Solenoid valves MH1, miniature

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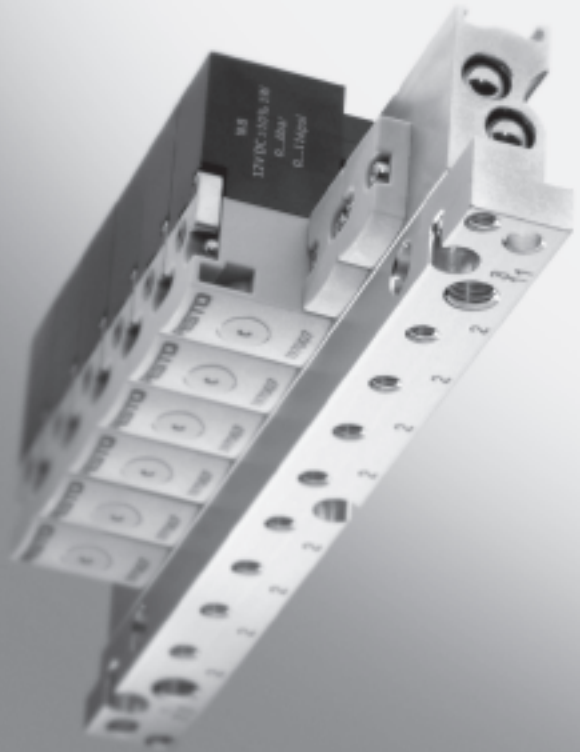

- Directly actuated valves
- Miniaturised design
- Flexible construction of valve manifolds
- Rapid response times of 4 ms
- Short cycle times
- Accurate cycle times

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.

Solenoid valves MH1, miniature

Product range overview

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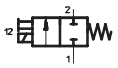
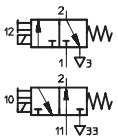
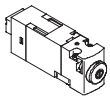
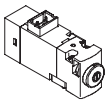
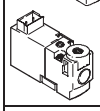
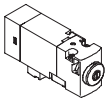
Function	Symbol	Version	Voltage [V DC]			→ Page
			5	12	24	
2/2-way valve	**Standard nominal flow rate 14 l/min**					
		Semi in-line valve	■	■	■	2 / 3.1-6
		Sub-base valve	■	■	■	2 / 3.1-17
3/2-way valve[1]	**Standard nominal flow rate 10 l/min**					
		Semi in-line valve	■	■	■	2 / 3.1-6
		Sub-base valve	■	■	■	2 / 3.1-17
		Sub-base valve with LED	–	–	■	2 / 3.1-17, 2 / 3.1-38

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

Mounting options				
Design		Semi in-line valve	Sub-base valve	
Electrical connection		Without LED	Without LED	With LED
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 base plug	■	■	■
	Manifold mounting with base plugs	■	■	■
	Manifold mounting with base plugs and electrical multi-pin connection	■	■	■
	Manifold mounting on PCB with soldering bases	■	■	■
	Manifold mounting on PCB with soldering bases and pneumatic multi-connector plate	–	■	■

Solenoid valves MH1, miniature

Type codes

MH	A	1	–	M	4	L	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

Signal status display	
–	Without
L	LED

Manual override	
H	By pushing (non-detenting)

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

Further variants and accessories can be configured and ordered using the modular system:
MH1 without LED ➔ from 2 / 3.1-28
MH1 with LED ➔ from 2 / 3.1-45

Solenoid valves MHP1, miniature

Peripherals overview – Semi in-line valve, valve manifold

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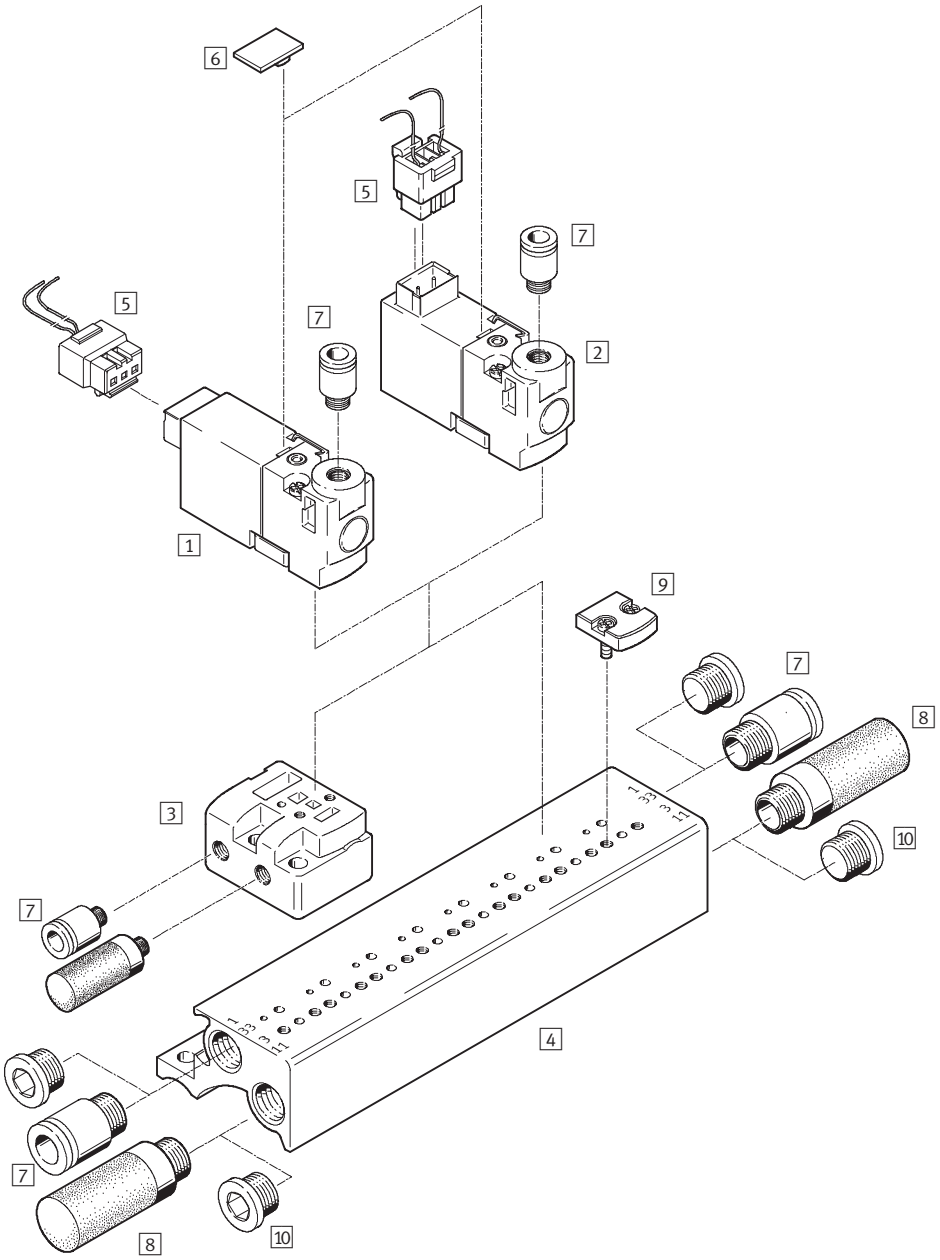
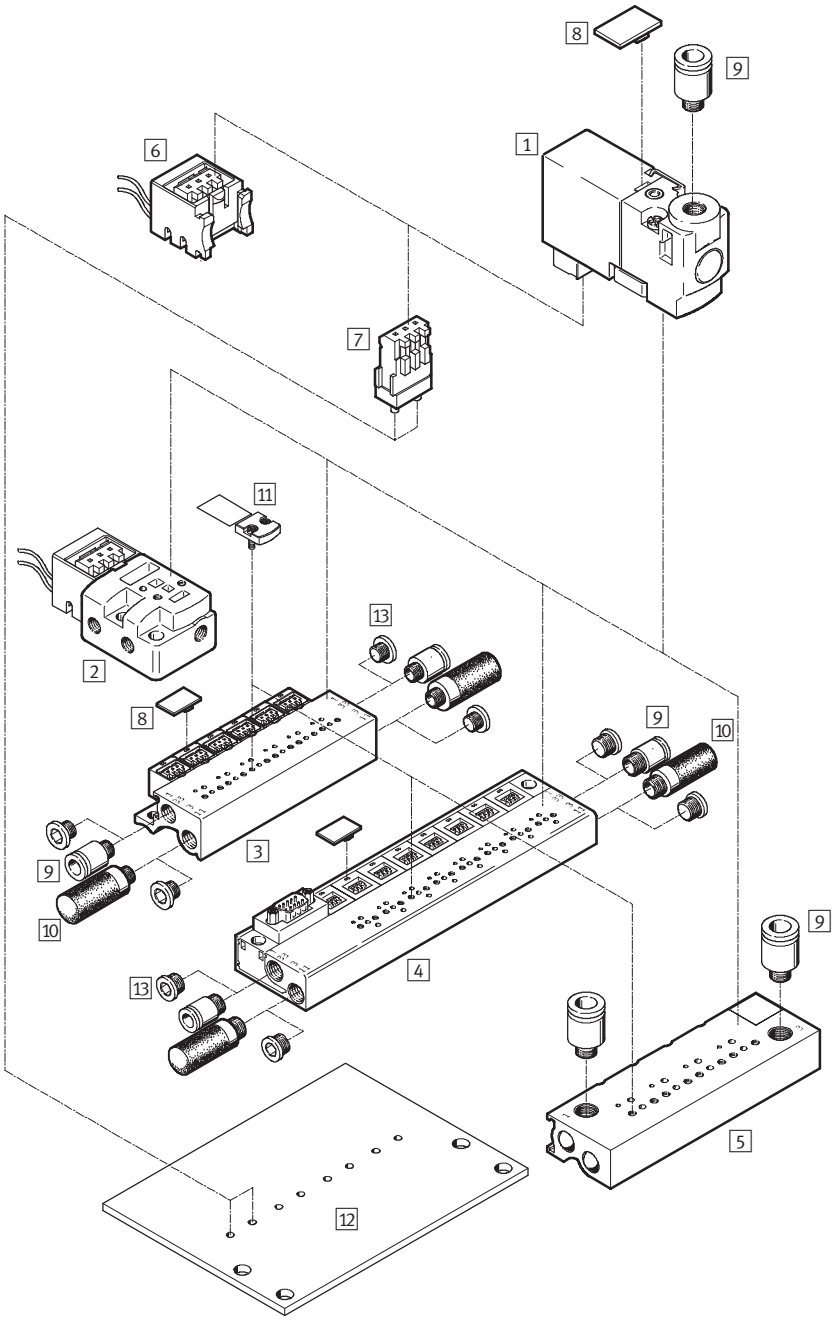
Plug connection at rear ...-HC – Plug connection on top ...-TC



Accessories

		➔ Page			➔ Page
1	Semi in-line valve MHP1-...-HC	2 / 3.1-8	6	Inscription label MH-BZ-80X	2 / 3.1-55
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 / 3.1-55
5	Plug socket with cable KMH	2 / 3.1-55	10	Blanking plug B	2 / 3.1-55

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 base plugs	2 / 3.1-11
4	Manifold block MHP1-PR...-3-PI-D... with base plugs 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	Base plug MHAP-PI	2 / 3.1-55
7	Soldering base PCBC-A	2 / 3.1-55
8	Inscription label MH-BZ-80x	2 / 3.1-55
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 / 3.1-55
12	Printed circuit board (user-specific)	2 / 3.1-14
13	Blanking plug B	2 / 3.1-55

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

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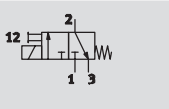
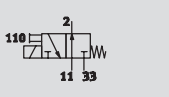
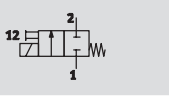
Function



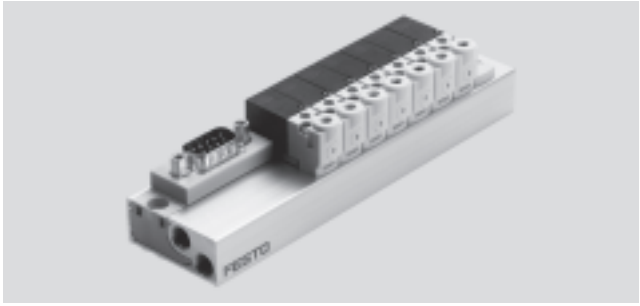




Voltage
5, 12, 24 V DC

Pressure
–0.9 ...+8 bar

Temperature range
–5 ... +50 °C



General technical data				
Valve function			2/2, single solenoid	3/2, single solenoid
Design			Poppet valve with spring return	
Sealing principle			Soft	
Actuation type			Electric	
Type of reset			Mechanical spring	
Pilot control mode			Direct	
Direction of flow			Non-reversible	
Exhaust function			–	Flow control
Manual override			By pushing (non-detenting)	
Type of mounting			On sub-base or manifold, via through-hole	
Assembly position			Any	
Nominal diameter		[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	M3
		3, 11	–	M3
	Manifold mounting	1, 33	M7	M7
		2	M3	M3
		3, 11	–	M7
Product weight		[g]	10	10

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 40µm Vacuum, grade of filtration 40µm	Filtered compressed air, lubricated or unlubricated, grade of filtration 40µm
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	
Storage temperature		[°C]	–20 ... +60	
Corrosion resistance class CRC			2 [2]	

1) Vacuum operation possible with special connection method
2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

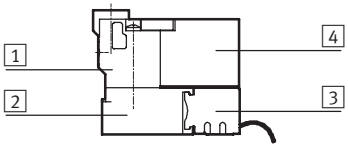
Solenoid valves MHP1, miniature

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	
Duty cycle		100%	
Protection class to EN 60529			
With plug socket KMH		IP40	
With base plug MHAP-PI			
With soldering base PCBC-A			
With Sub-D connector plug			

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

Materials



1	Body	Polyphenylene sulphide
2	Sub-base/manifold block	Aluminium
3	Base plug	Polyamide
4	Coil housing	Polyamide
–	Seals	Fluorocarbon rubber, nitrile rubber, hydrogenated nitrile rubber
	Note on materials	Free of copper and PTFE

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

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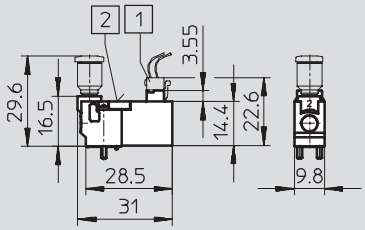
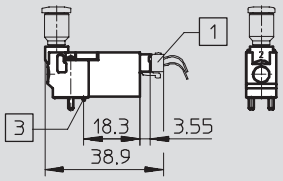
Dimensions

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

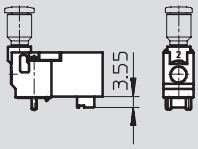
Plug connection on top



Plug connection at rear

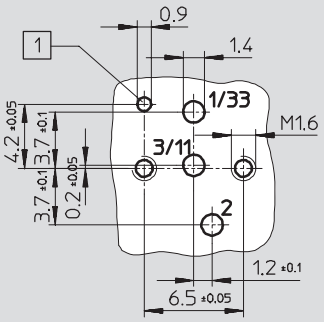


Plug connection underneath



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

Hole pattern on sub-bases



1 Hole for coding pin

- - Note

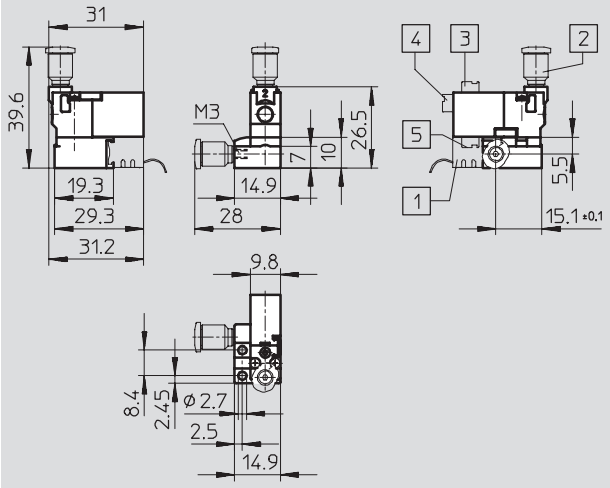
With semi in-line valves port 2 is not used.
If used as a 2/2-way valve, normally closed, ports 3/11 are not used.
If used as a 2/2-way valve, normally open, ports 1/33 are not used.

Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

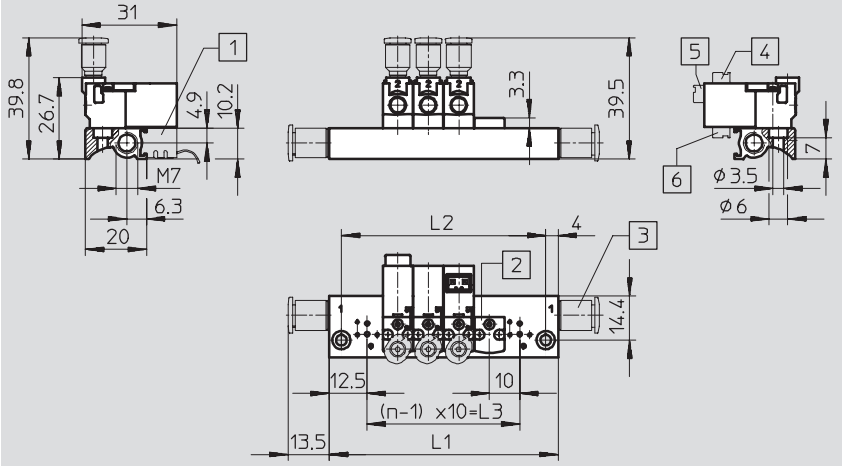
Dimensions – 2/2-way valve Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Base plug MHAP-PI
2 Fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Base plug MHAP-PI
2 Blanking plate MHAP1
3 Fitting QSM-...
4 Plug connection on top
5 Plug connection at rear
6 Plug connection underneath

Valve positions 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

Valve positions 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

Valve positions 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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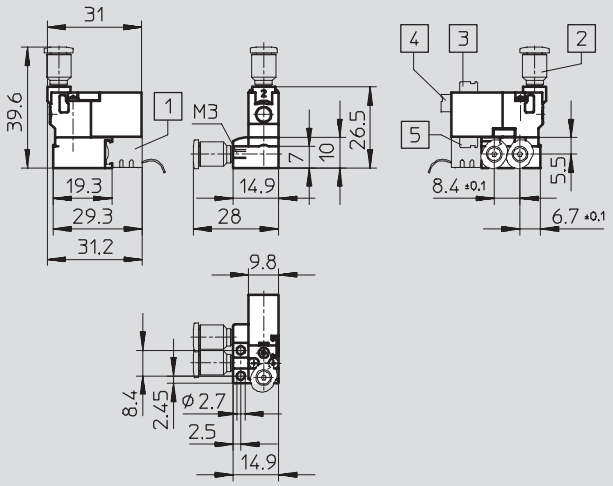
Dimensions – 3/2-way valve

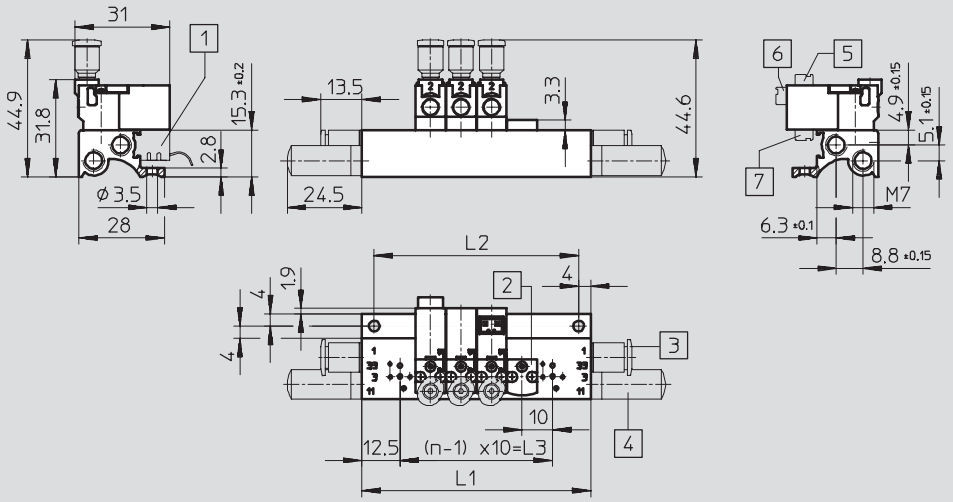
Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Base plug MHAP-PI
2 Fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Base plug MHAP-PI
2 Blanking plate MHAP1
3 Fitting QSM-...
4 Silencer
5 Plug connection on top
6 Plug connection at rear
7 Plug connection underneath

Valve positions 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

Valve positions 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

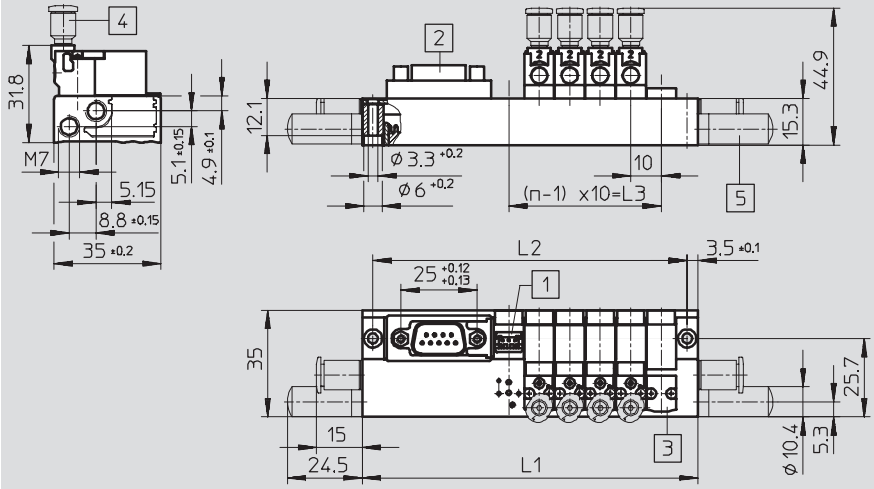
Valve positions n	L1 ±0.15	L2 ±0.1	L3
16	175	167	150
17	185	177	160
18	195	187	170
19	205	197	180
20	215	207	190
21	225	217	200
22	235	227	210

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 Base plug MHAP-PI
2 Sub-D plug, plug outlet to top (standard)
3 Blanking plate MHAP1
4 Fitting QSM-...
5 Silencer

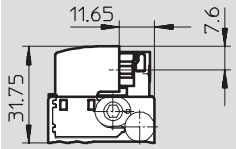
Valve positions n	L1 ±0.15	L2 ±0.1	L3
2	70	63	10
4	90	83	30
6	110	103	50
8	130	123	70

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

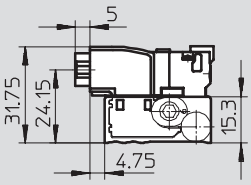
Valve positions n	L1 ±0.15	L2 ±0.1	L3
18	252	245	170
20	272	265	190
22	292	285	210

Electrical multi-pin connection – Plug directions

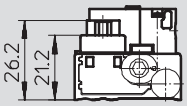
To pneumatic side



To electrical side



To top (standard)



Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

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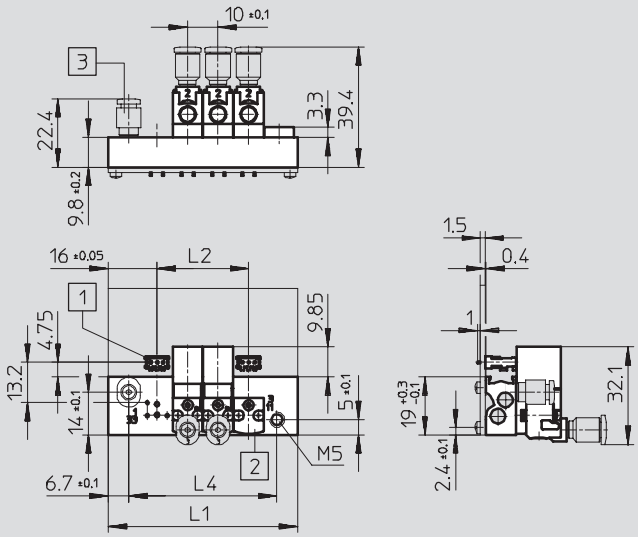
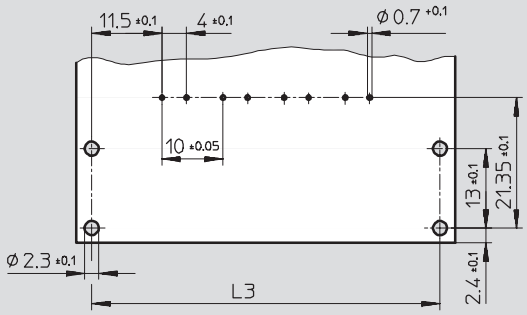
Dimensions – 3/2-way valve Download CAD data ➔ **www.festo.com/en/engineering**

Manifold mounting on PCB



1 Soldering base PCBC-A-...
2 Blanking plate MHAP1
3 Fitting QSM-...

Hole pattern on PCB



- Note

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

Valve positions 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 2/2G and type 3/2O 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	2 valves	**197 217**	**MHP1-P2-2-PI**
with base plugs for ...	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

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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 3/2G and type 3/2O valves must not be mixed on a manifold block.

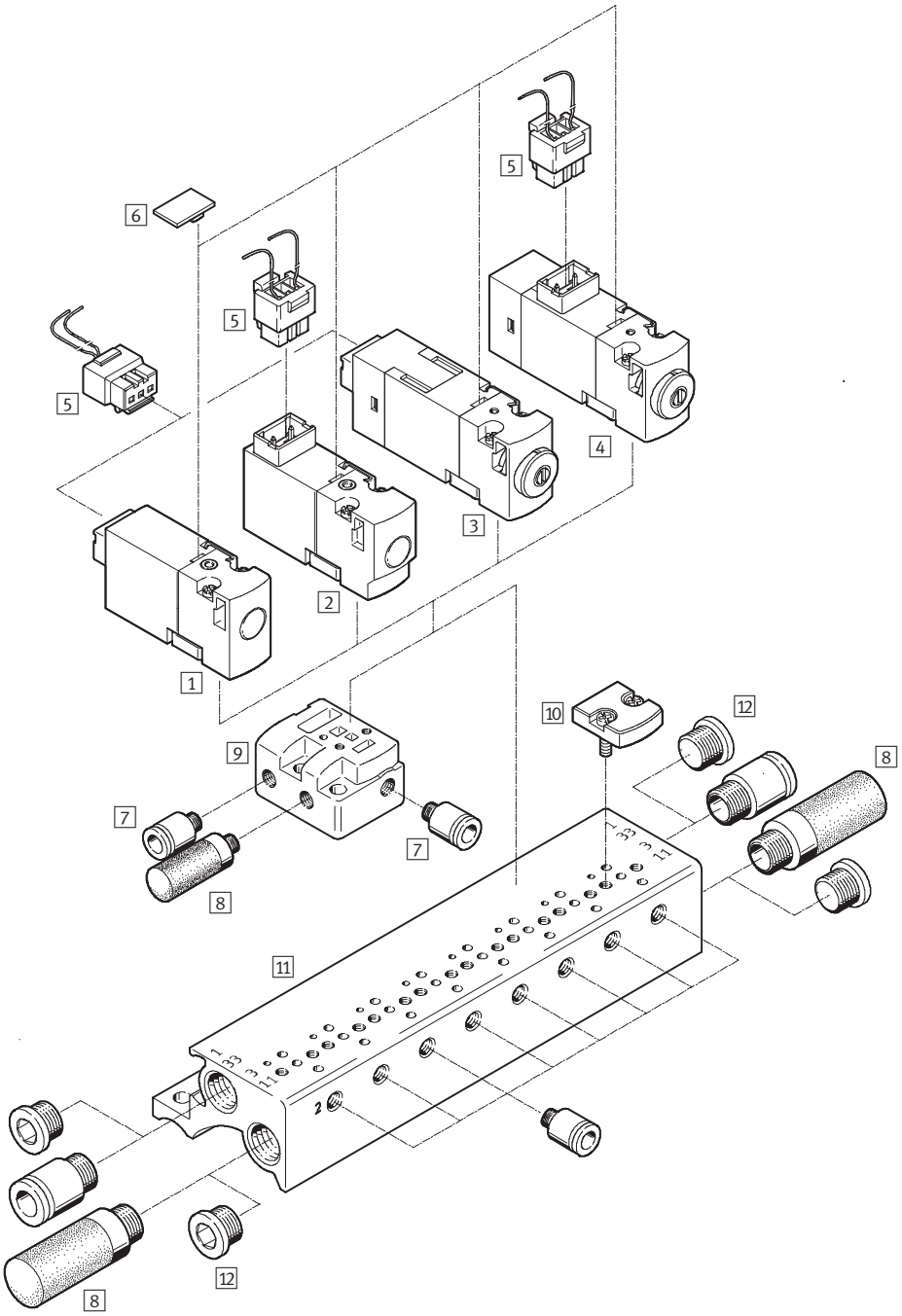
Ordering data – Product-specific accessories

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 base plugs 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 base plugs 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.

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



Accessories

		➔ Page				➔ Page
1	Sub-base valve MHA1-...-HC	2 / 3.1-19		7	Push-in fittings QS/QSM	Volume 3
2	Sub-base valve MHA1-...-TC	2 / 3.1-19		8	Silencer UC	Volume 3
3	Sub-base valve MHA1-...-HC with LED	2 / 3.1-38		9	Individual sub-base MHA1-AS-3-M3	2 / 3.1-22
4	Sub-base valve MHA1-...-TC with LED	2 / 3.1-38		10	Blanking plate MHAP1-BP-3 for sealing vacant positions	2 / 3.1-55
5	Plug socket with cable KMH	2 / 3.1-55		11	Manifold block MHA1-PR...-3	2 / 3.1-22
6	Inscription label MH-BZ-80X	2 / 3.1-55		12	Blanking plug B	2 / 3.1-55

Solenoid valves MHA1, miniature

Peripherals overview – Sub-base valve, valve terminal

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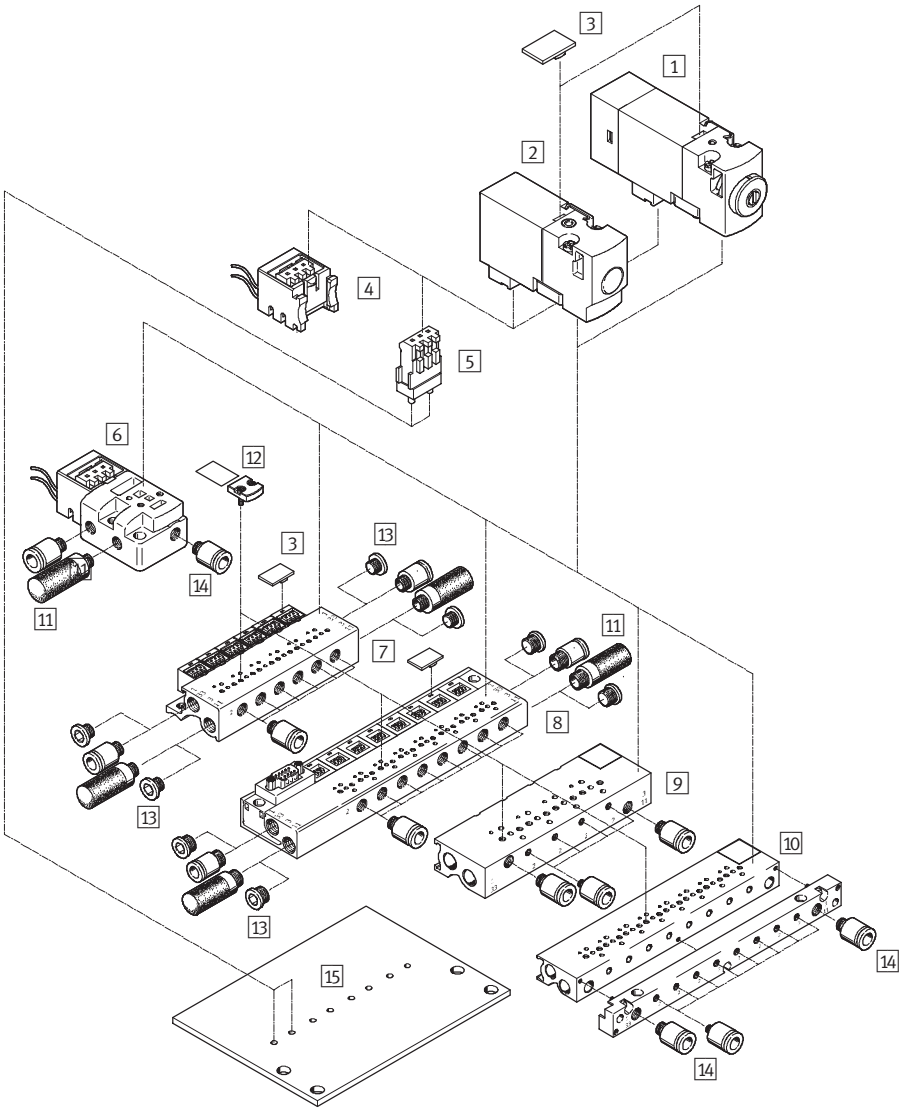
Plug connection underneath ...-PI



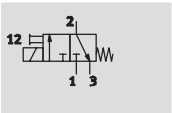
Accessories

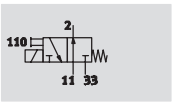
		➔ Page			➔ Page
1	Sub-base valve MHA1-...-PI with LED	2 / 3.1-38	9	Manifold block MHA1-PR...-3-M3-PI-PCB for mounting on PCB	2 / 3.1-25
2	Sub-base valve MHA1-...-PI	2 / 3.1-19	10	Manifold block MHA1-PR...-3-M3-PI-PCBM for mounting on PCB with pneumatic multi-connector plate	2 / 3.1-25
3	Inscription label MH-BZ-80X	2 / 3.1-55	11	Silencer UC	Volume 3
4	Base plug MHAP-PI	2 / 3.1-55	12	Blanking plate MHAP1 for sealing vacant positions	2 / 3.1-55
5	Soldering base PCBC-A	2 / 3.1-55	13	Blanking plug B	2 / 3.1-55
6	Individual sub-base MHA1-AS-3-M3-PI with base plug	2 / 3.1-22	14	Push-in fittings QS	Volume 3
7	Manifold block MHA1-PR...-3-M3-PI with base plugs	2 / 3.1-22	15	Printed circuit board (user-specific)	2 / 3.1-25
8	Manifold block MHA1-PR...-3-M3-PI-D... with base plugs and electrical multi-pin connection	2 / 3.1-24			

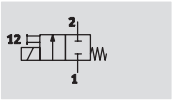
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Function



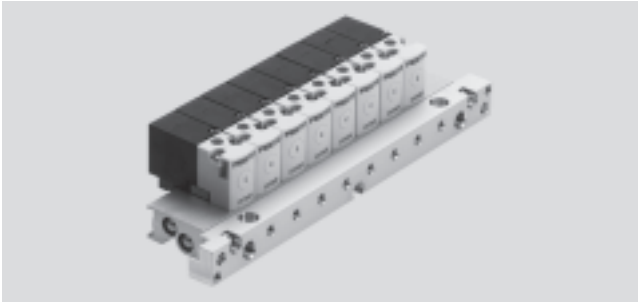




Voltage
5, 12, 24 V DC

Pressure
–0.9 … +8 bar

Temperature range
–5 … +50 °C



General technical data				
Valve function			2/2, single solenoid	3/2, single solenoid
Design			Poppet valve with spring return	
Sealing principle			Soft	
Actuation type			Electric	
Type of reset			Mechanical spring	
Pilot control mode			Direct	
Direction of flow			Non-reversible	
Exhaust function			–	Flow control
Manual override			Resetting	
Type of mounting			On sub-base or manifold, via through-hole	
Assembly position			Any	
Nominal diameter		[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 (PCB: M5)
		2	–	M3
		3, 11	M7	M7 (PCB: M5)
Product weight		[g]	10	10

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 40µm Vacuum, grade of filtration 40µm	Filtered compressed air, lubricated or unlubricated, grade of filtration 40µm
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	
Temperature of medium	Manifold mounting	[°C]	–5 … +40	
Storage temperature		[°C]	–20 … +60	
Corrosion resistance class CRC			2[2]	

1) Vacuum operation possible with special connection method

2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

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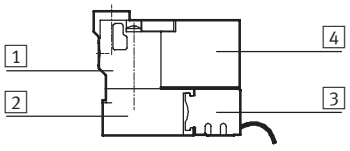
Electrical data			
Valve function		2/2, single solenoid	3/2, single solenoid
Operating voltage	[V DC]	5 ±10%, 12 ±10% or 24 ±10%	
Type of connection		Plug connection	
Power consumption	[W]	1	
Duty cycle		100%	
Protection class to EN 60529			
With plug socket KMH		IP40	
With base plug MHAP-PI			
With soldering base PCBC-A			
With Sub-D connector plug			

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

Materials



1	Body	Polyphenylene sulphide
2	Sub-base/manifold block	Aluminium
3	Base plug	Polyamide
4	Coil housing	Polyamide
–	Seals	Fluorocarbon rubber, nitrile rubber, hydrogenated nitrile rubber
	Note on materials	Free of copper and PTFE

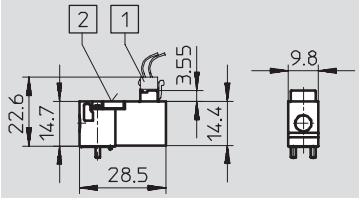
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

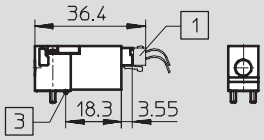
Dimensions

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

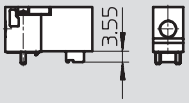
Plug connection on top



Plug connection at rear

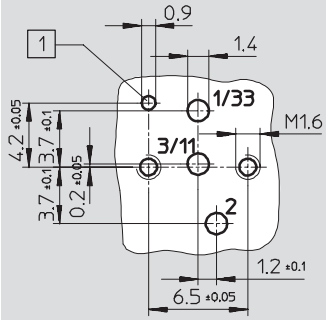


Plug connection underneath



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

Hole pattern on sub-bases



1 Hole for coding pin

Note

If used as a 2/2-way valve, normally closed, ports 3/11 are not used.

If used as a 2/2-way valve, normally open, ports 1/33 are not used.

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

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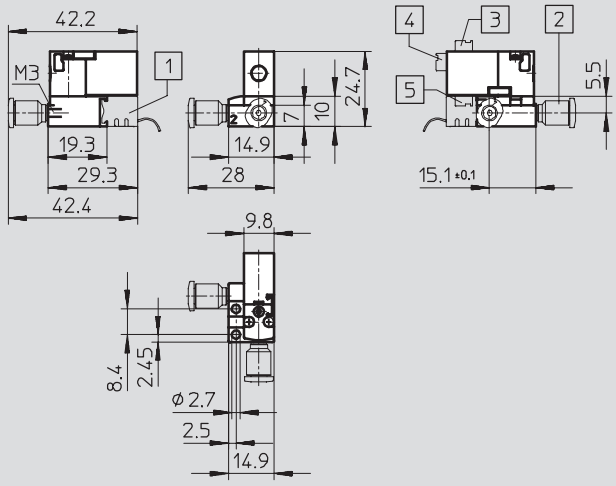
Dimensions – 2/2-way valve

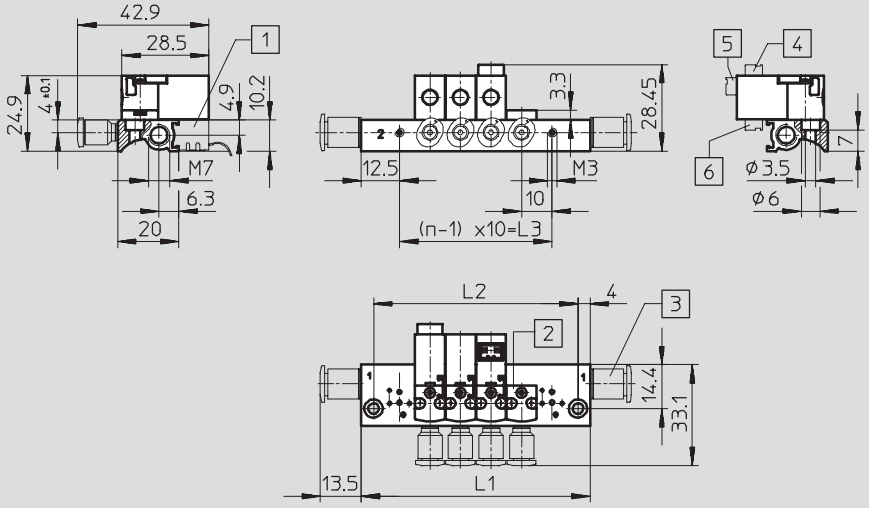
Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Base plug MHAP-PI
2 Fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Base plug MHAP-PI
2 Blanking plate MHAP1
3 Fitting QSM-...
4 Plug connection on top
5 Plug connection at rear
6 Plug connection underneath

Valve positions 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

Valve positions 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

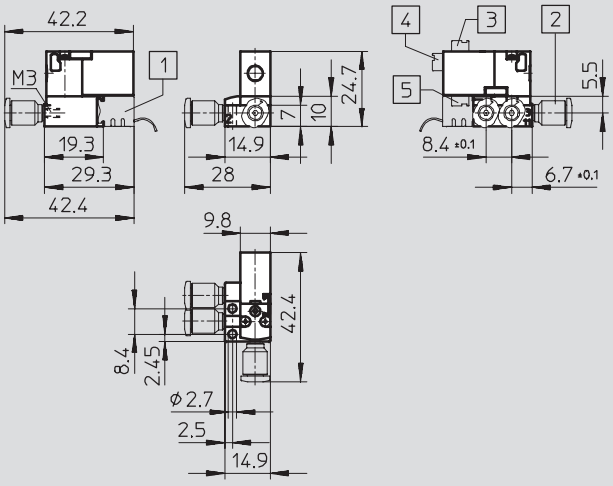
Valve positions n	L1 ±0.15	L2 ±0.1	L3
16	175	167	150
17	185	177	160
18	195	187	170
19	205	197	180
20	215	207	190
21	225	217	200
22	235	227	210

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

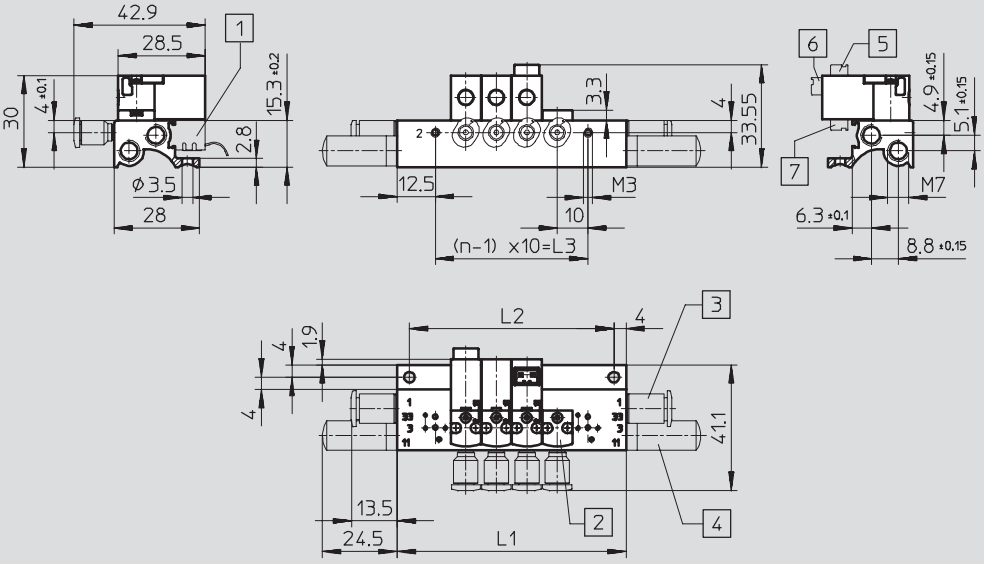
Dimensions – 3/2-way valve Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Base plug MHAP-PI
2 Fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Base plug MHAP-PI
2 Blanking plate MHAP1
3 Fitting QSM-...
4 Silencer
5 Plug connection on top
6 Plug connection at rear
7 Plug connection underneath

Valve positions 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

Valve positions 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

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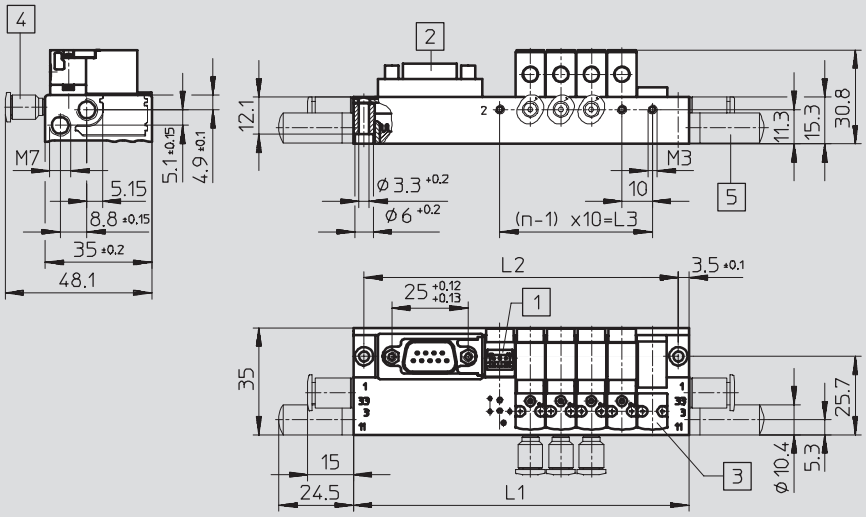
Dimensions – 3/2-way valve Download CAD data ➔ **www.festo.com/en/engineering**

Manifold mounting with electrical multi-pin connection



1 Base plug MHAP-PI
2 Sub-D plug, plug outlet to top (standard)
3 Blanking plate MHAP1
4 Fitting QSM-...
5 Silencer

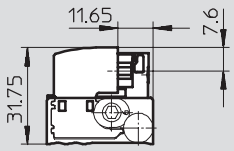
Valve positions n	L1 ±0.15	L2 ±0.1	L3
2	70	63	10
4	90	83	30
6	110	103	50
8	130	123	70

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

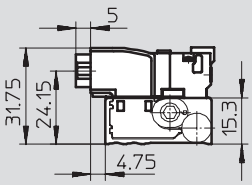
Valve positions n	L1 ±0.15	L2 ±0.1	L3
18	252	245	170
20	272	265	190
22	292	285	210

Electrical multi-pin connection – Plug directions

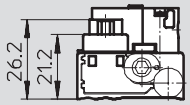
To pneumatic side



To electrical side



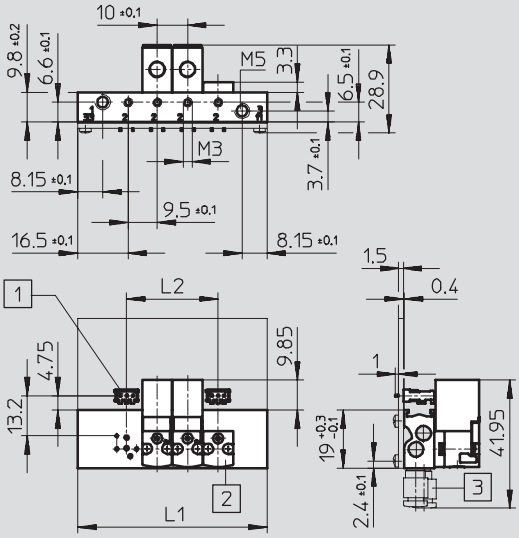
To top (standard)



Dimensions – 3/2-way valve

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

Manifold mounting on PCB

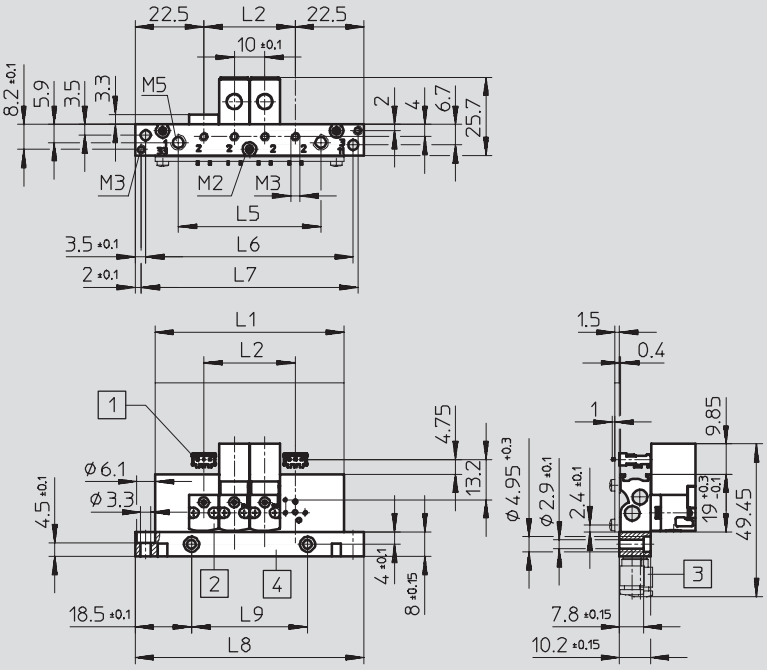


1 Soldering base PCBC-A-...
2 Blanking plate MHAP1
3 Fitting QSM-...

- - Note

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

Manifold mounting with pneumatic multi-connector plate on PCB



1 Soldering base PCBC-A-...
2 Blanking plate MHAP1
3 Fitting QSM-...
4 Removable pneumatic multi-connector plate

- - Note

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

Valve positions 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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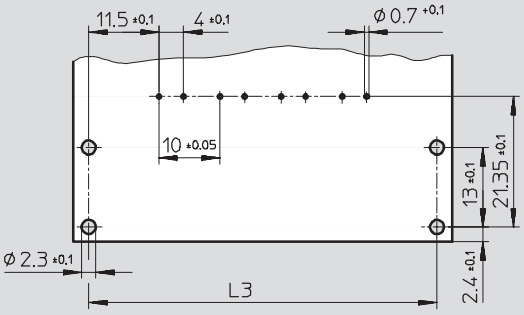
Dimensions

Hole 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 3/2G and type 3/2O 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 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 with base plugs 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 3/2G and type 3/2O 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 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 with base plugs 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 with base plugs 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 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 for mounting on PCB with pneumatic multi-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	Voltage supply	Valve function	Plug-in direction on valve	Number of valve positions	Type of linkage
197 334	MH1	A P	5VDC 12VDC 24VDC	D C N	TC HC PI	1V	PS
Order 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	Sub-base valve		**-A**		
		Semi in-line valve		**-P**		
	Voltage supply [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**		
		Plug connection underneath for electrical linkage		**-PI**		
	Number of valve positions	1		**-1V**		-1V
↓	Type of linkage	Individual sub-base		**-PS**		-PS

Transfer order code

197 334	**MH1**	–		–		–		–		–	**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**		**Fitting in exhaust duct on left**
	K05 K01		QB QC		AB AC		BB BC BU
–	**K05**	–	**QB**	–	**AB**	–	

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	Push-in fitting for working port, QS-3, tubing O.D. 3 mm		**-QB**		
		Push-in fitting for working port, QS-4, tubing O.D. 4 mm		**-QC**		
	Fitting in supply duct on left	Push-in fitting for supply on left, QS-3, tubing O.D. 3 mm	2	**-AB**		
		Push-in fitting for supply on left, QS-4, tubing O.D. 4 mm		**-AC**		
	Fitting in exhaust duct on left	Push-in fitting for exhaust on left, QS-3, tubing O.D. 3 mm	3	**-BB**		
		Push-in fitting for exhaust on left, QS-4, tubing O.D. 4 mm		**-BC**		
		Silencer for exhaust on left	4	**-BU**		

1 **K05, K01** Not with plug-in direction on valve PI
2 **AB** Not with fitting for working port QC
3 **BB** Not with fitting in supply duct on left AC
4 **BU** Not with valve function D

Transfer order code

–		–		–		–	

Solenoid valves MH1, manifold mounting with electrical individual connection

FESTO

Ordering data – Modular products

M Mandatory data								O Options →
Module No.	**Valve family**	**Design**	**Voltage supply**	**Valve function**	**Plug-in direction on valve**	**Number of valve positions**	**Type of linkage**	**Number of vacant positions**
197 334	MH1	A P	5VDC 12VDC 24VDC	D C N	TC HC PI	2V ... 22V	PR	1L ... 22L
Order example								
197 334	**MH1**	**A**	**12VDC**	**C**	**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**		
	Voltage supply [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**		
		Plug connection underneath for electrical link		**-PI**		
	Number of valve positions	2 ... 22		**-...V**		
	Type of linkage	Block without electrical linkage		**-PR**		-PR
O ↓	Number of vacant positions	1 ... 22		**-...L**		

Transfer order code

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

Solenoid valves MH1, manifold mounting with electrical individual connection

FESTO

Ordering data – Modular products

→ 0 **Options**

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

1 **K05, K01** Not with plug-in direction on valve PI
2 **AX** Not with fitting in supply duct on right CX
3 **BX** Not with fitting in exhaust duct on right DX
4 **BC, DC** Not with fitting in supply duct on left AD and fitting in supply duct on right CD
5 **BU, DU** Not with valve function D

Transfer order code

–		–		–		–		–		–	

Solenoid valves MH1, manifold mounting with electrical multi-pin connection

FESTO

Ordering data – Modular products

M Mandatory data								O Options →	
Module No.	**Valve family**	**Design**	**Voltage supply**	**Valve function**	**Plug-in direction on valve**	**Number of valve positions**	**Type of linkage**	**Number of vacant positions**	**Plug-in direction, Sub-D plug**
197 334	MH1	A P	5VDC 12VDC 24VDC	D C N	PI	2V ... 24V	PRA	1L ... 24L	SP ST SE
Order example									
197 334	**MH1**	**A**	**24VDC**	**C**	**PI**	**18V**	**PRA**	**3L**	**ST**

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**		
	Voltage supply [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 for electrical linkage		**-PI**		-PI
	Number of valve positions	2, 4, 6 ... 24 (even number only)	1	**-...V**		
	Type of linkage	Manifold block with Sub-D plug		**-PRA**		-PRA
O	Number of vacant positions	1 ... 24		**-...L**		
	Plug-in direction of Sub-D	Plug-in direction of Sub-D plug to pneumatic side		**-SP**		
		Plug-in direction of Sub-D plug to top		**-ST**		
↓		Plug-in direction of Sub-D plug to electrical side		**-SE**		

1 **24V** Number of valve positions 24: Only with voltage supply 24 V DC

Transfer order code

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

Solenoid valves MH1, manifold mounting with electrical multi-pin connection

FESTO

Ordering data – Modular products

→ [0] **Options**

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

[2] **S25, S50, S10**
Max. 8 valve positions

[3] **S10, M10, L10**
Not with voltage supply 5 V DC

[4] **M25, M50, M10**
Only with 10 or 12 valve positions

[5] **L25, L50, L10**
Min. 10 valve positions

[6] **AX** Not with fitting in supply duct on right CX

[7] **BX** Not with fitting in exhaust duct on right DX

[8] **BC, DC** Not with fitting in supply duct on left AD and fitting in supply duct on right CD

[9] **BU, DU** Not with valve function D

Transfer order code

–		–		–		–		–		–	

Solenoid valves MH1, miniature, manifold and PCB mounting

Ordering data – Modular products

FESTO

M **Mandatory data**

Module No.	Valve family	Design	Voltage supply	Valve function	Plug-in direction on valve	Number of valve positions	Type of link-age
197 334	MH1	A P	5VDC 12VDC 24VDC	D C N	PI	2V 4V 6V 8V 10V	PCD
Order example							
197 334	**MH1**	**P**	**5VDC**	**N**	**PI**	**10V**	**PCD**

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**		
	Voltage supply [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 for electrical linkage		**-PI**		-PI
	Number of valve positions	2, 4, 6, 8, 10		**-...V**		
↓	Type of linkage	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	Fitting in exhaust duct on left
1L ... 10L	QB QC	AB AC AD	BB BC BD BU
– **1L**	– **QC**	– **AC**	– **BC**

Ordering table

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

1 **QC** Not with fitting in supply duct on left AD and fitting in exhaust duct on left BD
2 **AB, AD, BD** Not with fitting for working port QC
3 **AD, BD** Not with design P
4 **BB** Not with fitting in supply duct on left AC, AD
5 **BC** Not with fitting in supply duct on left AD
6 **BU** Not with valve function D

Transfer order code

– [ ] – [ ] – [ ] – [ ]

Solenoid valves MH1, PCB mounting with pneumatic multi-connector plate

Ordering data – Modular products

FESTO

M **Mandatory data**

Module No.	Valve family		Design		Voltage supply		Valve function		Plug-in direction on valve		Number of valve positions		Type of linkage
197 334	MH1		A		5VDC 12VDC 24VDC		D C N		PI		4V 6V 8V 10V		PCM
Order 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
	Voltage supply [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 for electrical linkage		**-PI**		-PI
	Number of valve positions	4, 6, 8, 10		**-...V**		
↓	Type of linkage	PCB mounting, pneumatic multi-connector plate		**-PCM**		-PCM

Transfer order code

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

Solenoid valves MH1, PCB mounting with pneumatic multi-connector plate

Ordering data – Modular products

FESTO

➔ 0 **Options**

	Number of vacant positions		Fitting for working port		Fitting in supply duct on left		Fitting in exhaust duct on left
	L1 ... L10		QB QC		AB AC AD		BB BC BD BU
–		–	**QC**	–	**AC**	–	**BC**

Ordering table

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

1 **QC** Not with fitting in supply duct on left AD and fitting in exhaust duct on left BD
2 **AB, AD, BD** Not with fitting for working port QC
3 **BB** Not with fitting in supply duct on left AC, AD
4 **BC** Not with fitting in supply duct on left AD
5 **BU** Not with valve function D

Transfer order code

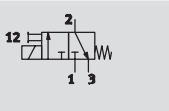
–		–		–		–	

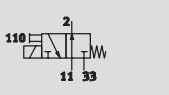
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

FESTO

Function

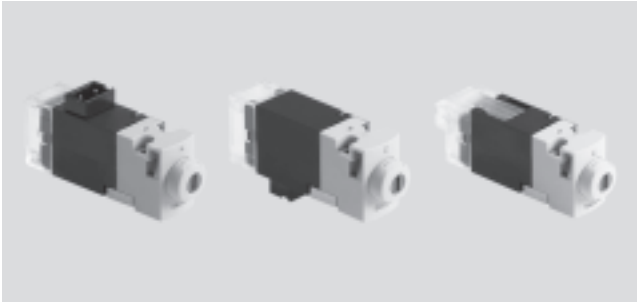




Voltage
24 V DC

Pressure
0 ... +8 bar

Temperature range
–5 ... +50 °C



General technical data			
Valve function			3/2, single solenoid
Design			Poppet valve with spring return
Sealing principle			Soft
Actuation type			Electric
Type of reset			Mechanical spring
Pilot control mode			Direct
Direction of flow			Non-reversible
Exhaust function			Flow control
Manual override			By pushing (non-detenting)
Signal status display			LED
Type of mounting			On sub-base or manifold, via through-hole
Assembly position			Any
Nominal diameter		[mm]	0.65
Standard nominal flow rate		[l/min]	10
Grid dimension		[mm]	10
Pneumatic connection	Individual sub-base	1, 33	M3
		2	M3
		3, 11	M3
	Manifold mounting	1, 33	M7
		2	M3
		3, 11	M7
Product weight		[g]	11

Operating and environmental conditions			
Valve function			3/2, single solenoid
Operating medium			Filtered compressed air, lubricated or unlubricated, grade of filtration 40µm
Operating pressure range	Normally closed	[bar]	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
Storage temperature		[°C]	–20 ... +60
Corrosion resistance class CRC			2 [2]

1) Vacuum operation possible with special connection method
2) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

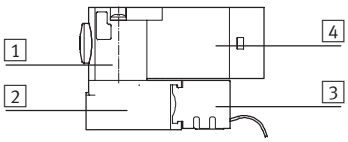
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

Electrical data		
Valve function		3/2, single solenoid
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug connection
Power consumption	[W]	1.1
Protection class to EN 60529		
With plug socket KMH		IP40
With base plug MHAP-PI		
With soldering base PCBC-A		
With Sub-D connector plug		

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

Materials



1	Body	Polyphenylene sulphide
2	Sub-base/manifold block	Aluminium
3	Base plug	Polyamide
4	Coil housing	Polyamide
–	Seals	Fluorocarbon rubber nitrile rubber, hydrogenated nitrile rubber
	Note on materials	Free of copper and PTFE

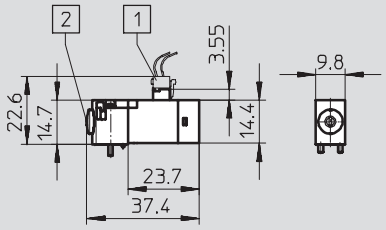
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

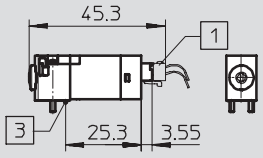
Dimensions

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

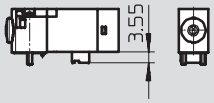
Plug connection on top



Plug connection at rear

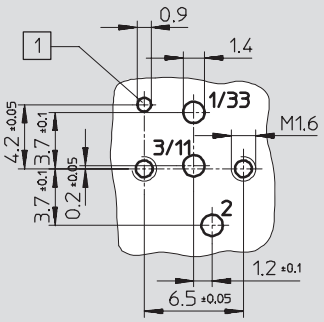


Plug connection underneath



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

Hole pattern on sub-bases



1 Hole for coding pin

Note

If used as a 2/2-way valve, normally closed, ports 3/11 are not used.

If used as a 2/2-way valve, normally open, ports 1/33 are not used.

Solenoid valves MHA1, miniature

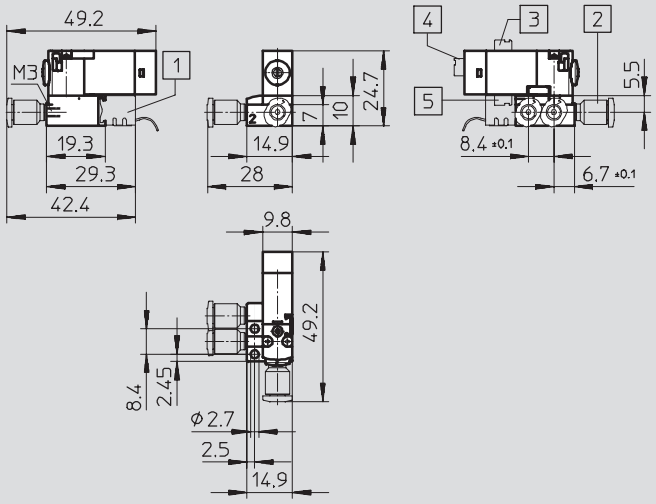
Technical data – Sub-base valve with LED

FESTO

Dimensions – 3/2-way valve

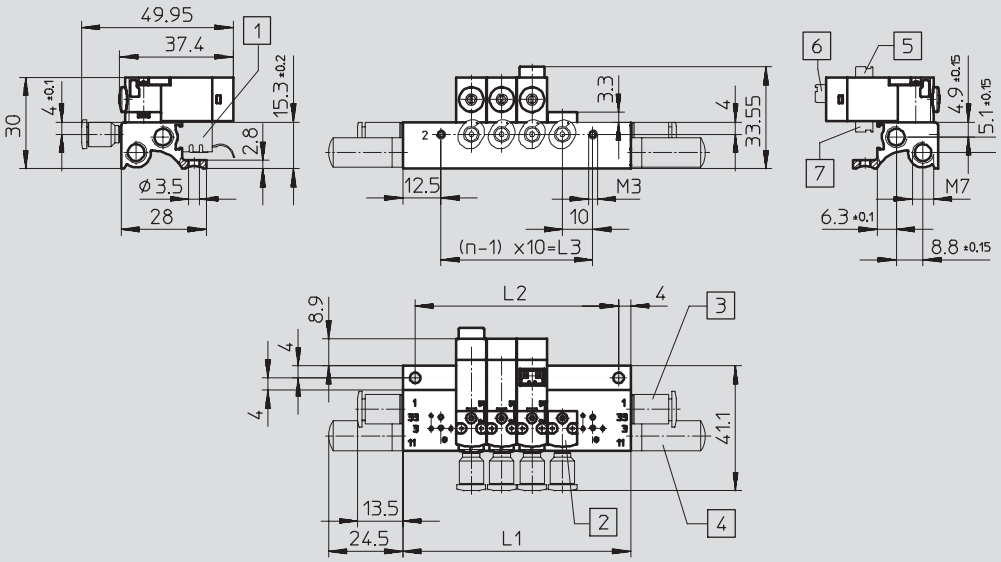
Download CAD data ➔ www.festo.com/en/engineering

Individual sub-base



1 Base plug MHAP-PI
2 Fitting QSM-...
3 Plug connection on top
4 Plug connection at rear
5 Plug connection underneath

Manifold mounting



1 Base plug MHAP-PI
2 Blanking plate MHAP1
3 Fitting QSM-...
4 Silencer
5 Plug connection on top
6 Plug connection at rear
7 Plug connection underneath

Valve positions 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

Valve positions 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

Valve positions 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

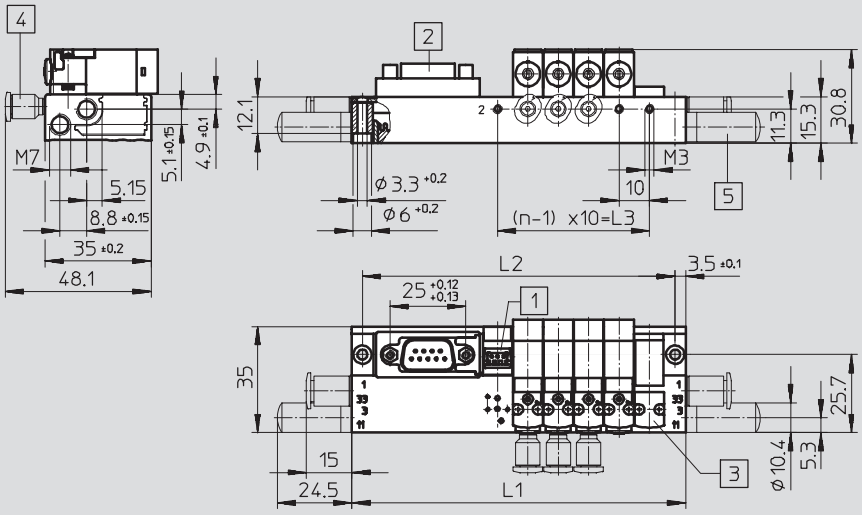
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

Dimensions – 3/2-way valve

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

Manifold mounting with electrical multi-pin connection



1 Base plug MHAP-PI
2 Sub-D plug, plug outlet to top (standard)
3 Blanking plate MHAP1
4 Fitting QSM-...
5 Silencer

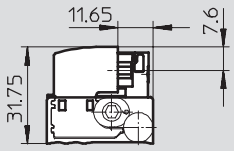
Valve positions n	L1 ±0.15	L2 ±0.1	L3
2	70	63	10
4	90	83	30
6	110	103	50
8	130	123	70

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

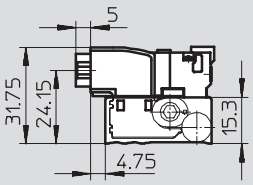
Valve positions n	L1 ±0.15	L2 ±0.1	L3
18	252	245	170
20	272	265	190
22	292	285	210

Electrical multi-pin connection – Plug directions

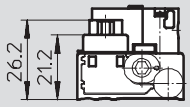
To pneumatic side



To electrical side



To top (standard)



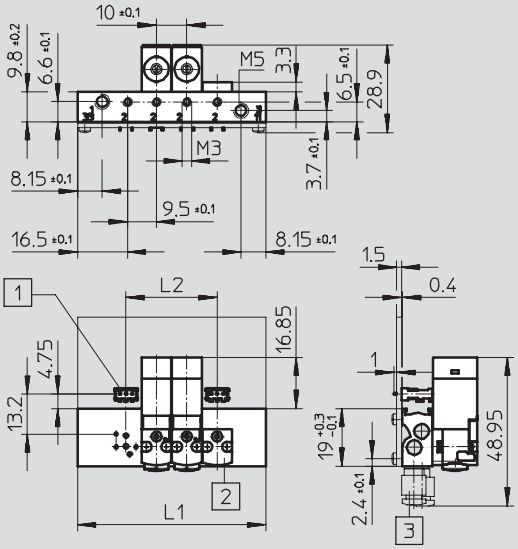
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

FESTO

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

Manifold mounting on PCB

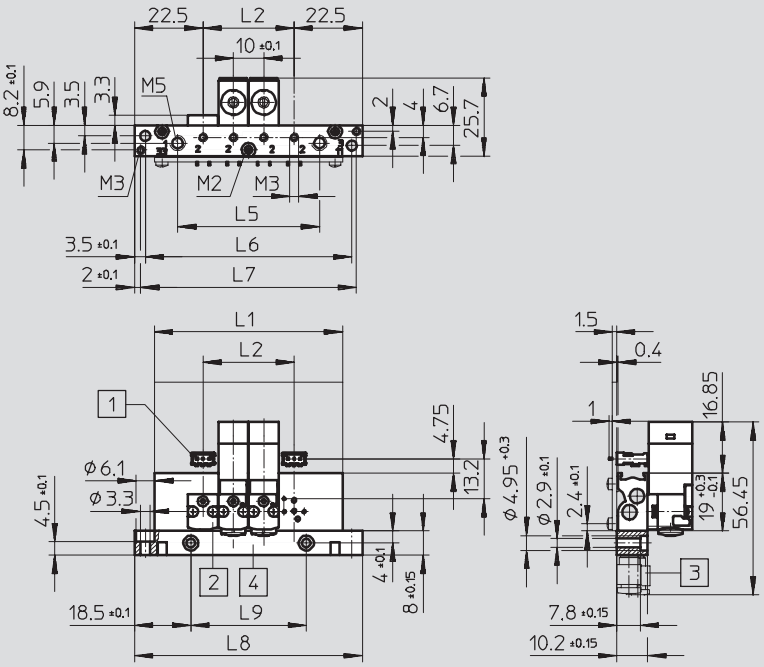


1 Soldering base PCBC-A-...
2 Blanking plate MHAP1
3 Fitting QSM-...

- Note

The printed circuit board is not included in the scope of delivery.
Hole pattern on PCB ➔ 2 / 3.1-44

Manifold mounting with pneumatic multi-connector plate on PCB



1 Soldering base PCBC-A-...
2 Blanking plate MHAP1
3 Fitting QSM-...
4 Removable pneumatic multi-connector plate

- Note

The printed circuit board is not included in the scope of delivery.
Hole pattern on PCB ➔ 2 / 3.1-44

Valve positions 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

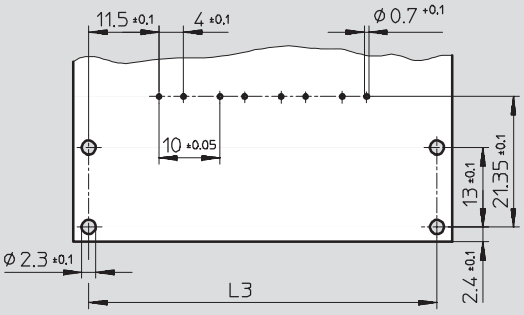
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

FESTO

Dimensions

Hole pattern on PCB



Note

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

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	24 V DC	**540 443**	**MHA1-M1LH-3/2G-0,6-HC**	**540 440**	**MHA1-M1LH-3/2O-0,6-HC**
Plug connection on top	24 V DC	**540 444**	**MHA1-M1LH-3/2G-0,6-TC**	**540 441**	**MHA1-M1LH-3/2O-0,6-TC**
Plug connection underneath	24 V DC	**540 445**	**MHA1-M1LH-3/2G-0,6-PI**	**540 442**	**MHA1-M1LH-3/2O-0,6-PI**

Note

Type 3/2G and type 3/2O 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 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 with base plugs 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 with base plugs 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 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 for mounting on PCB with pneumatic multi-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 / 3.1-45.

Solenoid valves MH1, miniature, individual sub-base

FESTO

Ordering data – Modular products, valve with LED

M Mandatory data

Module No.	Valve family		Design		Voltage supply		Valve function		Plug-in direction on valve		Number of valve positions		Type of linkage
197 334	MH1		A		24VDC		C N		TC HC PI		1V		PS
Order example													
197 334	**MH1**	–	**A**	–	**24VDC**	–	**C**	–	**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	Sub-base valve		**-A**		-A
	Voltage supply [V DC]	24		**-24VDC**		-24VDC
	Valve function	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**		
		Plug connection underneath for electrical linkage		**-PI**		
	Number of valve positions	1		**-1V**		-1V
↓	Type of linkage	Individual sub-base		**-PS**		-PS

Transfer order code

197 334	**MH1**	–	**A**	–	**24VDC**	–		–		–	**1V**	–	**PS**

Solenoid valves MH1, miniature, individual sub-base

FESTO

Ordering data – Modular products, valve with LED

➔ 0 **Options**

	Connecting cable with socket		Additional functions		Manual override		Fitting for working port		Fitting in supply duct on left		Fitting in exhaust duct on left
	K05 K01		LED		N		QB QC		AB AC		BB BC BU
–	**K05**	–	**LED**	–	**N**	–	**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**		
	Additional functions	Status display via LED		**-LED**		-LED
	Manual override	Non-detenting/detenting		**-N**		-N
	Fitting for working port	Push-in connector for working port, QS-3, tubing O.D. 3 mm		**-QB**		
		Push-in connector for working port, QS-4, tubing O.D. 4 mm		**-QC**		
	Fitting in supply duct on left	Push-in connector for supply on left, QS-3, tubing O.D. 3 mm	2	**-AB**		
		Push-in connector for supply on left, QS-4, tubing O.D. 4 mm		**-AC**		
	Fitting in exhaust duct on left	Push-in connector for exhaust on left, QS-3, tubing O.D. 3 mm	3	**-BB**		
		Push-in connector for exhaust on left, QS-4, tubing O.D. 4 mm		**-BC**		
		Silencer for exhaust on left		**-BU**		

1 **K05, K01** Not with plug-in direction on valve PI

2 **AB** Not with fitting for working port QC

3 **BB** Not with fitting in supply duct on left AC

Transfer order code

–		–	**LED**	–	**N**	–		–		–	

Solenoid valves MH1, manifold mounting with electrical individual connection

FESTO

Ordering data – Modular products, valve with LED

M Mandatory data								O Options →
Module No.	**Valve family**	**Design**	**Voltage supply**	**Valve function**	**Plug-in direction on valve**	**Number of valve positions**	**Type of linkage**	**Number of vacant positions**
197 334	MH1	A	24VDC	C N	TC HC PI	2V ... 22V	PR	2L ... 22L
Order example								
197 334	**MH1** –	**A** –	**24VDC** –	**N** –	**PI** –	**14V** –	**PR** –	**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**		-A
	Voltage supply [V DC]	24		**-24VDC**		-24VDC
	Valve function	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**		
		Plug connection underneath for electrical linkage		**-PI**		
	Number of valve positions	2 ... 22		**-...V**		
	Type of linkage	Block without electrical manifold module		**-PR**		-PR
O ↓	Number of vacant positions	1 ... 22		**-...L**		

Transfer order code

197 334	**MH1**	– **A**	– **24VDC**	–	–	–	–	– **PR**	–	

Solenoid valves MH1, manifold mounting with electrical individual connection

FESTO

Ordering data – Modular products, valve with LED

→ 0 Options

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

Ordering table

Size	1	Conditions	Code	Enter code
↓ Connecting cable with socket	Connecting cable 0.5 m, with socket IP40 (KMH-0,5)	1	**-K05**	
0 (supplied separately)	Connecting cable 1 m, with socket IP40 (KMH-1)	1	**-K01**	
Additional functions	Status display via LED		**-LED**	-LED
Manual override	Non-detenting/detenting		**-N**	-N
Fitting for working port	Push-in connector for working port, QS-3, tubing O.D. 3 mm		**-QB**	
	Push-in connector for working port, QS-4, tubing O.D. 4 mm		**-QC**	
Fitting in supply duct on left	Blanking plug for supply on left	2	**-AX**	
	Push-in connector for supply on left, QS-4, tubing O.D. 4 mm		**-AC**	
	Push-in connector for supply on left, QS-6, tubing O.D. 6 mm		**-AD**	
Fitting in exhaust duct on left	Blanking plug for exhaust on left	3	**-BX**	
	Push-in connector for exhaust on left, QS-4, tubing O.D. 4 mm	4	**-BC**	
	Push-in connector for exhaust on left, QS-6, tubing O.D. 6 mm		**-BD**	
	Silencer for exhaust on left		**-BU**	
Fitting in supply duct on right	Blanking plug for supply on right		**-CX**	
	Push-in connector for supply on right, QS-4, tubing O.D. 4 mm		**-CC**	
	Push-in connector for supply on right, QS-6, tubing O.D. 6 mm		**-CD**	
Fitting in exhaust duct on right	Blanking plug for exhaust on right		**-DX**	
	Push-in connector for exhaust on right, QS-4, tubing O.D. 4 mm	4	**-DC**	
	Push-in connector for exhaust on right, QS-6, tubing O.D. 6 mm		**-DD**	
	Silencer for exhaust on right		**-DU**	

1 **K05, K01** Not with plug-in direction on valve PI
2 **AX** Not with fitting in supply duct on right CX
3 **BX** Not with fitting in exhaust duct on right DX
4 **BC, DC** Not with fitting in supply duct on left AD and fitting in supply duct on right CD

Transfer order code

–	– **LED**	– **N**	–	–	–	–	–

Solenoid valves MH1, manifold mounting with electrical multi-pin connection

FESTO

Ordering data – Modular products, valve with LED

M Mandatory data								O Options	
Module No.	Valve family	Design	Voltage supply	Valve function	Plug-in direction on valve	Number of valve positions	Type of linkage	Number of vacant positions	Plug-in direction of Sub-D
197 334	MH1	A	24VDC	C N	PI	2V ... 24V	PRA	1L ... 24L	SP ST SE
Order example									
197 334	MH1 –	A –	24VDC –	C –	PI –	14V –	PRA –	2L –	SE

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
	Voltage supply [V DC]	24		**-24VDC**		-24VDC
	Valve function	3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection underneath for electrical linkage		**-PI**		-PI
	Number of valve positions	2, 4, 6 ... 24 (even number only)		**-...V**		
	Type of linkage	Block with Sub-D plug		**-PRA**		-PRA
O	Number of vacant positions	1 ... 24		**-...L**		
	Plug-in direction of Sub-D	Plug-in direction of Sub-D plug to pneumatic side		**-SP**		
		Plug-in direction of Sub-D plug to top		**-ST**		
↓		Plug-in direction of Sub-D plug to electrical side		**-SE**		

Transfer order code

197 334	MH1	–	A	–	24VDC	–		–	PI	–		–	PRA	–		–	

Solenoid valves MH1, manifold mounting with electrical multi-pin connection

FESTO

Ordering data – Modular products, valve with LED

→ 0 **Options**

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

Ordering table

Size	1	Condi-tions	Code		Enter code
↓ Connecting cable with socket	Connecting cable 2.5 m, Sub-D, 9-pin, 8-wire	1	**-S25**		
0 (supplied separately)	Connecting cable 5 m, Sub-D, 9-pin, 8-wire	1	**-S50**		
	Connecting cable 10 m, Sub-D, 9-pin, 8-wire	1	**-S10**		
	Connecting cable 2.5 m, Sub-D, 25-pin, 12-wire	2	**-M25**		
	Connecting cable 5 m, Sub-D, 25-pin, 12-wire	2	**-M50**		
	Connecting cable 10 m, Sub-D, 25-pin, 12-wire	2	**-M10**		
	Connecting cable 2.5 m, Sub-D, 25-pin, 20-wire	3	**-L25**		
	Connecting cable 5 m, Sub-D, 25-pin, 20-wire	3	**-L50**		
	Connecting cable 10 m, Sub-D, 25-pin, 20-wire	3	**-L10**		
Additional functions	Status display via LED		**-LED**		-LED
Manual override	Non-detenting/detenting		**-N**		-N
Fitting for working port	Push-in connector for working port, QS-3, tubing O.D. 3 mm		**-QB**		
	Push-in connector for working port, QS-4, tubing O.D. 4 mm		**-QC**		
Fitting in supply duct on left	Blanking plug for supply on left	4	**-AX**		
	Push-in connector for supply on left, QS-4, tubing O.D. 4 mm		**-AC**		
	Push-in connector for supply on left, QS-6, tubing O.D. 6 mm		**-AD**		
Fitting in exhaust duct on left	Blanking plug for exhaust on left	5	**-BX**		
	Push-in connector for exhaust on left, QS-4, tubing O.D. 4 mm	6	**-BC**		
	Push-in connector for exhaust on left, QS-6, tubing O.D. 6 mm		**-BD**		
	Silencer for exhaust on left		**-BU**		
Fitting in supply duct on right	Blanking plug for supply on right		**-CX**		
	Push-in connector for supply on right, QS-4, tubing O.D. 4 mm		**-CC**		
	Push-in connector for supply on right, QS-6, tubing O.D. 6 mm		**-CD**		
Fitting in exhaust duct on right	Blanking plug for exhaust on right		**-DX**		
	Push-in connector for exhaust on right, QS-4, tubing O.D. 4 mm	6	**-DC**		
	Push-in connector for exhaust on right, QS-6, tubing O.D. 6 mm		**-DD**		
	Silencer for exhaust on right		**-DU**		

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

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

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

4 **AX** Not with fitting in supply duct on right CX

5 **BX** Not with fitting in exhaust duct on right DX

6 **BC, DC** Not with fitting in supply duct on left AD and fitting in supply duct on right CD

Transfer order code

–		–	LED	–	N	–		–		–		–		–	

Solenoid valves MH1, miniature, manifold and PCB mounting

FESTO

Ordering data – Modular products, valve with LED

M Mandatory data →

Module No.	Valve family		Design		Voltage supply		Valve function		Plug-in direction on valve		Number of valve positions		Type of linkage
197 334	MH1	–	A	–	24VDC	–	C N	–	PI	–	2V 4V 6V 8V 10V	–	PCD
Order example													
197 334	MH1	–	A	–	24VDC	–		–	PI	–	10V	–	PCD

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
	Voltage supply [V DC]	5, 12, 24		**-24VDC**		-24VDC
	Valve function	3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection underneath for electrical linkage		**-PI**		-PI
	Number of valve positions	2, 4, 6, 8, 10		**-...V**		
↓	Type of linkage	PCB mounting, direct		**-PCD**		-PCD

Transfer order code

197 334	MH1	–	A	–	24VDC	–		–	PI	–		–	PCD

Solenoid valves MH1, miniature, manifold and PCB mounting

FESTO

Ordering data – Modular products, valve with LED

➔ 0 Options

Number of vacant positions	Additional functions	Manual override	Fitting for working port	Fitting in supply duct on left	Fitting in exhaust duct on left
1L ... 10L	LED	N	QB QC	AB AC AD	BB BC BD BU
– 2L	– LED	– N	– QC	– AC	– BC

Ordering table

Size		1	Condi-tions	Code	Enter code
0	Number of vacant positions	1 ... 10		-...L	
	Additional functions	Status display via LED		-LED	-LED
	Manual override	Non-detenting/detenting		-N	-N
	Fitting for working port	Push-in connector for working port, QS-3, tubing O.D. 3 mm		-QB	
		Push-in connector for working port, QS-4, tubing O.D. 4 mm	1	-QC	
	Fitting in supply duct on left	Push-in connector for supply on left, QS-3, tubing O.D. 3 mm	2	-AB	
		Push-in connector for supply on left, QS-4, tubing O.D. 4 mm		-AC	
		Push-in connector for supply on left, QS-6, tubing O.D. 6 mm	2	-AD	
	Fitting in exhaust duct on left	Push-in connector for exhaust on left, QS-3, tubing O.D. 3 mm	3	-BB	
		Push-in connector for exhaust on left, QS-4, tubing O.D. 4 mm	4	-BC	
		Push-in connector for exhaust on left, QS-6, tubing O.D. 6 mm	2	-BD	
		Silencer for exhaust on left		-BU	

1 **QC** Not with fitting in supply duct on left AD and fitting in exhaust duct on left BD
2 **AB, AD, BD** Not with fitting for working port QC
3 **BB** Not with fitting in supply duct on left AC, AD
4 **BC** Not with fitting in supply duct on left AD

Transfer order code

–		– LED	– N	–	–	–

Solenoid valves MH1, PCB mounting with pneumatic multi-connector plate

FESTO

Ordering data – Modular products, valve with LED

M **Mandatory data**

Module No.	Valve family		Design		Voltage supply		Valve function		Plug-in direction on valve		Number of valve positions		Type of linkage
197 334	MH1	–	A	–	24VDC	–	C N	–	PI	–	4V 6V 8V 10V	–	PCM
Order example													
197 334	**MH1**	–	**A**	–	**24VDC**	–	**C**	–	**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
	Voltage supply [V DC]	24	1	**-24VDC**		-24VDC
	Valve function	3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection underneath for electrical linkage		**-PI**		-PI
	Number of valve positions	4, 6, 8, 10		**-...V**		
↓	Type of linkage	PCB mounting, pneumatic multi-connector plate		**-PCM**		-PCM

Transfer order code

197 334	**MH1**	–	**A**	–	**24VDC**	–		–	**PI**	–		–	**PCM**

Solenoid valves MH1, PCB mounting with pneumatic multi-connector plate

FESTO

Ordering data – Modular products, valve with LED

➔ 0 **Options**

	Number of vacant positions		Additional functions		Manual override		Fitting for working port		Fitting in supply duct on left		Fitting in exhaust duct on left
	1L ... 10L		LED		N		QB QC		AB AC AD		BB BC BD BU
–		–	**LED**	–	**N**	–	**QC**	–	**AC**	–	**BC**

Ordering table

Size		1	Condi-tions	Code		Enter code
0	Number of vacant positions	1 ... 10		**-...L**		
	Additional functions	Status display via LED		**-LED**		-LED
	Manual override	Non-detenting/detenting		**-N**		-N
	Fitting for working port	Push-in connector for working port, QS-3, tubing O.D. 3 mm		**-QB**		
		Push-in connector for working port, QS-4, tubing O.D. 4 mm	1	**-QC**		
	Fitting in supply duct on left	Push-in connector for supply on left, QS-3, tubing O.D. 3 mm	2	**-AB**		
		Push-in connector for supply on left, QS-4, tubing O.D. 4 mm		**-AC**		
		Push-in connector for supply on left, QS-6, tubing O.D. 6 mm	2	**-AD**		
	Fitting in exhaust duct on left	Push-in connector for exhaust on left, QS-3, tubing O.D. 3 mm	3	**-BB**		
		Push-in connector for exhaust on left, QS-4, tubing O.D. 4 mm	4	**-BC**		
		Push-in connector for exhaust on left, QS-6, tubing O.D. 6 mm	2	**-BD**		
		Silencer for exhaust on left		**-BU**		

1 **QC** Not with fitting in supply duct on left AD and fitting in exhaust duct on left BD
2 **AB, AD, BD** Not with fitting for working port QC
3 **BB** Not with fitting in supply duct on left AC, AD
4 **BC** Not with fitting in supply duct on left AD

Transfer order code

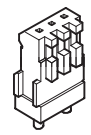
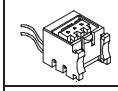
–		–	**LED**	–	**N**	–		–		–	

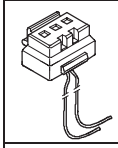
Solenoid valves MH1, miniature

Accessories

FESTO

Ordering data

		Part No.	Type
Soldering base			
		**197 261**	**PCBC-A-10**[1]
		197 262	**PCBC-A-100**[2]
Base plug (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			
		**197 259**	**MH-BZ-80X**[3]
Blanking plate			
	Plug connection	**197 257**	**MHAP1-BP-3**
	Base plug	**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