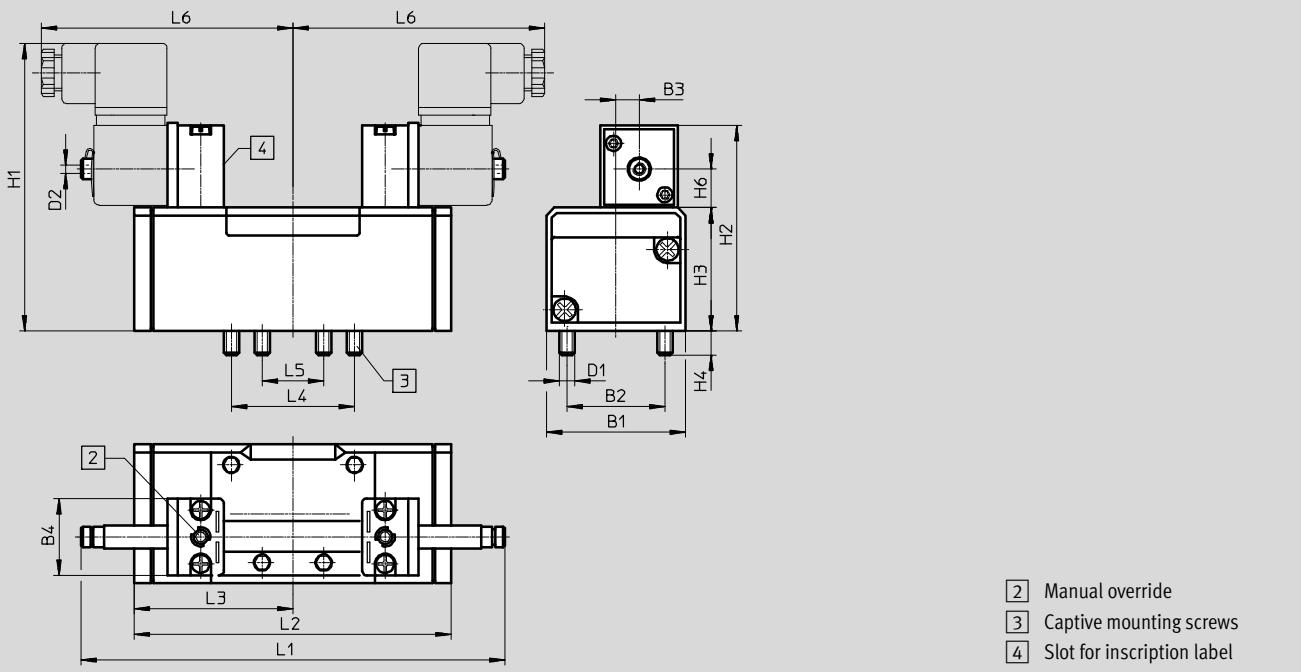
Dimensions Download CAD data ➔ **www.festo.com**

5/2-way single solenoid valves



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

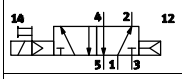
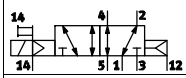
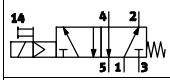
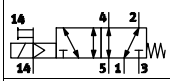
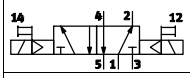
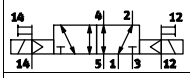
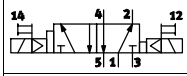
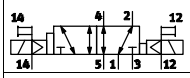
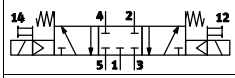
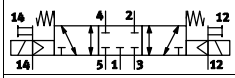
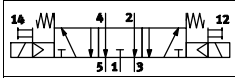
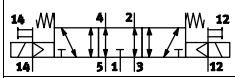
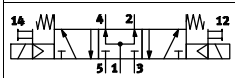
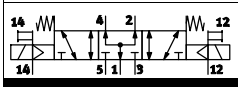
5/2-way double solenoid valves, 5/3-way valves



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			

Standard valves to ISO 5599-1, solenoid coil MSN1

Ordering data – Width 52 mm

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

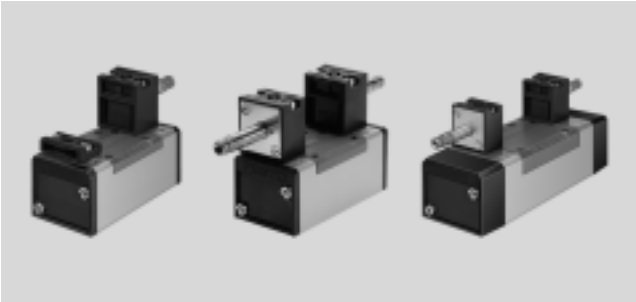
1) Solenoid coils ➔ 121

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 65 mm

FESTO

- Flow rate
  Up to 4600 l/min



General technical data			
Design			Piston spool valve
Sealing principle			Soft
Actuation type			Electric
Type of control			Piloted
Direction of flow	With external pilot air supply		Reversible
	With internal pilot air supply		Non-reversible
Exhaust function			With flow control
Manual override			Non-detenting, detenting via accessory
Type of mounting			On sub-base, with through-hole and screw
Mounting position			Any
Nominal size		[mm]	14.5
No overlap			Yes
Width		[mm]	65
Grid dimension		[mm]	71
Pneumatic ports			Sub-base size 3 to ISO 5599-1
Noise level		[dB (A)]	85
Conforms to standard			ISO 5599-1
Certification			Germanischer Lloyd
	With internal pilot air supply		c UL us Recognised (OL)

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

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 65 mm

Switching times [ms]					
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way single solenoid valve	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 double solenoid valve	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	–	–

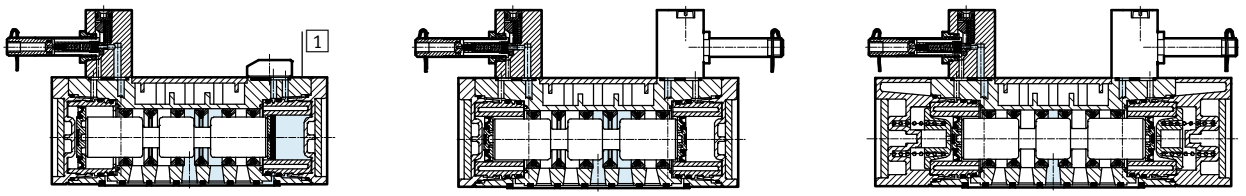
Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10	3 ... 10
	External pilot air supply	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	2 ... 10	3 ... 10
Ambient temperature		[°C]	–5 ... +50	
Temperature of medium		[°C]	–5 ... +50	

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

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

Materials

Sectional view



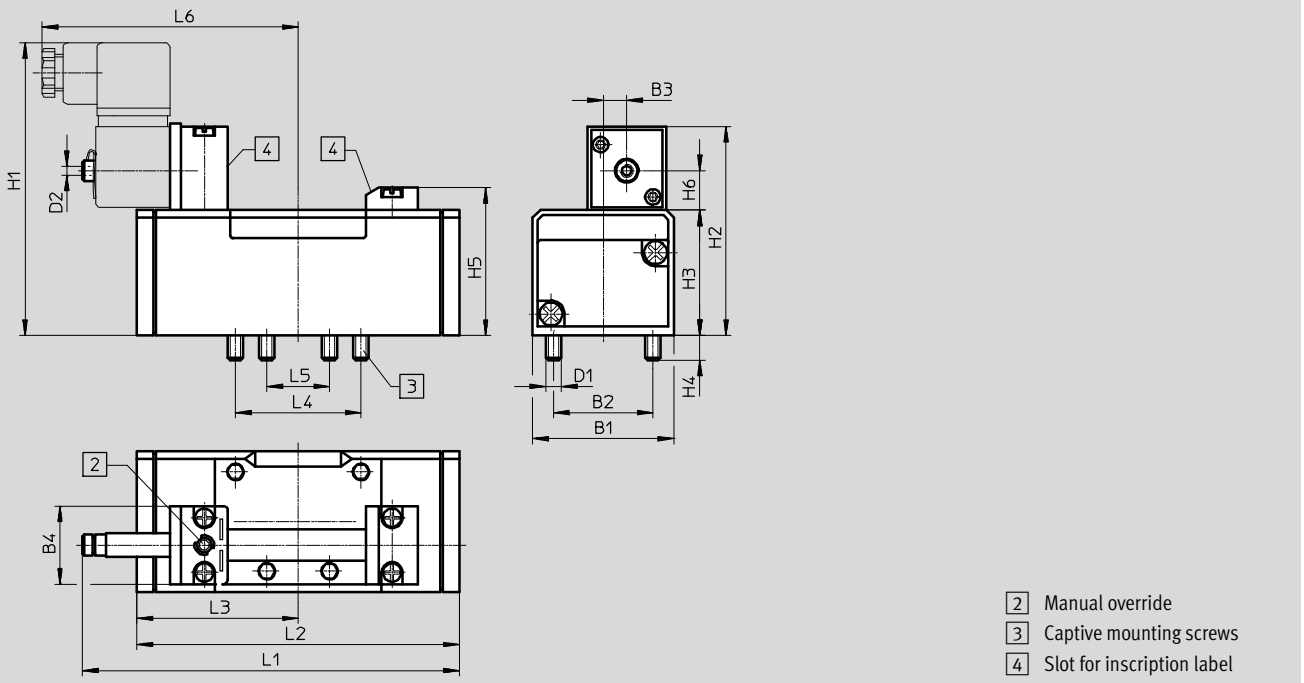
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, solenoid coil MSN1

Technical data – Width 65 mm

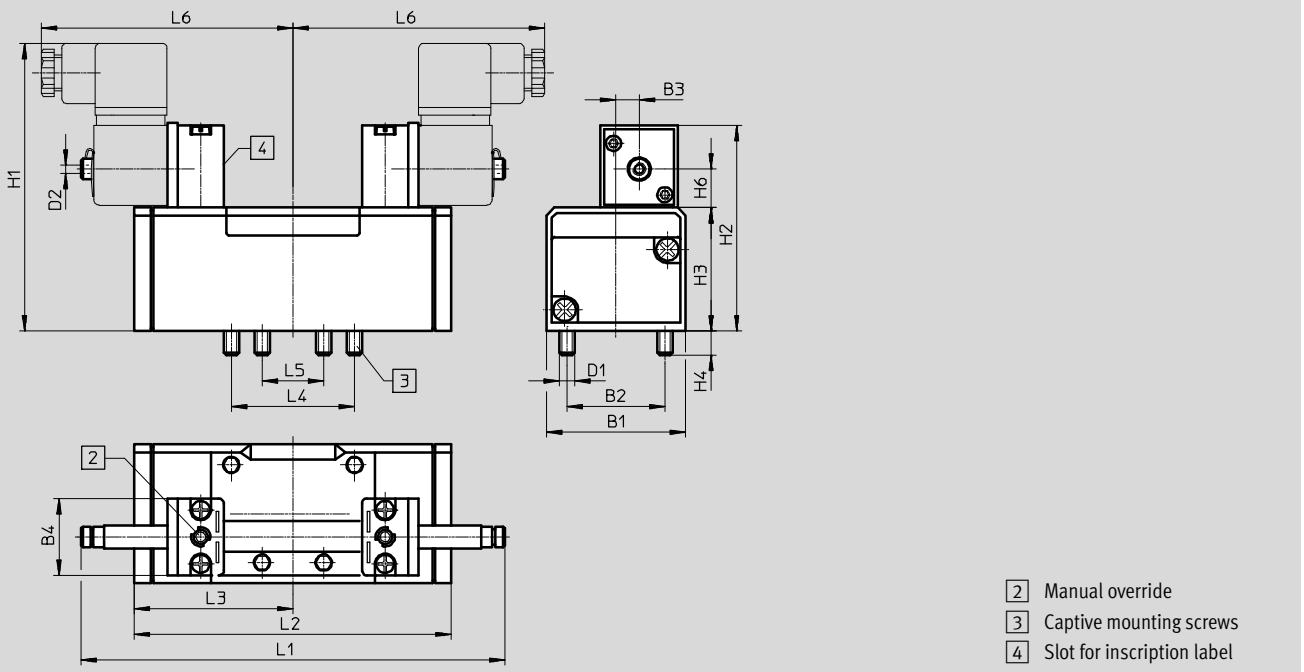
Dimensions Download CAD data ➔ **www.festo.com**

5/2-way single solenoid valves



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

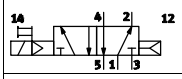
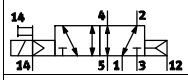
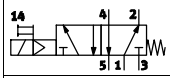
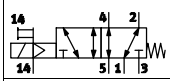
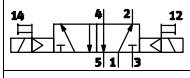
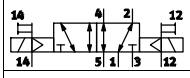
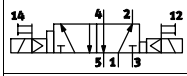
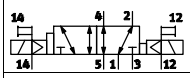
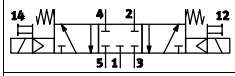
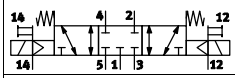
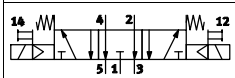
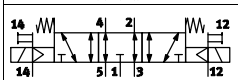
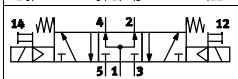
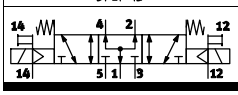
5/2-way double solenoid valves, 5/3-way valves



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			

Standard valves to ISO 5599-1, solenoid coil MSN1

Ordering data – Width 65 mm

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

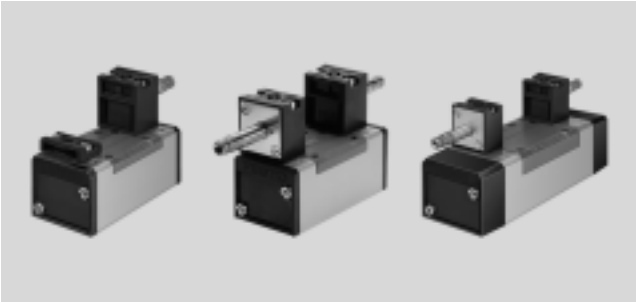
1) Solenoid coils ➔ 121

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 42 mm

FESTO

- Flow rate
  1200 l/min



General technical data			
Design			Piston spool valve
Sealing principle			Soft
Actuation type			Electric
Type of control			Piloted
Direction of flow	With external pilot air supply		Reversible
	With internal pilot air supply		Non-reversible
Exhaust function			With flow control
Manual override			Non-detenting, detenting via accessory
Type of mounting			On sub-base, via through-hole
Mounting position			Any
Nominal size		[mm]	8
No overlap			Yes
Width		[mm]	42
Grid dimension		[mm]	43
Pneumatic ports			Sub-base size 1 to ISO 5599-1
Noise level		[dB (A)]	85
Conforms to standard			ISO 5599-1
Certification			Germanischer Lloyd

Flow rates				
Valve function		5/2-way single solenoid valve	5/2-way double solenoid valve	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 single solenoid valve	MFH-5/2-...	23	35	–	–
	MFH-5/2-D-1-FR-...	16	45	–	–
5/2-way double solenoid valve	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	–	–

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 42 mm

ATEX		
Type		MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX
ATEX category gas		II 2G
Ignition protection type for gas		c T4
ATEX category for dust		II 2D
Ignition protection type for dust		c T105°C
Explosion-proof ambient temperature	[°C]	–5 <= Ta <= +40
CE marking (see declaration of conformity)		As per EU Explosion Protection Directive (ATEX)

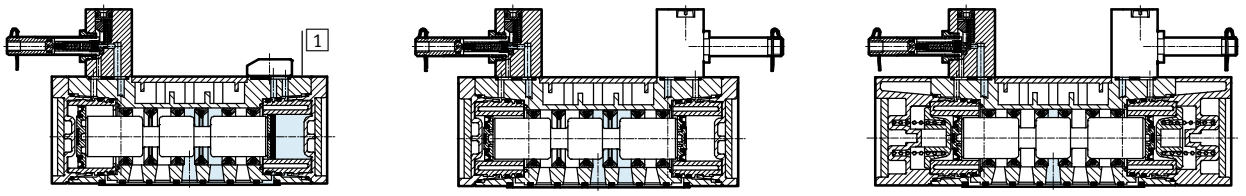
Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10	3 ... 10
	External pilot air supply	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	2 ... 10	3 ... 10
Ambient temperature		[°C]	–5 ... +40	
Temperature of medium		[°C]	–10 ... +60	
		[°C]	–5 ... +40 (MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX)	

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

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

Materials

Sectional view



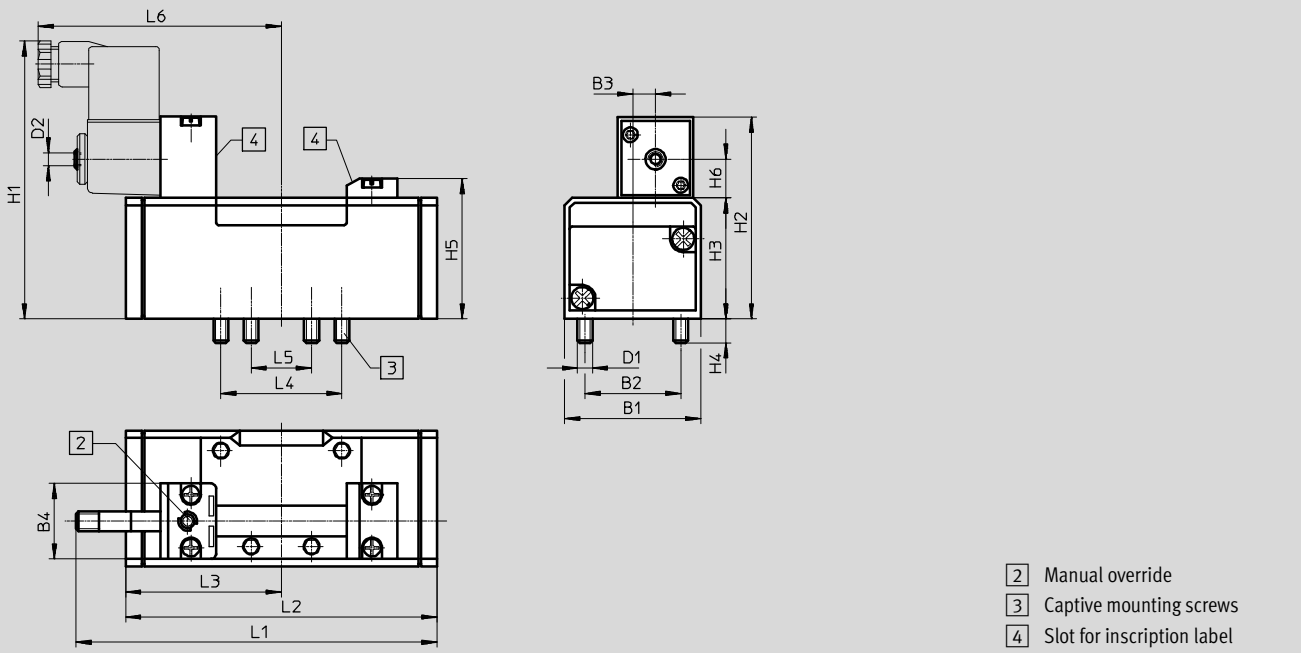
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 42 mm

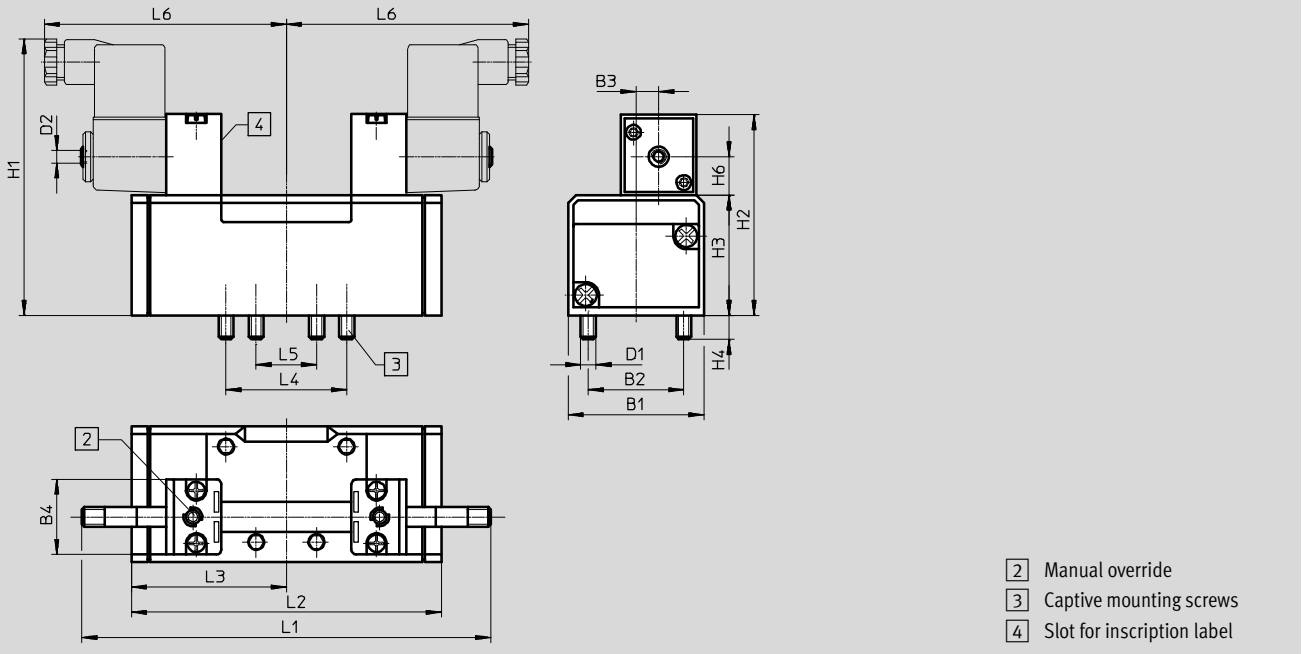
Dimensions Download CAD data ➔ **www.festo.com**

5/2-way single solenoid valves



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

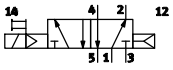
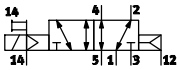
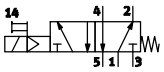
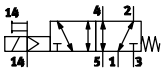
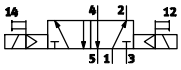
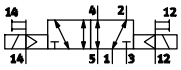
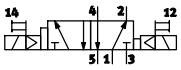
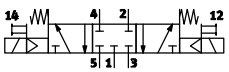
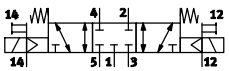
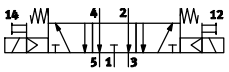
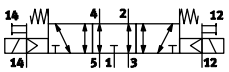
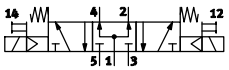
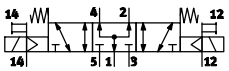
5/2-way double solenoid valves, 5/3-way valves



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			

Standard valves to ISO 5599-1, solenoid coil MSF

Ordering data – Width 42 mm

Ordering data – Valves with armature for solenoid coil MSF[1]						
Circuit symbol	Description	Pilot air supply	Weight [g]		Part No.	Type
5/2-way single solenoid valve						
	Pneumatic spring reset method	Internal	390	–	**150981**	**MFH-5/2-D-1-C**
				ATEX category ➔ 33	**535954**	**MFH-5/2-D-1-C-EX**
	Pneumatic spring reset method	External	390	–	**152562**	**MFH-5/2-D-1-S-C**
				ATEX category ➔ 33	**535957**	**MFH-5/2-D-1-S-C-EX**
	Mechanical spring reset method	Internal	390	–	**151016**	**MFH-5/2-D-1-FR-C**
				ATEX category ➔ 33	**535960**	**MFH-5/2-D-1-FR-C-EX**
	Mechanical spring reset method	External	390	–	**188510**	**MFH-5/2-D-1-FR-S-C**
5/2-way double solenoid valve						
	–	Internal	490	–	**150980**	**JMFH-5/2-D-1-C**
				ATEX category ➔ 33	**535963**	**JMFH-5/2-D-1-C-EX**
	–	External	490	–	**152563**	**JMFH-5/2-D-1-S-C**
				ATEX category ➔ 33	**535966**	**JMFH-5/2-D-1-S-C-EX**
	With dominant signal at 14	Internal	490	–	**151019**	**JMFDH-5/2-D-1-C**
				ATEX category ➔ 33	**536071**	**JMFDH-5/2-D-1-C-EX**
5/3-way valve						
	Normally closed, mechanical spring reset method	Internal	520	–	**150982**	**MFH-5/3G-D-1-C**
				ATEX category ➔ 33	**535969**	**MFH-5/3G-D-1-C-EX**
	Normally closed, mechanical spring reset method	External	520	–	**152564**	**MFH-5/3G-D-1-S-C**
				ATEX category ➔ 33	**535972**	**MFH-5/3G-D-1-S-C-EX**
	Normally exhausted, mechanical spring reset method	Internal	520	–	**150983**	**MFH-5/3E-D-1-C**
				ATEX category ➔ 33	**535975**	**MFH-5/3E-D-1-C-EX**
	Normally exhausted, mechanical spring reset method	External	520	–	**152565**	**MFH-5/3E-D-1-S-C**
				ATEX category ➔ 33	**535978**	**MFH-5/3E-D-1-S-C-EX**
	Normally open, mechanical spring reset method	Internal	520	–	**150984**	**MFH-5/3B-D-1-C**
				ATEX category ➔ 33	**535981**	**MFH-5/3B-D-1-C-EX**
	Normally open, mechanical spring reset method	External	520	–	**152566**	**MFH-5/3B-D-1-S-C**
				ATEX category ➔ 33	**535984**	**MFH-5/3B-D-1-S-C-EX**

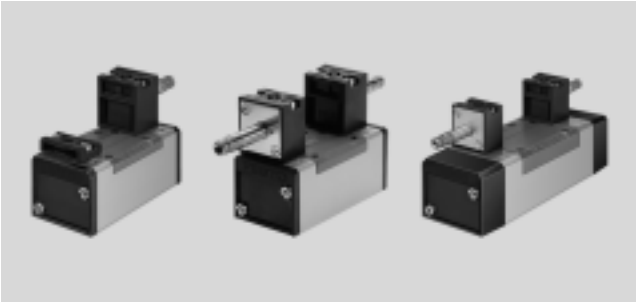
1) Solenoid coils ➔ 121

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 52 mm

FESTO

- Flow rate
  2300 l/min



General technical data			
Design			Piston spool valve
Sealing principle			Soft
Actuation type			Electric
Type of control			Piloted
Direction of flow	With external pilot air supply		Reversible
	With internal pilot air supply		Non-reversible
Exhaust function			With flow control
Manual override			Non-detenting, detenting via accessory
Type of mounting			On sub-base, with through-hole and screw
Mounting position			Any
Nominal size		[mm]	11.5
No overlap			Yes
Width		[mm]	52
Grid dimension		[mm]	56
Pneumatic ports			Sub-base size 2 to ISO 5599-1
Noise level		[dB (A)]	85
Conforms to standard			ISO 5599-1
Certification			Germanischer Lloyd

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

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

ATEX		
Type		MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX
ATEX category gas		II 2G
Ignition protection type for gas		c T4
ATEX category for dust		II 2D
Ignition protection type for dust		c T105°C
Explosion-proof ambient temperature	[°C]	–5 <= Ta <= +40
CE marking (see declaration of conformity)		As per EU Explosion Protection Directive (ATEX)

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 52 mm

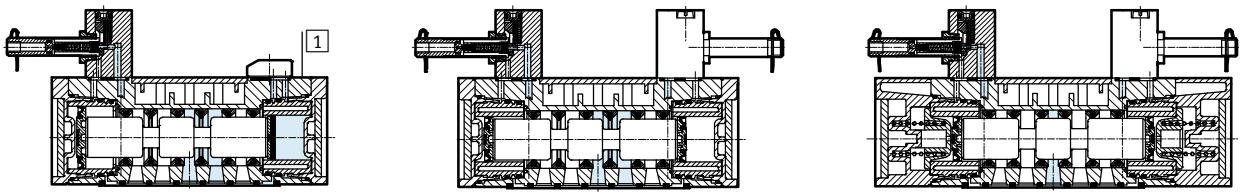
Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10	3 ... 10
Operating pressure	External pilot air supply	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	2 ... 10	3 ... 10
Ambient temperature		[°C]	–5 ... +40	
Temperature of medium		[°C]	–10 ... +60	

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

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

Materials

Sectional view



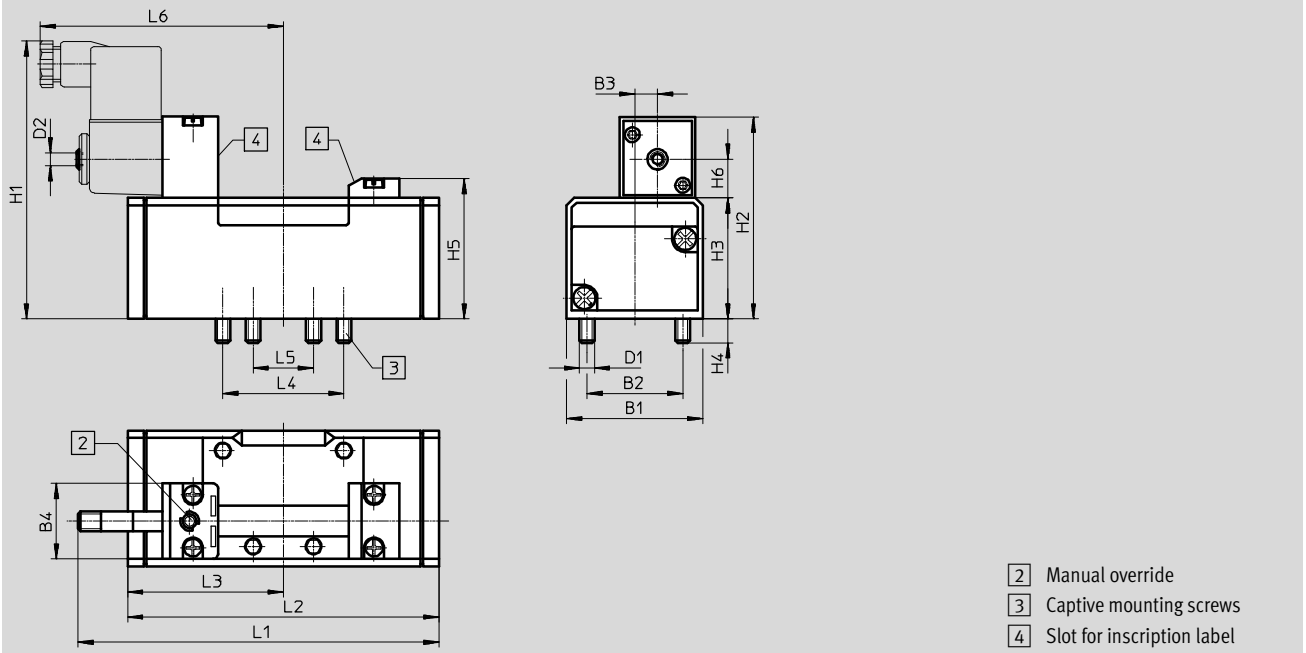
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 52 mm

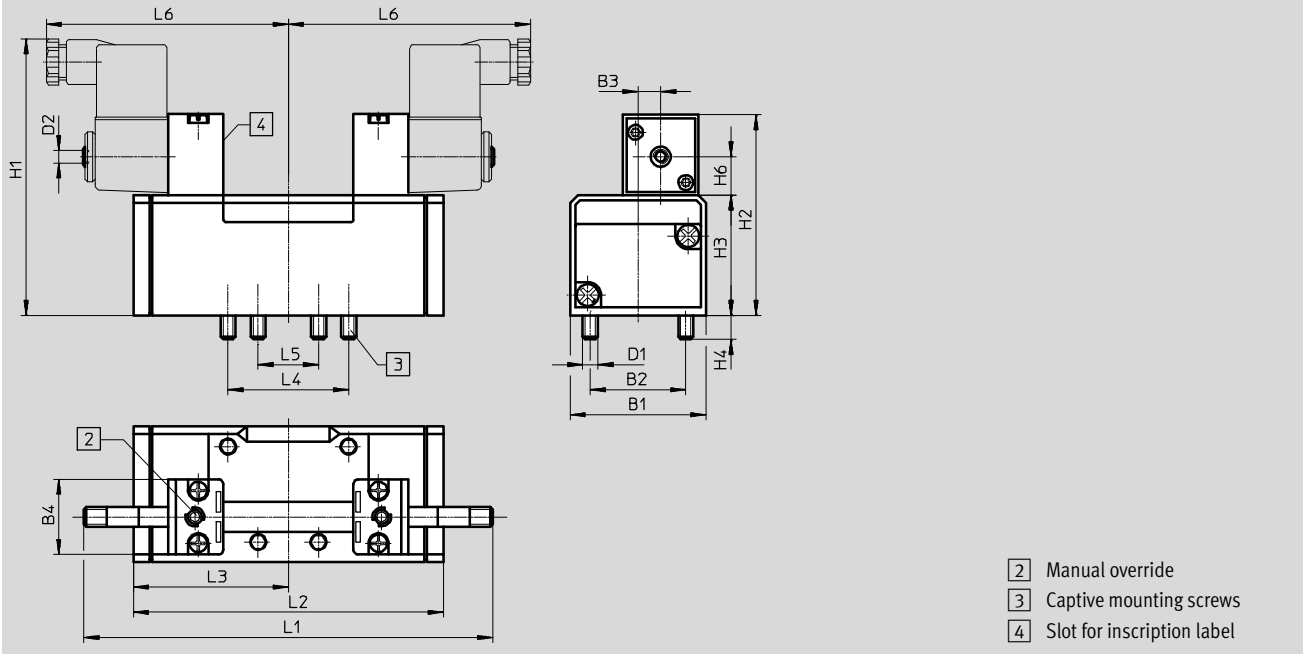
Dimensions Download CAD data ➔ **www.festo.com**

5/2-way single solenoid valves



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

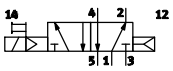
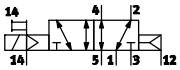
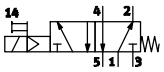
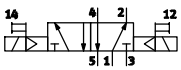
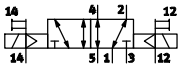
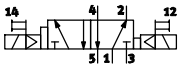
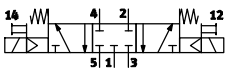
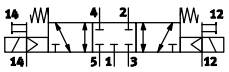
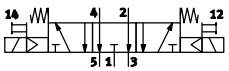
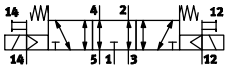
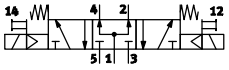
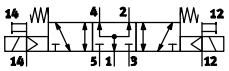
5/2-way double solenoid valves, 5/3-way valves



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

Standard valves to ISO 5599-1, solenoid coil MSF

Ordering data – Width 52 mm

Ordering data – Valves with armature for solenoid coil MSF[1]						
Circuit symbol	Description	Pilot air supply	Weight [g]		Part No.	Type
5/2-way single solenoid valve						
	Pneumatic spring reset method	Internal	650	–	**151851**	**MFH-5/2-D-2-C**
				ATEX category ➔ 36	**535955**	**MFH-5/2-D-2-C-EX**
	Pneumatic spring reset method	External	650	–	**151022**	**MFH-5/2-D-2-S-C**
				ATEX category ➔ 36	**535958**	**MFH-5/2-D-2-S-C-EX**
	Mechanical spring reset method	Internal	650	–	**151709**	**MFH-5/2-D-2-FR-C**
				ATEX category ➔ 36	**535961**	**MFH-5/2-D-2-FR-C-EX**
5/2-way double solenoid valve						
	–	Internal	820	–	**151852**	**JMFH-5/2-D-2-C**
				ATEX category ➔ 36	**535964**	**JMFH-5/2-D-2-C-EX**
	–	External	820	–	**151023**	**JMFH-5/2-D-2-S-C**
				ATEX category ➔ 36	**535967**	**JMFH-5/2-D-2-S-C-EX**
	With dominant signal at 14	Internal	820	–	**151853**	**JMFDH-5/2-D-2-C**
				ATEX category ➔ 36	**536072**	**JMFDH-5/2-D-2-C-EX**
5/3-way valve						
	Normally closed, mechanical spring reset method	Internal	820	–	**151854**	**MFH-5/3G-D-2-C**
				ATEX category ➔ 36	**535970**	**MFH-5/3G-D-2-C-EX**
	Normally closed, mechanical spring reset method	External	820	–	**151024**	**MFH-5/3G-D-2-S-C**
				ATEX category ➔ 36	**535973**	**MFH-5/3G-D-2-S-C-EX**
	Normally exhausted, mechanical spring reset method	Internal	820	–	**151855**	**MFH-5/3E-D-2-C**
				ATEX category ➔ 36	**535976**	**MFH-5/3E-D-2-C-EX**
	Normally exhausted, mechanical spring reset method	External	820	–	**151025**	**MFH-5/3E-D-2-S-C**
				ATEX category ➔ 36	**535979**	**MFH-5/3E-D-2-S-C-EX**
	Normally open, mechanical spring reset method	Internal	820	–	**151856**	**MFH-5/3B-D-2-C**
				ATEX category ➔ 36	**535982**	**MFH-5/3B-D-2-C-EX**
	Normally open, mechanical spring reset method	External	820	–	**151026**	**MFH-5/3B-D-2-S-C**
				ATEX category ➔ 36	**535985**	**MFH-5/3B-D-2-S-C-EX**

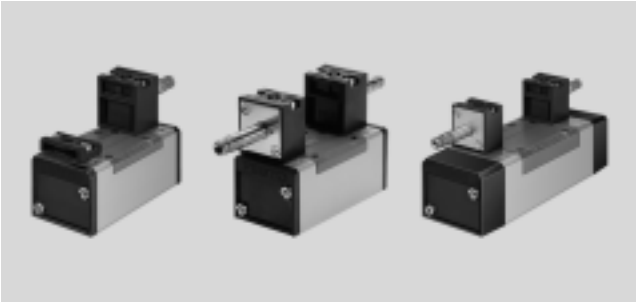
1) Solenoid coils ➔ 121

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 65 mm

FESTO

- Flow rate
  Up to 4600 l/min



General technical data			
Design			Piston spool valve
Sealing principle			Soft
Actuation type			Electric
Type of control			Piloted
Direction of flow	With external pilot air supply		Reversible
	With internal pilot air supply		Non-reversible
Exhaust function			With flow control
Manual override			Non-detenting, detenting via accessory
Type of mounting			On sub-base, with through-hole and screw
Mounting position			Any
Nominal size		[mm]	14.5
No overlap			Yes
Width		[mm]	65
Grid dimension		[mm]	71
Pneumatic ports			Sub-base size 3 to ISO 5599-1
Noise level		[dB (A)]	85
Conforms to standard			ISO 5599-1
Certification			Germanischer Lloyd

Flow rates					
Valve function			5/2-way valve	5/3-way valve	
				Normally closed	Normally exhausted	Normally open
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 single solenoid valve	MFH-5/2-...	60	66	–	–
	MFH-5/2-D-1-FR-...	28	79	–	–
5/2-way double solenoid valve	JMFH-...	–	–	18	–
	JMFDH-...	–	–	18	18
5/3-way valve	MFH-5/3G-...	36	77	–	–
	MFH-5/3E-...	37	78	–	–
	MFH-5/3B-...	36	75	–	–

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 65 mm

ATEX		
Type		MFH- ... -EX, JMFH- ... -EX, JMFDH- ... -EX
ATEX category gas		II 2G
Ignition protection type for gas		c T4
ATEX category for dust		II 2D
Ignition protection type for dust		c T105°C
Explosion-proof ambient temperature	[°C]	–5 <= Ta <= +40
CE marking (see declaration of conformity)		As per EU Explosion Protection Directive (ATEX)

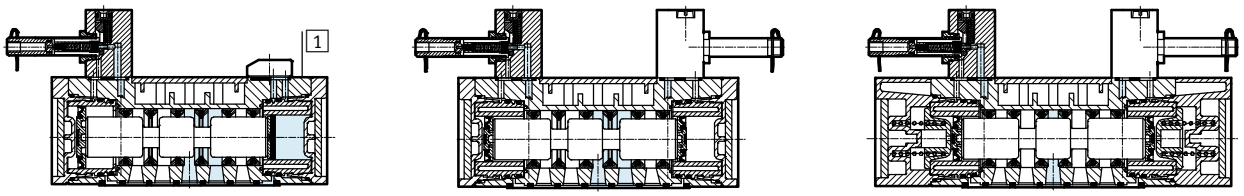
Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure	Internal pilot air supply	[bar]	2 ... 10	3 ... 10
	External pilot air supply	[bar]	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	2 ... 10	3 ... 10
Ambient temperature		[°C]	–5 ... +40	
Temperature of medium		[°C]	–10 ... +60	

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

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

Materials

Sectional view



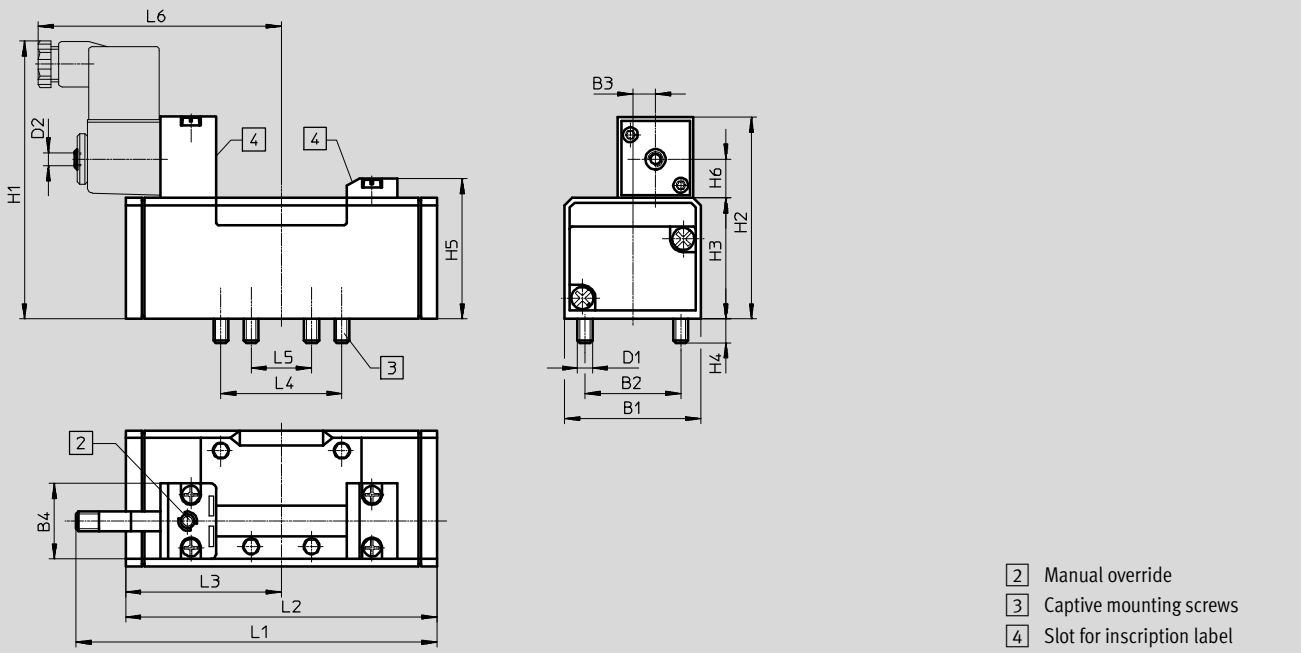
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, solenoid coil MSF

Technical data – Width 65 mm

Dimensions Download CAD data ➔ **www.festo.com**

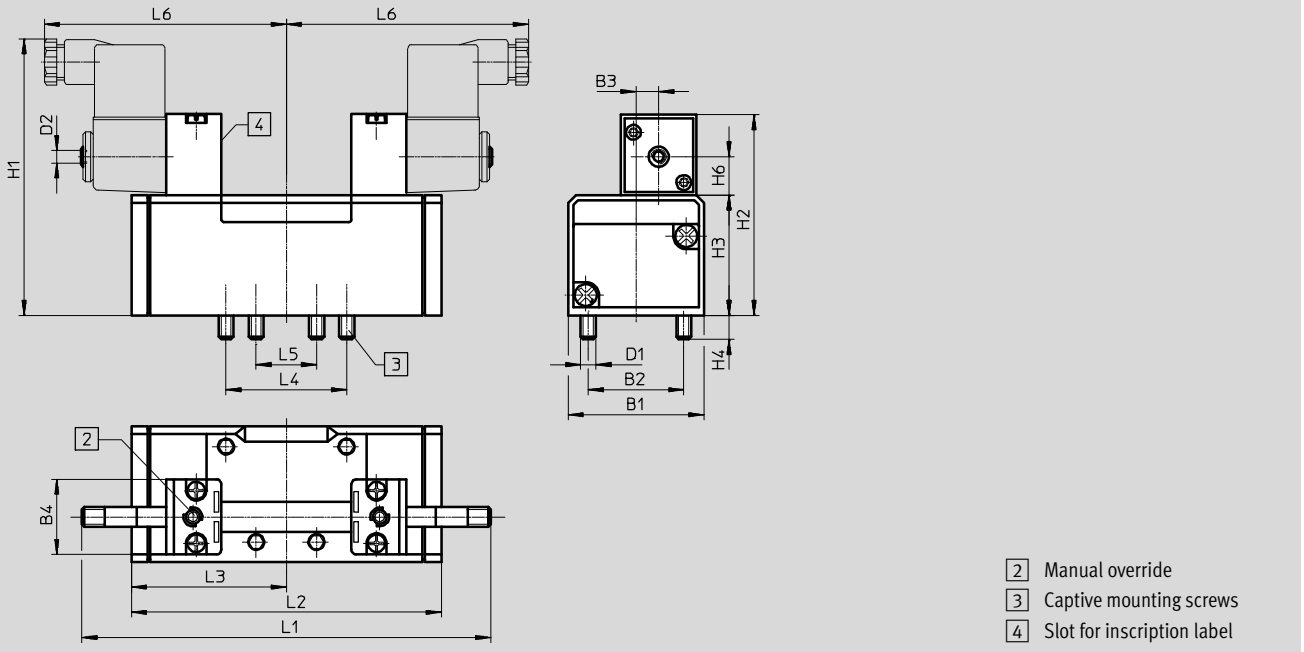
5/2-way single solenoid valves



2 Manual override
3 Captive mounting screws
4 Slot for inscription label

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

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

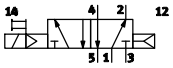
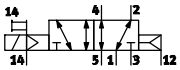
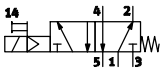
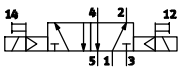
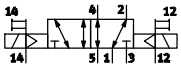
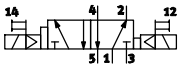
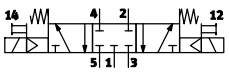
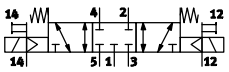
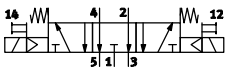
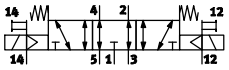
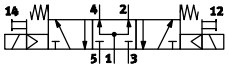
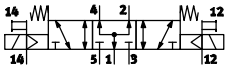


2 Manual override
3 Captive mounting screws
4 Slot for inscription label

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

Standard valves to ISO 5599-1, solenoid coil MSF

Ordering data – Width 65 mm

Ordering data – Valves with armature for solenoid coil MSF[1]						
Circuit symbol	Description	Pilot air supply	Weight [g]		Part No.	Type
5/2-way single solenoid valve						
	Pneumatic spring reset method	Internal	960	–	**151870**	**MFH-5/2-D-3-C**
				ATEX category ➔ 41	**535956**	**MFH-5/2-D-3-C-EX**
	Pneumatic spring reset method	External	960	–	**151032**	**MFH-5/2-D-3-S-C**
				ATEX category ➔ 41	**535959**	**MFH-5/2-D-3-S-C-EX**
	Mechanical spring reset method	Internal	960	–	**151711**	**MFH-5/2-D-3-FR-C**
				ATEX category ➔ 41	**535962**	**MFH-5/2-D-3-FR-C-EX**
5/2-way double solenoid valve						
	–	Internal	1060	–	**151871**	**JMFH-5/2-D-3-C**
				ATEX category ➔ 41	**535965**	**JMFH-5/2-D-3-C-EX**
	–	External	1060	–	**151033**	**JMFH-5/2-D-3-S-C**
				ATEX category ➔ 41	**535968**	**JMFH-5/2-D-3-S-C-EX**
	With dominant signal at 14	Internal	1060	–	**151872**	**JMFDH-5/2-D-3-C**
				ATEX category ➔ 41	**536073**	**JMFDH-5/2-D-3-C-EX**
5/3-way valve						
	Normally closed, mechanical spring reset method	Internal	1040	–	**151873**	**MFH-5/3G-D-3-C**
				ATEX category ➔ 41	**535971**	**MFH-5/3G-D-3-C-EX**
	Normally closed, mechanical spring reset method	External	1040	–	**151034**	**MFH-5/3G-D-3-S-C**
				ATEX category ➔ 41	**535974**	**MFH-5/3G-D-3-S-C-EX**
	Normally exhausted, mechanical spring reset method	Internal	1040	–	**151874**	**MFH-5/3E-D-3-C**
				ATEX category ➔ 41	**535977**	**MFH-5/3E-D-3-C-EX**
	Normally exhausted, mechanical spring reset method	External	1040	–	**151035**	**MFH-5/3E-D-3-S-C**
				ATEX category ➔ 41	**535980**	**MFH-5/3E-D-3-S-C-EX**
	Normally open, mechanical spring reset method	Internal	1040	–	**151875**	**MFH-5/3B-D-3-C**
				ATEX category ➔ 41	**535983**	**MFH-5/3B-D-3-C-EX**
	Normally open, mechanical spring reset method	External	1040	–	**151036**	**MFH-5/3B-D-3-S-C**
				ATEX category ➔ 41	**535986**	**MFH-5/3B-D-3-S-C-EX**

1) Solenoid coils ➔ 121

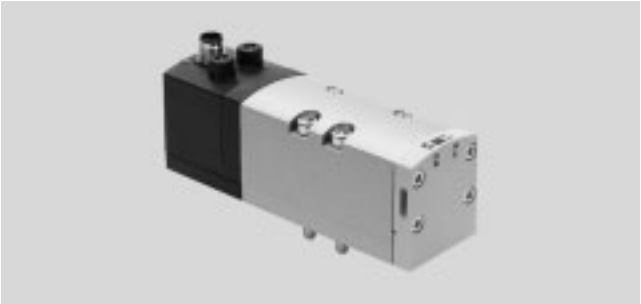
Standard valves to ISO 5599-1, central plug M12, 3-pin

Technical data – Width 42 mm

FESTO

- Flow rate
  Up to 1300 l/min

- Voltage
  24 V DC



General technical data		
Design		Piston spool valve
Sealing principle		Soft
Actuation type		Electric
Type of control		Piloted
Exhaust function		Flow control, external or via vertically stacked flow control plate
Manual override		Non-detenting, detenting
Type of mounting		On sub-base
Mounting position		Any
Nominal size	[mm]	11
No overlap		Yes
Width	[mm]	42
Grid dimension	[mm]	43
Pneumatic ports		Sub-base size 1 to ISO 5599-1
Conforms to standard		ISO 5599-1
Certification		c CSA us (OL)
		c UL us - Recognised (OL)

Flow rates					
Valve function		2/2-way valve	3/2-way valve	5/2-way valve	5/3-way valve
Standard nominal flow rate	[l/min]	1300	1100	1300	1300
Valve		1600	1600	2000	1900
Valve on individual sub-base		1400	1200	1400	1400
Valve pneumatically interlinked		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 single solenoid valve	VSVA-B-M52-A...	27	45	–	–
	VSVA-B-M52-M...	22	60	–	–
5/2-way double solenoid valve	VSVA-B-B52...	–	–	16	–
	VSVA-B-D52...	–	–	–	19
5/3-way valve	VSVA-B-P53...	22	65	–	–

Standard valves to ISO 5599-1, central plug M12, 3-pin

Technical data – 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 to ISO 8573-1:2010 [7:4:4]				
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium			Lubricated operation (in which case lubricated operation will always be required)				
Operating pressure	Internal pilot air supply	[bar]	3 ... 10	3 ... 10	–	3 ... 10	3 ... 10
	External pilot air supply	[bar]	3 ... 10	3 ... 10	–0.9 ... +10	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	3 ... 10				
Ambient temperature		[°C]	–5 ... +50				
Relative humidity		[%]	0 ... 90				

Safety characteristics					
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 resistance		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 display			LED			
Characteristic coil data	Voltage	[V DC]	24			
	Power	[W]	1.3	1.3	1.6	1.6
Permissible voltage fluctuations		[%]	±10			
Duty cycle		[%]	100			
Degree of protection to EN 60529			IP65, NEMA4 (in combination with a plug socket)			

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

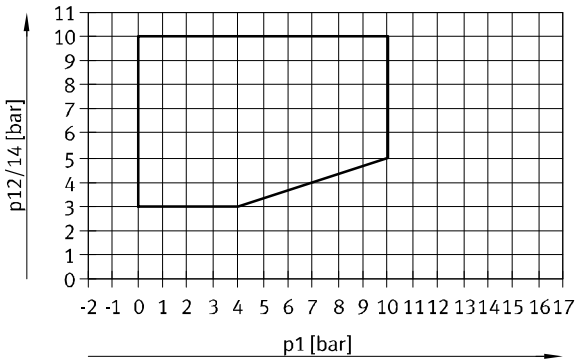
Product weight		
2x 2/2-way valve	[g]	442
2x 3/2-way valve	[g]	442
5/2-way single solenoid valve	[g]	426
5/2-way double solenoid valve	[g]	439
5/3-way valve	[g]	456

Standard valves to ISO 5599-1, central plug M12, 3-pin

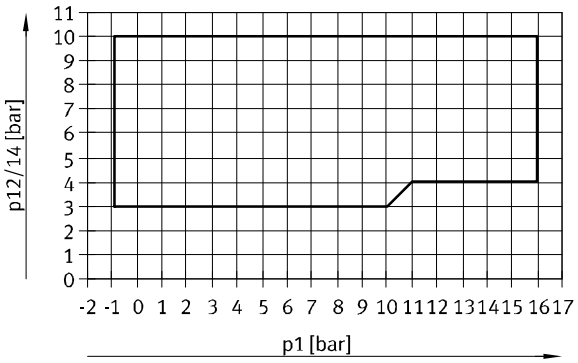
Technical data – Width 42 mm

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

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



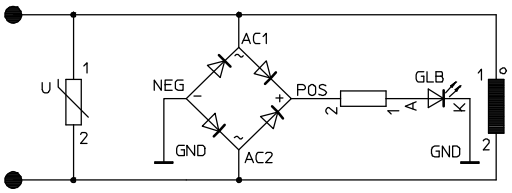
5/2-way valve and 5/3-way valve, external pilot air supply



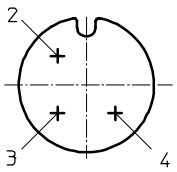
Protective circuit

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

24 V DC version



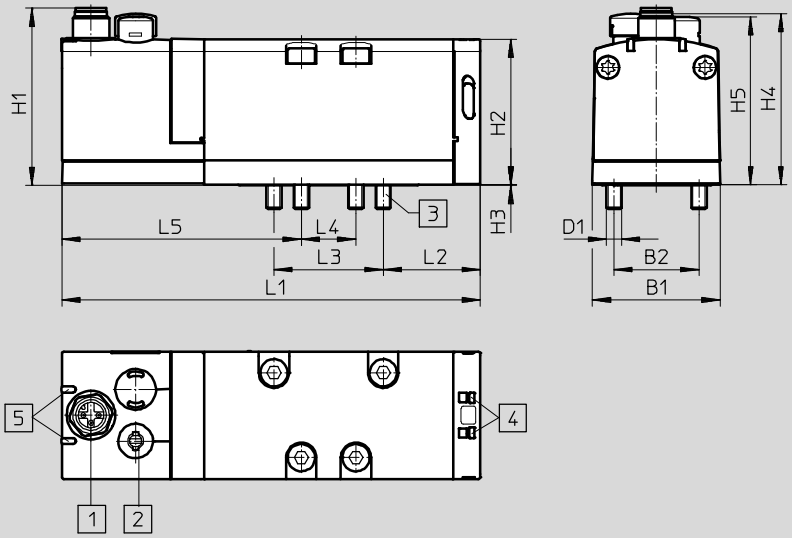
M12x1 – Pin allocation on the valve



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

Dimensions

Download CAD data ➔ **www.festo.com**



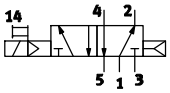
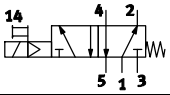
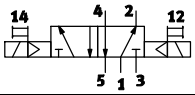
1 Plug, 3-pin
2 Manual override
3 Captive screws M5 x48
4 Slot for inscription label
5 LED

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

Standard valves to ISO 5599-1, central plug M12, 3-pin

Ordering data – Width 42 mm

★ Core product range

Ordering data					
Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
5/2-way single solenoid valve					
	Pneumatic spring reset method	Non-reversible	Internal	★ 561362	VSVA-B-M52-AD-D1-1R5L
	Mechanical spring reset method	Non-reversible	Internal	★ 561363	VSVA-B-M52-MD-D1-1R5L
5/2-way double solenoid valve					
	Dominance at 1st signal	Non-reversible	Internal	★ 561364	VSVA-B-B52-D-D1-1R5L

Festo core product range

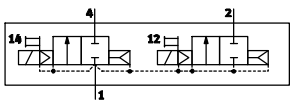
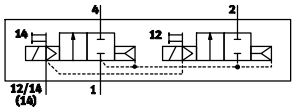
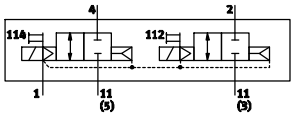
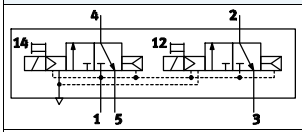
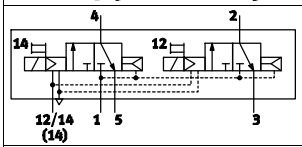
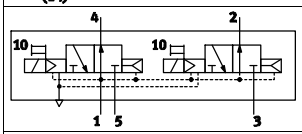
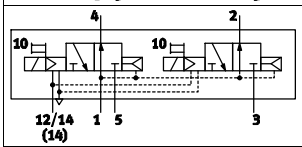
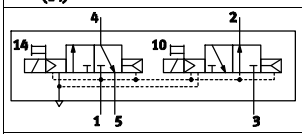
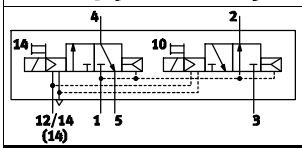
★ Ready for dispatch from the Festo factory in 24 hours

☆ Ready for dispatch in 5 days maximum from stock

Standard valves to ISO 5599-1, central plug M12, 3-pin

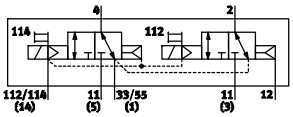
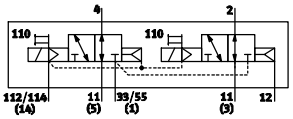
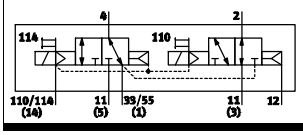
Ordering data – Width 42 mm

Ordering data

Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
2x 2/2-way valve					
	2x normally closed, pneumatic spring reset method	Non-reversible	Internal	Order via online configurator ➔ Internet: vsva	
	2x normally closed, pneumatic spring reset method	Non-reversible	External		
	2x normally closed, vacuum operation possible at 3 and 5, pneumatic spring reset method	Reversible	Internal		
2x 3/2-way valve					
	2x normally closed, pneumatic spring reset method	Non-reversible	Internal	**561359**	**VSVA-B-T32C-AD-D1-1R5L**
	2x normally closed, pneumatic spring reset method	Non-reversible	External	**561369**	**VSVA-B-T32C-AZD-D1-1R5L**
	2x normally open, pneumatic spring reset method	Non-reversible	Internal	**561360**	**VSVA-B-T32U-AD-D1-1R5L**
	2x normally open, pneumatic spring reset method	Non-reversible	External	**561370**	**VSVA-B-T32U-AZD-D1-1R5L**
	1x normally closed, 1x normally open, pneumatic spring reset method	Non-reversible	Internal	**561361**	**VSVA-B-T32H-AD-D1-1R5L**
	1x normally closed, 1x normally open, pneumatic spring reset method	Non-reversible	External	**561371**	**VSVA-B-T32H-AZD-D1-1R5L**

Standard valves to ISO 5599-1, central plug M12, 3-pin

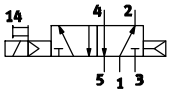
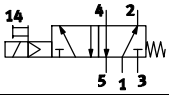
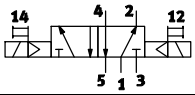
Ordering data – Width 42 mm

Ordering data				
Circuit symbol	Description	Direction of flow	Pilot air supply	Part No. Type
2x 3/2-way valve, reversible				
	2x normally closed, pneumatic spring reset method	Reversible	External	Order via online configurator ➔ Internet: vsva
	2x normally open, pneumatic spring reset method	Reversible	External	
	1x normally closed, 1x normally open, pneumatic spring reset method	Reversible	External	

Standard valves to ISO 5599-1, central plug M12, 3-pin

Ordering data – Width 42 mm

★ Core product range

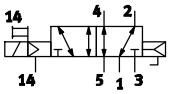
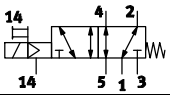
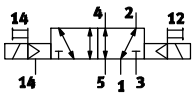
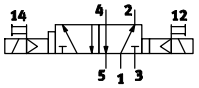
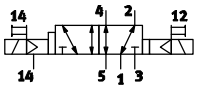
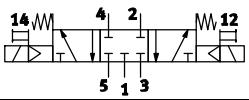
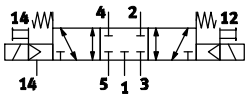
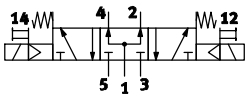
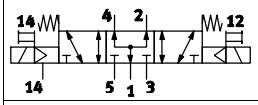
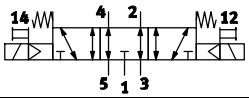
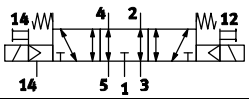
Ordering data					
Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
5/2-way single solenoid valve					
	Pneumatic spring reset method	Non-reversible	Internal	★ 561362	VSVA-B-M52-AD-D1-1R5L
	Mechanical spring reset method	Non-reversible	Internal	★ 561363	VSVA-B-M52-MD-D1-1R5L
5/2-way double solenoid valve					
	Dominance at 1st signal	Non-reversible	Internal	★ 561364	VSVA-B-B52-D-D1-1R5L

Festo core product range

★ Ready for dispatch from the Festo factory in 24 hours
☆ Ready for dispatch in 5 days maximum from stock

Standard valves to ISO 5599-1, central plug M12, 3-pin

Ordering data – Width 42 mm

Ordering data					
Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
5/2-way single solenoid valve					
	Pneumatic spring reset method	Reversible	External	**561372**	**VSVA-B-M52-AZD-D1-1R5L**
	Mechanical spring reset method	Reversible	External	**561373**	**VSVA-B-M52-MZD-D1-1R5L**
5/2-way double solenoid valve					
	Dominance at 1st signal	Reversible	External	**561374**	**VSVA-B-B52-ZD-D1-1R5L**
	Dominant signal at 14	Non-reversible	Internal	**561365**	**VSVA-B-D52-D-D1-1R5L**
	Dominant signal at 14	Reversible	External	**561375**	**VSVA-B-D52-ZD-D1-1R5L**
5/3-way valve					
	Normally closed, mechanical spring reset method	Non-reversible	Internal	**561366**	**VSVA-B-P53C-D-D1-1R5L**
	Normally closed, mechanical spring reset method	Reversible	External	**561376**	**VSVA-B-P53C-ZD-D1-1R5L**
	Normally open, mechanical spring reset method	Non-reversible	Internal	**561368**	**VSVA-B-P53U-D-D1-1R5L**
	Normally open, mechanical spring reset method	Reversible	External	**561378**	**VSVA-B-P53U-ZD-D1-1R5L**
	Normally exhausted, mechanical spring reset method	Non-reversible	Internal	**561367**	**VSVA-B-P53E-D-D1-1R5L**
	Normally exhausted, mechanical spring reset method	Reversible	External	**561377**	**VSVA-B-P53E-ZD-D1-1R5L**

Standard valves to ISO 5599-1, central plug M12, 3-pin

Technical data – Width 52 mm

- Flow rate
  Up to 2800 l/min

- Voltage
  24 V DC

General technical data		
Design		Piston spool valve
Sealing principle		Soft
Actuation type		Electric
Type of control		Piloted
Exhaust-air function		Flow control, external or via vertically stacked flow control plate
Manual override		Non-detenting, detenting
Type of mounting		On sub-base
Mounting position		Any
Nominal size	[mm]	15
No overlap		Yes
Width	[mm]	52
Grid dimension	[mm]	59
Pneumatic ports		Sub-base size 2 to ISO 5599-1
Conforms to standard		ISO 5599-1
Certification		c CSA us (OL)
		c UL us - Recognised (OL)
		C-Tick

Flow rates					
Valve function		2/2-way valve	3/2-way valve	5/2-way valve	5/3-way valve
Standard nominal flow rate	[l/min]	2800	2200	2800	2700
Valve		4000	3000	4000	3600
Valve on individual sub-base		2400	2000	2400	2300
Valve pneumatically interlinked		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 single solenoid valve	VSVA-B-M52-A...	40	45	–	–
	VSVA-B-M52-M...	20	60	–	–
5/2-way double solenoid valve	VSVA-B-B52...	–	–	18	–
	VSVA-B-D52...	–	–	–	18
5/3-way valve	VSVA-B-P53...	23	60	–	–

Standard valves to ISO 5599-1, central plug M12, 3-pin

Technical data – 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 to ISO 8573-1:2010 [7:4:4]				
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]				
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure	Internal pilot air supply	[bar]	3 ... 10	3 ... 10	–	3 ... 10	3 ... 10
	External pilot air supply	[bar]	3 ... 10	3 ... 10	–0.9 ... +10	–0.9 ... +16	–0.9 ... +16
Pilot pressure		[bar]	3 ... 10				
Ambient temperature		[°C]	–5 ... +50				
Relative humidity		[%]	0 ... 90				

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

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

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

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

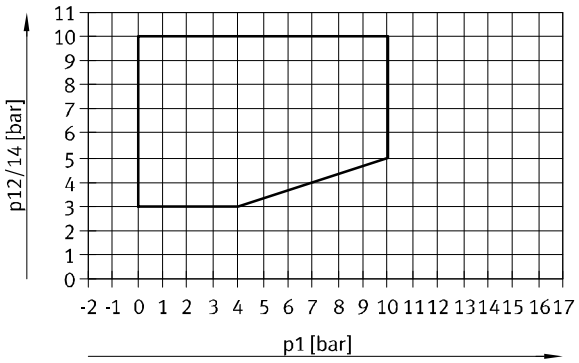
Product weight		
2x 2/2-way valve	[g]	740
2x 3/2-way valve	[g]	740
5/2-way single solenoid valve	[g]	702
5/2-way double solenoid valve	[g]	732
5/3-way valve	[g]	780

Standard valves to ISO 5599-1, central plug M12, 3-pin

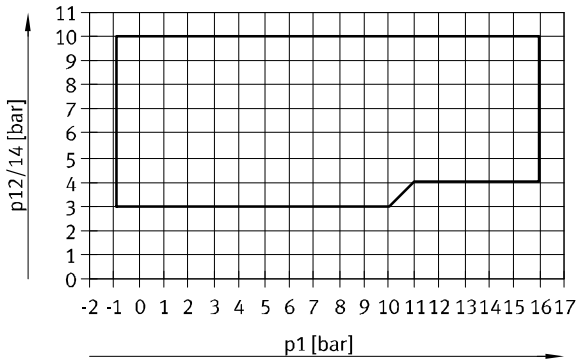
Technical data – Width 52 mm

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

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



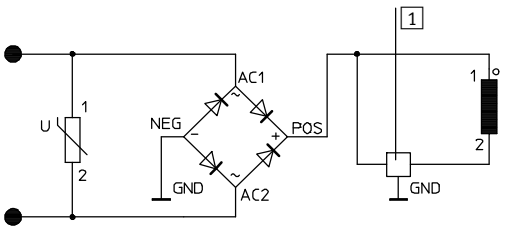
5/2-way valve and 5/3-way valve, external pilot air supply



Protective circuit

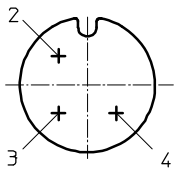
Each VSVA solenoid coil is provided with a spark arresting protective circuit and protected against polarity reversal.

24 V DC version



1 Reduction of holding current

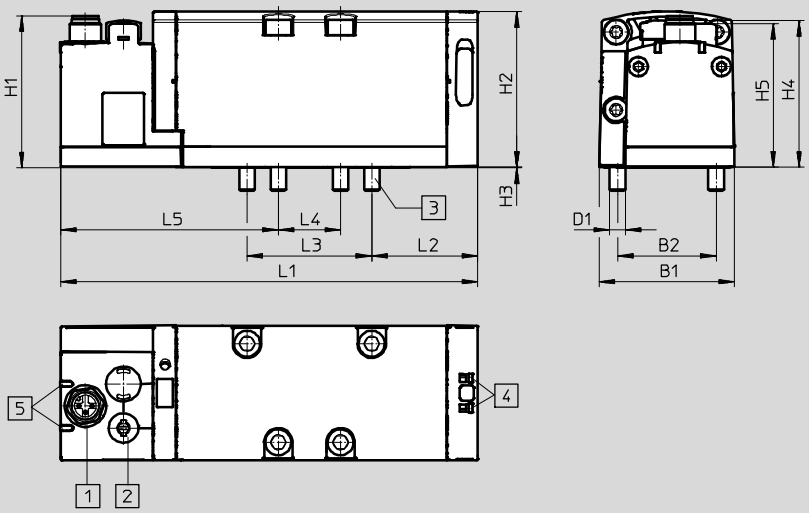
M12x1 – Pin allocation on the valve



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

Dimensions

Download CAD data ➔ **www.festo.com**



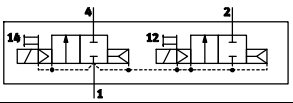
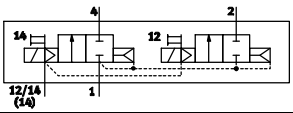
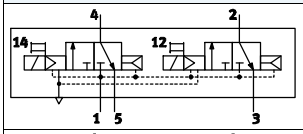
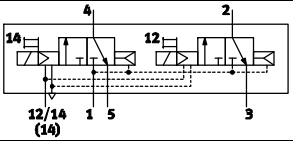
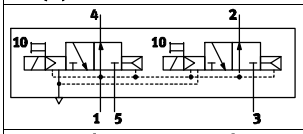
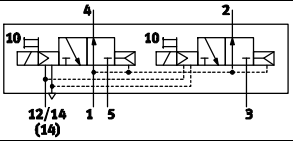
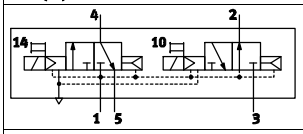
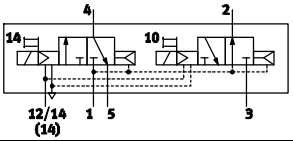
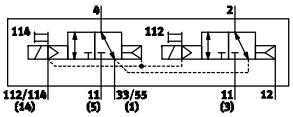
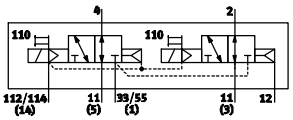
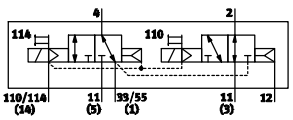
1 Plug, 3-pin
2 Manual override
3 Captive screws M6 x60
4 Slot for inscription label
5 LED

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

Standard valves to ISO 5599-1, central plug M12, 3-pin

Ordering data – Width 52 mm

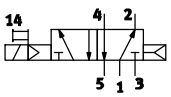
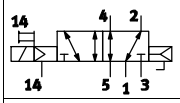
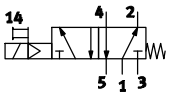
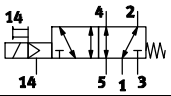
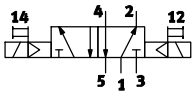
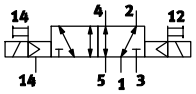
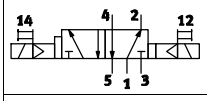
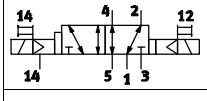
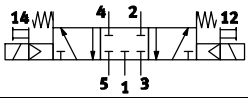
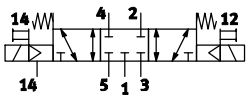
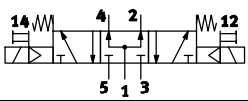
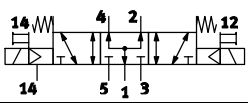
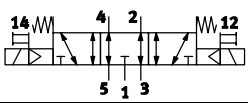
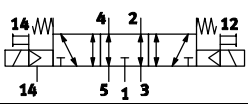
Ordering data

Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
2x 2/2-way valve					
	2x normally closed, pneumatic spring reset method	Non-reversible	Internal	Order via online configurator ➔ Internet: vsva	
	2x normally closed, pneumatic spring reset method	Non-reversible	External		
2x 3/2-way valve					
	2x normally closed, pneumatic spring reset method	Non-reversible	Internal	**566990**	**VSVA-B-T32C-AD-D2-1R5L**
	2x normally closed, pneumatic spring reset method	Non-reversible	External	**567000**	**VSVA-B-T32C-AZD-D2-1R5L**
	2x normally open, pneumatic spring reset method	Non-reversible	Internal	**566991**	**VSVA-B-T32U-AD-D2-1R5L**
	2x normally open, pneumatic spring reset method	Non-reversible	External	**567001**	**VSVA-B-T32U-AZD-D2-1R5L**
	1x normally closed, 1x normally open, pneumatic spring reset method	Non-reversible	Internal	**566992**	**VSVA-B-T32H-AD-D2-1R5L**
	1x normally closed, 1x normally open, pneumatic spring reset method	Non-reversible	External	**567002**	**VSVA-B-T32H-AZD-D2-1R5L**
2x 3/2-way valve, reversible					
	2x normally closed, pneumatic spring reset method	Reversible	External	Order via online configurator ➔ Internet: vsva	
	2x normally open, pneumatic spring reset method	Reversible	External		
	1x normally closed, 1x normally open, pneumatic spring reset method	Reversible	External		

Standard valves to ISO 5599-1, central plug M12, 3-pin

Ordering data – Width 52 mm

Ordering data

Circuit symbol	Description	Direction of flow	Pilot air supply	Part No.	Type
5/2-way single solenoid valve					
	Pneumatic spring reset method	Non-reversible	Internal	**566993**	**VSVA-B-M52-AD-D2-1R5L**
	Pneumatic spring reset method	Reversible	External	**567003**	**VSVA-B-M52-AZD-D2-1R5L**
	Mechanical spring reset method	Non-reversible	Internal	**566994**	**VSVA-B-M52-MD-D2-1R5L**
	Mechanical spring reset method	Reversible	External	**567004**	**VSVA-B-M52-MZD-D2-1R5L**
5/2-way double solenoid valve					
	Dominance at 1st signal	Non-reversible	Internal	**566995**	**VSVA-B-B52-D-D2-1R5L**
	Dominance at 1st signal	Reversible	External	**567005**	**VSVA-B-B52-ZD-D2-1R5L**
	Dominant signal at 14	Non-reversible	Internal	**566996**	**VSVA-B-D52-D-D2-1R5L**
	Dominant signal at 14	Reversible	External	**567006**	**VSVA-B-D52-ZD-D2-1R5L**
5/3-way valve					
	Normally closed, mechanical spring reset method	Non-reversible	Internal	**566997**	**VSVA-B-P53C-D-D2-1R5L**
	Normally closed, mechanical spring reset method	Reversible	External	**567007**	**VSVA-B-P53C-ZD-D2-1R5L**
	Normally open, mechanical spring reset method	Non-reversible	Internal	**566999**	**VSVA-B-P53U-D-D2-1R5L**
	Normally open, mechanical spring reset method	Reversible	External	**567009**	**VSVA-B-P53U-ZD-D2-1R5L**
	Normally exhausted, mechanical spring reset method	Non-reversible	Internal	**566998**	**VSVA-B-P53E-D-D2-1R5L**
	Normally exhausted, mechanical spring reset method	Reversible	External	**567008**	**VSVA-B-P53E-ZD-D2-1R5L**

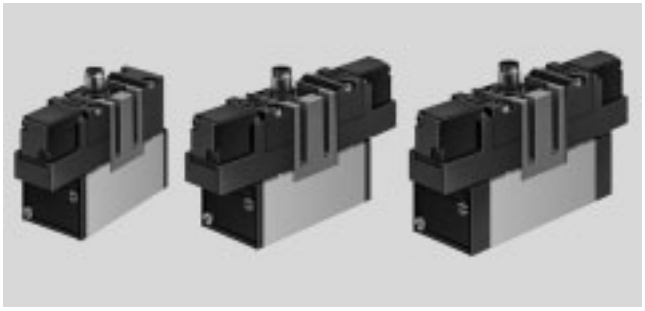
Standard valves to ISO 5599-1, central plug M12, 4-pin

Technical data – Width 65 mm

FESTO

- Flow rate
  Up to 4600 l/min

- Voltage
  24 V DC



General technical data		
Design		Piston spool valve
Sealing principle		Soft
Actuation type		Electric
Type of control		Piloted
Direction of flow		Non-reversible
Exhaust function		With flow control
Manual override		Non-detenting
Type of mounting		Via through-hole
Mounting position		Any
Nominal size	[mm]	14.5
Width	[mm]	65
Grid dimension	[mm]	71
Pneumatic ports		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 single solenoid valve	MEBH-5/2-...	59	87	–	–
	MEBH-5/2-D-1-ZSR-FR-...	28	109	–	–
5/2-way double solenoid valve	JMEBH-...	–	–	16	–
	JMEBDH-...	–	–	–	20
5/3-way valve	MEBH-5/3G-...	38	130	–	–
	MEBH-5/3E-...	38	130	–	–
	MEBH-5/3B-...	38	130	–	–

Standard valves to ISO 5599-1, central plug M12, 4-pin

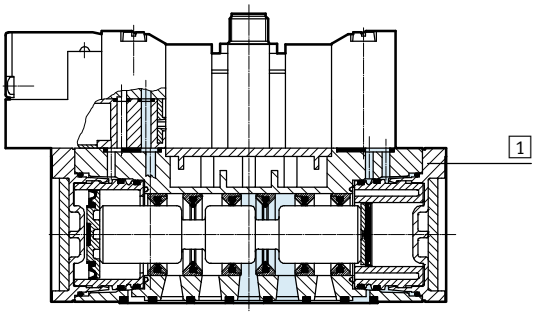
Technical data – Width 65 mm

Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium			Lubricated operation possible (in which case lubricated operation will always be required)	
Operating pressure		[bar]	2 ... 10	3 ... 10
Ambient temperature		[°C]	–5 ... +50	
Temperature of medium		[°C]	–5 ... +50	
Relative humidity		[%]	0 ... 90	

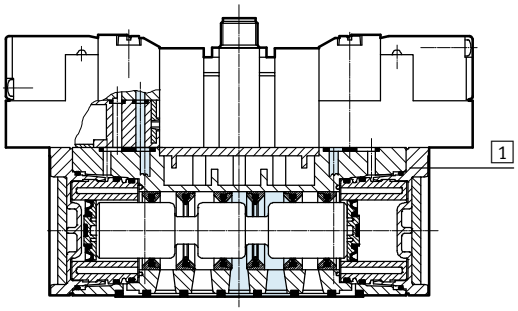
Electrical data			
Electrical connection			Central plug, round design M12x1, 4-pin
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	2.5
Degree of protection to EN 60529			IP65

Materials

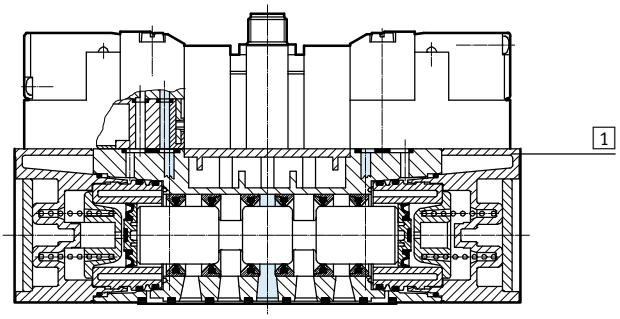
Sectional view MEBH-5/2- ...



Sectional view JMEBH-5/2- ..., JMEBDH-5/2- ...



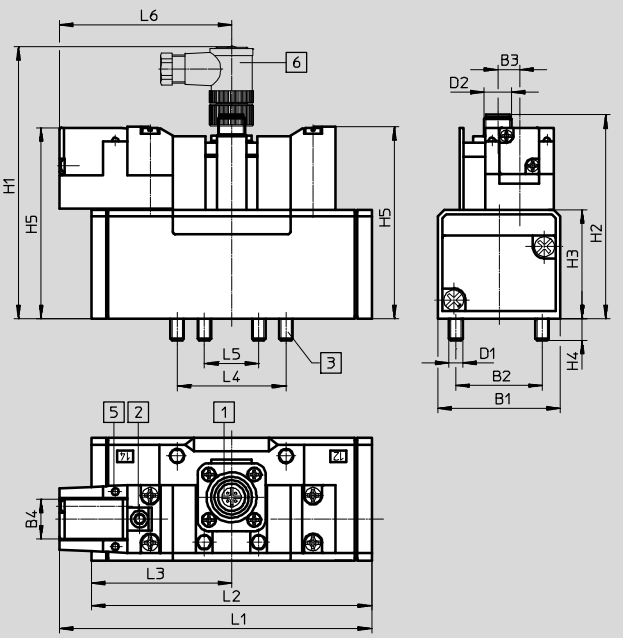
Sectional view MEBH-5/3...



1	Housing	Die-cast aluminium
–	Seals	NBR

Dimensions Download CAD data ➔ **www.festo.com**

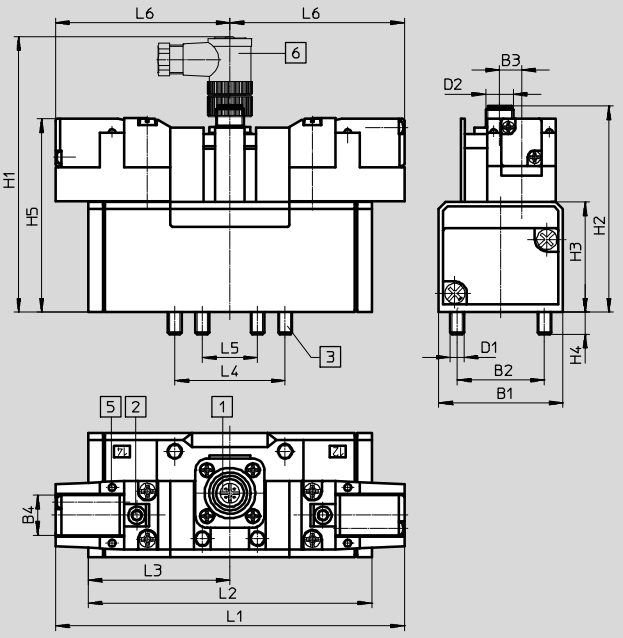
5/2-way single solenoid valves



1 Attachment of plug socket adjustable by 3x30°
2 Manual override
3 Captive mounting screws
5 LED display
6 Angled plug socket SEA-M12-4WD-PG7
➔ 123

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

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



1 Attachment of plug socket adjustable by 3x30°
2 Manual override
3 Captive mounting screws
5 LED display
6 Angled plug socket SEA-M12-4WD-PG7
➔ 123

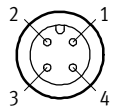
Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMEBH-5/2- ...	65	48	12	17.5	M8	M12	130	97.8	55	12	93.1	171.9	145.4	72.7	64	32	86
JMEBDH-5/2- ...													145.4	72.7			
MEBH-5/3...													184	92			

Standard valves to ISO 5599-1, central plug M12, 4-pin

Ordering data – Width 65 mm

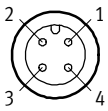
Central plug M12 – Pin allocation

5/2-way single solenoid valve



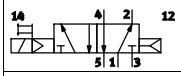
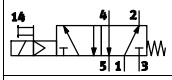
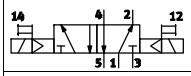
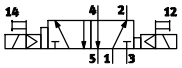
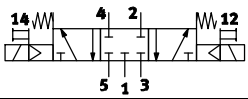
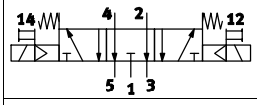
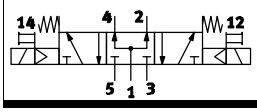
1 Unused
2 Unused
3 com (–)
4 Signal (+) Solenoid 14

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 single solenoid valve					
	Pneumatic spring reset method	Internal	1000	**184507**	**MEBH-5/2-D-3-ZSR-C**
	Mechanical spring reset method	Internal	1000	**184508**	**MEBH-5/2-D-3-ZSR-FR-C**
5/2-way double solenoid valve					
	–	Internal	1080	**184509**	**JMEBH-5/2-D-3-ZSR-C**
	With dominant signal at 14	Internal	1080	**184510**	**JMEBDH-5/2-D-3-ZSR-C**
5/3-way valve					
	Normally closed, mechanical spring reset method	Internal	1120	**184512**	**MEBH-5/3G-D-3-ZSR-C**
	Normally exhausted, mechanical spring reset method	Internal	1120	**184511**	**MEBH-5/3E-D-3-ZSR-C**
	Normally open, mechanical spring reset method	Internal	1120	**184513**	**MEBH-5/3B-D-3-ZSR-C**

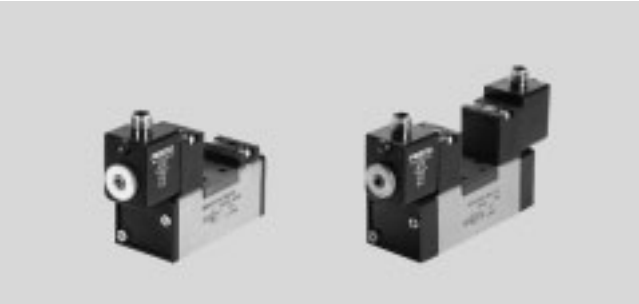
Standard valves to ISO 5599-1, individual plug M12x1

Technical data – Width 42 mm

FESTO

Flow rate
1200 l/min

Voltage
24 V DC



General technical data			
Design			Piston spool valve
Sealing principle			Soft
Actuation type			Electric
Type of control			Piloted
Direction of flow	With external pilot air supply		Reversible
	With internal pilot air supply		Non-reversible
Exhaust function			With flow control
Manual override			Non-detenting
Type of mounting			On sub-base via through-holes
Mounting position			Any
Nominal size		[mm]	8
No overlap			Yes
Width		[mm]	42
Grid dimension		[mm]	43
Pneumatic ports			Sub-base size 1 to ISO 5599-1
Noise level		[dB (A)]	85
Conforms to standard			ISO 5599-1

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

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

Operating and environmental conditions				
Reset method			Pneumatic spring	Mechanical spring
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Pilot medium			Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on 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 characteristics		
Max. positive test pulse with 0 signal	[µs]	3800
Max. negative test pulse with 1 signal	[µs]	4900
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

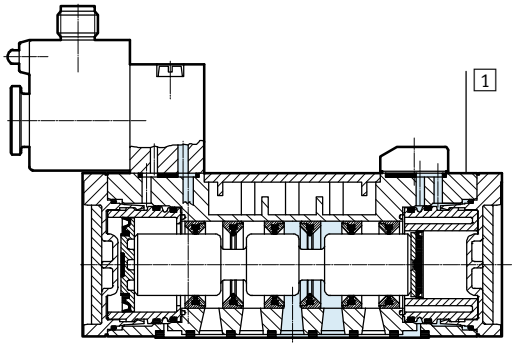
Electrical data			
Electrical connection			M12x1
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	2.7
Permissible voltage fluctuations		[%]	±10
Duty cycle		[%]	100
Degree of protection to EN 60529			IP65

Standard valves to ISO 5599-1, individual plug M12x1

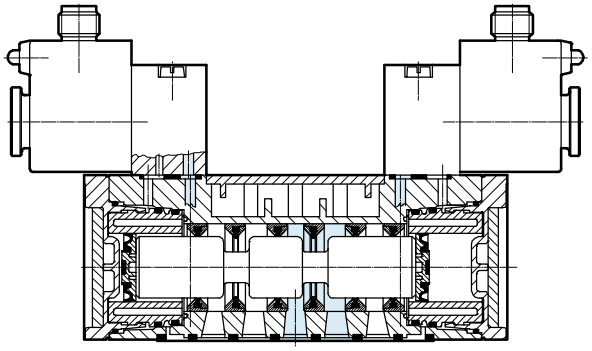
Technical data – Width 42 mm

Materials

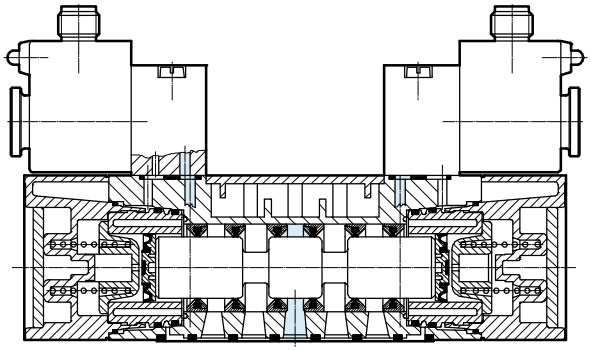
Sectional view MDH-5/2- ...



Sectional view JMDH-5/2- ..., JMDDH-5/2- ...



Sectional view MDH-5/3...



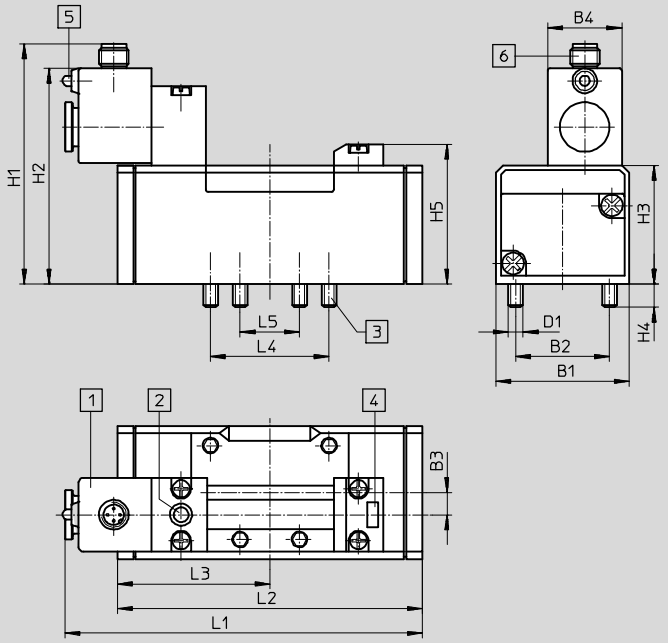
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR

Standard valves to ISO 5599-1, individual plug M12x1

Technical data – Width 42 mm

Dimensions Download CAD data ➔ **www.festo.com**

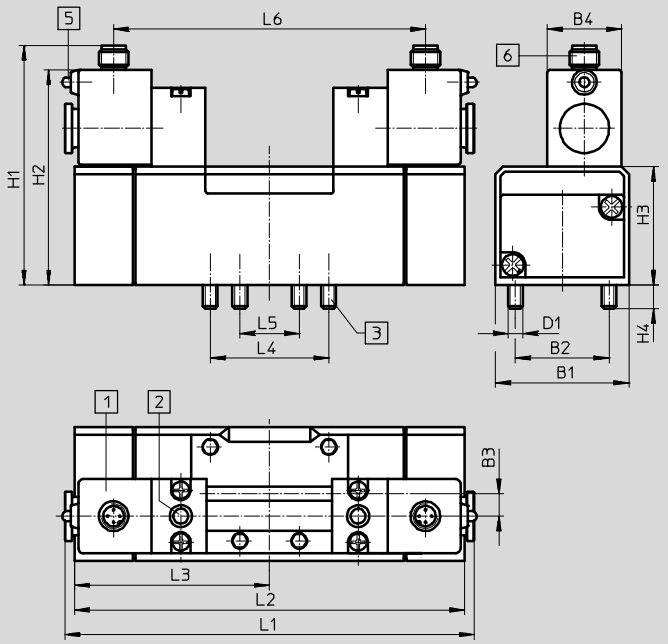
5/2-way single solenoid valves



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

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

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



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

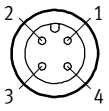
Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMDH-5/2- ...	42	28	6	30	M5	87.2	77.2	38	9	–	148	87.6	43.8	36	18	108.5
JMDDH-5/2- ...												87.6	43.8			
MDH-5/3...												108.4	54.3			

Standard valves to ISO 5599-1, individual plug M12x1

Ordering data – Width 42 mm

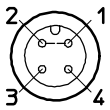
Pin allocation

M12 plug – 2-pin to VDMA



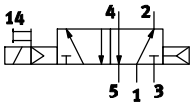
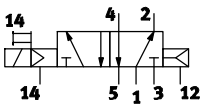
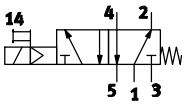
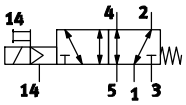
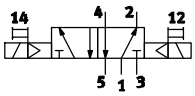
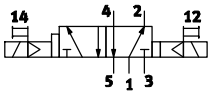
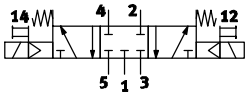
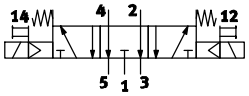
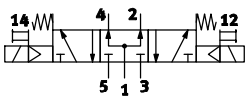
1 Unused
2 Unused
3 com (–)
4 Signal (+)

M12 plug – 4-pin to Desina



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

Ordering data – Solenoid valves

Circuit symbol	Description	Coil	Pilot air supply	Weight [g]	Part No.	Type
5/2-way single solenoid valve						
	Pneumatic spring reset method	2-pin to VDMA	Internal	420	**197125**	**MDH-5/2-D-1-M12-C**
		4-pin to Desina	Internal	420	**540803**	**MDH-5/2-D-1-M12D-C**
	Pneumatic spring reset method	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 re-set method	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 re-set method	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 double solenoid valve						
	–	2-pin to VDMA	Internal	550	**532687**	**JMDH-5/2-D-1-M12-C**
		4-pin to Desina	Internal	550	**540809**	**JMDH-5/2-D-1-M12D-C**
	With dominant signal at 14	2-pin to VDMA	Internal	550	**539079**	**JMDDH-5/2-D-1-M12-C**
		4-pin to Desina	Internal	550	**540808**	**JMDDH-5/2-D-1-M12D-C**
5/3-way valve						
	Normally closed, mechanical spring reset method	2-pin to VDMA	Internal	580	**525307**	**MDH-5/3G-D-1-M12-C**
		4-pin to Desina	Internal	580	**540806**	**MDH-5/3G-D-1-M12D-C**
	Normally exhausted, mechanical spring re-set method	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 re-set method	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**

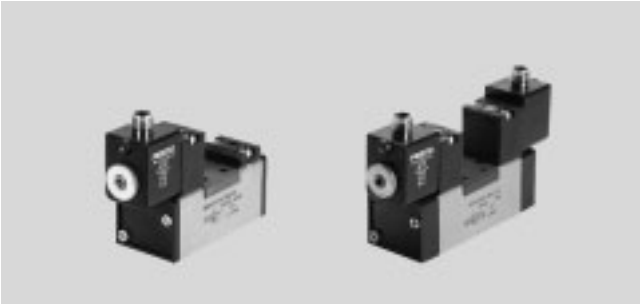
Standard valves to ISO 5599-1, individual plug M12x1

Technical data – Width 52 mm

FESTO

- Flow rate
  2300 l/min

- Voltage
  24 V DC



General technical data		
Design		Piston spool valve
Sealing principle		Soft
Actuation type		Electric
Type of control		Piloted
Direction of flow		Non-reversible
Exhaust function		With flow control
Manual override		Non-detenting
Type of mounting		On sub-base, with through-hole and screw
Mounting position		Any
Nominal size	[mm]	11.5
No overlap		Yes
Width	[mm]	52
Grid dimension	[mm]	56
Pneumatic ports		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

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

Standard valves to ISO 5599-1, individual plug M12x1

Technical data – Width 52 mm

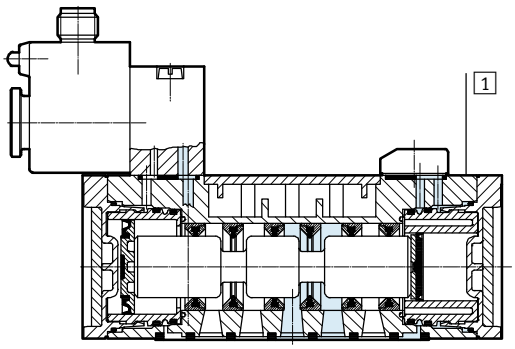
Operating and environmental conditions			
Reset method	Pneumatic spring	Mechanical spring	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure [bar]	2 … 10	3 … 10	
Ambient temperature [°C]	–10 … +50		
Temperature of medium [°C]	–10 … +50		

Safety characteristics		
Max. positive test pulse with 0 signal [µs]	3800	
Max. negative test pulse with 1 signal [µs]	4900	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	

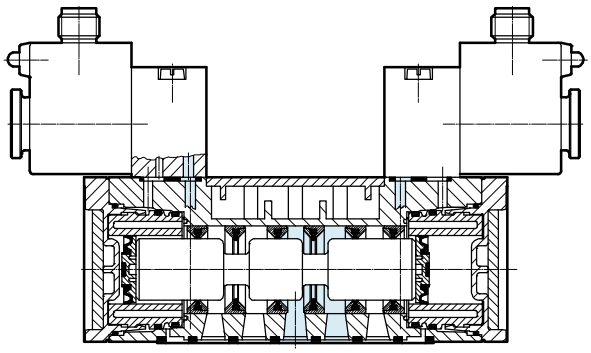
Electrical data			
Electrical connection			M12x1
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	2.7
Permissible voltage fluctuations		[%]	±10
Duty cycle		[%]	100
Degree of protection to EN 60529			IP65

Materials

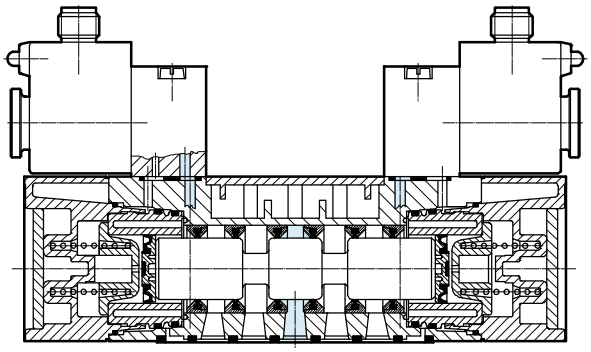
Sectional view MDH-5/2- …



Sectional view JMDH-5/2- …, JMDDH-5/2- …



Sectional view MDH-5/3…



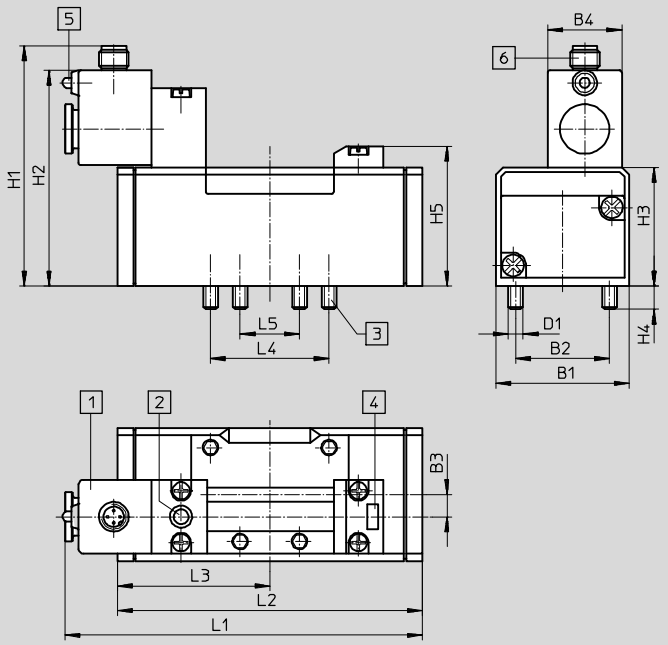
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, individual plug M12x1

Technical data – Width 52 mm

Dimensions Download CAD data ➔ **www.festo.com**

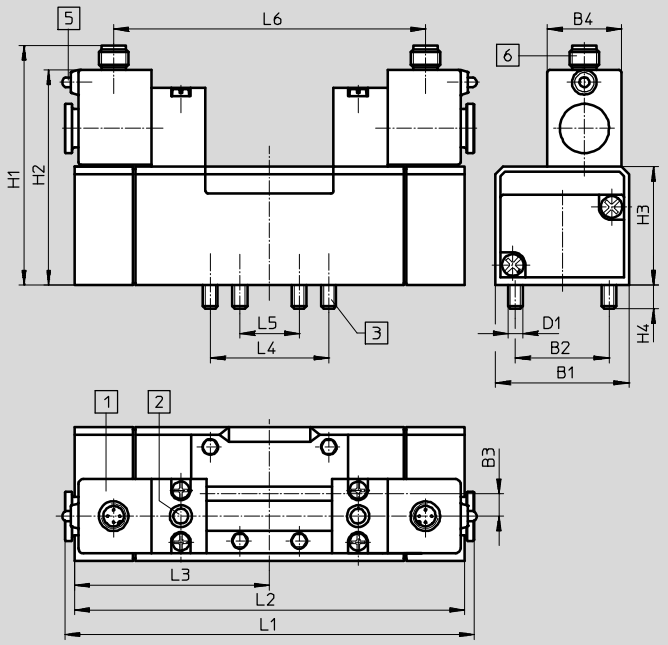
5/2-way single solenoid valves



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

Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
MDH-5/2 ...	54	38	9	30	M6	97.2	87.2	48	9.5	56.5	144.6	123.4	61.7	48	24	–
MDH-5/2- ... -FR-...											161.9	140.6				

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



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

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

Standard valves to ISO 5599-1, individual plug M12x1

Ordering data – Width 52 mm

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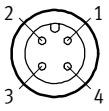
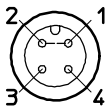
Pin allocation

M12 plug – 2-pin to VDMA



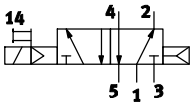
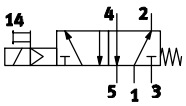
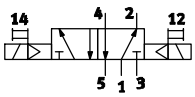
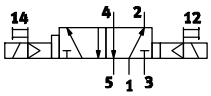
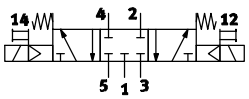
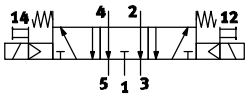
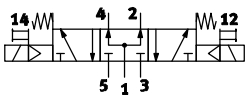
1 Unused
2 Unused
3 com (–)
4 Signal (+)

M12 plug – 4-pin to Desina



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

Ordering data

Circuit symbol	Description	Coil	Pilot air supply	Weight [g]	Part No.	Type
5/2-way single solenoid valve						
	Pneumatic spring reset method	2-pin to VDMA	Internal	810	**533008**	**MDH-5/2-D-2-M12-C**
		4-pin to Desina	Internal	810	**540812**	**MDH-5/2-D-2-M12D-C**
	Mechanical spring reset method	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 double solenoid valve						
	–	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						
	Normally closed, mechanical spring re-set method	2-pin to VDMA	Internal	1000	**539078**	**MDH-5/3G-D-2-M12-C**
		4-pin to Desina	Internal	1000	**540815**	**MDH-5/3G-D-2-M12D-C**
	Normally exhausted, mechanical spring reset method	2-pin to VDMA	Internal	1000	**533016**	**MDH-5/3E-D-2-M12-C**
		4-pin to Desina	Internal	1000	**540814**	**MDH-5/3E-D-2-M12D-C**
	Normally open, mechanical spring reset method	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**

Standard valves to ISO 5599-1, individual plug M12x1

Technical data – Width 65 mm

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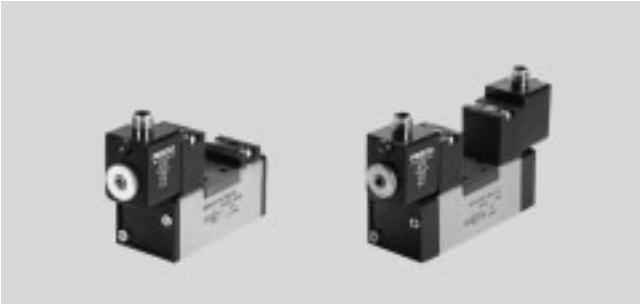
- Flow rate
  4500 l/min

- Voltage
  24 V DC



General technical data		
Design		Piston spool valve
Sealing principle		Soft
Actuation type		Electric
Type of control		Piloted
Direction of flow		Non-reversible
Exhaust function		With flow control
Manual override		Non-detenting
Type of mounting		On sub-base, with through-hole and screw
Mounting position		Any
Nominal size	[mm]	14.5
No overlap		Yes
Width	[mm]	65
Grid dimension	[mm]	71
Pneumatic ports		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 single solenoid valve	MDH-5/2-...	54	57	–	–
	MDH-5/2-...-FR-...	28	68	–	–
5/2-way double solenoid valve	JMDH-...	–	–	21	–
	JMDDH-...	–	–	23	23
5/3-way valve	MDH-5/3G-...	35	79	–	–
	MDH-5/3E-...	36	84	–	–
	MDH-5/3B-...	36	84	–	–

Standard valves to ISO 5599-1, individual plug M12x1

Technical data – Width 65 mm

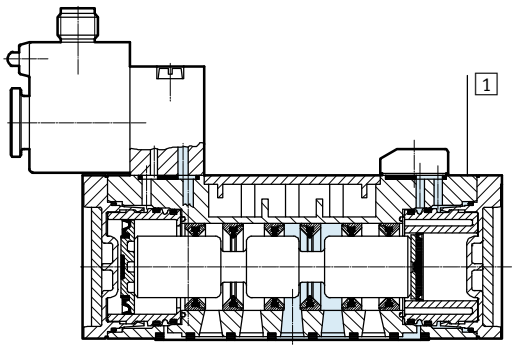
Operating and environmental conditions			
Reset method	Pneumatic spring	Mechanical spring	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure [bar]	2 … 10	3 … 10	
Ambient temperature [°C]	–10 … +50		
Temperature of medium [°C]	–10 … +50		

Safety characteristics		
Max. positive test pulse with 0 signal [µs]	3800	
Max. negative test pulse with 1 signal [µs]	4900	
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27	
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6	

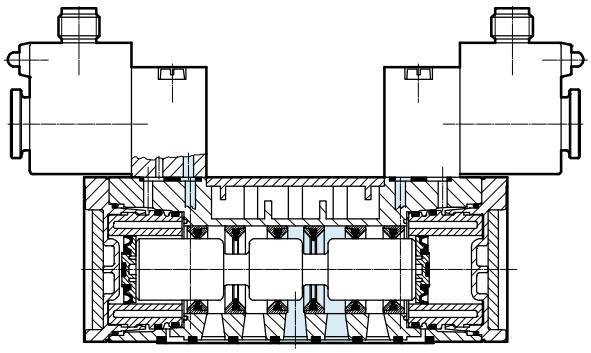
Electrical data			
Electrical connection			M12x1
Characteristic coil data	Voltage	[V DC]	24
	Power	[W]	2.7
Permissible voltage fluctuations		[%]	±10
Duty cycle		[%]	100
Degree of protection to EN 60529			IP65

Materials

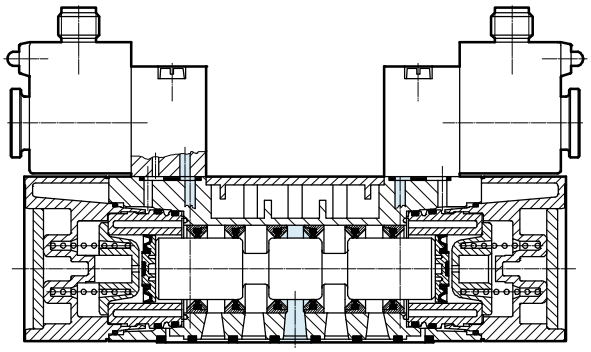
Sectional view MDH-5/2- …



Sectional view JMDH-5/2- …, JMDDH-5/2- …



Sectional view MDH-5/3…



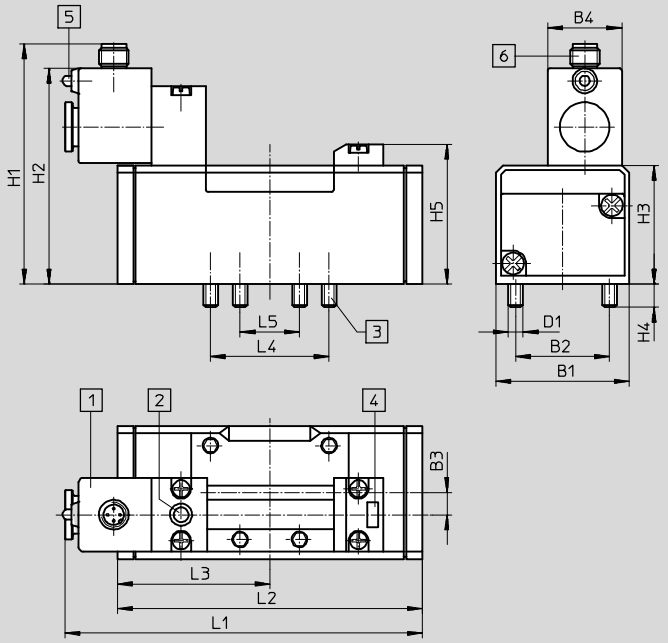
1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, individual plug M12x1

Technical data – Width 65 mm

Dimensions Download CAD data ➔ **www.festo.com**

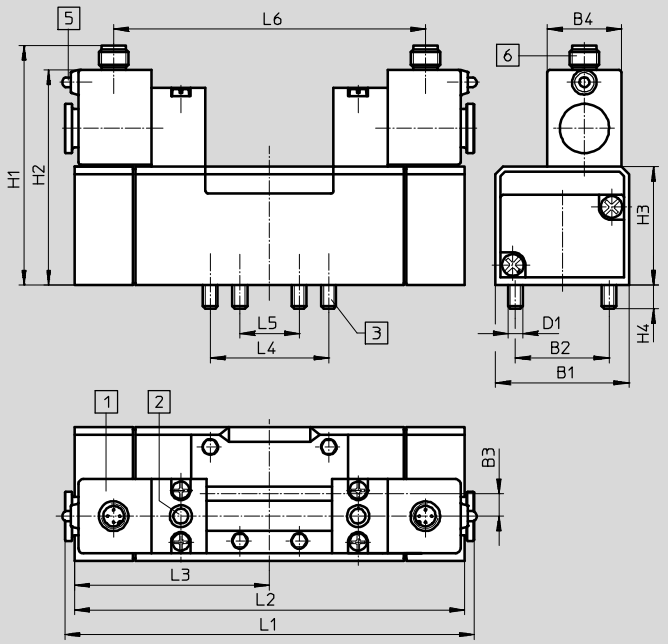
5/2-way single solenoid valves



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

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

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



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

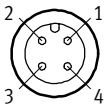
Type	B1	B2	B3	B4	D1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6
JMDH-5/2- ...	65	48	12	30	M8	104.2	94.2	55	12	–	186.4	145.4	72.7	64	32	146.9
JMDDH-5/2- ...												145.4	72.7			
MDH-5/3...												184	92			

Standard valves to ISO 5599-1, individual plug M12x1

Ordering data – Width 65 mm

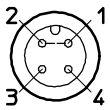
Pin allocation

M12 plug – 2-pin to VDMA



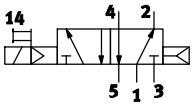
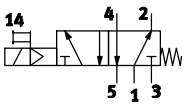
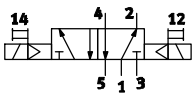
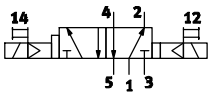
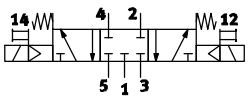
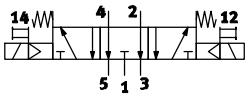
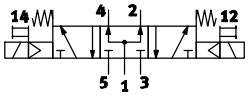
1 Unused
2 Unused
3 com (–)
4 Signal (+)

M12 plug – 4-pin to Desina



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

Ordering data

Circuit symbol	Description	Coil	Pilot air supply	Weight [g]	Part No.	Type
5/2-way single solenoid valve						
	Pneumatic spring reset method	2-pin to VDMA	Internal	1000	**533009**	**MDH-5/2-D-3-M12-C**
		4-pin to Desina	Internal	1000	**540819**	**MDH-5/2-D-3-M12D-C**
	Mechanical spring reset method	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 double solenoid valve						
	–	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						
	Normally closed, mechanical spring re-set method	2-pin to VDMA	Internal	1120	**539080**	**MDH-5/3G-D-3-M12-C**
		4-pin to Desina	Internal	1120	**540822**	**MDH-5/3G-D-3-M12D-C**
	Normally exhausted, mechanical spring reset method	2-pin to VDMA	Internal	1120	**533017**	**MDH-5/3E-D-3-M12-C**
		4-pin to Desina	Internal	1120	**540821**	**MDH-5/3E-D-3-M12D-C**
	Normally open, mechanical spring reset method	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**

Standard valves to ISO 5599-1, square plug design A

Technical data – Width 76 mm

FESTO

- Flow rate
  Up to 6000 l/min

- Voltage
  24 V DC
  48 V AC

General technical data		
Design		Piston spool valve
Sealing principle		Soft
Actuation type		Electric
Type of control		Piloted
Direction of flow		Non-reversible
Exhaust function		With flow control
Manual override		Non-detenting
Type of mounting		On sub-base, with through-hole and screw
Mounting position		Any
Nominal size	[mm]	18
No overlap		Yes
Width	[mm]	76
Grid dimension	[mm]	82
Pneumatic ports		Sub-base size 4 to ISO 5599-1
Noise level	[dB (A)]	85
Conforms to standard		ISO 5599-1

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

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

Standard valves to ISO 5599-1, square plug design A

Technical data – Width 76 mm

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

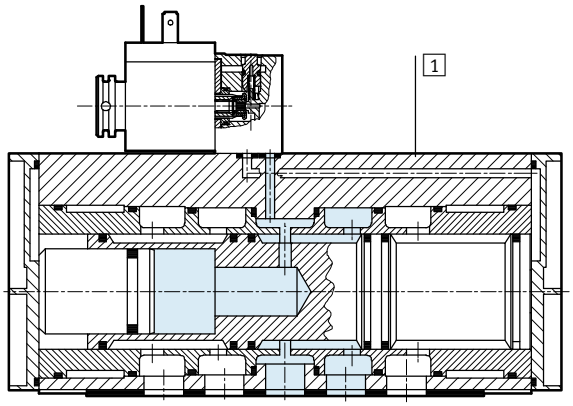
Safety characteristics			
Type		MDH-…-D-4-24DC, JMDH-…-D-4-24DC	MDH-…-D-4, JMDH-…-D-4
Max. positive test pulse with 0 signal	[µs]	4300	–
Max. negative test pulse with 1 signal	[µs]	2100	–

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

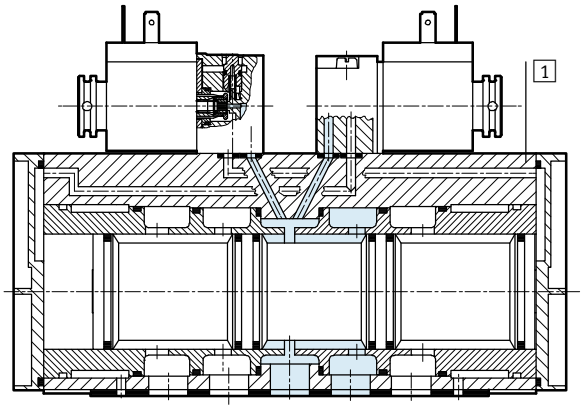
Electrical data – Pilot valve MDH-3/2-…												
Type			MDH-3/2-24DC			MDH-3/2-24DC/42AC			MDH-3/2-110AC		MDH-3/2-230AC	
Electrical connection			Plug, square design to EN 175301-803, type A									
Characteristic coil data	Voltage	[V DC]	24	–	–	24	–	–	–	–	110	–	–
		[AC V]	–	48	53	–	42	42	110	110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

Materials

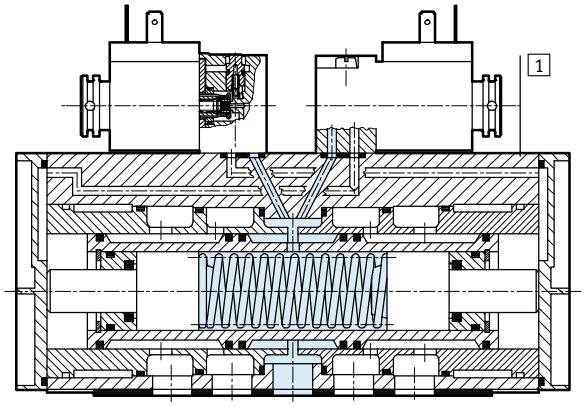
Sectional view MDH-5/2- ...



Sectional view JMDH-5/2- ...



Sectional view MDH-5/3...



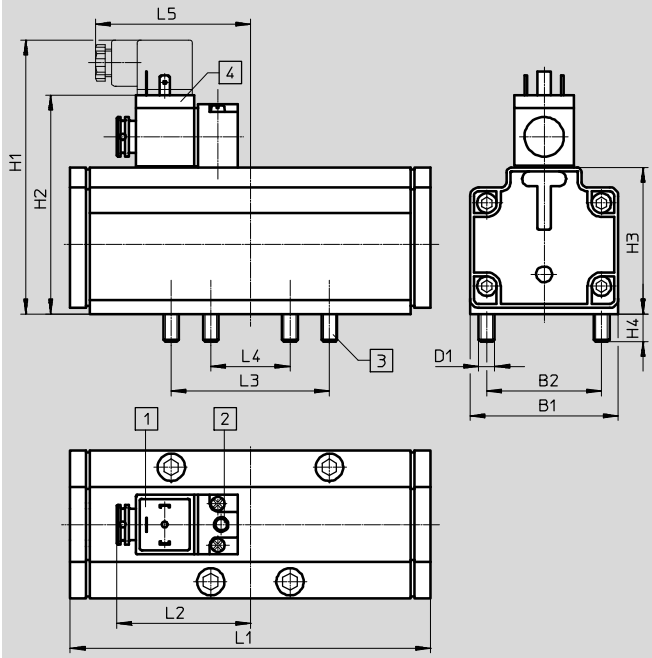
1	Housing	Aluminium
–	Seals	NBR
–	Note on materials	RoHS-compliant

Standard valves to ISO 5599-1, square plug design A

Technical data – Width 76 mm

Dimensions Download CAD data ➔ **www.festo.com**

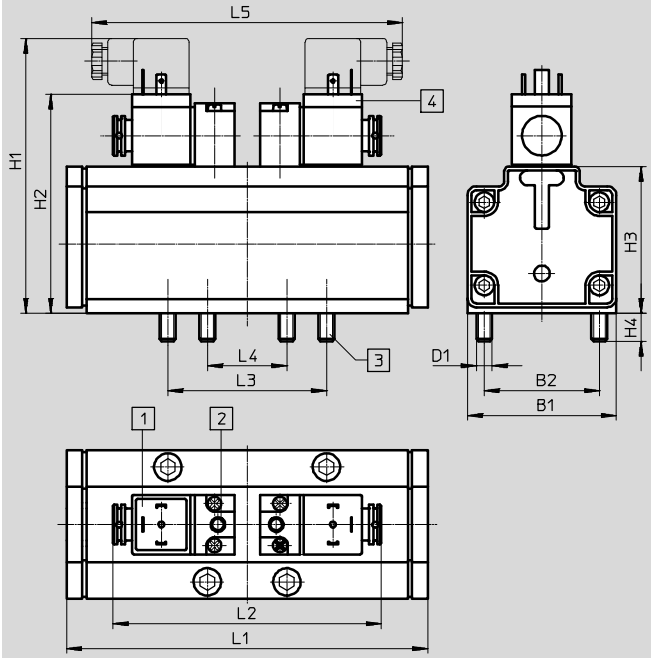
5/2-way single solenoid valves



1 Port for plug socket with port pattern to EN 175301-803, type A ➔ 122
2 Manual override
3 Captive mounting screws
4 Solenoid coil can be repositioned by 90° regardless of manual override

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

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

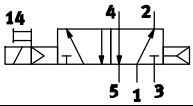
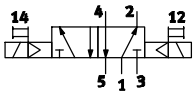
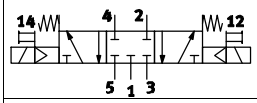
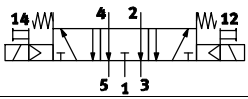


1 Port for plug socket with port pattern to EN 175301-803, type A ➔ 122
2 Manual override
3 Captive mounting screws
4 Solenoid coil can be repositioned by 90° regardless of manual override

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

Standard valves to ISO 5599-1, square plug design A

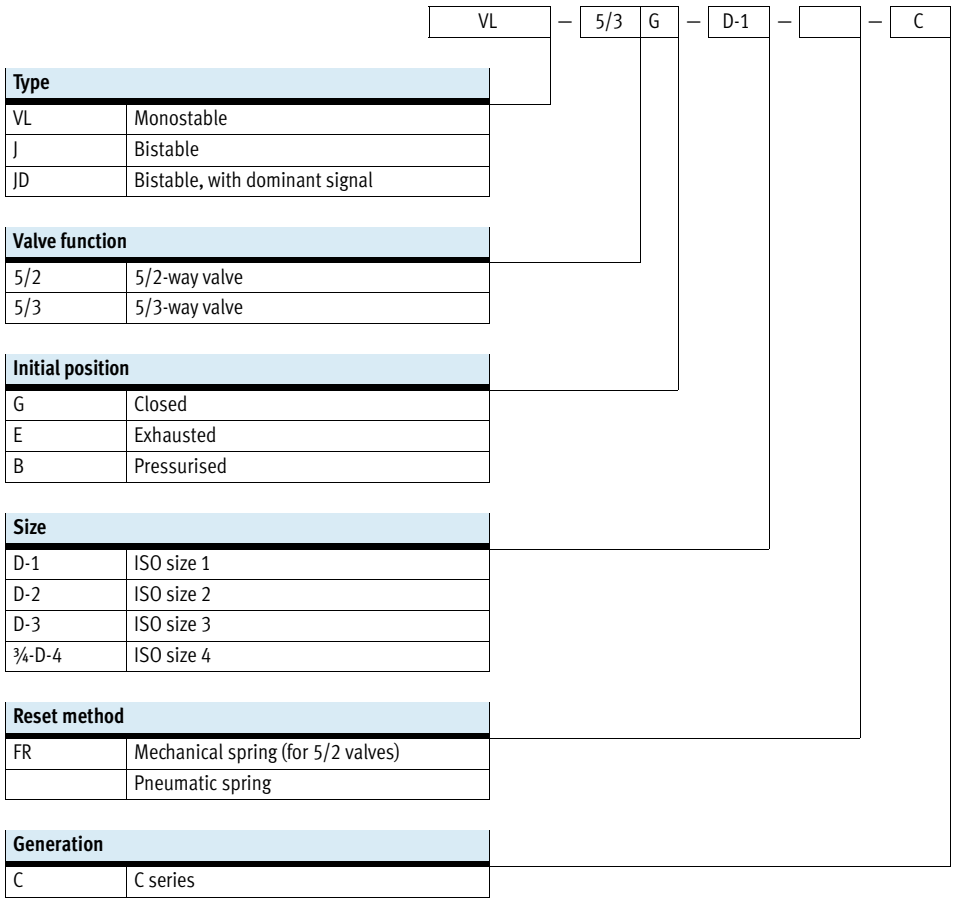
Ordering data – Width 76 mm

Ordering data						
Circuit symbol	Description	Voltage	Pilot air supply	Weight [g]	Part No.	Type
5/2-way single solenoid valve						
	Pneumatic spring reset method	24 V DC	Internal	2600	**12457**	**MDH-5/2-¾-D-4-24DC**
		–	Internal	2600	**14544**	**MDH-5/2-¾-D-4**[1]
5/2-way double solenoid valve						
	–	24 V DC	Internal	2600	**12458**	**JMDH-5/2-¾-D-4-24DC**
		–	Internal	2600	**14545**	**JMDH-5/2-¾-D-4**[1]
5/3-way valve						
	Normally closed, mechanical spring re-set method	24 V DC	Internal	2600	**12459**	**MDH-5/3G-¾-D-4-24DC**
		–	Internal	2600	**14546**	**MDH-5/3G-¾-D-4**[1]
	Normally exhausted, mechanical spring re-set method	24 V DC	Internal	2600	**12460**	**MDH-5/3E-¾-D-4-24DC**
		–	Internal	2600	**14547**	**MDH-5/3E-¾-D-4**[1]
Usable pilot valves						
	Electrical connection to EN 175301-803 design 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 no. of the pilot valve must be added after the type code when ordering.
Order example: 14546 MDH-5/3G-¾-D-4-119602 (for MDH-3/2-230AC with part no. 119602)

Standard valves to ISO 5599-1, pneumatic valves

Type codes



Type	
VL	Monostable
J	Bistable
JD	Bistable, with dominant signal

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

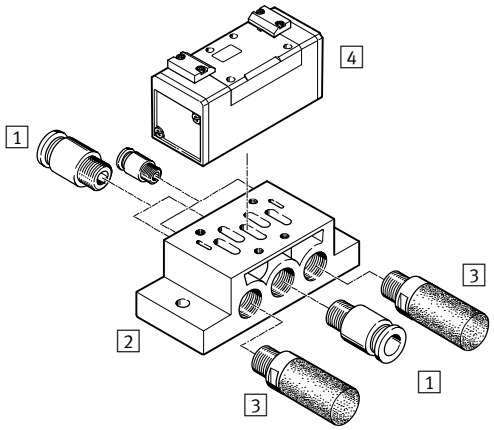
Initial position	
G	Closed
E	Exhausted
B	Pressurised

Size	
D-1	ISO size 1
D-2	ISO size 2
D-3	ISO size 3
¾-D-4	ISO size 4

Reset method	
FR	Mechanical spring (for 5/2 valves)
	Pneumatic spring

Generation	
C	C series

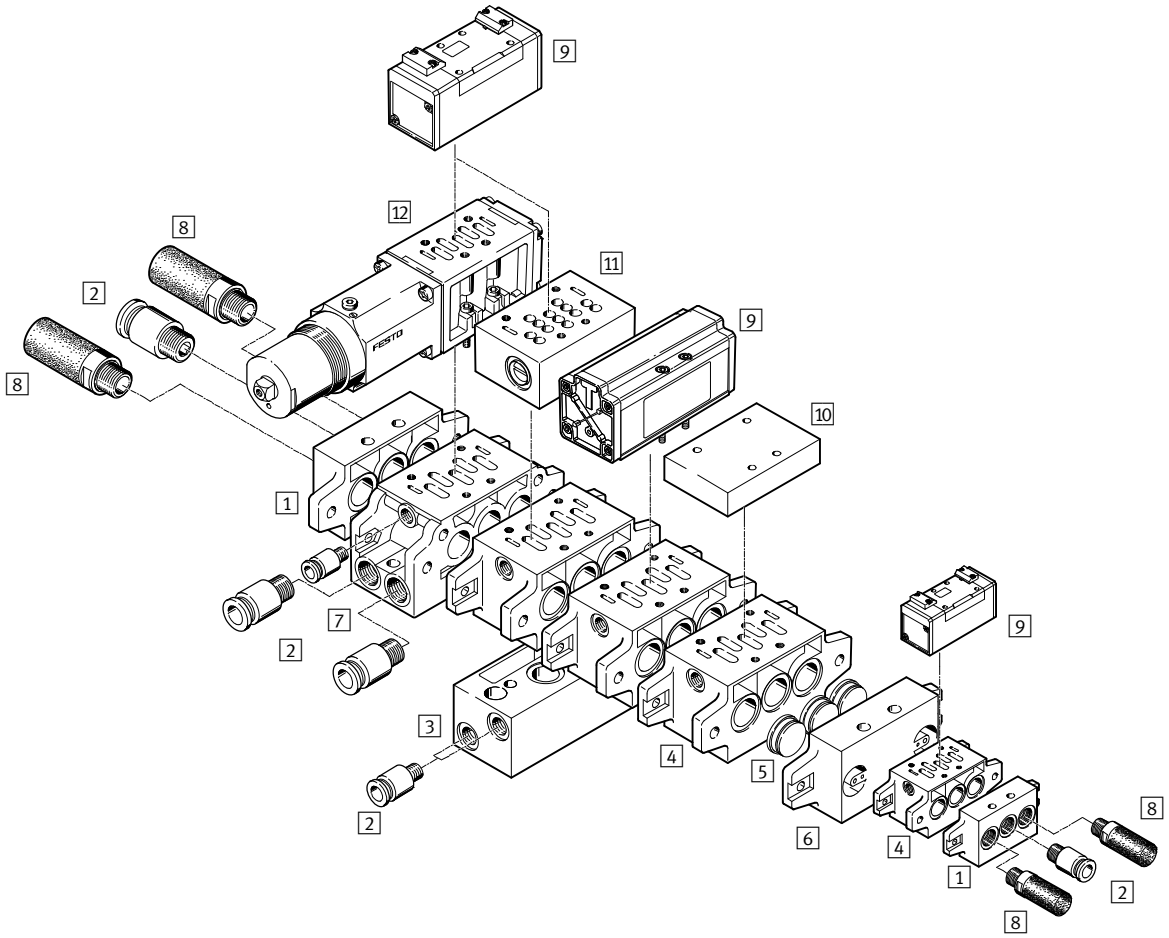
Valve on individual sub-base



Individual components

	Type	Brief description	➔ Page/Internet
1 Push-in fitting	QS-...	For connecting O.D. tubing	qs
2 Individual sub-base	NAS-...	Pneumatic ports, side	101
	NAU-...	Pneumatic ports, underneath	102
3 Silencer	U-...	For fitting in exhaust ports	silencer
4 Pneumatic valve	VL-...	Port pattern to ISO 5599-1	82
	J-...	Port pattern to ISO 5599-1	82
	JD-...	Port pattern to ISO 5599-1	82

Manifold assembly



Individual components

		Type	Brief description	➔ Page/Internet
1	End plate kit	NEV-...	For sealing the manifold sub-bases	104
2	Push-in fitting	QS-...	For connecting O.D. tubing	qs
3	90° connection plate	NAW-...	For routing ports 2 and 4 to the front	103
4	Manifold sub-base	NAV-...	With ports 2 and 4 underneath	103
5	Isolating disc	NSC-...	For sealing ducts 1, 3, 5 between end plate and manifold sub-base, e.g. to create pressure zones	105
6	Intermediate plate	NZV-...	For connecting manifold sub-bases of different sizes	107
7	Manifold sub-base with 90° connections	NAVW-...	With ports 2 and 4 either underneath or to the front	104
8	Silencer	U-...	For fitting in exhaust ports	silencer
9	Pneumatic valve	VL-...	Port pattern to ISO 5599-1	82
		J-...	Port pattern to ISO 5599-1	82
		JD-...	Port pattern to ISO 5599-1	82
10	Blanking plate	NDV-...	For sealing unused manifold sub-bases	105
11	Flow control plate	VABF-S1-...-F1B1-C	Controls the flow of exhaust air in ducts 3 and 5	108
		GRO-ZP-...	Controls the flow of exhaust air in ducts 3 and 5	108
12	Regulator plate	VABF-S1-...-R...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	115
		LR-ZP-...	Pressure regulator for manually setting a particular pressure in the regulated port upstream or downstream of the valve	115

Standard valves to ISO 5599-1, pneumatic valves

Technical data – Width 42 mm

FESTO

- Flow rate
  1200 l/min

General technical data			
Type		VL- ... -C, J ... -C	VL- ... -EX, J ... -EX
Design		Piston spool valve	Piston spool valve
Sealing principle		Soft	Soft
Actuation type		Pneumatic	Pneumatic
Type of control		Direct	Direct
Direction of flow		Reversible	Reversible
		VL-5/2-D-1-C: non-reversible	VL-5/2-D-1-C-EX: non-reversible
Exhaust function		With flow control	With flow control
Manual override		None	None
Type of mounting		On sub-base via through-hole	On sub-base via through-hole
Mounting position		Any	Any
Nominal size	[mm]	8	8
No overlap		Yes	Yes
Width	[mm]	42	42
Grid dimension	[mm]	43	43
Pneumatic ports		Sub-base size 1 to ISO 5599-1	Sub-base size 1 to ISO 5599-1
Noise level	[dB (A)]	85	85
Conforms to standard		ISO 5599-1	ISO 5599-1
Certification		Germanischer Lloyd	Germanischer Lloyd
		UL Recognised (OL)	–

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

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

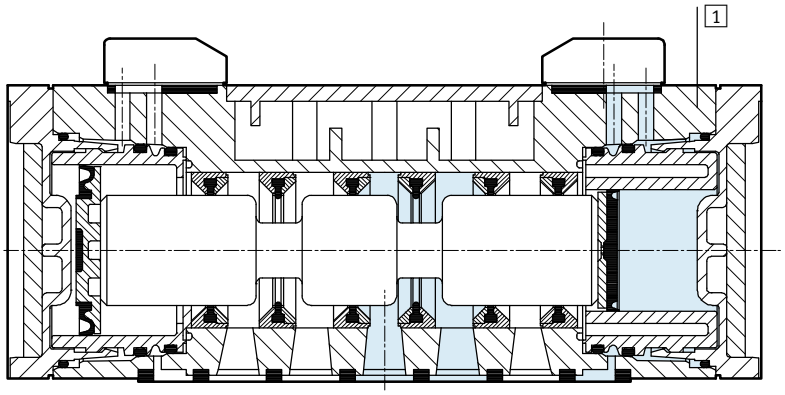
ATEX	
Type	VL- ... -EX, J ... -EX
ATEX category gas	II 2G
Ignition protection type for gas	c T4
ATEX category for dust	II 2D
Ignition protection type for dust	c T130°C
Explosion-proof ambient temperature [°C]	–10 <= Ta <= +60
CE marking (see declaration of conformity)	As per EU Explosion Protection Directive (ATEX)

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

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

Materials

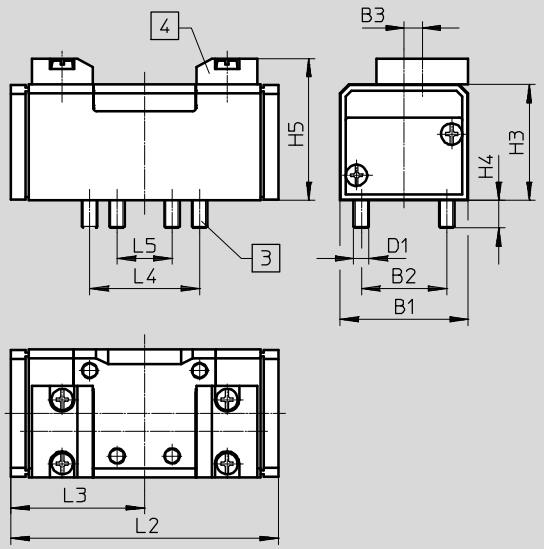
Sectional view



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

Dimensions Download CAD data ➔ **www.festo.com**

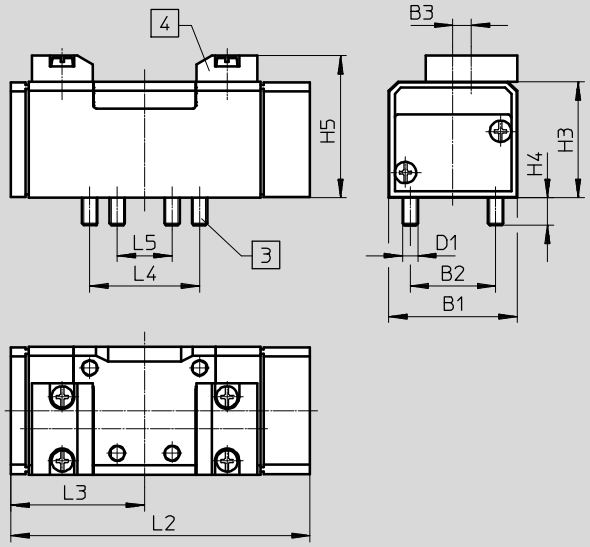
5/2-way valves, pneumatic spring reset method, 5/2-way double solenoid valves



3 Captive mounting screws
4 Slot for inscription label

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

5/2-way valves, mechanical spring reset method

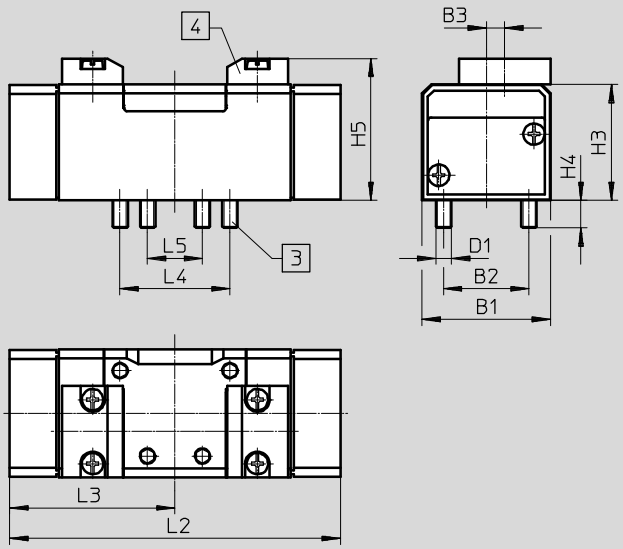


3 Captive mounting screws
4 Slot for inscription label

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

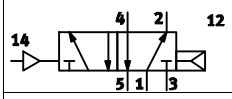
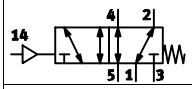
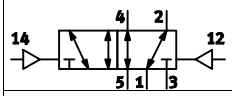
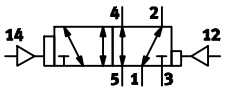
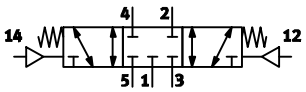
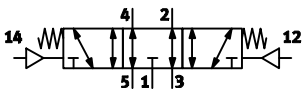
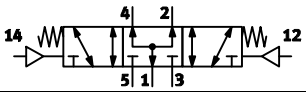
Dimensions Download CAD data ➔ **www.festo.com**

5/3-way valves



3 Captive mounting screws
4 Slot for inscription label

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

Ordering data					
Circuit symbol	Description		Weight [g]	Part No.	Type
5/2-way single solenoid valve					
	Pneumatic spring reset method	–	290	**151009**	**VL-5/2-D-1-C**
		ATEX category ➔ 83	290	**536007**	**VL-5/2-D-1-C-EX**
	Mechanical spring reset method	–	290	**151014**	**VL-5/2-D-1-FR-C**
		ATEX category ➔ 83	290	**536010**	**VL-5/2-D-1-FR-C-EX**
5/2-way double solenoid valve					
	–	–	290	**151007**	**J-5/2-D-1-C**
		ATEX category ➔ 83	290	**536013**	**J-5/2-D-1-C-EX**
	With dominant signal at 14	–	290	**151008**	**JD-5/2-D-1-C**
		ATEX category ➔ 83	290	**536016**	**JD-5/2-D-1-C-EX**
5/3-way valve					
	Normally closed Mechanical spring reset method	–	320	**151010**	**VL-5/3G-D-1-C**
		ATEX category ➔ 83	320	**536019**	**VL-5/3G-D-1-C-EX**
	Normally exhausted Mechanical spring reset method	–	320	**151011**	**VL-5/3E-D-1-C**
		ATEX category ➔ 83	320	**536022**	**VL-5/3E-D-1-C-EX**
	Normally pressurised Mechanical spring reset method	–	320	**151012**	**VL-5/3B-D-1-C**
		ATEX category ➔ 83	320	**536025**	**VL-5/3B-D-1-C-EX**

Standard valves to ISO 5599-1, pneumatic valves

Technical data – Width 52 mm

FESTO

- Flow rate
  2300 l/min

General technical data			
Type		VL- ... -C, J ... -C	VL- ... -EX, J ... -EX
Design		Piston spool valve	Piston spool valve
Sealing principle		Soft	Soft
Actuation type		Pneumatic	Pneumatic
Type of control		Direct	Direct
Direction of flow		Reversible	Reversible
		VL-5/2-D-2-C: non-reversible	VL-5/2-D-2-C-EX: non-reversible
Exhaust function		With flow control	With flow control
Manual override		None	None
Type of mounting		On sub-base, with through-hole and screw	On sub-base, with through-hole and screw
Mounting position		Any	Any
Nominal size	[mm]	11.5	11.5
No overlap		Yes	Yes
Width	[mm]	52	52
Grid dimension	[mm]	56	56
Pneumatic ports		Sub-base size 2 to ISO 5599-1	Sub-base size 2 to ISO 5599-1
Noise level	[dB (A)]	85	85
Conforms to standard		ISO 5599-1	ISO 5599-1
Certification		Germanischer Lloyd	Germanischer Lloyd
		UL Recognised (OL)	–

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

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

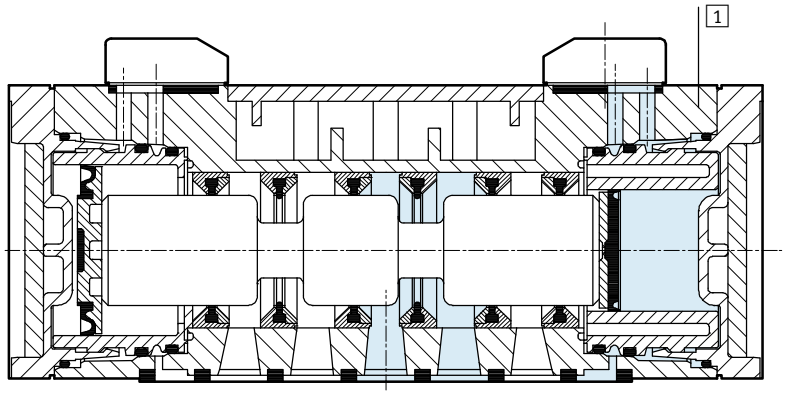
ATEX	
Type	VL- ... -EX, J ... -EX
ATEX category gas	II 2G
Ignition protection type for gas	c T4
ATEX category for dust	II 2D
Ignition protection type for dust	c T130°C
Explosion-proof ambient temperature [°C]	–10 <= Ta <= +60
CE marking (see declaration of conformity)	As per EU Explosion Protection Directive (ATEX)

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

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

Materials

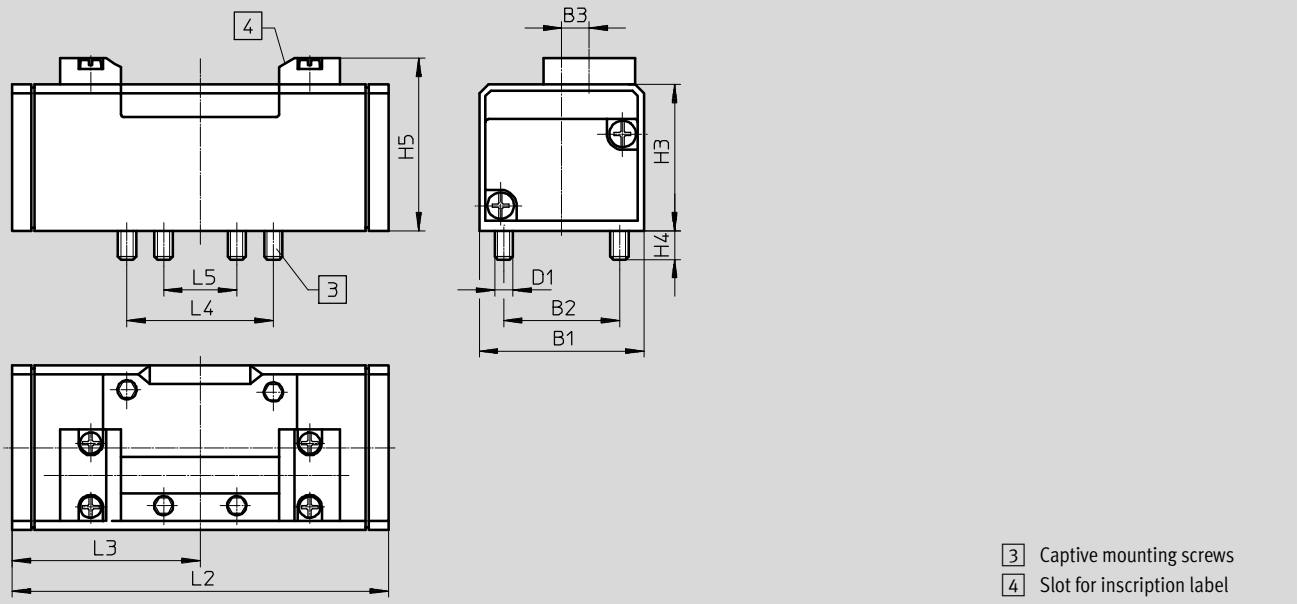
Sectional view



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

Dimensions Download CAD data ➔ **www.festo.com**

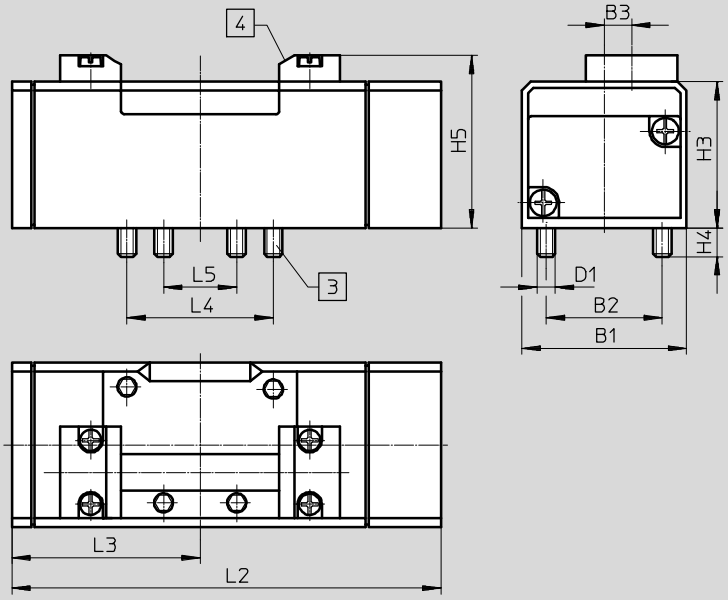
5/2-way valves, pneumatic spring reset method, 5/2-way double solenoid valves



3 Captive mounting screws
4 Slot for inscription label

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

5/2-way valves, mechanical spring reset method

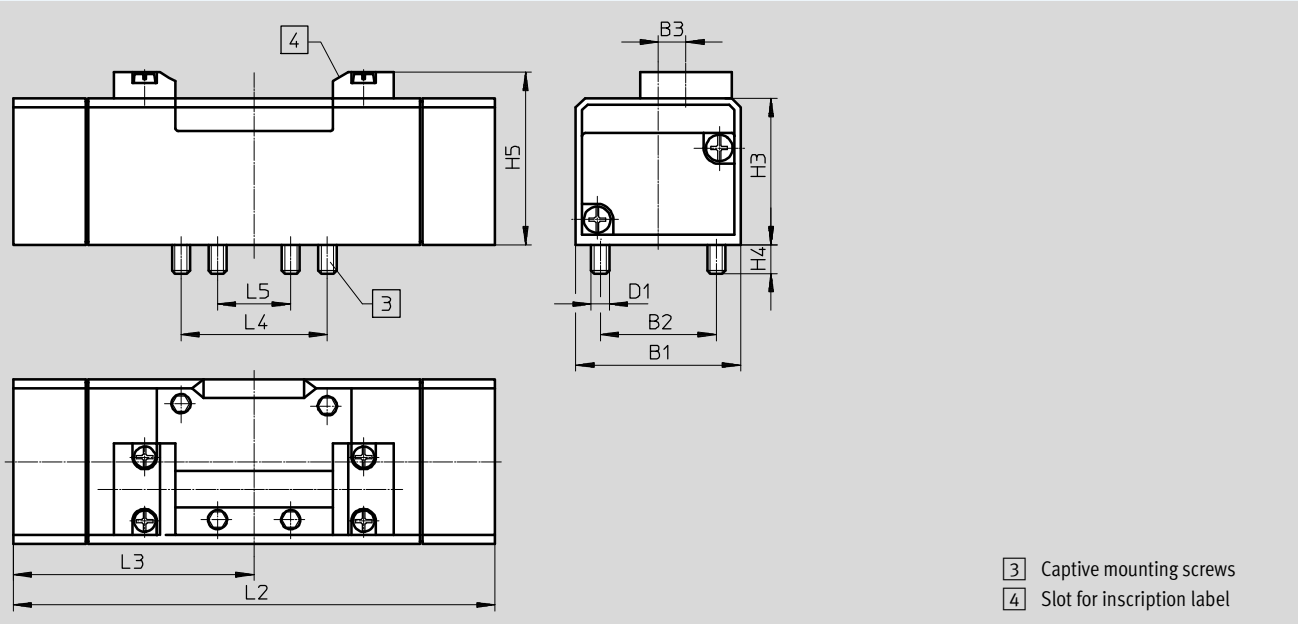


3 Captive mounting screws
4 Slot for inscription label

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

Dimensions Download CAD data ➔ **www.festo.com**

5/3-way valves

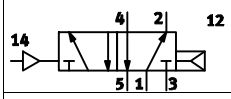
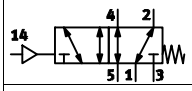
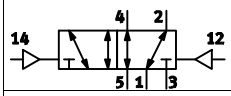
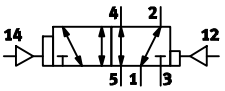
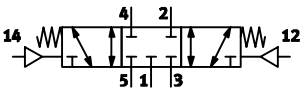
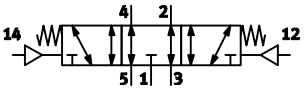
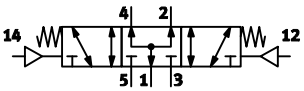


Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/3...	54	38	9	M6	48	9.5	56.5	158	79	48	24

Standard valves to ISO 5599-1, pneumatic valves

Technical data – Width 52 mm

FESTO

Ordering data					
Circuit symbol	Description		Weight [g]	Part No.	Type
5/2-way single solenoid valve					
	Pneumatic spring reset method	–	550	**151845**	**VL-5/2-D-2-C**
		ATEX category ➔ 88	550	**536008**	**VL-5/2-D-2-C-EX**
	Mechanical spring reset method	–	550	**151844**	**VL-5/2-D-2-FR-C**
		ATEX category ➔ 88	550	**536011**	**VL-5/2-D-2-FR-C-EX**
5/2-way double solenoid valve					
	–	–	550	**151846**	**J-5/2-D-2-C**
		ATEX category ➔ 88	550	**536014**	**J-5/2-D-2-C-EX**
	With dominant signal at 14	–	550	**151847**	**JD-5/2-D-2-C**
		ATEX category ➔ 88	550	**536017**	**JD-5/2-D-2-C-EX**
5/3-way valve					
	Normally closed Mechanical spring reset method	–	825	**151848**	**VL-5/3G-D-2-C**
		ATEX category ➔ 88	825	**536020**	**VL-5/3G-D-2-C-EX**
	Normally exhausted Mechanical spring reset method	–	825	**151849**	**VL-5/3E-D-2-C**
		ATEX category ➔ 88	825	**536023**	**VL-5/3E-D-2-C-EX**
	Normally pressurised Mechanical spring reset method	–	825	**151850**	**VL-5/3B-D-2-C**
		ATEX category ➔ 88	825	**536026**	**VL-5/3B-D-2-C-EX**

Standard valves to ISO 5599-1, pneumatic valves

Technical data – Width 65 mm

FESTO

- Flow rate
  Up to 4600 l/min

General technical data			
Type		VL- ... -C, J ... -C	VL- ... -EX, J ... -EX
Design		Piston spool valve	Piston spool valve
Sealing principle		Soft	Soft
Actuation type		Pneumatic	Pneumatic
Type of control		Direct	Direct
Direction of flow		Reversible	Reversible
		VL-5/2-D-3-C: non-reversible	VL-5/2-D-3-C-EX: non-reversible
Exhaust function		With flow control	With flow control
Manual override		None	None
Type of mounting		On sub-base, with through-hole and screw	On sub-base, with through-hole and screw
Mounting position		Any	Any
Nominal size	[mm]	14.5	14.5
No overlap		Yes	Yes
Width	[mm]	65	65
Grid dimension	[mm]	71	71
Pneumatic ports		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
Certification		Germanischer Lloyd	Germanischer Lloyd
		UL Recognised (OL)	–

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

Switching times [ms]					
		Switching time on	Switching time off	Switching time changeover	Switching time changeover (dominant)
5/2-way single solenoid valve	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 double solenoid valve	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	–	–

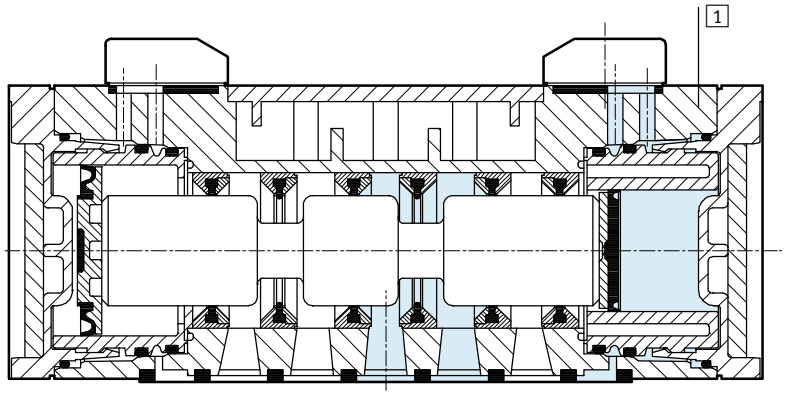
ATEX		
Type		VL- ... -EX, J ... -EX
ATEX category gas		II 2G
Ignition protection type for gas		c T4
ATEX category for dust		II 2D
Ignition protection type for dust		c T130°C
Explosion-proof ambient temperature	[°C]	–10 <= Ta <= +60
CE marking (see declaration of conformity)		As per EU Explosion Protection Directive (ATEX)

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

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

Materials

Sectional view

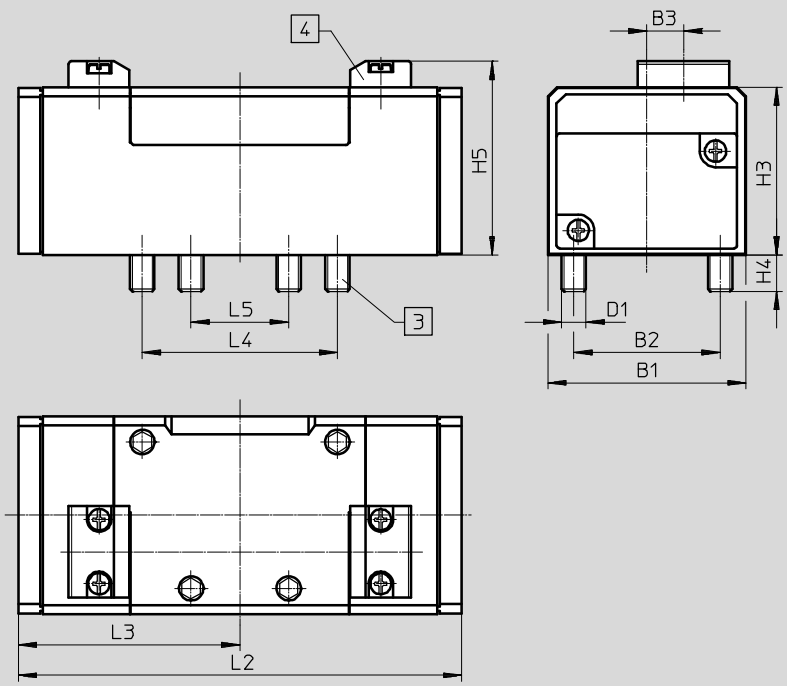


1	Housing	Die-cast aluminium
–	Seals	HNBR, NBR
–	Note on materials	RoHS-compliant

Dimensions

Download CAD data ➔ **www.festo.com**

5/2-way valves, pneumatic spring reset method, 5/2-way double solenoid valves

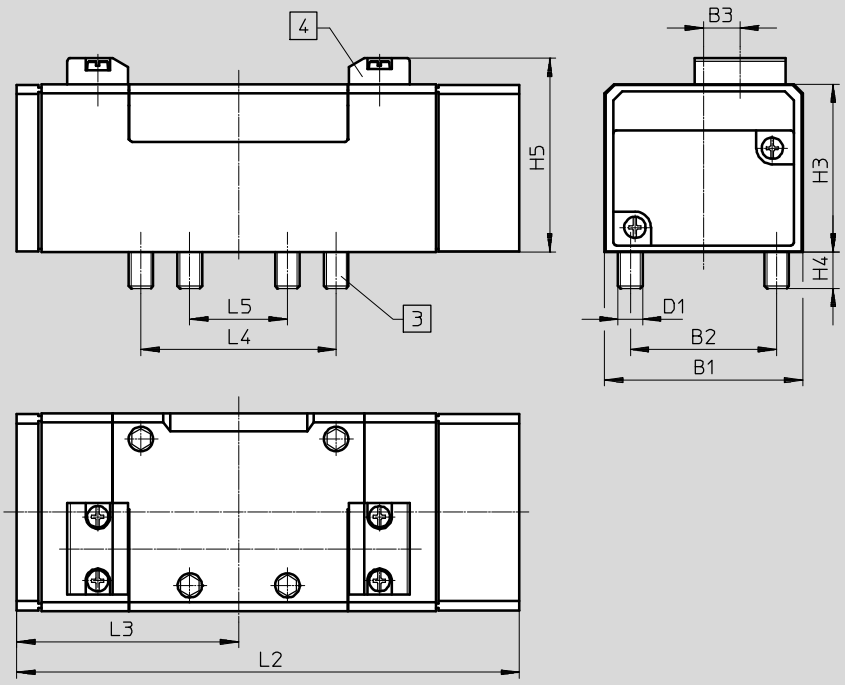


3 Captive mounting screws
4 Slot for inscription label

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

Dimensions Download CAD data ➔ **www.festo.com**

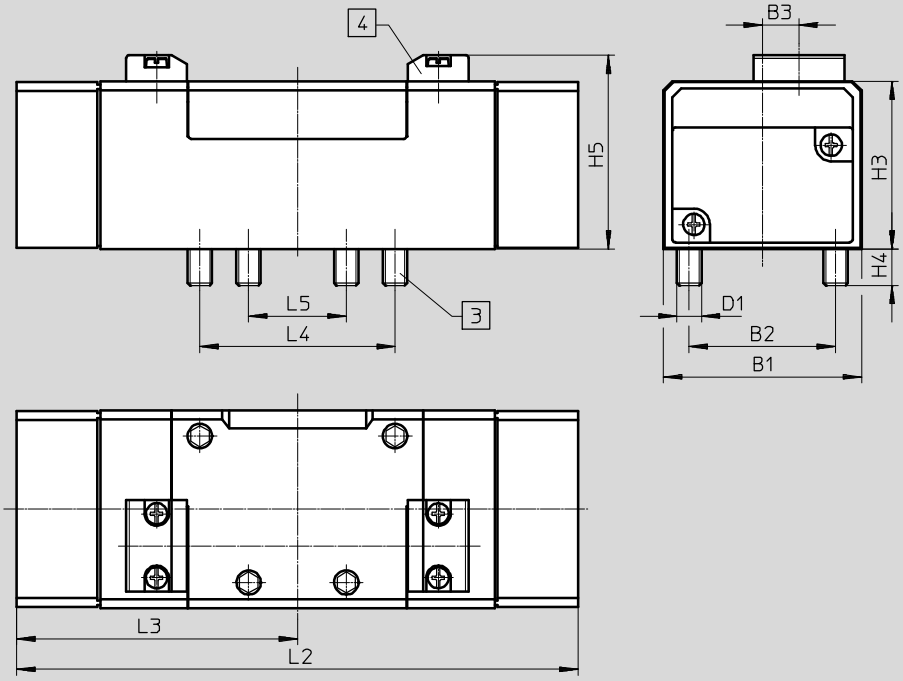
5/2-way valves, mechanical spring reset method



3 Captive mounting screws
4 Slot for inscription label

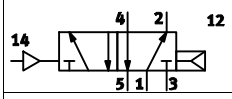
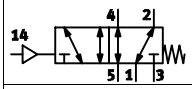
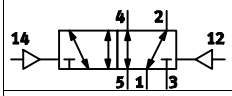
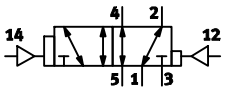
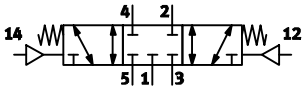
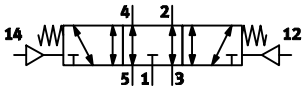
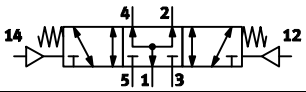
Type	B1	B2	B3	D1	H3	H4	H5	L2	L3	L4	L5
VL-5/2- ... -FR- ...	65	48	12	M8	55	12	63.5	164.7	72.7	64	32

5/3-way valves



3 Captive mounting screws
4 Slot for inscription label

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

Ordering data					
Circuit symbol	Description		Weight [g]	Part No.	Type
5/2-way single solenoid valve					
	Pneumatic spring reset method	–	810	**151864**	**VL-5/2-D-3-C**
		ATEX category ➔ 93	810	**536009**	**VL-5/2-D-3-C-EX**
	Mechanical spring reset method	–	810	**151863**	**VL-5/2-D-3-FR-C**
		ATEX category ➔ 93	810	**536012**	**VL-5/2-D-3-FR-C-EX**
5/2-way double solenoid valve					
	–	–	810	**151865**	**J-5/2-D-3-C**
		ATEX category ➔ 93	810	**536015**	**J-5/2-D-3-C-EX**
	With dominant signal at 14	–	810	**151866**	**JD-5/2-D-3-C**
		ATEX category ➔ 93	810	**536018**	**JD-5/2-D-3-C-EX**
5/3-way valve					
	Normally closed Mechanical spring reset method	–	910	**151867**	**VL-5/3G-D-3-C**
		ATEX category ➔ 93	910	**536021**	**VL-5/3G-D-3-C-EX**
	Normally exhausted Mechanical spring reset method	–	910	**151868**	**VL-5/3E-D-3-C**
		ATEX category ➔ 93	910	**536024**	**VL-5/3E-D-3-C-EX**
	Normally pressurised Mechanical spring reset method	–	910	**151869**	**VL-5/3B-D-3-C**
		ATEX category ➔ 93	910	**536027**	**VL-5/3B-D-3-C-EX**

Standard valves to ISO 5599-1, pneumatic valves

Technical data – Width 76 mm

FESTO

- Flow rate
  Up to 6000 l/min

General technical data		
Design		Piston spool valve
Sealing principle		Soft
Actuation type		Pneumatic
Type of control		Direct
Direction of flow		Reversible
Exhaust function		With flow control
Manual override		None
Type of mounting		On sub-base, with through-hole and screw
Mounting position		Any
Nominal size	[mm]	18
No overlap		Yes
Width	[mm]	76
Grid dimension	[mm]	82
Pneumatic ports		Sub-base size 4 to ISO 5599-1
Noise level	[dB (A)]	85
Conforms to standard		ISO 5599-1

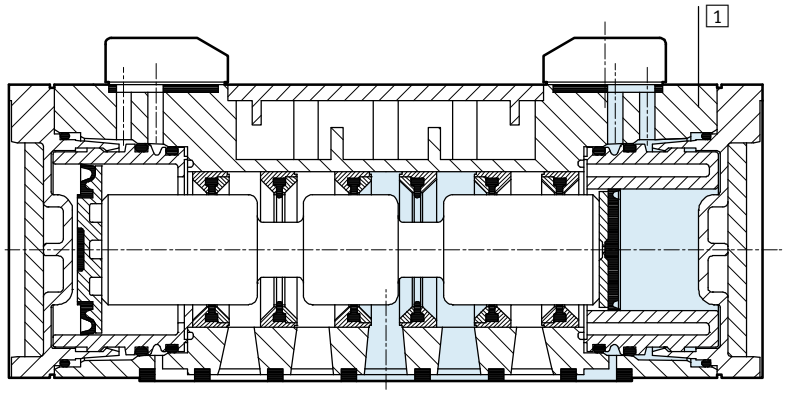
Flow rates			
Valve function		5/2-way valve	5/3-way valve
Standard nominal flow rate	[l/min]	6000	4800

Switching times [ms]				
		Switching time on	Switching time off	Switching time changeover
5/2-way single solenoid valve	VL-5/2-3/4-D-4	25	90	–
5/2-way double solenoid valve	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	–

Operating and environmental conditions				
Valve function		5/2-way valve		5/3-way valve
		Monostable	Bistable	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Pilot medium		Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium		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		

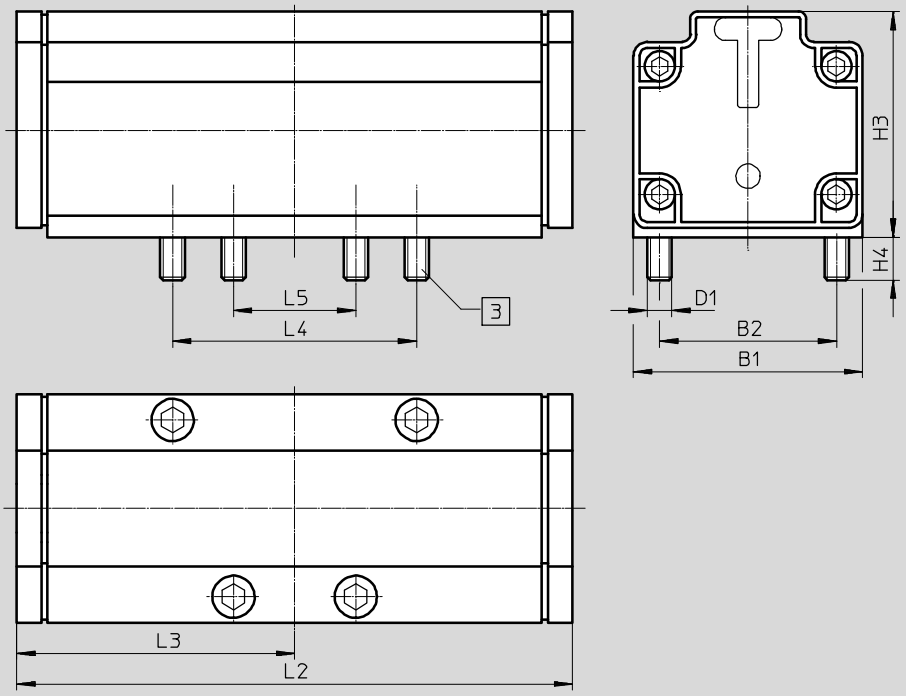
Materials

Sectional view



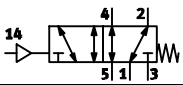
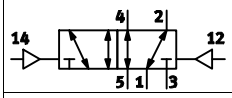
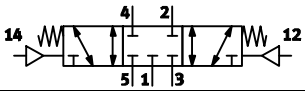
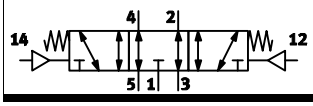
1	Housing	Aluminium
–	Seals	NBR
–	Note on materials	RoHS-compliant

Dimensions Download CAD data ➔ **www.festo.com**



3 Captive mounting 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									

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

Standard valves to ISO 5599-1, individual sub-base

Accessories

Individual sub-base NAS

Ports at side

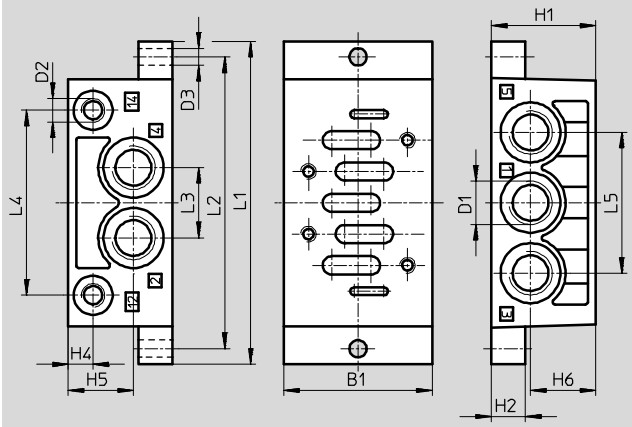
Materials:
Width 42 mm, 52 mm, 65 mm:
Die-cast aluminium

Width 76 mm:
Anodised aluminium

General technical data	
Conforms to standard	ISO 5599-1
Type of mounting	2 through-holes in housing

Operating and environmental conditions				
Width	42 mm	52 mm	65 mm	76 mm
Note on materials	Free of copper and PTFE			–
Certification	UL Recognised (OL)			–

Dimensions Download CAD data ➔ **www.festo.com**



Width	B1	D1	D2	D3	H1	H2	H4	H5	H6	L1	L2	L3	L4	L5
42 mm	48	G¼	G⅛	5.5	32	10	9	20.3	20.3	110	98	23	60	46
52 mm	57	G⅜	G⅛	6.6	40	13	9	25	25	124	112	27	71	54
65 mm	71	G½	G⅛	6.6	32	18	9	16	16	149	136	32	91	64
76 mm	85	G¾	G⅛	9	42	19	9	21	21	186	170	42	111	84

Ordering data

Designation to VDMA	Width	Pneumatic port		Weight	Part No.	Type
		1, 2, 3, 4, 5	12, 14	[g]		
VDMA 24345-A-1	42 mm	G¼	G⅛	190	★ **9484**	**NAS-¼-1A-ISO**
VDMA 24345-A-2	52 mm	G⅜	G⅛	300	**11310**	**NAS-⅜-2A-ISO**
VDMA 24345-A-3	65 mm	G½	G⅛	360	**10336**	**NAS½-3A-ISO**
VDMA 24345-A-4	76 mm	G¾	G⅛	1260	**152813**	**NAS-¾-4A-ISO**

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

Festo core product range

★ Ready for dispatch from the Festo factory in 24 hours
☆ Ready for dispatch in 5 days maximum from stock

Standard valves to ISO 5599-1, individual sub-base

Accessories

Individual sub-base NAU

Ports underneath

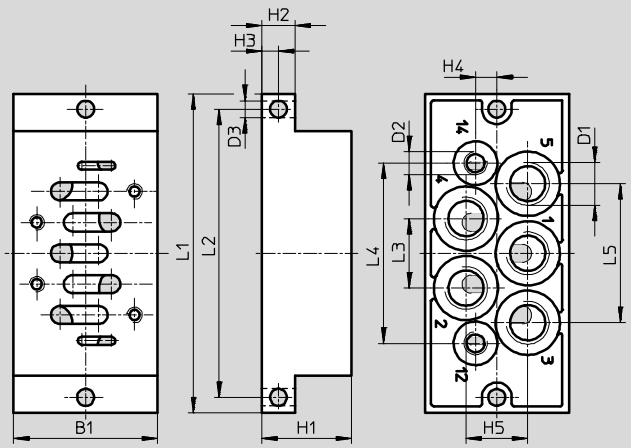
Materials:
Width 42 mm, 52 mm, 65 mm:
Die-cast aluminium

Width 76 mm:
Anodised aluminium

General technical data		
Conforms to standard	ISO 5599-1	
Type of mounting	2 through-holes in housing	

Operating and environmental conditions				
Width	42 mm	52 mm	65 mm	76 mm
Note on materials	Free of copper and PTFE			–
Certification	UL Recognised (OL)		–	–

Dimensions Download CAD data ➔ **www.festo.com**



Width	B1	D1	D2	D3	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
42 mm	46	G¼	G⅛	5.5	30	10	5	7.5	20	110	98	23	60.7	46
52 mm	56	G⅜	G⅛	6.6	35	13	6.5	8.3	24	124	112	27	70	54
65 mm	71	G½	G⅛	6.6	32	18	9	10	30	149	136	33	90	66
76 mm	85	G¾	G⅛	9	28	19	9.5	12	37	186	170	42	111	84

Ordering data

Designation to VDMA	Width	Pneumatic port		Weight	Part No.	Type
		1, 2, 3, 4, 5	12, 14	[g]		
VDMA 24345-B-1	42 mm	G¼	G⅛	280	★ **9485**	**NAU-¼-1B-ISO**
VDMA 24345-B-2	52 mm	G⅜	G⅛	450	**11416**	**NAU-⅜-2B-ISO**
VDMA 24345-B-3	65 mm	G½	G⅛	660	**10337**	**NAU½-3B-ISO**
VDMA 24345-B-4	76 mm	G¾	G⅛	1080	**152814**	**NAU-¾-4B-ISO**

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

Festo core product range

★ Ready for dispatch from the Festo factory in 24 hours
☆ Ready for dispatch in 5 days maximum from stock

Manifold sub-base NAV

Ports underneath

Materials:
Width 42 mm, 52 mm, 65 mm:
Die-cast aluminium

Width 76 mm:
Anodised aluminium

Dimensions ➔ 106

General technical data				
Conforms to standard	ISO 5599-1			

Operating and environmental conditions				
Width	42 mm	52 mm	65 mm	76 mm
Certification	–	UL Recognised (OL)		–

Ordering data

Designation to VDMA	Width	Pneumatic port		Weight	Part No.	Type
		2, 4	12, 14	[g]		
VDMA 24345-C-1	42 mm	G¼	G⅛	240	★ **10173**	**NAV-¼-1C-ISO**
VDMA 24345-C-2	52 mm	G⅜	G⅛	400	**11305**	**NAV-⅜-2C-ISO**
VDMA 24345-C-3	65 mm	G½	G⅛	700	**10175**	**NAV-½-3C-ISO**
VDMA 24345-C-4	76 mm	G¾	G⅛	1400	**11139**	**NAV-¾-4C-ISO**

90° connection plate NAW

Ports at side and top

Materials:
Width 42 mm, 52 mm, 65 mm:
Die-cast aluminium

Width 76 mm:
Anodised aluminium

Dimensions ➔ 106

General technical data				
Conforms to standard	ISO 5599-1			

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

Ordering data

Designation to VDMA	Width	Pneumatic port		Weight	Part No.	Type
		2, 4	12, 14	[g]		
VDMA 24345-E-1	42 mm	G¼	G⅛	360	**11304**	**NAW-¼-1E-ISO**
VDMA 24345-E-2	52 mm	G⅜	G⅛	600	**11307**	**NAW-⅜-2E-ISO**
VDMA 24345-E-3	65 mm	G½	G⅛	920	**11309**	**NAW-½-3E-ISO**
VDMA 24345-E-4	76 mm	G¾	G⅛	1550	**11141**	**NAW-¾-4E-ISO**

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

Festo core product range

★ Ready for dispatch from the Festo factory in 24 hours
☆ Ready for dispatch in 5 days maximum from stock

Manifold sub-base with 90° connections NAVW

Ports at side and underneath

Materials:
Die-cast aluminium

Dimensions ➔ 106

General technical data	
Conforms to standard	ISO 5599-1

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:–:–]

Ordering data

Width	Pneumatic port		Weight	Part No.	Type
	2, 4	12, 14	[g]		
42 mm	G¼	G⅛	320	**152789**	**NAVW-¼-1-ISO**
52 mm	G⅜	G⅛	550	**152790**	**NAVW-⅜-2-ISO**
65 mm	G½	G⅛	1020	**152791**	**NAVW-½-3-ISO**

End plate kit NEV

Materials:
Width 42 mm, 52 mm, 65 mm:
Die-cast aluminium

Width 76 mm:
Anodised aluminium

Dimensions ➔ 106

General technical data	
Conforms to standard	ISO 5599-1

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

Ordering data

Designation to VDMA	Width	Pneumatic port	Weight	Part No.	Type
		1, 3, 5	[g]		
VDMA 24345-D-1	42 mm	G⅜	280	★ **10174**	**NEV-1DA/DB-ISO**
VDMA 24345-D-2	52 mm	G½	450	**11306**	**NEV-2DA/DB-ISO**
VDMA 24345-D-3	65 mm	G1	760	**10176**	**NEV-3DA/DB-ISO**
VDMA 24345-D-4	76 mm	G1	1390	**11140**	**NEV-4DA/DB-ISO**

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

Festo core product range

★ Ready for dispatch from the Festo factory in 24 hours
☆ Ready for dispatch in 5 days maximum from stock

Blanking plate NDV

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

Width 76 mm:
Wrought aluminium alloy

Dimensions ➔ 106

General technical data	
Conforms to standard	ISO 5599-1

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:–:–]
Note on 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:
Die-cast aluminium

Dimensions ➔ 106

General technical data	
Conforms to standard	ISO 5599-1

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

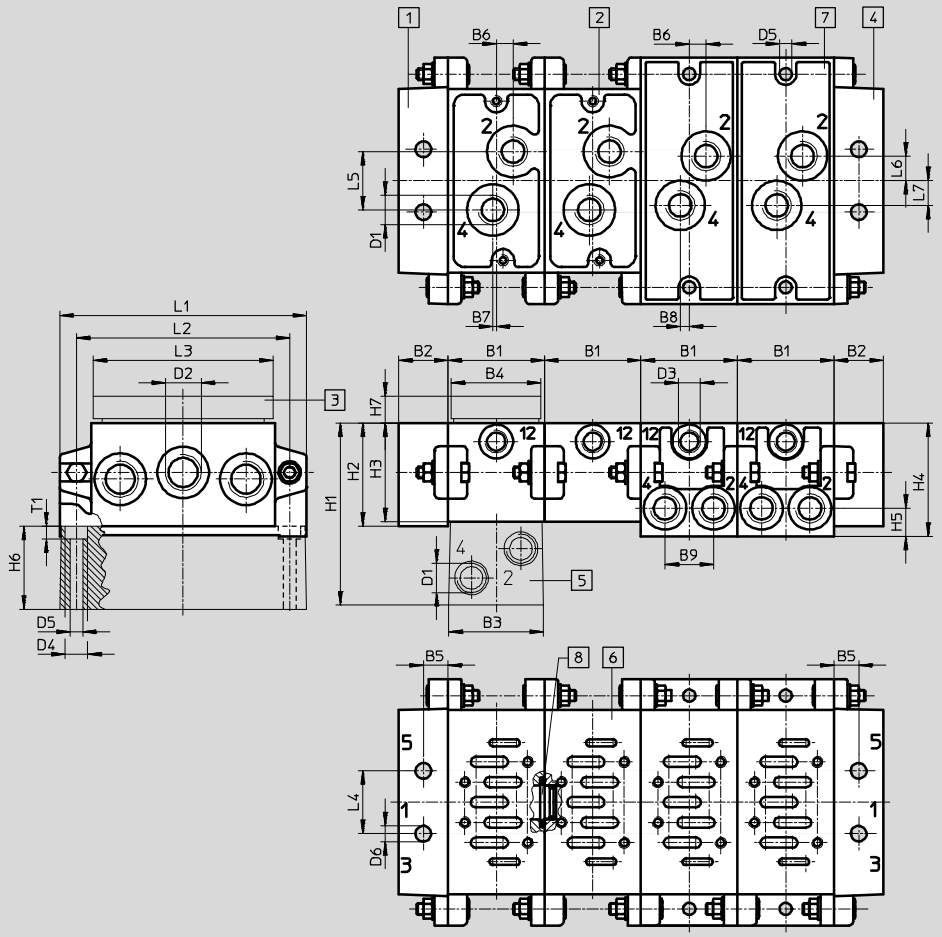
Ordering data

Width	Pneumatic port	Weight [g]	Part No.	Type
42 mm	G¼	6	★ **11550**	**NSC-¼-1-ISO**
52 mm	G⅜	9.2	**11908**	**NSC-⅜-2-ISO**
65 mm	G½	20	**11551**	**NSC-½-3-ISO**
76 mm	G¾	24	**11699**	**NSC-¾-4-ISO**

Festo core product range

★ Ready for dispatch from the Festo factory in 24 hours
☆ Ready for dispatch in 5 days maximum from stock

Dimensions – Manifold assembly Download CAD data ➔ **www.festo.com**



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

Width	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1	D2	D3	D4 ∅	D5 ∅	D6 ∅
42 mm	43	22	42	40	11	7.5	1.5	4	21.6	G¼	G⅜	G⅛	10	5.5	7
52 mm	56	26	55	50	13	6	5	6	27	G⅜	G½	G⅛	11	6.6	9
65 mm	71	30	70	70	15	8	6	6	35.5	G½	G1	G⅛	15	9	12
76 mm	82	30	80	80	15	9	8	–	–	G¾	G1	G⅛	15	9	12

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

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

Intermediate plate NZV

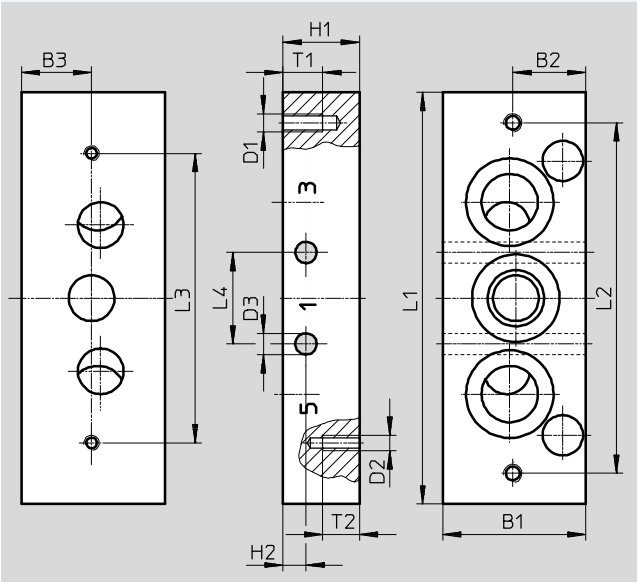
For connecting manifold sub-bases of different sizes

Materials:
Die-cast aluminium, anodised

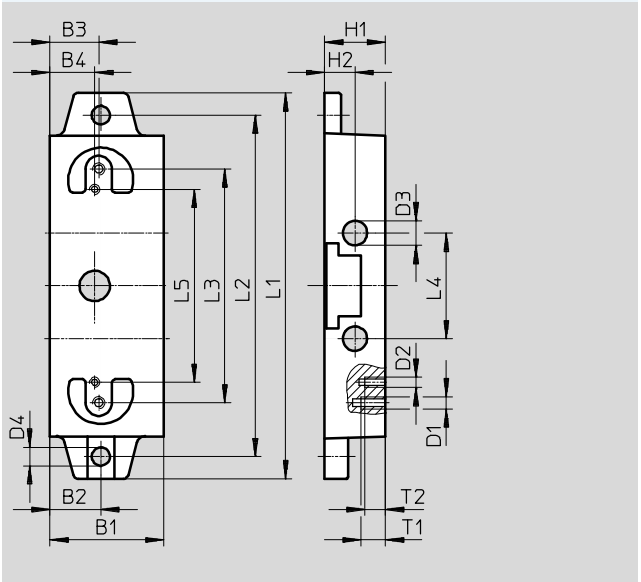
General technical data	
Based on standard	ISO 5599-1
Note on materials	Free of copper and PTFE

Dimensions Download CAD data ➔ **www.festo.com**

NZV-1-2



NZV-3-2/1



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

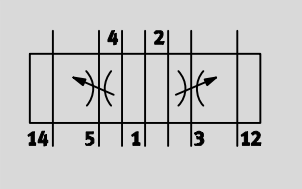
Ordering data

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

Standard valves to ISO 5599-1, flow control plate

Accessories

Function



Exhaust air flow control valve for 3 and 5.

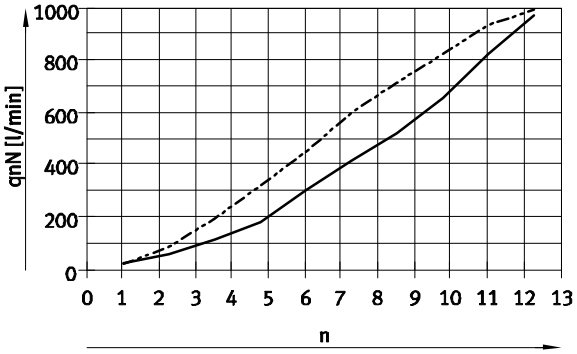
General technical data				
Type		VABF-S1-1-F1B1-C	VABF-S1-2-F1B1-C	GRO-ZP-3-ISO
Based on standard		ISO 5599-1		
Pneumatic vertical stacking		Flow control plate, exhaust air flow control		
Mounting position		Any		
Type of mounting		Via through-hole		
Standard nominal flow rate	[l/min]	1100	–	1500
Degree 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 to ISO 8573-1:2010 [7:4:4]		Compressed air to ISO 8573-1:2010 [7:–:–]
Note on 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	[bar]	–0.9 ... +10	–0.9 ... +10	0 ... +16
Supply pressure 1	[bar]	–	+0.5 ... +10	–
Ambient temperature	[°C]	–5 ... +50	–5 ... +50	–20 ... +80
Temperature of medium	[°C]	–	–	–20 ... +80

Standard nominal flow rate qnN as a function of the turns n of the regulating screw

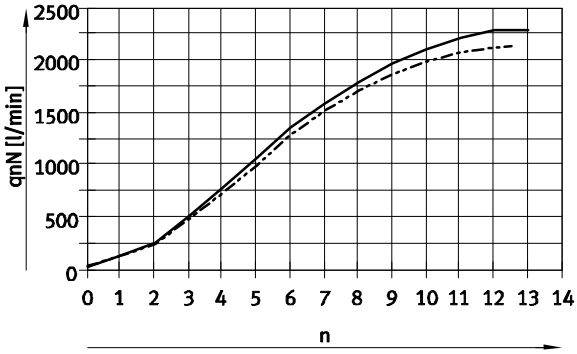
VABF-S1-1-F1B1-C



Flow control screw from 2 ⇢ 3

Flow control screw from 4 ⇢ 5

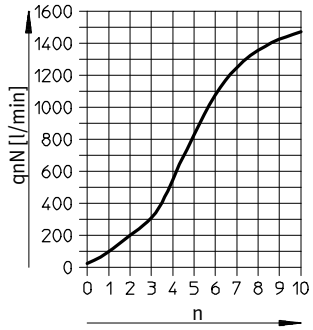
VABF-S1-2-F1B1-C



Flow control screw from 2 ⇢ 3

Flow control screw from 4 ⇢ 5

GRO-ZP-3-ISO

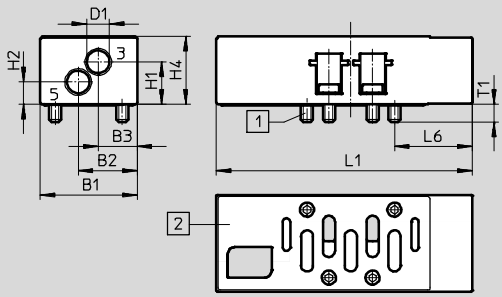


Standard valves to ISO 5599-1, flow control plate

Accessories

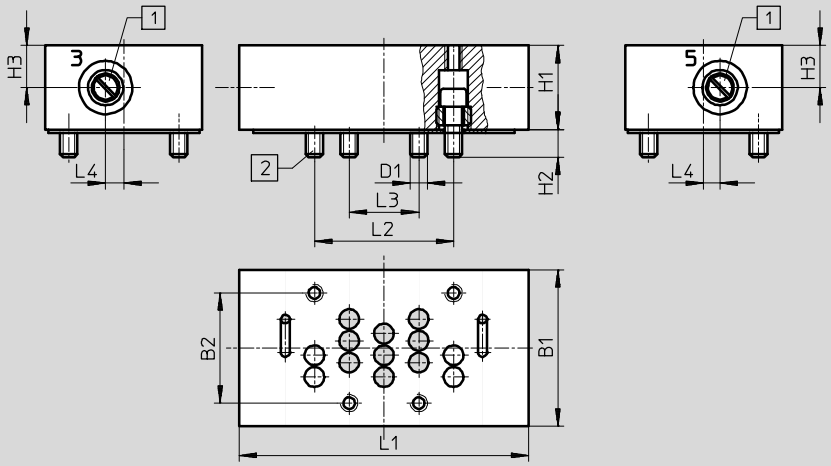
Dimensions Download CAD data ➔ **www.festo.com**

VABF-S1-...



1 Captive mounting screws
2 Port pattern to ISO 5599-1

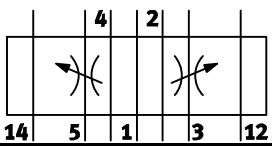
GRO-ZP-3-ISO



1 Regulating screw for flow control valve
2 Captive mounting screws

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

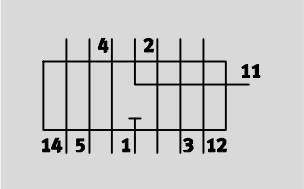
Ordering data

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

Standard valves to ISO 5599-1, vertical supply plate

Accessories

Function



Alternative compressed air supply for port 1 of the assembled 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

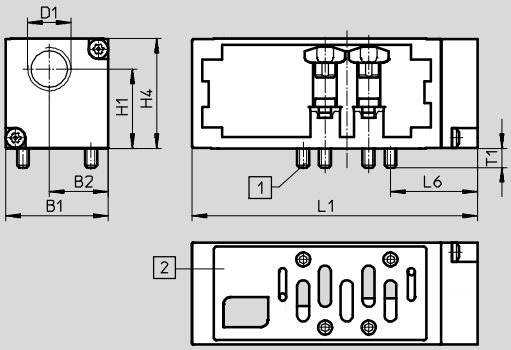
Materials	
Housing	Die-cast aluminium
Note on materials	RoHS-compliant

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

Standard valves to ISO 5599-1, vertical supply plate

Accessories

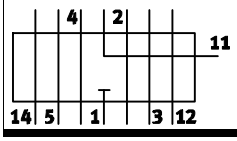
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**



1 Captive screws
2 Port pattern to ISO 5599-1

Type	B1	B2	D1	H1	H4	L1	L6	T1
VABF-S1-1-P1A3-G38	42.1	24.2	G⅜	32.7	45.3	117.6	35.8	7.9
VABF-S1-2-P1A3-G12	54	31	G½	42.4	58.9	136	38	10

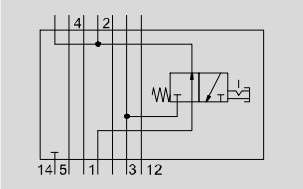
Ordering data

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**

Standard valves to ISO 5599-1, vertical pressure shut-off plate

Accessories

Function



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

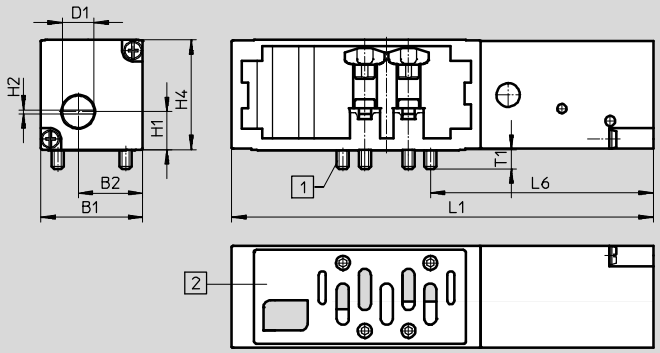
Materials	
Housing	Die-cast aluminium
Note on materials	RoHS-compliant

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

Standard valves to ISO 5599-1, vertical pressure shut-off plate

Accessories

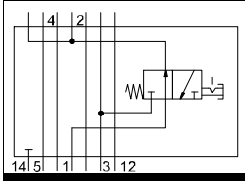
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**



1 Captive screws
2 Port pattern to ISO 5599-1

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

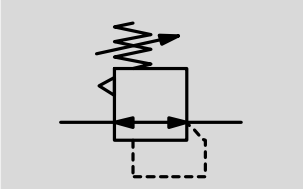
Ordering data

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

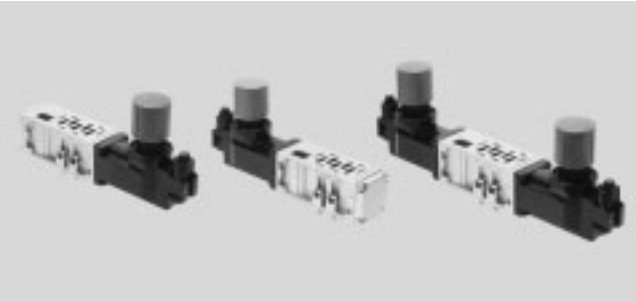
Standard valves to ISO 5599-1, pressure regulator

Accessories

Function



The pressure regulator enables the manual setting of a particular pressure in the regulated port upstream or downstream of the valve.



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

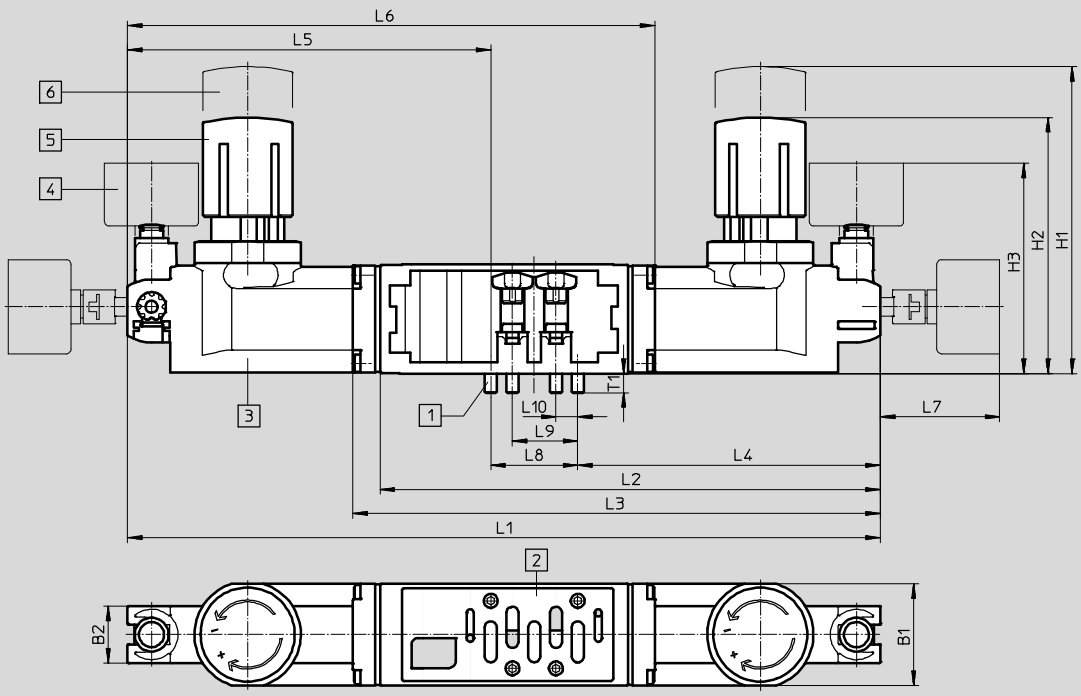
Materials			
Type	VABF-S1-1-R...	VABF-S1-2-R...	LR-ZP-...-3
Regulator housing	Die-cast aluminium	Die-cast aluminium	Die-cast aluminium, steel
Control section	PA	PA	–
Seals	–	–	NBR
Note on materials	RoHS-compliant	RoHS-compliant	RoHS-compliant
	PWIS-free	PWIS-free	Contains PWIS (paint-wetting impairment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

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

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

Dimensions Download CAD data ➔ **www.festo.com**

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

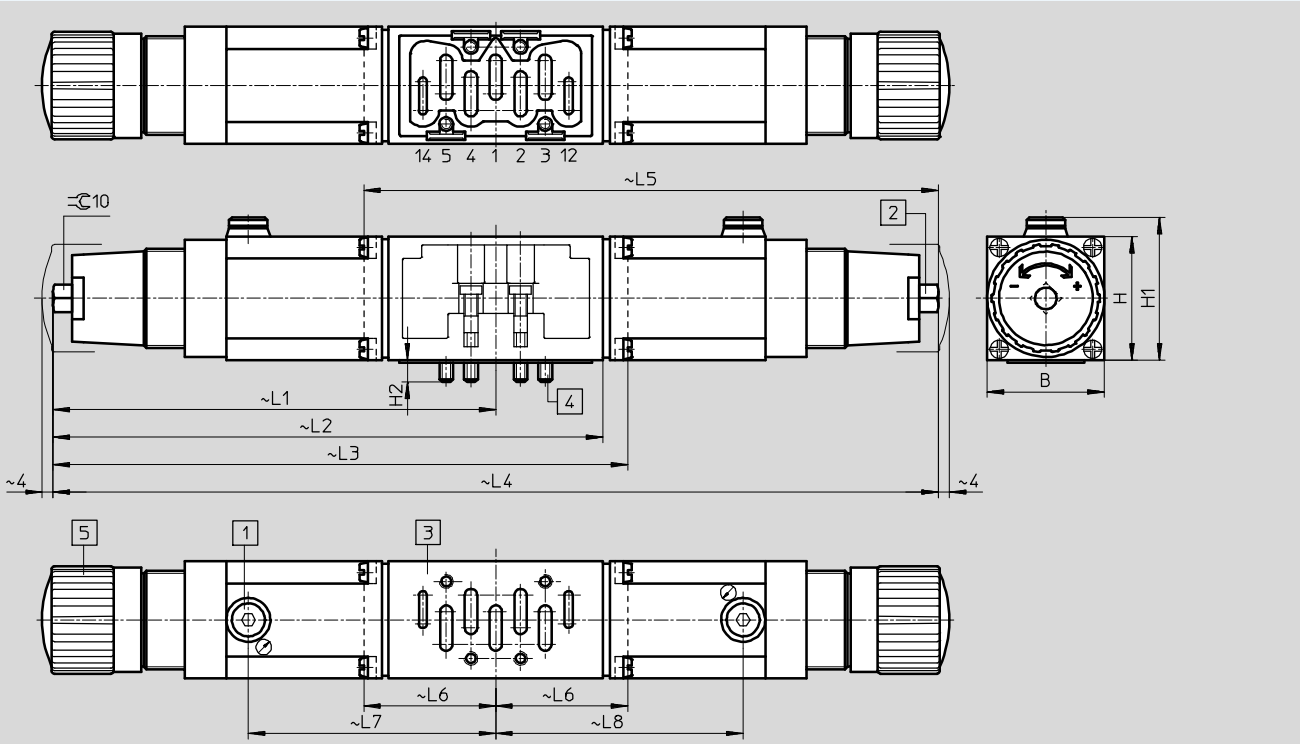


1 Captive mounting screws
2 Port pattern to ISO 5599-1
3 Regulator housing
4 Pressure gauge
5 Regulator knob in locked state
6 Regulator knob during pressure adjustment

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					

Dimensions Download CAD data ➔ **www.festo.com**

LR-ZP-...-3

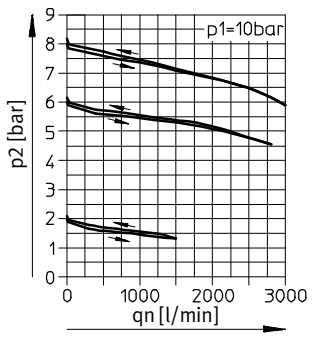


1 Pressure gauge connection G1/8
2 Regulating screw
3 Port pattern to ISO 5599-1
4 Captive mounting screws
5 Rotary knob

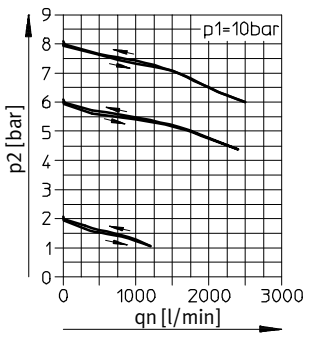
Type	B	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
Regulator plate, width 65 mm												
LR-ZP-P-D-3	70	63	65	14	201.5	–	274	–	–	–	119	–
LR-ZP-B-D-3					201.5	–	–	–	274	72.5	–	119
LR-ZP-A-D-3					201.5	–	–	403	–	–	119	119
LR-ZP-A/B-D-3					201.5	260	–	–	–	–	119	–

Flow rate qn as a function of output pressure p2

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



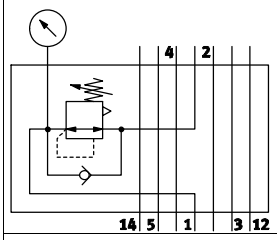
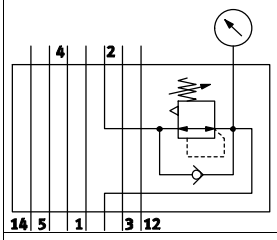
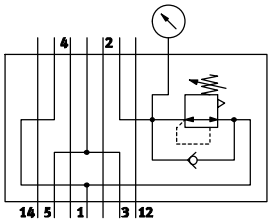
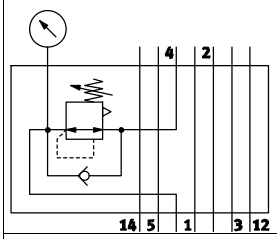
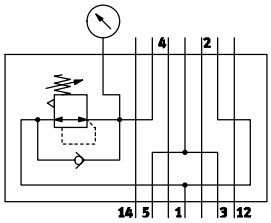
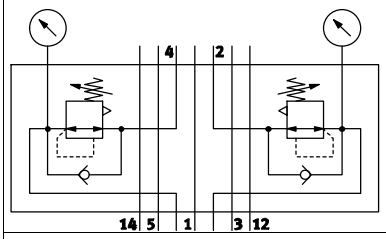
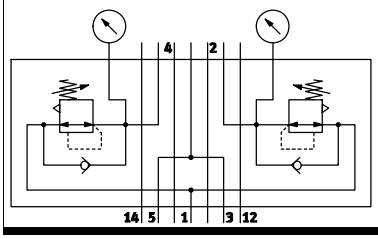
LR-ZP-P-D-3



Standard valves to ISO 5599-1, pressure regulator

Accessories

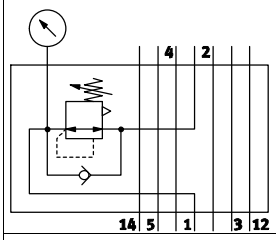
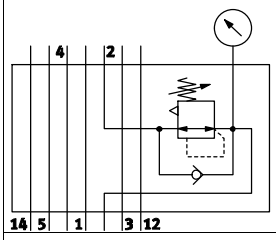
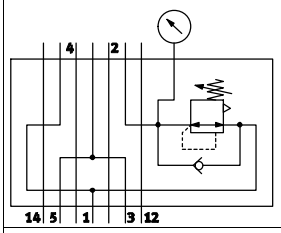
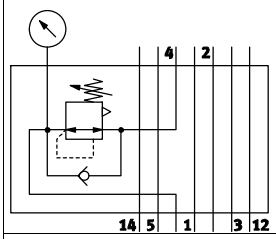
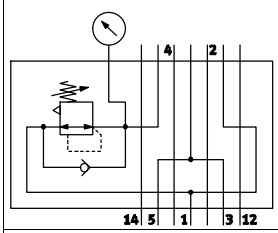
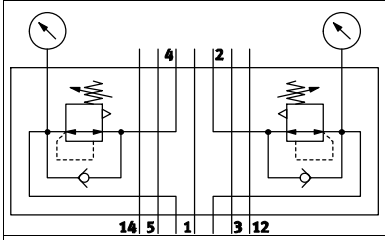
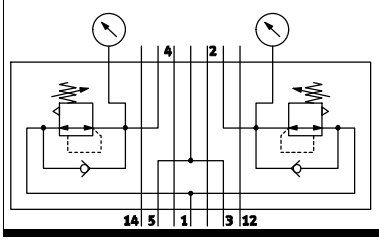
Ordering data

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

Standard valves to ISO 5599-1, pressure regulator

Accessories

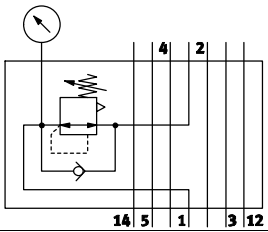
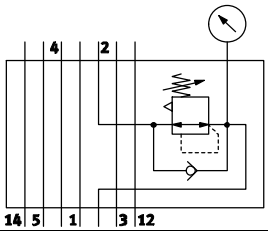
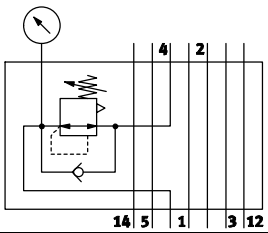
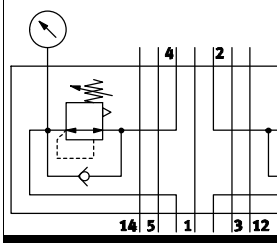
Ordering data

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

Standard valves to ISO 5599-1, pressure regulator

Accessories

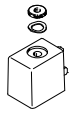
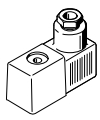
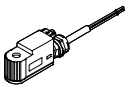
Ordering data

	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 ... 12 bar	**35426**	**LR-ZP-B-D-3**
	4	A	0 ... 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-40-16-⅛**

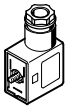
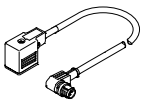
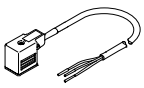
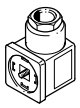
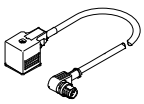
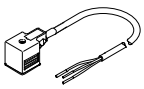
Note: This product conforms to ISO 1179-1 and to ISO 228-1

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

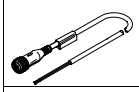
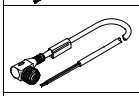
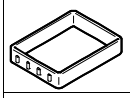
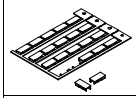
Standard valves to ISO 5599-1

Accessories

FESTO

Ordering data						
	Description			Cable length [m]	Part No.	Type
Electrical accessories for solenoid coil MSF						
	Angled socket	Screw terminal	Cable conduit fitting Pg9	–	34431	MSSD-F
			Cable conduit fitting M16	–	59710	MSSD-F-M16
		Insulation displacement connection	Cable conduit fitting M16	–	192746	MSSD-F-S-M16
	PUR cable coating, connection technology M12x1, A-coded	24 AC/DC	• Signal status display • 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 coating	24 AC/DC	• Signal status display • 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 coating	24 V DC	Signal status display	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 display	–	19143	MF-LD-12-24DC
		230 V DC/V AC	Signal status display	–	19144	MF-LD-230AC
Electrical accessories for solenoid coil MSN1 and MD						
	Angled socket	Screw terminal	Cable conduit fitting Pg9	–	34583	MSSD-C
			Cable conduit fitting M16	–	539709	MSSD-C-M16
		Insulation displacement connection	Cable conduit fitting M16	–	192748	MSSD-C-S-M16
	PUR cable coating, connection technology M12x1, A-coded	24 AC/DC	• Signal status display • 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 coating	24 AC/DC	• Signal status display • 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 coating	24 V DC	Signal status display	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 display	–	19145	MC-LD-12-24DC
		230 V DC/V AC	Signal status display	–	19146	MC-LD-230AC

Ordering data

	Description			Part No.	Type
Electrical accessories for valves with central plug					
	Angled socket, M12, 4-pin, type A, screw terminal		–	**185498**	**SEA-M12-4WD-PG7**
	Connecting cable, straight socket, M12x1, 5-pin, open cable end, 4-wire		2.5	**550326**	**NEBU-M12G5-K-2,5-LE4**
			5	**541328**	**NEBU-M12G5-K-5-LE4**
	Connecting cable, angled socket, M12x1, 5-pin, open cable end, 4-wire		2.5	**550325**	**NEBU-M12W5-K-2,5-LE4**
			5	**541329**	**NEBU-M12W5-K-5-LE4**
Pressure gauge					
	With cartridge connection for regulator		10 bar	**543487**	**PAGN-26-16-P10**
			6 bar	**543488**	**PAGN-26-10-P10**
Seal					
	Enables the valves with central plug M12, 3-pin, to be assembled on the sub-bases of the valve terminal VTSA/VTSA-F (2 included in the scope of delivery)			**571343**	**VABD-S2-1-S-C**
Inscription label					
	Inscription label for valves	Scope of delivery 24 labels in frame		**161937**	**IBS-9x17**
	Clip-on inscription label holder for valve cap, for valves with central plug M12, 3-pin	Scope of delivery 5 holders		**540888**	**ASCF-T-S6**
Manual override					
	Tool for manual override	Valves MN1H/MFH		**157651**	**AHB-MD/MF/MV**