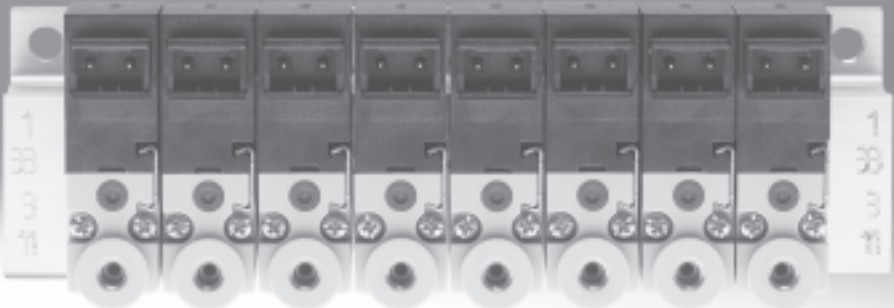
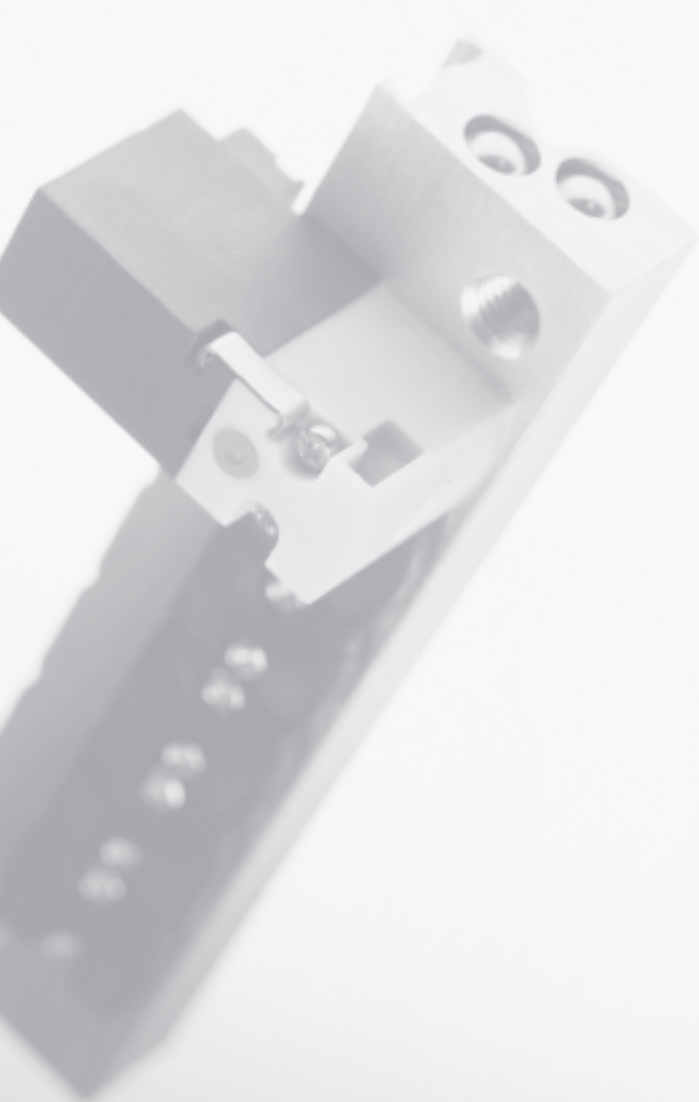


Solenoid valves MH1, miniature



Complete product range for a wide range of applications

FESTO



Extremely small

The new miniaturised generation of poppet valves offers flow rates of 14 l/min in the 2/2-way version or 10 l/min in the 3/2-way version. Either as an individual sub-base or pre-assembled on a PR manifold rail. In addition, mounting on a PR manifold rail enables very compact assembly. For increased requirements and speed, the bigger MH2 with a flow rate of up to 100 l/min is the ideal solution.

Extremely versatile and fast

The miniature valves can be linked together via a pneumatic multiple connector plate or electrical multi-pin plug. There is also a choice between horizontal electrical connections, on top and underneath. Furthermore, a connection for mounting on a PCB is available. All components are tested and assembled for Festo plug and work[®]. Need a system to run as fast as possible? No problem! The response time of the miniature valves is an impressive 4 ms.

Totally coordinated

Festo offers an extensive product range including drives, rodless drives, mini slides, rotary drives and accessories under the umbrella term “compact”. Perfectly coordinated and geared towards all production areas for the manufacture and processing of very small products. All the components comply with Festo’s proven quality standards and include the added value that only a global company can offer.

Miniature valves not just for the electronics industry ...

... but also for the light assembly, medical technology and semiconductor industries and wherever extremely compact and fast-switching valves or pilot valves are required for valves coming into contact with media (e.g. process industry). With response times of approximately 4 ms, these valves satisfy all requirements for speed. Vacuum functions can also be easily implemented. A 100% duty cycle and even a three-shift operation guarantee maximum cost-effectiveness.

With flow rates of 10 and 14 l/min for the miniature valves, there is always sufficient volume for pilot control of process valves. The flow rate is also adequate for Festo's wide range of compact cylinders, rotary drives and slides.

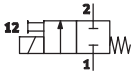
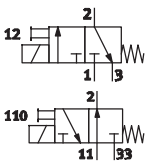
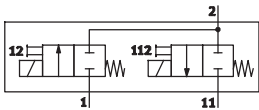
For increased requirements of up to 100 l/min: MH2.



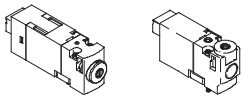
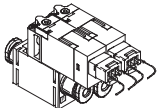
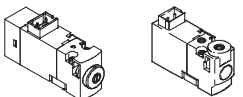
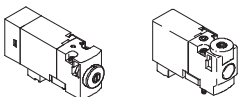
Solenoid valves MH1, miniature

Product range overview

FESTO

Function	Circuit symbol	Version	Voltage [V DC]			→ Page/ Internet
			5	12	24	
2/2-way valve		Standard nominal flow rate 14 l/min				
		Semi in-line valve	■	■	■	6
		Sub-base valve	■	■	■	16
		Standard nominal flow rate 30 l/min, controls vacuum or ejector pulse				
		Sub-base valve	-	-	■	33
3/2-way valve ¹⁾		Standard nominal flow rate 10 l/min				
		Semi in-line valve	■	■	■	6
		Sub-base valve	■	■	■	16
		Sub-base valve with LED	-	-	■	16
2x2/2-way valve		Standard nominal flow rate 30 l/min, controls vacuum and ejector pulse				
		Sub-base valve with LED	-	-	■	33


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

Mounting options				
Design		Semi in-line valve	Sub-base valve	
			Without LED	Without LED
Electrical connection				
Plug connection at rear (HC)				
	Individual sub-base	■	■	■
	Manifold assembly	■	■	■
	Sub-base with 2x2/2-way valve fully assembled	-	-	■
Plug connection on top (TC)				
	Individual sub-base	■	■	■
	Manifold assembly	■	■	■
Plug connection underneath (PI)				
	Individual sub-base with plug base	■	■	■
	Manifold assembly with plug bases	■	■	■
	Manifold assembly with plug bases and electrical multi-pin plug	■	■	■
	Manifold assembly on PCB with soldering bases	■	■	■
	Manifold assembly on PCB with soldering bases and pneumatic multiple connector plate	-	■	■

Solenoid valves MH1, miniature

Type codes

		MH	A	1	-	M	4	L	H	-	3/2	-	0	-	M3	-	HC
Valve family																	
MH	Miniature and fast-switching valves																
Design																	
P	Semi in-line valve																
A	Sub-base valve																
Size																	
1	Flow rate 10 ... 14 l/min																
Drive type																	
M	Solenoid, switching																
Operating voltage																	
4	5 V DC																
5	12 V DC																
1	24 V DC																
Signal status display																	
-	No																
L	LED																
Manual override																	
H	Non-detenting/detenting																
Valve function																	
2/2	2/2-way valve																
3/2	3/2-way valve																
Normal position																	
G	Closed																
0	Open																
Pneumatic connection																	
0.6	Nominal size 0.65 mm																
0.9	Nominal size 0.9 mm																
M3	M3 thread																
Electrical connection																	
HC	Plug connection at rear for plug socket KMH/NEBV-H1G2																
TC	Plug connection on top for plug socket KMH/NEBV-H1G2																
PI	Plug connection underneath for plug-in connection																

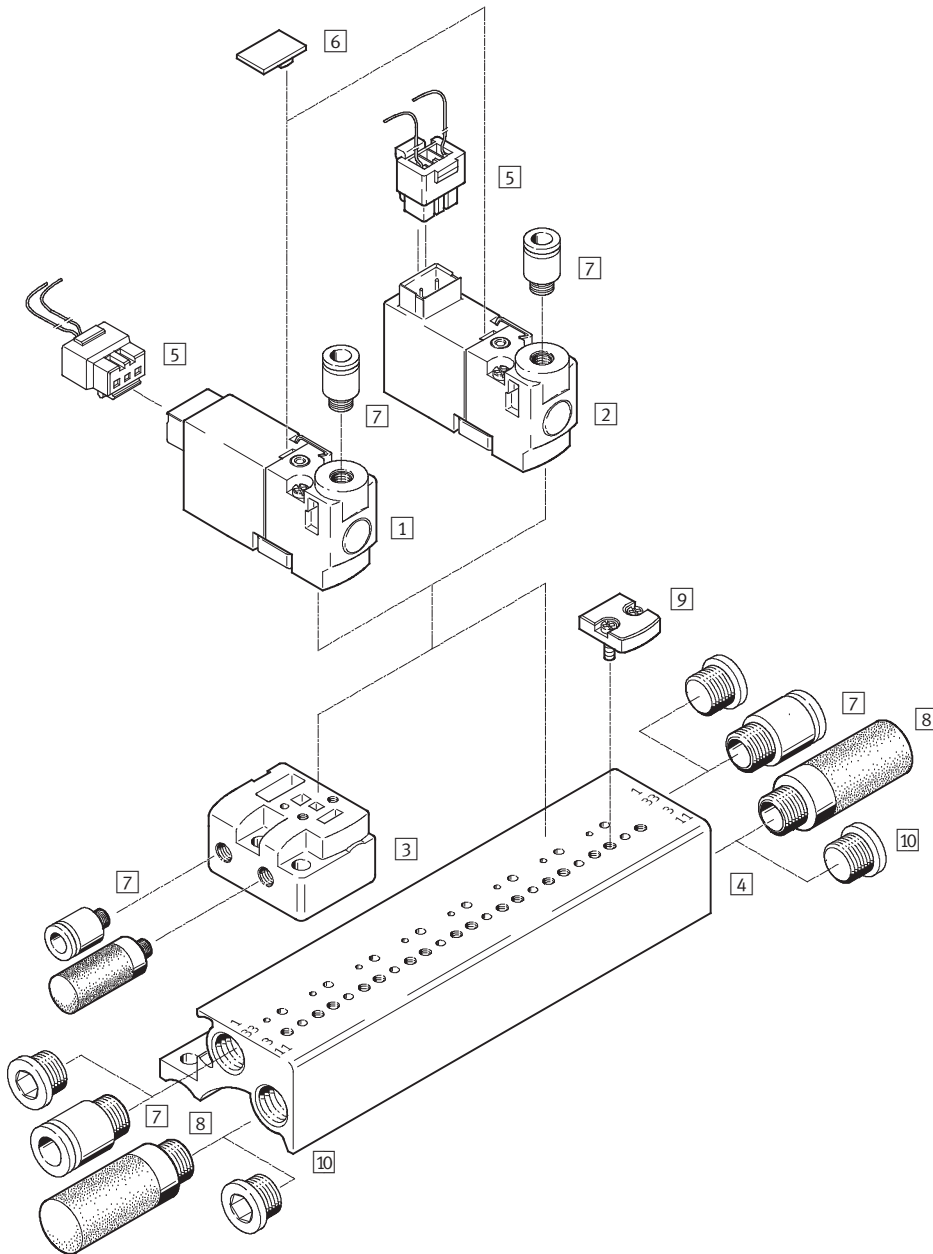
 Note

Further variants and accessories can be configured and ordered using the modular system.

Solenoid valves MHP1, miniature

Peripherals overview – Semi in-line valve, valve manifold

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

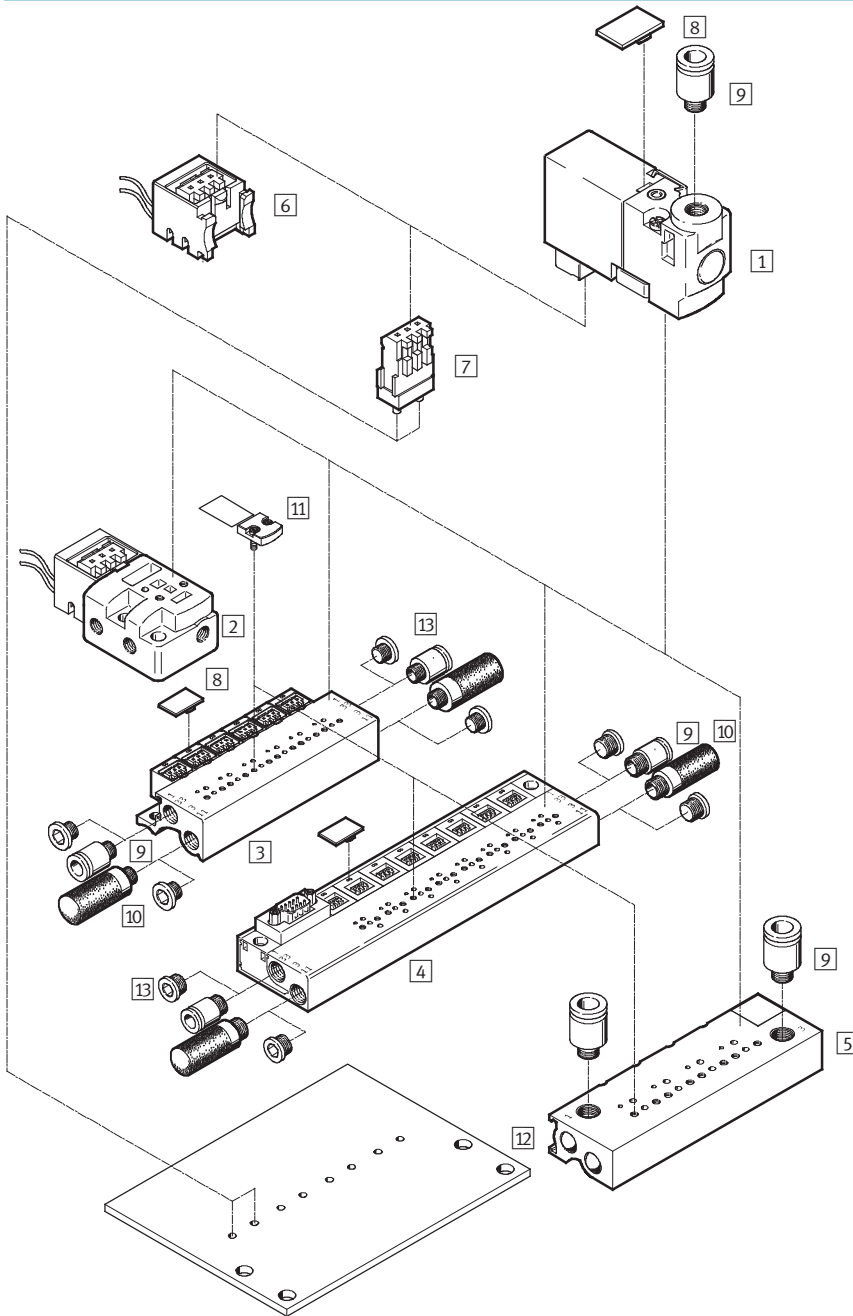


Accessories		→ Page/ Internet	→ Page/ Internet
1	Semi in-line valve MHP1-...-HC	8	6
2	Semi in-line valve MHP1-...-TC	8	7
3	Individual sub-base MHP1-AS-3-M3	10	8
4	Manifold block MHP1-PR...-3	10	9
5	Plug socket with cable KMH/NEBV-H1G2	35	10
			6
			7
			8
			9
			10

Solenoid valves MHP1, miniature

Peripherals overview – Semi in-line valve, valve terminal

Plug connection underneath ...-PI



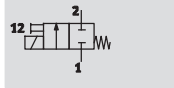
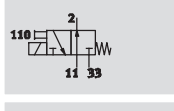
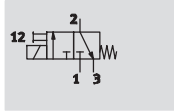
Accessories		→ Page/ Internet	→ Page/ Internet
1	Semi in-line valve MHP1-...-PI	8	
2	Individual sub-base MHP1-AS-3-M3-PI	10	
3	Manifold block MHP1-PR...-3-PI with plug bases	10	
4	Manifold block MHP1-PR...-3-PI-D with plug bases and electrical multi-pin plug	12	
5	Manifold block MHP1-PR...-3-PI-PCB for mounting on PCB	13	
6	Plug base MHAP-PI	35	
			7
			8
			9
			10
			11
			12
			13
			35
			35
			qs
			uc
			35
			13
			35


Solenoid valves MHP1, miniature


Technical data – Semi in-line valve


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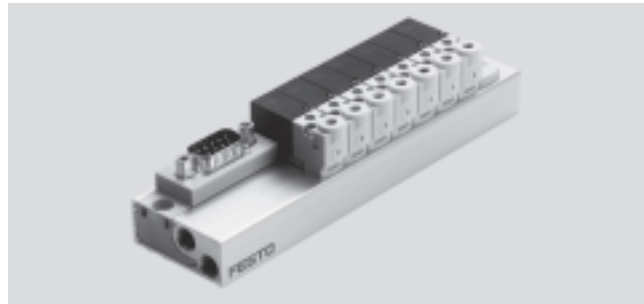
Function



-  - Voltage
5, 12, 24 V DC

-  - Pressure
-0.9 ... +8 bar

-  - Temperature range
-5 ... +50 °C



General technical data			
Valve function		2/2-way, single solenoid	3/2-way, single solenoid
Constructional design		Poppet valve with spring return	
Sealing principle		Soft	
Actuation type		Electric	
Reset method		Mechanical spring	
Type of pilot control		Direct	
Direction of flow		Non-reversible	
Exhaust function		-	With flow control
Manual override		Non-detenting	
Type of mounting		On sub-base via through-holes	
Mounting position		Any	
Nominal size		[mm] 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 assembly	1, 33	M7
		2	M3
		3, 11	-
Product weight		[g] 10	10

Operating and environmental conditions			
Valve function		2/2-way, single solenoid	3/2-way, single solenoid
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm Vacuum, grade of filtration 40 µm	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm -
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 assembly	[°C] -5 ... +40	
Temperature of medium	Individual mounting	[°C] -5 ... +50	
	Manifold assembly	[°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 as per Festo standard 940 070

Components subject to moderate corrosion stress. 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.

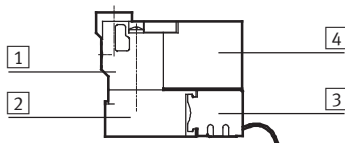
Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

Electrical data		
Valve function	2/2-way, single solenoid	3/2-way, 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/NEBV-H1G2	IP40	
With plug base MHAP-PI		
With soldering base PCBC-A		
With Sub-D connector plug		

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

Materials



1	Housing	Polyphenylene sulphide
2	Sub-base	Aluminium
3	Plug base	Polyamide
4	Coil housing	Polyamide
-	Seals	Fluoro elastomer, nitrile rubber, hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

Dimensions

Download CAD data → www.festo.com

Plug connection on top

Plug connection at rear

Plug connection underneath

1 Plug socket KMH/NEBV-H1G2
 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, port 3/11 is not used.
 If used as a 2/2-way valve, normally open, port 1/33 is not used.

Solenoid valves MHP1, miniature

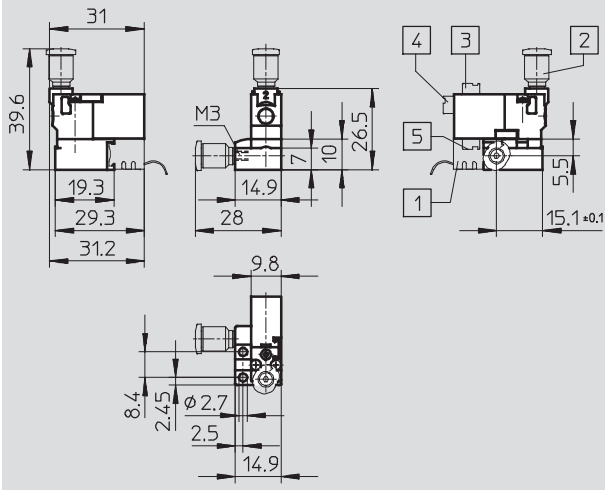
Technical data – Semi in-line valve



Dimensions – 2/2-way valve

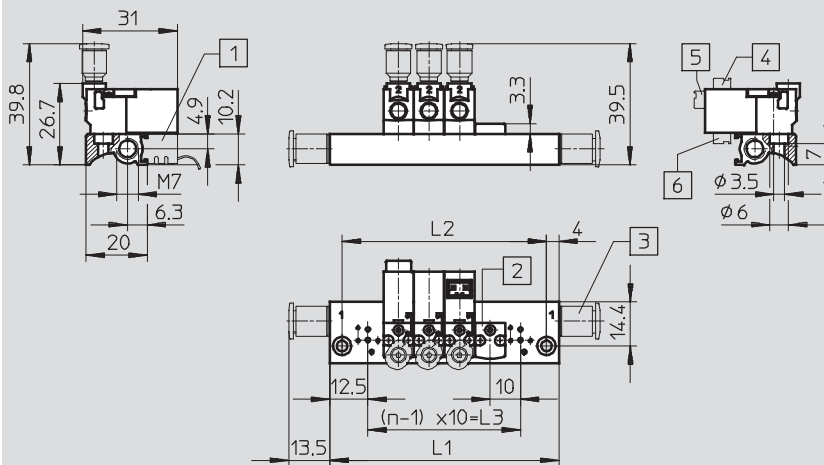
Download CAD data → www.festo.com

Individual sub-base



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

Manifold assembly



- 1 Plug base 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

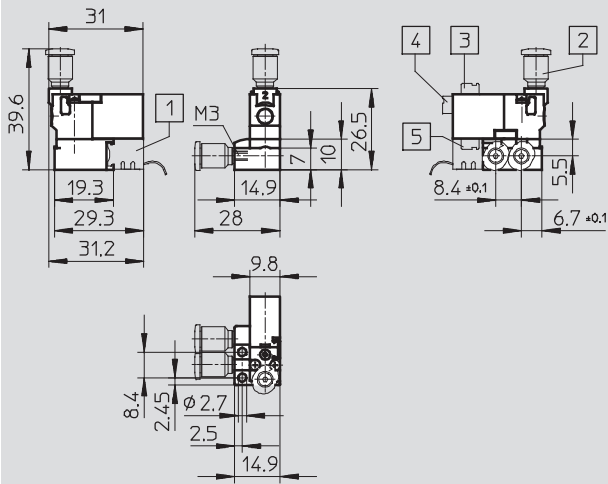
Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

Dimensions – 3/2-way valve

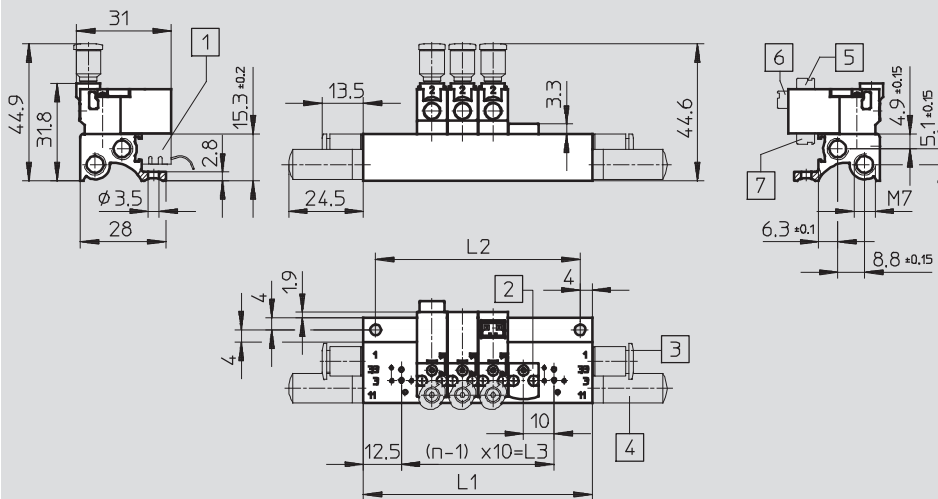
Download CAD data → www.festo.com

Individual sub-base



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

Manifold assembly



- 1 Plug base 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

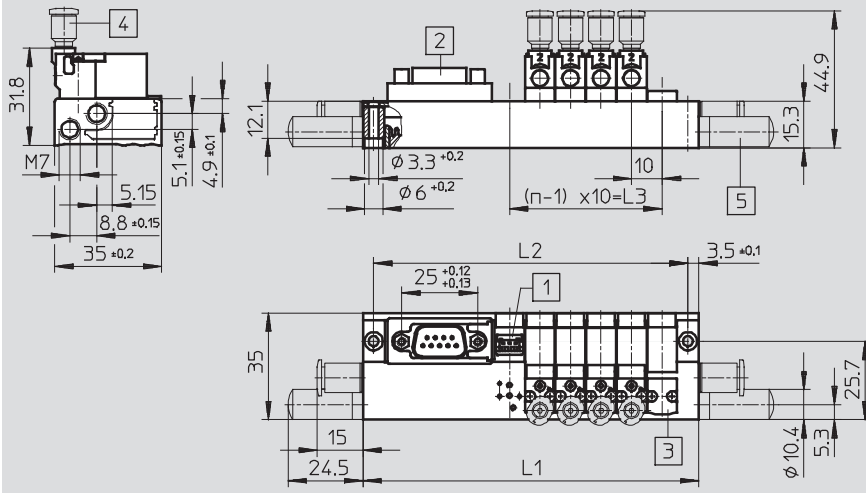
Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

Dimensions – 3/2-way valve

Download CAD data → www.festo.com

Manifold assembly with electrical multi-pin plug



- 1 Plug base MHAP-PI
- 2 Sub-D plug, plug exit on 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

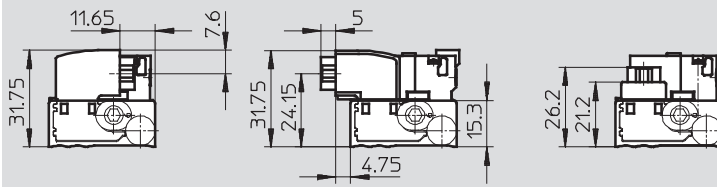
Valve positions n	L1 ±0.15	L2 ±0.1	L3
18	252	245	170
20	272	265	190
22	292	285	210

Electrical multi-pin plug – Plug directions

To pneumatic side

To electrical side

To top (standard)



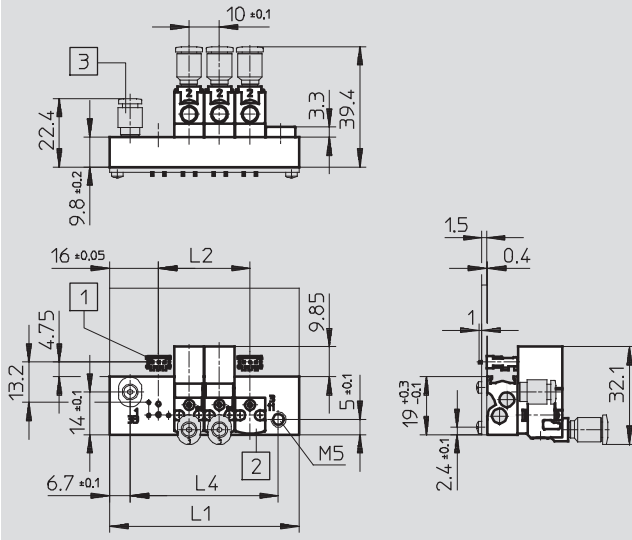
Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

Dimensions – 3/2-way valve

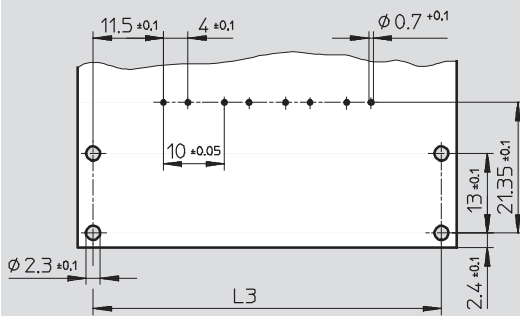
Download CAD data → www.festo.com

Manifold assembly on PCB



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

Hole pattern on PCB




Note
The PCB 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	197045	MHP1-M4H-2/2G-M3-HC
	12 V DC	197046	MHP1-M5H-2/2G-M3-HC
	24 V DC	197047	MHP1-M1H-2/2G-M3-HC
Plug connection on top	5 V DC	197048	MHP1-M4H-2/2G-M3-TC
	12 V DC	197049	MHP1-M5H-2/2G-M3-TC
	24 V DC	197050	MHP1-M1H-2/2G-M3-TC
Plug connection underneath	5 V DC	197051	MHP1-M4H-2/2G-M3-PI
	12 V DC	197052	MHP1-M5H-2/2G-M3-PI
	24 V DC	197053	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		197188	MHP1-AS-2-M3
Manifold block for	2 valves	197196	MHP1-P2-2
	4 valves	197197	MHP1-P4-2
	6 valves	197198	MHP1-P6-2
	8 valves	197200	MHP1-P8-2
	10 valves	197201	MHP1-P10-2
Valves with plug connection underneath			
Individual sub-base		197190	MHP1-AS-2-M3-PI
Manifold block with plug bases for	2 valves	197217	MHP1-P2-2-PI
	4 valves	197218	MHP1-P4-2-PI
	6 valves	197219	MHP1-P6-2-PI
	8 valves	197220	MHP1-P8-2-PI
	10 valves	197221	MHP1-P10-2-PI

 Note
Manifold blocks with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered using the MH1 modular product system.


Solenoid valves MHP1, miniature

Technical data – Semi in-line valve

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	197009	MHP1-M4H-3/2G-M3-HC	197027	MHP1-M4H-3/2O-M3-HC
	12 V DC	197010	MHP1-M5H-3/2G-M3-HC	197028	MHP1-M5H-3/2O-M3-HC
	24 V DC	197011	MHP1-M1H-3/2G-M3-HC	197029	MHP1-M1H-3/2O-M3-HC
Plug connection on top	5 V DC	197012	MHP1-M4H-3/2G-M3-TC	197030	MHP1-M4H-3/2O-M3-TC
	12 V DC	197013	MHP1-M5H-3/2G-M3-TC	197031	MHP1-M5H-3/2O-M3-TC
	24 V DC	197014	MHP1-M1H-3/2G-M3-TC	197032	MHP1-M1H-3/2O-M3-TC
Plug connection underneath	5 V DC	197015	MHP1-M4H-3/2G-M3-PI	197033	MHP1-M4H-3/2O-M3-PI
	12 V DC	197016	MHP1-M5H-3/2G-M3-PI	197034	MHP1-M5H-3/2O-M3-PI
	24 V DC	197017	MHP1-M1H-3/2G-M3-PI	197035	MHP1-M1H-3/2O-M3-PI

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

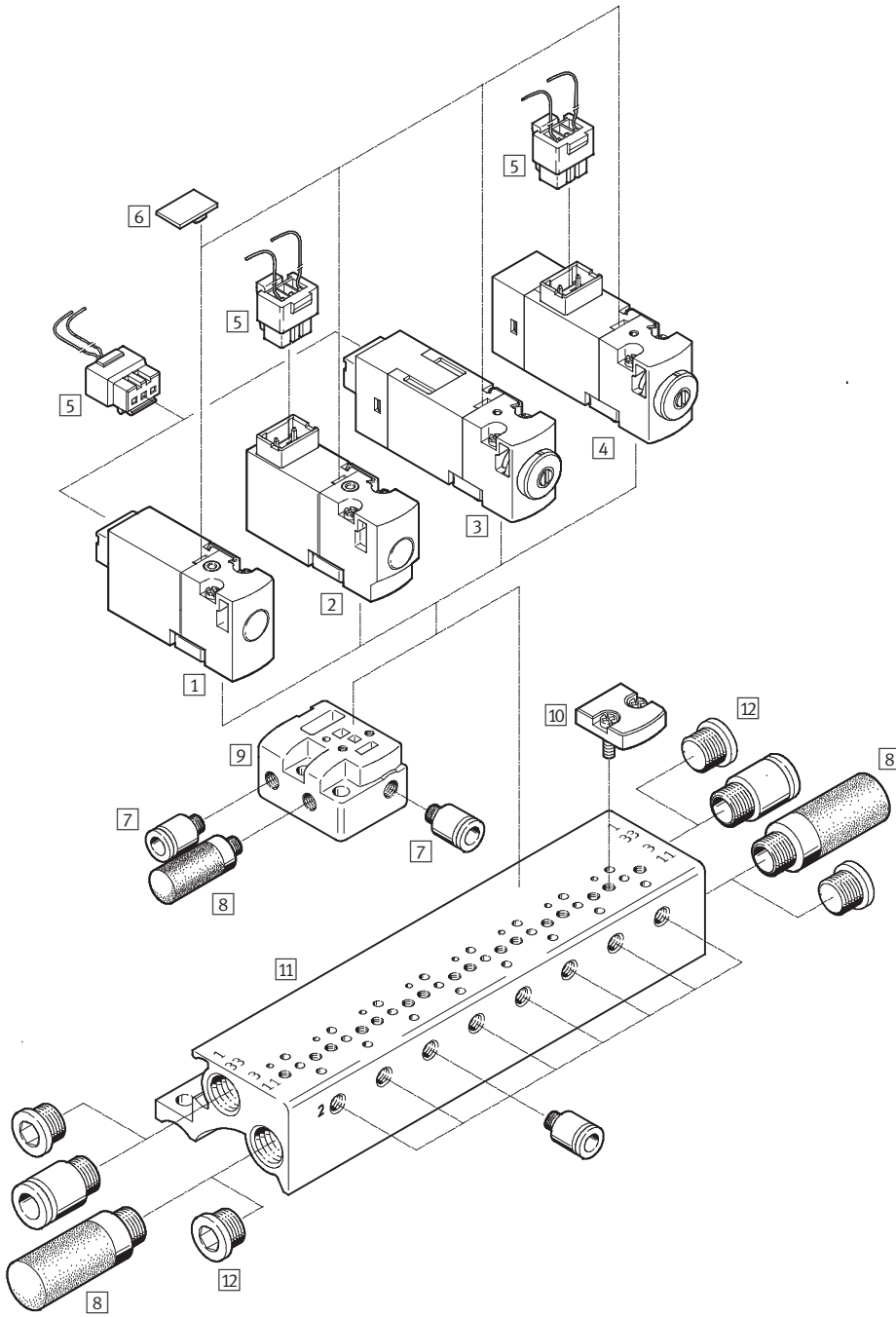
Ordering data – Product-specific accessories			
Designation		Part No.	Type
Valves with plug connection at rear or on top			
Individual sub-base		197184	MHP1-AS-3-M3
Manifold block for	2 valves	197191	MHP1-PR2-3
	4 valves	197192	MHP1-PR4-3
	6 valves	197193	MHP1-PR6-3
	8 valves	197194	MHP1-PR8-3
	10 valves	197195	MHP1-PR10-3
Valves with plug connection underneath			
Individual sub-base		197186	MHP1-AS-3-M3-PI
Manifold block with plug bases for	2 valves	197212	MHP1-PR2-3-PI
	4 valves	197213	MHP1-PR4-3-PI
	6 valves	197214	MHP1-PR6-3-PI
	8 valves	197215	MHP1-PR8-3-PI
	10 valves	197216	MHP1-PR10-3-PI
Manifold block with plug bases and electrical multi-pin plug for	4 valves	197233	MHP1-PR4-3-PI-D9
	6 valves	197234	MHP1-PR6-3-PI-D9
	8 valves	197235	MHP1-PR8-3-PI-D9
	10 valves	197236	MHP1-PR10-3-PI-D25
Manifold block for mounting on PCB for	2 valves	197242	MHP1-PR2-3-PI-PCB
	4 valves	197243	MHP1-PR4-3-PI-PCB
	6 valves	197244	MHP1-PR6-3-PI-PCB
	8 valves	197245	MHP1-PR8-3-PI-PCB
	10 valves	197246	MHP1-PR10-3-PI-PCB

 Note
Manifold blocks with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered using the MH1 modular product system.

Solenoid valves MHA1, miniature

Peripherals overview – Sub-base valve, valve manifold

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

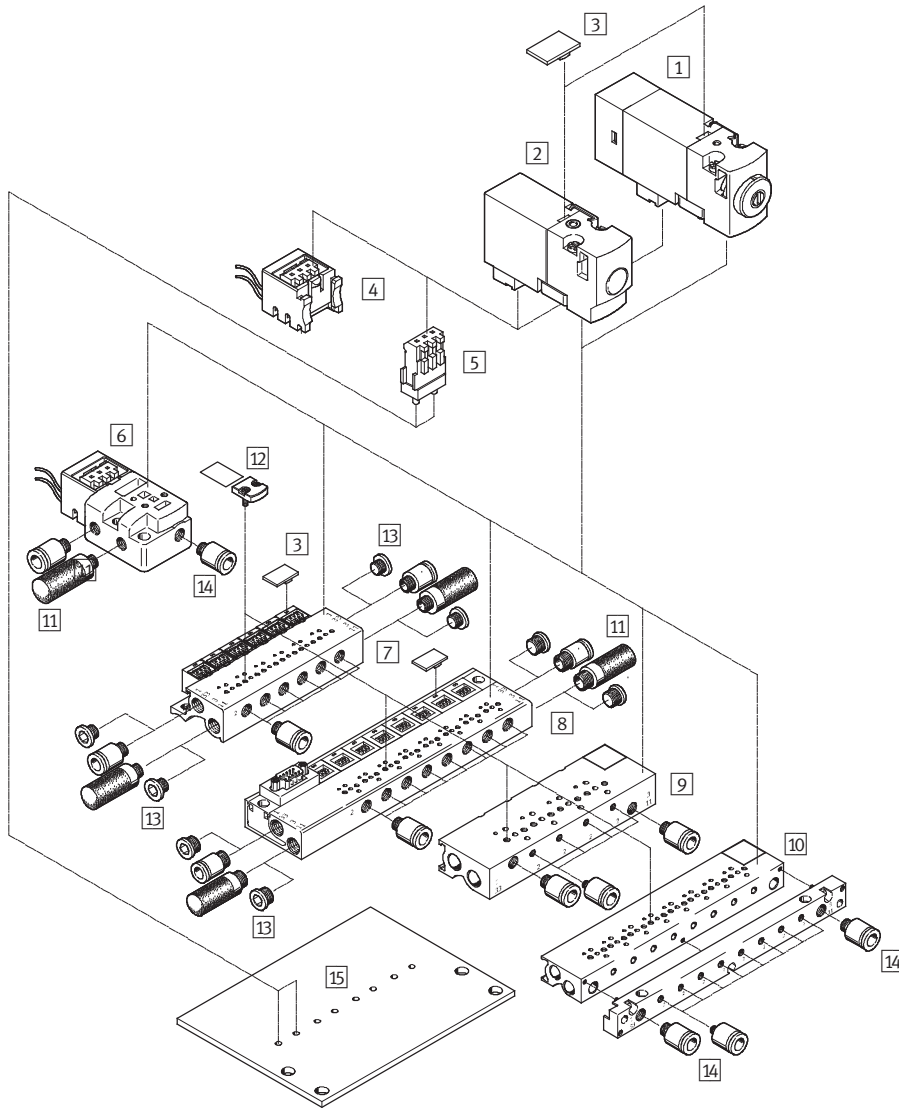


Accessories				
		→ Page/ Internet		→ Page/ Internet
1	Sub-base valve MHA1-...-HC	19	7	Push-in fittings QS/QSM
2	Sub-base valve MHA1-...-TC	19	8	Silencer UC
3	Sub-base valve MHA1-...-HC with LED	27	9	Individual sub-base MHA1-AS-3-M3
4	Sub-base valve MHA1-...-TC with LED	27	10	Blanking plate MHAP1-BP-3 for sealing vacant positions
5	Plug socket with cable KMH/NEBV-H1G2	35	11	Manifold block MHA1-PR...-3
6	Inscription label MH-BZ-80X	35	12	Blanking plug B

Solenoid valves MHA1, miniature

Peripherals overview – Sub-base valve, valve terminal

Plug connection underneath ...-PI

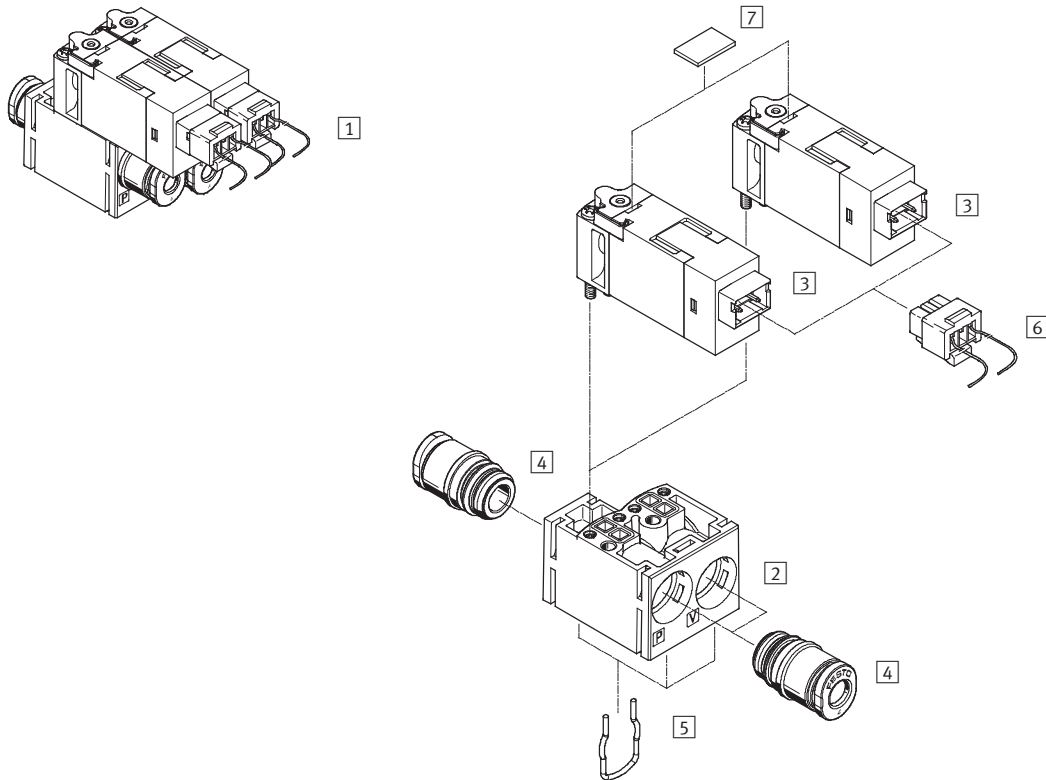


Accessories		→ Page/ Internet	→ Page/ Internet
1	Sub-base valve MHA1-...-PI with LED	27	
2	Sub-base valve MHA1-...-PI	19	
3	Inscription label MH-BZ-80X	35	
4	Plug base MHAP-PI	35	
5	Soldering base PCBC-A	35	
6	Individual sub-base MHA1-AS-3-M3-PI with plug base	21	
7	Manifold block MHA1-PR...-3-M3-PI with plug bases	21	
8	Manifold block MHA1-PR...-3-M3-PI-D with plug bases and electrical multi-pin plug	23	
9	Manifold block MHA1-PR...-3-M3-PI-PCB for mounting on PCB		24
10	Manifold block MHA1-PR...-3-M3-PI-PCBM for mounting on PCB with pneumatic multiple connector plate		24
11	Silencer UC		uc
12	Blanking plate MHAP1 for sealing vacant positions		35
13	Blanking plug B		35
14	Push-in fittings QS		qs
15	PCB (user-specific)		24

Solenoid valves MHP1, miniature

Peripherals overview – 2x2/2 sub-base valve with LED

2x2/2 sub-base valve with LED



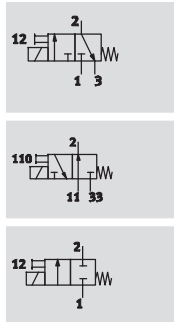
Accessories

	→ Page/ Internet		→ Page/ Internet
1	Solenoid valve MHA1-2x2/2G-1,5	33	
2	Sub-base	-	
3	Solenoid valve MHA1-M1LCH-2/2G-1.5-HC	33	
4	Push-in cartridge	-	
		5	Clip
		6	Plug socket with cable KMH/NEBV-H1G2
		7	Inscription label MH-BZ-80x

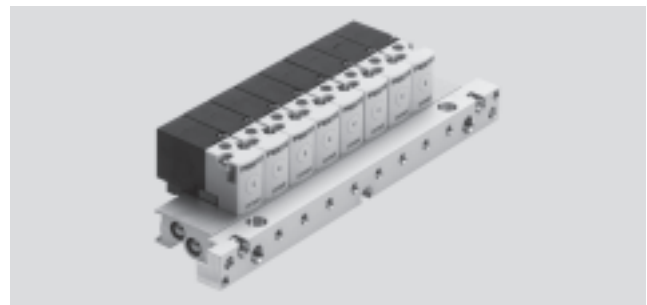
Solenoid valves MHA1, miniature

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-way, single solenoid		3/2-way, single solenoid	
Constructional design		Poppet valve with spring return			
Sealing principle		Soft			
Actuation type		Electric			
Reset method		Mechanical spring			
Type of pilot control		Direct			
Direction of flow		Non-reversible			
Exhaust function		-		With flow control	
Manual override		Non-detenting			
Type of mounting		On sub-base via through-holes			
Mounting position		Any			
Nominal size		[mm]	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 assembly	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-way, single solenoid		3/2-way, single solenoid	
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
		Vacuum, grade of filtration 40 µm			
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 assembly	[°C]	-5 ... +40		
Temperature of medium	Individual mounting	[°C]	-5 ... +50		
Temperature of medium	Manifold assembly	[°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 as per Festo standard 940 070

Components subject to moderate corrosion stress. 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.

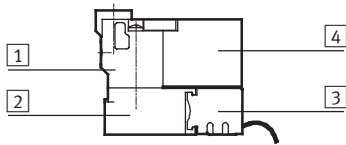
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Electrical data		
Valve function		2/2-way, single solenoid 3/2-way, 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/NEBV-H1G2		IP40
With plug base MHAP-PI		
With soldering base PCBC-A		
With Sub-D connector plug		

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

Materials



1	Housing	Polyphenylene sulphide
2	Sub-base	Aluminium
3	Plug base	Polyamide
4	Coil housing	Polyamide
-	Seals	Fluoro elastomer, nitrile rubber, hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

Dimensions Download CAD data → www.festo.com

Plug connection on top

Plug connection at rear

Plug connection underneath

1 Plug socket KMH/NEBV-H1G2
 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, port 3/11 is not used. If used as a 2/2-way valve, normally open, port 1/33 is not used.

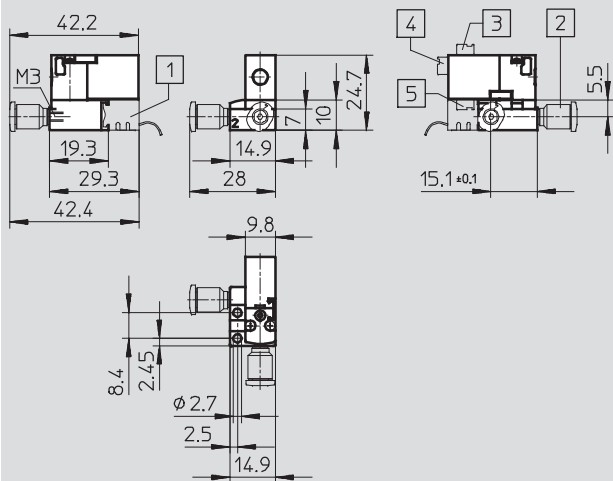
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Dimensions – 2/2-way valve

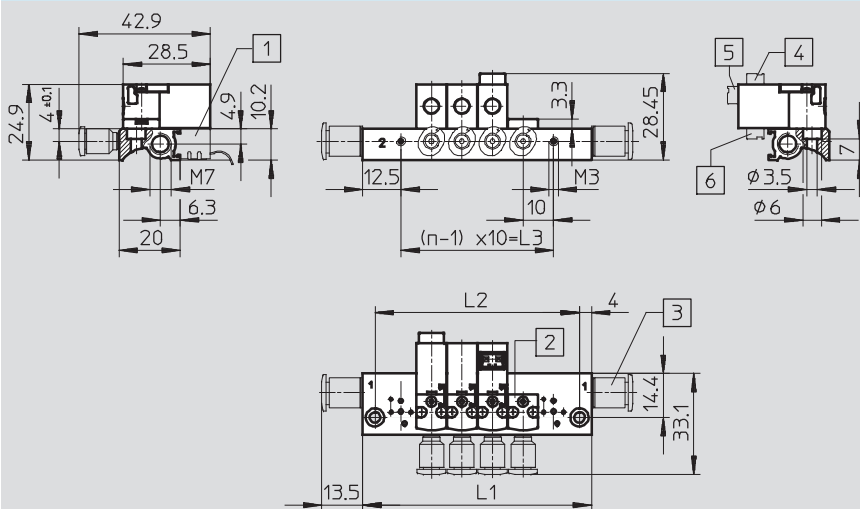
Download CAD data → www.festo.com

Individual sub-base



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

Manifold assembly



- 1 Plug base 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

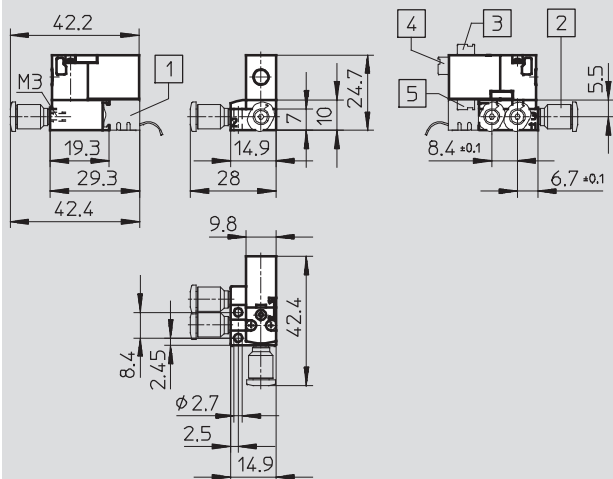
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Dimensions – 3/2-way valve

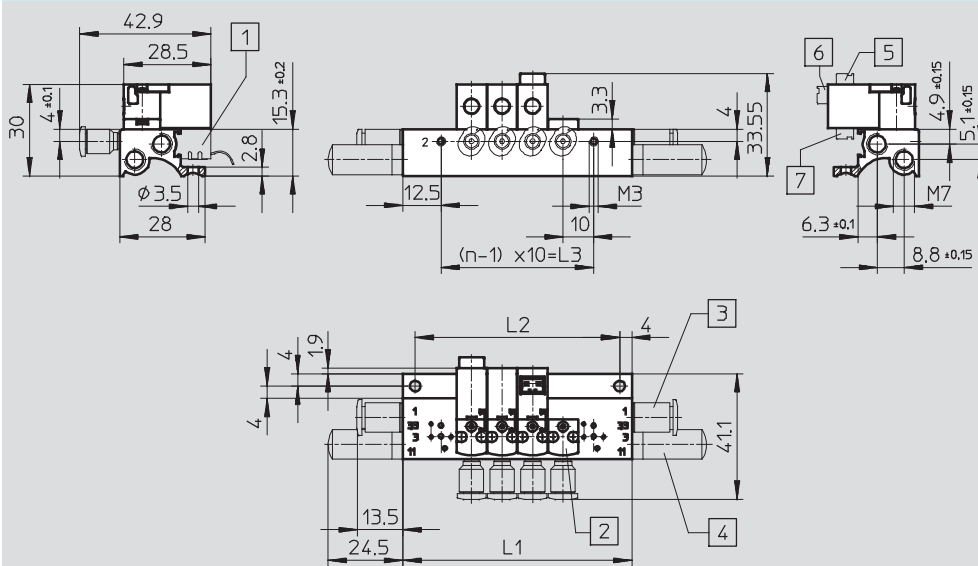
Download CAD data → www.festo.com

Individual sub-base



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

Manifold assembly



- 1 Plug base 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

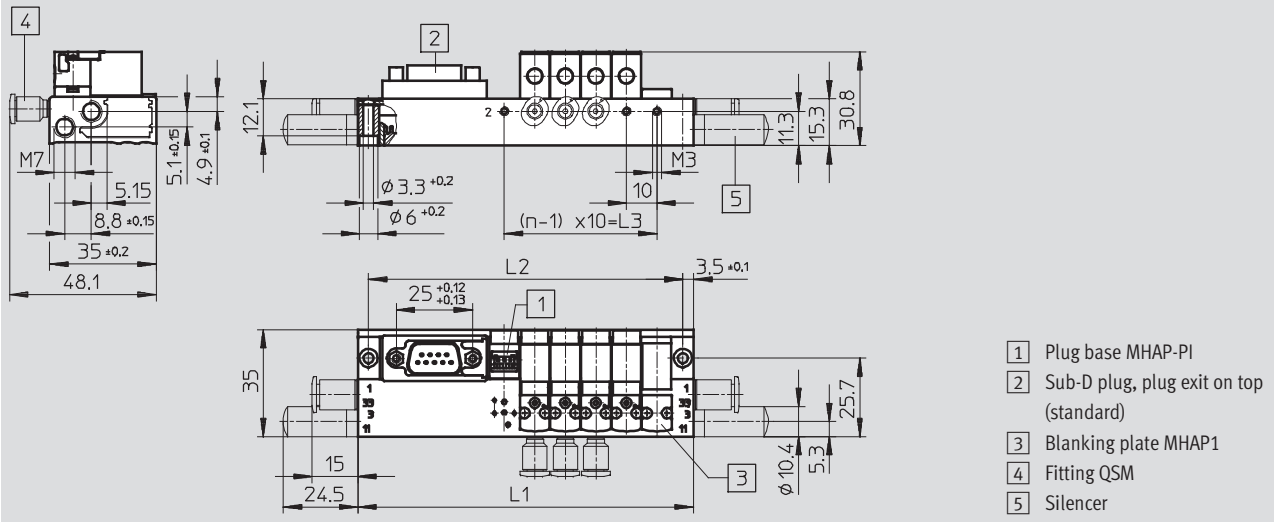
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Dimensions – 3/2-way valve

Download CAD data → www.festo.com

Manifold assembly with electrical multi-pin plug

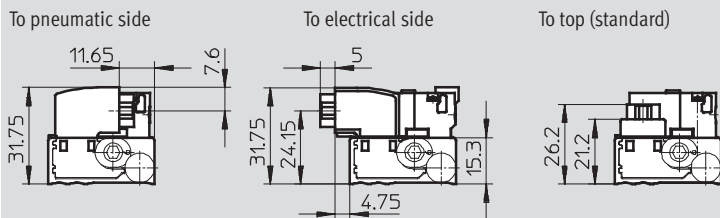


Valve positions n	L1 ±0.15	L2 ±0.1	L3
2	70	63	10
4	90	83	30
6	110	103	50
8	130	123	70

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 plug – Plug directions



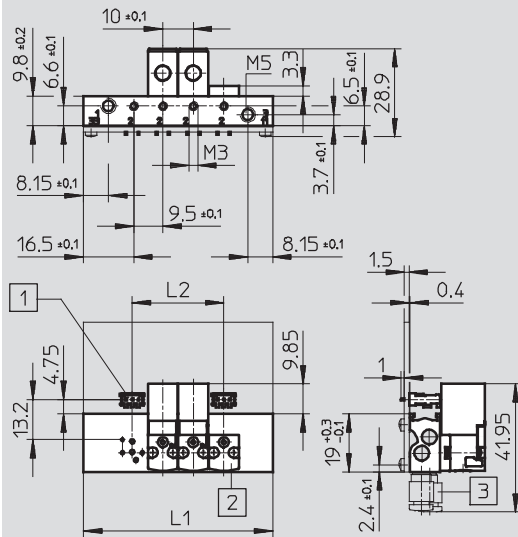
Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Dimensions – 3/2-way valve

Download CAD data → www.festo.com

Manifold assembly on PCB



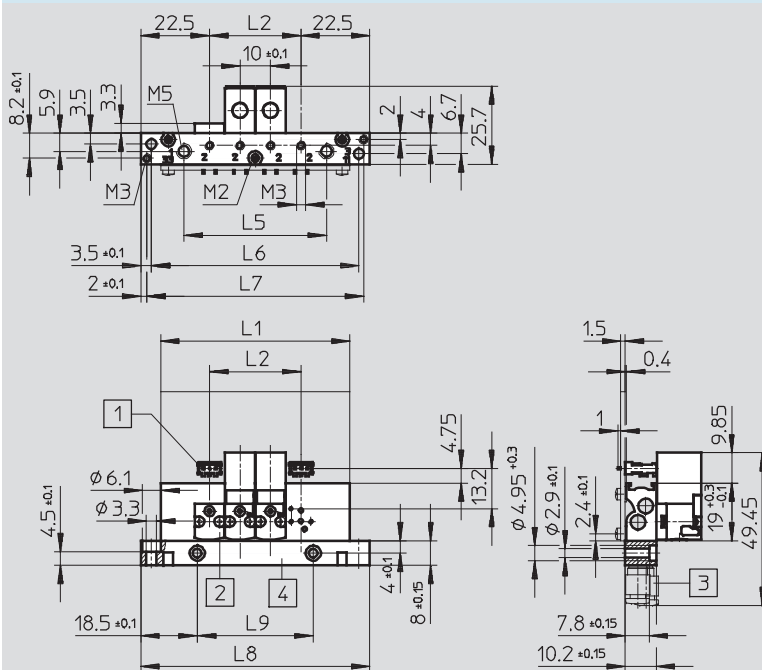
- 1 Soldering base PCBC-A
- 2 Blanking plate MHAP1
- 3 Fitting QSM

-  - Note

The PCB is not included in the scope of delivery.

Hole pattern on PCB → 25

Manifold assembly with pneumatic multiple connector plate on PCB



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

-  - Note

The PCB is not included in the scope of delivery.

Hole pattern on PCB → 25

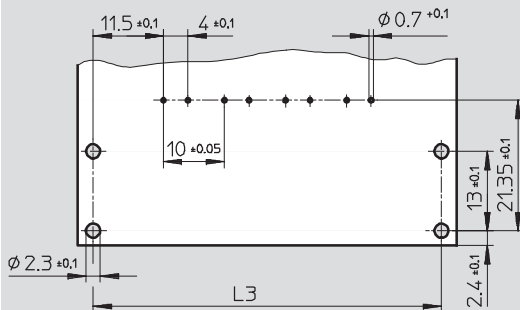
Valve positions n	L1 ±0.15	L2	L3 ±0.1	L5 ±0.15	L6	L7 ±0.1	L8 ±0.2	L9 ±0.1
2	42	10	37	-	-	-	-	-
4	62	30	57	46.7	68	71	75	38
6	82	50	77	66.7	88	91	95	58
8	102	70	97	86.7	108	111	115	78
10	122	90	117	106.7	128	131	135	98

Solenoid valves MHA1, miniature

Technical data – Sub-base valve

Dimensions

Hole pattern on PCB



Note

The PCB 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	197036	MHA1-M4H-2/2G-0,9-HC
	12 V DC	197037	MHA1-M5H-2/2G-0,9-HC
	24 V DC	197038	MHA1-M1H-2/2G-0,9-HC
Plug connection on top	5 V DC	197039	MHA1-M4H-2/2G-0,9-TC
	12 V DC	197040	MHA1-M5H-2/2G-0,9-TC
	24 V DC	197041	MHA1-M1H-2/2G-0,9-TC
Plug connection underneath	5 V DC	197042	MHA1-M4H-2/2G-0,9-PI
	12 V DC	197043	MHA1-M5H-2/2G-0,9-PI
	24 V DC	197044	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	197187	MHA1-AS-2-M3
Manifold block for	2 valves	197207 MHA1-P2-2-M3
	4 valves	197208 MHA1-P4-2-M3
	6 valves	197209 MHA1-P6-2-M3
	8 valves	197210 MHA1-P8-2-M3
	10 valves	197211 MHA1-P10-2-M3
Valves with plug connection underneath		
Individual sub-base	197189	MHA1-AS-2-M3-PI
Manifold block with plug bases for	2 valves	197227 MHA1-P2-2-M3-PI
	4 valves	197228 MHA1-P4-2-M3-PI
	6 valves	197229 MHA1-P6-2-M3-PI
	8 valves	197230 MHA1-P8-2-M3-PI
	10 valves	197231 MHA1-P10-2-M3-PI




Note

Manifold blocks with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered using the MH1 modular product system.


Solenoid valves MHA1, miniature

Technical data – Sub-base valve

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	197000	MHA1-M4H-3/2G-0,6-HC	197018	MHA1-M4H-3/2O-0,6-HC
	12 V DC	197001	MHA1-M5H-3/2G-0,6-HC	197019	MHA1-M5H-3/2O-0,6-HC
	24 V DC	197002	MHA1-M1H-3/2G-0,6-HC	197020	MHA1-M1H-3/2O-0,6-HC
Plug connection on top	5 V DC	197003	MHA1-M4H-3/2G-0,6-TC	197021	MHA1-M4H-3/2O-0,6-TC
	12 V DC	197004	MHA1-M5H-3/2G-0,6-TC	197022	MHA1-M5H-3/2O-0,6-TC
	24 V DC	197005	MHA1-M1H-3/2G-0,6-TC	197023	MHA1-M1H-3/2O-0,6-TC
Plug connection underneath	5 V DC	197006	MHA1-M4H-3/2G-0,6-PI	197024	MHA1-M4H-3/2O-0,6-PI
	12 V DC	197007	MHA1-M5H-3/2G-0,6-PI	197025	MHA1-M5H-3/2O-0,6-PI
	24 V DC	197008	MHA1-M1H-3/2G-0,6-PI	197026	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		197183	MHA1-AS-3-M3
Manifold block for	2 valves	197202	MHA1-PR2-3-M3
	4 valves	197203	MHA1-PR4-3-M3
	6 valves	197204	MHA1-PR6-3-M3
	8 valves	197205	MHA1-PR8-3-M3
	10 valves	197206	MHA1-PR10-3-M3
Valves with plug connection underneath			
Individual sub-base		197185	MHA1-AS-3-M3-PI
Manifold block with plug bases for	2 valves	197222	MHA1-PR2-3-M3-PI
	4 valves	197223	MHA1-PR4-3-M3-PI
	6 valves	197224	MHA1-PR6-3-M3-PI
	8 valves	197225	MHA1-PR8-3-M3-PI
	10 valves	197226	MHA1-PR10-3-M3-PI
Manifold block with plug bases and electrical multi-pin plug for	4 valves	197238	MHA1-PR4-3-M3-PI-D9
	6 valves	197239	MHA1-PR6-3-M3-PI-D9
	8 valves	197240	MHA1-PR8-3-M3-PI-D9
	10 valves	197241	MHA1-PR10-3-M3-PI-D25
Manifold block for mounting on PCB for	2 valves	197247	MHA1-PR2-3-M3-PI-PCB
	4 valves	197248	MHA1-PR4-3-M3-PI-PCB
	6 valves	197249	MHA1-PR6-3-M3-PI-PCB
	8 valves	197250	MHA1-PR8-3-M3-PI-PCB
	10 valves	197251	MHA1-PR10-3-M3-PI-PCB
Manifold block for mounting on PCB with pneumatic multiple connector plate for	4 valves	197253	MHA1-PR4-3-PI-PCBM
	6 valves	197254	MHA1-PR6-3-PI-PCBM
	8 valves	197255	MHA1-PR8-3-PI-PCBM
	10 valves	197256	MHA1-PR10-3-PI-PCBM

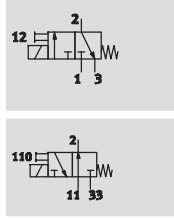
 Note
Manifold blocks with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered using the MH1 modular product system.




Solenoid valves MHA1, miniature

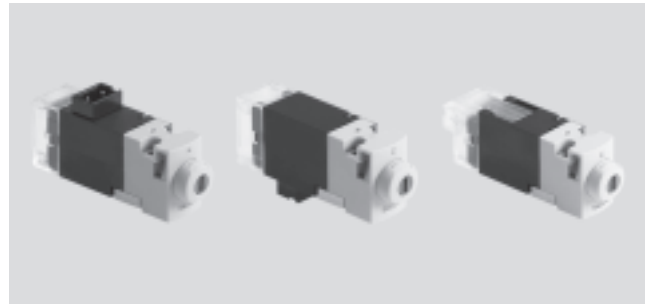
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Technical data – Sub-base valve with LED

Function



-  Voltage
24 V DC
-  Pressure
0 ... +8 bar
-  Temperature range
-5 ... +50 °C



General technical data			
Valve function		3/2-way, single solenoid	
Constructional design		Poppet valve with spring return	
Sealing principle		Soft	
Actuation type		Electric	
Reset method		Mechanical spring	
Type of pilot control		Direct	
Direction of flow		Non-reversible	
Exhaust function		With flow control	
Manual override		Non-detenting/detenting	
Signal status display		LED	
Type of mounting		On sub-base via through-holes	
Mounting position		Any	
Nominal size		[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 assembly	1, 33	M7
		2	M3
		3, 11	M7
Product weight		[g]	11

Operating and environmental conditions			
Valve function		3/2-way, single solenoid	
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Operating pressure range	Normally closed	[bar]	0 ... 8 ¹⁾
	Normally open	[bar]	0 ... 6 ¹⁾
Ambient temperature	Individual mounting	[°C]	-5 ... +50
	Manifold assembly	[°C]	-5 ... +40
Temperature of medium	Individual mounting	[°C]	-5 ... +50
	Manifold assembly	[°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 as per Festo standard 940 070

Components subject to moderate corrosion stress. 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

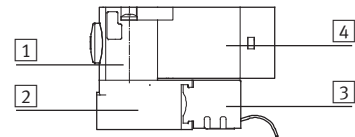
Technical data – Sub-base valve with LED



Electrical data		
Valve function		3/2-way, 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/NEBV-H1G2		IP40
With plug base MHAP-PI		
With soldering base PCBC-A		
With Sub-D connector plug		

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

Materials



1	Housing	Polyphenylene sulphide
2	Sub-base	Aluminium
3	Plug base	Polyamide
4	Coil housing	Polyamide
-	Seals	Fluoro elastomer, nitrile rubber, hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

Dimensions

Download CAD data → www.festo.com

Plug connection on top

Plug connection at rear

Plug connection underneath

1 Plug socket KMH/NEBV-H1G2
 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, port 3/11 is not used.
 If used as a 2/2-way valve, normally open, port 1/33 is not used.

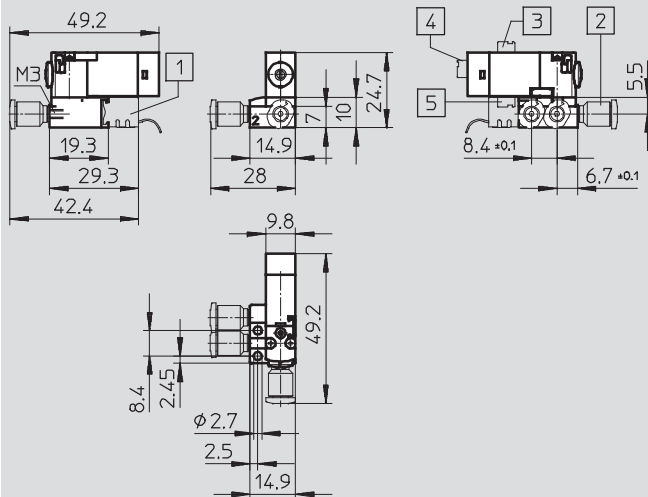
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

Dimensions – 3/2-way valve

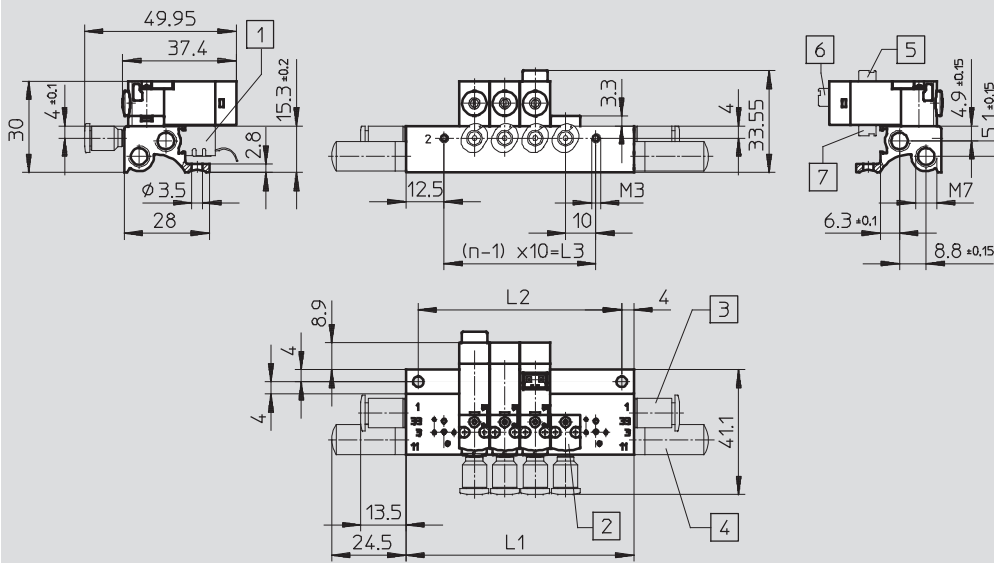
Download CAD data → www.festo.com

Individual sub-base



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

Manifold assembly



- 1 Plug base 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

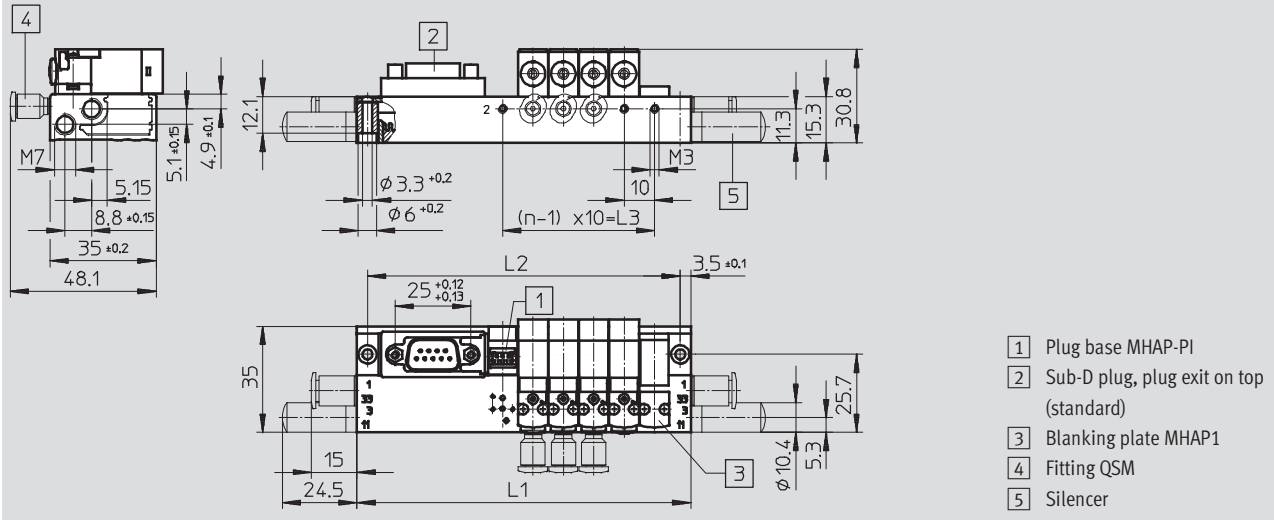
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

Dimensions – 3/2-way valve

Download CAD data → www.festo.com

Manifold assembly with electrical multi-pin plug

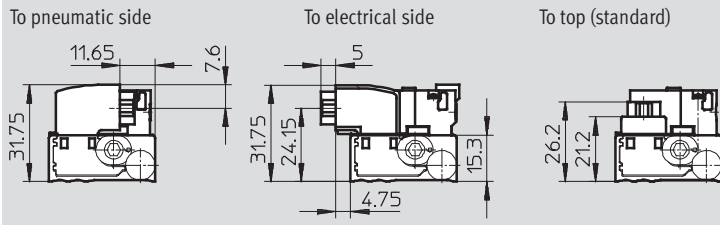


Valve positions n	L1 ±0.15	L2 ±0.1	L3
2	70	63	10
4	90	83	30
6	110	103	50
8	130	123	70

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 plug – Plug directions



Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

Dimensions – 3/2-way valve Download CAD data → www.festo.com

Manifold assembly on PCB

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

- - Note

The PCB is not included in the scope of delivery.

Hole pattern on PCB → 32

Manifold assembly with pneumatic multiple connector plate on PCB

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

- - Note

The PCB is not included in the scope of delivery.

Hole pattern on PCB → 32

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

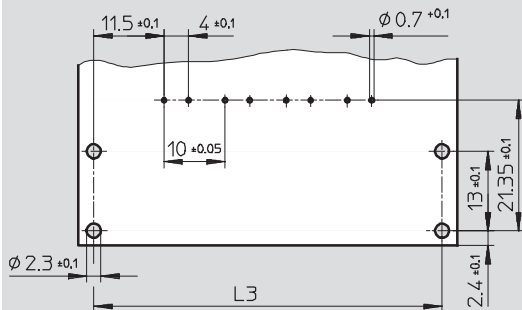
Solenoid valves MHA1, miniature

Technical data – Sub-base valve with LED

FESTO

Dimensions

Hole pattern on PCB



-  - Note

The PCB 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	540443	MHA1-M1LH-3/2G-0,6-HC	540440	MHA1-M1LH-3/2O-0,6-HC
Plug connection on top	24 V DC	540444	MHA1-M1LH-3/2G-0,6-TC	540441	MHA1-M1LH-3/2O-0,6-TC
Plug connection underneath	24 V DC	540445	MHA1-M1LH-3/2G-0,6-PI	540442	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	197183	MHA1-AS-3-M3
Manifold block for	2 valves	197202 MHA1-PR2-3-M3
	4 valves	197203 MHA1-PR4-3-M3
	6 valves	197204 MHA1-PR6-3-M3
	8 valves	197205 MHA1-PR8-3-M3
	10 valves	197206 MHA1-PR10-3-M3
Valves with plug connection underneath		
Individual sub-base	197185	MHA1-AS-3-M3-PI
Manifold block with plug bases for	2 valves	197222 MHA1-PR2-3-M3-PI
	4 valves	197223 MHA1-PR4-3-M3-PI
	6 valves	197224 MHA1-PR6-3-M3-PI
	8 valves	197225 MHA1-PR8-3-M3-PI
	10 valves	197226 MHA1-PR10-3-M3-PI
Manifold block with plug bases and electrical multi-pin plug for	4 valves	197238 MHA1-PR4-3-M3-PI-D9
	6 valves	197239 MHA1-PR6-3-M3-PI-D9
	8 valves	197240 MHA1-PR8-3-M3-PI-D9
Manifold block for mounting on PCB for	10 valves	197241 MHA1-PR10-3-M3-PI-D25
	2 valves	197247 MHA1-PR2-3-M3-PI-PCB
	4 valves	197248 MHA1-PR4-3-M3-PI-PCB
	6 valves	197249 MHA1-PR6-3-M3-PI-PCB
Manifold block for mounting on PCB with pneumatic multiple connector plate for	8 valves	197250 MHA1-PR8-3-M3-PI-PCB
	10 valves	197251 MHA1-PR10-3-M3-PI-PCB
	4 valves	197253 MHA1-PR4-3-PI-PCBM
	6 valves	197254 MHA1-PR6-3-PI-PCBM
	8 valves	197255 MHA1-PR8-3-PI-PCBM
	10 valves	197256 MHA1-PR10-3-PI-PCBM

-  - Note

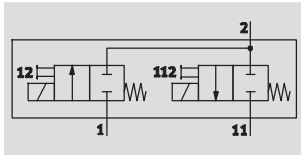
Manifold blocks with an uneven number of valves and for 11 ... 24 valves as well as further variants can be configured and ordered using the MH1 modular product system.




Solenoid valves MHA1, miniature

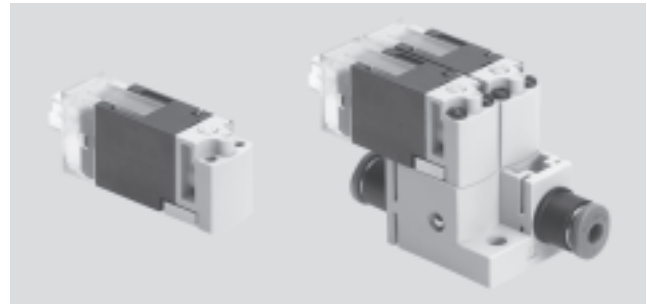
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Technical data – 2x2/2-way sub-base valve with LED

Function



-  Voltage
24 V DC
-  Pressure
– 0.95 ... +1.5 bar
-  Temperature range
–5 ... +50 °C



General technical data			
Valve function	2/2-way, single solenoid	2x2/2-way, single solenoid	
Constructional design	Poppet valve with spring return		
Sealing principle	Soft		
Actuation type	Electric		
Reset method	Mechanical spring		
Type of pilot control	Direct		
Direction of flow	Non-reversible		
Exhaust function	No flow control		
Manual override	Non-detenting		
Signal status display	LED		
Type of mounting	On sub-base via through-holes	Via through-holes	
Mounting position	Any		
Nominal size	[mm]	1.5	
Standard nominal flow rate	[l/min]	30	
Width	[mm]	10	20
Grid dimension	[mm]	10	
Pneumatic connection	1	–	QS3, QS4
	11	–	QS3, QS4
	2	–	QS3, QS4

Operating and environmental conditions			
Valve function	2/2-way, single solenoid	2x2/2-way, single solenoid	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm		
Operating pressure	Port 1	[bar]	0 ... 1.5
	Port 11	[bar]	– 0.95 ... 0
Ambient temperature	[°C]	–5 ... +50	
Temperature of medium	[°C]	–5 ... +50	
Storage temperature	[°C]	–20 ... +60	
Corrosion resistance class CRC	2 ¹⁾		

1) Corrosion resistance class 2 as per Festo standard 940 070
Components subject to moderate corrosion stress. 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.

Electrical data			
Valve function	2/2-way, single solenoid	2x2/2-way, single solenoid	
Operating voltage	[V DC]	24 ±10%	
Type of connection	Plug connection		
Power consumption	[W]	3, following current reduction 0.7	
Max. length of connecting cable	[m]	30	
Protection class to EN 60529			
With plug socket KMH/NEBV-H1G2	IP40		

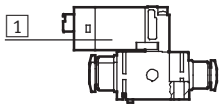
Solenoid valves MHA1, miniature



Technical data – 2x2/2-way sub-base valve with LED

Response times and switching frequencies		
Valve function	2/2-way, single solenoid	2x2/2-way, single solenoid
Response time on/off	[ms]	6/2
Maximum switching frequency	[Hz]	10

Materials

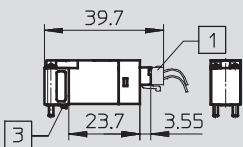


1	Housing	Reinforced PA, reinforced PPS
-	Screws	Steel
-	Seals	HNBR, NBR
	Note on materials	Free of copper and PTFE RoHS-compliant

Dimensions

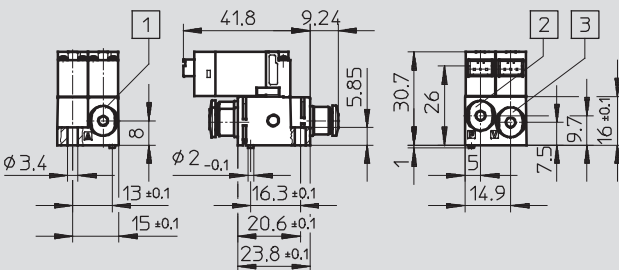
Download CAD data → www.festo.com

2/2-way valve



- 1 Plug socket KMH/NEBV-H1G2
- 3 Coding pin

2x2/2-way valve



- 1 Push-in fitting 2
- 2 Push-in fitting 1
- 3 Push-in fitting 11

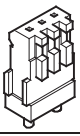

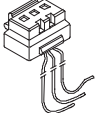
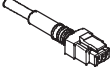
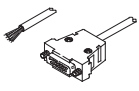





Ordering data

Circuit symbol	Normal position	Push-in fitting for 1/11/2 [mm]	Weight [g]	Part No.	Type
2x2/2-way valve					
	2x closed	4/4/3	30.6	560372	MHA1-2X2/2G-1,5-4-4-3
		4/4/4	30.6	566175	MHA1-2X2/2G-1,5-4-4-4
		3/3/3	30.6	562051	MHA1-2X2/2G-1,5-3-3-3
2/2-way valve					
	Closed	-	10	557864	MHA1-M1LCH-2/2G-1.5-HC

Solenoid valves MH1, miniature

Accessories

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Ordering data			Part No.	Type
Soldering base				
	For plug-in connection, 3-pin	10 pieces	197261	PCBC-A-10
		100 pieces	197262	PCBC-A-100
Plug socket with cable				
	Electrical plug base for plug-in connection, for 1 valve, with cable	0.5 m	197260	MHAP-PI
	Plug socket with cable for horizontal connection, for 1 valve, 2-wire	0.5 m	197263	KMH-0,5
		1 m	197264	KMH-1
	Plug socket with cable, sheathed for horizontal connection, for 1 valve, 2-wire	0.5 m	566658	NEBV-H1G2-P-0.5-N-LE2
		1 m	566659	NEBV-H1G2-P-1-N-LE2
		2.5 m	566660	NEBV-H1G2-P-2.5-N-LE2
		5 m	566661	NEBV-H1G2-P-5-N-LE2
	Socket, 9-pin, Sub-D, open cable end, for up to 8 valves, IP40, cable sheath PVC	2.5 m	531184	KMP6-09P-8-2,5
		5 m	531185	KMP6-09P-8-5
		10 m	531186	KMP6-09P-8-10
	Socket, 25-pin, Sub-D, open cable end, for up to 12 valves, IP40, cable sheath PVC	2.5 m	530049	KMP6-25P-12-2,5
		5 m	530050	KMP6-25P-12-5
		10 m	530051	KMP6-25P-12-10
	Socket, 25-pin, Sub-D, open cable end, for up to 24 valves, IP40, cable sheath PVC	2.5 m	530046	KMP6-25P-20-2,5
		5 m	530047	KMP6-25P-20-5
		10 m	530048	KMP6-25P-20-10
Blanking plug				
	For M5 thread	10 pieces	3843	B-M5
	For M7 thread	10 pieces	174309	B-M7
Inscription label				
	For solenoid valve	80 labels in frame	197259	MH-BZ-80X
Blanking plate				
	For manifold block	Plug connection	197257	MHAP1-BP-3
		Plug base	197258	MHAP1-BP-3-PI
Silencer				
			→ Internet: uc	
Push-in fittings				
			→ Internet: quick star	