

## Solenoid/pneumatic valves, Tiger 2000

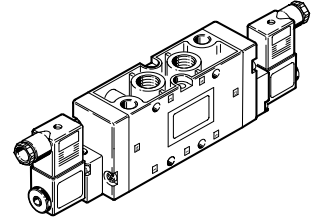
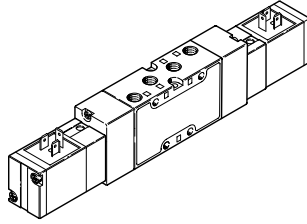
**FESTO**



## Key features

### General

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



### Solenoid coils

#### F solenoid coils

<p>Voltage:</p> <ul style="list-style-type: none"> <li>• 12 to 230 V DC</li> <li>• 12 to 240 V AC (50 to 60 Hz)</li> </ul>	<p>Power consumption:</p> <ul style="list-style-type: none"> <li>• 4.1 to 5.5 W DC</li> <li>• 3.85 to 9 VA AC</li> </ul>	<ul style="list-style-type: none"> <li>• For all MFH valves</li> <li>• Selected types conform to the ATEX Directive for potentially explosive atmospheres</li> </ul>	<ul style="list-style-type: none"> <li>• Solenoid coil can be easily exchanged later</li> <li>• Solenoid coil not included in scope of delivery</li> </ul>
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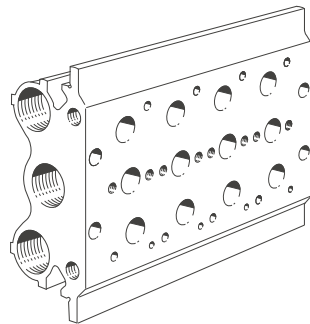
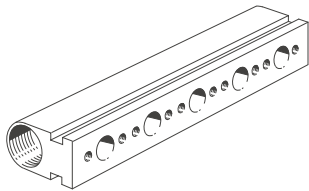
#### V solenoid coils

<p>Voltage:</p> <ul style="list-style-type: none"> <li>• 24 V DC</li> </ul>	<p>Power consumption:</p> <ul style="list-style-type: none"> <li>• 2.5 W</li> </ul>	<ul style="list-style-type: none"> <li>• For all MVH valves</li> <li>• Low heating</li> </ul>	<ul style="list-style-type: none"> <li>• Solenoid coil included in scope of delivery</li> </ul>
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### Manifold assembly

#### With manifold rail PAL

#### With manifold block PRS



The valves Tiger 2000 (without an ATEX category) can be mounted on manifold rails PAL with a common supply port or on manifold blocks PRS with a common supply port and common exhausts.










The manifold rail and manifold block have 2 to 10 valve positions.



#### Note

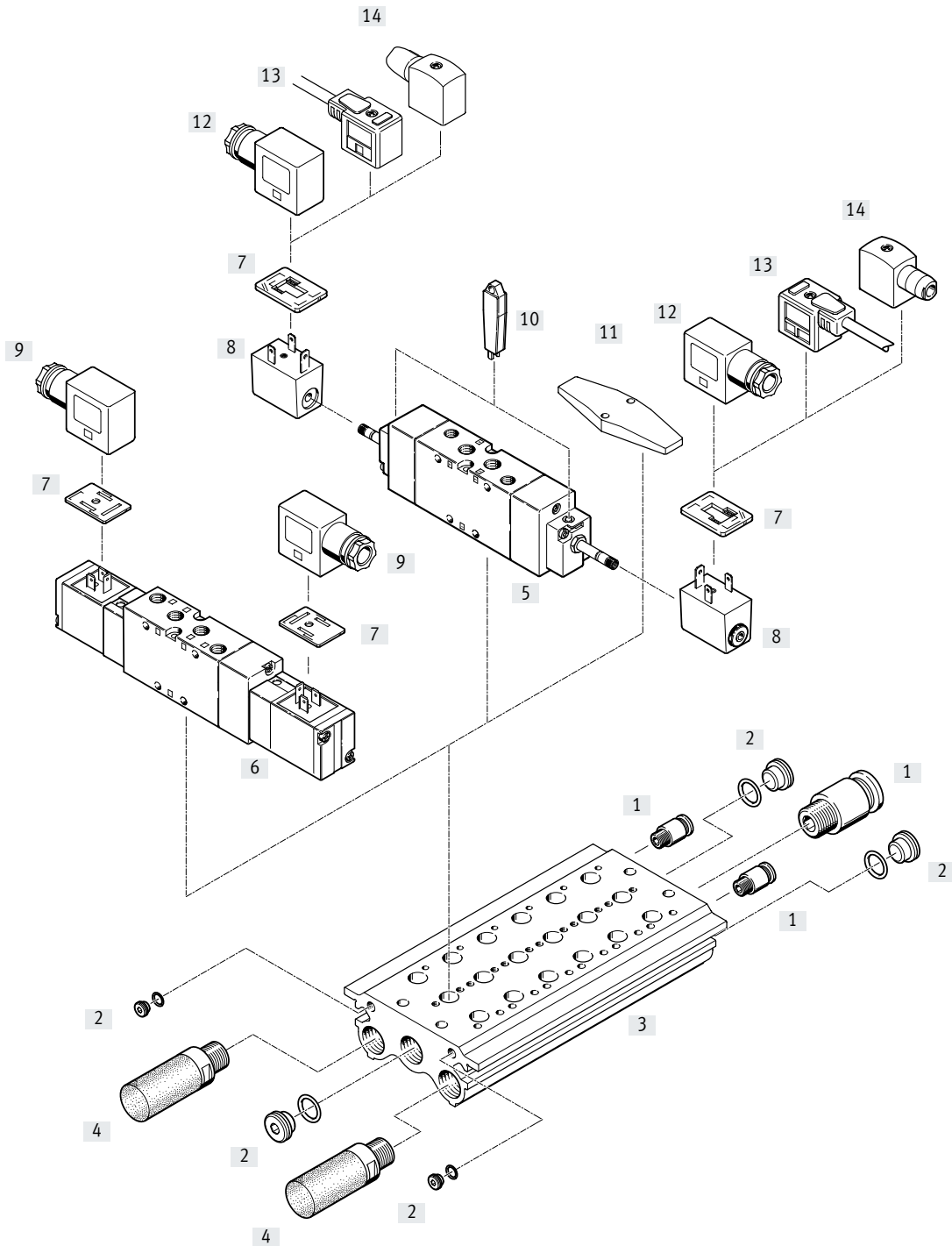
Valves for potentially explosive atmospheres (ATEX category) are not suitable for mounting on manifold rails PAL or manifold blocks PRS.

## Product range overview

Function	Design	Type	Pneumatic connection	Operating voltage		Pilot air supply		Reset method		→ Page/ Internet
				[V DC]	[V AC]	Internal	External	Pneumatic spring	Mechanical spring	
5/2-way valves	<b>Solenoid valve</b>									
		MFH	G1/8	12, 24, 42, 48	12, 24, 42, 48, 110, 230, 240	■	■	■	■	9
			G1/4			■	■	■	■	
			G3/8			■	■	■	■	
		MVH	G1/8	24	-	■	■	■	■	27
			G1/4			■	■	■	■	
			G3/8			■	■	■	■	
	<b>Double solenoid valve</b>									
		JMFH	G1/8	12, 24, 42, 48	12, 24, 42, 48, 110, 230, 240	■	■	-	-	14
			G1/4			■	■	-	-	
			G3/8			■	■	-	-	
		JMVH	G1/8	24	-	■	■	-	-	33
			G1/4			■	■	-	-	
			G3/8			■	■	-	-	
	<b>Pneumatic valve</b>									
	VL	G1/8	-	-	-	-	-	■	49	
		G1/4			-	-	-	■		
		G3/8			-	-	-	■		
<b>Double pilot valve</b>										
	J	G1/8	-	-	-	-	-	-	50	
		G1/4			-	-	-	-		
		G3/8			-	-	-	-		
5/3-way valves	<b>Solenoid valve</b>									
		MFH-5/3	G1/8	12, 24, 42, 48	12, 24, 42, 48, 110, 230, 240	■	■	-	-	20
			G1/4			■	■	-	-	
			G3/8			■	■	-	-	
		MVH-5/3	G1/8	24	-	■	■	-	-	38
			G1/4			■	■	-	-	
			G3/8			■	■	-	-	
	<b>Pneumatic valve</b>									
		VL	G1/8	-	-	-	-	-	-	54
G1/4			-			-	-	-		
G3/8			-			-	-	-		

## Peripherals overview

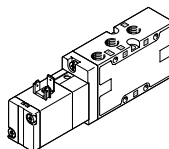
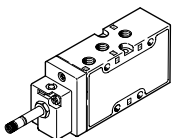
### Mounting on manifold block



### Variants

MFH-5...-B

MVH-5...-B

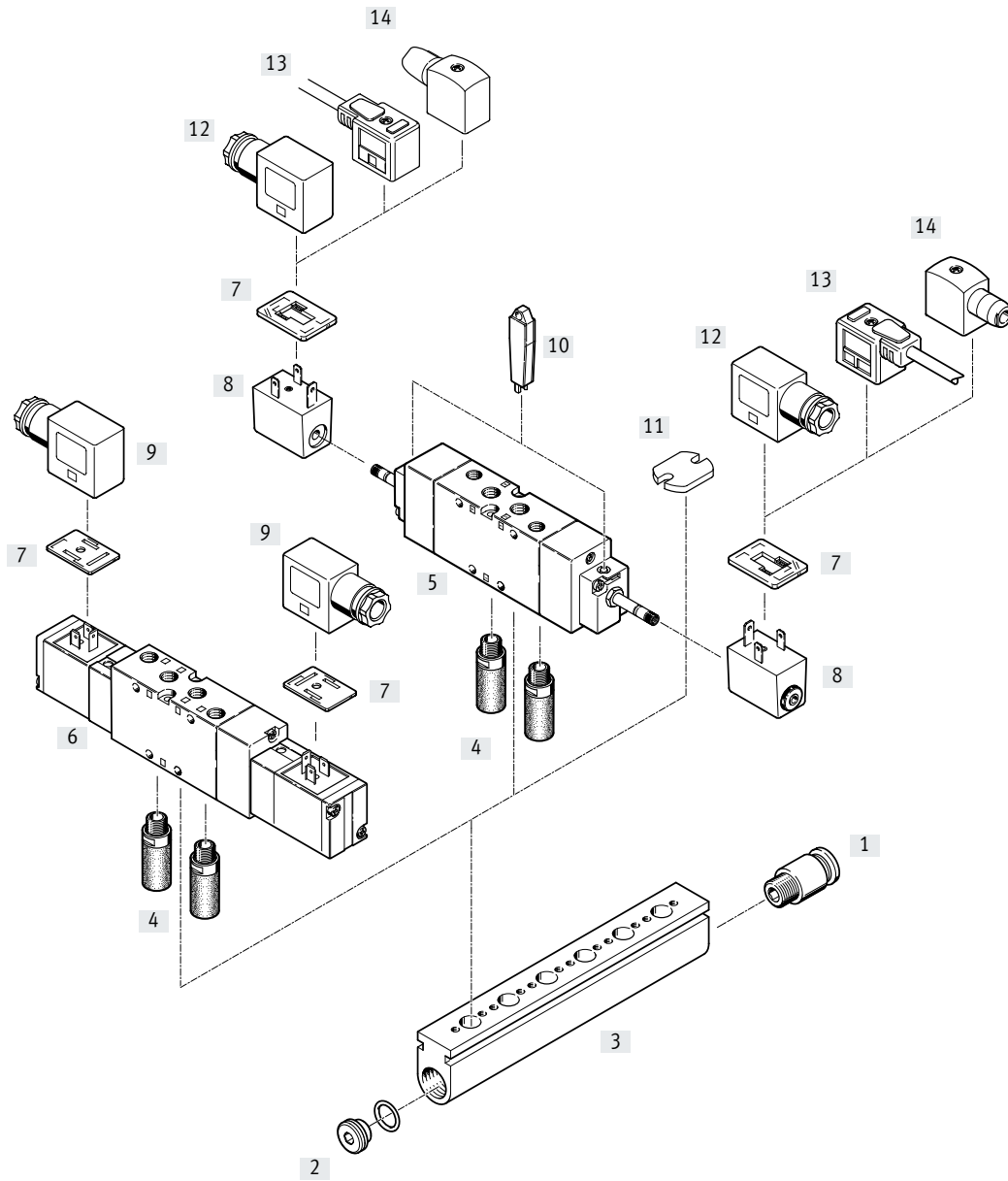


## Peripherals overview

Accessories	Brief description	→ Page/ Internet
[1] Push-in fitting QS	For connecting tubing with standard O.D.	qs
[2] Sealing plug PRSV	–	62
[3] Manifold block PRS	–	60
[4] Silencer	For mounting in exhaust ports	u
[5] Solenoid valve MFH	Basic valve for F solenoid coil	9
[6] Solenoid valve MVH	With V solenoid coil	27
[7] Illuminating seal M...-LD	For indicating the switching status	65
[8] F solenoid coil MSFG, MSFW	F solenoid coil for basic valves MFH, JMFH	64
[9] Plug socket MSSD-V	For solenoid valves MVH, JMVH	65
[10] Manual override AHB	By inserting and turning the manual override AHB (by 90°), the valve can be locked	63
[11] Cover plate PRSB	For covering vacant positions	62
[12] Plug socket MSSD-F	For solenoid valves MFH, JMFH	64
[13] Connecting cable KMF	For solenoid valves MFH, JMFH	64
[14] Plug socket MSSD-F-S	For solenoid valves MFH, JMFH	64

Peripherals overview

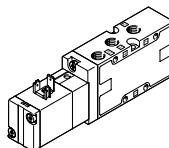
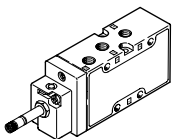
Mounting on manifold rail



Variants

MFH-5-...-B

MVH-5-...-B



## Peripherals overview

Accessories	Brief description	→ Page/ Internet
[1] Push-in fitting QS	For connecting tubing with standard O.D.	qs
[2] Sealing plug PRSV	-	62
[3] Manifold rail PAL	-	58
[4] Silencer	For mounting in exhaust ports	u
[5] Solenoid valve MFH	Basic valve for F solenoid coil	9
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Type codes

001	Series
<b>MFH</b>	Solenoid valve, with armature tube for F-solenoid coil, monostable, normally closed
<b>MVH</b>	Single solenoid valve, with V solenoid coil
<b>JMFH</b>	Solenoid valve, with armature tube for F-solenoid coil, bistable
<b>JMVH</b>	Double solenoid valve, with V solenoid coil

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

003	Pneumatic connection
<b>1/8</b>	G1/8
<b>1/4</b>	G1/4
<b>3/8</b>	G3/8



004	Reset method
	Mechanical spring
<b>L</b>	Pneumatic spring

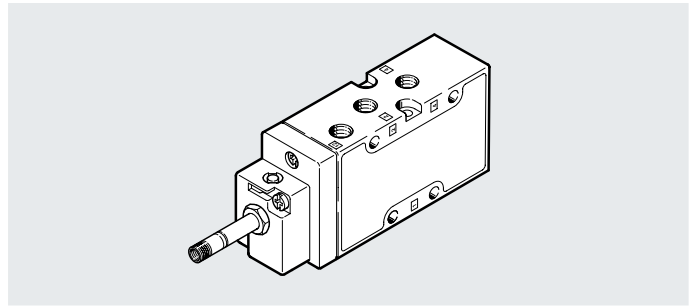
005	Pilot air
	Internal
<b>S</b>	External

006	Generation
<b>B</b>	Series B

007	Certification
	None
<b>EX</b>	EX certification (ATEX)

## Technical data – 5/2-way valves

-  - Flow rate  
750 ... 2000 l/min
-  - Voltage  
12, 24, 42, 48 V DC  
24, 42, 48, 110, 230,  
240 V AC  
Sets of wearing parts  
→ page 13



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

1) ATEX valve

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

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

## Technical data – 5/2-way valves

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

1) For non-reversible valves

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

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

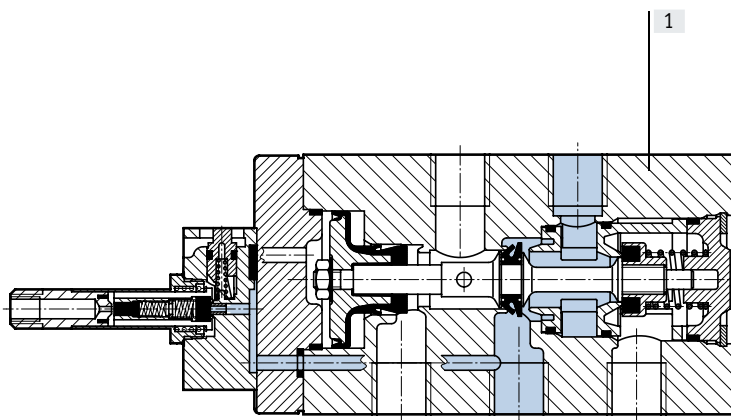
Electrical data – F solenoid coil			
Electrical connection of solenoid coil			Plug pins for plug sockets MSSD-F, KMF
Operating voltage	Direct voltage	[V DC]	12, 24, 42, 48
	Alternating voltage	[V AC]	24, 42, 48, 110, 230, 240 (50 ... 60 Hz)
Characteristic coil data	Direct voltage	[W]	4.5
	Alternating voltage	[VA]	Pull: 7.5 Hold: 6
Degree of protection			IP65 (in combination with plug socket)

Valve switching times [ms]			G1/8		G1/4		G3/8	
Pneumatic connection			G1/8		G1/4		G3/8	
Reset method			Mechanical	Pneumatic	Mechanical	Pneumatic	Mechanical	Pneumatic
On			10	27	12	23	20	25, 27 <sup>1)</sup>
Off			30	22	36	42	56	50, 65 <sup>1)</sup>

1) For reversible valves

### Materials

#### Sectional view



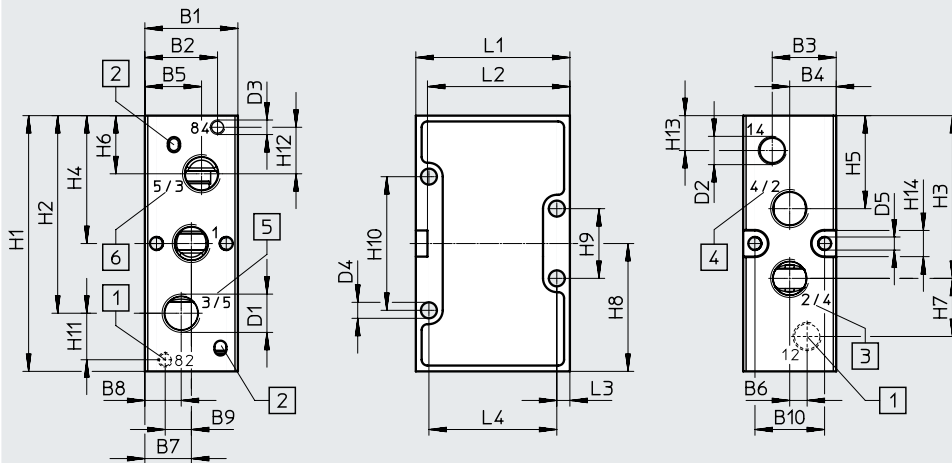
[1] Housing	Die-cast aluminium
- Seals	NBR, TPE-U(PU)
- Note on materials	RoHS-compliant

### Technical data – 5/2-way valves

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

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

Basic valve



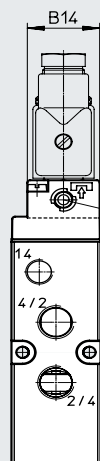
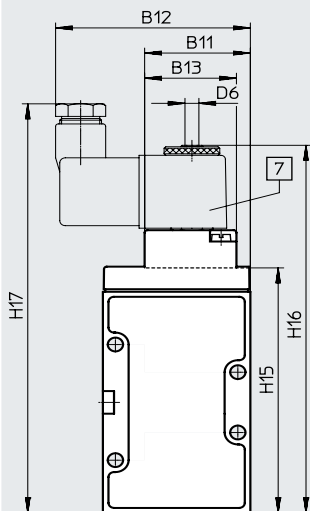
- [1] Port 12 and 82 are not available with MFH-5-...-B and MFH-5-...-S-B
- [2] Protection against rotation
- [3] 2 on poppet seat valve  
4 on piston spool valve
- [4] 4 on poppet seat valve  
2 on piston spool valve
- [5] 3 on poppet seat valve  
5 on piston spool valve
- [6] 5 on poppet seat valve  
3 on piston spool valve

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

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

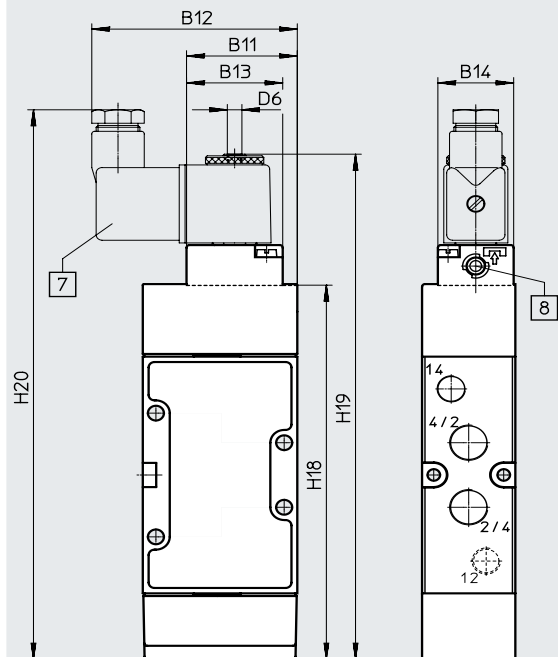
#### Installation dimensions with F solenoid coil

Mechanical reset method



[7] Solenoid coil can be rotated 360°

#### Pneumatic reset method



[8] Manual override can be turned 180°

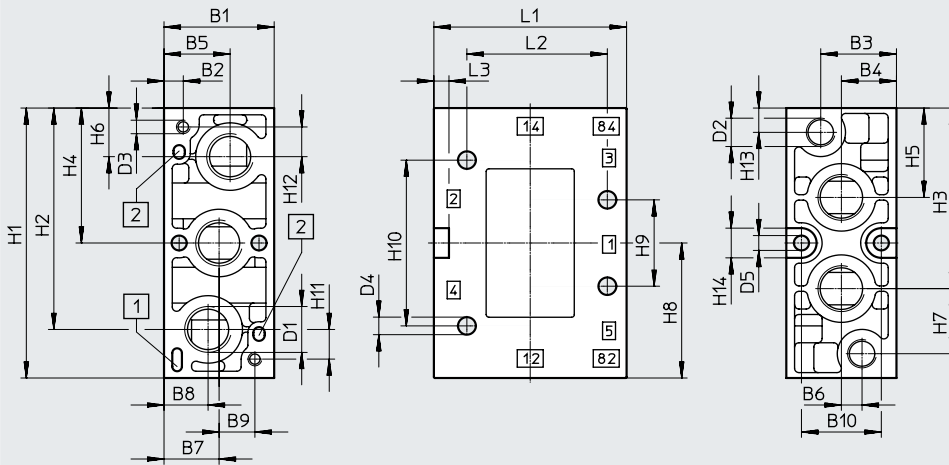
Type	B11	B12	B13	B14	D6	H18	H19	H20
MFH-5-1/8-	36.8	67	33	26	M5	126.2	175	191.5
MFH-5-1/4-	38	70				139	187.8	204.3

Technical data – 5/2-way valves

Dimensions – Pneumatic connection G3/8

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

Basic valve



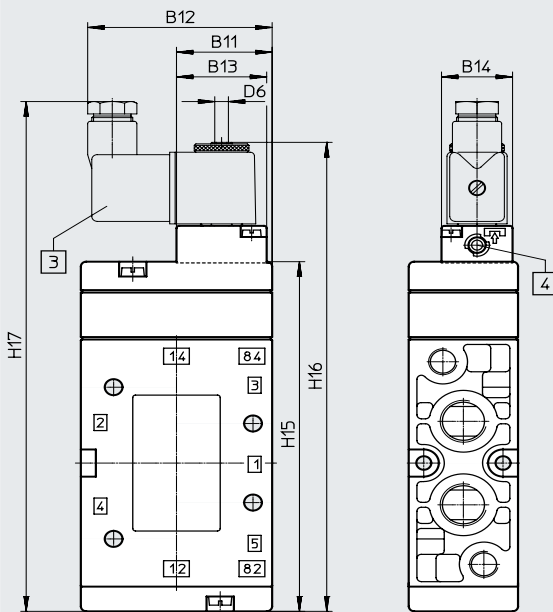
- [1] For coding pin
- [2] Protection against rotation

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

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

Installation dimensions with F solenoid coil

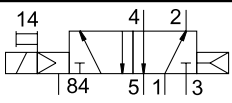
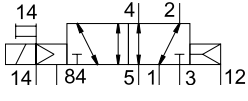
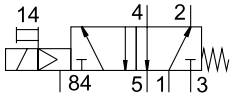
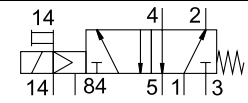
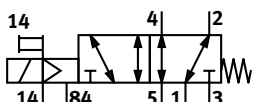
Mechanical or pneumatic reset method



- [3] Solenoid coil can be rotated 360°
- [4] Manual override can be turned 180°

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



## Technical data – 5/2-way valves

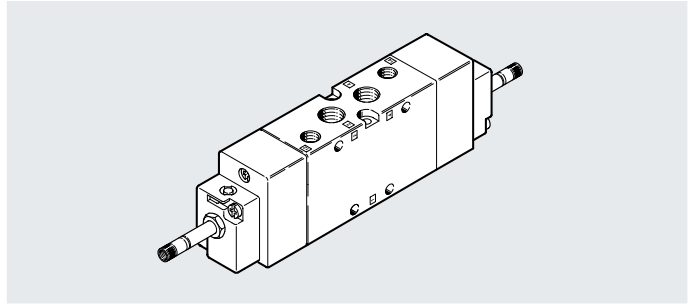
Ordering data	Description of valve (without F solenoid coil <sup>1)</sup> )	Pneumatic connection	ATEX category	Part no.	Type
	<ul style="list-style-type: none"> <li>• Pneumatic reset method</li> <li>• Flow direction not reversible</li> <li>• Internal pilot air supply</li> </ul>	G1/8	–	<b>30991</b>	<b>MFH-5-1/8-L-B</b>
			ATEX category → Page 9	<b>535921</b>	<b>MFH-5-1/8-L-B-EX</b>
		G1/4	–	<b>31010</b>	<b>MFH-5-1/4-L-B</b>
			ATEX category → Page 9	<b>535922</b>	<b>MFH-5-1/4-L-B-EX</b>
		G3/8	–	<b>14946</b>	<b>MFH-5-3/8-L-B</b>
			ATEX category → Page 9	<b>535923</b>	<b>MFH-5-3/8-L-B-EX</b>
	<ul style="list-style-type: none"> <li>• Pneumatic reset method</li> <li>• Flow direction reversible</li> <li>• External pilot air supply</li> </ul>	G1/8	–	<b>30992</b>	<b>MFH-5-1/8-L-S-B</b>
			ATEX category → Page 9	<b>535927</b>	<b>MFH-5-1/8-L-S-B-EX</b>
		G1/4	–	<b>33185</b>	<b>MFH-5-1/4-L-S-B</b>
			ATEX category → Page 9	<b>535928</b>	<b>MFH-5-1/4-L-S-B-EX</b>
		G3/8	–	<b>33181</b>	<b>MFH-5-3/8-L-S-B</b>
			ATEX category → Page 9	<b>535929</b>	<b>MFH-5-3/8-L-S-B-EX</b>
	<ul style="list-style-type: none"> <li>• Mechanical reset method</li> <li>• Flow direction not reversible</li> <li>• Internal pilot air supply</li> </ul>	G1/8	–	<b>19758</b>	<b>MFH-5-1/8-B</b>
			ATEX category → Page 9	<b>535918</b>	<b>MFH-5-1/8-B-EX</b>
		G1/4	–	<b>15901</b>	<b>MFH-5-1/4-B</b>
			ATEX category → Page 9	<b>535919</b>	<b>MFH-5-1/4-B-EX</b>
		G3/8	–	<b>19705</b>	<b>MFH-5-3/8-B</b>
			ATEX category → Page 9	<b>535920</b>	<b>MFH-5-3/8-B-EX</b>
	<ul style="list-style-type: none"> <li>• Mechanical reset method</li> <li>• Flow direction not reversible</li> <li>• External pilot air supply</li> </ul>	G1/8	–	<b>19759</b>	<b>MFH-5-1/8-S-B</b>
			ATEX category → Page 9	<b>535924</b>	<b>MFH-5-1/8-S-B-EX</b>
		G1/4	–	<b>15902</b>	<b>MFH-5-1/4-S-B</b>
			ATEX category → Page 9	<b>535925</b>	<b>MFH-5-1/4-S-B-EX</b>
	<ul style="list-style-type: none"> <li>• Mechanical reset method</li> <li>• Flow direction reversible</li> <li>• External pilot air supply</li> </ul>	G3/8	–	<b>19706</b>	<b>MFH-5-3/8-S-B</b>
			ATEX category → Page 9	<b>535926</b>	<b>MFH-5-3/8-S-B-EX</b>

1) F solenoid coils → page 64

Ordering data – Sets of wearing parts		
Pneumatic connection	Part no.	Type
G1/8	<b>125710</b>	<b>MFH-5-1/8-B</b>
G1/4	<b>115580</b>	<b>MFH-5-1/4-B</b>
G3/8	<b>115074</b>	<b>MFH-5-3/8-B</b>

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

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



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

1) ATEX valve

<b>Safety characteristics</b>		
Max. switching frequency	[Hz]	3
Max. positive test pulse with 0 signal	[µs]	2200
Max. negative test pulse with 1 signal	[µs]	3700

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

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

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

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

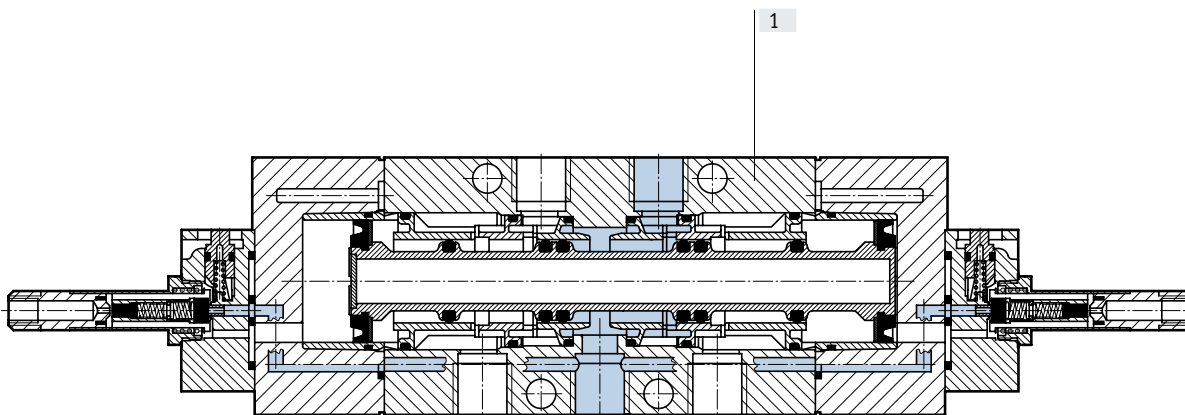
Electrical data – F solenoid coil			
Electrical connection of solenoid coil			Plug pins for plug sockets MSSD-F, KMF
Operating voltage	Direct voltage	[V DC]	12, 24, 42, 48
	Alternating voltage	[V AC]	24, 42, 48, 110, 230, 240 (50 ... 60 Hz)
Characteristic coil data	Direct voltage	[W]	4.5
	Alternating voltage	[VA]	Pull: 7.5 Hold: 6
Degree of protection			IP65 (in combination with plug socket)

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

1) For reversible valves

## Materials

### Sectional view



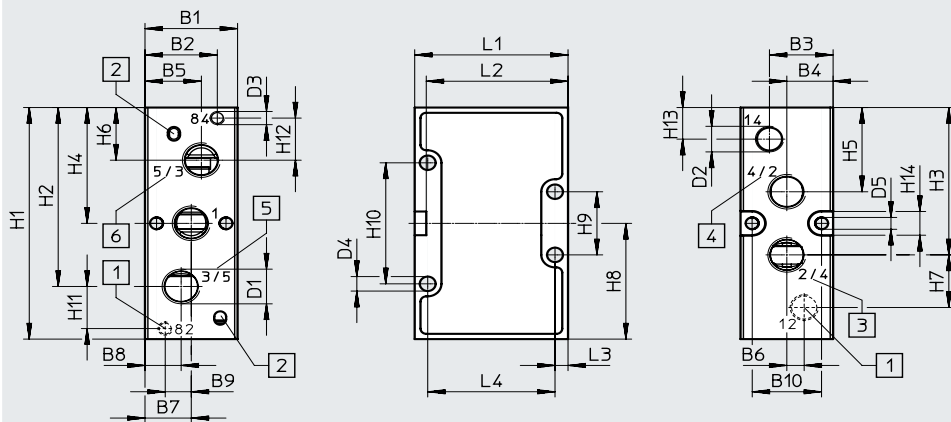
[1] Housing	Die-cast aluminium
- Seals	NBR
Note on materials	RoHS-compliant

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

Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



- [1] Port 12 and 82 are not available with MFH-5-...-B and MFH-5-...-S-B
- [2] Protection against rotation
- [3] 2 on poppet seat valve  
4 on piston spool valve
- [4] 4 on poppet seat valve  
2 on piston spool valve
- [5] 3 on poppet seat valve  
5 on piston spool valve
- [6] 5 on poppet seat valve  
3 on piston spool valve

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

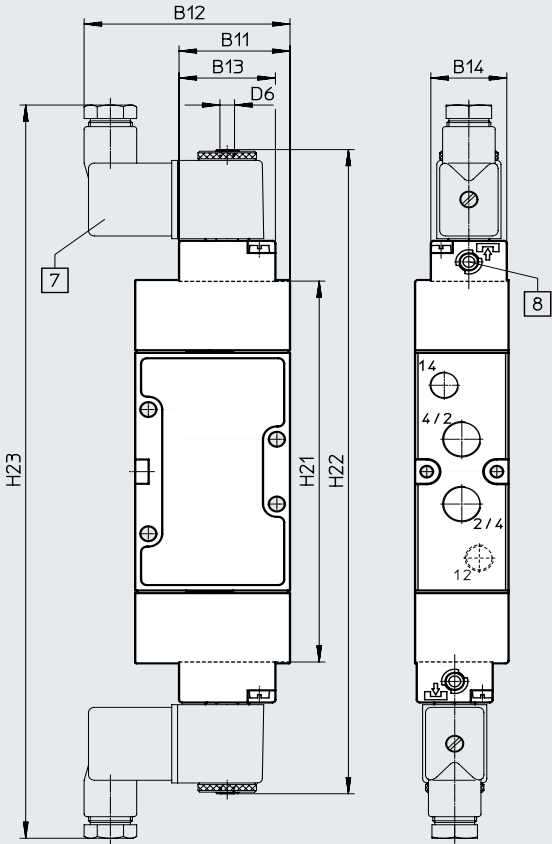
Pneumatic connection	H3	H4	H5	H6	H7	H8 ±0.2	H9	H10	H11	H12	H13	H14	L1 ±0.2	L2	L3	L4
G1/8	49.5	38.5	27.5	17.5	19	38.5	21	41	12	12	8.5	9	47	43	3.5	40
G1/4	56	44	32	20	20	44	22	48	16	16	12		53	49	4.5	44

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

Dimensions – Pneumatic connection G1/8, G1/4

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

Installation dimensions with F solenoid coil, mechanical or pneumatic reset



- [7] Solenoid coil can be rotated 360°
- [8] Manual override can be turned 180°

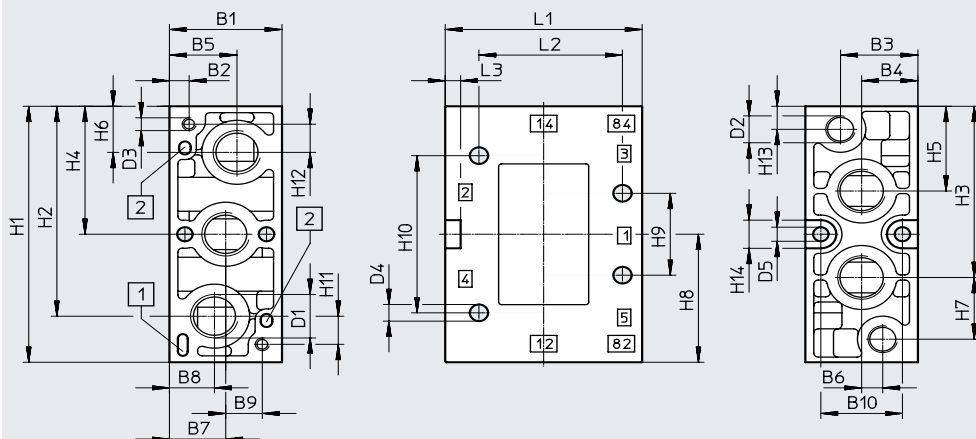
Type	B11	B12	B13	B14	D6	H21	H22	H23
JMFH-5-1/8-	36.8	67	33	26	M5	129	226.6	259.6
JMFH-5-1/4-	38	70				141.5	239.1	272.1

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

Dimensions – Pneumatic connection G3/8

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

Basic valve

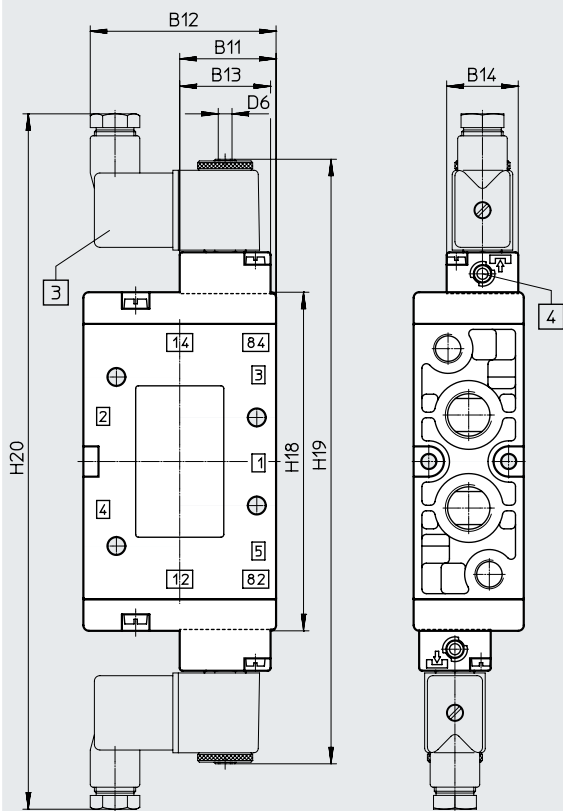


- [1] For coding pin
- [2] Protection against rotation

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

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

Installation dimensions with F solenoid coil, mechanical or pneumatic reset



- [3] Solenoid coil can be rotated 360°
- [4] Manual override can be turned 180°



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

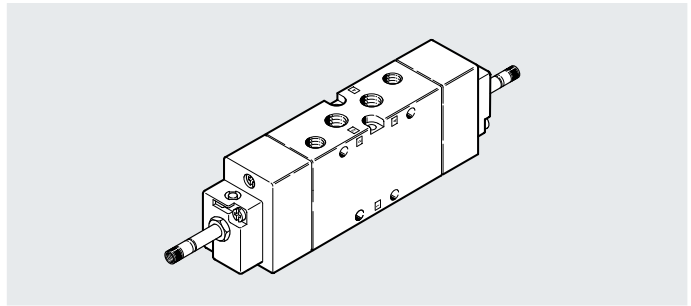
Technical data – 5/2-way valves, double solenoid valves

Ordering data	Description of valve (without F solenoid coil <sup>1)</sup> )	Pneumatic connection	ATEX category	Part no.	Type
	<ul style="list-style-type: none"> <li>Flow direction not reversible</li> <li>Internal pilot air supply</li> </ul>	G1/8	–	<b>30486</b>	<b>JMFH-5-1/8-B</b>
			ATEX category → Page 9	<b>535930</b>	<b>JMFH-5-1/8-B-EX</b>
		G1/4	–	<b>19789</b>	<b>JMFH-5-1/4-B</b>
			ATEX category → Page 9	<b>535931</b>	<b>JMFH-5-1/4-B-EX</b>
		G3/8	–	<b>19700</b>	<b>JMFH-5-3/8-B</b>
			ATEX category → Page 9	<b>535932</b>	<b>JMFH-5-3/8-B-EX</b>
	<ul style="list-style-type: none"> <li>Flow direction reversible</li> <li>External pilot air supply</li> </ul>	G1/8	–	<b>30487</b>	<b>JMFH-5-1/8-S-B</b>
			ATEX category → Page 9	<b>535933</b>	<b>JMFH-5-1/8-S-B-EX</b>
		G1/4	–	<b>19790</b>	<b>JMFH-5-1/4-S-B</b>
			ATEX category → Page 9	<b>535934</b>	<b>JMFH-5-1/4-S-B-EX</b>
		G3/8	–	<b>19702</b>	<b>JMFH-5-3/8-S-B</b>
			ATEX category → Page 9	<b>535935</b>	<b>JMFH-5-3/8-S-B-EX</b>

1) F solenoid coils → page 64

Technical data – 5/3-way valves

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



General technical data		G1/8	G1/4	G3/8
Pneumatic connection		G1/8	G1/4	G3/8
Valve function		5/3-way		
Design		Piston spool		
Overlap		Positive overlap		
Sealing principle		Soft		
Actuation type		Electrical		
Reset method		Mechanical spring		
Type of control		Piloted		
Pilot air supply		Internal or external		
Flow direction		Reversible or not reversible (see switching symbol)		
Exhaust air function		Cannot be throttled	Can be throttled	Can be throttled
Manual override		Non-detenting		
Type of mounting		With through-hole		
Mounting position		Any		
Electrical connection		Via F solenoid coil, to be ordered separately		
b value		–	0.38	–
c value [l/s bar]		–	6.35	–
Nominal width [mm]		8	10	12
Standard nominal flow rate	Closed [l/min]	1000	1600	2200
	Exhausted [l/min]			2200
	Pressurised [l/min]			2600
Grid dimension [mm]		27	33	41
Valve width [mm]		26	32	40
Product weight [g]		400, 440 <sup>1)</sup>	500	780, 1000 <sup>1)</sup>

1) ATEX valve

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

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

## Technical data – 5/3-way valves

Operating and environmental conditions			G1/8	G1/4	G3/8
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]		
Pilot medium (with external pilot air supply)			Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the 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
	External pilot air supply	[bar]	-0.9 ... +10	-0.9 ... +10	-0.9 ... +10
Pilot pressure		[bar]	3 ... 10	3 ... 10	3 ... 10
Storage temperature		[°C]	-40 ... +60		
Ambient temperature		[°C]	-5 ... +40		
Temperature of medium		[°C]	-10 ... +60		
		[°C]	-5 ... +40 (MFH- ... -EX)		
Corrosion resistance class CRC <sup>1)</sup>			1		

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

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

## Electrical data

F solenoid coil			
Electrical connection of solenoid coil			Plug pins for plug sockets MSSD-F, KMF
Operating voltage	Direct voltage	[V DC]	12, 24, 42, 48
	Alternating voltage	[V AC]	24, 42, 48, 110, 230, 240 (50 ... 60 Hz)
Characteristic coil data	Direct voltage	[W]	4.5
	Alternating voltage	[VA]	Pull: 7.5 Hold: 6
Degree of protection			IP65 (in combination with plug socket)

## Valve switching times [ms]

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

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

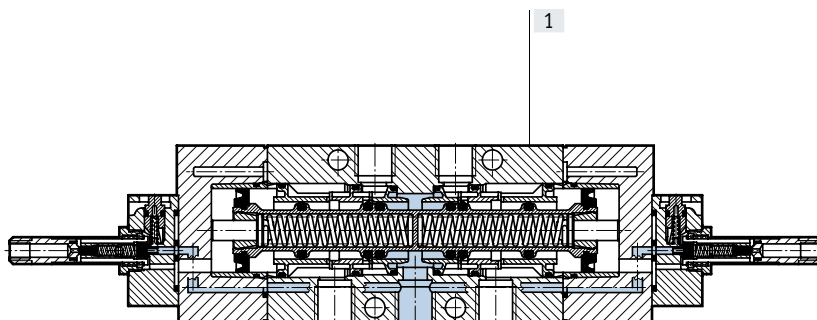
2) After long electrical actuation (> 16h), the switch-off time of 5/3-way valves can increase to max. 50 ms.

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

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

## Materials

## Sectional view



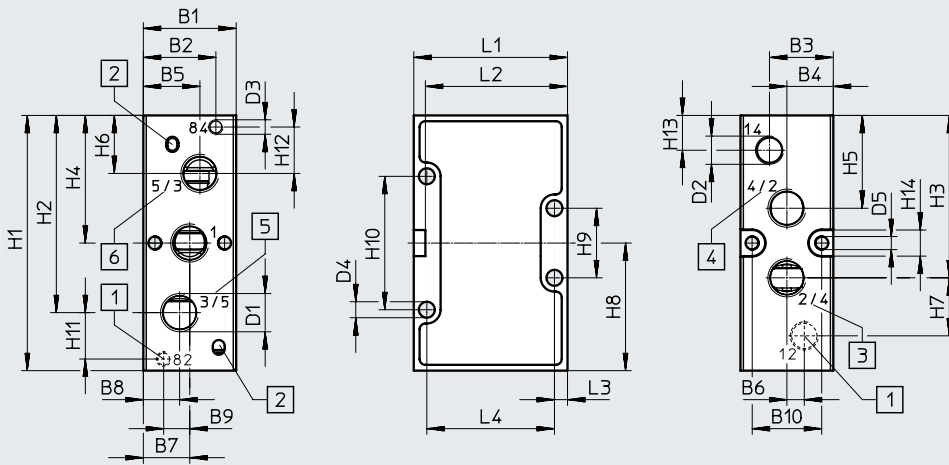
[1] Housing	Die-cast aluminium
- Seals	NBR
- Note on materials	RoHS-compliant

Technical data – 5/3-way valves

Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



- [1] Port 12 and 82 are not available with MFH-5-...-B and MFH-5-...-S-B
- [2] Protection against rotation
- [3] 2 on poppet seat valve  
4 on piston spool valve
- [4] 4 on poppet seat valve  
2 on piston spool valve
- [5] 3 on poppet seat valve  
5 on piston spool valve
- [6] 5 on poppet seat valve  
3 on piston spool valve

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

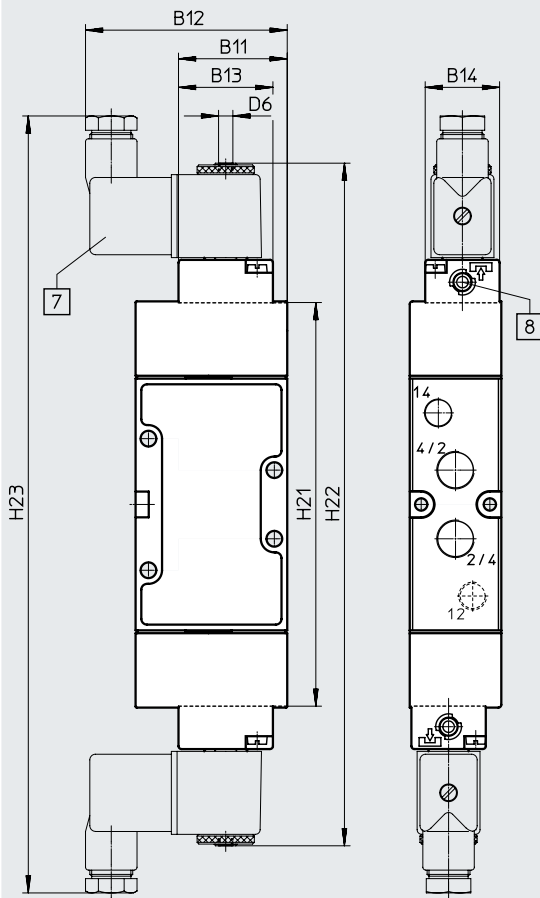
Pneumatic connection	H3	H4	H5	H6	H7	H8 ±0.2	H9	H10	H11	H12	H13	H14	L1 ±0.2	L2	L3	L4
G1/8	49.5	38.5	27.5	17.5	19	38.5	21	41	12	12	8.5	9	47	43	3.5	40
G1/4	56	44	32	20	20	44	22	48	16	16	12		53	49	4.5	44

## Technical data – 5/3-way valves

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

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

Installation dimensions with F solenoid coil, mechanical or pneumatic reset



[7] Solenoid coil can be rotated 360°

[8] Manual override can be turned 180°

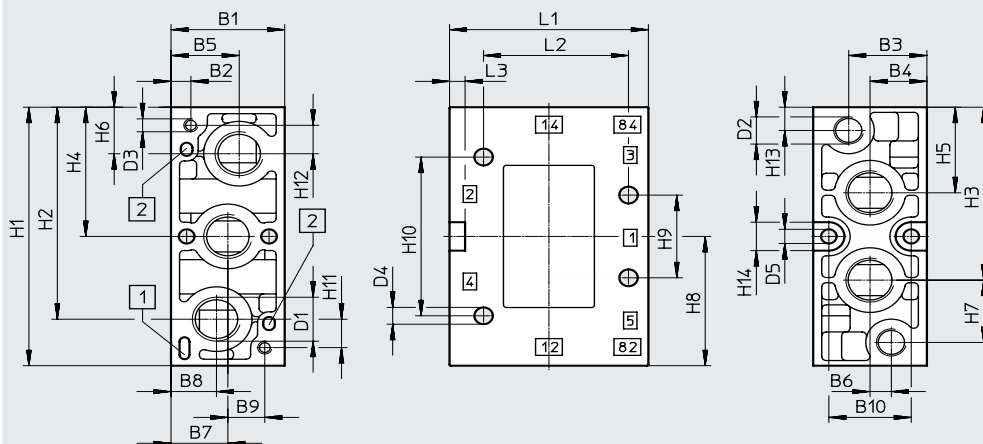
Type	B11	B12	B13	B14	D6	H21	H22	H23
MFH-5-1/8-	36.8	67	33	26	M5	129	226.6	259.6
MFH-5-1/4-	38	70				141.5	239.1	272.1

### Technical data – 5/3-way valves

**Dimensions – Pneumatic connection G3/8**

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

Basic valve

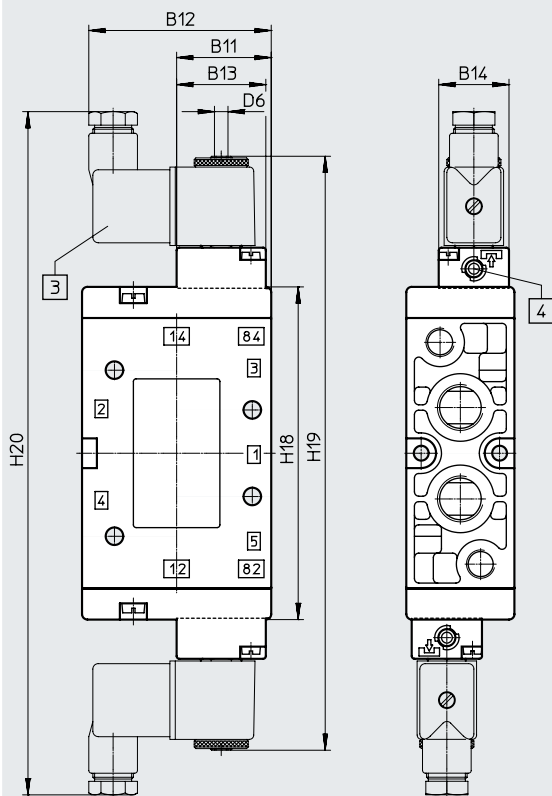


- [1] For coding pin
- [2] Protection against rotation

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

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

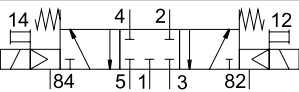
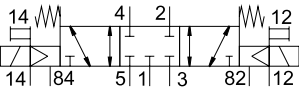
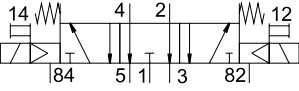
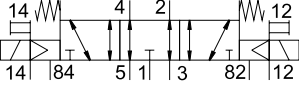
**Installation dimensions with F solenoid coil, mechanical or pneumatic reset**



- [3] Solenoid coil can be rotated 360°
- [4] Manual override can be turned 180°

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

## Technical data – 5/3-way valves

Ordering data	Description of valve (without F solenoid coil <sup>1)</sup> )	Pneumatic connection	ATEX category	Part no.	Type
	<ul style="list-style-type: none"> <li>• Normally closed</li> <li>• Internal pilot air supply</li> </ul>	G1/8	–	30484	MFH-5/3G-1/8-B
			ATEX category → Page 20	535936	MFH-5/3G-1/8-B-EX
		G1/4	–	19787	MFH-5/3G-1/4-B
			ATEX category → Page 20	535937	MFH-5/3G-1/4-B-EX
		G3/8	–	19707	MFH-5/3G-3/8-B
			ATEX category → Page 20	535938	MFH-5/3G-3/8-B-EX
	<ul style="list-style-type: none"> <li>• Normally closed</li> <li>• External pilot air supply</li> </ul>	G1/8	–	30993	MFH-5/3G-1/8-S-B
			ATEX category → Page 20	535939	MFH-5/3G-1/8-S-B-EX
		G1/4	–	31001	MFH-5/3G-1/4-S-B
			ATEX category → Page 20	535940	MFH-5/3G-1/4-S-B-EX
		G3/8	–	31317	MFH-5/3G-3/8-S-B
			ATEX category → Page 20	535941	MFH-5/3G-3/8-S-B-EX
	<ul style="list-style-type: none"> <li>• Normally exhausted</li> <li>• Internal pilot air supply</li> </ul>	G1/8	–	30483	MFH-5/3E-1/8-B
			ATEX category → Page 20	535942	MFH-5/3E-1/8-B-EX
		G1/4	–	19786	MFH-5/3E-1/4-B
			ATEX category → Page 20	535943	MFH-5/3E-1/4-B-EX
		G3/8	–	19708	MFH-5/3E-3/8-B
			ATEX category → Page 20	535944	MFH-5/3E-3/8-B-EX
	<ul style="list-style-type: none"> <li>• Normally exhausted</li> <li>• External pilot air supply</li> </ul>	G1/8	–	30994	MFH-5/3E-1/8-S-B
			ATEX category → Page 20	535945	MFH-5/3E-1/8-S-B-EX
		G1/4	–	31002	MFH-5/3E-1/4-S-B
			ATEX category → Page 20	535946	MFH-5/3E-1/4-S-B-EX
		G3/8	–	31318	MFH-5/3E-3/8-S-B
			ATEX category → Page 20	535947	MFH-5/3E-3/8-S-B-EX



1) F solenoid coils → page 64

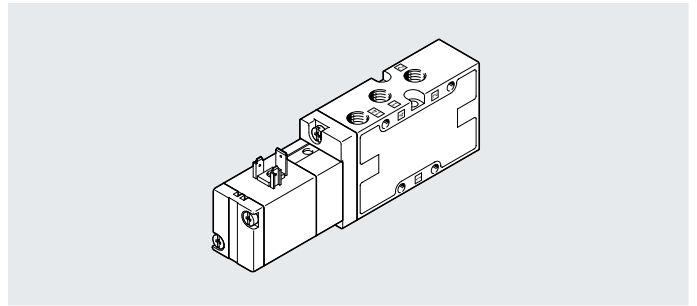
Technical data – 5/3-way valves

Ordering data	Description of valve (without F solenoid coil <sup>1)</sup> )	Pneumatic connection	ATEX category	Part no.	Type
	<ul style="list-style-type: none"> <li>• Normally pressurised</li> <li>• Internal pilot air supply</li> </ul>	G1/8	–	<b>30485</b>	<b>MFH-5/3B-1/8-B</b>
			ATEX category → Page 20	<b>535948</b>	<b>MFH-5/3B-1/8-B-EX</b>
		G1/4	–	<b>19788</b>	<b>MFH-5/3B-1/4-B</b>
			ATEX category → Page 20	<b>535949</b>	<b>MFH-5/3B-1/4-B-EX</b>
		G3/8	–	<b>19709</b>	<b>MFH-5/3B-3/8-B</b>
			ATEX category → Page 20	<b>535950</b>	<b>MFH-5/3B-3/8-B-EX</b>
	<ul style="list-style-type: none"> <li>• Normally pressurised</li> <li>• External pilot air supply</li> </ul>	G1/8	–	<b>30995</b>	<b>MFH-5/3B-1/8-S-B</b>
			ATEX category → Page 20	<b>535951</b>	<b>MFH-5/3B-1/8-S-B-EX</b>
		G1/4	–	<b>31003</b>	<b>MFH-5/3B-1/4-S-B</b>
			ATEX category → Page 20	<b>535952</b>	<b>MFH-5/3B-1/4-S-B-EX</b>
		G3/8	–	<b>31319</b>	<b>MFH-5/3B-3/8-S-B</b>
			ATEX category → Page 20	<b>535953</b>	<b>MFH-5/3B-3/8-S-B-EX</b>

1) F solenoid coils → page 64

## Technical data – 5/2-way valves

-  - Flow rate  
750 ... 2000 l/min
-  - Voltage  
24 V DC
- Sets of wearing parts  
→ page 38



General technical data						
Pneumatic connection	G1/8		G1/4		G3/8	
Reset method	Mechanical	Pneumatic	Mechanical	Pneumatic	Mechanical	Pneumatic
Valve function	5/2-way					
Design	Poppet seat	Piston spool	Poppet seat	Piston spool	Piston spool	
Overlap	Negative overlap	Positive overlap	Negative overlap	Positive overlap	Positive overlap	
Sealing principle	Soft					
Actuation type	Electrical					
Type of control	Piloted					
Pilot air supply	Internal or external					
Flow direction	Reversible or not reversible (see switching symbol)					
Exhaust air function	Can be throttled					
Manual override	Non-detenting					
Type of mounting	With through-hole					
Mounting position	Any					
b value	0.34	–	0.29	0.38	–	–
c value	[l/s bar]	3	–	5.5	6.35	–
Nominal width	[mm]	5	8	7	10	12
Standard nominal flow rate	[l/min]	750	1000	1300	1600	2000
Grid dimension	[mm]	27		33		41
Valve width	[mm]	26		32		40
Product weight	[g]	230	290	360	440	750
Safety characteristics						
Max. switching frequency	[Hz]	3				
Max. positive test pulse with 0 signal	[µs]	2200				
Max. negative test pulse with 1 signal	[µs]	3700				

## Technical data – 5/2-way valves

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

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

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

### Electrical data – V solenoid coil

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

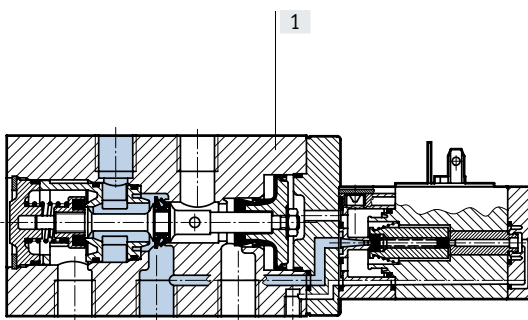
### Valve switching times [ms]

Type	MVH-5-1/8-B MVH-5-1/8-S-B MVH-5-1/8-B-VI-X	MVH-5-1/8-L-B MVH-5-1/8-LS-B	MVH-5-1/4-B MVH-5-1/4-S-B	MVH-5-1/4-L-B MVH-5-1/4-LS-B	MVH-5-3/8-B MVH-5-3/8-S-B	MVH-5-3/8-L-B MVH-5-3/8-LS-B
On	20	30	15, 19 <sup>1)</sup>	28	22	22
Off	36	25	36, 41 <sup>1)</sup>	37	60	60

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

### Materials

#### Sectional view



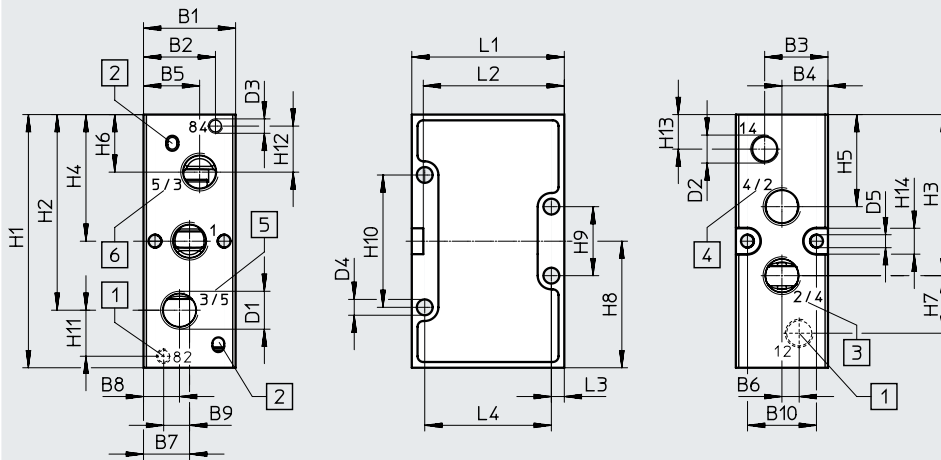
[1] Housing	Die-cast aluminium
- Seals	NBR, PU, TPE-U(PU)
- Note on materials	RoHS-compliant

### Technical data – 5/2-way valves

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

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

Basic valve



- [1] Port 12 and 82 are not available with MFH-5-...-B and MFH-5-...-S-B
- [2] Protection against rotation
- [3] 2 on poppet seat valve  
4 on piston spool valve
- [4] 4 on poppet seat valve  
2 on piston spool valve
- [5] 3 on poppet seat valve  
5 on piston spool valve
- [6] 5 on poppet seat valve  
3 on piston spool valve

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

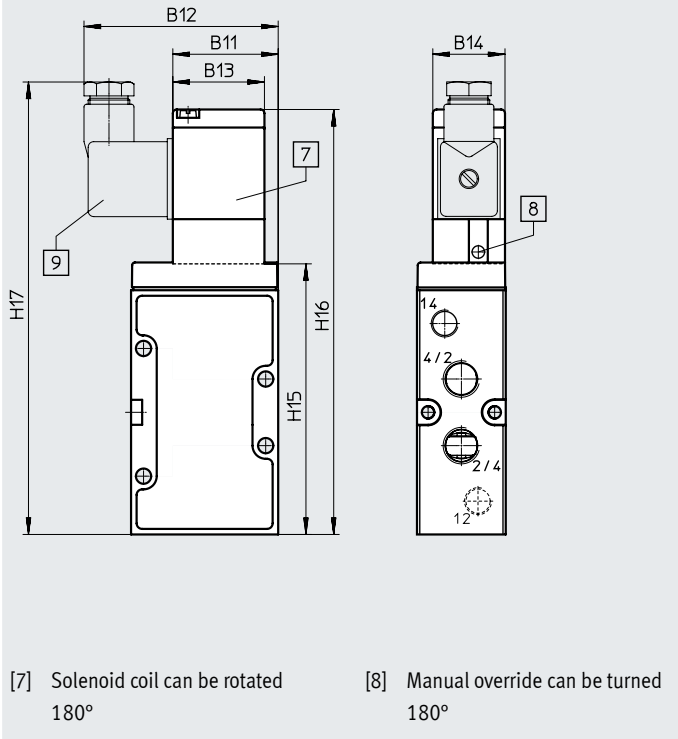
Pneumatic connection	H3	H4	H5	H6	H7	H8 ±0.2	H9	H10	H11	H12	H13	H14	L1 ±0.2	L2	L3	L4
G1/8	49.5	38.5	27.5	17.5	19	38.5	21	41	12	12	8.5	9	47	43	3.5	40
G1/4	56	44	32	20	20	44	22	48	16	16	12		53	49	4.5	44

Technical data – 5/2-way valves

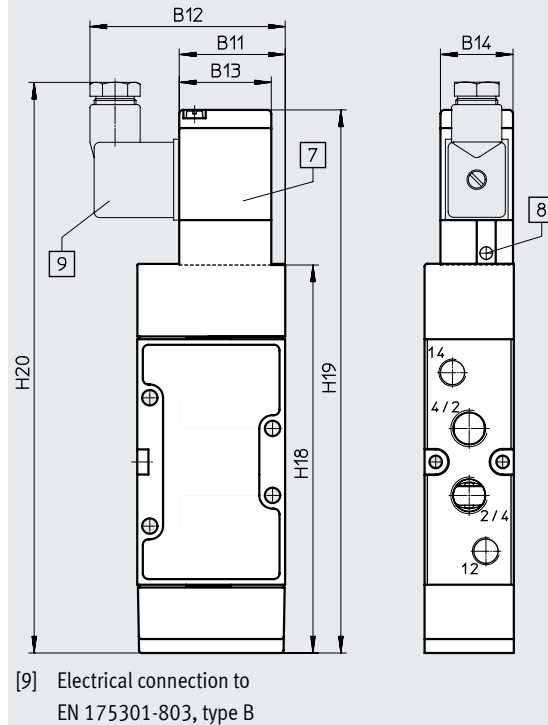
Dimensions – Pneumatic connection G1/8, G1/4

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

Installation dimensions with V solenoid coil  
Mechanical reset method



Pneumatic reset method



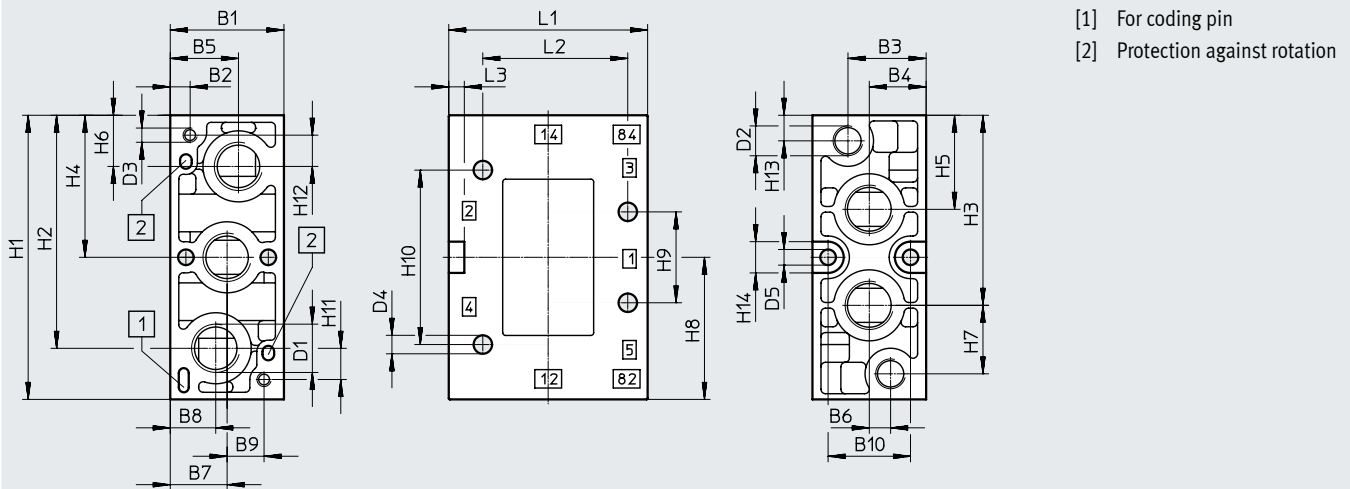
Type	B11	B12	B13	B14	H15	H16	H17
MVH-5-1/8-	36.8	67	33	26	86.5	142.6	152.6
MVH-5-1/4-	38	70			97.5	153.1	163.1

### Technical data – 5/2-way valves

#### Dimensions – Pneumatic connection G3/8

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

Basic valve



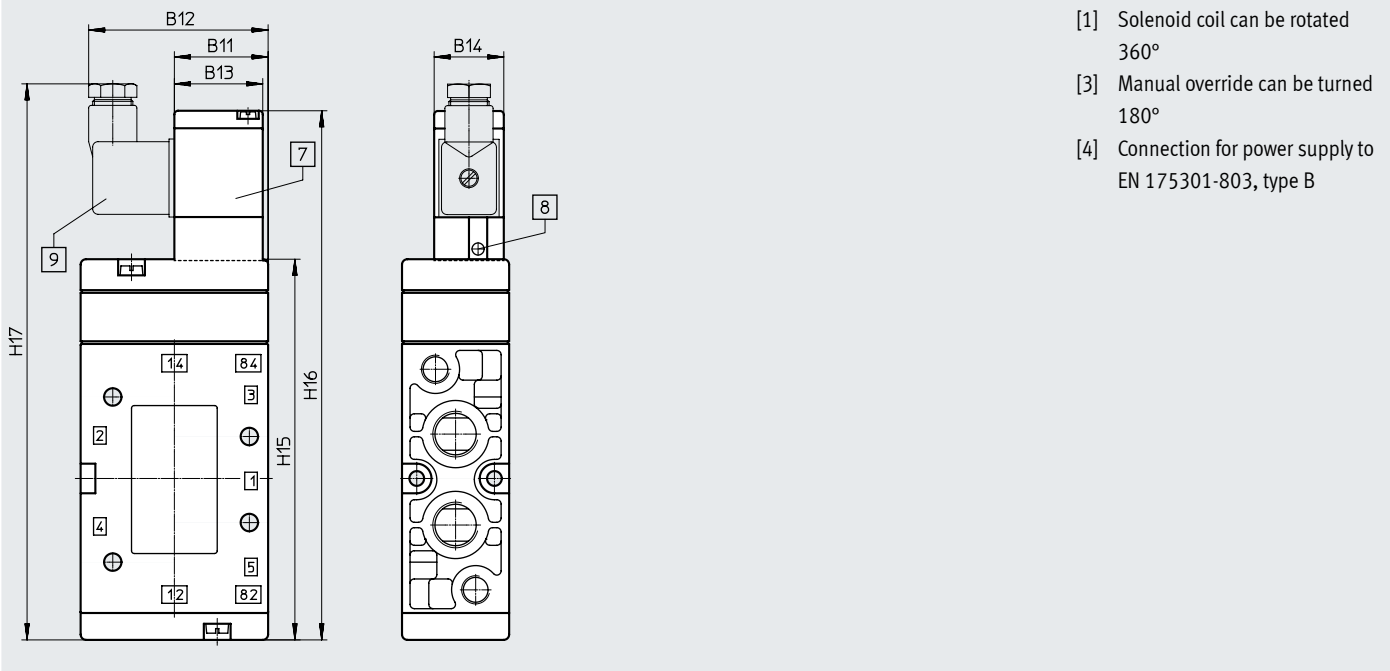
- [1] For coding pin
- [2] Protection against rotation

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

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

#### Installation dimensions with V solenoid coil

Mechanical or pneumatic reset method



- [1] Solenoid coil can be rotated 360°
- [3] Manual override can be turned 180°
- [4] Connection for power supply to EN 175301-803, type B


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

Technical data – 5/2-way valves

Ordering data					
Circuit symbol	Description of valves with V solenoid coil	Voltage	Pneumatic connection	Part no.	Type
	<ul style="list-style-type: none"> <li>Pneumatic reset method</li> <li>Internal pilot air supply</li> </ul>	24 V DC	G1/8	19749	MVH-5-1/8-L-B
			G1/4	31009	MVH-5-1/4-L-B
			G3/8	14947	MVH-5-3/8-L-B
	<ul style="list-style-type: none"> <li>Pneumatic reset method</li> <li>External pilot air supply</li> </ul>	24 V DC	G1/8	19750	MVH-5-1/8-L-S-B
			G1/4	33184	MVH-5-1/4-L-S-B
			G3/8	33180	MVH-5-3/8-L-S-B
	<ul style="list-style-type: none"> <li>Mechanical reset method</li> <li>Internal pilot air supply</li> </ul>	24 V DC	G1/8	19779	MVH-5-1/8-B
			G1/4	19701	MVH-5-1/4-B
			G3/8	14945	MVH-5-3/8-B
	<ul style="list-style-type: none"> <li>Mechanical reset method</li> <li>External pilot air supply</li> </ul>	24 V DC	G1/8	30996	MVH-5-1/8-S-B
			G1/4	15903	MVH-5-1/4-S-B
	<ul style="list-style-type: none"> <li>Mechanical reset method</li> <li>External pilot air supply</li> </ul>	24 V DC	G3/8	15342	MVH-5-3/8-S-B

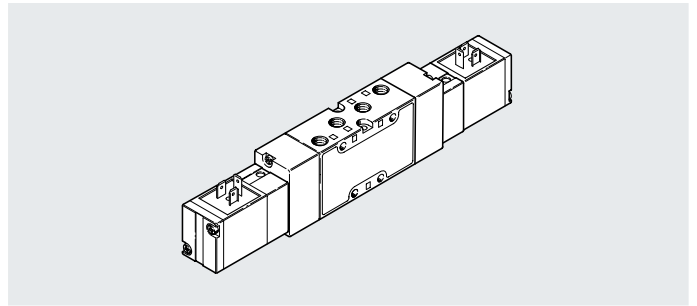
Ordering data – Sets of wearing parts		
Pneumatic connection	Part no.	Type
G1/8	125071	MVH-5-1/8-B
G1/4	115588	MVH-5-1/4-B
G3/8	115074	MVH-5-3/8-B

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

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

-  - Voltage  
24 V DC

Sets of wearing parts  
→ page 37



General technical data		G1/8	G1/4	G3/8
Pneumatic connection		G1/8	G1/4	G3/8
Valve function		5/2-way, double solenoid		
Design		Piston spool		
Overlap		Positive overlap		
Sealing principle		Soft		
Actuation type		Electrical		
Type of control		Piloted		
Pilot air supply		Internal or external		
Flow direction		Reversible or not reversible (see switching symbol)		
Exhaust air function		Can be throttled		
Manual override		Non-detenting		
Type of mounting		With through-hole		
Mounting position		Any		
b value		–	0.38	–
c value [l/s bar]		–	6.35	–
Nominal width [mm]		8	10	12
Standard nominal flow rate [l/min]		1000	1600	2000
Grid dimension [mm]		27	33	41
Valve width [mm]		26	32	40
Product weight [g]		560	615	900

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

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

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

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

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

Electrical data – V solenoid coil

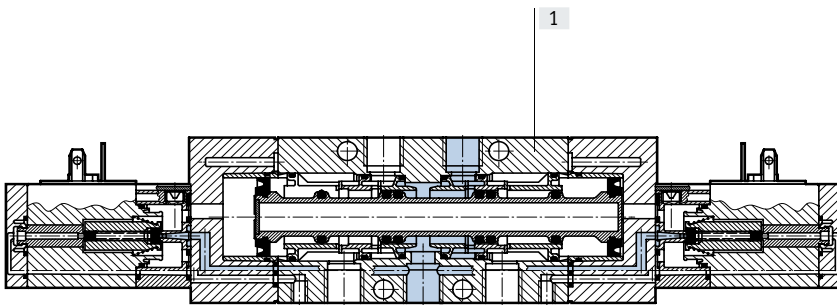
Electrical connection	To EN 175301-803, type B		
Permissible voltage fluctuations	[%]	± 10	
Operating voltage	Direct voltage	[V DC]	24
Characteristic coil data	Direct voltage	[W]	2.5
Degree of protection	IP65 (in combination with plug socket)		

Valve switching times [ms]

Type	JMVH-5-1/8-B JMVH-5-1/8-S-B	JMVH-5-1/8-B-VI-X	JMVH-5-1/4-B JMVH-5-1/4-S-B	JMVH-5-1/4-B-VI-X	JMVH-5-3/8-B JMVH-5-3/8-S-B
Changeover	18	22	16	18	17

Materials

Sectional view

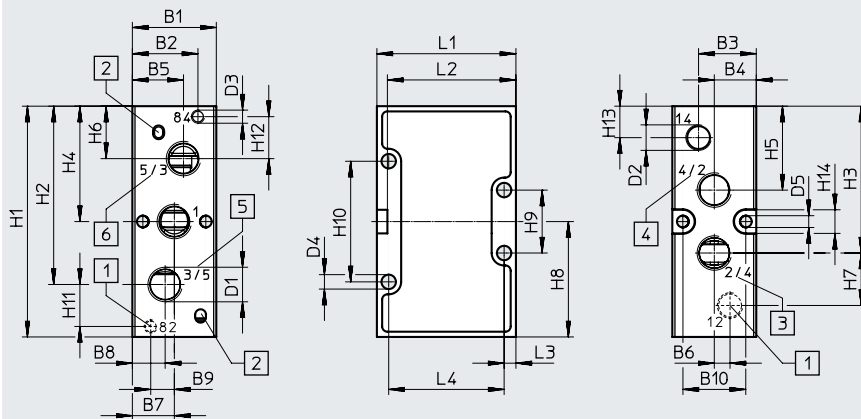


[1]	Housing	Die-cast aluminium
-	Seals	NBR
-	Note on materials	RoHS-compliant

Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



- [1] Port 12 and 82 are not available with MFH-5-...-B and MFH-5-...-S-B
- [2] Protection against rotation
- [3] 2 on poppet seat valve  
4 on piston spool valve
- [4] 4 on poppet seat valve  
2 on piston spool valve
- [5] 3 on poppet seat valve  
5 on piston spool valve
- [6] 5 on poppet seat valve  
3 on piston spool valve

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

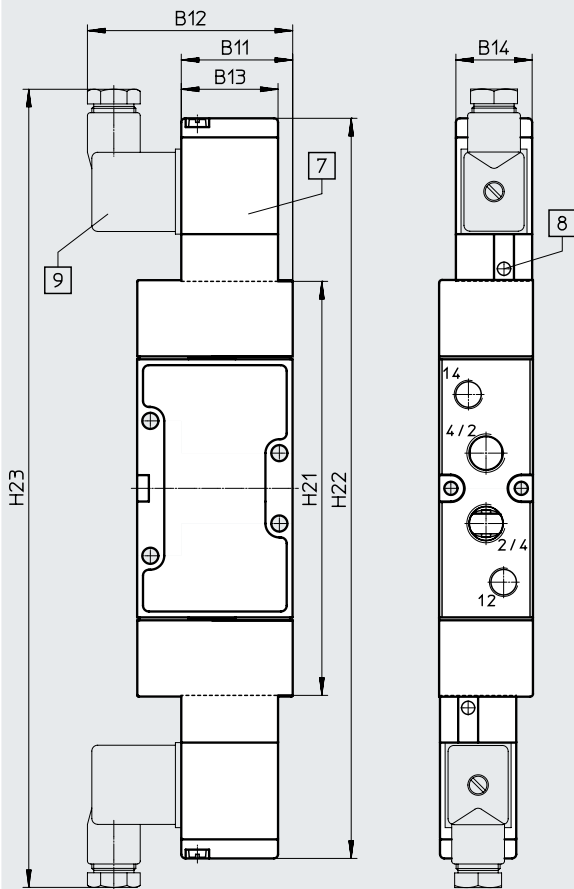
Pneumatic connection	H3	H4	H5	H6	H7	H8 ±0.2	H9	H10	H11	H12	H13	H14	L1 ±0.2	L2	L3	L4
G1/8	49.5	38.5	27.5	17.5	19	38.5	21	41	12	12	8.5	9	47	43	3.5	40
G1/4	56	44	32	20	20	44	22	48	16	16	12		53	49	4.5	44

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

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

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

Installation dimensions with V solenoid coil



- [7] Solenoid coil can be rotated 360°
- [8] Manual override can be turned 180°
- [9] Electrical connection to EN 175301-803, type B

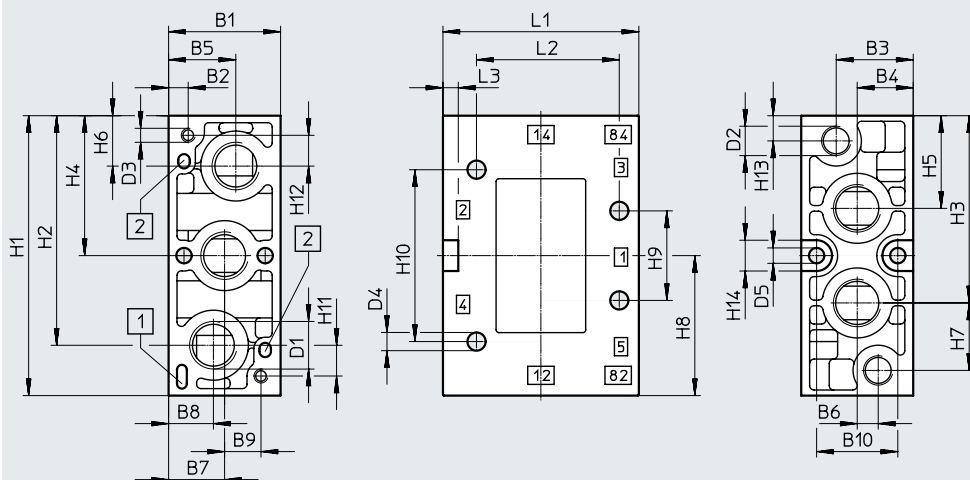
Type	B11	B12	B13	B14	H21	H22	H23
JMVH-5-1/8-	36.8	67	33	26	129	241.2	261.2
JMVH-5-1/4-	38	70			141	254.2	274.5

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

Dimensions – Pneumatic connection G3/8

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

Basic valve

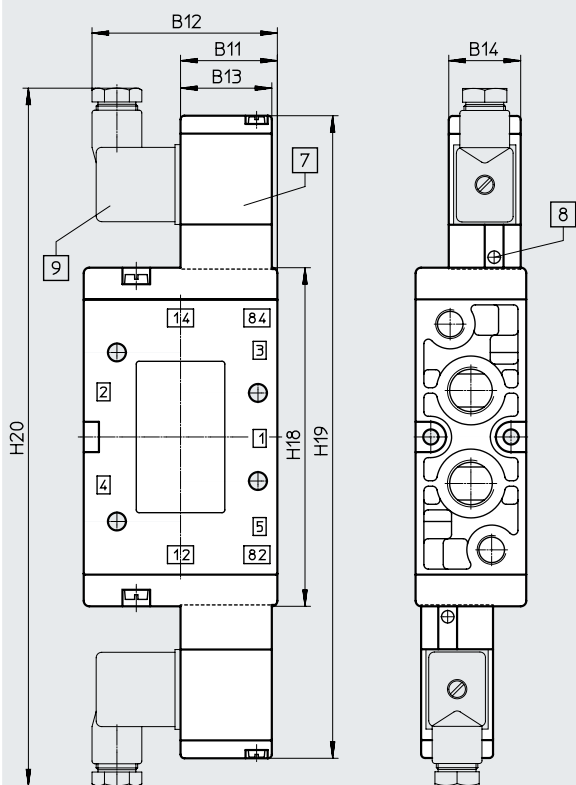


- [1] For coding pin
- [2] Protection against rotation

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

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

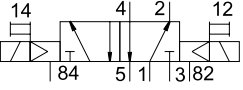
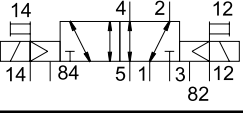
Installation dimensions with V solenoid coil



- [7] Solenoid coil can be rotated 360°
- [8] Manual override can be turned 180°
- [9] Electrical connection to EN 175301-803, type B

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


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

Ordering data		Description of valves with V solenoid coil	Voltage	Pneumatic connection	Part no.	Type
	<ul style="list-style-type: none"> <li>Internal pilot air supply</li> </ul>	24 V DC	G1/8	30475	JMVH-5-1/8-B	
			G1/4	19136	JMVH-5-1/4-B	
			G3/8	14948	JMVH-5-3/8-B	
	<ul style="list-style-type: none"> <li>External pilot air supply</li> </ul>	24 V DC	G1/8	30476	JMVH-5-1/8-S-B	
			G1/4	19137	JMVH-5-1/4-S-B	
			G3/8	15343	JMVH-5-3/8-S-B	

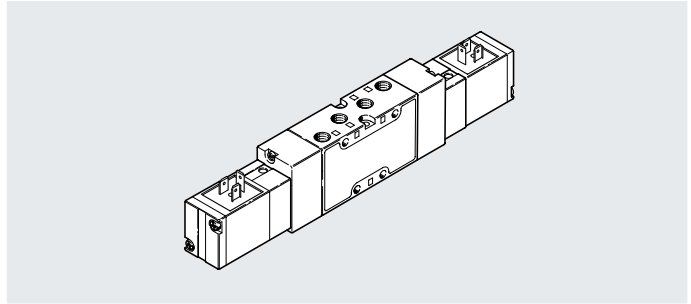
## Ordering data – Sets of wearing parts

Pneumatic connection	Part no.	Type
G1/8	115590	JMVH-5-1/8-B-(SB)
G1/4	115589	JMVH-5-1/4-B-(SB)

Technical data – 5/3-way valves

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

-  - Voltage  
24 V DC



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

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

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

## Technical data – 5/3-way valves

Operating and environmental conditions			G1/8			G1/4			G3/8		
Pneumatic connection			G1/8			G1/4			G3/8		
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]								
Pilot medium (with external pilot air supply)			Compressed air to ISO 8573-1:2010 [7:4:4]								
Note on the 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		
	External pilot air supply	[bar]	-0.9 ... +10			-0.9 ... +10			-0.9 ... +10		
Pilot pressure		[bar]	3 ... 10			3 ... 10			3 ... 10		
Storage temperature		[°C]	-40 ... +60								
Ambient temperature		[°C]	-5 ... +50								
Temperature of medium		[°C]	-5 ... +50								
Corrosion resistance class CRC <sup>1)</sup>			1								

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

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

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

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

1) With external pilot air

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

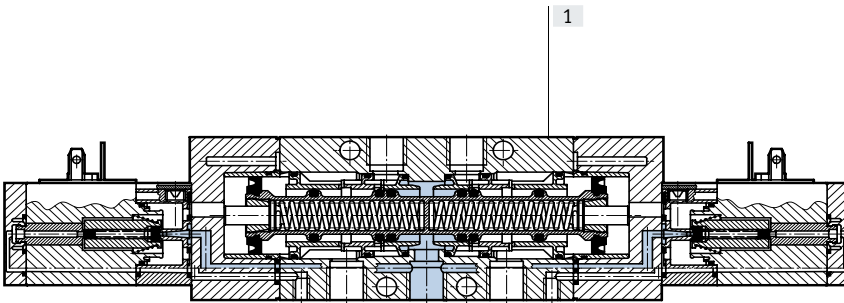
3) After long electrical actuation (> 16h), the switch-off time of 5/3-way valves can increase to max. 100 ms.

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

Technical data – 5/3-way valves

Materials

Sectional view

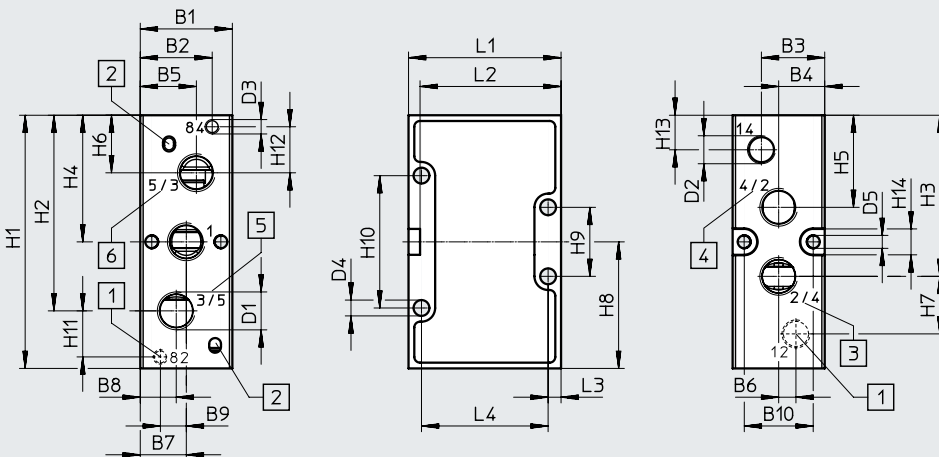


[1] Housing	Die-cast aluminium
- Seals	NBR
- Note on materials	RoHS-compliant

Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



- [1] Port 12 and 82 are not available with MFH-5-...-B and MFH-5-...-S-B
- [2] Protection against rotation
- [3] 2 on poppet seat valve  
4 on piston spool valve
- [4] 4 on poppet seat valve  
2 on piston spool valve
- [5] 3 on poppet seat valve  
5 on piston spool valve
- [6] 5 on poppet seat valve  
3 on piston spool valve

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

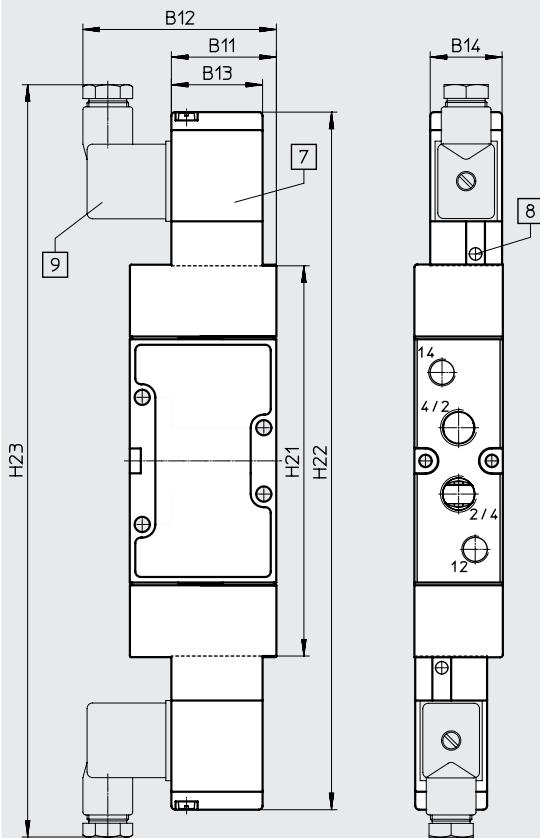
Pneumatic connection	H3	H4	H5	H6	H7	H8 ±0.2	H9	H10	H11	H12	H13	H14	L1 ±0.2	L2	L3	L4
G1/8	49.5	38.5	27.5	17.5	19	38.5	21	41	12	12	8.5	9	47	43	3.5	40
G1/4	56	44	32	20	20	44	22	48	16	16	12		53	49	4.5	44

## Technical data – 5/3-way valves

### Dimensions

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

Installation dimensions with V solenoid coil, mechanical or pneumatic reset



- [7] Solenoid coil can be rotated 360°
- [8] Manual override can be turned 180°
- [9] Electrical connection to EN 175301-803, type B

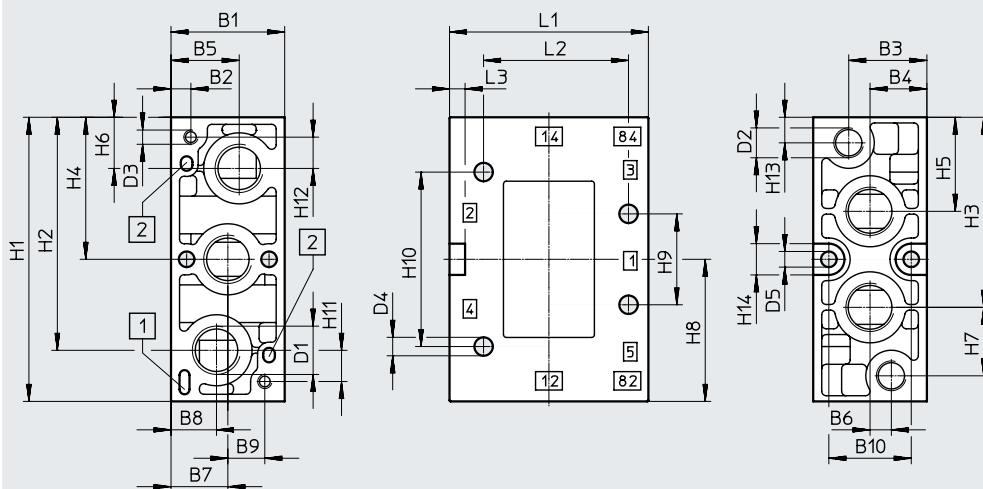
Type	B11	B12	B13	B14	H21	H22	H23
MVH-5-1/8-	36.8	67	33	26	129	241.2	261.2
MVH-5-1/4-	38	70			141	254.2	274.5

## Technical data – 5/3-way valves

### Dimensions – Pneumatic connection G3/8

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

Basic valve

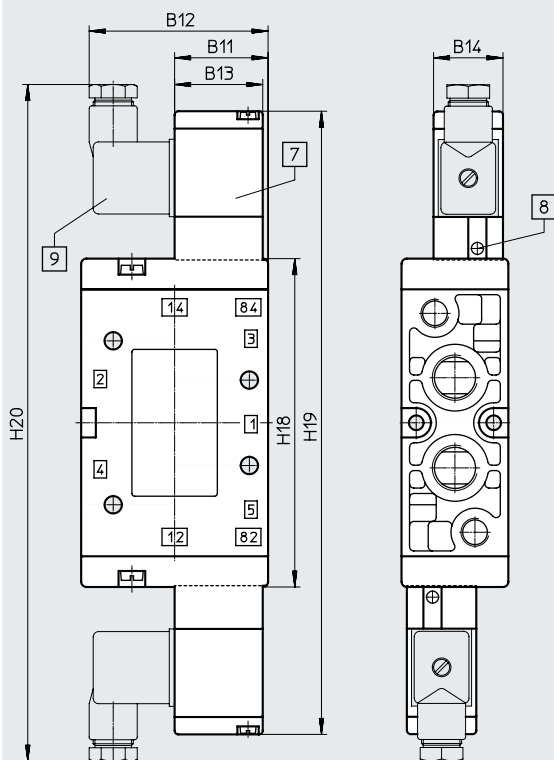


- [1] For coding pin
- [2] Protection against rotation

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

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

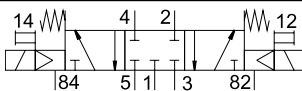
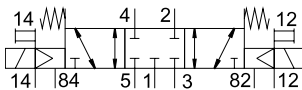
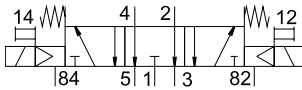
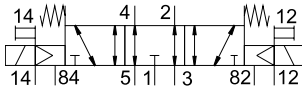
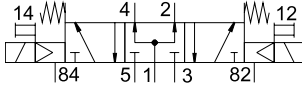
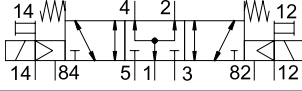
### Installation dimensions with V solenoid coil, mechanical or pneumatic reset



- [7] Solenoid coil can be rotated 360°
- [8] Manual override can be turned 180°
- [9] Electrical connection to EN 175301-803, type B

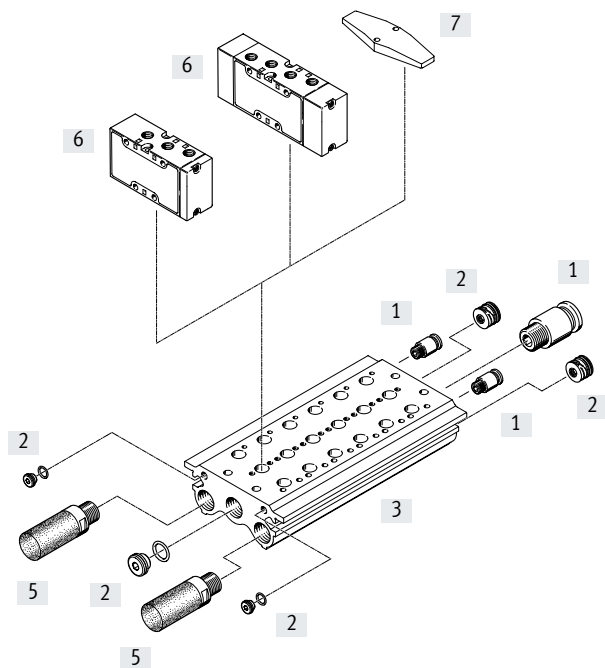
Type	B11	B12	B13	B14	H18	H19	H20
MVH-5-3/8-	35	67.5	33	26	123	234	254

## Technical data – 5/3-way valves

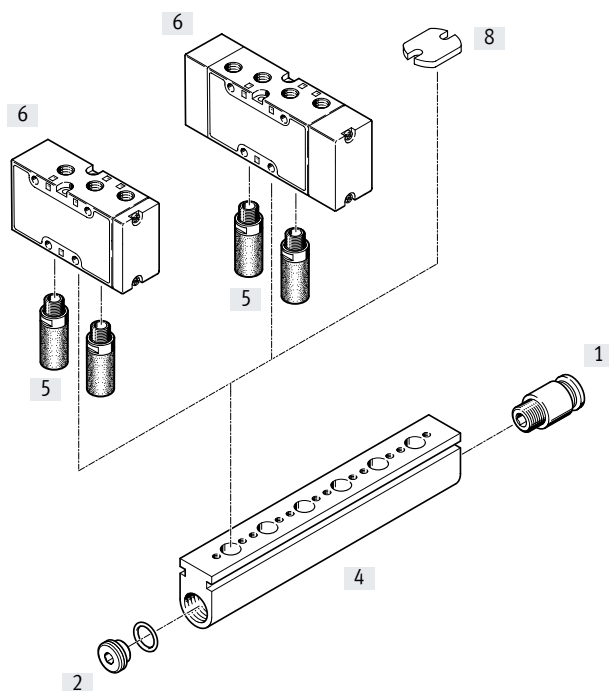
Ordering data Circuit symbol	Description of valves with V solenoid coil	Voltage	Pneumatic connection	Part no.	Type
	<ul style="list-style-type: none"> <li>Normally closed</li> <li>Internal pilot air supply</li> </ul>	24 V DC	G1/8	30477	MVH-5/3G-1/8-B
			G1/4	19138	MVH-5/3G-1/4-B
			G3/8	14944	MVH-5/3G-3/8-B
	<ul style="list-style-type: none"> <li>Normally closed</li> <li>External pilot air supply</li> </ul>	24 V DC	G1/8	30997	MVH-5/3G-1/8-S-B
			G1/4	31004	MVH-5/3G-1/4-S-B
			G3/8	15346	MVH-5/3G-3/8-S-B
	<ul style="list-style-type: none"> <li>Normally exhausted</li> <li>Internal pilot air supply</li> </ul>	24 V DC	G1/8	30478	MVH-5/3E-1/8-B
			G1/4	19139	MVH-5/3E-1/4-B
			G3/8	14943	MVH-5/3E-3/8-B
	<ul style="list-style-type: none"> <li>Normally exhausted</li> <li>External pilot air supply</li> </ul>	24 V DC	G1/8	30998	MVH-5/3E-1/8-S-B
			G1/4	31005	MVH-5/3E-1/4-S-B
			G3/8	15344	MVH-5/3E-3/8-S-B
	<ul style="list-style-type: none"> <li>Normally pressurised</li> <li>Internal pilot air supply</li> </ul>	24 V DC	G1/8	30480	MVH-5/3B-1/8-B
			G1/4	19140	MVH-5/3B-1/4-B
			G3/8	19699	MVH-5/3B-3/8-B
	<ul style="list-style-type: none"> <li>Normally pressurised</li> <li>External pilot air supply</li> </ul>	24 V DC	G1/8	30999	MVH-5/3B-1/8-S-B
			G1/4	31006	MVH-5/3B-1/4-S-B
			G3/8	15345	MVH-5/3B-3/8-S-B

## Peripherals overview

### Mounting on manifold block



### Mounting on manifold rail



Accessories	Brief description	→ Page/Internet
[1] Push-in fitting QS	For connecting tubing with standard O.D.	qs
[2] Sealing plug PRSV	–	62
[3] Manifold block PRS	–	60
[4] Manifold rail PAL	–	58
[5] Silencer	For mounting in exhaust ports	u
[6] Pneumatic valve VL, J	–	46
[7] Cover plate PRSB	For covering vacant positions	62
[8] Cover plate PALB	For covering vacant positions	62

## Type codes

001	Series
<b>VL</b>	Pneumatic valve, monostable
<b>J</b>	Pneumatic valve, bistable


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

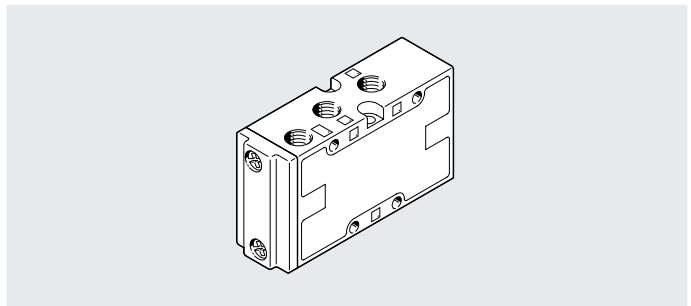
003	Pneumatic connection
<b>1/8</b>	G1/8
<b>1/4</b>	G1/4
<b>3/8</b>	G3/8

004	Generation
<b>B</b>	Series B

005	Certification
	None
<b>EX</b>	EX certification (ATEX)

Technical data – 5/2-way valves

-  - Flow rate  
750 ... 2000 l/min
- Sets of wearing parts  
→ page 49



General technical data		G1/8	G1/4	G3/8
Pneumatic connection		G1/8	G1/4	G3/8
Valve function		5/2-way		
Design		Poppet seat		Piston spool
Overlap		Negative overlap		Positive overlap
Sealing principle		Soft		
Actuation type		Pneumatic		
Reset method		Mechanical spring		
Type of control		Direct		
Flow direction		Not reversible		Reversible
Exhaust air function		Can be throttled		
Manual override		None		
Type of mounting		With through-hole		
Mounting position		Any		
b value		–	0.29	–
c value [l/s bar]		–	5.5	–
Nominal width [mm]		5	7	12
Standard nominal flow rate [l/min]		750	1300	2000
Grid dimension [mm]		27	33	41
Valve width [mm]		26	32	40
Product weight [g]		170	240	570

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

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

## Technical data – 5/2-way valves

Operating and environmental conditions			
Pneumatic connection	G1/8	G1/4	G3/8
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Pilot medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure [bar]	0 ... 10	0 ... 10	-0.9 ... +10
Pilot pressure [bar]	1.5 ... 10	1.5 ... 10	2.5 ... 10
Storage temperature [°C]	-40 ... +60		
Ambient temperature [°C]	-10 ... +60		
Temperature of medium [°C]	-10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>	1		

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

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

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

### Technical data – 5/2-way valves

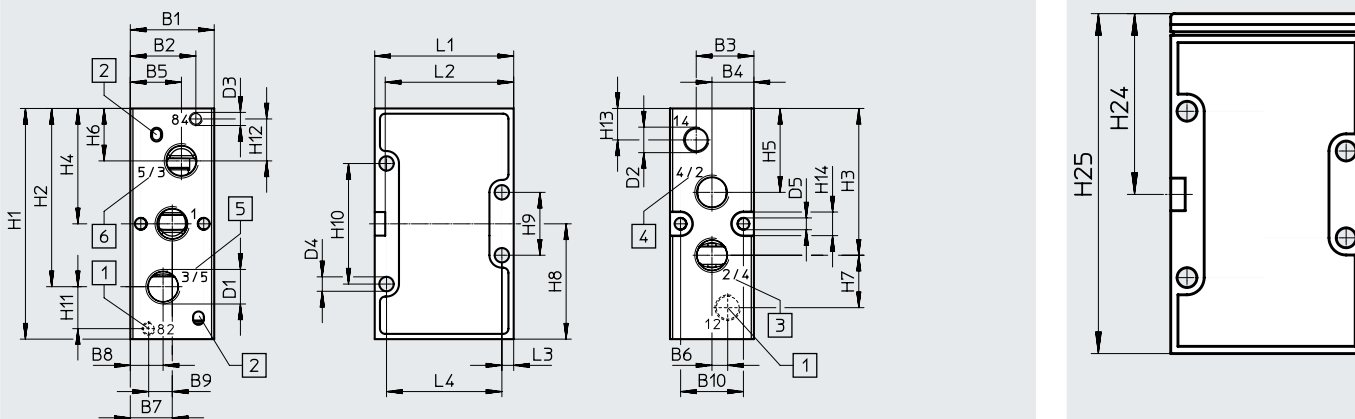
Materials			
Pneumatic connection	G1/8	G1/4	G3/8
Housing	Die-cast aluminium		
Seals	NBR, TPE-U(PU)	NBR, PU	NBR
Note on materials	RoHS-compliant		

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

Basic valve

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

VL-5-...-B



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

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

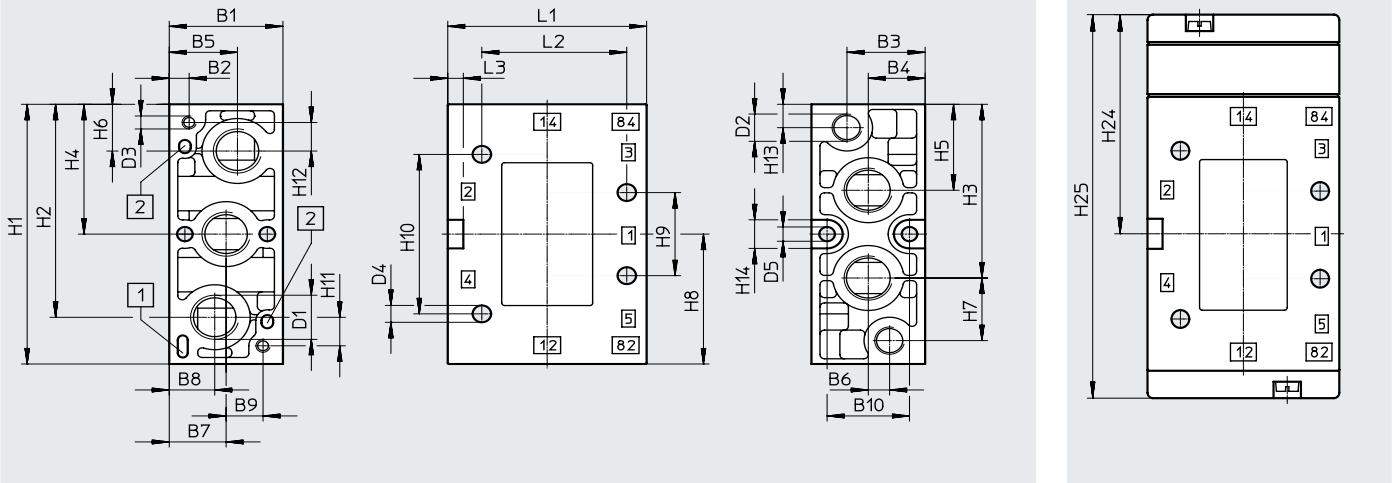
Technical data – 5/2-way valves

Dimensions – Pneumatic connection G3/8

Basic valve

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

VL-5-3/8-B



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

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


Ordering data

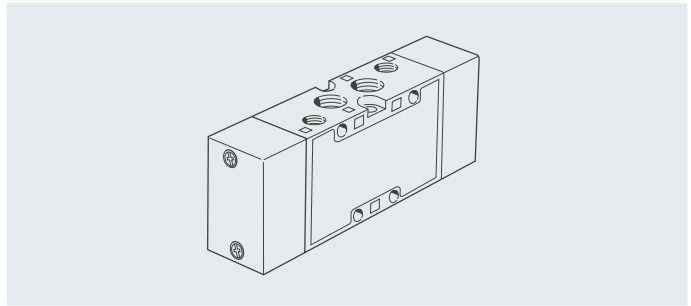
Circuit symbol	Description	Pneumatic connection	ATEX category	Part no.	Type
	Mechanical reset method	G1/8	-	31000	VL-5-1/8-B
			ATEX category → Page 46	536040	VL-5-1/8-B-EX
	Mechanical reset method	G1/4	-	14294	VL-5-1/4-B
			ATEX category → Page 46	536041	VL-5-1/4-B-EX
	Mechanical reset method	G3/8	-	14952	VL-5-3/8-B
			ATEX category → Page 46	536042	VL-5-3/8-B-EX

Ordering data – Sets of wearing parts

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

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

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



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

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

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

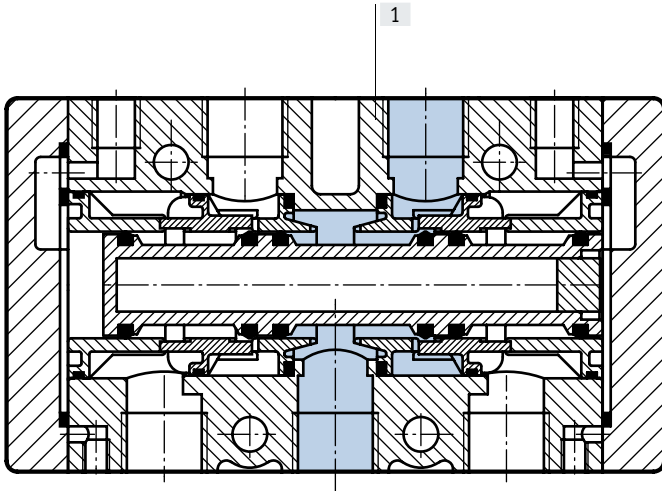
1) Corrosion resistance class CRC 1 to Festo standard FN 940070  
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

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

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

### Materials

Sectional view



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

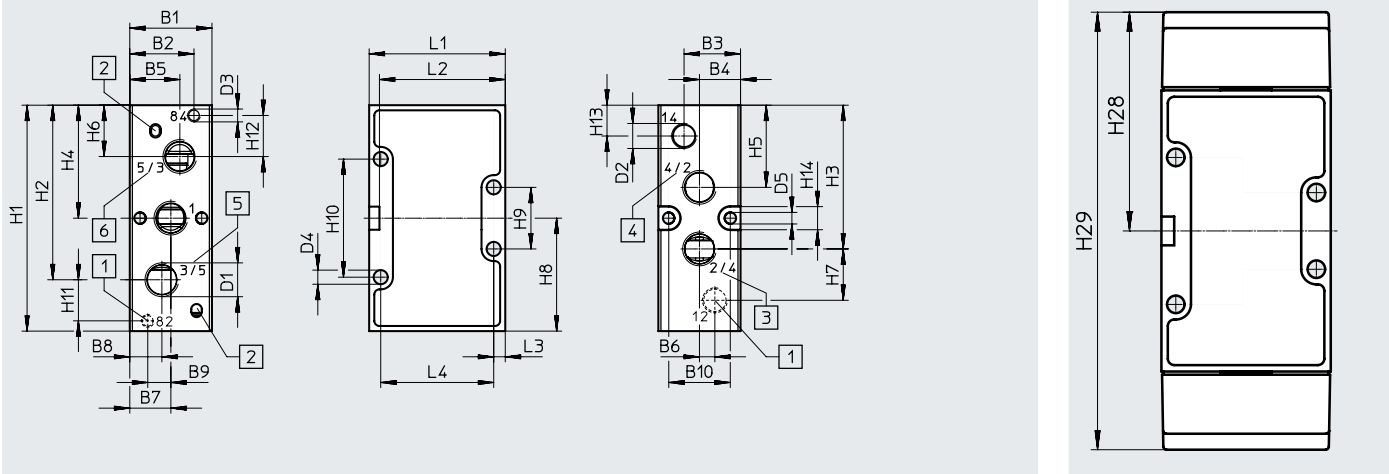
Technical data – 5/2-way valves, double pilot valves

Dimensions – Pneumatic connection G1/8, G1/4

Basic valve

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

J-5-...-B



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

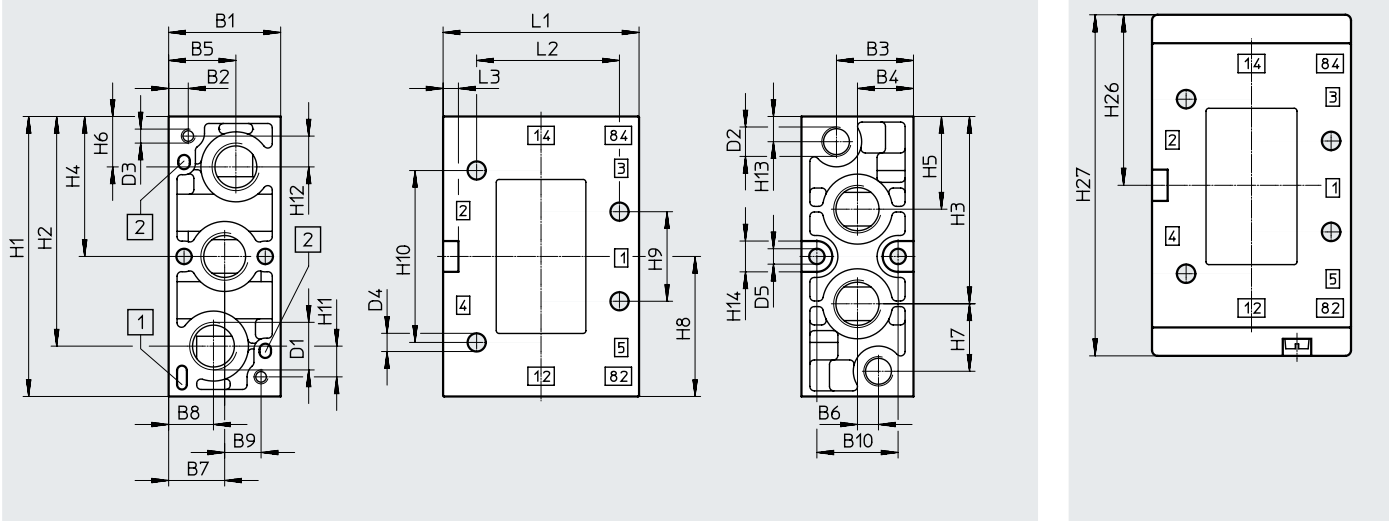
Pneumatic connection	H2	H3	H4	H5	H6	H7	H8	H25	L1	L2	L3
G1/8	41	21	38.5	22	19	42	12	124	47	40	43
G1/4	46	24	44	24	20	48	16	137	53	44	49

Dimensions – Pneumatic connection G3/8

Basic valve

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

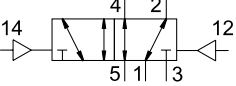
J-5-3/8-B




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

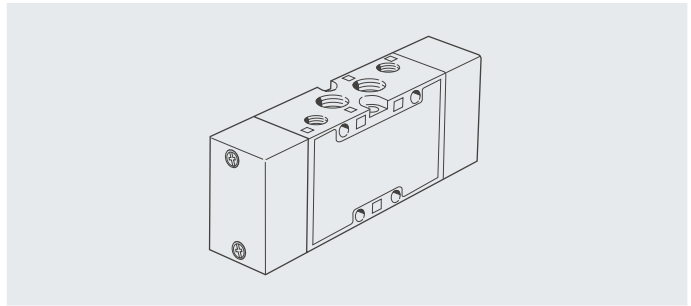
Pneumatic connection	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H26	H27	L1 ±0.2	L2	L3
G3/8	66.9	50	33.1	18	24.1	50	32	61.4	11	11	9	11	60	120	70	51	5.5

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

Ordering data	Description	Pneumatic connection	ATEX category	Part no.	Type
	Double pilot valve	G1/8	– ATEX category → Page 46	<b>30988</b> <b>536043</b>	<b>J-5-1/8-B</b> <b>J-5-1/8-B-EX</b>
		G1/4	– ATEX category → Page 46	<b>14295</b> <b>536044</b>	<b>J-5-1/4-B</b> <b>J-5-1/4-B-EX</b>
		G3/8	– ATEX category → Page 46	<b>14953</b> <b>536045</b>	<b>J-5-3/8-B</b> <b>J-5-3/8-B-EX</b>

## Technical data – 5/3-way valves

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



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

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

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

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

## Technical data – 5/3-way valves

Valve switching times [ms] Pneumatic connection	G1/8			G1/4			G3/8		
	On	Off	Changeover	On	Off	Changeover	On	Off	Changeover
Closed	5	14	23	6	26	30	7	28	54
Exhausted	5	14	24	6	26	35	7	28	83
Pressurised	5	14	16	6	26	35	7	28	78

**Materials**

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

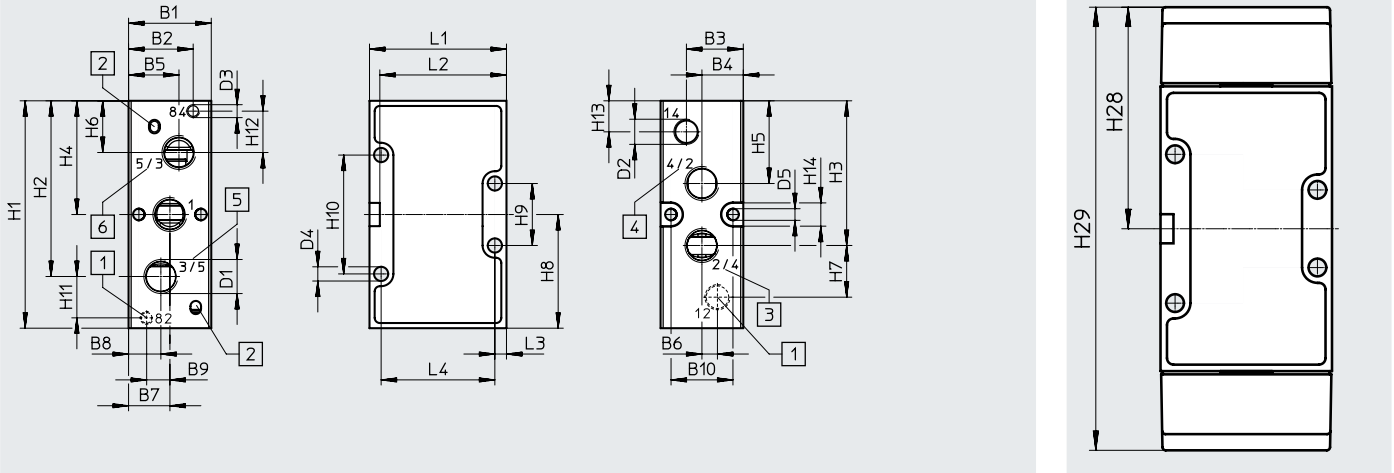
Technical data – 5/3-way valves

Dimensions – Pneumatic connection G1/8, G1/4

Basic valve

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

VL-5/3...-B



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

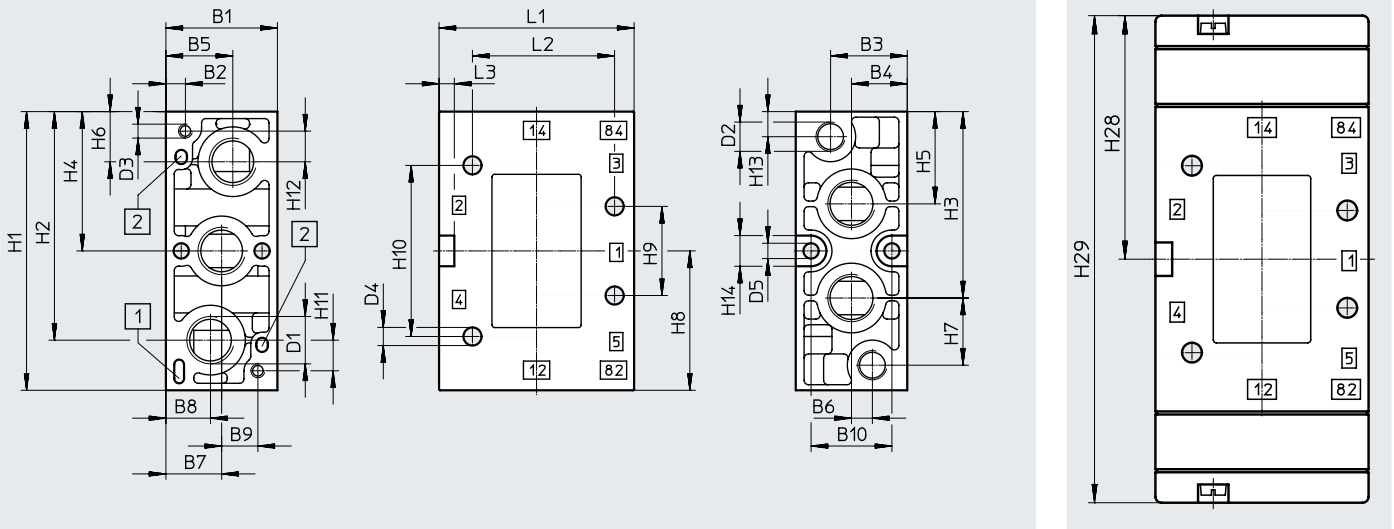
Pneumatic connection	H2	H3	H4	H5	H6	H7	H8	H25	L1	L2	L3
G1/8	41	21	38.5	22	19	42	12	124	47	40	43
G1/4	46	24	44	24	20	48	16	137	53	44	49

Dimensions – Pneumatic connection G3/8

Basic valve

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

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



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

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

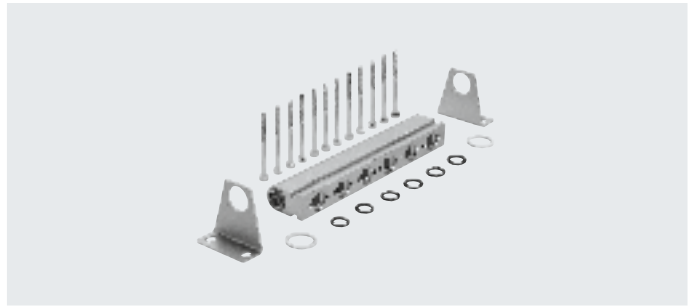
## Technical data – 5/3-way valves

Ordering data	Description	Pneumatic connection	ATEX category	Part no.	Type		
	Normally closed	G1/8	– ATEX category → Page 46	30990 536046	VL-5/3G-1/8-B VL-5/3G-1/8-B-EX		
		G1/4	– ATEX category → Page 46	14298 536047	VL-5/3G-1/4-B VL-5/3G-1/4-B-EX		
		G3/8	– ATEX category → Page 46	14950 536048	VL-5/3G-3/8-B VL-5/3G-3/8-B-EX		
			Normally exhausted	G1/8	– ATEX category → Page 46	31309 536049	VL-5/3E-1/8-B VL-5/3E-1/8-B-EX
				G1/4	– ATEX category → Page 46	14297 536050	VL-5/3E-1/4-B VL-5/3E-1/4-B-EX
				G3/8	– ATEX category → Page 46	14949 536051	VL-5/3E-3/8-B VL-5/3E-3/8-B-EX
	Normally pressurised			G1/8	– ATEX category → Page 46	31310 536052	VL-5/3B-1/8-B VL-5/3B-1/8-B-EX
				G1/4	– ATEX category → Page 46	14299 536053	VL-5/3B-1/4-B VL-5/3B-1/4-B-EX
				G3/8	– ATEX category → Page 46	14951 536054	VL-5/3B-3/8-B VL-5/3B-3/8-B-EX

## Accessories

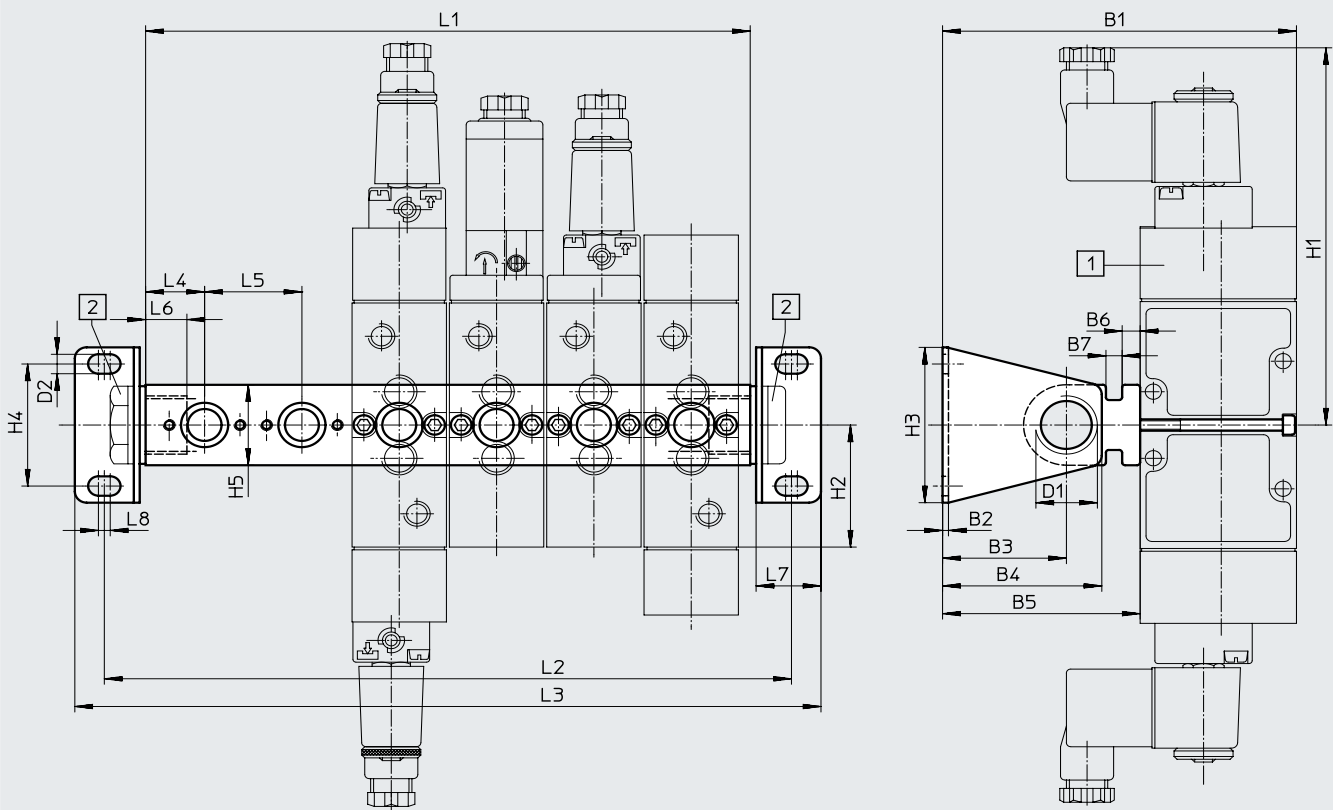
### Manifold rail PAL-...-B

Material:  
Anodised aluminium



### Dimensions

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



[1] The caps on all valves can be repositioned by 180°

[2] Blanking plugs and reducing nipples are not included in the scope of delivery

→ Internet: components for cable connections

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

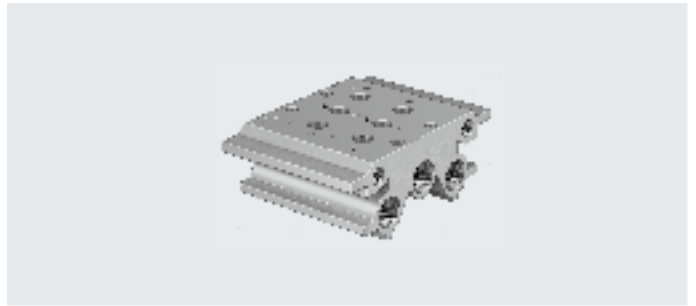
## Accessories

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

Accessories

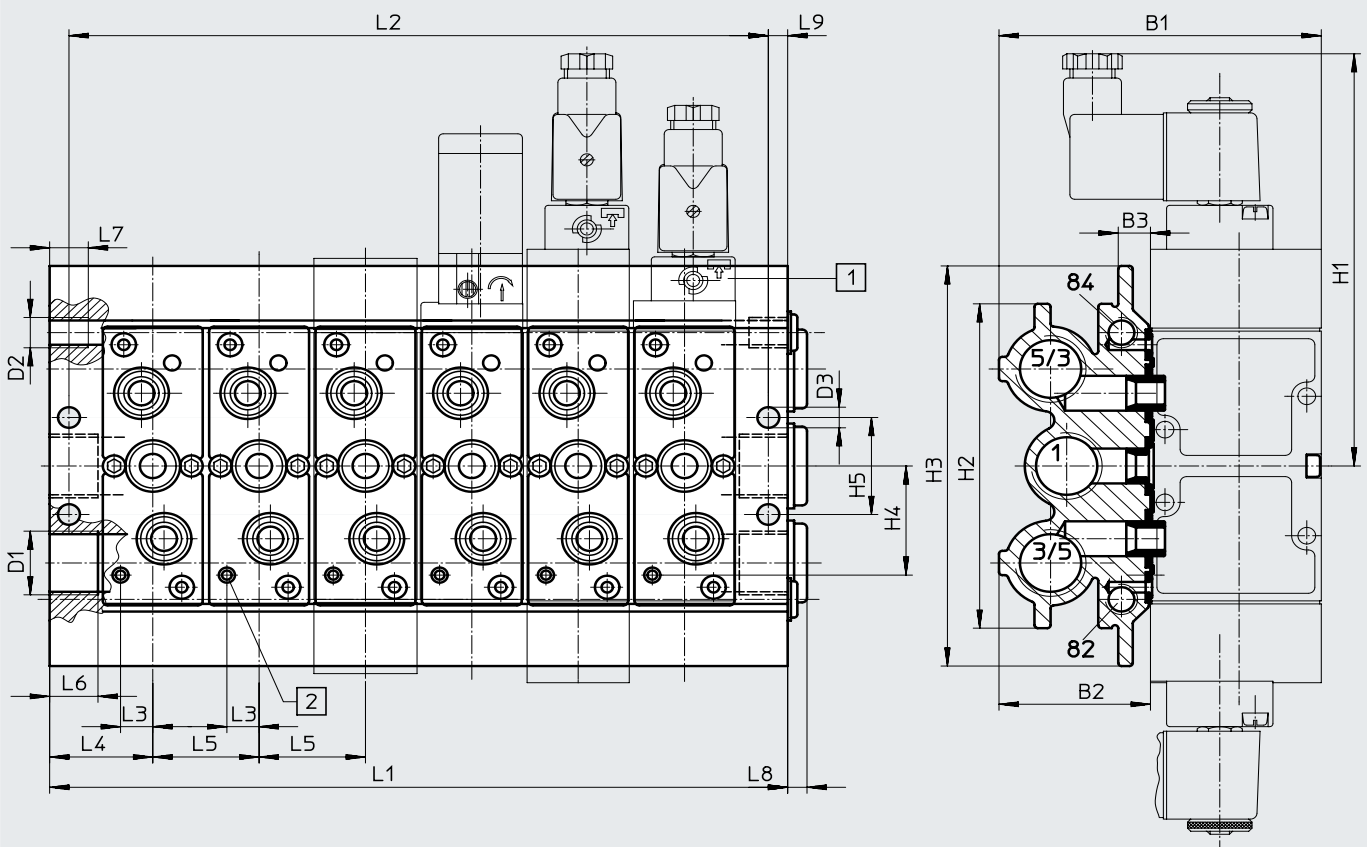
Manifold block PRS

Material:  
Anodised aluminium



Dimensions

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



[1] The caps on all valves can be repositioned by 180°

[2] Hole for spring pin to DIN 7346  $\varnothing$  3 mm

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

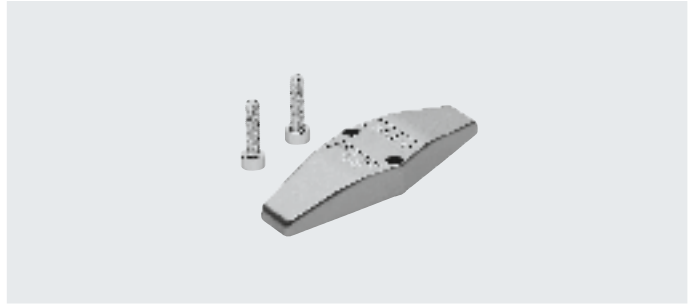
## Accessories

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

## Accessories

### Cover plate for vacant positions PRSB

Material:  
Die-cast aluminium



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

### Cover plate for vacant positions PALB

Material:  
Steel



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

### Sealing plug PRSV for creating pressure zones

Material:  
Steel



Ordering data			
Pneumatic connection	Weight [g]	Part no.	Type
G1/8	18	160997	PRSV-1/8
G1/4	27	160996	PRSV-1/4

## Accessories

### Manual override AHB

Material:  
Polymer



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

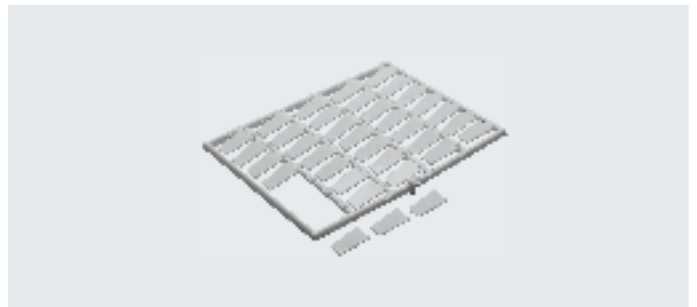
1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

### Inscription label

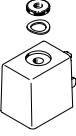




#### KMC/F/V-BZ-35X

Material:  
Polymer

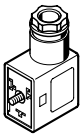





Ordering data		Weight	Part no.	Type
		[g]		
Inscription label for valves (35 in frames included in the scope of delivery)		20	33362	KMC/F/V-BZ-35X

## Accessories

Ordering data – Solenoid coils					Technical datas → Internet: msf
	Description	Voltage	Cable length [m]	Part no.	Type
<b>F solenoid coils, without plug socket</b>					
	–	12 V DC	–	34410	MSFG-12-OD
		24 V DC and 42 V AC, 50 ... 60 Hz	–	34411	MSFG-24/42-50/60-OD
		42 V DC	–	34413	MSFG-42-OD
		24 V AC	–	34415	MSFW-24-50/60-OD
		48 V AC, 50 ... 60 Hz	–	34418	MSFW-48-50/60-OD
		110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz	–	34420	MSFW-110-50/60-OD
		230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz	–	34422	MSFW-230-50/60-OD
		240 V AC, 50 ... 60 Hz	–	34424	MSFW-240-50/60-OD
	Explosion-proof	24 V DC	–	536931	MSFG-24-EX
		24 V AC	–	536932	MSFW-24-50/60-EX
		110 V AC	–	536933	MSFW-110-50/60-EX
		230 V AC	–	536934	MSFW-230-50/60-EX
<b>F solenoid coils, cable with open end, 3-wire</b>					
	Explosion-proof	24 V DC	1	8059804	VACF-B-K1-1-1-EX4-M
			5	8059805	VACF-B-K1-1-5-EX4-M
			10	8059806	VACF-B-K1-1-10-EX4-M
			20	8059807	VACF-B-K1-1-20-EX4-M
		24 V AC	1	8059808	VACF-B-K1-1A-1-EX4-M
			1	8059811	VACF-B-K1-16B-1-EX4-M
		110 V AC	5	8059812	VACF-B-K1-16B-5-EX4-M
			1	8059809	VACF-B-K1-3A-1-EX4-M
		5	8059810	VACF-B-K1-3A-5-EX4-M	
		<b>Ordering data – Plug sockets/connecting cable for F solenoid coils</b>			
	Description	Voltage	Cable length [m]	Part no.	Type
Plug socket without cable, cable connection with					Technical datas → Internet: mssd
	Locking screws (cable connector Pg9)	–	–	34431	MSSD-F
	Locking screws (cable connector M16)	–	–	539710	MSSD-F-M16
	Insulation displacement technology (cable connector M16)	–	–	192746	MSSD-F-S-M16
<b>Connecting cable</b>					Technical datas → Internet: kmf
	Signal status indication with LED	24 V DC	2.5	30935	KMF-1-24DC-2.5-LED
			5	30937	KMF-1-24DC-5-LED
			10	193458	KMF-1-24DC-10-LED
	Without signal status display	Up to 240 V	2.5	30936	KMF-1-230AC-2.5
			5	30938	KMF-1-230AC-5

## Accessories

Ordering data – Plug sockets/connecting cable for V solenoid coils				
	Description	Voltage	Cable length [m]	Part no.   Type
<b>Plug socket without cable, cable connection with</b>				Technical datas → Internet: mssd
	Locking screws (cable connector Pg9)	–	–	<b>33295</b>   <b>MSSD-V</b>
	Locking screws (cable connector M16)	–	–	<b>539713</b>   <b>MSSD-V-M16</b>
<b>Connecting cable</b>				Technical datas → Internet: kmv
	Signal status indication with LED	24 V DC	2.5	<b>30939</b>   <b>KMV-1-24DC-2.5-LED</b>
			5	<b>30941</b>   <b>KMV-1-24DC-5-LED</b>
			10	<b>193456</b>   <b>KMV-1-24-10-LED</b>
<b>Ordering data – Illuminating seal</b>				Technical datas → Internet: illuminating seal
	Description	Voltage	Part no.	Type
	For F solenoid coils	12 ... 24 V DC	<b>19143</b>	<b>MF-LD-12-24DC</b>
		230 V DC/V AC	<b>19144</b>	<b>MF-LD-230AC</b>
	For V solenoid coils	12 ... 24 V DC	<b>35558</b>	<b>MV-LD-12-24DC</b>