

- 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

FESTO



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.

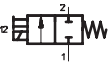
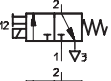
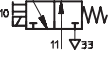
With flow rates of 10 and 14 l/min on the miniature valves, there is still adequate volume available for piloting process valves. And there is also adequate flow rate for the broad range of compact cylinders, rotary actuators and slides from Festo.

Up to 100 l/min if demands are high: MH2.

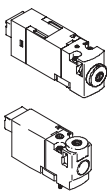
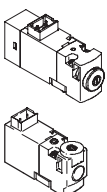
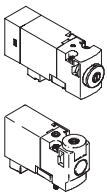


Solenoid valves MH1, miniature

Product range overview

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

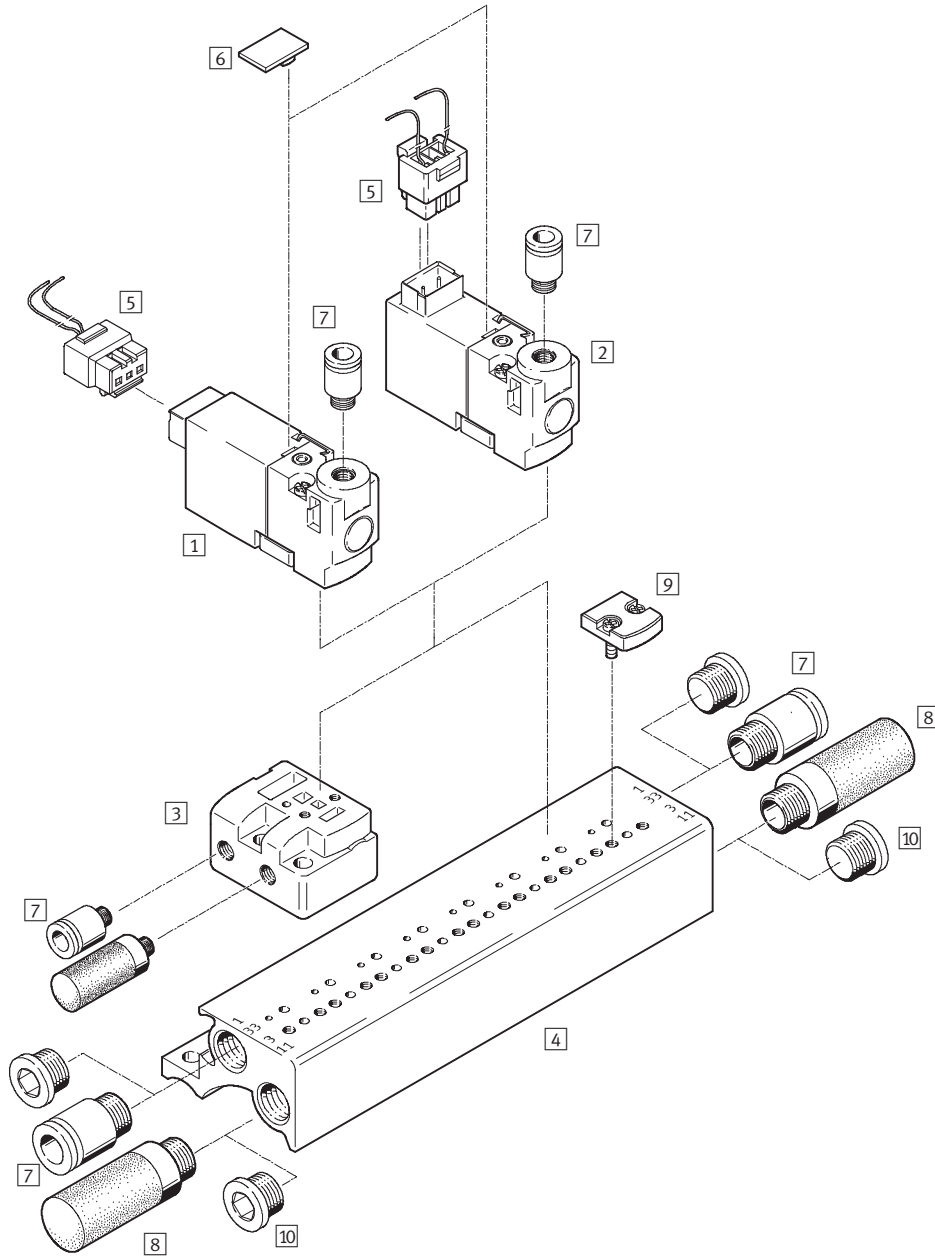
Further variants and accessories can be configured and ordered using the modular system:
MH1 without LED → from 2 / 3.1-28
MH1 with LED → from 2 / 3.1-45

Solenoid valves MHP1, miniature

Peripherals overview – Semi in-line valve, valve manifold



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



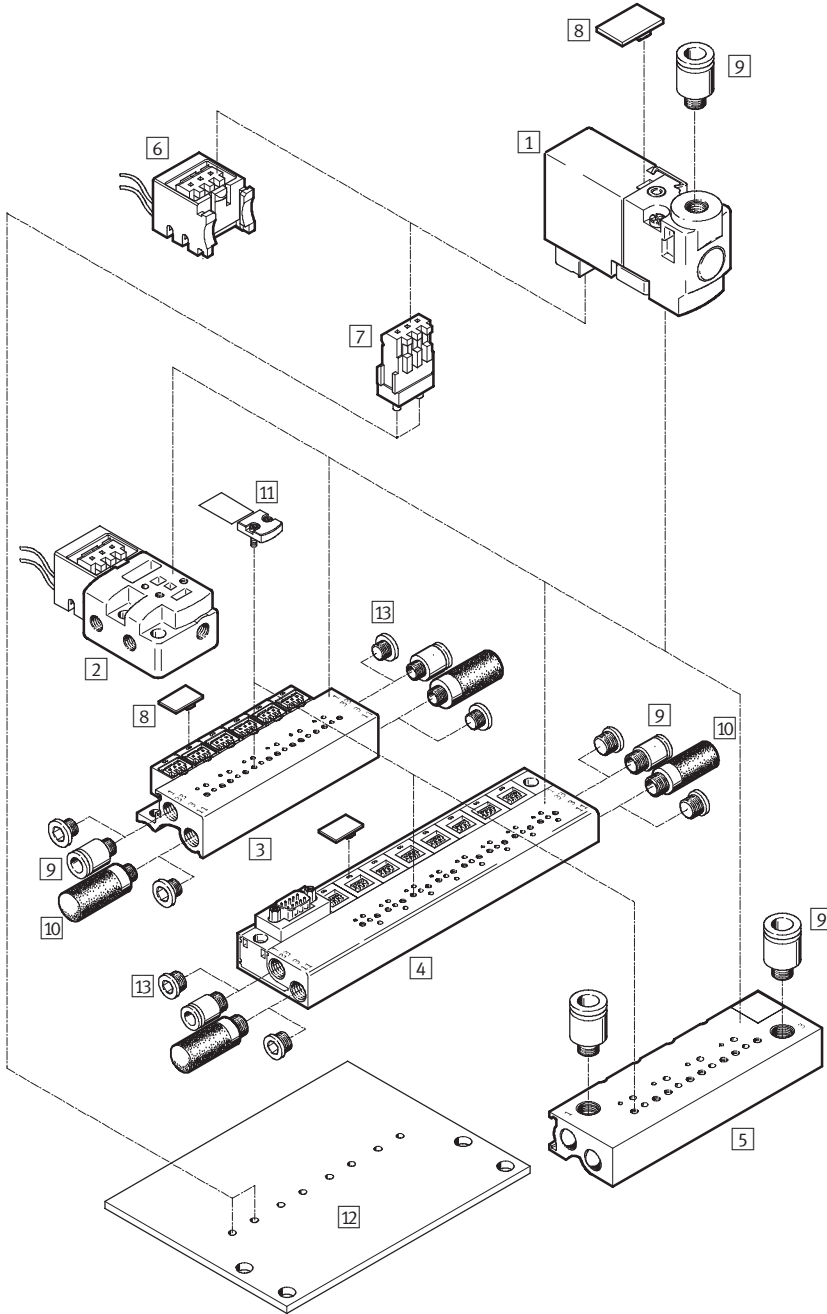
Accessories		→ Page	Accessories		→ Page
1	Semi in-line valve MHP1-...-HC	2 / 3.1-8	6	Inscription label MH-BZ-80X	2 / 3.1-55
2	Semi in-line valve MHP1-...-TC	2 / 3.1-8	7	Push-in fittings QS/QSM	Volume 3
3	Individual sub-base MHP1-AS-3-M3	2 / 3.1-11	8	Silencer UC	Volume 3
4	Manifold block MHP1-PR...-3	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

Application-optimised directional control valves
Miniature
3.1

Solenoid valves MHP1, miniature

Peripherals overview – Semi in-line valve, valve terminal

Plug connection underneath ...-PI

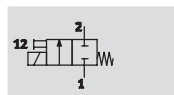
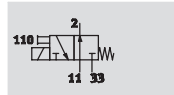
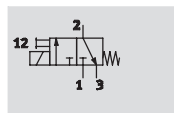


Accessories		→ Page			→ Page
1	Semi in-line valve MHP1-...-PI	2 / 3.1-8	6	Base plug MHAP-PI	2 / 3.1-55
2	Individual sub-base MHP1-AS-3-M3-PI	2 / 3.1-11	7	Soldering base PCBC-A	2 / 3.1-55
3	Manifold block MHP1-PR...-3-PI with base plugs	2 / 3.1-11	8	Inscription label MH-BZ-80x	2 / 3.1-55
4	Manifold block MHP1-PR...-3-PI-D... with base plugs and electrical multi-pin connection	2 / 3.1-13	9	Push-in fittings QS/QSM	Volume 3
5	Manifold block MHP1-PR...-3-PI-PCB for mounting on PCB	2 / 3.1-14	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

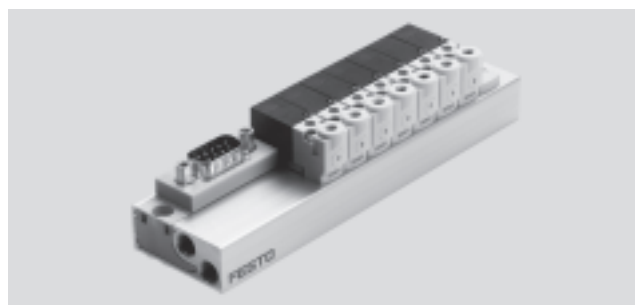
Function



- - 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
		2	M3
		3, 11	-
	Manifold mounting	1, 33	M7
		2	M3
		3, 11	-
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

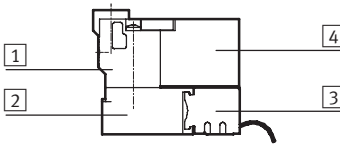
Technical data – Semi in-line valve



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

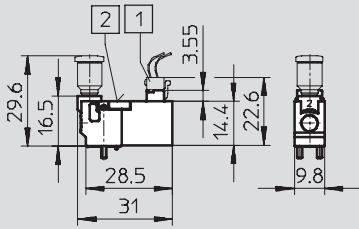
Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

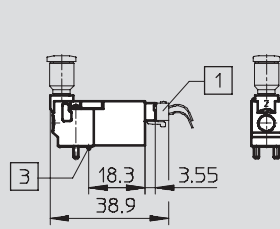


Dimensions Download CAD data → www.festo.com/en/engineering

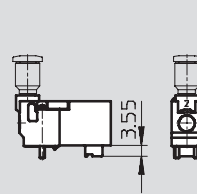
Plug connection on top



Plug connection at rear

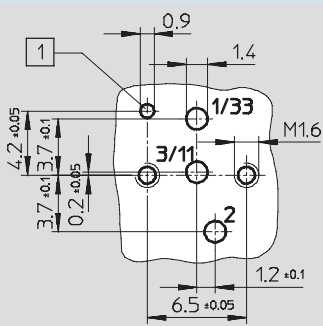


Plug connection underneath



- 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

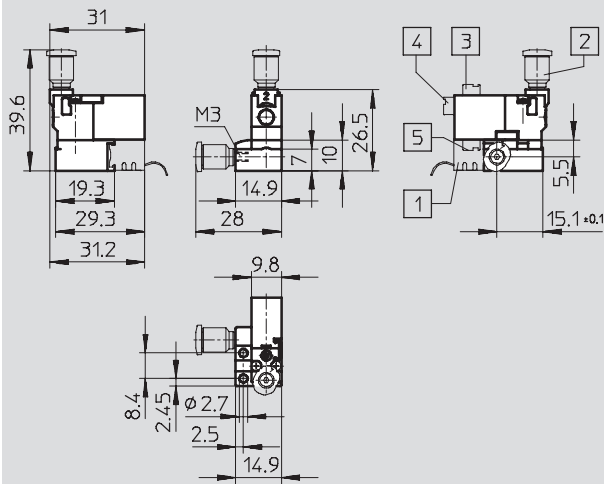
Technical data – Semi in-line valve



Dimensions – 2/2-way valve

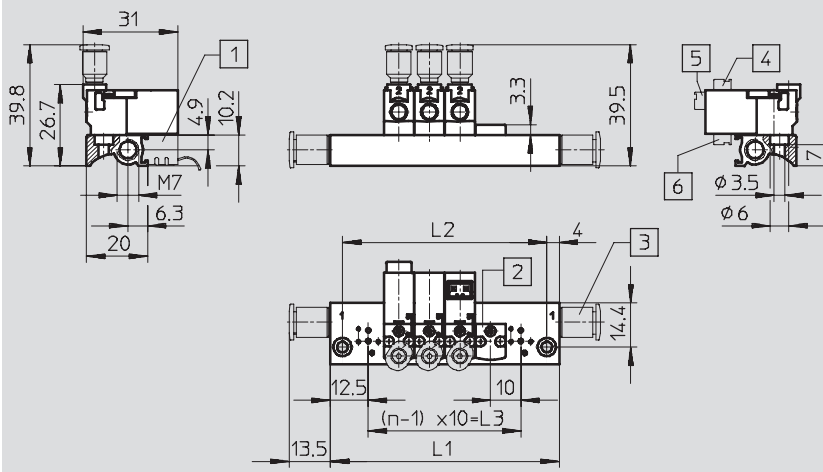
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Individual sub-base



- 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

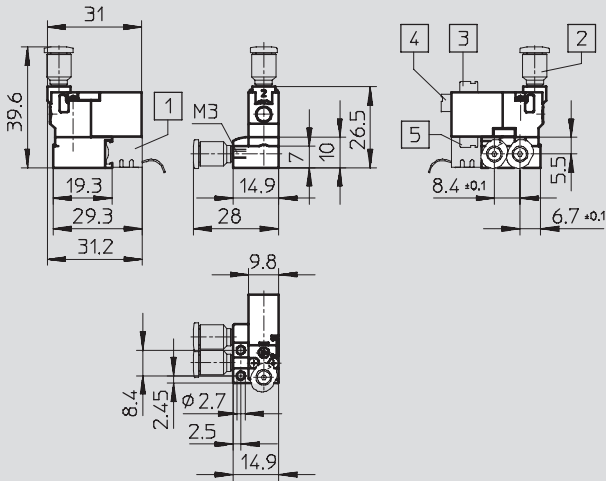
Technical data – Semi in-line valve



Dimensions – 3/2-way valve

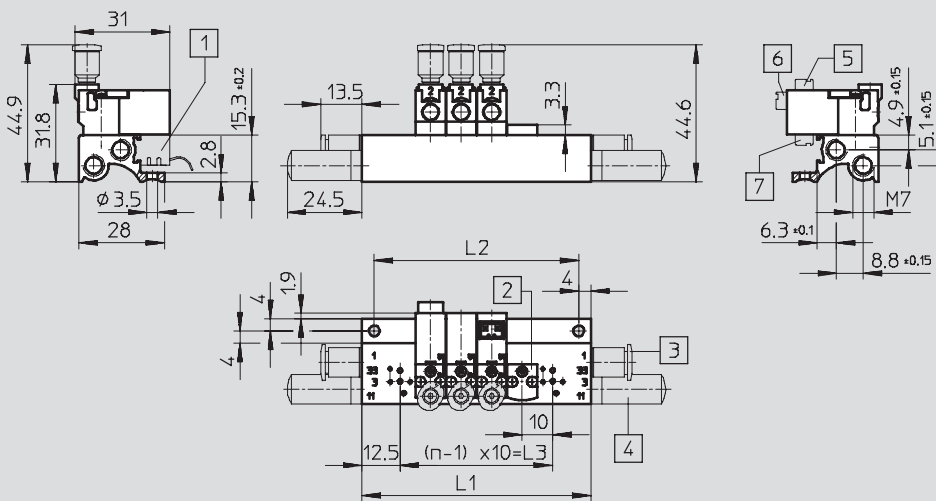
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Individual sub-base



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

Manifold mounting



- 1 Base plug MHP-PI
- 2 Blanking plate MHP1
- 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

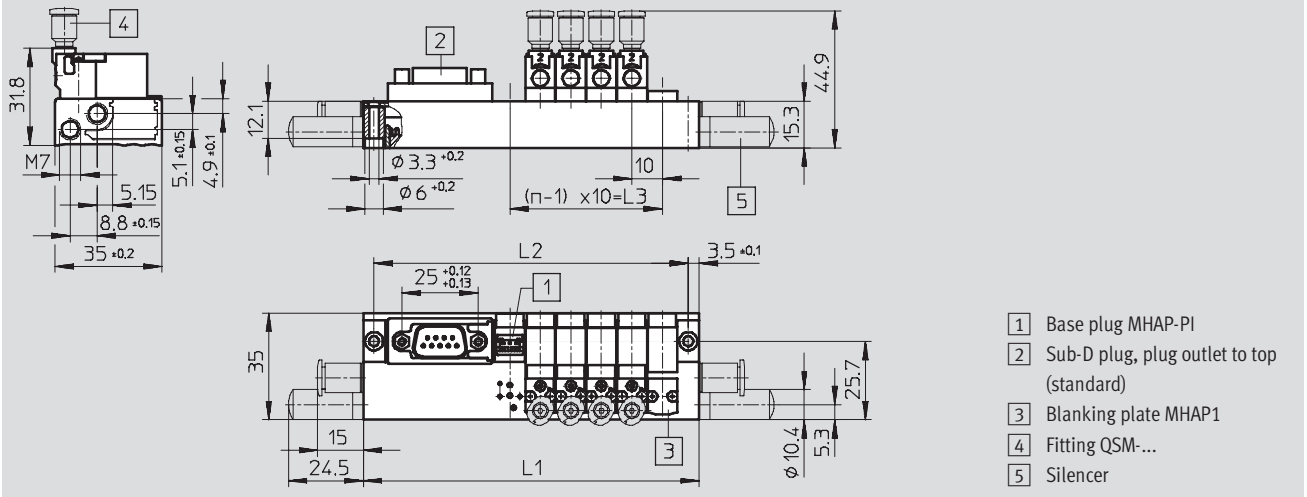
Solenoid valves MHP1, miniature

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

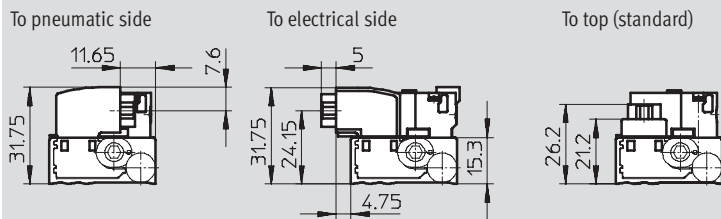


Valve positions n	L1 ±0.15	L2 ±0.1	L3
2	70	63	10
4	90	83	30
6	110	103	50
8	130	123	70

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



Solenoid valves MHP1, miniature

Technical data – Semi in-line valve



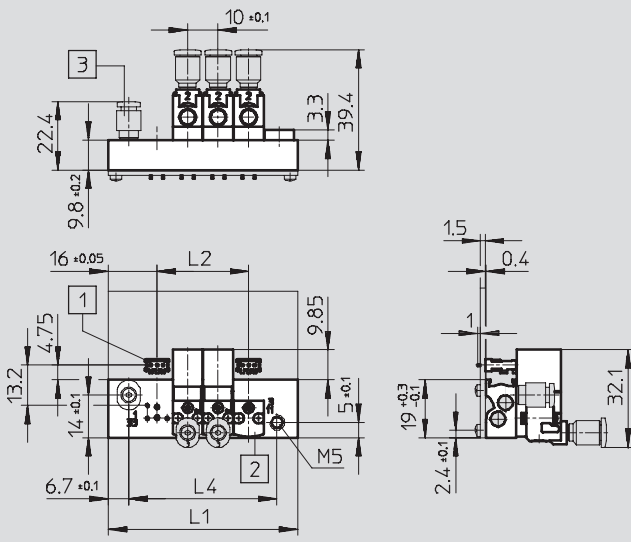
Application-optimised directional control valves
Miniature

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Dimensions – 3/2-way valve

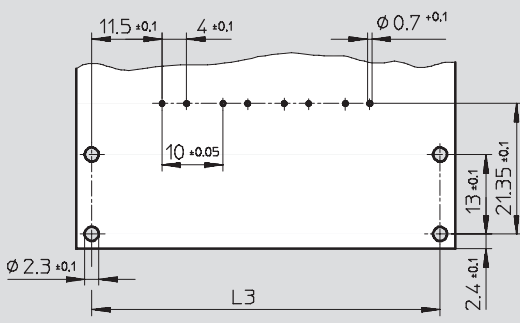
Download CAD data → www.festo.com/en/engineering

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

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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

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 base plugs 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

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



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

3.1

Ordering data – 3/2-way valves					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	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.

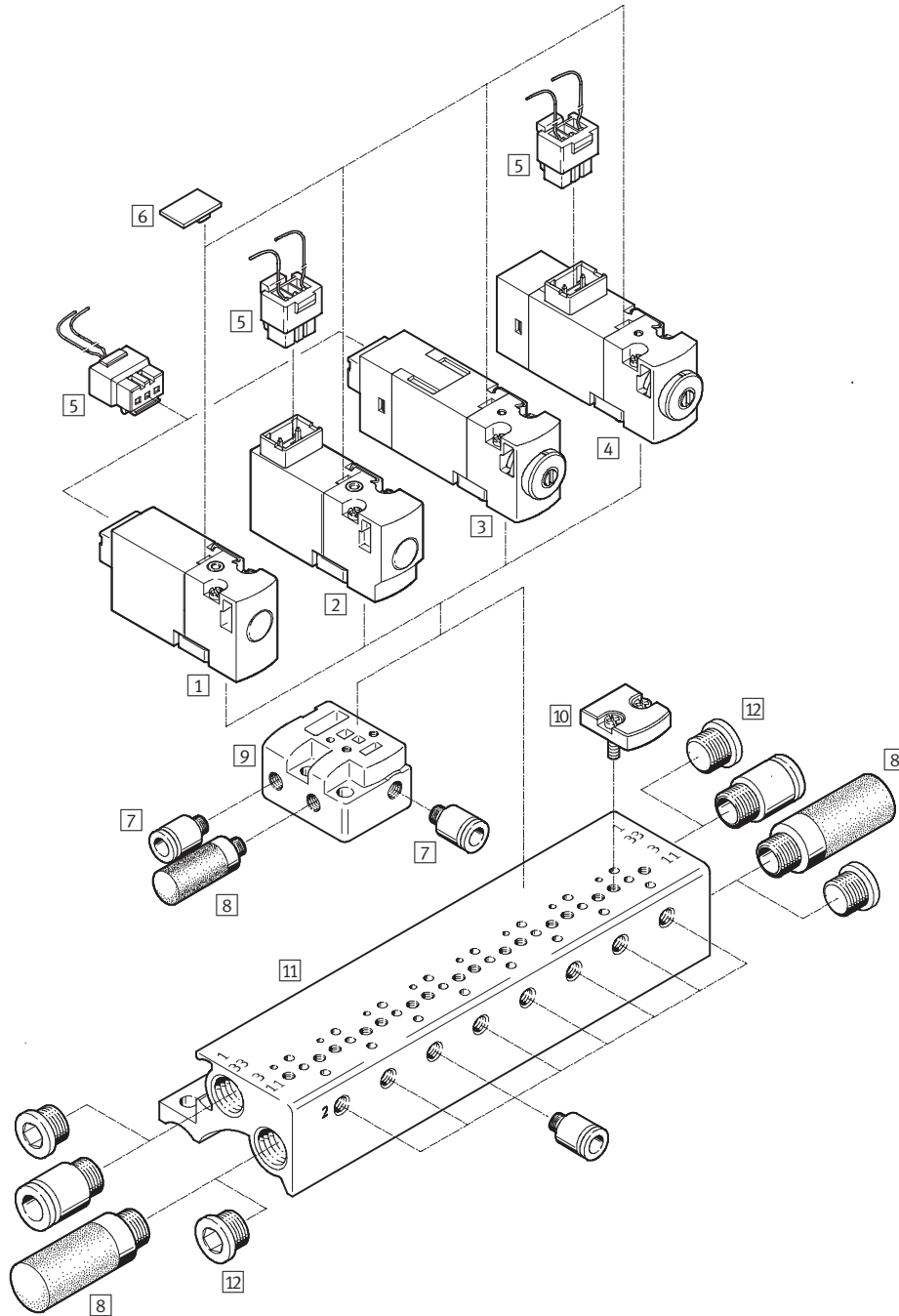
Ordering data – Product-specific accessories			
Designation		Part No.	Type
Valves with plug connection at rear or on top			
Individual sub-base		197 184	MHP1-AS-3-M3
Manifold block for ...	2 valves	197 191	MHP1-PR2-3
	4 valves	197 192	MHP1-PR4-3
	6 valves	197 193	MHP1-PR6-3
	8 valves	197 194	MHP1-PR8-3
	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.

Solenoid valves MHA1, miniature

Peripherals overview – Sub-base valve, valve manifold

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



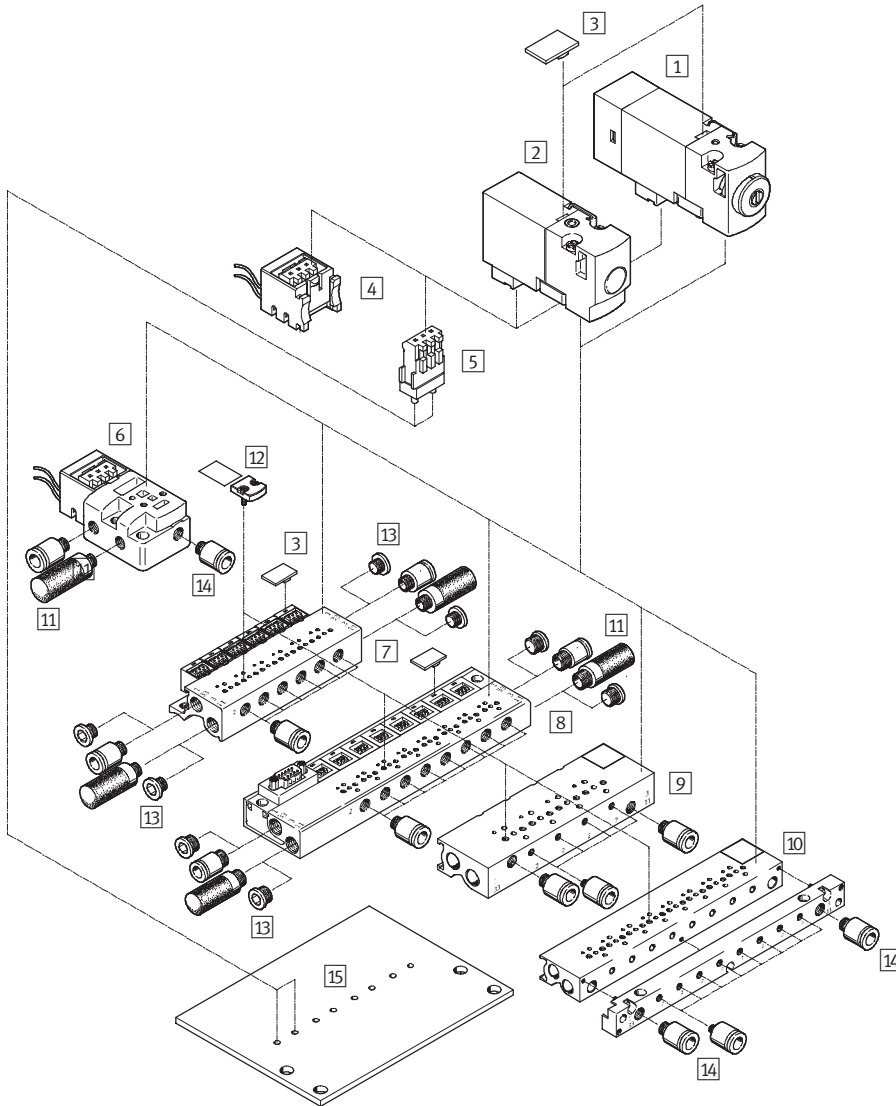
Accessories		→ Page		→ Page	
1	Sub-base valve MHA1-...-HC	2 / 3.1-19	7	Push-in fittings QS/QSM	Volume 3
2	Sub-base valve MHA1-...-TC	2 / 3.1-19	8	Silencer UC	Volume 3
3	Sub-base valve MHA1-...-HC with LED	2 / 3.1-38	9	Individual sub-base MHA1-AS-3-M3	2 / 3.1-22
4	Sub-base valve MHA1-...-TC with LED	2 / 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



Plug connection underneath ...-PI



Application-optimised directional control valves
Miniature

3.1

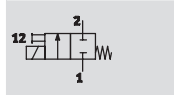
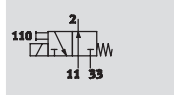
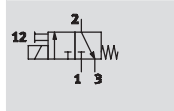
Accessories		→ Page	→ Page
1	Sub-base valve MHA1-...-PI with LED	2 / 3.1-38	
2	Sub-base valve MHA1-...-PI	2 / 3.1-19	
3	Inscription label MH-BZ-80X	2 / 3.1-55	
4	Base plug MHAP-PI	2 / 3.1-55	
5	Soldering base PCBC-A	2 / 3.1-55	
6	Individual sub-base MHA1-AS-3-M3-PI with base plug	2 / 3.1-22	
7	Manifold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

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

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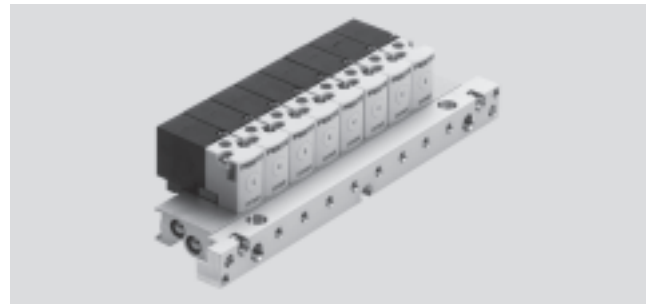
Function



Voltage
5, 12, 24 V DC

Pressure
-0.9 ... +8 bar

Temperature range
-5 ... +50 °C



Application-optimised directional control valves
Miniature

3.1

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		
	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

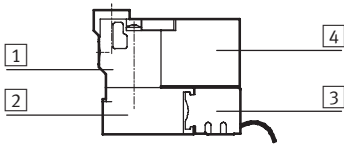
Technical data – Sub-base valve



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



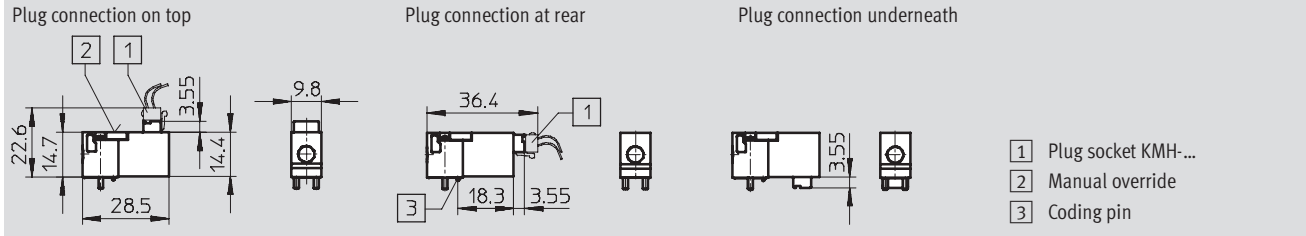
1	Body	Polyphenylene sulphide
2	Sub-base/manifold block	Aluminium
3	Base plug	Polyamide
4	Coil housing	Polyamide
-	Seals	Fluorocarbon rubber, nitrile rubber, hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

Solenoid valves MHA1, miniature

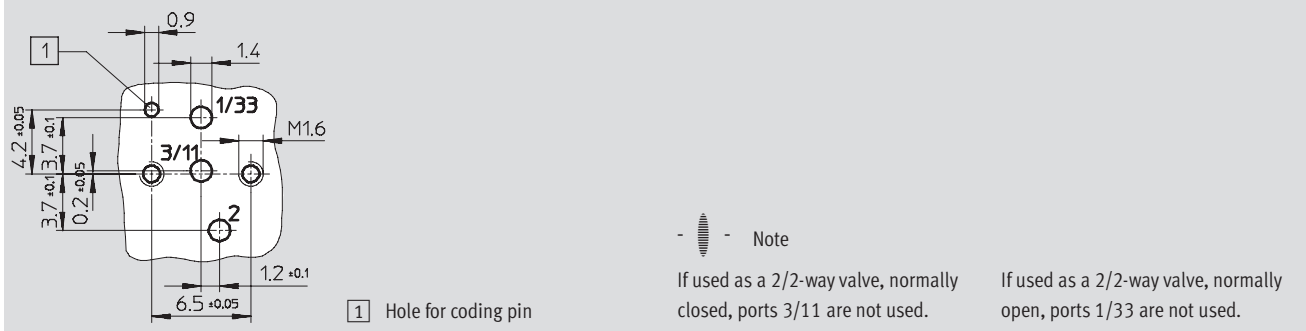
Technical data – Sub-base valve



Dimensions Download CAD data → www.festo.com/en/engineering



Hole pattern on sub-bases



Solenoid valves MHA1, miniature

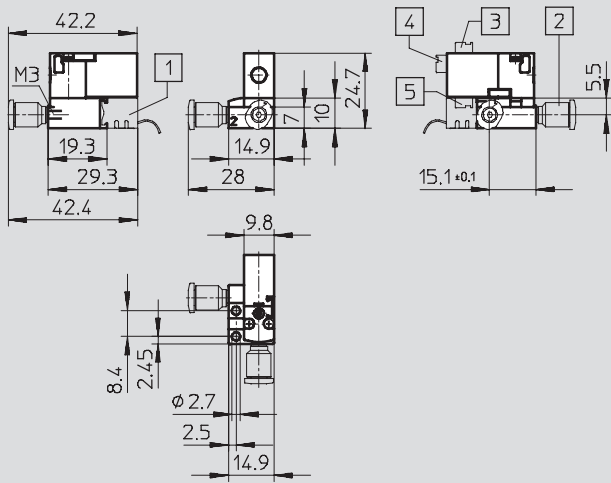
Technical data – Sub-base valve



Dimensions – 2/2-way valve

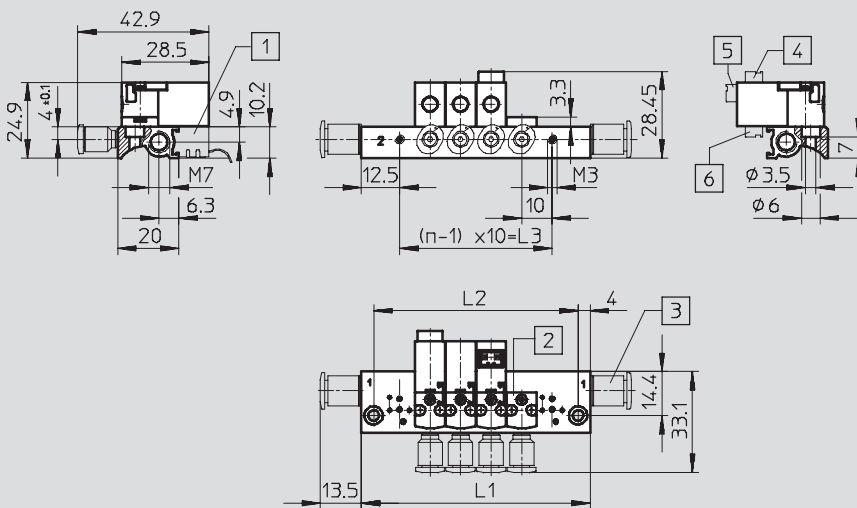
Download CAD data → www.festo.com/en/engineering

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 MHA1, miniature

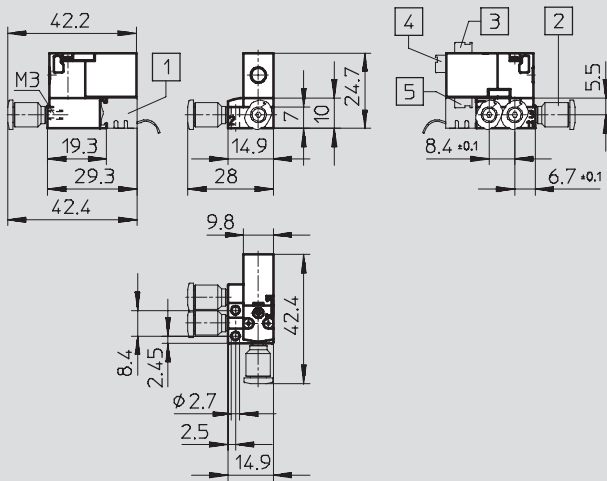
Technical data – Sub-base valve



Dimensions – 3/2-way valve

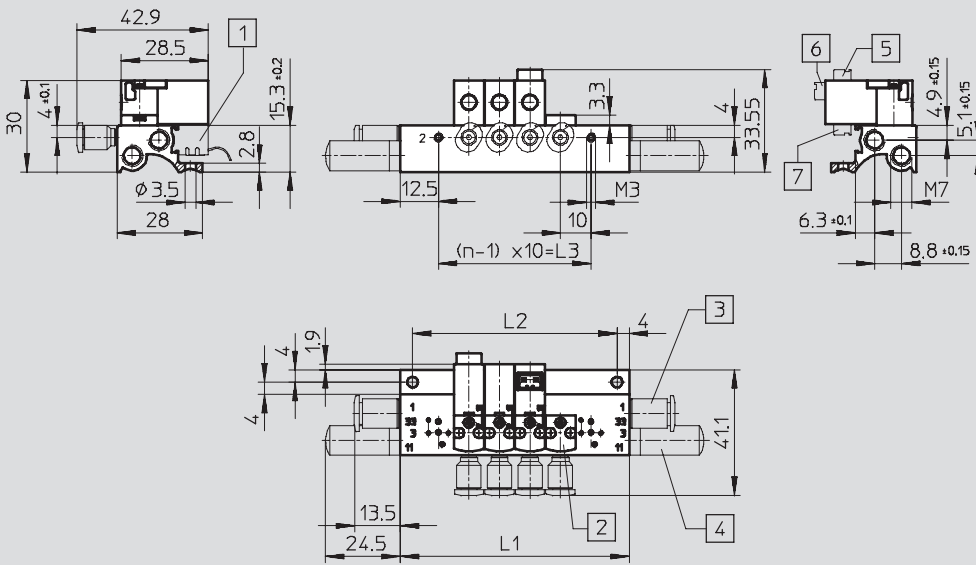
Download CAD data → www.festo.com/en/engineering

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

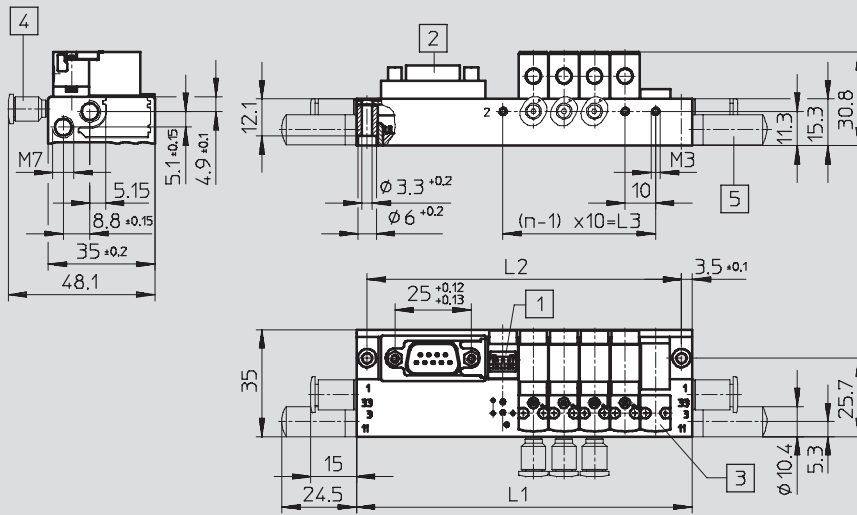
Technical data – Sub-base valve



Dimensions – 3/2-way valve

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

Manifold mounting with electrical multi-pin connection



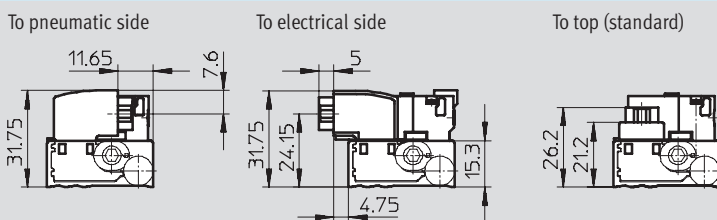
- 1 Base plug MHAP-PI
- 2 Sub-D plug, plug outlet to top (standard)
- 3 Blanking plate MHAP1
- 4 Fitting QSM-...
- 5 Silencer

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



Solenoid valves MHA1, miniature

Technical data – Sub-base valve



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

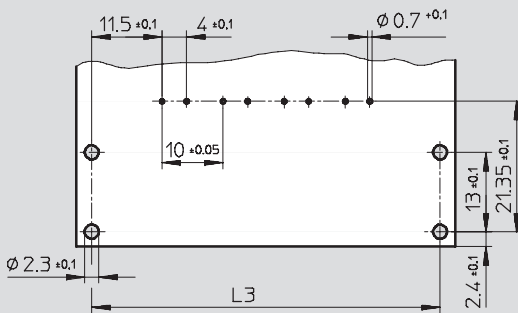
Solenoid valves MHA1, miniature

Technical data – Sub-base valve



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

FESTO

Ordering data – 3/2-way valves					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	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



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

→ **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



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	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 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



Ordering data – Modular products

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	Condi- tions	Code		Enter code
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 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



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	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 ... 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



Ordering data – Modular products

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 [0] (supplied separately)	Connecting cable 2.5 m, Sub-D, 9-pin, 8-wire	[2]	-S25		
	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



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	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
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Solenoid valves MH1, miniature, manifold and PCB mounting



Ordering data – Modular products

→ 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	Condi- tions	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 | 4 BB | Not with fitting in supply duct on left AC, AD |
| 2 AB, AD, BD | Not with fitting for working port QC | 5 BC | Not with fitting in supply duct on left AD |
| 3 AD, BD | Not with design P | 6 BU | Not with valve function D |

Application-optimised directional control valves
Miniature

3.1

Transfer order code

- - - -

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



Ordering data – Modular products

Application-optimised directional control valves
Miniature

3.1

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

FESTO

Ordering data – Modular products

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

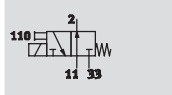
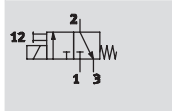
Transfer order code

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Solenoid valves MHA1, miniature


Technical data – Sub-base valve with LED

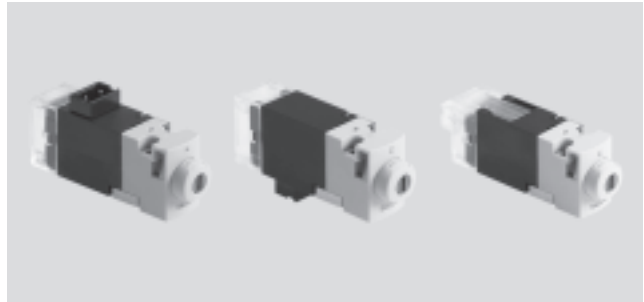
Function



 Voltage
24 V DC

 Pressure
0 ... +8 bar

 Temperature range
-5 ... +50 °C



General technical data		3/2, single solenoid	
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		3/2, single solenoid	
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

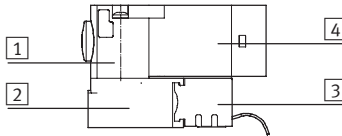
Solenoid valves MHA1, miniature

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

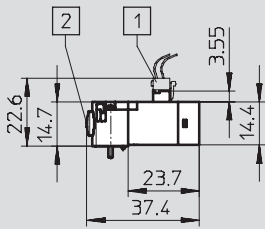
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

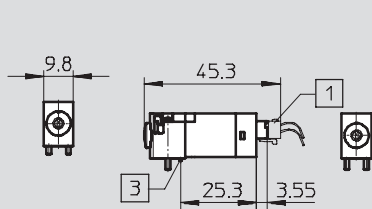
Dimensions

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

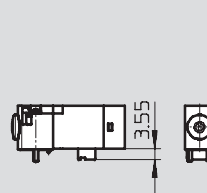
Plug connection on top



Plug connection at rear

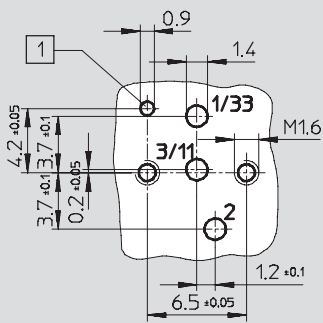


Plug connection underneath



- 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

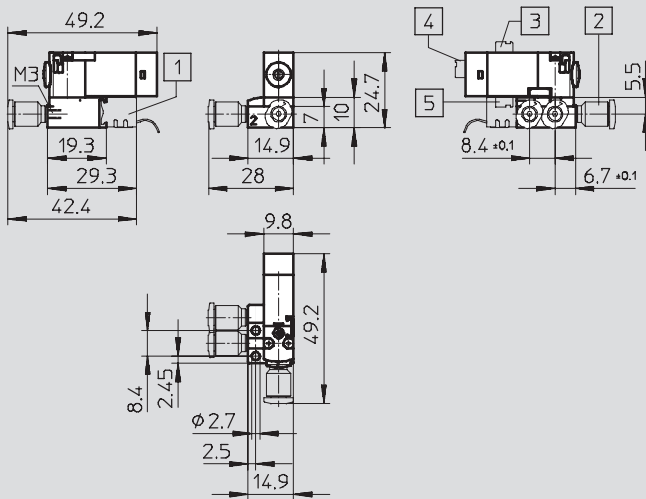
Technical data – Sub-base valve with LED



Dimensions – 3/2-way valve

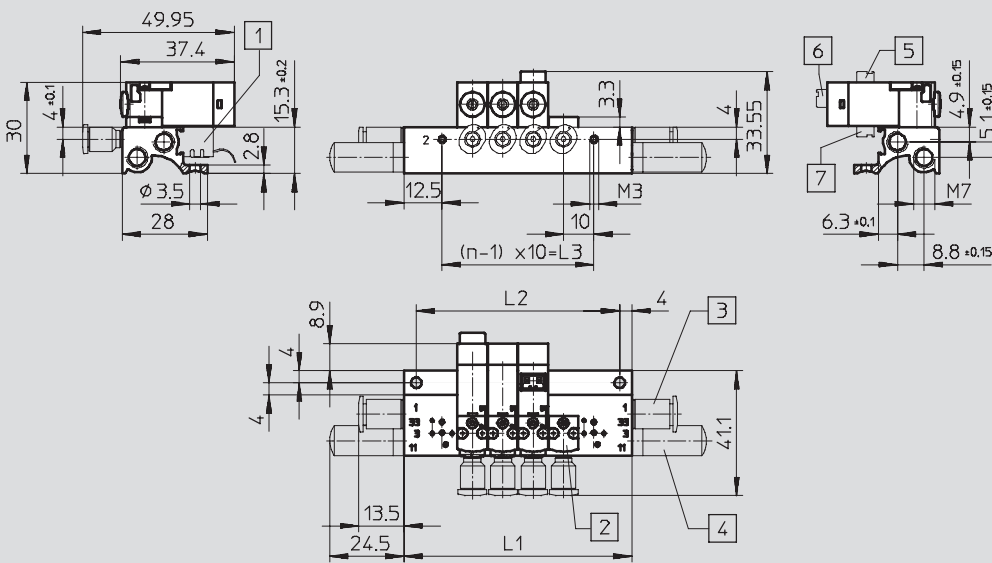
Download CAD data → www.festo.com/en/engineering

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

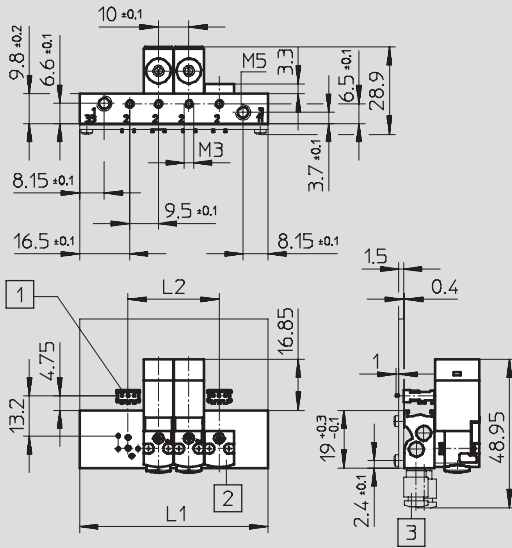
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED


Dimensions – 3/2-way valve

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

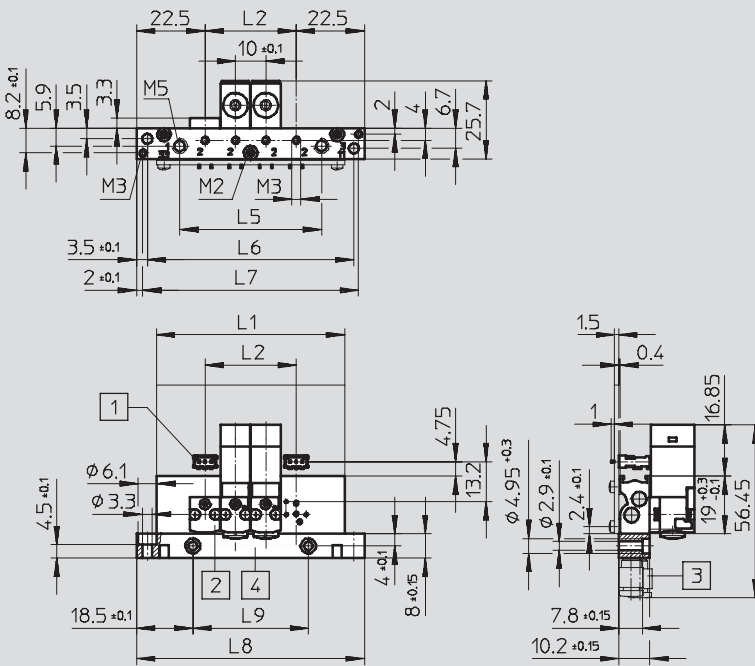
Manifold mounting on PCB




- 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

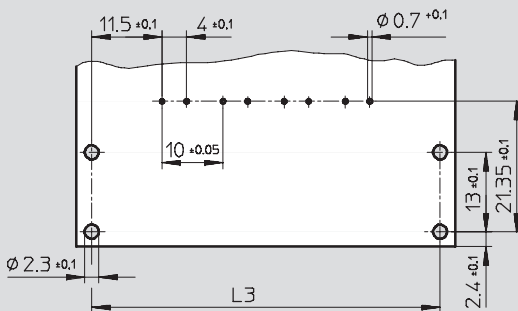
Valve positions n	L1 ±0.15	L2	L3 ±0.1	L5 ±0.15	L6	L7 ±0.1	L8 ±0.2	L9 ±0.1
2	42	10	37	-	-	-	-	-
4	62	30	57	46.7	68	71	75	38
6	82	50	77	66.7	88	91	95	58
8	102	70	97	86.7	108	111	115	78
10	122	90	117	106.7	128	131	135	98

Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

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		Normally open	
		Part No.	Type	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



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

Application-optimised directional control valves
Miniature

3.1

Transfer order code

197 334	MH1	- A	- 24VDC	-	-	- 1V	- PS
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Solenoid valves MH1, miniature, individual sub-base

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

- - - - - -

Solenoid valves MH1, manifold mounting with electrical individual connection



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	

Application-optimised directional control valves
Miniature

3.1

Transfer order code

Solenoid valves MH1, manifold mounting with electrical individual connection

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	Condi- tions	Code	Enter code
↓	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	
0	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

- - - - - - - -

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



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		Condi- tions	Code	Enter code
Size	1			
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	

Application-optimised directional control valves
Miniature

3.1

Transfer order code

197 334	MH1	- A	- 24VDC	-	PI	-	PRA	-	
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Solenoid valves MH1, manifold mounting with electrical multi-pin connection

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
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
↓ 0 Connecting cable with socket (supplied separately)	Connecting cable 2.5 m, Sub-D, 9-pin, 8-wire			1	-S25	
	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
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



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		Condi- tions	Code	Enter code
Size	1			
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

Application-optimised directional control valves
Miniature

3.1

Transfer order code

197 334	MH1	- A	- 24VDC	-	PI	-	PCD
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Solenoid valves MH1, miniature, manifold and PCB mounting

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

- - - - - -

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



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		Condi- tions	Code	Enter code
Size	1			
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
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Solenoid valves MH1, PCB mounting with pneumatic multi-connector plate

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

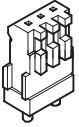
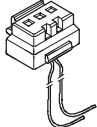









Transfer order code

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Solenoid valves MH1, miniature

Accessories

FESTO

Ordering data				Ordering data			
		Part No.	Type			Part No.	Type
Soldering base				Plug socket with cable (IP40)			
		197 261	PCBC-A-10 ¹⁾		0.5 m	197 263	KMH-0,5
		197 262	PCBC-A-100 ²⁾		1 m	197 264	KMH-1
Base plug (IP40)				Inscription label			
		197 260	MHAP-PI			197 259	MH-BZ-80X ³⁾
Blanking plug B				Blanking plate			
	M5	3843	B-M5 ⁴⁾		Plug connection	197 257	MHAP1-BP-3
	M7	174 309	B-M7 ⁴⁾		Base plug	197 258	MHAP1-BP-3-PI
Silencer UC				Push-in fittings QS/QSM			
		→ Volume 3				→ Volume 3	
Connecting cable KMP6 (up to 8 valves)				Connecting cable KMP6 (up to 12 valves)			
	2.5 m	531 184	KMP6-09P-8-2,5		2.5 m	530 049	KMP6-25P-12-2,5
	5 m	531 185	KMP6-09P-8-5		5 m	530 050	KMP6-25P-12-5
	10 m	531 186	KMP6-09P-8-10		10 m	530 051	KMP6-25P-12-10
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				

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