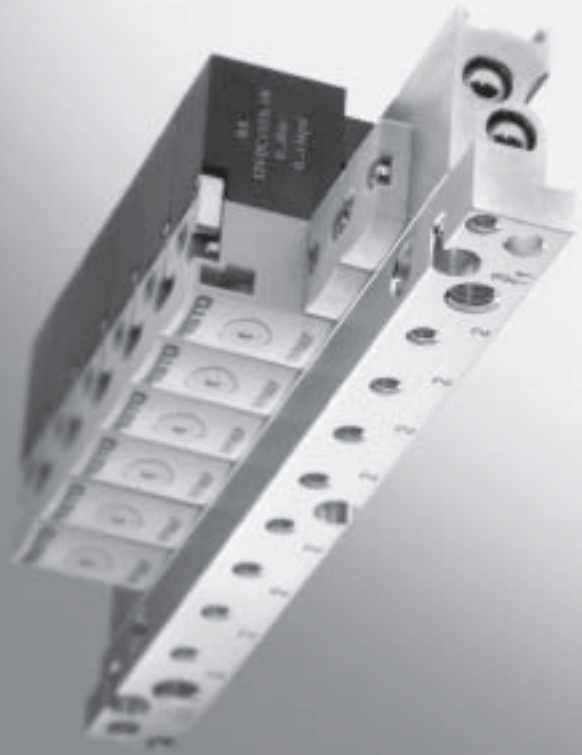
Solenoid valves MH1, miniature

FESTO



- Directly actuated valves
- Miniaturised design
- Flexible construction of valve manifolds
- Rapid response times of 4 ms
- Short cycle times
- Accurate cycle times

The full range for ultrafast fields of application

Extremely miniaturized
The new miniaturized generation of poppet valves: You can choose between flow rates of 14 l/min on the 2/2-way versions or 10 l/min on the 3/2-way version. Either as individual sub-base valve or preassembled on the PR manifold. Incidentally: if used on the PR manifold, it is possible to implement an extremely high packing density.
Fast and virtually predestined for more stringent demands: The big brother MH2 with a flow rate up to 100 l/min.

Extremely versatile and fast
All new miniature valves can be interlinked by pneumatic multi-pin and electrical multi-pin. Even the electrical terminals offer selection options between horizontal, top and bottom. One other interesting variant is mounting on an electronic printed circuit board including connection. Everything tested and assembled in advance for Festo plug and work. And if the system is to run as fast as possible – no problem: the switching times of the miniature valves are around 4 ms.

Extreme partnership
Festo offers a broad product range of drives, rodless drives, miniature slides, rotary actuators and accessories under the generic term "compact". Optimally intermatched and aimed at manufacturing sectors which produce and process very small products. Everything incorporating the proverbial Festo quality and with all added values offered by a company operating worldwide.

Miniature valves not only for the electronics industry ...

...but also for the light assembly industry, medical engineering, semiconductor industry and process industry. Wherever extremely compact and ultrafast switching valves are needed. No speed needs are left to be desired with switching times of approx. 4 ms. Vacuum functions can be also implemented in an extremely easy manner. 100% duty and even three-shift operation guarantee maximum economy.

With flow rates of 10 and 14 l/min on the miniature valves, there is still adequate volume available for piloting process valves. And there is also adequate flow rate for the broad range of compact cylinders, rotary actuators and slides from Festo.
Up to 100 l/min if demands are high: MH2.

Design Award
Winner 2001

reddot

Solenoid valves MH1, miniature

Product range overview

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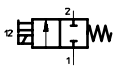
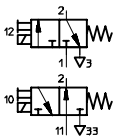
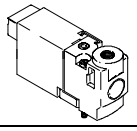
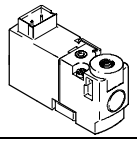
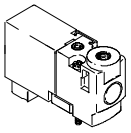
Function	Symbol	Version	Response time [ms]	Voltage [V DC]			→ Page
			4	5	12	24	
2/2-way valve	**Standard nominal flow rate 14 l/min**						
		Semi in-line valve	■	■	■	■	2 / 3.1-6
		Sub-base valve	■	■	■	■	2 / 3.1-17
3/2-way valve[1]	**Standard nominal flow rate 10 l/min**						
		Semi in-line valve	■	■	■	■	2 / 3.1-6
		Sub-base valve	■	■	■	■	2 / 3.1-17

1) Can be used as a 2/2 way valve by sealing connection 1 or 3

Mounting options			
Mechanical connection		Semi in-line valve	Sub-base valve
Electrical connection			
Plug connection at rear (HC)			
	Individual sub-base	■	■
	Manifold mounting	■	■
Plug connection on top (TC)			
	Individual sub-base	■	■
	Manifold mounting	■	■
Plug connection underneath (PI)			
	Individual sub-base with plug base	■	■
	Manifold mounting with plug bases	■	■
	Manifold mounting with plug bases and electrical multi-pin connection	■	■
	Manifold mounting on PCB with soldering bases	■	■
	Manifold mounting on PCB with soldering bases and pneumatic multiple connector plate	–	■

Solenoid valves MH1, miniature

Type code

MH	P	1	–	M	4	H	–	3/2	–	O	–	M3	–	HC

Valve family	
MH	Miniature and fast-switching valves

Design	
P	Semi in-line valve
A	Sub-base valve

Size	
1	Flow rates 10 ... 14 l/min

Drive function	
M	Solenoid, switching

Operating voltage	
4	5 V DC
5	12 V DC
1	24 V DC

Manual override	
H	Resetting

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

Normal position	
G	Closed
O	Open

Pneumatic connection	
0.6	Nominal size 0.65 mm
0.9	Nominal size 0.9 mm
M3	Thread M3

Electrical connection	
HC	Plug connection at rear for plug socket KMH
TC	Plug connection on top for plug socket KMH
PI	Plug connection underneath for plug-in connection

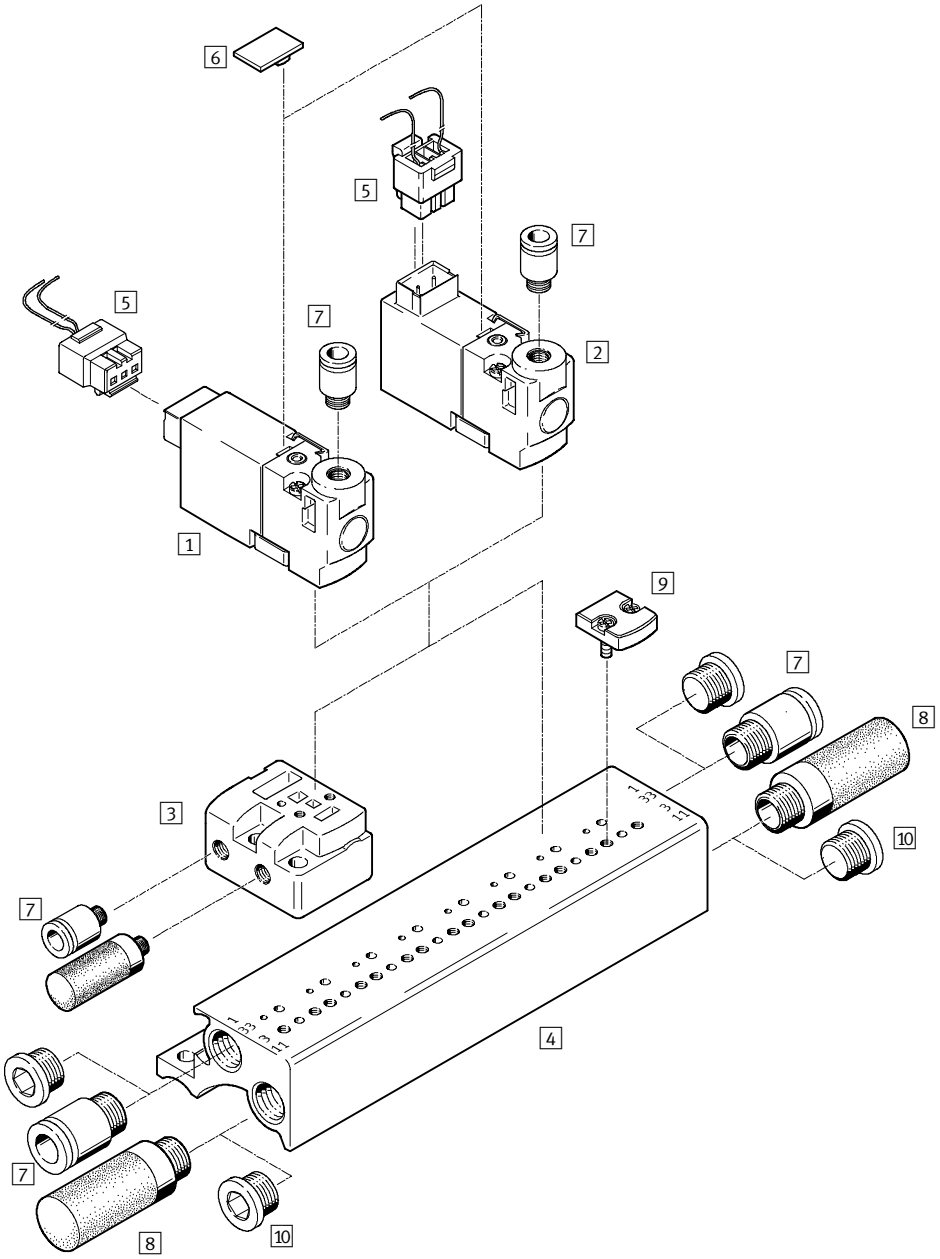
Note

Additional variants and accessories can be configured and ordered through the MH1 modular product system ➔ from 2 / 3.1-28

Solenoid valves MHP1, miniature

Peripherals overview – Semi in-line valve

Plug connection at rear ...-HC
Plug connection on top ...-TC



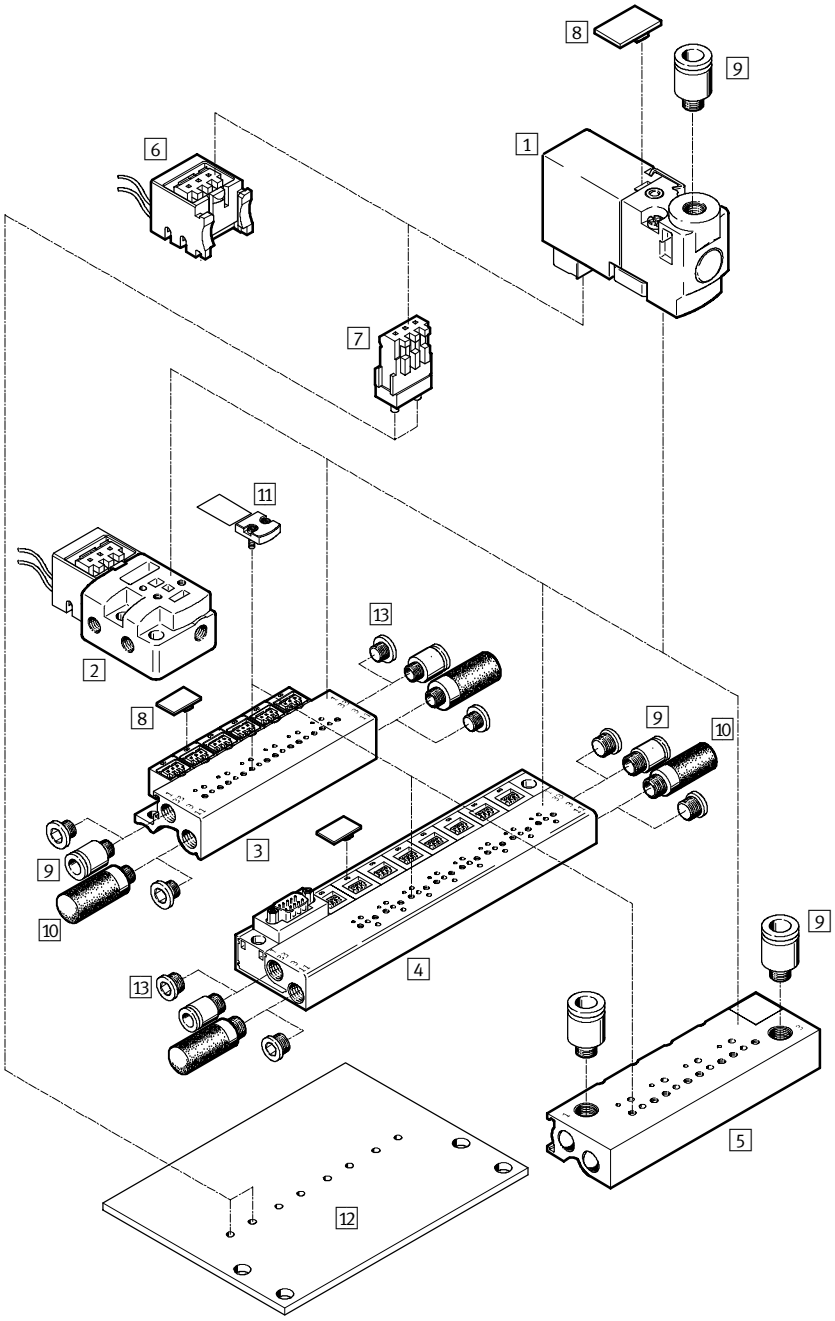
Accessories

		➔ Page			➔ Page
1	Semi in-line valve MHP1-...-HC	2 / 3.1-8	6	Inscription label MH-BZ-80X	2 / 3.1-38
2	Semi in-line valve MHP1-...-TC	2 / 3.1-8	7	Push-in fittings QS/QSM	Volume 3
3	Individual sub-base MHP1-AS-3-M3	2 / 3.1-11	8	Silencer UC	Volume 3
4	Manifold block MHP1-PR...-3	2 / 3.1-11	9	Blanking plate MHAP1-BP-3 for sealing vacant positions	2 / 3.1-38
5	Plug socket with cable KMH	2 / 3.1-38	10	Blanking plug B	2 / 3.1-38

Solenoid valves MHP1, miniature

Peripherals overview – Semi in-line valve

Plug connection underneath ...-PI



Accessories

		➔ Page
1	Semi in-line valve MHP1-...-PI	2 / 3.1-8
2	Individual sub-base MHP1-AS-3-M3-PI	2 / 3.1-11
3	Manifold block MHP1-PR...-3-PI with plug bases	2 / 3.1-11
4	Manifold block MHP1-PR...-3-PI-D... with plug bases and electrical multi-pin connection	2 / 3.1-13
5	Manifold block MHP1-PR...-3-PI-PCB for mounting on PCB	2 / 3.1-14

		➔ Page
6	Plug base MHAP-PI	2 / 3.1-38
7	Soldering base PCBC-A	2 / 3.1-38
8	Inscription label MH-BZ-80x	2 / 3.1-38
9	Push-in fittings QS/QSM	Volume 3
10	Silencer UC	Volume 3
11	Blanking plate MHAP1-BP-3-PI for sealing vacant positions	2 / 3.1-38
12	Printed circuit board (user-specific)	2 / 3.1-14
13	Blanking plug B	2 / 3.1-38

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

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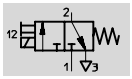
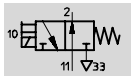
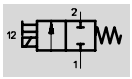
Function



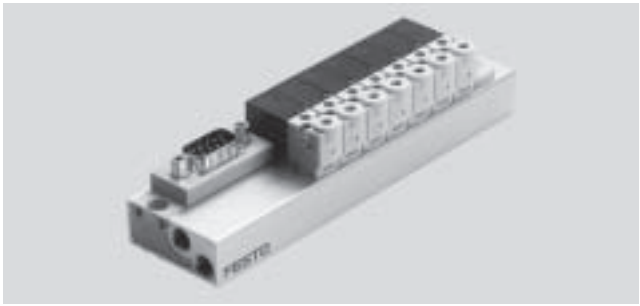




Voltage
5, 12, 24 V DC

Pressure
–0.9 … +8 bar

Temperature range
–5 … +50°C



General technical data				
Valve function			2/2, single solenoid	3/2, single solenoid
Constructional design			Poppet disc seat	
Sealing principle			Soft	
Actuation type			Electrical	
Type of reset			Mechanical springs	
Type of pilot control			Direct	
Direction of flow			Non-reversible	
Exhaust function			Without flow control	
Manual override			Resetting	
Type of mounting			Via through-holes	
Mounting position			Any	
Nominal size		[mm]	0.9	0.65
Standard nominal flow rate		[l/min]	14 (2 bar → 0 bar)	10
Grid dimension		[mm]	10	10
Pneumatic connection	Individual sub-base	1, 33	M3	M3
		2	–	M3
		3, 11	M3	M3
	Manifold mounting	1, 33	M7	M7
		2	–	M3
		3, 11	M7	M7
Product weight		[g]	50	50

Operating and environmental conditions				
Valve function			2/2, single solenoid	3/2, single solenoid
Operating medium			Filtered compressed air, lubricated or unlubricated, grade of filtration 40µ Vacuum	Filtered compressed air, lubricated or unlubricated, grade of filtration 40µ
Operating pressure range	Normally closed	[bar]	–0.9 … +2	0 … 8[1]
	Normally open	[bar]	–	0 … 6[1]
Ambient temperature	Individual mounting	[°C]	–5 … +50	
	Manifold mounting	[°C]	–5 … +40	
Temperature of medium	Individual mounting	[°C]	–5 … +50	
	Manifold mounting	[°C]	–5 … +40	
Corrosion resistance class CRC[2]			1	

1) Vacuum operation possible with special connection method
2) Corrosion resistance class 1 according to Festo standard 940 070
Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

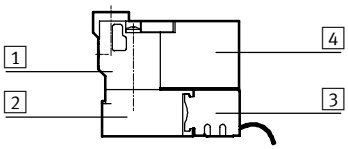
Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

Electrical data			
Valve function		2/2, single solenoid	3/2, single solenoid
Operating voltage	[V DC]	5 ±10%, 12 ±10% or 24 ±10%	
Type of connection		Plug connection	
Power consumption	[W]	1	
Protection class to EN 60 529			
with plug socket KMH		IP40	
with plug base MHAP-PI		IP40	
with soldering base PCBC-A		IP40	
with Sub-D connector plug		IP40	

Response times and switching frequencies			
Valve function		2/2, single solenoid	3/2, single solenoid
Response time on/off	[ms]	4/5	4/4
Switching frequency	[Hz]	20	

Materials



1	Housing	Die-cast zinc
2	Sub-base	Aluminium
3	Plug base	Polyamide
4	Coil housing	Polyamide
–	Seals	Nitrile rubber, hydrogenated nitrile rubber
	Note on material	Free of copper, PTFE and silicone

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

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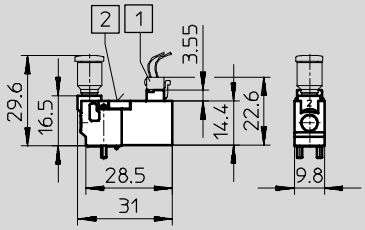
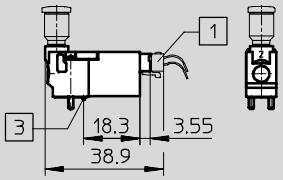
Dimensions

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

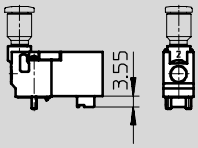
Plug connection on top



Plug connection at rear

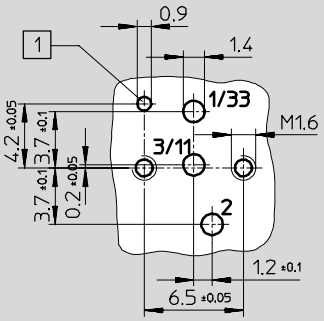


Plug connection at rear



1 Plug socket KMH-...
2 Manual override
3 Coding pin

Port pattern on sub-bases



1 Hole for coding pin

- - Note

Semi in-line valves have no port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not applicable.

If used as a 2/2-way valve, normally open, port 1/33 is not applicable.

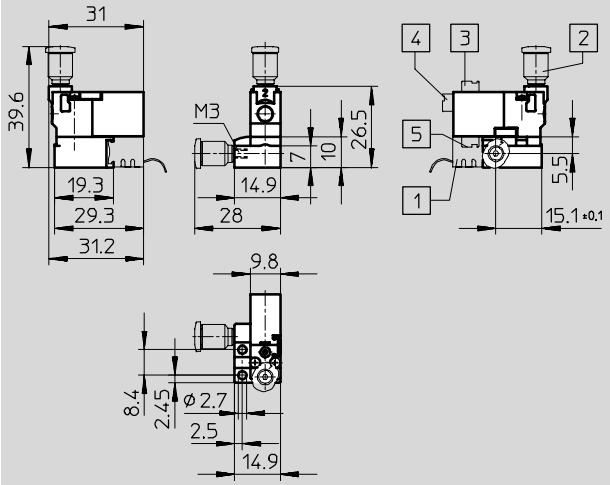
Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

Dimensions – 2/2-way valve

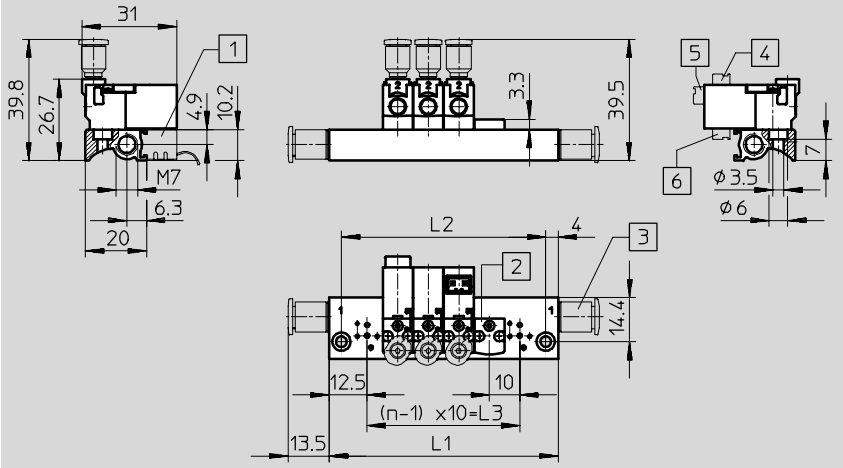
Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug base MHAP-PI
2 Push-in fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Plug base MHAP-PI
2 Blanking plate MHAP1
3 Push-in fitting QSM-...
4 Plug connection on top
5 Plug connection at rear
6 Plug connection underneath

Number of valves n	L1 ±0.15	L2 ±0.1	L3
2	35	27	10
3	45	37	20
4	55	47	30
5	65	57	40
6	75	67	50
7	85	77	60
8	95	87	70

Number of valves n	L1 ±0.15	L2 ±0.1	L3
9	105	97	80
10	115	107	90
11	125	117	100
12	135	127	110
13	145	137	120
14	155	147	130
15	165	157	140

Number of valves n	L1 ±0.15	L2 ±0.1	L3
16	175	167	150
17	185	177	160
18	195	187	170
19	205	197	180
20	215	207	190
21	225	217	200
22	235	227	210

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

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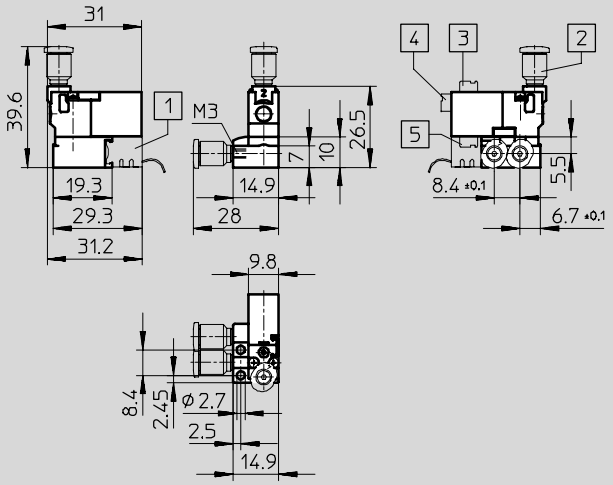
Dimensions – 3/2-way valve

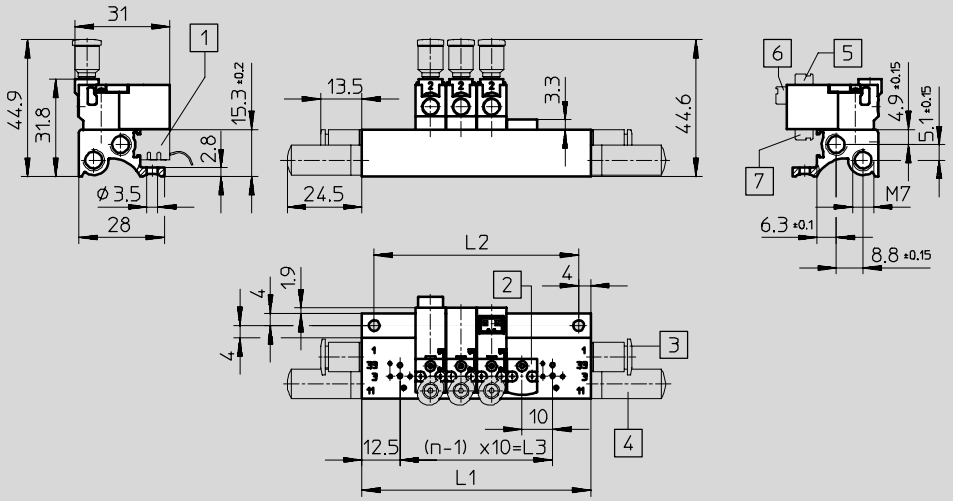
Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug base MHAP-PI
2 Push-in fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Plug base MHAP-PI
2 Blanking plate MHAP1
3 Push-in fitting QSM-...
4 Silencer
5 Plug connection on top
6 Plug connection at rear
7 Plug connection underneath

Number of valves n	L1 ±0.15	L2 ±0.1	L3
2	35	27	10
3	45	37	20
4	55	47	30
5	65	57	40
6	75	67	50
7	85	77	60
8	95	87	70

Number of valves n	L1 ±0.15	L2 ±0.1	L3
9	105	97	80
10	115	107	90
11	125	117	100
12	135	127	110
13	145	137	120
14	155	147	130
15	165	157	140

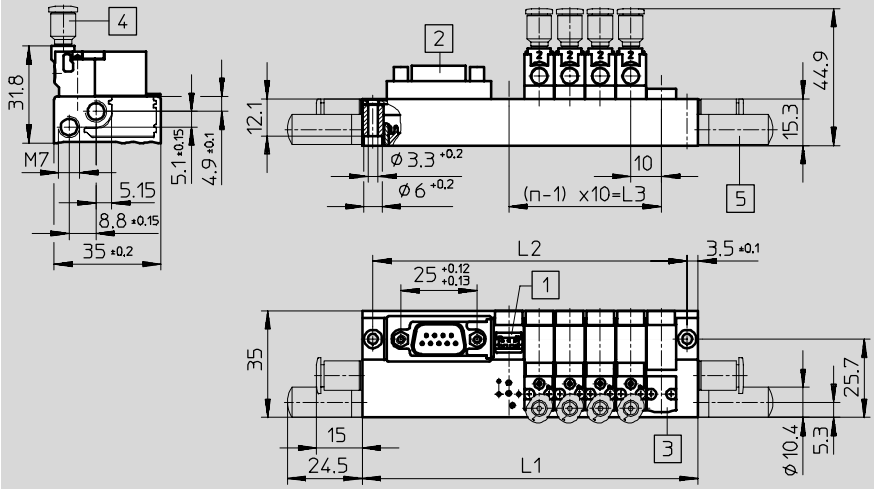
Number of valves n	L1 ±0.15	L2 ±0.1	L3
16	175	167	150
17	185	177	160
18	195	187	170
19	205	197	180
20	215	207	190
21	225	217	200
22	235	227	210

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

Dimensions – 3/2-way valve Download CAD data ➔ **www.festo.com/en/engineering**

Manifold mounting with electrical multi-pin connection



1 Plug base MHAP-PI
2 Sub-D plug 9/25, plug direction to top (standard)
3 Blanking plate MHAP1
4 Push-in fitting QSM-...
5 Silencer

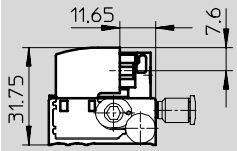
Number of valves n	L1 ±0.15	L2 ±0.1	L3
2	70	63	10
4	90	83	30
6	110	103	50
8	130	123	70

Number of valves n	L1 ±0.15	L2 ±0.1	L3
10	172	165	90
12	192	185	110
14	212	205	130
16	232	225	150

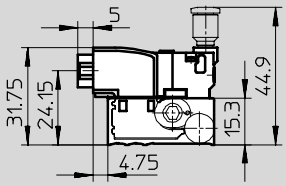
Number of valves n	L1 ±0.15	L2 ±0.1	L3
18	252	245	170
20	272	265	190
22	292	285	210

Electrical multi-pin connection – Plug directions

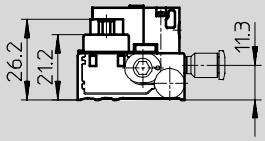
to pneumatic side



to electrical side



to top (standard)



Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

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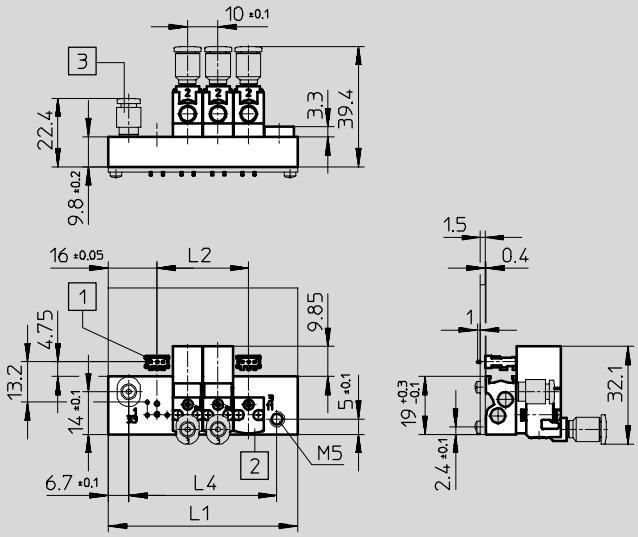
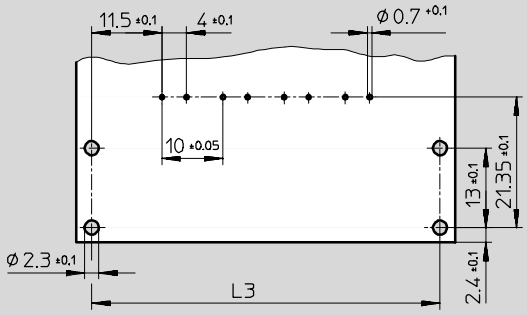
Dimensions – 3/2-way valve Download CAD data ➔ **www.festo.com/en/engineering**

Manifold mounting on PCB



1 Soldering base PCBC-A-...
2 Blanking plate MHAP1
3 Push-in fitting QSM-...

Port pattern on PCB



Note

The printed circuit board is not included in the scope of delivery.

Number of valves n	L1 ±0.15	L2	L3 ±0.1	L4 ±0.1
2	42	10	37	28.6
4	62	30	57	48.6
6	82	50	77	68.6
8	102	70	97	88.6
10	122	90	117	108.6

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

Ordering data – 2/2-way valves			
Electrical connection	Operating voltage	Normally closed Part No.	Type
M3 connecting thread			
Plug connection at rear	5 V DC	**197 045**	**MHP1-M4H-2/2G-M3-HC**
	12 V DC	**197 046**	**MHP1-M5H-2/2G-M3-HC**
	24 V DC	**197 047**	**MHP1-M1H-2/2G-M3-HC**
Plug connection on top	5 V DC	**197 048**	**MHP1-M4H-2/2G-M3-TC**
	12 V DC	**197 049**	**MHP1-M5H-2/2G-M3-TC**
	24 V DC	**197 050**	**MHP1-M1H-2/2G-M3-TC**
Plug connection underneath	5 V DC	**197 051**	**MHP1-M4H-2/2G-M3-PI**
	12 V DC	**197 052**	**MHP1-M5H-2/2G-M3-PI**
	24 V DC	**197 053**	**MHP1-M1H-2/2G-M3-PI**

- Note

Type 2/2NC and type 3/2NO valves must not be mixed on a manifold block.

Ordering data – Product-specific accessories			
Designation		Part No.	Type
Valves with plug connection at rear or on top			
Individual sub-base		**197 188**	**MHP1-AS-2-M3**
Manifold block for ...	2 valves	**197 196**	**MHP1-P2-2**
	4 valves	**197 197**	**MHP1-P4-2**
	6 valves	**197 198**	**MHP1-P6-2**
	8 valves	**197 200**	**MHP1-P8-2**
	10 valves	**197 201**	**MHP1-P10-2**
Valves with plug connection underneath			
Individual sub-base		**197 190**	**MHP1-AS-2-M3-PI**
Manifold block with plug bases for ...	2 valves	**197 217**	**MHP1-P2-2-PI**
	4 valves	**197 218**	**MHP1-P4-2-PI**
	6 valves	**197 219**	**MHP1-P6-2-PI**
	8 valves	**197 220**	**MHP1-P8-2-PI**
	10 valves	**197 221**	**MHP1-P10-2-PI**

- Note

Manifold blocks (with and without working ports) with an uneven number of valves and for 11 ... 22 valves as well as further variants can be configured and ordered using the MH1 modular product system ➔ from 2 / 3.1-28.

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

FESTO

Ordering data – 3/2-way valves

Electrical connection	Operating voltage	Normally closed Part No.	Type	Normally open Part No.	Type
M3 connecting thread					
Plug connection at rear	5 V DC	**197 009**	**MHP1-M4H-3/2G-M3-HC**	**197 027**	**MHP1-M4H-3/2O-M3-HC**
	12 V DC	**197 010**	**MHP1-M5H-3/2G-M3-HC**	**197 028**	**MHP1-M5H-3/2O-M3-HC**
	24 V DC	**197 011**	**MHP1-M1H-3/2G-M3-HC**	**197 029**	**MHP1-M1H-3/2O-M3-HC**
Plug connection on top	5 V DC	**197 012**	**MHP1-M4H-3/2G-M3-TC**	**197 030**	**MHP1-M4H-3/2O-M3-TC**
	12 V DC	**197 013**	**MHP1-M5H-3/2G-M3-TC**	**197 031**	**MHP1-M5H-3/2O-M3-TC**
	24 V DC	**197 014**	**MHP1-M1H-3/2G-M3-TC**	**197 032**	**MHP1-M1H-3/2O-M3-TC**
Plug connection underneath	5 V DC	**197 015**	**MHP1-M4H-3/2G-M3-PI**	**197 033**	**MHP1-M4H-3/2O-M3-PI**
	12 V DC	**197 016**	**MHP1-M5H-3/2G-M3-PI**	**197 034**	**MHP1-M5H-3/2O-M3-PI**
	24 V DC	**197 017**	**MHP1-M1H-3/2G-M3-PI**	**197 035**	**MHP1-M1H-3/2O-M3-PI**

- Note

Type 3/2NC and type 3/2NO valves must not be mixed on a manifold block.

Ordering data – Product-specific accessories

Designation		Part No.	Type
Valves with plug connection at rear or on top			
Individual sub-base		**197 184**	**MHP1-AS-3-M3**
Manifold block for ...	2 valves	**197 191**	**MHP1-PR2-3**
	4 valves	**197 192**	**MHP1-PR4-3**
	6 valves	**197 193**	**MHP1-PR6-3**
	8 valves	**197 194**	**MHP1-PR8-3**
	10 valves	**197 195**	**MHP1-PR10-3**
Valves with plug connection underneath			
Individual sub-base		**197 186**	**MHP1-AS-3-M3-PI**
Manifold block with plug bases for ...	2 valves	**197 212**	**MHP1-PR2-3-PI**
	4 valves	**197 213**	**MHP1-PR4-3-PI**
	6 valves	**197 214**	**MHP1-PR6-3-PI**
	8 valves	**197 215**	**MHP1-PR8-3-PI**
	10 valves	**197 216**	**MHP1-PR10-3-PI**
Manifold block with plug bases and electrical multi-pin connection for ...	4 valves	**197 233**	**MHP1-PR4-3-PI-D9**
	6 valves	**197 234**	**MHP1-PR6-3-PI-D9**
	8 valves	**197 235**	**MHP1-PR8-3-PI-D9**
	10 valves	**197 236**	**MHP1-PR10-3-PI-D25**
Manifold block for mounting on PCB for ...	2 valves	**197 242**	**MHP1-PR2-3-PI-PCB**
	4 valves	**197 243**	**MHP1-PR4-3-PI-PCB**
	6 valves	**197 244**	**MHP1-PR6-3-PI-PCB**
	8 valves	**197 245**	**MHP1-PR8-3-PI-PCB**
	10 valves	**197 246**	**MHP1-PR10-3-PI-PCB**

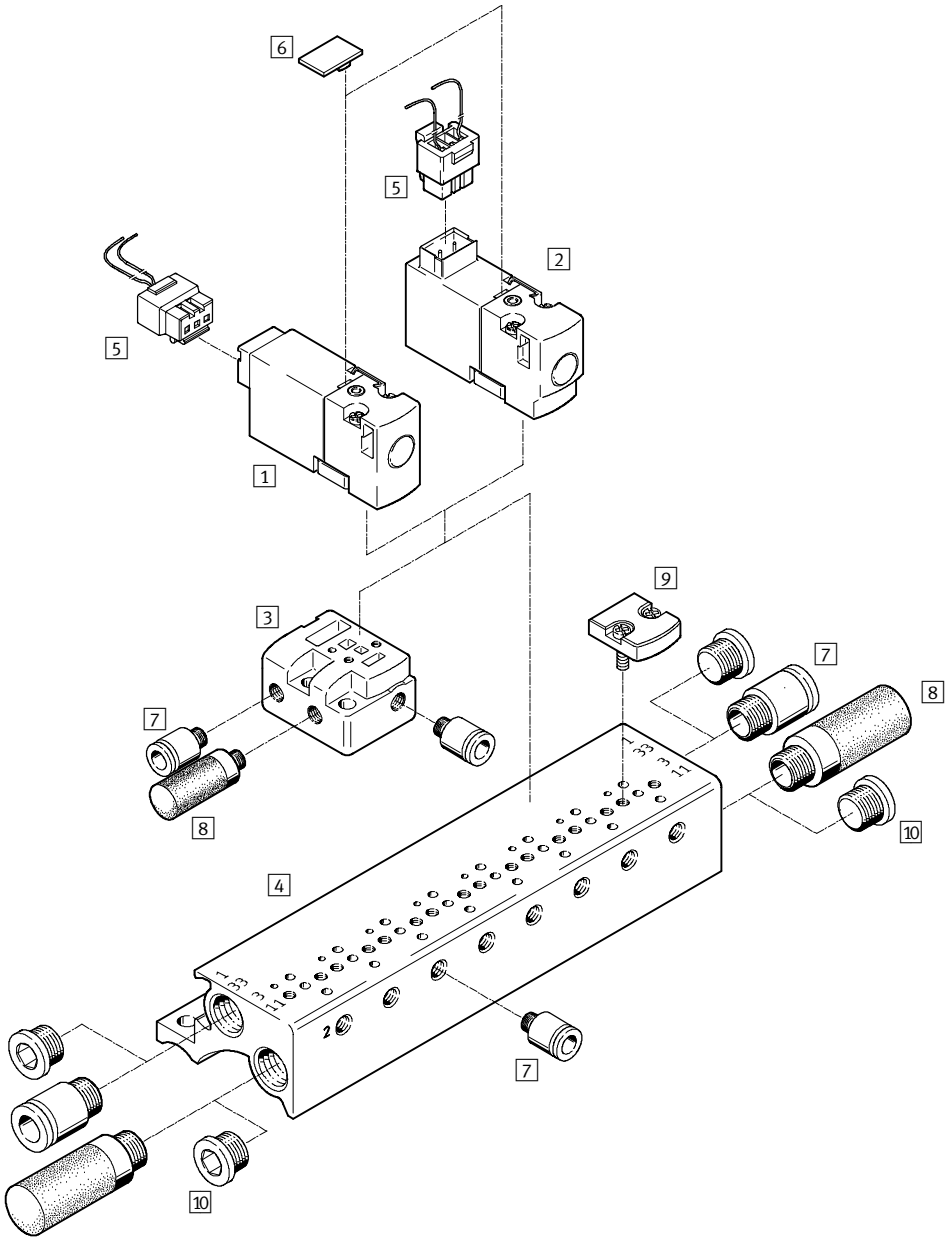
- Note

Manifold blocks (with and without working ports) with an uneven number of valves and for 11 ... 22 valves as well as further variants can be configured and ordered using the MH1 modular product system ➔ from 2 / 3.1-28.

Solenoid valves MHA1, miniature

Peripherals overview – Sub-base valve

Plug connection at rear ...-HC
Plug connection on top ...-TC



Accessories

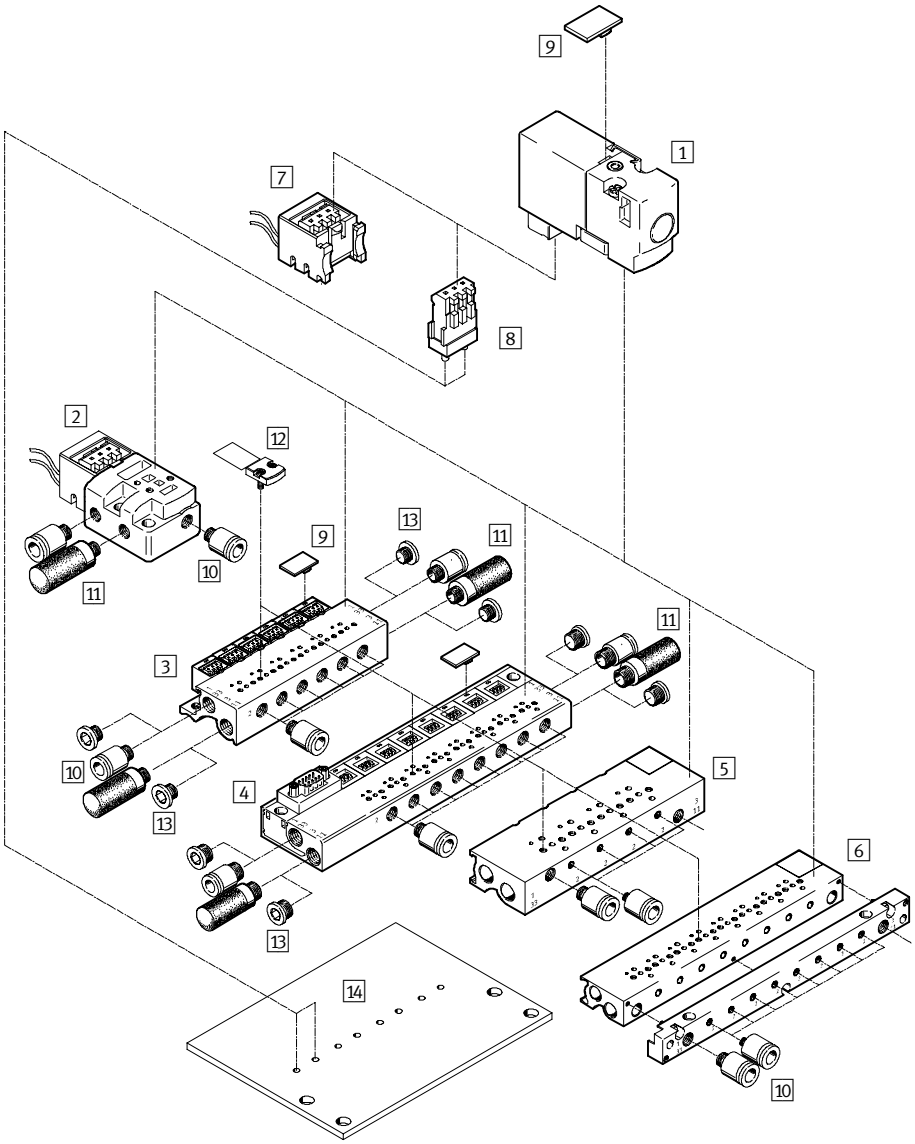
		➔ Page			➔ Page
1	Sub-base valve MHA1-...-HC	2 / 3.1-19	6	Inscription label MH-BZ-80X	2 / 3.1-38
2	Sub-base valve MHA1-...-TC	2 / 3.1-19	7	Push-in fittings QS/QSM	Volume 3
3	Individual sub-base MHA1-AS-3-M3	2 / 3.1-22	8	Silencer UC	Volume 3
4	Manifold block MHA1-PR...-3	2 / 3.1-22	9	Blanking plate MHAP1-BP-3 for sealing vacant positions	2 / 3.1-38
5	Plug socket with cable KMH	2 / 3.1-38	10	Blanking plug B	2 / 3.1-38

Solenoid valves MHA1, miniature

Peripherals overview – Sub-base valve

FESTO

Plug connection underneath ...-PI



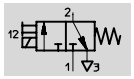
Accessories

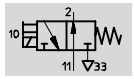
		➔ Page			➔ Page
1	Sub-base valve MHA1-...-PI	2 / 3.1-19	8	Soldering base PCBC-A	2 / 3.1-38
2	Individual sub-base MHA1-AS-3-M3-PI with plug base	2 / 3.1-22	9	Inscription label MH-BZ-80X	2 / 3.1-38
3	Manifold block MHA1-PR...-3-M3-PI with plug bases	2 / 3.1-22	10	Push-in fittings QS	Volume 3
4	Manifold block MHA1-PR...-3-M3-PI-D... with plug bases and electrical multi-pin connection	2 / 3.1-24	11	Silencer UC	Volume 3
5	Manifold block MHA1-PR...-3-M3-PI-PCB for mounting on PCB	2 / 3.1-25	12	Blanking plate MHAP1 for sealing vacant positions	2 / 3.1-38
6	Manifold block MHA1-PR...-3-M3-PI-PCBM for mounting on PCB with pneumatic multiple connector plate	2 / 3.1-25	13	Blanking plug B	2 / 3.1-38
7	Plug base MHAP-PI	2 / 3.1-38	14	Printed circuit board (user-specific)	2 / 3.1-25

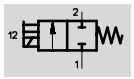
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Function



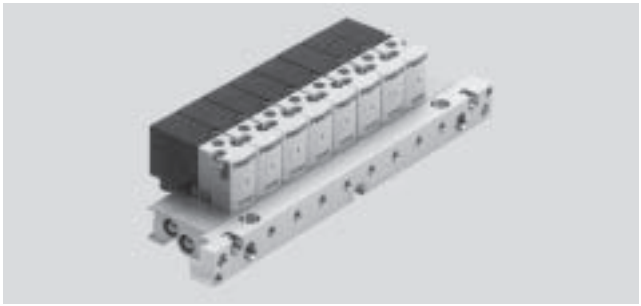




Voltage
5, 12, 24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +50°C



General technical data				
Valve function			2/2, single solenoid	3/2, single solenoid
Constructional design			Poppet disc seat	
Sealing principle			Soft	
Actuation type			Electrical	
Type of reset			Mechanical springs	
Type of pilot control			Direct	
Direction of flow			Non-reversible	
Exhaust function			Without flow control	
Manual override			Resetting	
Type of mounting			Via through-holes	
Mounting position			Any	
Nominal size		[mm]	0.9	0.65
Standard nominal flow rate		[l/min]	14 (2 bar → 0 bar)	10
Grid dimension		[mm]	10	10
Pneumatic connection	Individual sub-base	1, 33	M3	M3
		2	–	M3
		3, 11	M3	M3
	Manifold mounting	1, 33	M7	M7
		2	–	M3
		3, 11	M7	M7
Product weight		[g]	50	50

Operating and environmental conditions				
Valve function			2/2, single solenoid	3/2, single solenoid
Operating medium			Filtered compressed air, lubricated or unlubricated, grade of filtration 40µ Vacuum	Filtered compressed air, lubricated or unlubricated, grade of filtration 40µ
Operating pressure range	Normally closed	[bar]	–0.9 ... +2	0 ... 8[1]
	Normally open	[bar]	–	0 ... 6[1]
Ambient temperature	Individual mounting	[°C]	–5 ... +50	
	Manifold mounting	[°C]	–5 ... +40	
Temperature of medium	Individual mounting	[°C]	–5 ... +50	
	Manifold mounting	[°C]	–5 ... +40	
Corrosion resistance class CRC[2]			1	

1) Vacuum operation possible with special connection method
2) Corrosion resistance class 1 according to Festo standard 940 070
Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

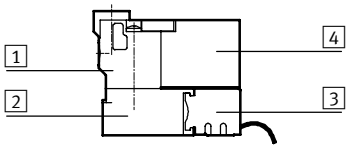
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Electrical data			
Valve function		2/2, single solenoid	3/2, single solenoid
Operating voltage	[V DC]	5 ±10%, 12 ±10% or 24 ±10%	
Type of connection		Plug connection	
Power consumption	[W]	1	
Protection class to EN 60 529			
With plug socket KMH		IP40	
With plug base MHAP-PI		IP40	
With soldering base PCBC-A		IP40	
With Sub-D connector plug		IP40	

Response times and switching frequencies			
Valve function		2/2, single solenoid	3/2, single solenoid
Response time on/off	[ms]	4/5	4/4
Switching frequency	[Hz]	20	

Materials



1	Housing	Die-cast zinc
2	Sub-base	Aluminium
3	Plug base	Polyamide
4	Coil housing	Polyamide
–	Seals	Nitrile rubber, hydrogenated nitrile rubber
	Note on material	Free of copper, PTFE and silicone

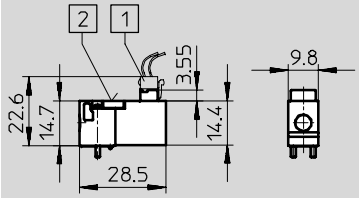
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

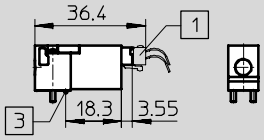
Dimensions

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

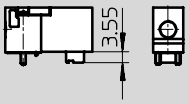
Plug connection on top



Plug connection at rear

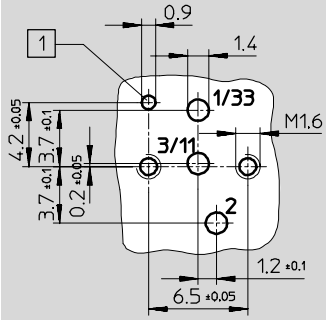


Plug connection at rear



1 Plug socket KMH-...
2 Manual override
3 Coding pin

Port pattern on sub-bases



1 Hole for coding pin

Note

Semi in-line valves have no port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not applicable.

If used as a 2/2-way valve, normally open, port 1/33 is not applicable.

Solenoid valves MHA1, miniature

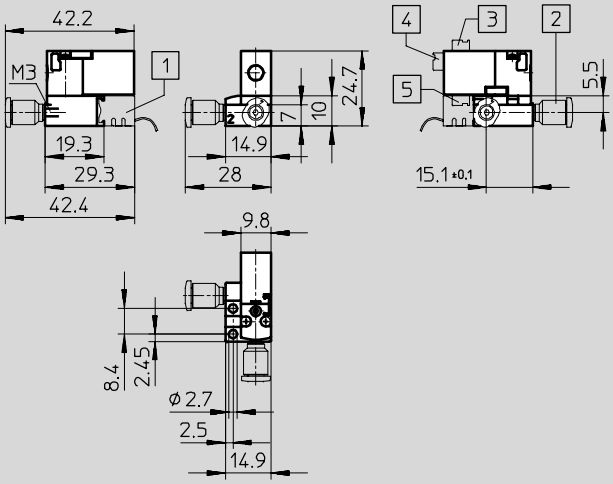
Technical data – Sub-base valve

FESTO

Dimensions – 2/2-way valve

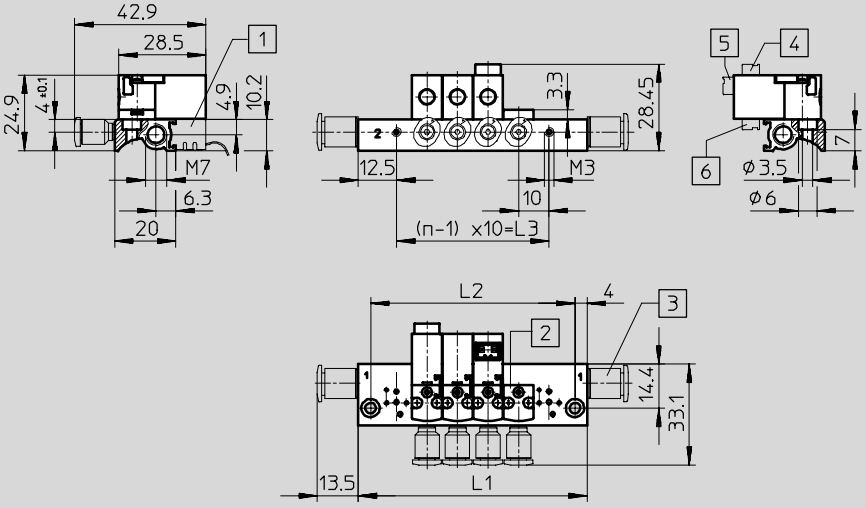
Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug base MHAP-PI
2 Push-in fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Plug base MHAP-PI
2 Blanking plate MHAP1
3 Push-in fitting QSM-...
4 Plug connection on top
5 Plug connection at rear
6 Plug connection underneath

Number of valves n	L1 ±0.15	L2 ±0.1	L3
2	35	27	10
3	45	37	20
4	55	47	30
5	65	57	40
6	75	67	50
7	85	77	60
8	95	87	70

Number of valves n	L1 ±0.15	L2 ±0.1	L3
9	105	97	80
10	115	107	90
11	125	117	100
12	135	127	110
13	145	137	120
14	155	147	130
15	165	157	140

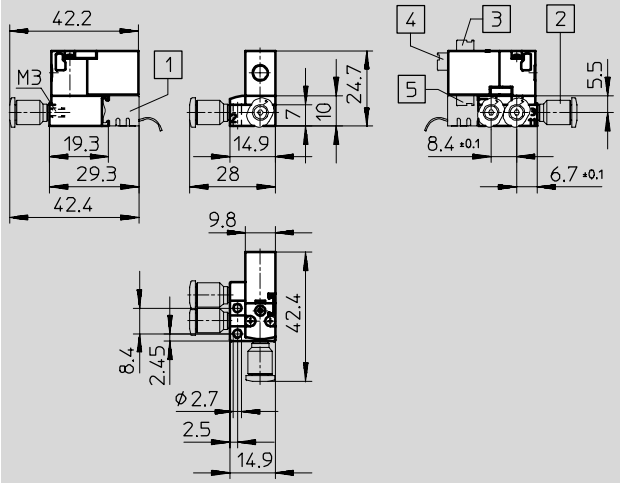
Number of valves n	L1 ±0.15	L2 ±0.1	L3
16	175	167	150
17	185	177	160
18	195	187	170
19	205	197	180
20	215	207	190
21	225	217	200
22	235	227	210

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

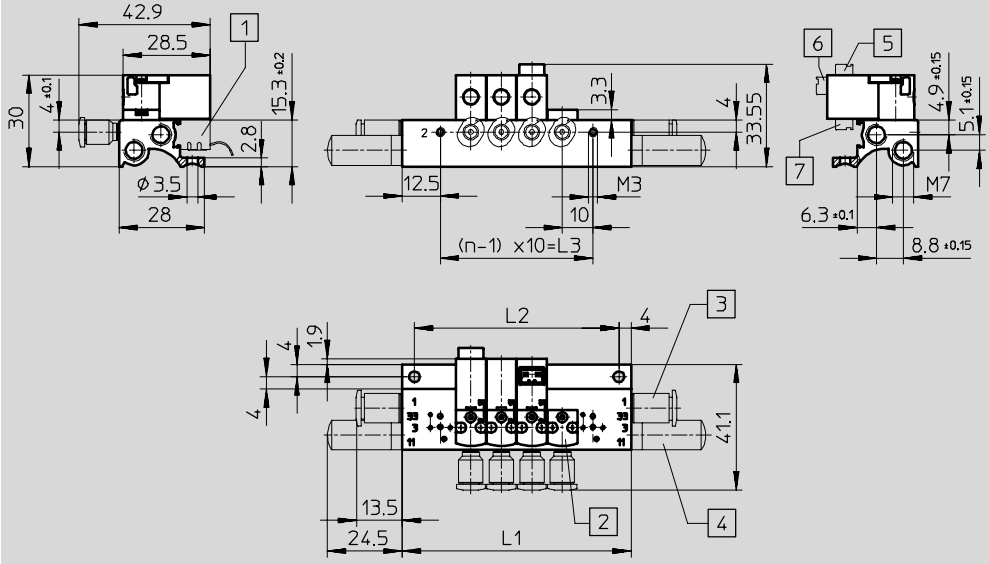
Dimensions – 3/2-way valve Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug base MHAP-PI
2 Push-in fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Plug base MHAP-PI
2 Blanking plate MHAP1
3 Push-in fitting QSM-...
4 Silencer
5 Plug connection on top
6 Plug connection at rear
7 Plug connection underneath

Number of valves n	L1 ±0.15	L2 ±0.1	L3
2	35	27	10
3	45	37	20
4	55	47	30
5	65	57	40
6	75	67	50
7	85	77	60
8	95	87	70

Number of valves n	L1 ±0.15	L2 ±0.1	L3
9	105	97	80
10	115	107	90
11	125	117	100
12	135	127	110
13	145	137	120
14	155	147	130
15	165	157	140

Number of valves n	L1 ±0.15	L2 ±0.1	L3
16	175	167	150
17	185	177	160
18	195	187	170
19	205	197	180
20	215	207	190
21	225	217	200
22	235	227	210

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

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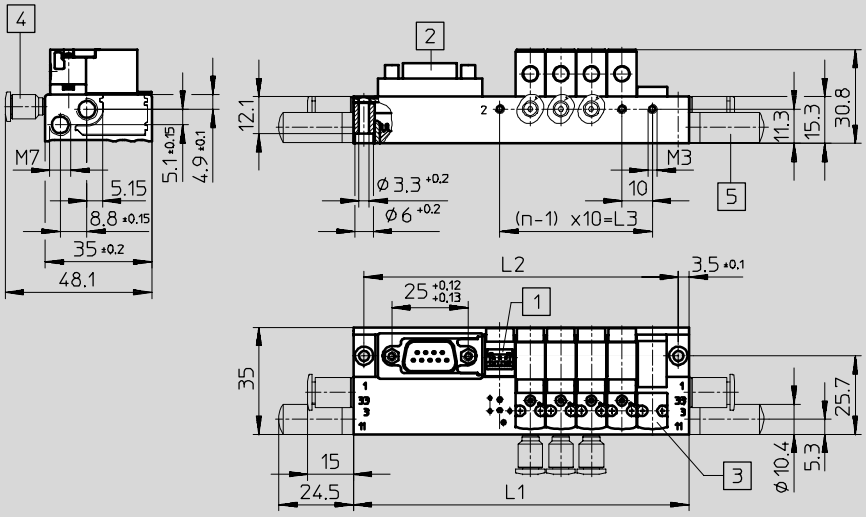
Dimensions – 3/2-way valve Download CAD data ➔ **www.festo.com/en/engineering**

Manifold mounting with electrical multi-pin connection



1 Plug base MHAP-PI
2 Sub-D plug 9/25-pin
plug direction to top (standard)
3 Blanking plate MHAP1
4 Push-in fitting QSM-...
5 Silencer

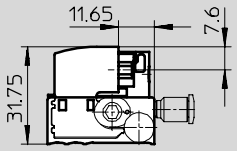
Number of valves n	L1 ±0.15	L2 ±0.1	L3
2	70	63	10
4	90	83	30
6	110	103	50
8	130	123	70

Number of valves n	L1 ±0.15	L2 ±0.1	L3
10	172	165	90
12	192	185	110
14	212	205	130
16	232	225	150

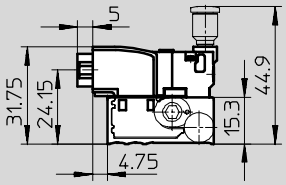
Number of valves n	L1 ±0.15	L2 ±0.1	L3
18	252	245	170
20	272	265	190
22	292	285	210

Electrical multi-pin connection – Plug directions

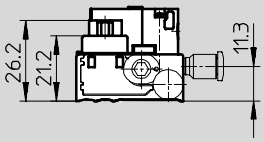
to pneumatic side



to electrical side



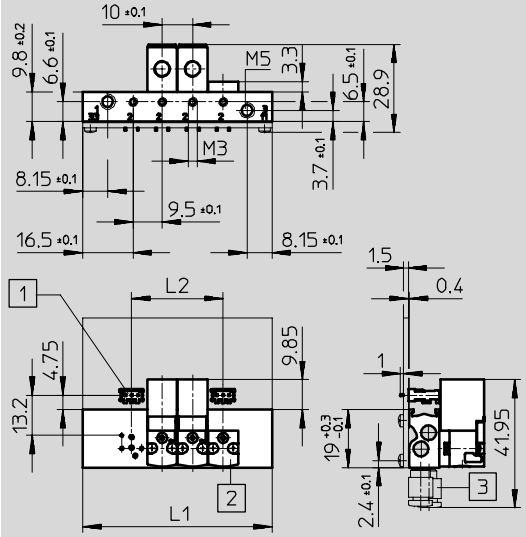
to top (standard)



Dimensions – 3/2-way valve

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

Manifold mounting on PCB

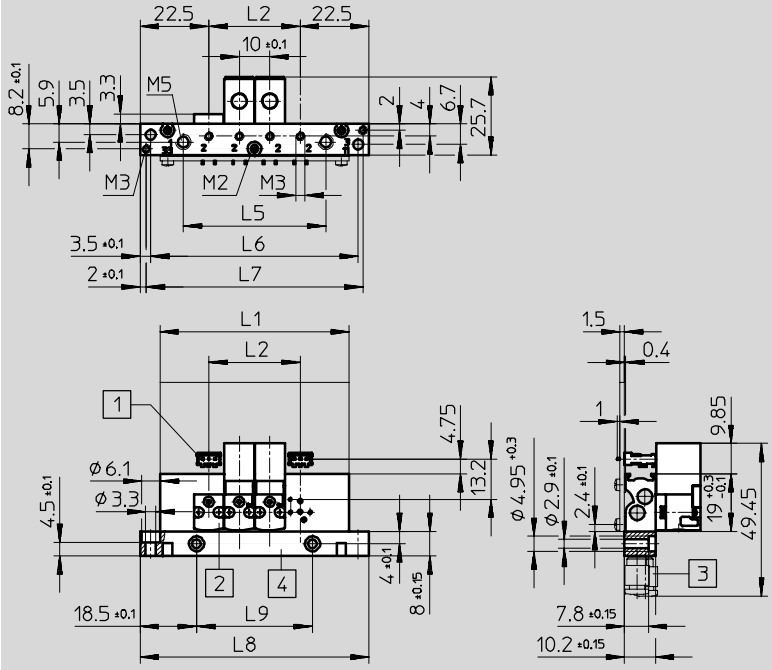


1 Soldering base PCBC-A-...
2 Blanking plate MHAP1
3 Push-in fitting QSM-...

- - Note

The printed circuit board is not included in the scope of delivery.
Port pattern on PCB ➔ 2 / 3.1-26

Manifold mounting with pneumatic multiple connector plate on PCB



1 Soldering base PCBC-A-...
2 Blanking plate MHAP1
3 Push-in fitting QSM-...
4 Removable pneumatic multiple connector plate

- - Note

The printed circuit board is not included in the scope of delivery.
Port pattern on PCB ➔ 2 / 3.1-26

Number of valves n	L1 ±0.15	L2	L3 ±0.1	L5 ±0.15	L6	L7 ±0.1	L8 ±0.2	L9 ±0.1
2	42	10	37	–	–	–	–	–
4	62	30	57	46.7	68	71	75	38
6	82	50	77	66.7	88	91	95	58
8	102	70	97	86.7	108	111	115	78
10	122	90	117	106.7	128	131	135	98

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

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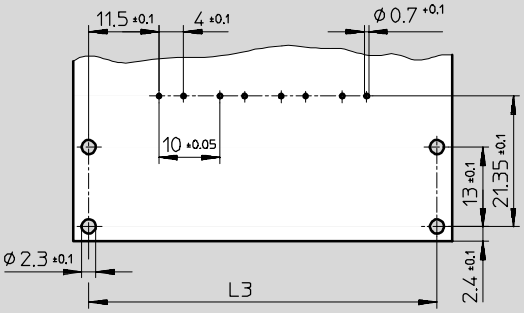
Dimensions

Port pattern on PCB



- Note

The printed circuit board is not included in the scope of delivery.

Ordering data – 2/2-way valves

Electrical connection	Operating voltage	Normally closed Part No.	Type
M3 connecting thread			
Plug connection at rear	5 V DC	**197 036**	**MHA1-M4H-2/2G-0,9-HC**
	12 V DC	**197 037**	**MHA1-M5H-2/2G-0,9-HC**
	24 V DC	**197 038**	**MHA1-M1H-2/2G-0,9-HC**
Plug connection on top	5 V DC	**197 039**	**MHA1-M4H-2/2G-0,9-TC**
	12 V DC	**197 040**	**MHA1-M5H-2/2G-0,9-TC**
	24 V DC	**197 041**	**MHA1-M1H-2/2G-0,9-TC**
Plug connection underneath	5 V DC	**197 042**	**MHA1-M4H-2/2G-0,9-PI**
	12 V DC	**197 043**	**MHA1-M5H-2/2G-0,9-PI**
	24 V DC	**197 044**	**MHA1-M1H-2/2G-0,9-PI**

- Note

Type 3/2NC and type 3/2NO valves must not be mixed on a manifold block.

Ordering data – Product-specific accessories

Designation		Part No.	Type
Valves with plug connection at rear or on top			
Individual sub-base		**197 187**	**MHA1-AS-2-M3**
Manifold block for ...	2 valves	**197 207**	**MHA1-P2-2-M3**
	4 valves	**197 208**	**MHA1-P4-2-M3**
	6 valves	**197 209**	**MHA1-P6-2-M3**
	8 valves	**197 210**	**MHA1-P8-2-M3**
	10 valves	**197 211**	**MHA1-P10-2-M3**
Valves with plug connection underneath			
Individual sub-base		**197 189**	**MHA1-AS-2-M3-PI**
Manifold block with plug bases for ...	2 valves	**197 227**	**MHA1-P2-2-M3-PI**
	4 valves	**197 228**	**MHA1-P4-2-M3-PI**
	6 valves	**197 229**	**MHA1-P6-2-M3-PI**
	8 valves	**197 230**	**MHA1-P8-2-M3-PI**
	10 valves	**197 231**	**MHA1-P10-2-M3-PI**

- Note

Manifold blocks (with and without working ports) with an uneven number of valves and for 11 ... 22 valves as well as further variants can be configured and ordered using the MH1 modular product system ➔ from 2 / 3.1-28.

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Ordering data – 3/2-way valves					
Electrical connection	Operating voltage	Normally closed Part No.	Type	Normally open Part No.	Type
M3 connecting thread					
Plug connection at rear	5 V DC	**197 000**	**MHA1-M4H-3/2G-0,6-HC**	**197 018**	**MHA1-M4H-3/2O-0,6-HC**
	12 V DC	**197 001**	**MHA1-M5H-3/2G-0,6-HC**	**197 019**	**MHA1-M5H-3/2O-0,6-HC**
	24 V DC	**197 002**	**MHA1-M1H-3/2G-0,6-HC**	**197 020**	**MHA1-M1H-3/2O-0,6-HC**
Plug connection on top	5 V DC	**197 003**	**MHA1-M4H-3/2G-0,6-TC**	**197 021**	**MHA1-M4H-3/2O-0,6-TC**
	12 V DC	**197 004**	**MHA1-M5H-3/2G-0,6-TC**	**197 022**	**MHA1-M5H-3/2O-0,6-TC**
	24 V DC	**197 005**	**MHA1-M1H-3/2G-0,6-TC**	**197 023**	**MHA1-M1H-3/2O-0,6-TC**
Plug connection underneath	5 V DC	**197 006**	**MHA1-M4H-3/2G-0,6-PI**	**197 024**	**MHA1-M4H-3/2O-0,6-PI**
	12 V DC	**197 007**	**MHA1-M5H-3/2G-0,6-PI**	**197 025**	**MHA1-M5H-3/2O-0,6-PI**
	24 V DC	**197 008**	**MHA1-M1H-3/2G-0,6-PI**	**197 026**	**MHA1-M1H-3/2O-0,6-PI**

- Note

Type 3/2NC and type 3/2NO valves must not be mixed on a manifold block.

Ordering data – Product-specific accessories			
Designation		Part No.	Type
Valves with plug connection at rear or on top			
Individual sub-base		**197 183**	**MHA1-AS-3-M3**
Manifold block for ...	2 valves	**197 202**	**MHA1-PR2-3-M3**
	4 valves	**197 203**	**MHA1-PR4-3-M3**
	6 valves	**197 204**	**MHA1-PR6-3-M3**
	8 valves	**197 205**	**MHA1-PR8-3-M3**
	10 valves	**197 206**	**MHA1-PR10-3-M3**
Valves with plug connection underneath			
Individual sub-base		**197 185**	**MHA1-AS-3-M3-PI**
Manifold block with plug bases for ...	2 valves	**197 222**	**MHA1-PR2-3-M3-PI**
	4 valves	**197 223**	**MHA1-PR4-3-M3-PI**
	6 valves	**197 224**	**MHA1-PR6-3-M3-PI**
	8 valves	**197 225**	**MHA1-PR8-3-M3-PI**
	10 valves	**197 226**	**MHA1-PR10-3-M3-PI**
Manifold block with plug bases and electrical multi-pin connection for ...	4 valves	**197 238**	**MHA1-PR4-3-M3-PI-D9**
	6 valves	**197 239**	**MHA1-PR6-3-M3-PI-D9**
	8 valves	**197 240**	**MHA1-PR8-3-M3-PI-D9**
	10 valves	**197 241**	**MHA1-PR10-3-M3-PI-D25**
Manifold block for mounting on PCB for ...	2 valves	**197 247**	**MHA1-PR2-3-M3-PI-PCB**
	4 valves	**197 248**	**MHA1-PR4-3-M3-PI-PCB**
	6 valves	**197 249**	**MHA1-PR6-3-M3-PI-PCB**
	8 valves	**197 250**	**MHA1-PR8-3-M3-PI-PCB**
	10 valves	**197 251**	**MHA1-PR10-3-M3-PI-PCB**
Manifold block for mounting on PCB with pneumatic multiple connector plate for ...	4 valves	**197 253**	**MHA1-PR4-3-PI-PCBM**
	6 valves	**197 254**	**MHA1-PR6-3-PI-PCBM**
	8 valves	**197 255**	**MHA1-PR8-3-PI-PCBM**
	10 valves	**197 256**	**MHA1-PR10-3-PI-PCBM**

- Note

Manifold blocks (with and without working ports) with an uneven number of valves and for 11 ... 22 valves as well as further variants can be configured and ordered using the MH1 modular product system ➔ from 2 / 3.1-28.

Solenoid valves MH1, miniature, individual sub-base

Ordering data – Modular products

FESTO

M **Mandatory data**

Module No.	Valve family		Design		Operating voltage		Valve function		Plug-in direction on valve		Number of valve positions		Link type
197 334	MH1		P A		5VDC 12VDC 24VDC		D C N		TC HC		1V		PS
Ordering example													
197 334	**MH1**	–	**P**	–	**12VDC**	–	**D**	–	**TC**	–	**1V**	–	**PS**

Ordering table

Size		1	Condi-tions	Code		Enter code
M	Module No.	**197 334**				
	Valve family	Miniature valve size 1		**MH1**		MH1
	Design	Semi in-line valve		**-P**		-P
		Sub-base valve		**-A**		
	Operating voltage [V DC]	5, 12, 24		**-...VDC**		
	Valve function	2/2-way valve, normally closed		**-D**		
		3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection on top for connecting cable with socket IP40 (KMH-0,5)		**-TC**		
		Plug connection at rear for connecting cable with socket IP40 (KMH-1)		**-HC**		
	Number of valve positions	1		**-1V**		-1V
↓	Link type	Individual sub-base		**-PS**		-PS

Transfer order code

197 334	**MH1**	–	**P**	–		–		–		–	**1V**	–	**PS**

Solenoid valves MH1, miniature, individual sub-base

Ordering data – Modular products

FESTO

0 Options

Connecting cable with socket	Fitting for working port	Fitting in supply duct on left side	Fitting in exhaust duct on left side
K05 K01	QB QC	AB AC	BB BC BU
– **K05**	– **QB**	– **AB**	– **BC**

Ordering table

Size		1	Condi-tions	Code		Enter code
0	Connecting cable with socket (supplied separately)	Connecting cable 0.5 m, with socket IP40 (KMH-0,5)	1	**-K05**		
		Connecting cable 1 m, with socket IP40 (KMH-1)	1	**-K01**		
	Fitting for working port	QS fitting for working port, tubing O.D. 3 mm		**-QB**		
		QS fitting for working port, tubing O.D. 4 mm		**-QC**		
	Fitting in supply duct on left side	QS fitting for supply on left, tubing O.D. 3 mm	2	**-AB**		
		QS fitting for supply on left, tubing O.D. 4 mm		**-AC**		
	Fitting in exhaust duct on left side	QS fitting for exhaust on left, tubing O.D. 3 mm	3	**-BB**		
		QS fitting for exhaust on left, tubing O.D. 4 mm		**-BC**		
		Silencer for exhaust on left	4	**-BU**		

1 **K05, K01** Not with plug-in direction PI.
2 **AB** Not with fitting QC.
3 **BB** Not with fitting AC.
4 **BU** Not with valve function D.

Transfer order code

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Solenoid valves MH1, miniature, manifold mounting, individual electr. connection

FESTO

Ordering data – Modular products

M Mandatory data								O Options →
Module No.	**Valve family**	**Design**	**Operating voltage**	**Valve function**	**Plug-in direction on valve**	**Number of valve positions**	**Link type**	**Number of vacant positions**
197 334	MH1	A P	5VDC 12VDC 24VDC	D C N	TC HC	2V ... 22V	PR	2L ... 22L
Ordering example								
197 334	**MH1**	**A**	**12VDC**	**D**	**TC**	**14V**	**PR**	**2L**

Ordering table

Size		1	Conditions	Code		Enter code
M	Module No.	**197 334**				
	Valve family	Miniature valve size 1		**MH1**		MH1
	Design	Sub-base valve		**-A**		
		Semi in-line valve		**-P**		
	Operating voltage [V DC]	5, 12, 24		**-...VDC**		
	Valve function	2/2-way valve, normally closed		**-D**		
		3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection on top for connecting cable with socket IP40 (KMH-0,5)		**-TC**		
		Plug connection at rear for connecting cable with socket IP40 (KMH-1)		**-HC**		
	Number of valve positions	2 ... 22		**-...V**		
	Link type	Manifold block without electrical link		**-PR**		
O ↓	Number of vacant positions	2 ... 22		**-...L**		

Transfer order code

197 334	**MH1**	–		–		–		–		–		–	**PR**	–	

Solenoid valves MH1, miniature, manifold mounting, individual electr. connection

Ordering data – Modular products

[0] Options

Connecting cable with socket	Fitting for working port	Fitting in supply duct on left side	Fitting in exhaust duct on left side	Fitting in supply duct on right side	Fitting in exhaust duct on right side
K05 K01	QB QC	AX AC AD	BX BC BD BU	CX CC CD	DX DC DD DU
– **K05**	– **QC**	– **AX**	– **BD**	– **CD**	– **DX**

Ordering table

Size		1	Conditions	Code		Enter code
↓	Connecting cable with socket	0.5 m with socket IP40 (KMH-0,5)		-K05		
[0]	(supplied separately)	1 m with socket IP40 (KMH-1)		-K01		
	Fitting for working port	QS fitting for working port, tubing O.D. 3 mm		-QB		
		QS fitting for working port, tubing O.D. 4 mm		-QC		
	Fitting in supply duct on left side	Blanking plug for supply on left	[1]	-AX		
		QS fitting for supply on left, tubing O.D. 4 mm		-AC		
		QS fitting for supply on left, tubing O.D. 6 mm		-AD		
	Fitting in exhaust duct on left side	Blanking plug for exhaust on left	[2]	-BX		
		QS fitting for exhaust on left, tubing O.D. 4 mm	[3]	-BC		
		QS fitting for exhaust on left, tubing O.D. 6 mm		-BD		
		Silencer for exhaust on left	[4]	-BU		
	Fitting in supply duct on right side	Blanking plug for supply on right		-CX		
		QS fitting for supply on right, tubing O.D. 4 mm		-CC		
		QS fitting for supply on right, tubing O.D. 6 mm		-CD		
	Fitting in exhaust duct on right side	Blanking plug for exhaust on right		-DX		
		QS fitting for exhaust on right, tubing O.D. 4 mm	[3]	-DC		
		QS fitting for exhaust on right, tubing O.D. 6 mm		-DD		
		Silencer for exhaust on right	[4]	-DU		

[1] **AX** Not with fitting CX.
[2] **BX** Not with fitting DX.
[3] **BC, DC** Not with fitting AD, CD.
[4] **BU, DU** Not with valve function D.

Transfer order code

– [ ] – [ ] – [ ] – [ ] – [ ] – [ ]

Solenoid valves MH1, miniature, manifold mounting, electr. multi-pin connection

FESTO

Ordering data – Modular products

M Mandatory data								O Options →	
Module No.	**Valve family**	**Design**	**Operating voltage**	**Valve function**	**Plug-in direction on valve**	**Number of valve positions**	**Link type**	**Number of vacant positions**	**Plug-in direction, Sub-D plug**
197 334	MH1	A P	5VDC 12VDC 24VDC	D C N	PI	2V ... 22V	PRA	2L ... 22L	SP ST SE
Ordering example									
197 334	**MH1**	**– A**	**– 12VDC**	**– D**	**– PI**	**– 14V**	**– PRA**	**– 2L**	**–**

Ordering table

Size		1	Condi-tions	Code		Enter code
M	Module No.	**197 334**				
	Valve family	Miniature valve size 1		**MH1**		MH1
	Design	Sub-base valve		**-A**		
		Semi in-line valve		**-P**		
	Operating voltage [V DC]	5, 12, 24		**-...VDC**		
	Valve function	2/2-way valve, normally closed		**-D**		
		3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection underneath with electrical link		**-PI**		PI
	Number of valve positions	2, 4, 6 ... 22		**-...V**		
	Link type	Manifold block with Sub-D plug		**-PRA**		PRA
O	Number of vacant positions	2, 4, 6 ... 22		**-...L**		
	Plug-in direction, Sub-D plug	to pneumatic side		**-SP**		
		to top		**-ST**		
↓		to electrical side		**-SE**		

Transfer order code

197 334	**MH1**	**–**	**A**	**–**		**–**		**–**	**PI**	**–**	**PRA**	**–**		**–**	

Solenoid valves MH1, miniature, manifold mounting, electr. multi-pin connection

FESTO

Ordering data – Modular products

0 Options

	Connecting cable with socket		Fitting for working port	Fitting in supply duct on left side	Fitting in exhaust duct on left side	Fitting in supply duct on right side	Fitting in exhaust duct on right side
	S25 M25 L25 S50 M50 L50 S10 M10 L10		QB QC	AX AC AD	BX BC BD BU	CX CC CD	DX DC DD DU
–	**L25**	–	**QC**	– **AX**	– **BD**	– **CD**	– **DX**

Ordering table

Size		1	Conditions	Code	Enter code
↓	Connecting cable with socket (supplied separately)	2.5 m, Sub-D 9-pin, 8-wire	1	**-S25**	
		5 m, Sub-D 9-pin, 8-wire	1	**-S50**	
		10 m, Sub-D 9-pin, 8-wire	1 2	**-S10**	
		2.5 m, Sub-D 25-pin, 12-wire	3	**-M25**	
		5 m, Sub-D 25-pin, 12-wire	3	**-M50**	
		10 m, Sub-D 25-pin, 12-wire	2 3	**-M10**	
		2.5 m, Sub-D 25-pin, 20-wire	4	**-L25**	
		5 m, Sub-D 25-pin, 20-wire	4	**-L50**	
		10 m, Sub-D 25-pin, 20-wire	2 4	**-L10**	
	Fitting for working port	QS fitting for working port, tubing O.D. 3 mm		**-QB**	
		QS fitting for working port, tubing O.D. 4 mm		**-QC**	
	Fitting in supply duct on left side	Blanking plug for supply on left	5	**-AX**	
		QS fitting for supply on left, tubing O.D. 4 mm		**-AC**	
		QS fitting for supply on left, tubing O.D. 6 mm		**-AD**	
	Fitting in exhaust duct on left side	Blanking plug for exhaust on left	6	**-BX**	
		QS fitting for exhaust on left, tubing O.D. 4 mm	7	**-BC**	
		QS fitting for exhaust on left, tubing O.D. 6 mm		**-BD**	
		Silencer for exhaust on left	8	**-BU**	
	Fitting in supply duct on right side	Blanking plug for supply on right		**-CX**	
		QS fitting for supply on right, tubing O.D. 4 mm		**-CC**	
		QS fitting for supply on right, tubing O.D. 6 mm		**-CD**	
	Fitting in exhaust duct on right side	Blanking plug for exhaust on right		**-DX**	
		QS fitting for exhaust on right, tubing O.D. 4 mm	7	**-DC**	
		QS fitting for exhaust on right, tubing O.D. 6 mm		**-DD**	
		Silencer for exhaust on right	8	**-DU**	

1 **S25, S50, S10**
Max. 8 valve positions.

2 **S10, M10, L10**
Not with operating voltage 5VDC.

3 **M25, M50, M10**
Only with 10 or 12 valve positions.

4 **L25, L50, L10**
Min. 10 valve positions.

5 **AX** Not with fitting CX.

6 **BX** Not with fitting DX.

7 **BC, DC** Not with fitting AD, CD.

8 **BU, DU** Not with valve function D.

Transfer order code

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Solenoid valves MH1, miniature, manifold and PCB mounting

Ordering data – Modular products

FESTO

M **Mandatory data**

Module No.	Valve family	Design	Operating voltage	Valve function	Plug-in direction on valve	Number of valve positions	Link type
197 334	MH1	A P	5VDC 12VDC 24VDC	D C N	PI	2V ... 10V	PCD
Ordering example							
197 334	**MH1**	**A**	**12VDC**	**D**	**PI**	**10V**	**PCD**

Ordering table

Size		1	Conditions	Code		Enter code
M	Module No.	**197 334**				
	Valve family	Miniature valve size 1		**MH1**		MH1
	Design	Sub-base valve		**-A**		
		Semi in-line valve		**-P**		
	Operating voltage [V DC]	5, 12, 24		**-...VDC**		
	Valve function	2/2-way valve, normally closed		**-D**		
		3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection underneath with electrical link		**-PI**		-PI
	Number of valve positions	2, 4, 6, 8, 10		**-...V**		
	Link type	PCB mounting, direct		**-PCD**		-PCD

Transfer order code

197 334	**MH1**	–		–		–		–	**PI**	–		– **PCD**

Solenoid valves MH1, miniature, manifold and PCB mounting

Ordering data – Modular products

FESTO

0 Options			
Number of vacant positions	**Fitting for working port**	**Fitting in supply duct on left side**	**Fitting in exhaust duct on left side**
2L ... 10L	QB QC	AB AC AD	BB BC BD BU
– **2L**	– **QC**	– **AC**	– **BC**

Ordering table

Size		1	Condi-tions	Code		Enter code
0	Number of vacant positions	2, 4, 6, 8, 10		**-...L**		
	Fitting for working port	QS fitting for working port, tubing O.D. 3 mm		**-QB**		
		QS fitting for working port, tubing O.D. 4 mm		**-QC**		
	Fitting in supply duct on left side	QS fitting for supply on left, tubing O.D. 3 mm	1	**-AB**		
		QS fitting for supply on left, tubing O.D. 4 mm		**-AC**		
		QS fitting for supply on left, tubing O.D. 6 mm		**-AD**		
	Fitting in exhaust duct on left side	QS fitting for exhaust on left, tubing O.D. 3 mm	2	**-BB**		
		QS fitting for exhaust on left, tubing O.D. 4 mm	3	**-BC**		
		QS fitting for exhaust on left, tubing O.D. 6 mm		**-BD**		
		Silencer for exhaust on left	4	**-BU**		

1 **AB** Not with fitting QC.
2 **BB** Not with fitting AC, AD.
3 **BC** Not with fitting AD, CD.
4 **BU** Not with valve function D.

Transfer order code

– [ ] – [ ] – [ ] – [ ]

Solenoid valves MH1, miniature, manifold mounting, pneumatic multi-connector

FESTO

Ordering data – Modular products

M **Mandatory data**

Module No.	Valve family		Design		Operating voltage		Valve function		Plug-in direction on valve		Number of valve positions		Link type
197 334	MH1		A		5VDC 12VDC 24VDC		D C N		PI		4V 6V 8V 10V		PCM
Ordering example													
197 334	**MH1**	–	**A**	–	**12VDC**	–	**D**	–	**PI**	–	**10V**	–	**PCM**

Ordering table

Size		1	Condi-tions	Code		Enter code
M	Module No.	**197 334**				
	Valve family	Miniature valve size 1		**MH1**		MH1
	Design	Sub-base valve		**-A**		-A
	Operating voltage [V DC]	5, 12, 24		**-...VDC**		
	Valve function	2/2-way valve, normally closed		**-D**		
		3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection underneath with electrical link		**-PI**		-PI
	Number of valve positions	4, 6, 8, 10		**-...V**		
↓	Link type	Printed circuit board mounting, pneumatic multiple connector plate		**-PCM**		-PCM

Transfer order code

197 334	**MH1**	–	**A**	–		–		–	**PI**	–		–	**PCM**

Solenoid valves MH1, miniature, manifold mounting, pneumatic multi-connector

FESTO

Ordering data – Modular products

0 Options

	Number of vacant positions		Fitting for working port		Fitting in supply duct on left side		Fitting in exhaust duct on left side
	L4 L6 L8 L10		QB QC		AB AC AD		BB BC BD BU
–		–	**QC**	–	**AC**	–	**BC**

Ordering table

Size		1	Conditions	Code		Enter code
0	Number of vacant positions	4, 6, 8, 10		**-...L**		
	Fitting for working port	QS fitting for working port, tubing O.D. 3 mm		**-QB**		
		QS fitting for working port, tubing O.D. 4 mm	1	**-QC**		
	Fitting in supply duct on left side	QS fitting for supply on left, tubing O.D. 3 mm		**-AB**		
		QS fitting for supply on left, tubing O.D. 4 mm		**-AC**		
		QS fitting for supply on left, tubing O.D. 6 mm	2	**-AD**		
	Fitting in exhaust duct on left side	QS fitting for exhaust on left, tubing O.D. 3 mm	3	**-BB**		
		QS fitting for exhaust on left, tubing O.D. 4 mm	4	**-BC**		
		QS fitting for exhaust on left, tubing O.D. 6 mm	2	**-BD**		
		Silencer for exhaust on left	4 5	**-BU**		

1 **QC** Not with fitting AD, BD.
2 **AD, BD** Not with fitting QC.
3 **BB** Not with fitting AC, AD.
4 **BC, BU** Not with fitting AD.
5 **BU** Not with valve function D.

Transfer order code

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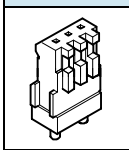
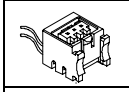
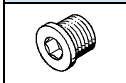
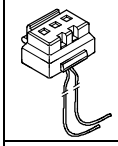
Solenoid valves MH1, miniature

Accessories

FESTO

Ordering data

		Part No.	Type
Soldering base			
		**197 261**	**PCBC-A-10**[1]
		197 262	**PCBC-A-100**[2]
Plug base (IP40)			
		**197 260**	**MHAP-PI**
Blanking plug B			
	M5	**3843**	**B-M5**[4]
	M7	**174 309**	**B-M7**[4]
Silencer UC			
		➔ Volume 3	
Connecting cable KMP6 (up to 8 valves)			
	2.5 m	**531 184**	**KMP6-09P-8-2,5**
	5 m	**531 185**	**KMP6-09P-8-5**
	10 m	**531 186**	**KMP6-09P-8-10**
Connecting cable KMP6 (up to 22 valves)			
	2.5 m	**530 046**	**KMP6-25P-22-2,5**
	5 m	**530 047**	**KMP6-25P-22-5**
	10 m	**530 048**	**KMP6-25P-22-10**

		Part No.	Type
Plug socket with cable (IP40)			
	0.5 m	**197 263**	**KMH-0,5**
	1 m	**197 264**	**KMH-1**
Inscription label			
		**197 289**	**MH-BZ-80X**[3]
Blanking plate			
	Plug connection	**197 257**	**MHAP1-BP-3**
	Plug base	**197 258**	**MHAP1-BP-3-PI**
Push-in fittings QS/QSM			
		➔ Volume 3	
Connecting cable KMP6 (up to 12 valves)			
	2.5 m	**530 049**	**KMP6-25P-12-2,5**
	5 m	**530 050**	**KMP6-25P-12-5**
	10 m	**530 051**	**KMP6-25P-12-10**

1) Scope of delivery 10 pieces
2) Scope of delivery 100 pieces
3) Scope of delivery 80 pieces
4) Scope of delivery 10 pieces