

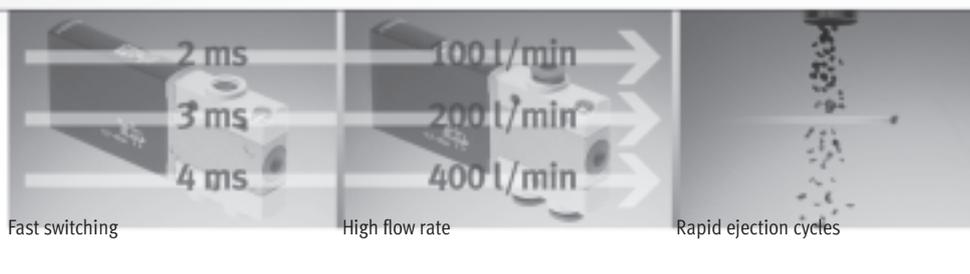


- Directly actuated valves
- Rapid response times down to 2 ms
- Standard nominal flow rate
100 ... 400 l/min
- Compact design
- Flexible construction of valve manifolds
- Free of copper and PTFE

Fast-switching valves from Festo: More than just fast switching

The fast-switching professionals with response times down to 2 milliseconds

Speed, dynamic response and precision are in demand more than ever in modern automation. The solution lies in pneumatic components that offer shorter cycle times in return for comparatively low investment costs for the components. Maximum process reliability, robustness and service life are guaranteed.



High speed in production

Fast-switching valves are a true technological gem when it comes to high-speed applications. With response times ≤ 2 ms and a repetition accuracy ≤ 0.2 ms, they represent the pinnacle of what is technologically achievable – even in 24-hour continuous operation with over 500 million cycles.

Fast-switching valves are easily retrofitted into existing systems or can be used as a pacesetter for newly designed systems. They have a compact design that provides high component density. Indispensable for sorting parts by means of air ejector, in flap control systems, for gluing, dosing, packaging and, of course, suitable for vacuum applications as well.

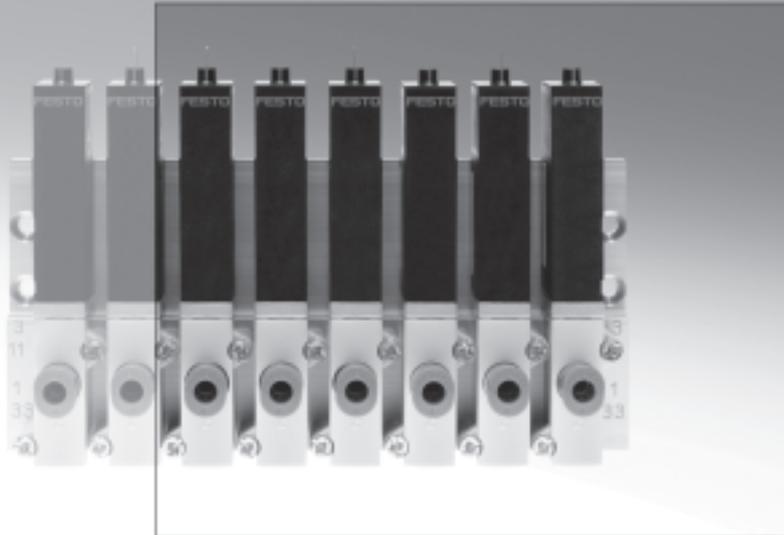
Faster switching

The extremely short response times facilitate short cycle times. Extremely precise switching makes it possible to control process sequences accurately.

High output and very good machine utilisation are also guaranteed. Good repetition accuracy of response times ensures consistent processes, improves process and part quality and reduces rejects and rework.

Faster installation

Thanks to the various connection options such as threads or integrated QS push-in connectors and the different mounting options for individual valves or the valve manifold, the installation can be optimised to suit local conditions and space requirements can be reduced to a minimum. Fast-switching valves can be used directly in the application without additional protective measures. As a result, very short pneumatic lines guarantee short signal paths and fast response times.



- Variants with and without fast-switching electronics as 3/2-way and 5/2-way valves
- Shortest possible response times with maximum repetition accuracy and outstanding service life
- Directly actuated poppet valve with IP65 protection

Advantages for design

- Very high cycle rates
- Extremely short cycle times
- Maximum repetition accuracy
- Vacuum-compatible thanks to directly actuated poppet valve
- Flexible design principle
- Direct actuation via standard PLC possible
- Direct mounting in the application with IP65 protection

Advantages for purchasing

- Everything from a single source
- Low ordering costs
- No additional mounting components
- No costs for additional power outputs
- Use of standard PLCs
- Increased system productivity

Advantages for installation

- Easy installation
- Direct pneumatic connection via integrated QS connections
- Reduced assembly costs with pre-assembled cables
- No additional protection required thanks to IP65



Fast and precise – sturdy and economical

High performance, process stability and extremely simple handling

MH fast-switching valves increase cycle rates and improve process and part quality with their excellent repetition accuracy.



Built-in fast-switching electronics

- All 3/2- and 5/2-way valves are available with built-in fast-switching electronics.
- This enables constant dynamic response independent of temperature or supply voltage fluctuations.
- With Festo plug & work[®], installation is simple, and no additional electronics or pneumatics know-how is necessary.

Optimised equipment and processes

- On-site assembly thanks to IP65 – insensitive to dust and humidity.
- Direct actuation with 24 V DC/1 A – use of PLC standard outputs.
- With an extremely long service life of 500 million cycles, three-layer continuous operation and being maintenance-free, you get optimum efficiency.

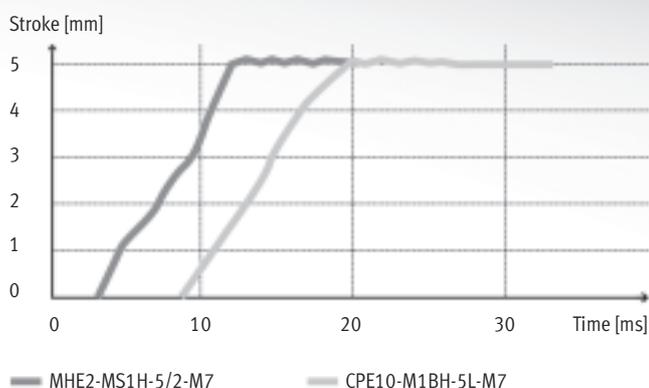
Key features

- Repetition accuracy ≤ 0.2 ms for exact dispensing/bonding, for example.
- Switching time ≤ 2 ms makes for short cycle times and very quick response characteristics.
- 10 mm width enables compact assembly.
- Variably connectable as an individual valve, a semi in-line or manifold mounted variant, facilitating customised installation.
- IP65 protection enables direct mounting during use without requiring additional protective measures.
- Easy installation via direct actuation from the standard PLC with 24 V DC/1 A.

Fast valves and an optimised control loop system – two guarantees for success

To generate speed in pneumatics, the combination of valve and cylinder must be perfectly harmonised. With the right combination, efficiency can be improved by 30%. Cylinders with small diameters and short strokes need fast valves.

Short-stroke cylinder ADN-32-5 – 30% faster with a fast-switching valve



Valve type		CPE10	MH2-5/2
Flow rate	[l/min]	350	100
Valve response time	[ms]	16	1.7
Cycle time	[ms]	20	14
	[%]	100	70
Result			30% faster

Small and fast – a good combination

With a small cylinder volume, particularly in the case of short-stroke cylinders, the response time is crucial. In the example shown here, the combination with a fast-switching valve is 30% faster. In concrete terms, this means that the cylinder actuated using the fast-switching valve is already in the end position before movement of the cylinder in combination with the universal valve even begins.

The result is a significant increase in system efficiency and economy – with a comparable space requirement and weight for both valves, low air consumption and a ten-fold increase in the service life of the fast-switching valve.

Length means losses – Focus on tubing

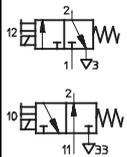
Short tubing is a key factor when it comes to pneumatic efficiency. Reducing the tubing length from 1 m to 0.5 m, for example, improves the max. possible flow rate by 20%. A tube length greater than 2 m results in losses of up to 50%. Use of the next largest tube is recommended in this case.

Small and local – The clever alternative

Short tubes with a small diameter are ideal for installation of valves close to the cylinder. The small and light fast-switching valves are suitable for direct mounting in the application – thanks also to their IP65 protection. The use of smaller and lighter fittings also reduces the weight – and improves the efficiency of moving systems in particular.

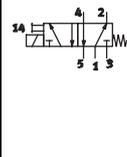
Solenoid valves MH2, fast-switching valves

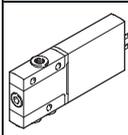
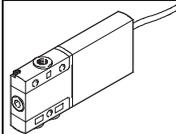
Product range overview

Function	Circuit symbol	Design	Response time [ms]				Operating voltage [V DC]	Free of copper and PTFE	→ Page/Internet
			Off ²⁾	On ²⁾	Off	On			
3/2-way valve ¹⁾	Standard nominal flow rate 100 l/min								
		Individual valve	2	1.7	3.5	7	24	■	10
		Semi in-line valve	2	1.7	3.5	7	24	■	20
Sub-base valve		2	1.7	3.5	7	24	■	32	

1) Can be used as a 2/2 way valve by sealing connection 3 or 33

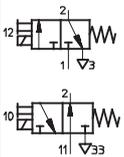
2) With built-in fast-switching electronics

Function	Circuit symbol	Design	Response time [ms]		Operating voltage [V DC]	Free of copper and PTFE	→ Page/Internet
			Off	On			
5/2-way valve	Standard nominal flow rate 100 l/min						
		Individual valve	1.7	1.9	24	■	15
		Semi in-line valve	1.7	1.9	24	■	26
Sub-base valve		1.7	1.9	24	■	38	

Mounting options							
Design	Individual valve		Semi in-line valve		Sub-base valve		
Valve function	3/2-way	5/2-way	3/2-way	5/2-way	3/2-way	5/2-way	
Plug vanes							
	Direct mounting	■	■	-	-	-	-
	Individual sub-base	-	-	■	■	■	■
	Manifold mounting	-	-	■	■	■	■
Moulded-in cable							
	Direct mounting	■	■	-	-	-	-
	Individual sub-base	-	-	-	-	■	■
	Manifold mounting	-	-	-	-	■	■

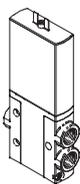
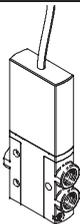
Solenoid valves MH3, fast-switching valves

Product range overview

Function	Circuit symbol	Design	Response time [ms]				Operating voltage [V DC]	Free of copper and PTFE	→ Page/Internet
			Off ²⁾	On ²⁾	Off	On			
3/2-way valve ¹⁾	Standard nominal flow rate 200 l/min								
		Individual valve	2.8	2.3	4.5	8.3	24	■	46
		Semi in-line valve	2.8	2.3	4.5	8.3	24	■	51
Sub-base valve		2.8	2.3	4.5	8.3	24	■	57	

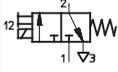
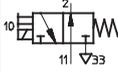
1) Can be used as a 2/2 way valve by sealing connection 3 or 33

2) With built-in fast-switching electronics

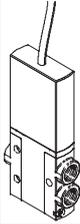
Mounting options				
Design	Individual valve	Semi in-line valve	Sub-base valve	
Plug vanes				
	Direct mounting	■	-	-
	Individual sub-base	-	■	■
	Manifold mounting	-	■	■
Moulded-in cable				
	Direct mounting	■	-	-
	Individual sub-base	-	■	■
	Manifold mounting	-	■	■

Solenoid valves MH4, fast-switching valves

Product range overview

Function	Circuit symbol	Design	Response time [ms]				Operating voltage [V DC]	Free of copper and PTFE	→ Page/Internet
			Off ²⁾	On ²⁾	Off	On			
3/2-way valve ¹⁾	Standard nominal flow rate 400 l/min								
		Individual valve	3.5	3.5	5	10.5	24	■	66
		Semi in-line valve	3.5	3.5	5	10.5	24	■	70
	Sub-base valve	3.5	3.5	5	10.5	24	■	76	

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
- 2) With built-in fast-switching electronics

Mounting options				
Design	Individual valve	Semi in-line valve	Sub-base valve	
Plug vanes				
	Direct mounting	■	-	-
	Individual sub-base	-	■	■
	Manifold mounting	-	■	■
Moulded-in cable				
	Direct mounting	■	-	-
	Individual sub-base	-	■	■
	Manifold mounting	-	■	■

Solenoid valves MH2, fast-switching valves

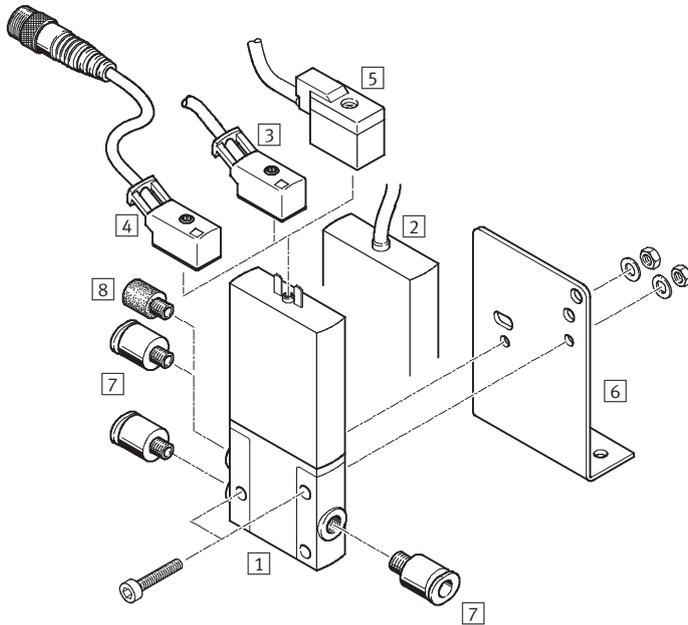
Type codes

		MH	P	2	-	M	S	5	H	-	3/2	-	0	-	M5	-	TC
Valve family																	
MH	Fast-switching valves																
Design																	
E	Individual valve																
P	Semi in-line valve																
A	Sub-base valve																
Size																	
2	Flow rate 90 to 100 l/min																
Drive function																	
M	Solenoid, switching																
Response time																	
-	7 ms																
S	2 ms																
Operating voltage																	
1	24 V DC																
Manual override																	
H	Non-detenting																
Valve function																	
3/2	3/2-way valve																
5/2	5/2-way valve																
Normal position																	
G	Closed																
O	Open																
Pneumatic connection																	
2	Nominal size 2 mm																
M5	Thread M5																
M7	Thread M7																
QS4	Push-in connector for 4 mm O.D. tubing																
Electrical connection																	
-	Plug vanes for plug socket KMYZ																
K	Moulded-in cable, 2.5 m long																

Solenoid valves MHE2, fast-switching valves

Peripherals overview – Individual valve, 3/2-way valve

Connection with plug vanes – Connection with moulded-in cable

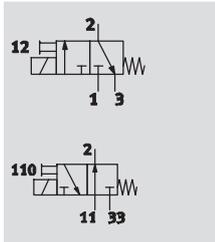


Valves and accessories		
	Brief description	→ Page/Internet
1	Individual valve MHE2	With plug vanes 11
2	Individual valve MHE2-...-K	With moulded-in cable 11
3	Plug socket with cable KMYZ-3 (IP65)	With LED and PUR cable 44
4	Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable and M8 plug 44
5	Plug socket with cable KMYZ-4 (IP40)	With PVC cable 44
6	Mounting bracket MHE2-BG-L	- 13
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D. quick star
8	Silencer UC	For fitting in exhaust ports uc

Solenoid valves MHE2, fast-switching valves

Technical data – Individual valve, 3/2-way valve

Function



Voltage
24 V DC



-0.9 ... +8 bar



Temperature range
-5 ... +60 °C



General technical data	
Valve function	3/2 way, single solenoid ¹⁾
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 14 (minimum clearance 4 mm)
Nominal diameter	[mm] 2
Standard nominal flow rate	[l/min] 100
Type of mounting	Via through-holes
Pneumatic connection	Connecting thread M7
	Push-in fitting for tubing O.D. 4 mm
Product weight	[g] 60

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
	Vacuum, grade of filtration 40 µm
Operating pressure	[bar] -0.9 ... +8
Operating pressure, reversible	[bar] -0.9 ... 0
Ambient temperature	[°C] -5 ... +60 (100% duty cycle)
Temperature of medium	[°C] -5 ... +60 (100% duty cycle)
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognized (OL)

- 1) 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 MHE2, fast-switching valves

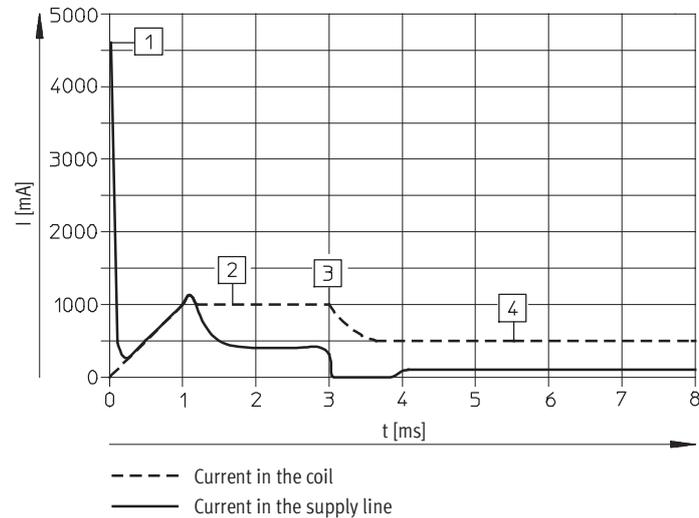
Technical data – Individual valve, 3/2-way valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	5 for 3 ms approx. (pull 1 A), then 1.25 W
Without fast-switching electronics	[W]	2.88
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	1.7/2 +10% ... -30%
Maximum switching frequency	[Hz]	330 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	7/3.5
Maximum switching frequency	[Hz]	130

1) The ambient temperature must be limited as from 125 Hz.

Current path for valves with fast-switching electronics

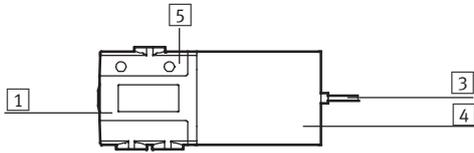


- 1 Capacitor charging
- 2 Controlled coil current 1 A
- 3 Drop to holding current
- 4 Controlled holding current 0.5 A

Solenoid valves MHE2, fast-switching valves

Technical data – Individual valve, 3/2-way valve

Materials



1	Body	Die-cast zinc, coated
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
5	Connection piece	Polyamide
-	Seals	Nitrile rubber/ hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

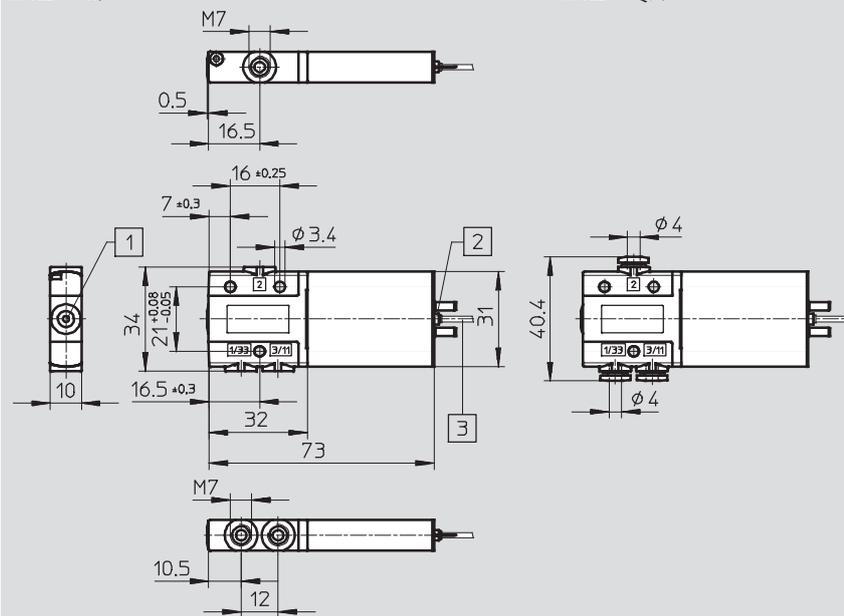
Dimensions

Download CAD Data → www.festo.com/us/cad

Valve with plug vanes or moulded-in cable

MHE2-...-M7

MHE2-...-QS4

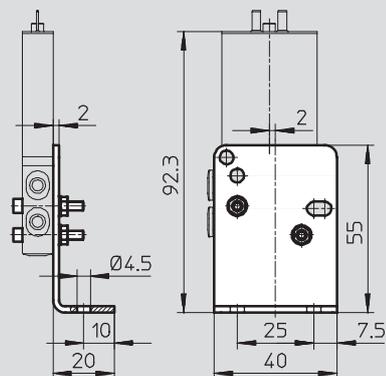


1 Manual override, non-detenting

2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4

3 Cable 2.5 m

Mounting bracket MHE2-BG-L



Solenoid valves MHE2, fast-switching valves

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Technical data – Individual valve, 3/2-way valve

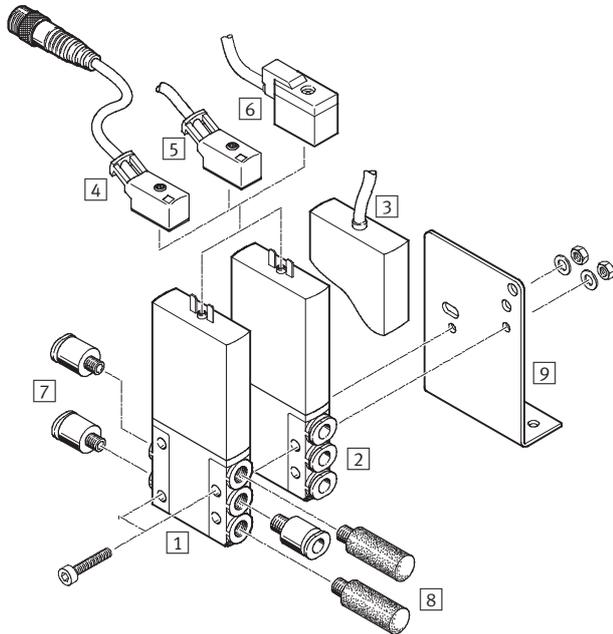
Ordering data – Valves					
	Pneumatic connection	Normal position	Electrical connection	Part No.	Type
Response time 2 ms					
Operating voltage 24 V DC	Connecting thread M7	Normally open	Plug vanes	196151	MHE2-MS1H-3/20-M7
			Cable	196153	MHE2-MS1H-3/20-M7-K
		Normally closed	Plug vanes	196131	MHE2-MS1H-3/2G-M7
			Cable	196133	MHE2-MS1H-3/2G-M7-K
	Push-in connector QS 4	Normally open	Plug vanes	196155	MHE2-MS1H-3/20-QS4
			Cable	196157	MHE2-MS1H-3/20-QS4-K
		Normally closed	Plug vanes	196135	MHE2-MS1H-3/2G-QS4
			Cable	196137	MHE2-MS1H-3/2G-QS4-K
Response time 7 ms					
Operating voltage 24 V DC	Connecting thread M7	Normally open	Plug vanes	196150	MHE2-M1H-3/20-M7
			Cable	196152	MHE2-M1H-3/20-M7-K
		Normally closed	Plug vanes	196130	MHE2-M1H-3/2G-M7
			Cable	196132	MHE2-M1H-3/2G-M7-K
	Push-in connector QS 4	Normally open	Plug vanes	196154	MHE2-M1H-3/20-QS4
			Cable	196156	MHE2-M1H-3/20-QS4-K
		Normally closed	Plug vanes	196134	MHE2-M1H-3/2G-QS4
			Cable	196136	MHE2-M1H-3/2G-QS4-K

Ordering data – Product-specific accessories		
Designation	Part No.	Type
Mounting bracket	196165	MHE2-BG-L

Solenoid valves MHE2, fast-switching valves

Peripherals overview – Individual valve, 5/2-way valve

Connection with plug vanes – Connection with moulded-in cable



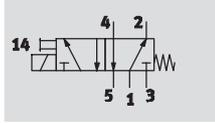
Valves and accessories		Brief description	→ Page/Internet
1	Individual valve MHE2-...QS-4	With plug vanes and connection QS-4	16
2	Individual valve MHE2-...-M7	With plug vanes and connection M7	16
3	Individual valve MHE2-...-K	With moulded-in cable	16
4	Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable and M8 plug	44
5	Plug socket with cable KMYZ-3 (IP65)	With LED and PUR cable	44
6	Plug socket with cable KMYZ-4 (IP40)	With PVC cable	44
7	Push-in fittings QS	For connecting compressed air tubing with standard external diameters	quick star
8	Silencer UC	For fitting in exhaust ports	uc
9	Mounting bracket MHE2-BG-L	–	18

Solenoid valves MHE2, fast-switching valves

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Technical data – Individual valve, 5/2-way valve

Function



-  - Voltage
24 V DC

-  -
-0.9 ... +8 bar

-  - Temperature range
-5 ... +60 °C



General technical data		
Valve function		5/2, single solenoid
Design		Pressure-relieved poppet valve
Sealing principle		Soft
Control type		Electric
Actuation type		Direct
Direction of flow		Reversible with restrictions ²⁾
Exhaust function		With flow control
Manual override		Non-detenting
Assembly position		Any
Grid dimension	[mm]	14 (minimum clearance 4 mm)
Nominal diameter	[mm]	2
Standard nominal flow rate	[l/min]	90
Type of mounting		Via through-holes
Pneumatic connection		Connecting thread M7
		Push-in fitting for tubing O.D. 4 mm
Product weight	[g]	65

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
		Vacuum, grade of filtration 40 µm
Operating pressure	[bar]	-0.9 ... +8
Ambient temperature	[°C]	-5 ... +60 (100% duty cycle)
Temperature of medium	[°C]	-5 ... +60 (100% duty cycle)
Corrosion resistance class CRC		2 ¹⁾
Certification		c UL us - Recognised (OL)

1) 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.

2) With reversible operation leakage may occur.

Solenoid valves MHE2, fast-switching valves

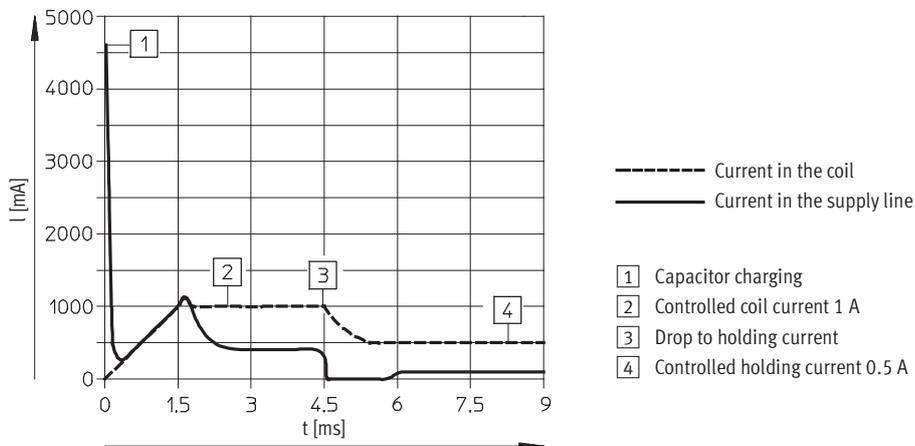
Technical data – Individual valve, 5/2-way valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
Low-current phase	[W]	1.625
High-current phase	[W]	6.5
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40

Response times and switching frequencies		
Response time on	[ms]	1.9 +10% ... -30%
Response time off	[ms]	1.7 +10% ... -30%
Maximum switching frequency	[Hz]	300 ¹⁾
CE symbol		In accordance with EU EMC Directive

1) The ambient temperature must be limited as from 100 Hz.

Current path

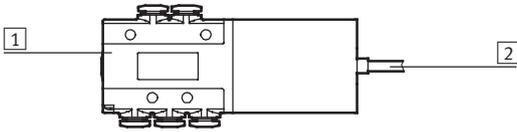


Solenoid valves MHE2, fast-switching valves

Technical data – Individual valve, 5/2-way valve

FESTO

Materials



1	Body	Die-cast zinc, coated
2	Cable sheath	Polyurethane
-	Seals	Nitrile rubber/ hydrogenated nitrile rubber
-	Screws	Galvanised steel
	Note on materials	Free of copper and PTFE

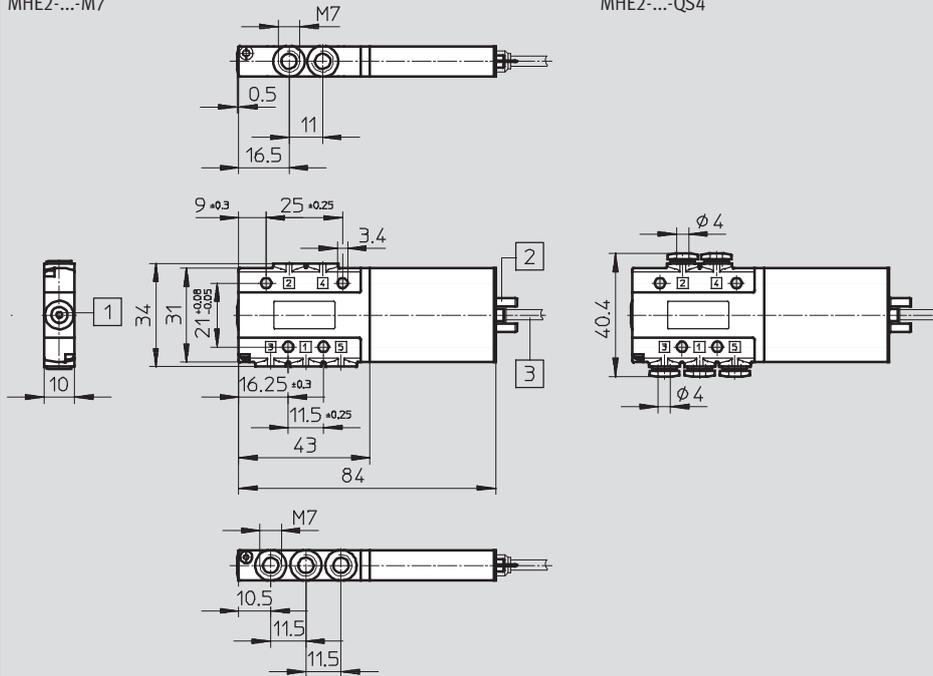
Dimensions

Download CAD Data → www.festo.com/us/cad

Valve with plug vanes or moulded-in cable

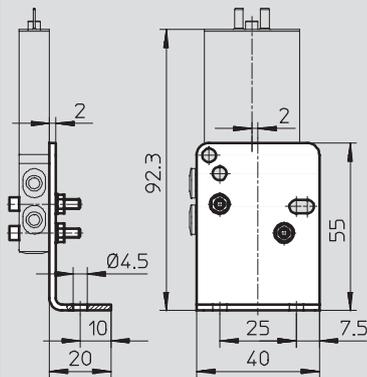
MHE2-...-M7

MHE2-...-QS4



- 1 Manual override, non-detenting
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 3 Cable 2.5 m

Mounting bracket MHE2-BG-L



Solenoid valves MHE2, fast-switching valves

Technical data – Individual valve, 5/2-way valve

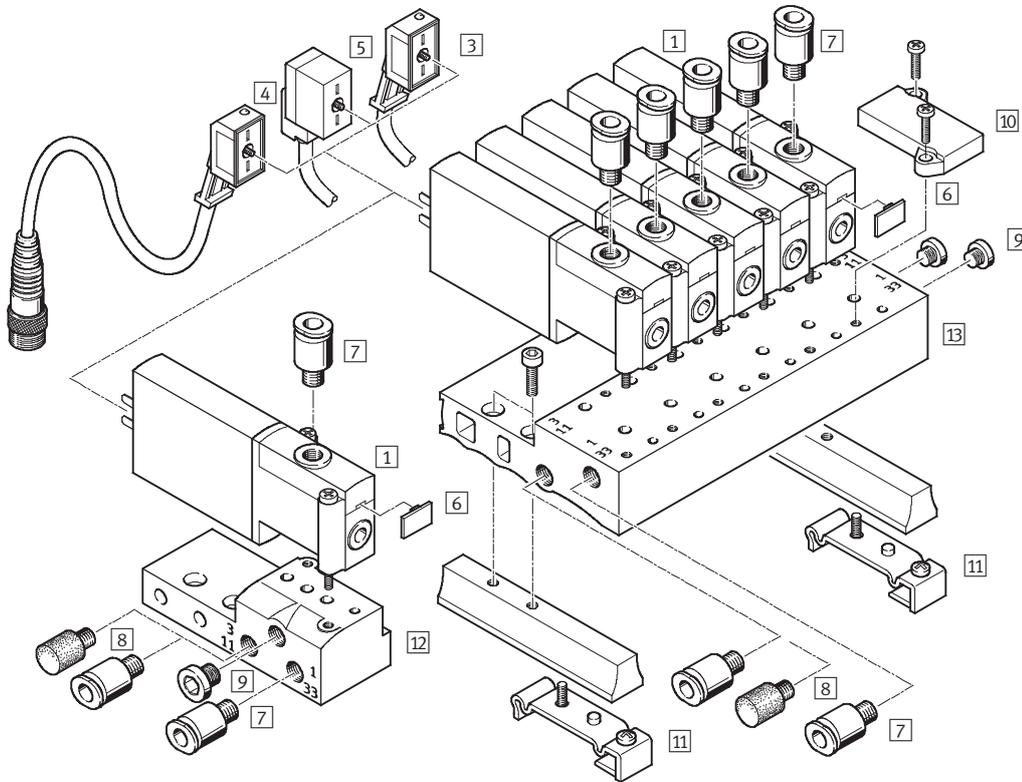
Ordering data – Valves				
	Pneumatic connection	Electrical connection	Part No.	Type
Operating voltage 24 V DC	Connecting thread M7	Plug vanes	525113	MHE2-MS1H-5/2-M7
		Cable	525115	MHE2-MS1H-5/2-M7-K
	Push-in connector QS 4	Plug vanes	525117	MHE2-MS1H-5/2-QS-4
		Cable	525119	MHE2-MS1H-5/2-QS-4-K

Ordering data – Product-specific accessories		
Designation	Part No.	Type
Mounting bracket	196165	MHE2-BG-L

Solenoid valves MHP2, fast-switching valves

Peripherals overview – Semi in-line valve, 3/2-way valve

Connection with plug vanes – Connection with moulded-in cable ...-K

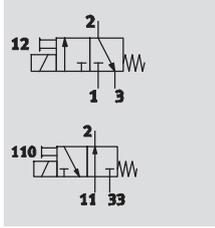


Valves and accessories		
	Brief description	→ Page/Internet
1	Semi in-line valve MHP2-...	With plug vanes 21
2	Semi in-line valve MHP2-...-K	With moulded-in cable 21
3	Plug socket with cable KMYZ-3 (IP65)	With LED and PUR cable 44
4	Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable and M8 plug 44
5	Plug socket with cable KMYZ-4 (IP40)	With PVC cable 44
6	Inscription label MH-BZ-80X	For identifying the valves 44
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D. quick star
8	Silencer UC	For fitting in exhaust ports uc
9	Blanking plug B	For sealing unused ports 44
10	Blanking plate MHAP2-BP-3	For sealing vacant positions 44
11	Hat-rail mounting MHAP2-BG-NRH-35	– 44
12	Individual sub-base MHA2-AS-3-M5	For semi in-line valve; the individual sub-base is also used for the sub-base valve, the output port must in this case be sealed with a blanking plug 24
13	Manifold block MHP2-PR...-3	For semi in-line valve 24

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve, 3/2-way valve

Function



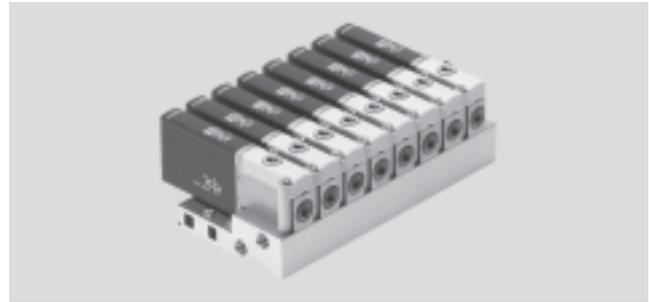
Voltage
24 V DC



-0.9 ... +8 bar



Temperature range
-5 ... +40 °C



General technical data	
Valve function	3/2 way, single solenoid ¹⁾
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 14
Nominal diameter	[mm] 2
Standard nominal flow rate	[l/min] 100
Type of mounting	On sub-base/manifold
Pneumatic connection	Connecting thread M5
	Push-in fitting for tubing O.D. 4 mm
Product weight	[g] 50

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
	Vacuum, grade of filtration 40 µm
Operating pressure	[bar] -0.9 ... +8
Operating pressure, reversible	[bar] -0.9 ... 0
Ambient temperature	[°C] -5 ... +40 (100% duty cycle)
Temperature of medium	[°C] -5 ... +40 (100% duty cycle)
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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 MHP2, fast-switching valves

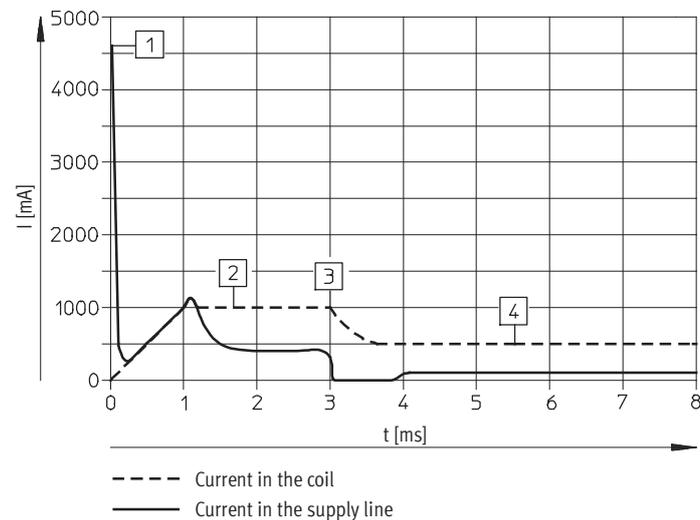
Technical data – Semi in-line valve, 3/2-way valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes
Power consumption		
With fast-switching electronics	[W]	5 for 3 ms approx. (pull 1 A), then 1.25 W
Without fast-switching electronics	[W]	2.88
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMH		IP40
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	1.7/2 +10% ... -30%
Maximum switching frequency	[Hz]	330 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	7/3.5
Maximum switching frequency	[Hz]	130

1) The ambient temperature must be limited from 100 Hz.

Current path for valves with fast-switching electronics

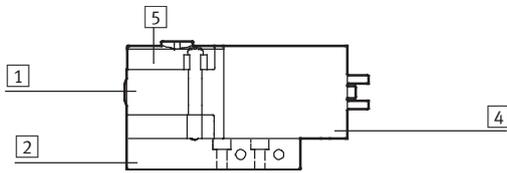


- 1 Capacitor charging
- 2 Controlled coil current 1 A
- 3 Drop to holding current
- 4 Controlled holding current 0.5 A

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve, 3/2-way valve

Materials

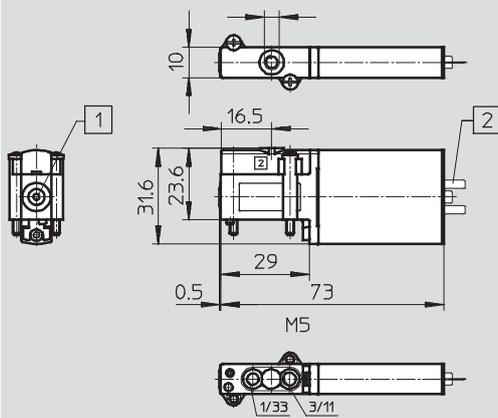


1	Body	Die-cast zinc
2	Sub-base	Manifold block: Aluminium Individual sub-base: Die-cast zinc
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
5	Connection piece	Polyamide
-	Seals	Nitrile rubber/ hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

Dimensions

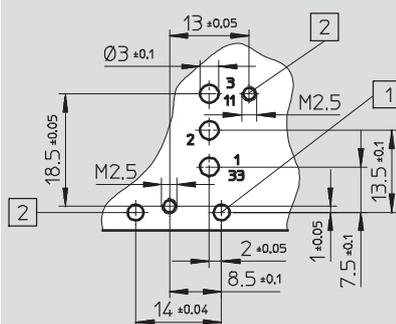
Download CAD Data → www.festo.com/us/cad

Valve with plug vanes



- 1 Manual override, non-detenting
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4

Port pattern on sub-bases

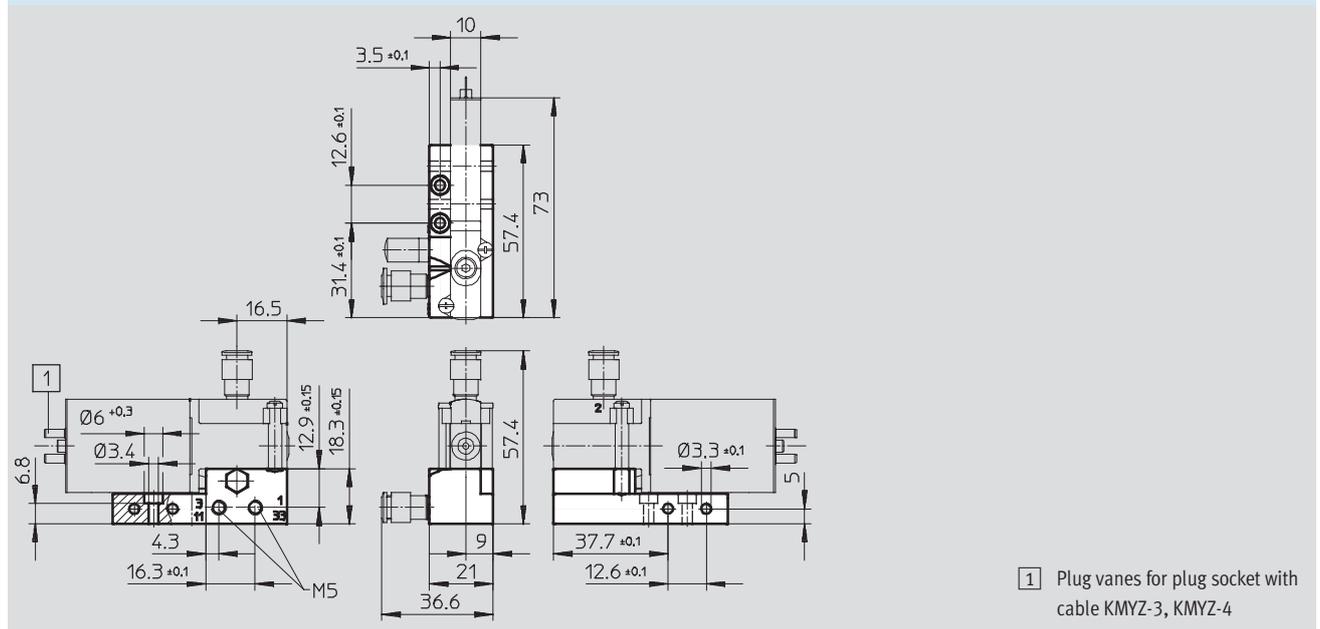


- 1 Hole for coding pin, 1.7^{+0.2} mm deep
- 2 Mounting thread, 4.6⁺¹ mm deep

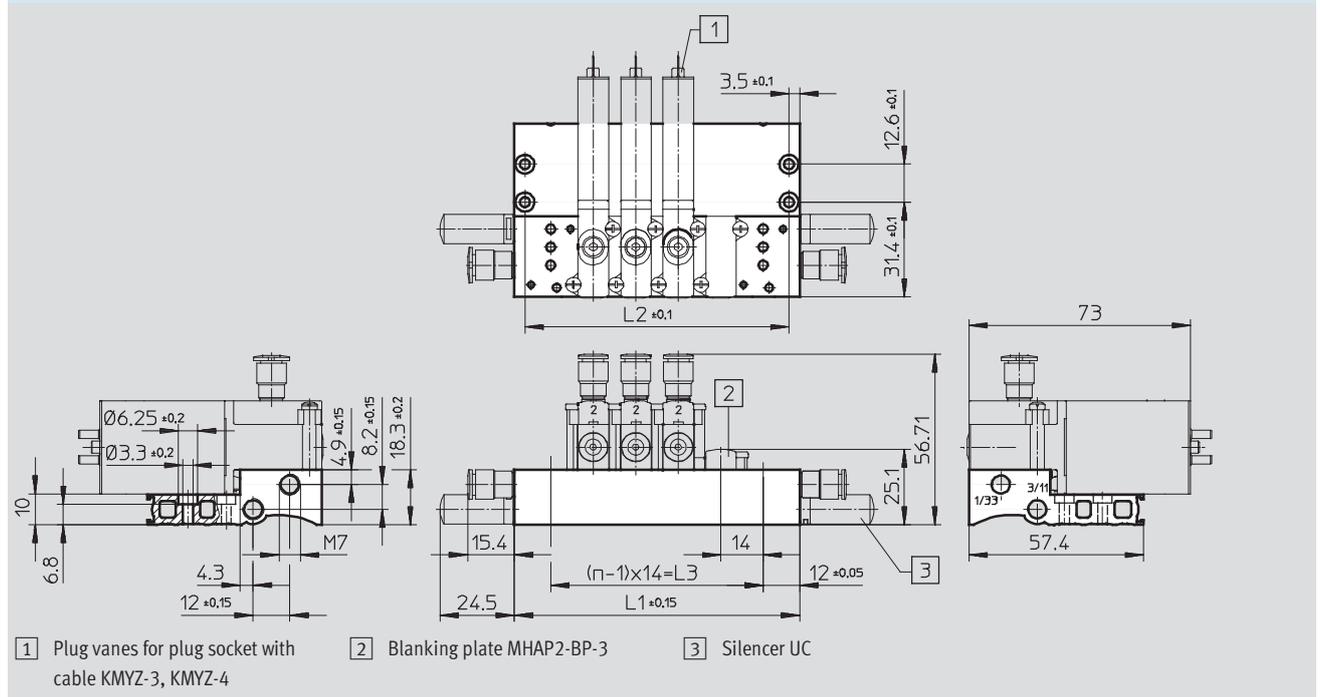
Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve, 3/2-way valve

Dimensions Download CAD Data → www.festo.com/us/cad
Individual sub-base



Manifold mounting



Valve positions n	L1	L2	L3
2	38	31	14
3	52	45	18
4	66	59	42

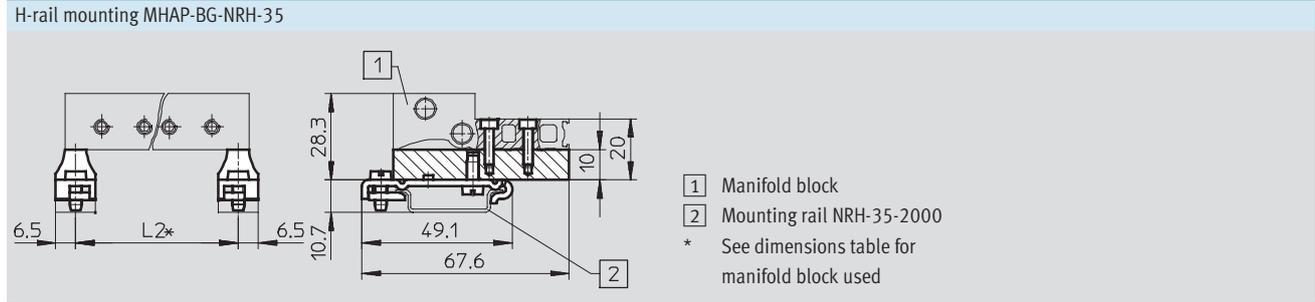
Valve positions n	L1	L2	L3
5	80	73	56
6	94	87	70
7	108	101	84

Valve positions n	L1	L2	L3
8	122	115	98
9	136	129	112
10	150	143	126

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve, 3/2-way valve

Dimensions Download CAD Data → www.festo.com/us/cad



Valve positions n	2	3	4	5	6	7	8	9	10
L1	38	52	66	80	94	108	122	136	150
L2	31	45	59	73	87	101	115	129	143
L3	14	28	42	56	70	84	98	112	126

Ordering data – Valves					
	Pneumatic connection	Normal position	Electrical connection	Part No.	Type
Response time 2 ms					
Operating voltage 24 V DC	Connecting thread M5	Normally open	Plug vanes	196143	MHP2-MS1H-3/20-M5
		Normally closed	Plug vanes	196123	MHP2-MS1H-3/2G-M5
Response time 7 ms					
Operating voltage 24 V DC	Connecting thread M5	Normally open	Plug vanes	196142	MHP2-M1H-3/20-M5
		Normally closed	Plug vanes	196122	MHP2-M1H-3/2G-M5

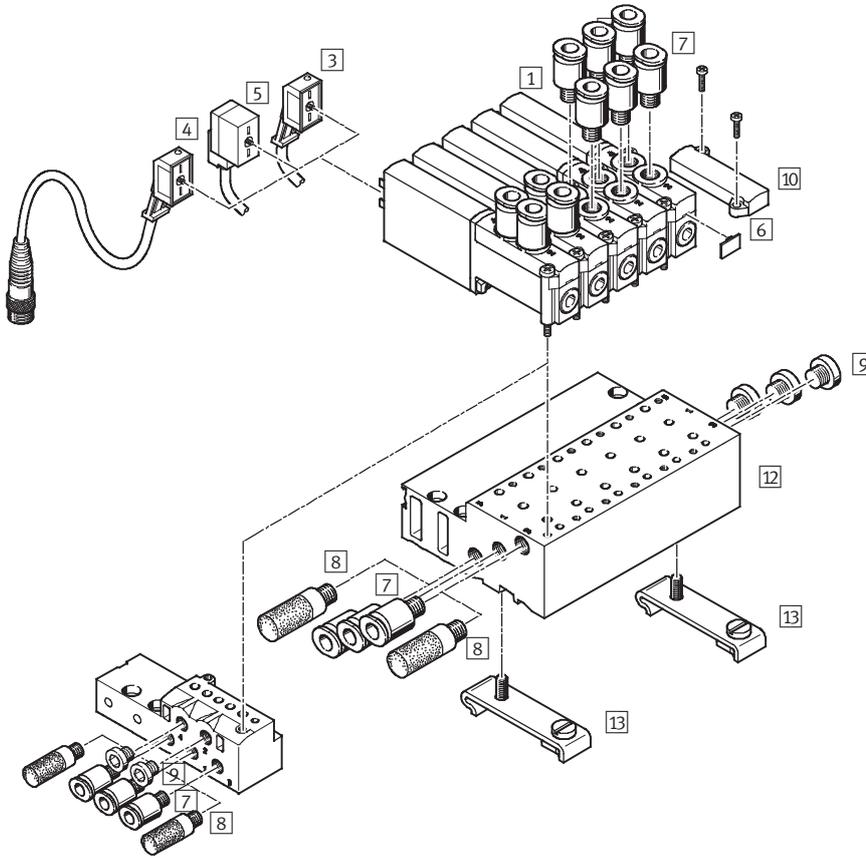
Note
Type 3/2G and type 3/2O valves must not be mixed on a manifold block.

Ordering data – Product-specific accessories			
Designation		Part No.	Type
Individual sub-base	1 valve	197438	MHA2-AS-3-M5
Manifold block for	2 valves	197442	MHP2-PR2-3
	4 valves	197443	MHP2-PR4-3
	6 valves	197444	MHP2-PR6-3
	8 valves	197445	MHP2-PR8-3
	10 valves	197446	MHP2-PR10-3

Solenoid valves MHP2, fast-switching valves

Peripherals overview – Semi in-line valve, 5/2-way valve

Connection with plug vanes – Connection with moulded-in cable ...-K

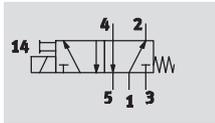


Valves and accessories			
	Brief description	→ Page/Internet	
1	Semi in-line valve MHP2-...	With plug vanes	27
3	Plug socket with cable KMYZ-3 (IP65)	With LED and PUR cable	44
4	Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable and M8 plug	44
5	Plug socket with cable KMYZ-4 (IP40)	With PVC cable	44
6	Inscription label MH-BZ-80X	For identifying the valves	44
7	Push-in fittings QS	For connecting compressed air tubing with standard external diameters	quick star
8	Silencer UC	For fitting in exhaust ports	uc
9	Blanking plug B	For sealing unused ports	44
10	Blanking plate MHAP2-BP-5	For sealing vacant positions	44
11	Individual sub-base MHA2-AS-3-M5	For semi in-line valve; the individual sub-base is also used for the sub-base valve, the output port must in this case be sealed with a blanking plug	31
12	Manifold block MHP2-PR...-5	For semi in-line valve	31
13	H-rail mounting CPV10/14-VI-BG-NRH-35	–	44

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve, 5/2-way valve

Function



Voltage
24 V DC



-0.9 ... +8 bar



Temperature range
-5 ... +40 °C



General technical data	
Valve function	5/2, single solenoid
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension [mm]	14
Nominal diameter [mm]	2
Standard nominal flow rate [l/min]	90
Type of mounting	On sub-base/manifold
Pneumatic connection	Connecting thread M5
	Push-in fitting for tubing O.D. 4 mm
Product weight [g]	65

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
	Vacuum, grade of filtration 40 µm
Operating pressure [bar]	-0.9 ... +8
Ambient temperature [°C]	-5 ... +40 (100% duty cycle)
Temperature of medium [°C]	-5 ... +40 (100% duty cycle)
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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.
- 2) With reversible operation leakage may occur.

Solenoid valves MHP2, fast-switching valves

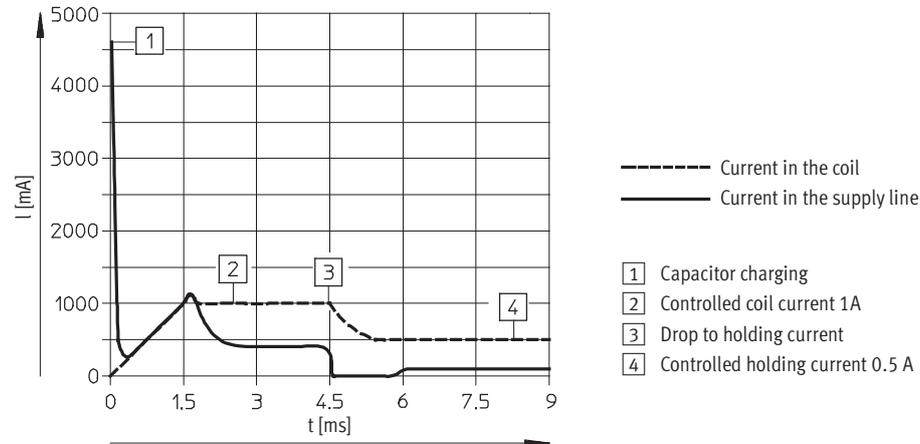
Technical data – Semi in-line valve, 5/2-way valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes
Power consumption		
Low-current phase	[W]	1.625
High-current phase	[W]	6.5
Protection class to EN 60529		
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40

Response times and switching frequencies		
Response time on	[ms]	1.9 +10% ... -30%
Response time off	[ms]	1.7 +10% ... -30%
Maximum switching frequency	[Hz]	300 ¹⁾
CE symbol		In accordance with EU EMC Directive

1) The ambient temperature must be limited as from 75 Hz.

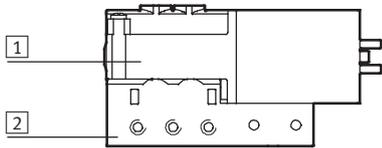
Current path



Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve, 5/2-way valve

Materials



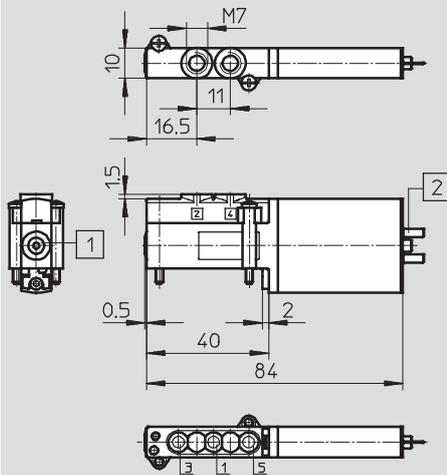
1	Body	Die-cast zinc, coated
2	Sub-base	Die-cast zinc
-	Seals	Nitrile rubber/ hydrogenated nitrile rubber
-	Screws	Galvanised steel
Note on materials		Free of copper and PTFE

Dimensions

Download CAD Data → www.festo.com/us/cad

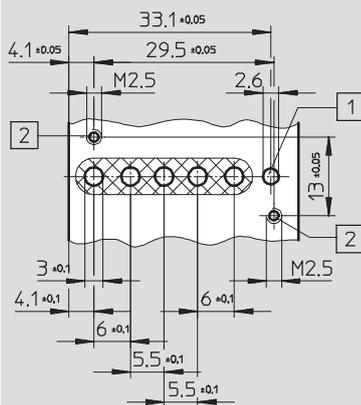
Valve with plug vanes or moulded-in cable ...-K

MHP2-...-M5



- 1 Manual override, non-detenting
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4

Port pattern on sub-bases



- 1 Hole for coding pin, 1.7 mm deep
- 2 Mounting thread, 4.6 mm deep

Note

Semi in-line valves do not require ports 2 and 4.

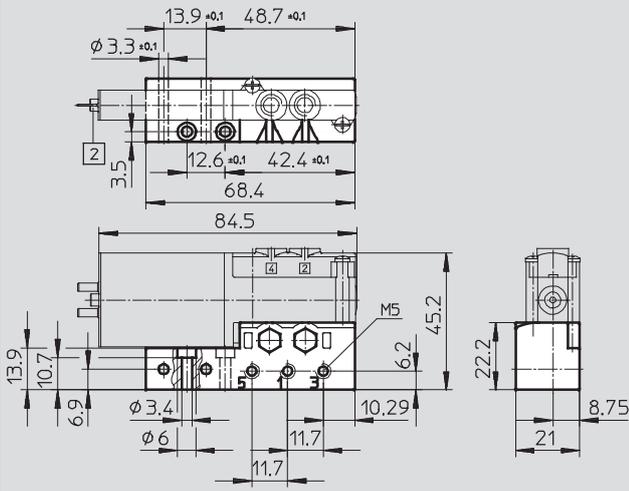
Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve, 5/2-way valve

Dimensions

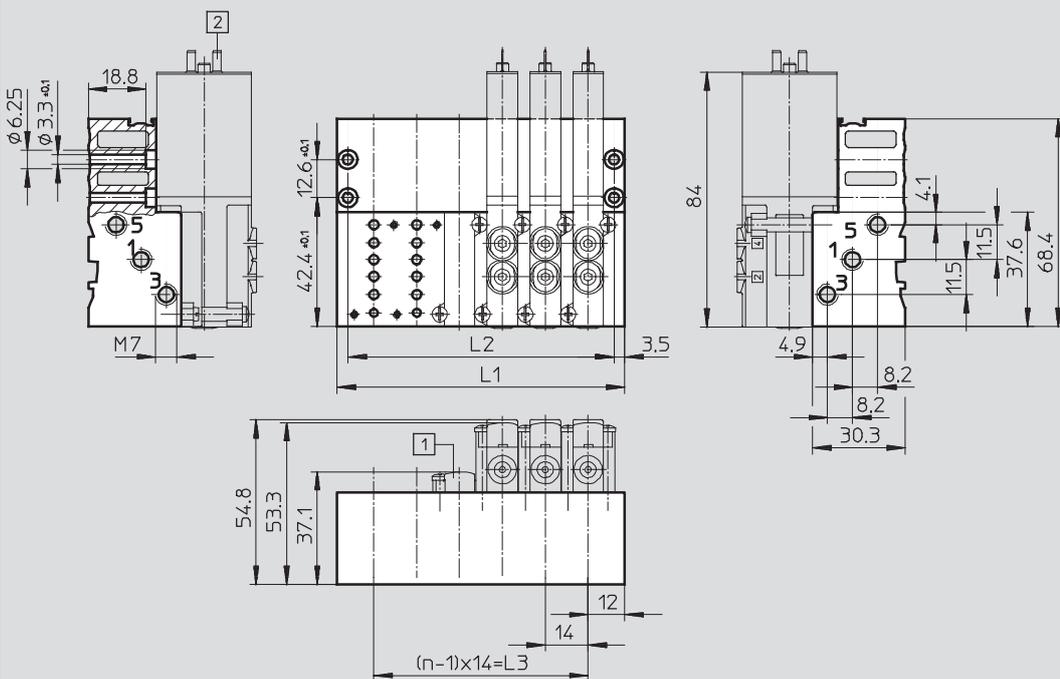
Download CAD Data → www.festo.com/us/cad

Individual sub-base



- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 3 Cable 2.5 m

Manifold mounting



- 1 Blanking plate MHAP2-BP-5
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4

Valve positions n	L1	L2	L3
2	38	31	14
3	52	45	18
4	66	59	42

Valve positions n	L1	L2	L3
5	80	73	56
6	94	87	70
7	108	101	84

Valve positions n	L1	L2	L3
8	122	115	98
9	136	129	112
10	150	143	126

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve, 5/2-way valve

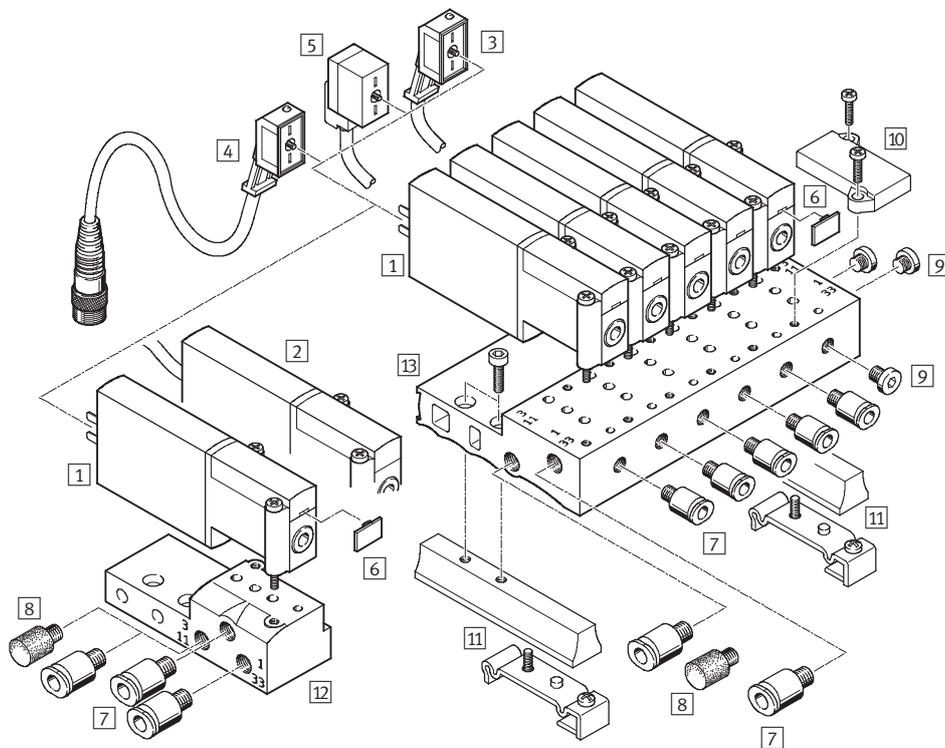
Ordering data – Valves				
	Pneumatic connection	Electrical connection	Part No.	Type
Operating voltage 24 V DC	Connecting thread M5	Plug vanes	525105	MHP2-MS1H-5/2-M5

Ordering data – Product-specific accessories				
Designation			Part No.	Type
Individual sub-base	1 valve		525120	MHA2-AS-5-M5
Manifold block for	2 valves		525122	MHP2-PR2-5
	4 valves		525123	MHP2-PR4-5
	6 valves		525124	MHP2-PR6-5
	8 valves		525125	MHP2-PR8-5
	10 valves		525126	MHP2-PR10-5

Solenoid valves MHA2, fast-switching valves

Peripherals overview – Sub-base valve, 3/2-way valve

Connection with plug vanes – Connection with moulded-in cable ...-K

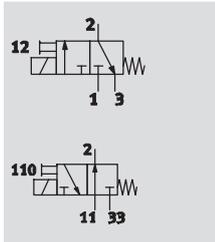


Valves and accessories		Brief description	→ Page/Internet
1	Sub-base valve MHA2-...	With plug vanes	33
2	Sub-base valve MHA2-...-K	With moulded-in cable	33
3	Plug socket KMYZ-3 (IP 65)	With LED and PUR cable	44
4	Plug socket KMYZ-3 (IP 65)	With LED, PUR cable and M8 plug	44
5	Plug socket KMYZ-4 (IP 40)	With PVC cable	44
6	Inscription label MH-BZ-80X	For identifying the valves	44
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D.P	quick star
8	Silencer UC	For fitting in exhaust ports	uc
9	Blanking plug B	For sealing unused ports	44
10	Blanking plate MHAP2-BP-3	For sealing vacant positions	44
11	H-rail mounting MHAP2-BG-NRH-35	–	44
12	Individual sub-base MHA2-AS-3-M5	For sub-base valve	36
13	Manifold block MHA2-PR...-3-M5	For sub-base valve	36

Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve, 3/2-way valve

Function



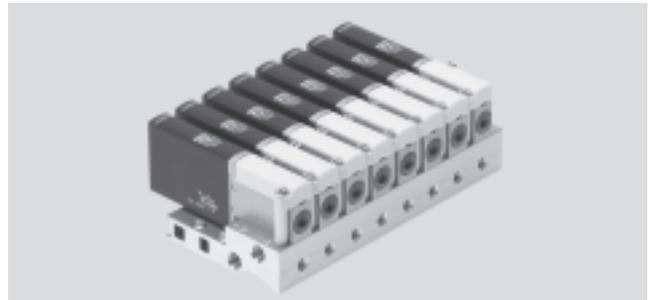
Voltage
24 V DC



-0.9 ... +8 bar



Temperature range
-5 ... +40 °C



General technical data	
Valve function	3/2 way, single solenoid ¹⁾
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 14
Nominal diameter	[mm] 2
Standard nominal flow rate	[l/min] 100
Type of mounting	On sub-base/manifold
Pneumatic connection	Connecting thread M5 or M7
Product weight	[g] 50

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm Vacuum, grade of filtration 40 µm
Operating pressure	[bar] -0.9 ... +8
Operating pressure, reversible	[bar] -0.9 ... 0
Ambient temperature	[°C] -5 ... +40 (100% duty cycle)
Temperature of medium	[°C] -5 ... +40 (100% duty cycle)
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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 MHA2, fast-switching valves

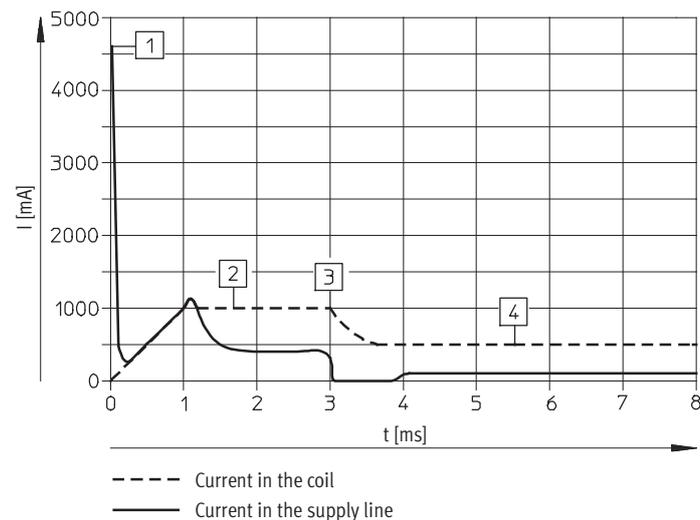
Technical data – Sub-base valve, 3/2-way valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	5 for 3 ms approx. (pull 1 A), then 1.25 W
Without fast-switching electronics	[W]	2.88
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMH		IP40
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40
With plug base MHAP-PI		IP40
With Sub-D connector plug		IP40

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	1.7/2 +10% ... -30%
Maximum switching frequency	[Hz]	330 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	7/3.5
Maximum switching frequency	[Hz]	130

1) The ambient temperature must be limited as from 100 Hz.

Current path for valves with fast-switching electronics

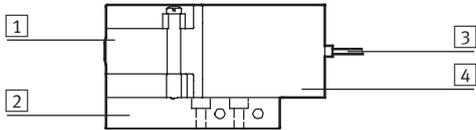


- 1 Capacitor charging
- 2 Controlled coil current 1 A
- 3 Drop to holding current
- 4 Controlled holding current 0.5 A

Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve, 3/2-way valve

Materials

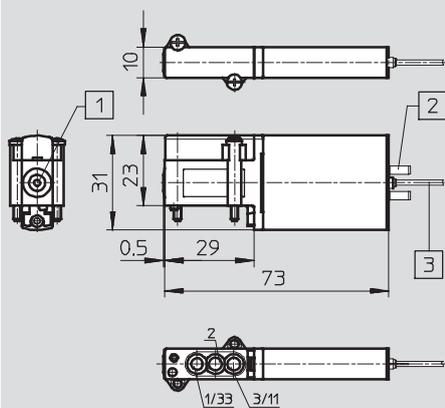


1	Body	Die-cast zinc, coated
2	Sub-base	Manifold block: Aluminium Individual sub-base: Die-cast zinc
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
-	Seals	Nitrile rubber/ hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

Dimensions

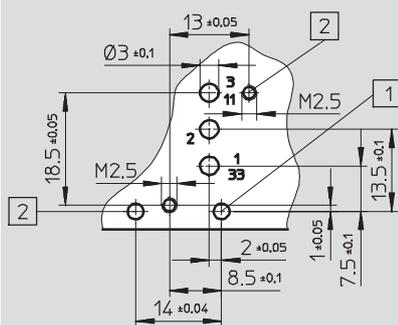
Download CAD Data → www.festo.com/us/cad

Valve with plug vanes or moulded-in cable ...-K



- 1 Manual override, non-detenting
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 3 Cable 2.5 m

Port pattern on sub-bases



- 1 Hole for coding pin, 1.7^{+0.2} mm deep
- 2 Mounting thread, 4.6⁺¹ mm deep

Solenoid valves MHA2, fast-switching valves

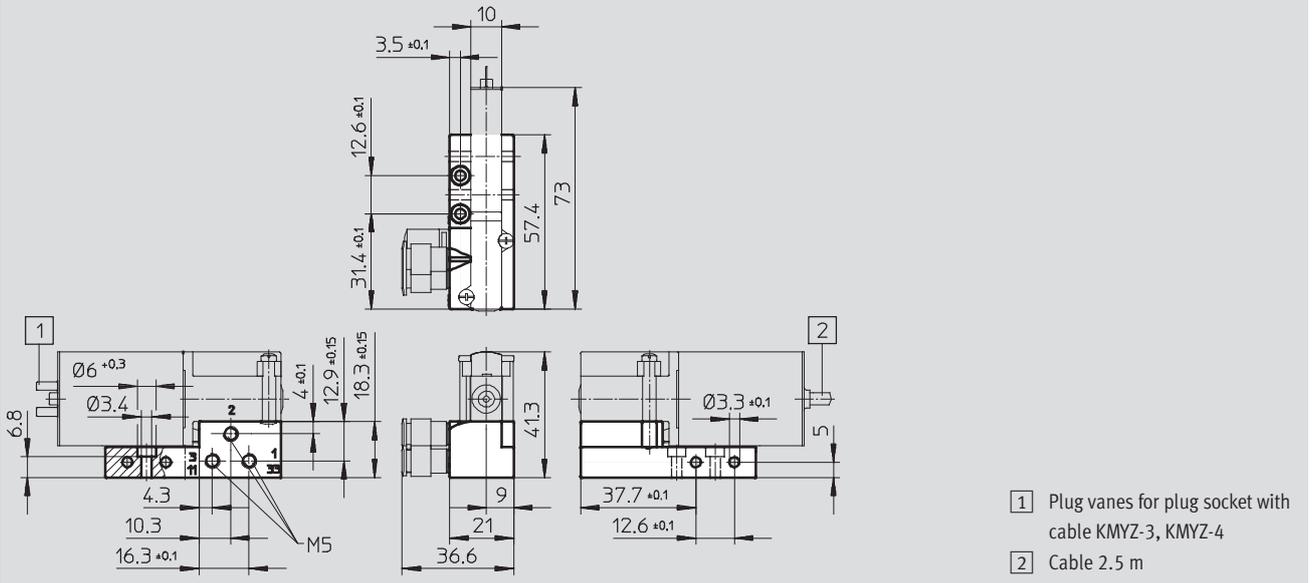
Technical data – Sub-base valve, 3/2-way valve



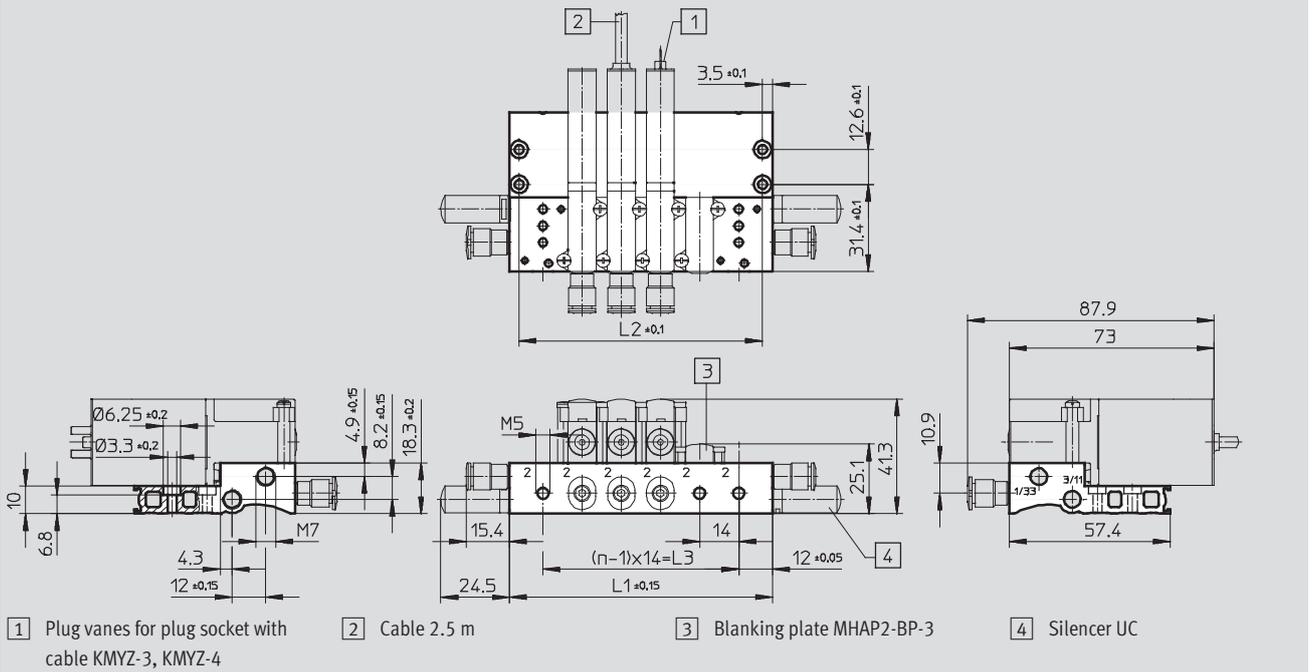
Dimensions

Download CAD Data → www.festo.com/us/cad

Individual sub-base



Manifold mounting



Valve positions n	L1	L2	L3
2	38	31	14
3	52	45	18
4	66	59	42

Valve positions n	L1	L2	L3
5	80	73	56
6	94	87	70
7	108	101	84

Valve positions n	L1	L2	L3
8	122	115	98
9	136	129	112
10	150	143	126

Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve, 3/2-way valve

Ordering data – Valves				
	Normal position	Electrical connection	Part No.	Type
Response time 2 ms				
Operating voltage 24 V DC	Normally open	Plug vanes	196139	MHA2-MS1H-3/20-2
		Cable	196141	MHA2-MS1H-3/20-2-K
	Normally closed	Plug vanes	196119	MHA2-MS1H-3/2G-2
		Cable	196121	MHA2-MS1H-3/2G-2-K
Response time 7 ms				
Operating voltage 24 V DC	Normally open	Plug vanes	196138	MHA2-M1H-3/20-2
		Cable	196140	MHA2-M1H-3/20-2-K
	Normally closed	Plug vanes	196118	MHA2-M1H-3/2G-2
		Cable	196120	MHA2-M1H-3/2G-2-K

Note

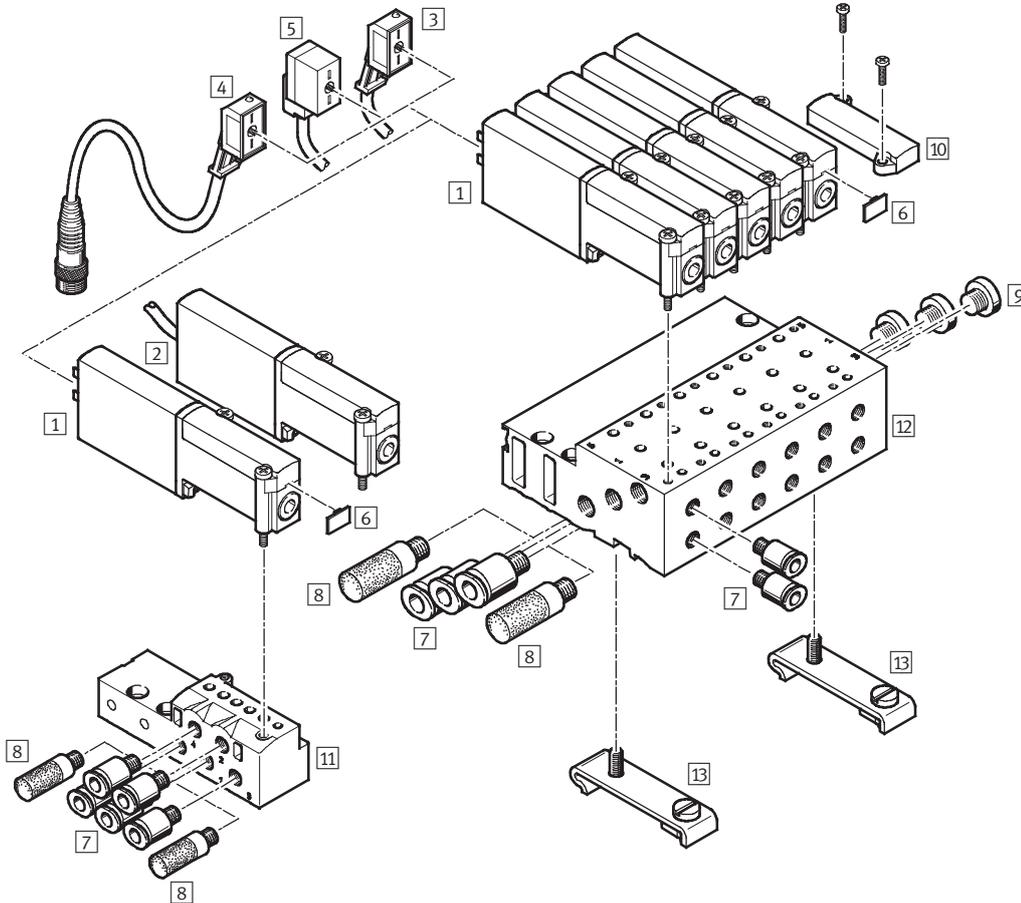
Type 3/2G and type 3/2O valves must not be mixed on a manifold block.

Ordering data – Product-specific accessories			
Designation		Part No.	Type
Individual sub-base	1 valve	197438	MHA2-AS-3-M5
Manifold for	2 valves	197447	MHA2-PR2-3-M5
	4 valves	197448	MHA2-PR4-3-M5
	6 valves	197449	MHA2-PR6-3-M5
	8 valves	197450	MHA2-PR8-3-M5
	10 valves	197451	MHA2-PR10-3-M5

Solenoid valves MHA2, fast-switching valves

Peripherals overview – Sub-base valve, 5/2-way valve

Connection with plug vanes – Connection with moulded-in cable ...-K



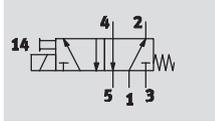
Valves and accessories			
	Brief description	→ Page/Internet	
1	Sub-base valve MHA2-...	With plug vanes	39
2	Sub-base valve MHA2-...-K	With moulded-in cable	39
3	Plug socket KMYZ-3 (IP 65)	With LED and PUR cable	44
4	Plug socket KMYZ-3 (IP 65)	With LED, PUR cable and M8 plug	44
5	Plug socket KMYZ-4 (IP 40)	With PVC cable	44
6	Inscription label MH-BZ-80X	For identifying the valves	44
7	Push-in fittings QS	For connecting compressed air tubing with standard external diameters	quick star
8	Silencer UC	For fitting in exhaust ports	uc
9	Blanking plug B	For sealing unused ports	44
10	Blanking plate MHAP2-BP-5	For sealing vacant positions	44
11	Individual sub-base MHA2-AS-5-M5	For sub-base valve	43
12	Manifold block MHA2-PR...-5-M5	For sub-base valve	43
13	H-rail mounting CPV10/14-VI-BG-NRH-35	-	44

Solenoid valves MHA2, fast-switching valves

FESTO

Technical data – Sub-base valve, 5/2-way valve

Function



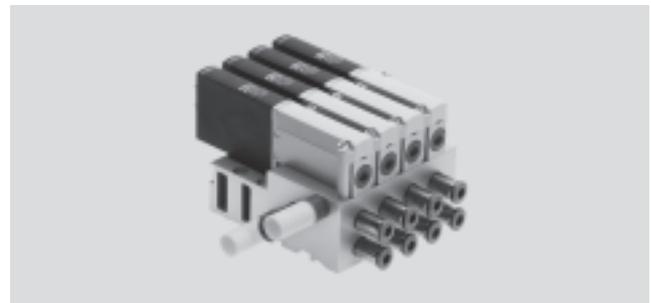
Voltage
24 V DC



-0.9 ... +8 bar



Temperature range
-5 ... +40 °C



General technical data	
Valve function	5/2, single solenoid
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 14
Nominal diameter	[mm] 2
Standard nominal flow rate	[l/min] 90
Type of mounting	On sub-base/manifold
Max. tightening torque, valve mounting	[Nm] 0.4
Pneumatic connection	Sub-base
Product weight	[g] 65

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm Vacuum, grade of filtration 40 µm
Operating pressure	[bar] -0.9 ... +8
Ambient temperature	[°C] -5 ... +40 (100% duty cycle)
Temperature of medium	[°C] -5 ... +40 (100% duty cycle)
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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.
- 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar.

Solenoid valves MHA2, fast-switching valves

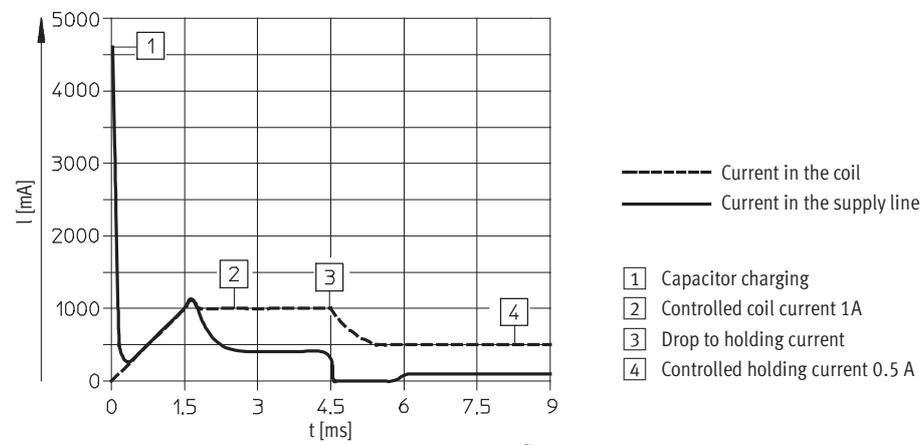
Technical data – Sub-base valve, 5/2-way valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
Low-current phase	[W]	1.625
High-current phase	[W]	6.5
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40

Response times and switching frequencies		
Response time on	[ms]	1.9 +10% ... -30%
Response time off	[ms]	1.7 +10% ... -30%
Maximum switching frequency	[Hz]	300 ¹⁾
CE symbol		In accordance with EU EMC Directive

1) The ambient temperature must be limited as from 125 Hz.

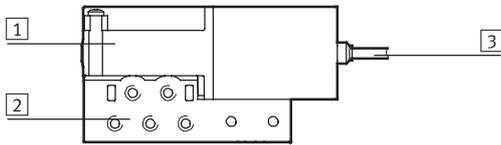
Current path



Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve, 5/2-way valve

Materials

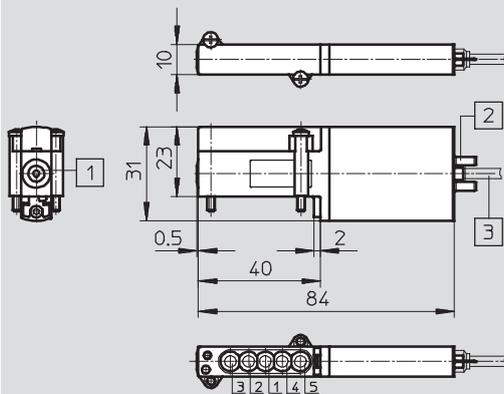


1	Body	Die-cast zinc
2	Sub-base	Die-cast zinc
3	Cable sheath	Polyurethane
-	Seals	Nitrile rubber/ hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

Dimensions

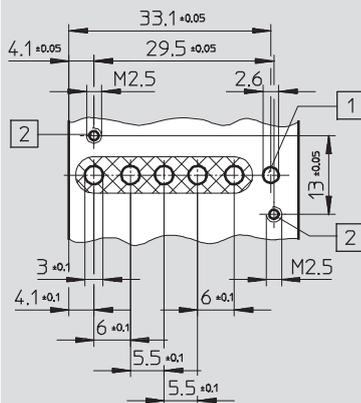
Download CAD Data → www.festo.com/us/cad

Valve with plug vanes or moulded-in cable ...-K



- 1 Manual override, non-detenting
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 3 Cable 2.5 m

Port pattern on sub-bases



- 1 Hole for coding pin, 1.7 mm deep
- 2 Mounting thread, 4.6 mm deep

Note

Semi in-line valves do not require ports 2 and 4.

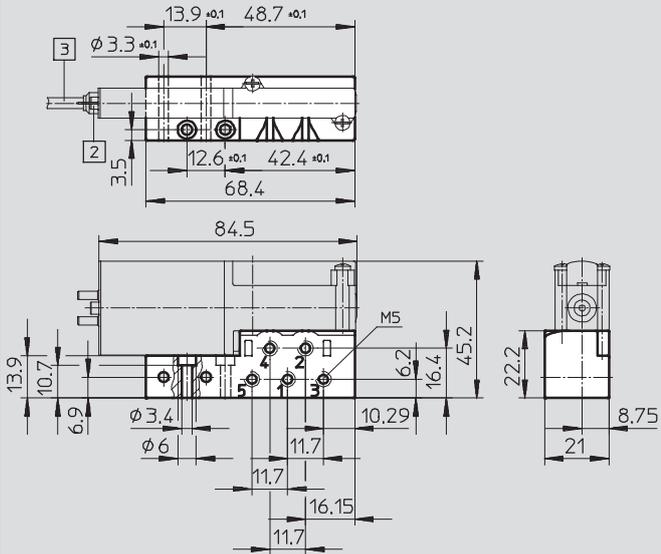
Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve, 5/2-way valve

Dimensions

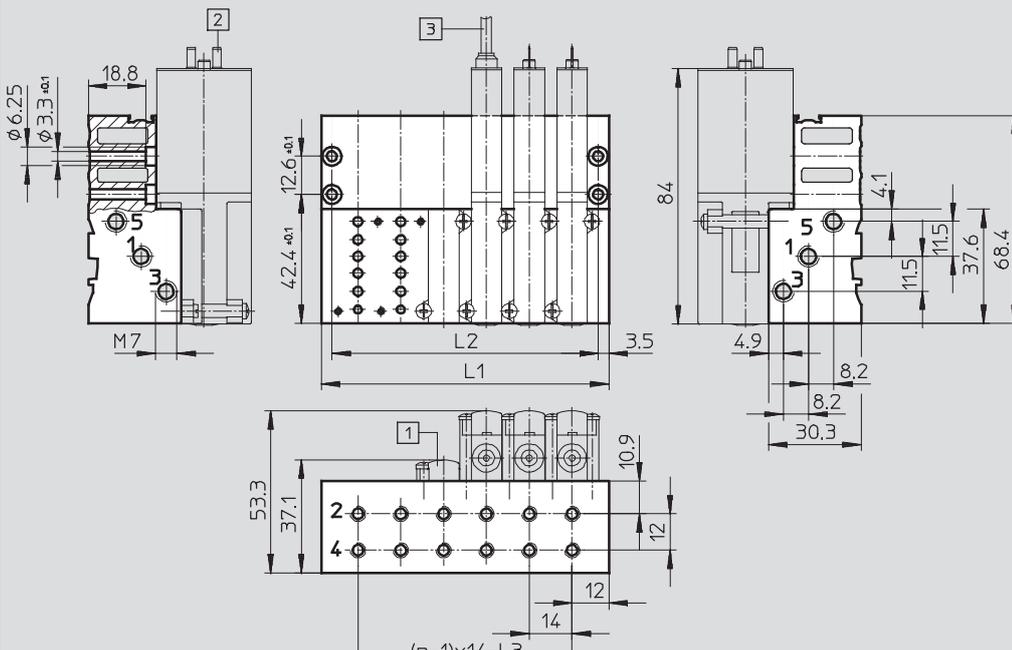
Download CAD Data → www.festo.com/us/cad

Individual sub-base



- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 3 Cable 2.5 m

Manifold mounting



- 1 Blanking plate MHAP2-BP-5
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 3 Cable 2.5 m

Valve positions n	L1	L2	L3
2	38	31	14
3	52	45	18
4	66	59	42

Valve positions n	L1	L2	L3
5	80	73	56
6	94	87	70
7	108	101	84

Valve positions n	L1	L2	L3
8	122	115	98
9	136	129	112
10	150	143	126

Solenoid valves MHA2, fast-switching valves

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Technical data – Sub-base valve, 5/2-way valve

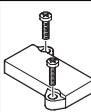
Ordering data – Valves				
	Normal position	Electrical connection	Part No.	Type
Operating voltage 24 V DC	Normally closed	Plug vanes	525101	MHA2-MS1H-5/2-2
		Cable	525103	MHA2-MS1H-5/2-2-K

Ordering data – Product-specific accessories				
Designation			Part No.	Type
Individual sub-base		1 valve	525120	MHA2-AS-5-M5
Manifold for		2 valves	525127	MHA2-PR2-5-M5
		4 valves	525128	MHA2-PR4-5-M5
		6 valves	525129	MHA2-PR6-5-M5
		8 valves	525130	MHA2-PR8-5-M5
		10 valves	525131	MHA2-PR10-5-M5

Solenoid valves MH2, fast-switching valves

Accessories

FESTO

Ordering data			Part No.	Type
Plug socket with cable				
	Protection class IP65 with LED, PUR cable, open cable end	Length 2.5 m	193693	KMYZ-3-24-2,5-LED-PUR-B
		Length 5 m	193695	KMYZ-3-24-5-LED-PUR-B
		Length 10 m	196066	KMYZ-3-24-10-LED-PUR-B
	Protection class IP65 with LED, PUR cable, M8 plug, 3-pin	Length 0.5 m	525654	KMYZ-3-24-M8-0,5-LED-PUR
		Length 2.5 m	525655	KMYZ-3-24-M8-2,5-LED-PUR
	Protection class IP40, PVC cable, open cable end	Length 0.5 m	193690	KMYZ-4-24-0,5-B
		Length 2.5 m	193691	KMYZ-4-24-2,5-B
H-rail mounting				
	For 3/2-way valves		525053	MHAP2-BG-NRH-35
	For 5/2-way valves		162556	CPV10/14-VI-BG-NRH-35
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
H-rail				
		2 m	35430	NRH-35-2000
Blanking plate				
	For 3/2-way valves	Plug connection	197470	MHAP2-BP-3
		Plug base	197471	MHAP2-BP-3-PI
	For 5/2-way valves		525132	MHAP2-BP-5
Silencer				
			→ Internet: uc	
Push-in fittings				
			→ Internet: quick star	

Solenoid valves MH3, fast-switching valves

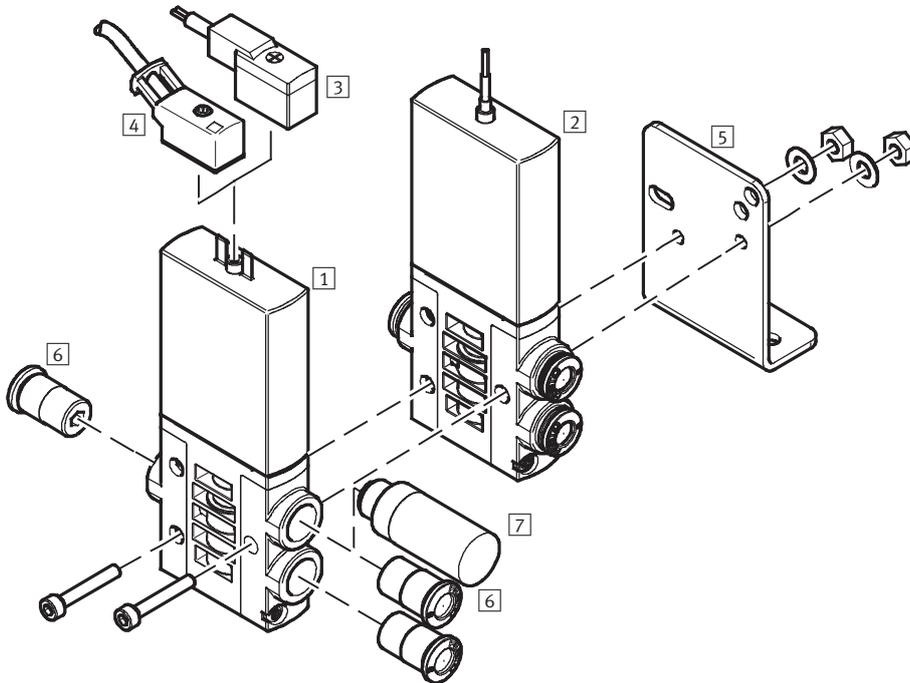
Type codes

		MH	P	3	-	M	S	1	H	-	3/2	-	0	-	QS6		K
Valve family																	
MH	Fast-switching valves																
Design																	
E	Individual valve																
P	Semi in-line valve																
A	Sub-base valve																
Size																	
3	Flow rate 200 l/min																
Drive function																	
M	Solenoid, switching																
Response time																	
-	8.3 ms																
S	3 ms																
Operating voltage																	
1	24 V DC																
Manual override																	
H	Non-detenting																
Valve function																	
3/2	3/2-way valve																
Normal position																	
G	Closed																
0	Open																
Pneumatic connection																	
3	Nominal size 3 mm																
1/8	G1/8 thread																
QS6	Push-in connector for 6 mm O.D. tubing																
Electrical connection																	
-	Plug vanes for plug socket KMYZ																
K	Moulded-in cable, 2.5 m long																

Solenoid valves MHE3, fast-switching valves

Peripherals overview – Individual valve

Connection with plug vanes – Connection with moulded-in cable

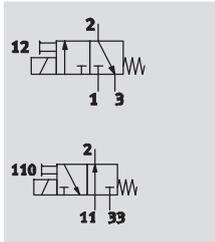


Valves and accessories		
	Brief description	→ Page/Internet
1	Individual valve MHE3 With plug vanes	47
2	Individual valve MHE3-...-K With cable	47
3	Plug socket with cable KMYZ-4 (IP 40) With PVC cable	63
4	Plug socket with cable KMYZ-3 (IP 65) With LED, PUR cable, with M8 plug or open end	63
5	Mounting bracket MHE2-BG-L –	50
6	Push-in fittings QS For connecting compressed air tubing with standard O.D.	quick star
7	Silencer UC For fitting in exhaust ports	uc

Solenoid valves MHE3, fast-switching valves

Technical data – Individual valve

Function



Voltage
24 V DC



-0.9 ... +8 bar



Temperature range
-5 ... +60 °C



General technical data	
Valve function	3/2 way, single solenoid ¹⁾
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 19 (minimum distance 5 mm)
Nominal diameter	[mm] 3
Standard nominal flow rate	[l/min] 200
Type of mounting	Via through-holes
Pneumatic connection	Connecting thread G1/8
	Push-in fitting for tubing O.D. 6 mm
Product weight	[g] 120

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
	Vacuum, grade of filtration 40 µm
Operating pressure	[bar] -0.9 ... +8
Operating pressure, reversible	[bar] -0.9 ... 0
Ambient temperature	[°C] -5 ... +60
Temperature of medium	[°C] -5 ... +60
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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 MHE3, fast-switching valves

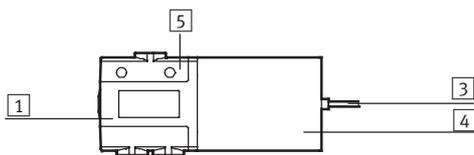
Technical data – Individual valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	Pull: 6.5 Hold: 1.6
Without fast-switching electronics	[W]	3.7
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3/2.3 +10% ... -30%
Maximum switching frequency	[Hz]	280 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	8.3/4.5
Maximum switching frequency	[Hz]	130

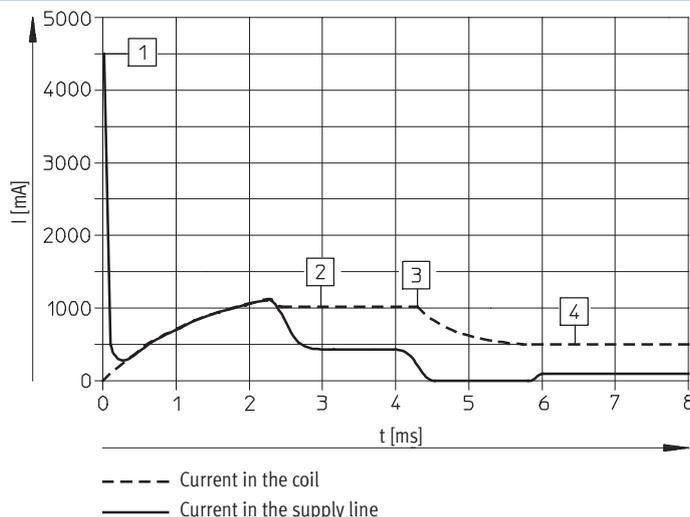
1) The ambient temperature must be limited as from 90 Hz.

Materials



1	Body	Die-cast zinc, coated
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
5	Connection piece	Polyamide
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE

Current path for valves with fast-switching electronics



- 1 Capacitor charging
- 2 Controlled coil current 1 A
- 3 Drop to holding current
- 4 Controlled holding current 0.5 A

Solenoid valves MHE3, fast-switching valves

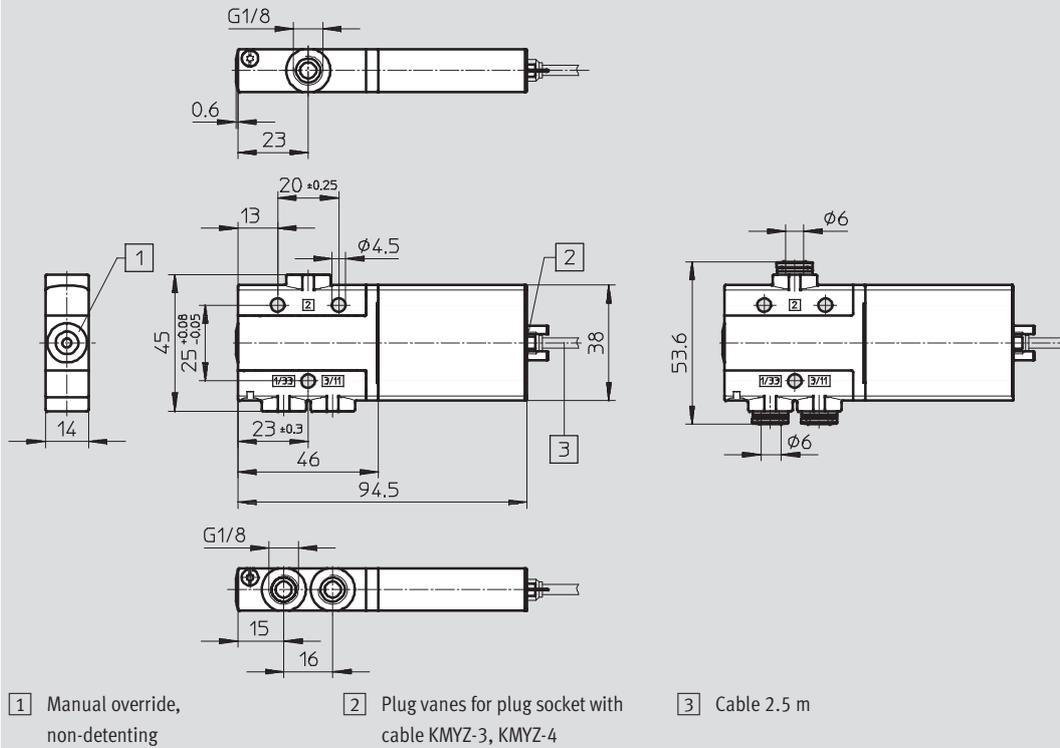
Technical data – Individual valve

Dimensions

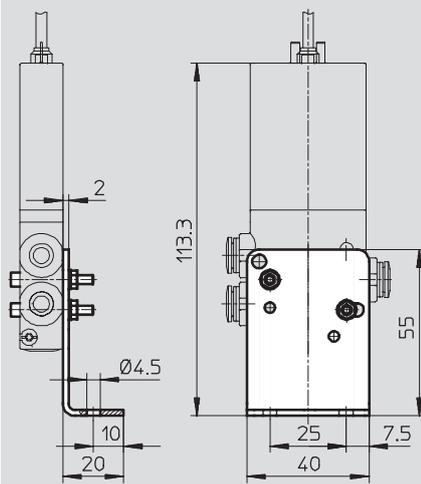
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Valve with connecting thread G1/8

Valve with push-in fitting QS 6



Mounting bracket MHE2-BG-L



Solenoid valves MHE3, fast-switching valves

Technical data – Individual valve

Ordering data – Valves					
	Pneumatic connection	Normal position	Electrical connection	Part No.	Type
Response time 3/2.3 ms					
Operating voltage 24 V DC	Connecting thread G $\frac{1}{8}$	Normally open	Plug vanes	525167	MHE3-MS1H-3/20- $\frac{1}{8}$
			Cable	525169	MHE3-MS1H-3/20- $\frac{1}{8}$ -K
		Normally closed	Plug vanes	525147	MHE3-MS1H-3/2G- $\frac{1}{8}$
			Cable	525149	MHE3-MS1H-3/2G- $\frac{1}{8}$ -K
	Push-in connector QS 6	Normally open	Plug vanes	525171	MHE3-MS1H-3/20-QS6
		Normally closed	Plug vanes	525151	MHE3-MS1H-3/2G-QS6
			Cable	525153	MHE3-MS1H-3/2G-QS6-K
Response time 8.3/4.5 ms					
Operating voltage 24 V DC	Connecting thread G $\frac{1}{8}$	Normally open	Plug vanes	525166	MHE3-M1H-3/20- $\frac{1}{8}$
			Cable	525168	MHE3-M1H-3/20- $\frac{1}{8}$ -K
		Normally closed	Plug vanes	525146	MHE3-M1H-3/2G- $\frac{1}{8}$
			Cable	525148	MHE3-M1H-3/2G- $\frac{1}{8}$ -K
	Push-in connector QS 6	Normally open	Plug vanes	525170	MHE3-M1H-3/20-QS6
		Normally closed	Plug vanes	525150	MHE3-M1H-3/2G-QS6
			Cable	525152	MHE3-M1H-3/2G-QS6-K

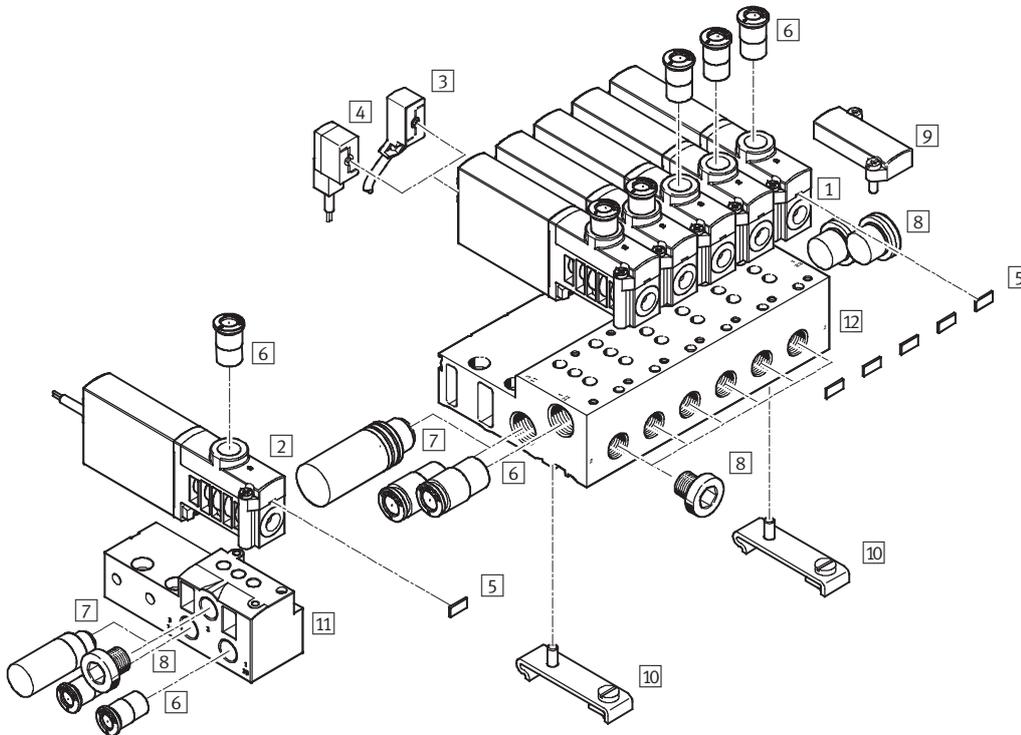
Ordering data – Product-specific accessories					
Designation	Weight [g]	CRC	Part No.	Type	
Mounting bracket	55	2 ¹⁾	196165	MHE2-BG-L	

1) 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 MHP3, fast-switching valves

Peripherals overview – Semi in-line valve

Connection with plug vanes – Connection with moulded-in cable



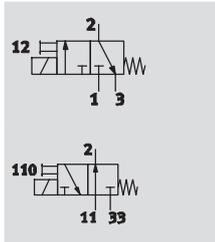
Valves and accessories		
	Brief description	→ Page/Internet
1	Semi in-line valve MHP3	With plug vanes 52
2	Semi in-line valve MHP3-...-K	With cable 52
3	Plug socket with cable KMYZ-4 (IP 40)	With PVC cable 63
4	Plug socket with cable KMYZ-3 (IP 65)	With LED, PUR cable, with M8 plug or open end 63
5	Inscription label MH-BZ-80X	For identifying the valves 63
6	Push-in fittings QS	For connecting compressed air tubing with standard O.D. quick star
7	Silencer UC	For fitting in exhaust ports uc
8	Blanking plug B	For sealing unused ports 63
9	Blanking plate MHAP3-BP-3	For sealing vacant positions 63
10	H-rail mounting CPV10/14-VI-BG-NRH-35	– 63
11	Individual sub-base MHA3-AS-3-1/8	For semi in-line valve; the individual sub-base is also used for the sub-base valve, the output port must in this case be sealed with a blanking plug 55
12	Manifold block MHA3-PR	For semi in-line valve 55

Solenoid valves MHP3, fast-switching valves

FESTO

Technical data – Semi in-line valve

Function



-  - Voltage
24 V DC
-  -
-0.9 ... +8 bar
-  - Temperature range
-5 ... +40 °C



General technical data	
Valve function	3/2 way, single solenoid ¹⁾
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 19
Nominal diameter	[mm] 3
Standard nominal flow rate	[l/min] 200
Type of mounting	On sub-base or manifold, via through-hole
Pneumatic connection	Connecting thread G1/8
	Push-in fitting for tubing O.D. 6 mm
Product weight	[g] 120

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
	Vacuum, grade of filtration 40 µm
Operating pressure	[bar] -0.9 ... +8
Operating pressure, reversible	[bar] -0.9 ... 0
Ambient temperature	[°C] -5 ... +40
Temperature of medium	[°C] -5 ... +40
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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 MHP3, fast-switching valves

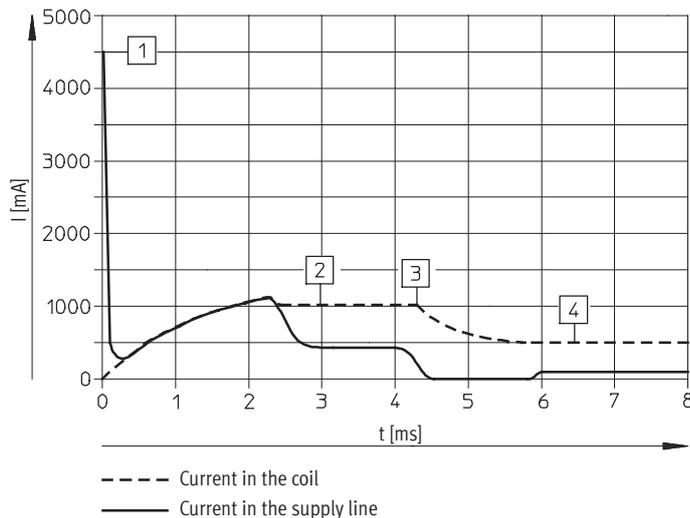
Technical data – Semi in-line valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	Pull: 6.5 Hold: 1.6
Without fast-switching electronics	[W]	3.7
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3/2.3 +10% ... -30%
Maximum switching frequency	[Hz]	280 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	8.3/4.5
Maximum switching frequency	[Hz]	130

1) The ambient temperature must be limited as from 100 Hz.

Current path for valves with fast-switching electronics



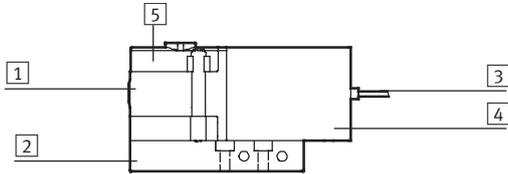
- 1 Capacitor charging
- 2 Controlled coil current 1 A
- 3 Drop to holding current
- 4 Controlled holding current 0.5 A

Solenoid valves MHP3, fast-switching valves

Technical data – Semi in-line valve



Materials



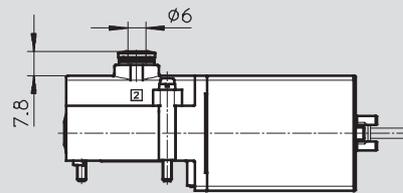
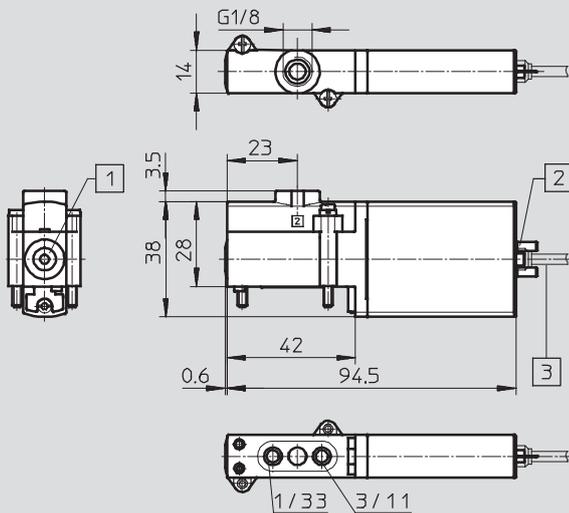
1	Body	Die-cast zinc, coated
2	Sub-base	Manifold block: Aluminium Individual sub-base: Die-cast zinc
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
5	Connection piece	Polyamide
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE

Dimensions

Download CAD Data → www.festo.com/us/cad

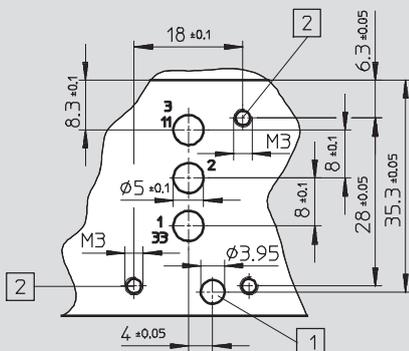
Valve with connecting thread G1/8

Valve with push-in fitting QS 6



- 1 Manual override, non-detenting
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 3 Cable 2.5 m

Port pattern on sub-bases



Note

Semi in-line valves do not require port 2.
 If used as a 2/2-way valve, normally closed, port 3/11 is not required.
 If used as a 2/2-way valve, normally open, port 1/33 is not required.

- 1 Hole for coding pin, 2 mm deep
- 2 Mounting thread, 8 mm deep

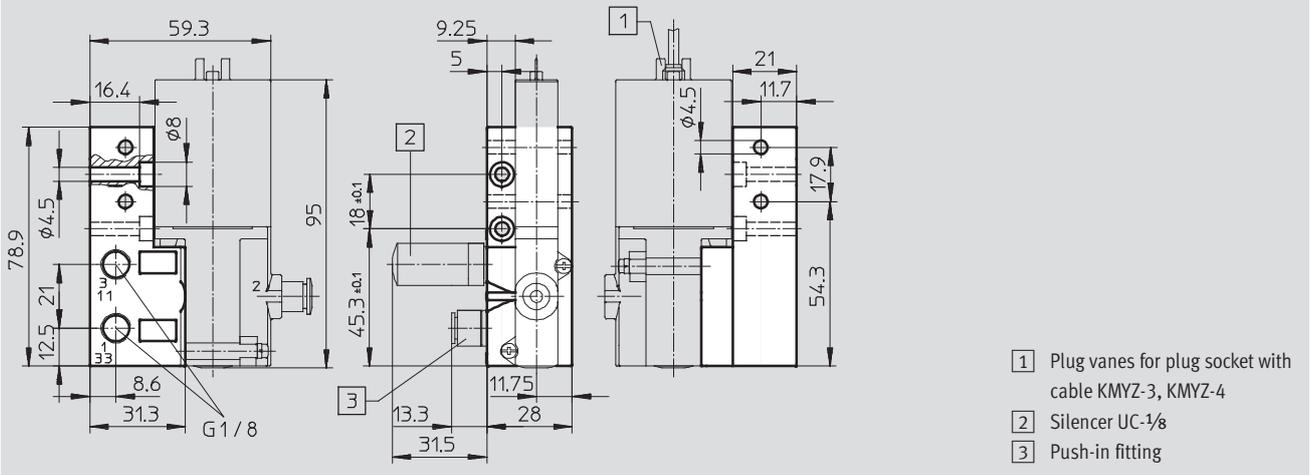
Solenoid valves MHP3, fast-switching valves

Technical data – Semi in-line valve

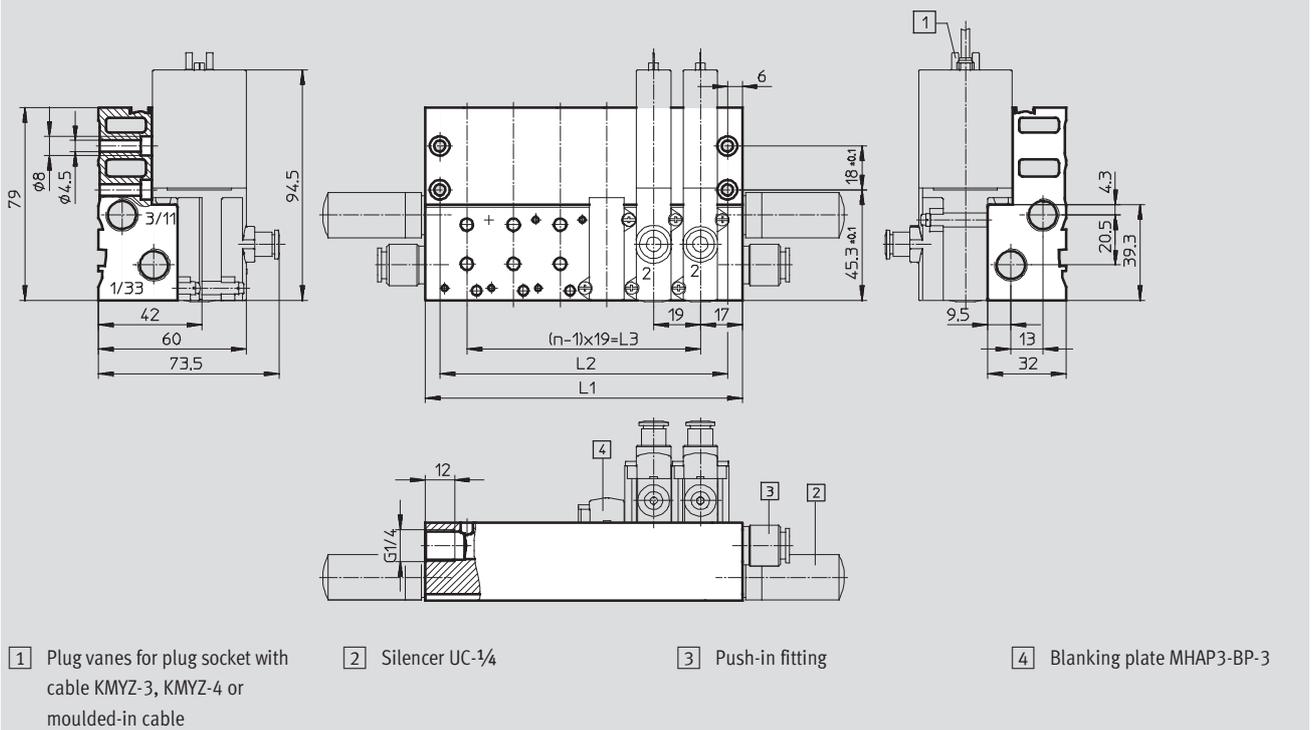
Dimensions

Download CAD Data → www.festo.com/us/cad

Individual sub-base



Manifold mounting



Valve positions n	L1	L2	L3
2	53	41	19
4	91	79	57
6	129	117	95

Valve positions n	L1	L2	L3
8	167	155	133
10	205	193	171

Solenoid valves MHP3, fast-switching valves

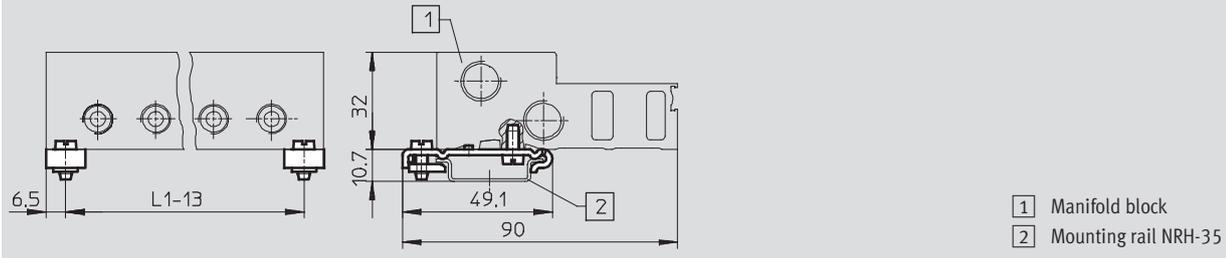
Technical data – Semi in-line valve

FESTO

Dimensions

Download CAD Data → www.festo.com/us/cad

H-rail mounting CPV10/14-VI-BG-NRH-35



Type	Valve positions n	L1
MHA3-PR2-1/8	2	53
MHA3-PR4-1/8	4	91
MHA3-PR6-1/8	6	129

Type	Valve positions n	L1
MHA3-PR8-1/8	8	167
MHA3-PR10-1/8	10	205

Ordering data – Valves

	Pneumatic connection	Normal position	Electrical connection	Part No.	Type
Response time 3/2.3 ms					
Operating voltage 24 V DC	Connecting thread G1/8	Normally open	Plug vanes	525159	MHP3-MS1H-3/20-1/8
		Normally closed	Plug vanes	525139	MHP3-MS1H-3/2G-1/8
	Push-in connector QS 6	Normally closed	Plug vanes	525143	MHP3-MS1H-3/2G-QS6
			Cable	525145	MHP3-MS1H-3/2G-QS6-K
Response time 8.3/4.5 ms					
Operating voltage 24 V DC	Connecting thread G1/8	Normally open	Plug vanes	525158	MHP3-M1H-3/20-1/8
		Normally closed	Plug vanes	525138	MHP3-M1H-3/2G-1/8
	Push-in connector QS 6	Normally closed	Plug vanes	525142	MHP3-M1H-3/2G-QS6

Note

Type 3/2G and type 3/20 valves must not be mixed on a manifold block.

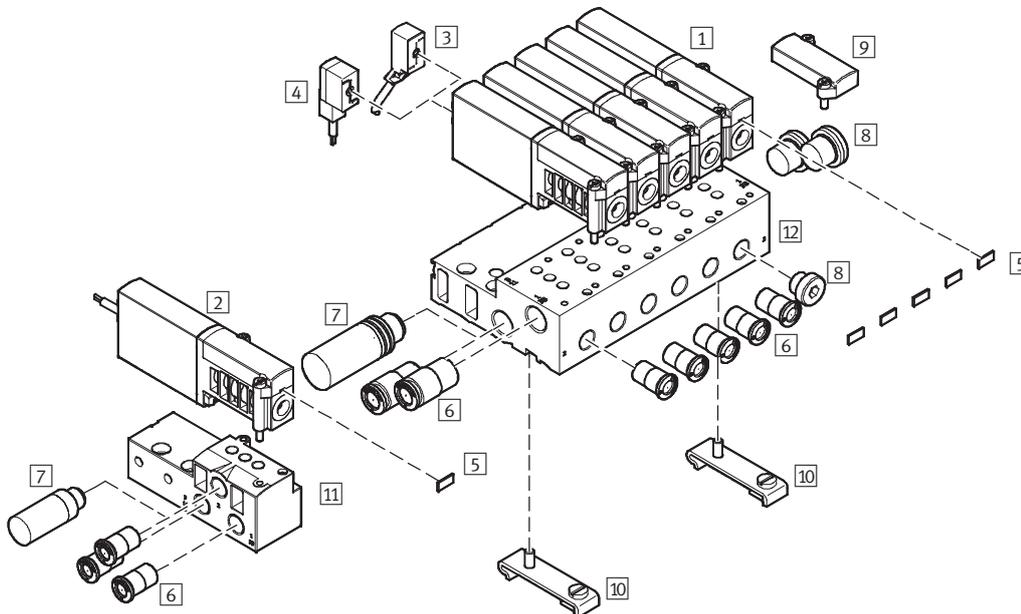
Ordering data – Product-specific accessories

Designation		Part No.	Type
Individual sub-base	1 valve	525214	MHA3-AS-3-1/8
Manifold block for	2 valves	525221	MHA3-PR2-1/8
	4 valves	525222	MHA3-PR4-1/8
	6 valves	525223	MHA3-PR6-1/8
	8 valves	525224	MHA3-PR8-1/8
	10 valves	525225	MHA3-PR10-1/8

Solenoid valves MHA3, fast-switching valves

Peripherals overview – Sub-base valve

Connection with plug vanes – Connection with moulded-in cable

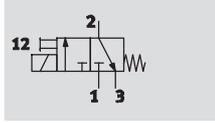


Valves and accessories		
	Brief description	→ Page/Internet
1	Sub-base valve MHA3	With plug vanes 58
2	Sub-base valve MHA3-...-K	With cable 58
3	Plug socket with cable KMYZ-4 (IP 40)	With PVC cable 63
4	Plug socket with cable KMYZ-3 (IP 65)	With LED, PUR cable, with M8 plug or open end 63
5	Inscription label MH-BZ-80X	For identifying the valves 63
6	Push-in fittings QS	For connecting compressed air tubing with standard O.D. quick star
7	Silencer UC	For fitting in exhaust ports uc
8	Blanking plug B	For sealing unused ports 63
9	Blanking plate MHAP3-BP-3	For sealing vacant positions 63
10	H-rail mounting CPV10/14-VI-BG-NRH-35	– 63
11	Individual sub-base MHA3-AS-3-1/8	For sub-base valve 61
12	Manifold block MHA3-PR...-3-1/8	For sub-base valve 61

Solenoid valves MHA3, fast-switching valves

Technical data – Sub-base valve

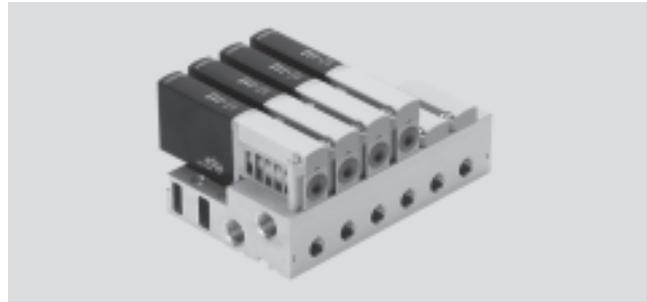
Function



-  - Voltage
24 V DC

-  -
-0.9 ... +8 bar

-  - Temperature range
-5 ... +40 °C



General technical data		
Valve function		3/2 way, single solenoid ¹⁾
Design		Pressure-relieved poppet valve
Sealing principle		Soft
Control type		Electric
Actuation type		Direct
Direction of flow		Reversible with restrictions ²⁾
Exhaust function		With flow control
Manual override		Non-detenting
Assembly position		Any
Grid dimension	[mm]	19
Nominal diameter	[mm]	3
Standard nominal flow rate	[l/min]	200
Type of mounting		On sub-base or manifold, via through-hole
Pneumatic connection		Connecting thread G1/8
Product weight	[g]	120

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
		Vacuum, grade of filtration 40 µm
Operating pressure	[bar]	-0.9 ... +8
Operating pressure, reversible	[bar]	-0.9 ... 0
Ambient temperature	[°C]	-5 ... +40
Temperature of medium	[°C]	-5 ... +40
Corrosion resistance class CRC		2 ¹⁾
Certification		c UL us - Recognised (OL)

- 1) 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 MHA3, fast-switching valves

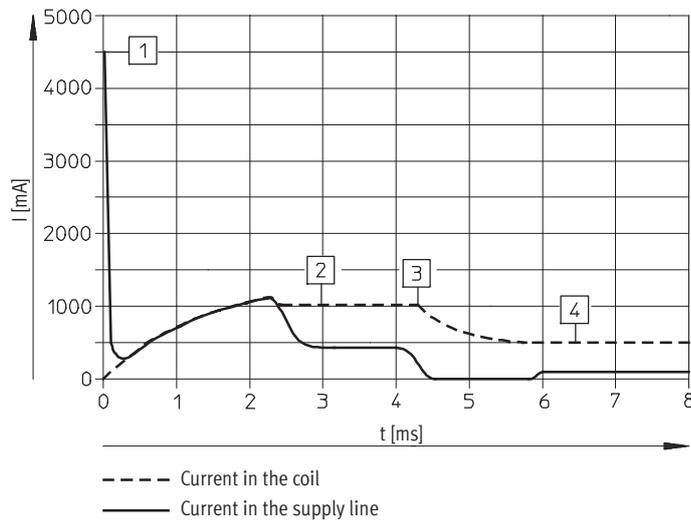
Technical data – Sub-base valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	Pull: 6.5 Hold: 1.6
Without fast-switching electronics	[W]	3.7
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMYZ-3		IP65
With plug socket with cable KMYZ-3 and plug M8		IP65
With plug socket with cable KMYZ-4		IP40

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3/2.3 +10% ... -30%
Maximum switching frequency	[Hz]	280 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	8.3/4.5
Maximum switching frequency	[Hz]	130

1) The ambient temperature must be limited as from 100 Hz.

Current path for valves with fast-switching electronics



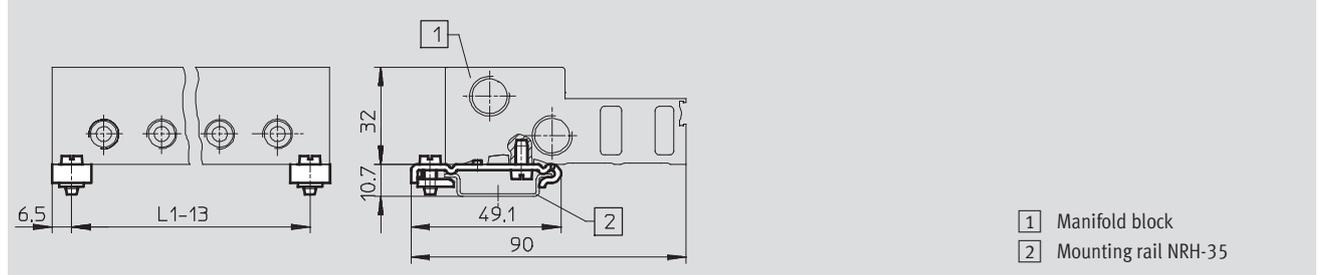
- 1 Capacitor charging
- 2 Controlled coil current 1 A
- 3 Drop to holding current
- 4 Controlled holding current 0.5 A

Solenoid valves MHA3, fast-switching valves

Technical data – Sub-base valve

Dimensions Download CAD Data → www.festo.com/us/cad

H-rail mounting CPV10/14-VI-BG-NRH-35



Type	Valve positions n	L1
MHA3-PR2-1/8	2	53
MHA3-PR4-1/8	4	91
MHA3-PR6-1/8	6	129

Type	Valve positions n	L1
MHA3-PR8-1/8	8	167
MHA3-PR10-1/8	10	205

Ordering data – Valves

Normal position		Electrical connection	Part No.	Type
Response time 3/2.3 ms				
Operating voltage 24 V DC	Normally closed	Plug vanes	525135	MHA3-MS1H-3/2G-3
		Cable	525137	MHA3-MS1H-3/2G-3-K
Response time 8.3/4.5 ms				
Operating voltage 24 V DC	Normally closed	Plug vanes	525134	MHA3-M1H-3/2G-3
		Cable	525136	MHA3-M1H-3/2G-3-K

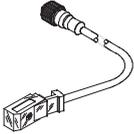
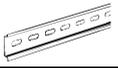
Ordering data – Product-specific accessories

Designation		Part No.	Type
Individual sub-base	1 valve	525214	MHA3-AS-3-1/8
Manifold block for	2 valves	525221	MHA3-PR2-1/8
	4 valves	525222	MHA3-PR4-1/8
	6 valves	525223	MHA3-PR6-1/8
	8 valves	525224	MHA3-PR8-1/8
	10 valves	525225	MHA3-PR10-1/8

Solenoid valves MH3, fast-switching valves

Accessories

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Ordering data			Part No.	Type
Plug socket with cable				
	Protection class IP65 with LED, PUR cable, open cable end	Length 2.5 m	193693	KMYZ-3-24-2,5-LED-PUR-B
		Length 5 m	193695	KMYZ-3-24-5-LED-PUR-B
		Length 10 m	196066	KMYZ-3-24-10-LED-PUR-B
	Protection class IP65 with LED, PUR cable, M8 plug, 3-pin	Length 0.5 m	525654	KMYZ-3-24-M8-0,5-LED-PUR
		Length 2.5 m	525655	KMYZ-3-24-M8-2,5-LED-PUR
	Protection class IP40, PVC cable, open cable end	Length 0.5 m	193690	KMYZ-4-24-0,5-B
		Length 2.5 m	193691	KMYZ-4-24-2,5-B
H-rail mounting				
	For 5/2-way valves		162556	CPV10/14-VI-BG-NRH-35
Blanking plug				
	For G1/8 thread	10 pieces	3569	B-1/8
	For G1/4 thread	10 pieces	3568	B-1/4
Inscription label				
	For solenoid valve	80 labels in frame	197259	MH-BZ-80X
H-rail				
		2 m	35430	NRH-35-2000
Blanking plate				
	For manifold block		525226	MHAP3-BP-3
Silencer				
			→ Internet: uc	
Push-in fittings				
			→ Internet: quick star	

Solenoid valves MH4, fast-switching valves

Type codes

MH P 4 - M S 1 H - 3/2 - 0 - QS8

Valve family	
MH	Miniature and fast-switching valves

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

Size	
4	Flow rate 400 l/min

Drive function	
M	Solenoid, switching

Response time	
-	10.5 ms
S	3.5 ms

Operating voltage	
1	24 V DC

Manual override	
H	Non-detenting

Valve function	
3/2	3/2-way valve

Normal position	
G	Closed
O	Open

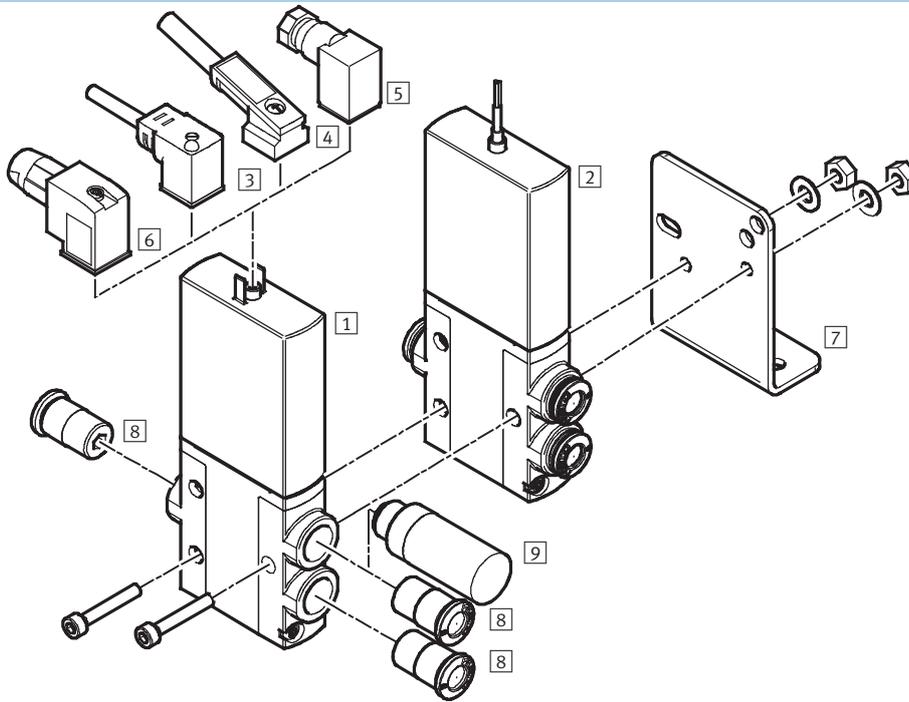
Pneumatic connection	
4	Nominal size 4 mm
1/4	G1/4 thread
QS8	Push-in connector for 8 mm O.D. tubing

Electrical connection	
-	Plug vanes for plug socket KMEB-...
K	Moulded-in cable, 2.5 m long

Solenoid valves MHE4, fast-switching valves

Peripherals overview – Individual valve

Connection with plug vanes – Connection with moulded-in cable



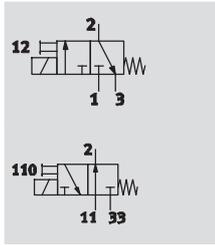
Valves and accessories		Brief description	→ Page/Internet
1	Individual valve MHE4-...	With plug vanes	66
2	Individual valve MHE4-...-K	With cable	66
3	Plug socket with cable KMEB-1 (IP65)	PVC cable, with or without LED	82
4	Plug socket with cable KMEB-2 (IP65)	With LED, without LED; PUR cable, with or without LED	82
5	Plug socket MSSD-EB (IP65)	With clamping screw	82
6	Plug socket MSSD-EB-S-M14 (IP65)	With insulation displacement connector	82
7	Mounting bracket MHE2-BG-L	–	69
8	Push-in fittings QS	For connecting compressed air tubing with standard O.D.	quick star
9	Silencer UC	For fitting in exhaust ports	uc

Solenoid valves MHE4, fast-switching valves

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Technical data – Individual valve

Function



-  - Voltage
24 V DC

-  -
-0.9 ... +8 bar

-  - Temperature range
-5 ... +60 °C



General technical data	
Valve function	3/2 way, single solenoid ¹⁾
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 24
Nominal diameter	[mm] 4
Standard nominal flow rate	[l/min] 400
Type of mounting	Via through-holes
Pneumatic connection	Connecting thread G1/8
	Push-in fitting for tubing O.D. 8 mm
Product weight	[g] 270

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
	Vacuum, grade of filtration 40 µm
Operating pressure	[bar] -0.9 ... +8
Operating pressure, reversible	[bar] -0.9 ... 0
Ambient temperature	[°C] -5 ... +60
Temperature of medium	[°C] -5 ... +60
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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 MHE4, fast-switching valves

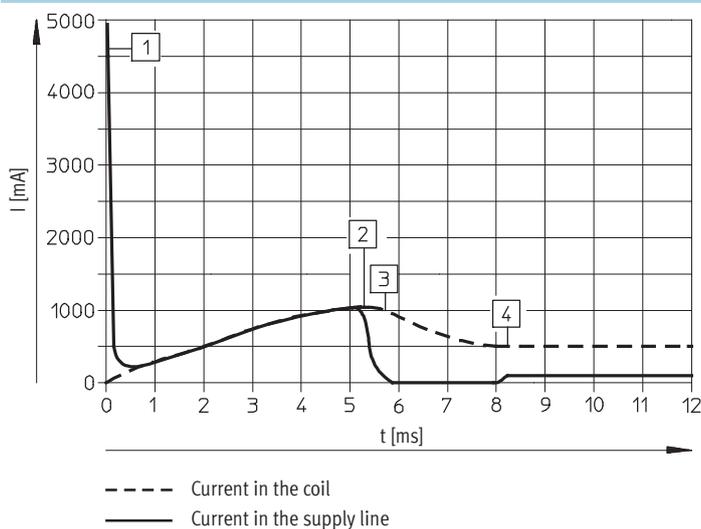
Technical data – Individual valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	Pull: 8.5 Hold: 2.125
Without fast-switching electronics	[W]	5,6
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMEB		IP65

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3.5/3.5 +10% ... -30%
Maximum switching frequency	[Hz]	210 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	10.5/5
Maximum switching frequency	[Hz]	120

1) The ambient temperature must be limited as from 90 Hz.

Current path for valves with fast-switching electronics



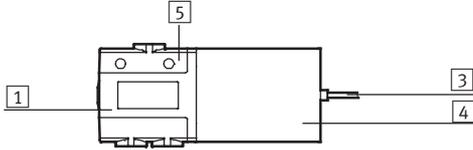
- 1) Capacitor charging
- 2) Controlled coil current 1 A
- 3) Drop to holding current
- 4) Controlled holding current 0.5 A

Solenoid valves MHE4, fast-switching valves

Technical data – Individual valve



Materials



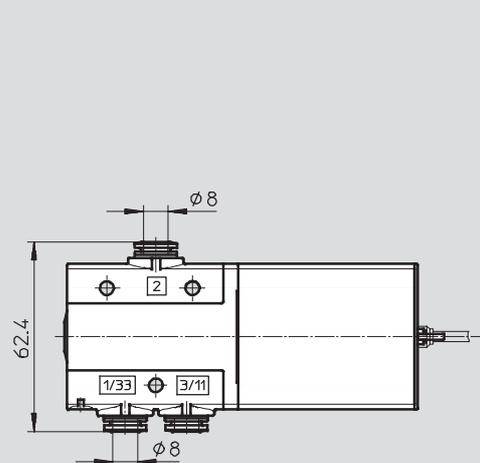
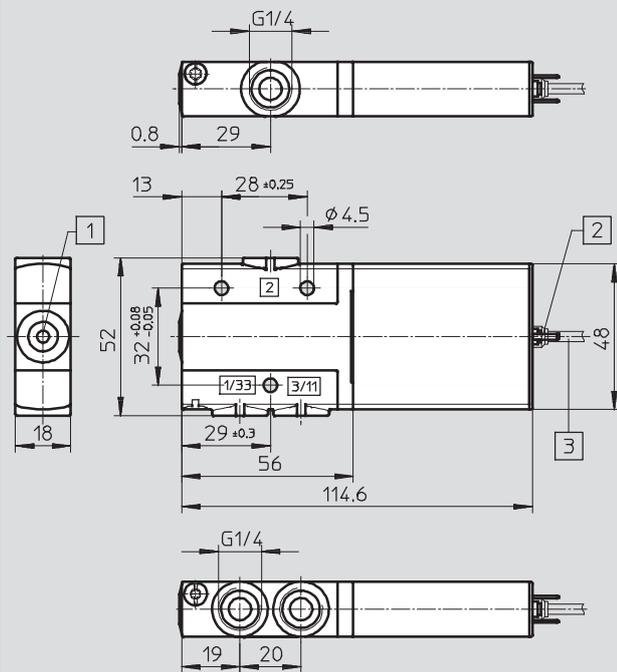
1	Body	Die-cast zinc, coated
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
5	Connection piece	Polyamide
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE

Dimensions

Download CAD Data → www.festo.com/us/cad

Valve with connecting thread G1/4

Valve with push-in fitting QS 8

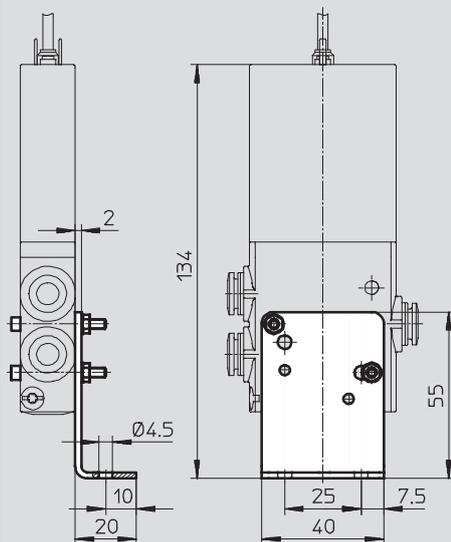


1 Manual override, non-detenting

2 Plug vanes for plug socket with cable KMEB

3 Cable 2.5 m

Mounting bracket MHE2-BG-L



Solenoid valves MHE4, fast-switching valves

Technical data – Individual valve

Ordering data – Valves						
	Pneumatic connection	Normal position	Electrical connection	Part No.	Type	
Response time 3.5/3.5 ms						
Operating voltage 24 V DC	Connecting thread G $\frac{1}{4}$	Normally open	Plug vanes	525207	MHE4-MS1H-3/20- $\frac{1}{4}$	
		Normally closed	Plug vanes	525187	MHE4-MS1H-3/2G- $\frac{1}{4}$	
	Push-in connector QS 8	Normally open	Cable	525189	MHE4-MS1H-3/2G- $\frac{1}{4}$ -K	
			Plug vanes	525211	MHE4-MS1H-3/20-QS8	
		Normally closed	Cable	525213	MHE4-MS1H-3/20-QS8-K	
			Plug vanes	525191	MHE4-MS1H-3/2G-QS8	
		Normally closed	Cable	525193	MHE4-MS1H-3/2G-QS8-K	
Response time 10.5/5 ms						
Operating voltage 24 V DC	Connecting thread G $\frac{1}{4}$	Normally open	Plug vanes	525206	MHE4-M1H-3/20- $\frac{1}{4}$	
		Normally closed	Cable	525208	MHE4-M1H-3/20- $\frac{1}{4}$ -K	
	Push-in connector QS 8		Normally open	Plug vanes	525186	MHE4-M1H-3/2G- $\frac{1}{4}$
		Cable		525188	MHE4-M1H-3/2G- $\frac{1}{4}$ -K	
		Normally closed	Plug vanes	525210	MHE4-M1H-3/20-QS8	
			Plug vanes	525190	MHE4-M1H-3/2G-QS8	

Ordering data – Product-specific accessories					
Designation	Weight [g]	CRC	Part No.	Type	
Mounting bracket	55	2 ¹⁾	196165	MHE2-BG-L	

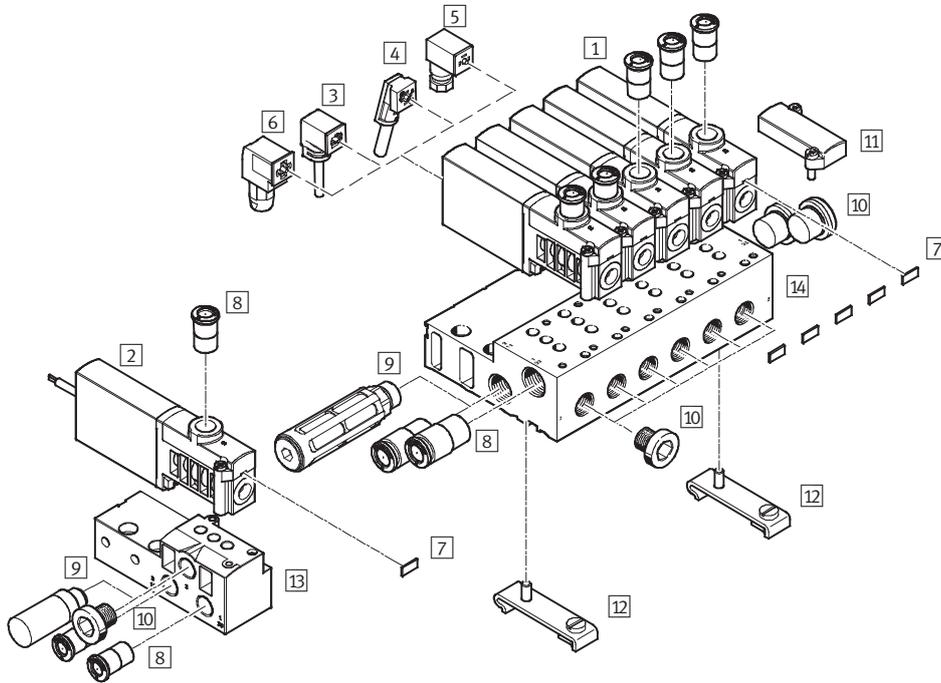
1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Solenoid valves MHP4, fast-switching valves

Peripherals overview – Semi in-line valve

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Connection with plug vanes – Connection with moulded-in cable

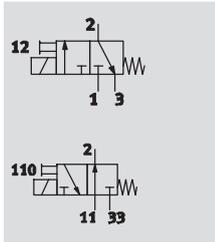


Valves and accessories		
	Brief description	→ Page/Internet
1	Semi in-line valve MHP4 With plug vanes	71
2	Semi in-line valve MHP4-...-K With cable	71
3	Plug socket MSSD-EB (IP65) With clamping screw	82
4	Plug socket MSSD-EB-S-M14 (IP65) With insulation displacement connector	82
5	Plug socket with cable KMEB-1 (IP65) PVC cable, with or without LED	82
6	Plug socket with cable KMEB-2 (IP65) PUR cable, with or without LED	82
7	Inscription label MH-BZ-80X For identifying the valves	82
8	Push-in fittings QS For connecting compressed air tubing with standard O.D.	quick star
9	Silencer UC For fitting in exhaust ports	uc
10	Blanking plug B For sealing unused ports	82
11	Blanking plate MHAP4-BP-3 For sealing vacant positions	82
12	H-rail mounting CPV10/14-VI-BG-NRH-35 –	82
13	Individual sub-base MHA4-AS-3-¼ For semi in-line valve; the individual sub-base is also used for the sub-base valve, the output port must in this case be sealed with a blanking plug	74
14	Manifold block MHA4-PR For semi in-line valve	74

Solenoid valves MHP4, fast-switching valves

Technical data – Semi in-line valve

Function



Voltage
24 V DC



–0.9 ... +8 bar



Temperature range
–5 ... +40 °C



General technical data	
Valve function	3/2 way, single solenoid ¹⁾
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 24
Nominal diameter	[mm] 4
Standard nominal flow rate	[l/min] 400
Type of mounting	On sub-base or manifold, via through-hole
Pneumatic connection	Connecting thread G1/4
	Push-in fitting for tubing O.D. 8 mm
Product weight	[g] 270

- 1) Can be used as a 2/2 way valve by sealing connection 1 or 3
 2) There may be slight leakage in the pressure range –0.5 to +0.5 bar

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
	Vacuum, grade of filtration 40 µm
Operating pressure	[bar] –0.9 ... +8
Operating pressure, reversible	[bar] –0.9 ... 0
Ambient temperature	[°C] –5 ... +40
Temperature of medium	[°C] –5 ... +40
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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 MHP4, fast-switching valves

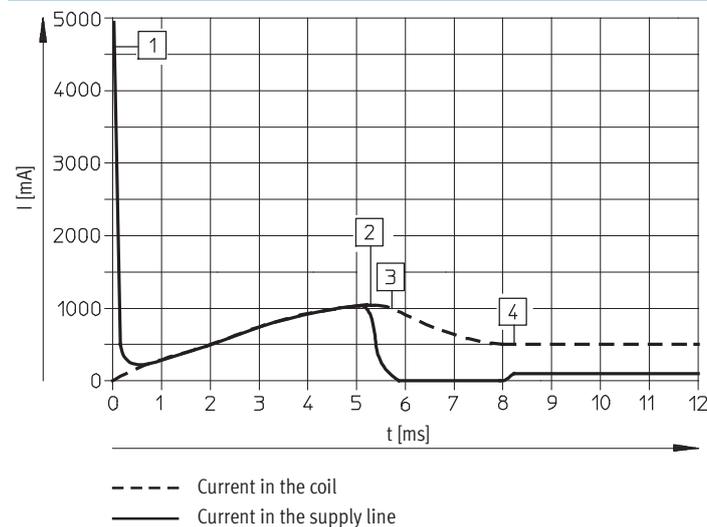
Technical data – Semi in-line valve

Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	Pull: 8.5 Hold: 2.125
Without fast-switching electronics	[W]	5.6
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMEB		IP65

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3.5/3.5 +10% ... -30%
Maximum switching frequency	[Hz]	210 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	10.5/5
Maximum switching frequency	[Hz]	120

1) The ambient temperature must be limited as from 100 Hz.

Current path for valves with fast-switching electronics



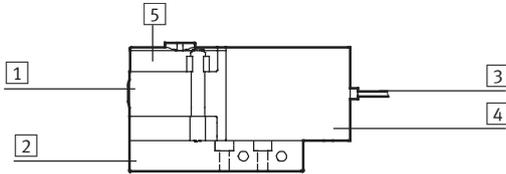
- 1] Capacitor charging
- 2] Controlled coil current 1 A
- 3] Drop to holding current
- 4] Controlled holding current 0.5 A

Solenoid valves MHP4, fast-switching valves

Technical data – Semi in-line valve

FESTO

Materials



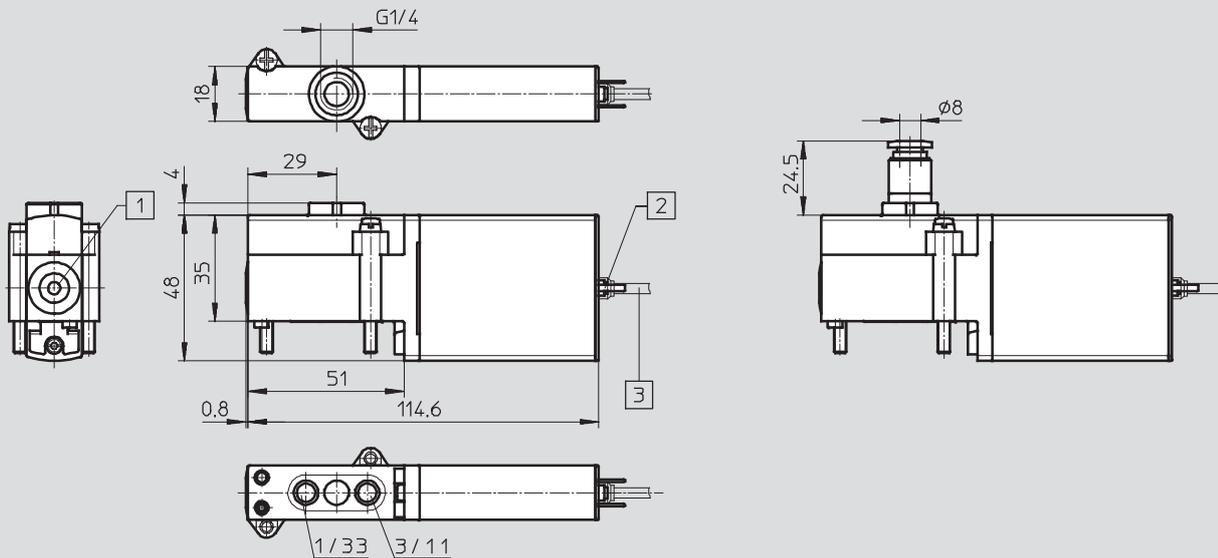
1	Body	Die-cast zinc, coated
2	Sub-base	Manifold block: Aluminium Individual sub-base: Die-cast zinc
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
5	Connection piece	Polyamide
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE

Dimensions

Download CAD Data → www.festo.com/us/cad

Valve with connecting thread G1/4

Valve with push-in fitting QS 8

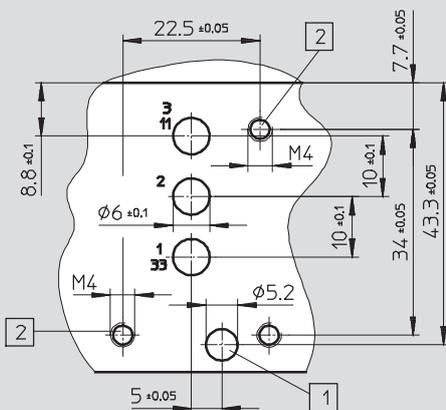


1 Manual override, non-detenting

2 Plug vanes for plug socket with cable KMEB

3 Cable 2.5 m

Port pattern on sub-bases



Note

Semi in-line valves do not require port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not required.
If used as a 2/2-way valve, normally open, port 1/33 is not required.

1 Hole for coding pin, 2.5 mm deep

2 Mounting thread, 13 mm deep

Solenoid valves MHP4, fast-switching valves

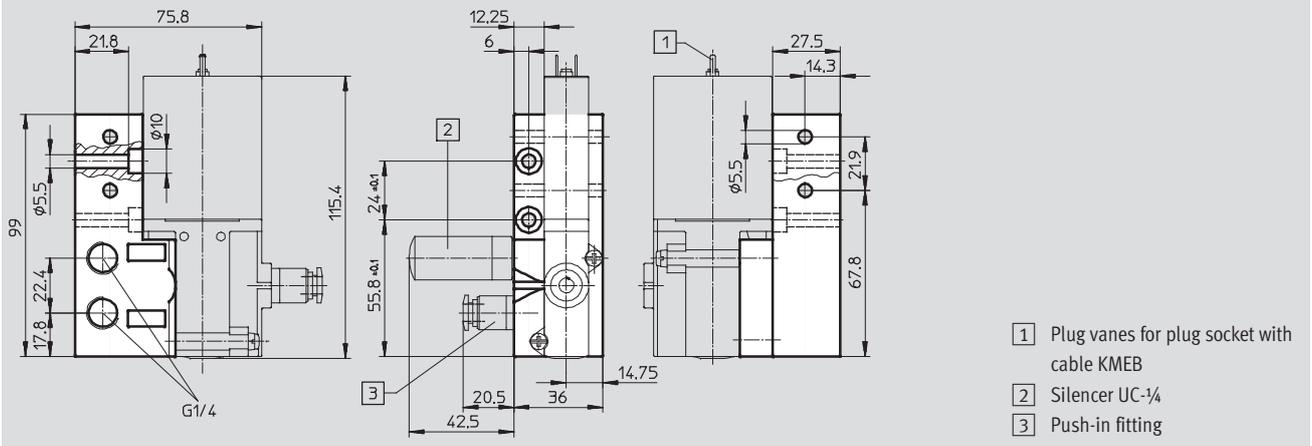
Technical data – Semi in-line valve



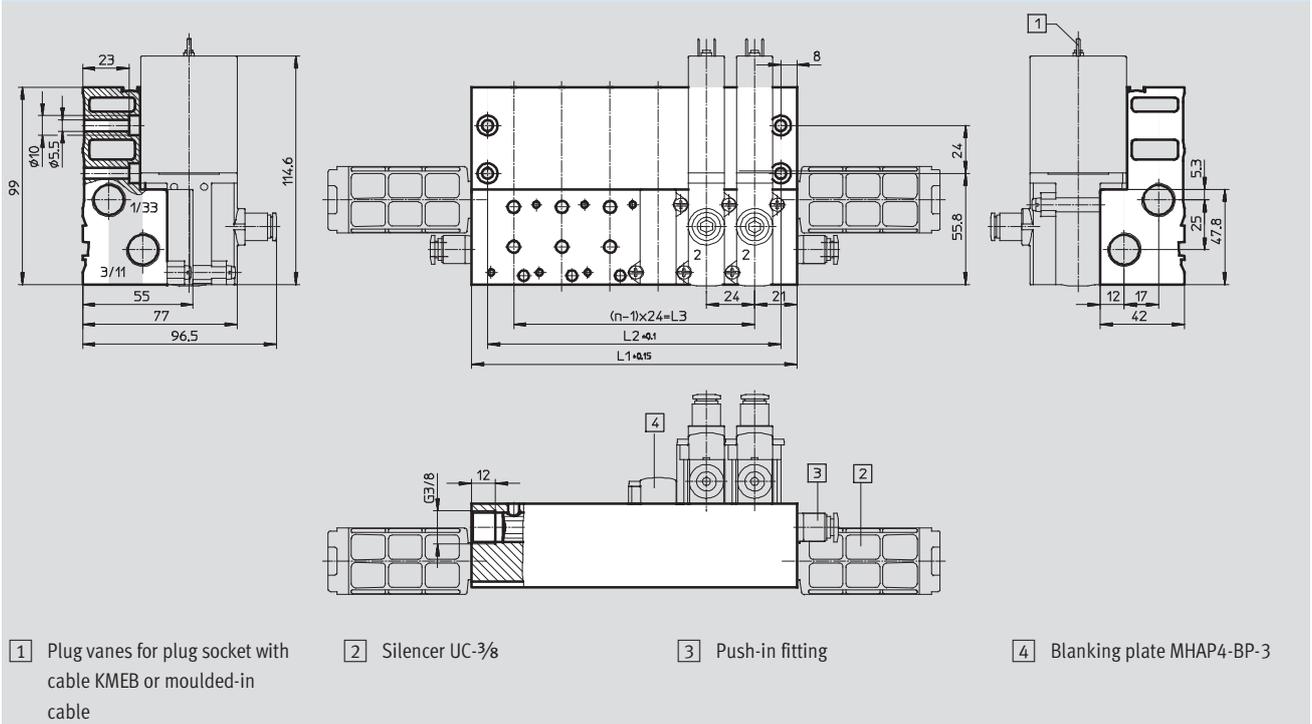
Dimensions

Download CAD Data → www.festo.com/us/cad

Individual sub-base



Manifold mounting



Valve positions n	L1	L2	L3
2	66	50	24
4	114	98	72
6	162	146	120

Valve positions n	L1	L2	L3
8	210	194	168
10	258	242	216

Solenoid valves MHP4, fast-switching valves

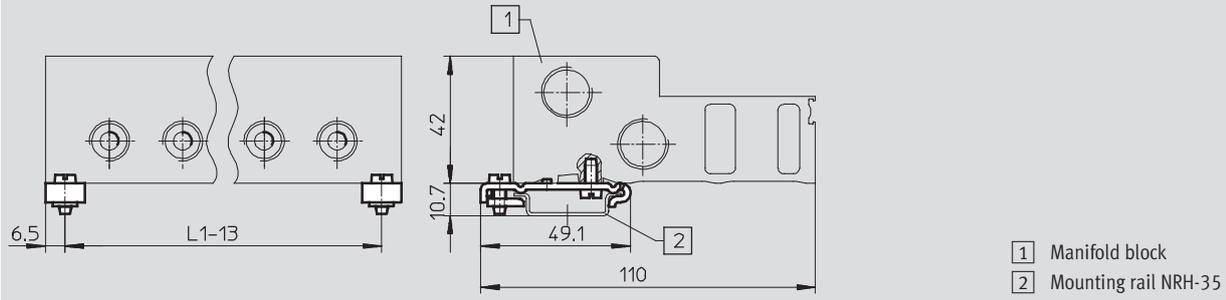
Technical data – Semi in-line valve

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Dimensions

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H-rail mounting CPV10/14-VI-BG-NRH-35



Type	Valve positions n	L1
MHA4-PR2-3	2	66
MHA4-PR4-3	4	114
MHA4-PR6-3	6	162

Type	Valve positions n	L1
MHA4-PR8-3	8	210
MHA4-PR10-3	10	258

Ordering data – Valves

	Pneumatic connection	Normal position	Electrical connection	Part No.	Type
Response time 3.5/3.5 ms					
Operating voltage 24 V DC	Connecting thread G $\frac{1}{4}$	Normally open	Plug vanes	525199	MHP4-MS1H-3/20- $\frac{1}{4}$
		Normally closed	Plug vanes	525179	MHP4-MS1H-3/2G- $\frac{1}{4}$
	Push-in connector QS 8	Normally closed	Plug vanes	525183	MHP4-MS1H-3/2G-QS8
Response time 10.5/5 ms					
Operating voltage 24 V DC	Connecting thread G $\frac{1}{4}$	Normally open	Plug vanes	525198	MHP4-M1H-3/20- $\frac{1}{4}$
		Normally closed	Plug vanes	525178	MHP4-M1H-3/2G- $\frac{1}{4}$

Note

Type 3/2G and type 3/20 valves must not be mixed on a manifold block.

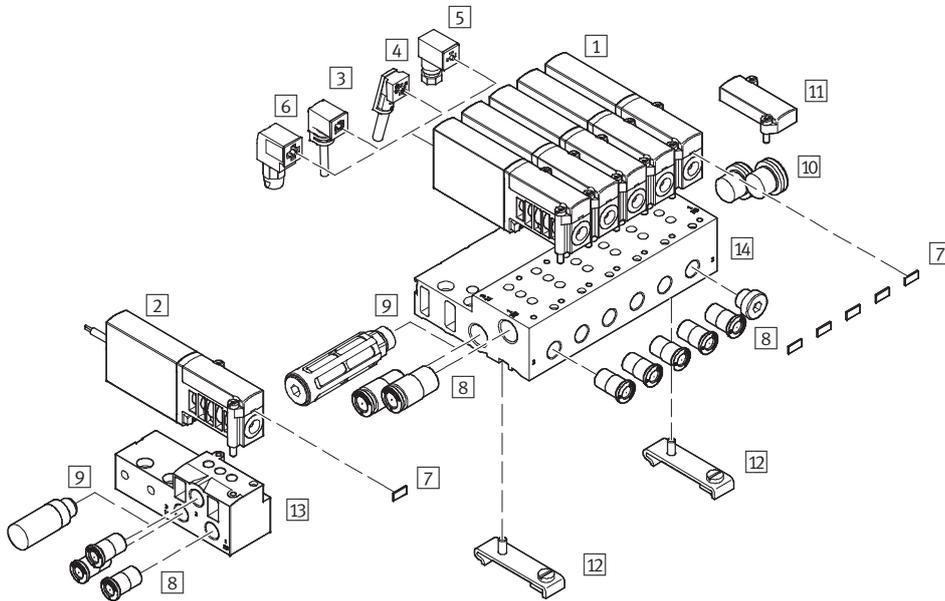
Ordering data – Product-specific accessories

Designation		Part No.	Type
Individual sub-base	1 valve	525227	MHA4-AS-3- $\frac{1}{4}$
Manifold block for	2 valves	525234	MHA4-PR2- $\frac{1}{4}$
	4 valves	525235	MHA4-PR4- $\frac{1}{4}$
	6 valves	525236	MHA4-PR6- $\frac{1}{4}$
	8 valves	525237	MHA4-PR8- $\frac{1}{4}$
	10 valves	525238	MHA4-PR10- $\frac{1}{4}$

Solenoid valves MHA4, fast-switching valves

Peripherals overview – Sub-base valve

Connection with plug vanes – Connection with moulded-in cable



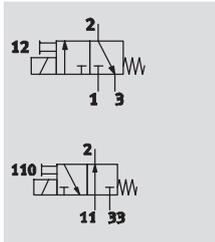
Valves and accessories		
	Brief description	→ Page/Internet
1	Sub-base valve MHA4-...	With plug vanes 82
2	Sub-base valve MHA4-...-K	With cable 82
3	Plug socket with cable KMEB-1 (IP65)	PVC cable, with or without LED 82
4	Plug socket with cable KMEB-2 (IP65)	PUR cable, with or without LED 82
5	Plug socket MSSD-EB (IP65)	With clamping screw 82
6	Plug socket MSSD-EB-S-M14 (IP65)	With insulation displacement connector 82
7	Inscription label MH-BZ-80X	For identifying the valves 82
8	Push-in fittings QS	For connecting compressed air tubing with standard O.D. quick star
9	Silencer UC	For fitting in exhaust ports uc
10	Blanking plug B	For sealing unused ports 82
11	Blanking plate MHAP4-BP-3	For sealing vacant positions 82
12	H-rail mounting CPV10/14-VI-BG-NRH-35	– 82
13	Individual sub-base MHA4-AS-3-1/4	For sub-base valves 80
14	Manifold block MHA4-PR...-3	For sub-base valves 80

Solenoid valves MHA4, fast-switching valves

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Technical data – Sub-base valve

Function



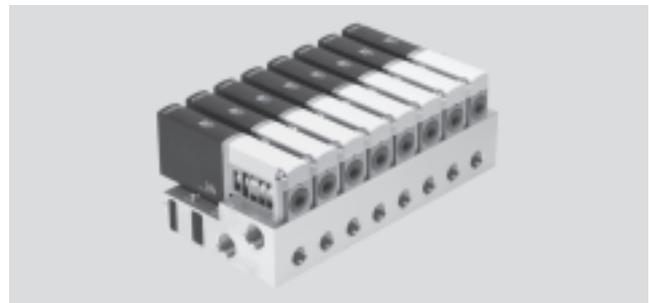
Voltage
24 V DC



-0.9 ... +8 bar



Temperature range
-5 ... +40 °C



General technical data	
Valve function	3/2 way, single solenoid ¹⁾
Design	Pressure-relieved poppet valve
Sealing principle	Soft
Control type	Electric
Actuation type	Direct
Direction of flow	Reversible with restrictions ²⁾
Exhaust function	With flow control
Manual override	Non-detenting
Assembly position	Any
Grid dimension	[mm] 24
Nominal diameter	[mm] 4
Standard nominal flow rate	[l/min] 400
Type of mounting	On sub-base or manifold, via through-hole
Pneumatic connection	Connecting thread G1/4
Product weight	[g] 270

- 1) Can be used as a 2/2 way valve by sealing connection 3 or 33
 2) There may be slight leakage in the pressure range -0.5 to +0.5 bar

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm
	Vacuum, grade of filtration 40 µm
Operating pressure	[bar] -0.9 ... +8
Operating pressure, reversible	[bar] -0.9 ... 0
Ambient temperature	[°C] -5 ... +40
Temperature of medium	[°C] -5 ... +40
Corrosion resistance class CRC	2 ¹⁾
Certification	c UL us - Recognised (OL)

- 1) 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 MHA4, fast-switching valves

Technical data – Sub-base valve

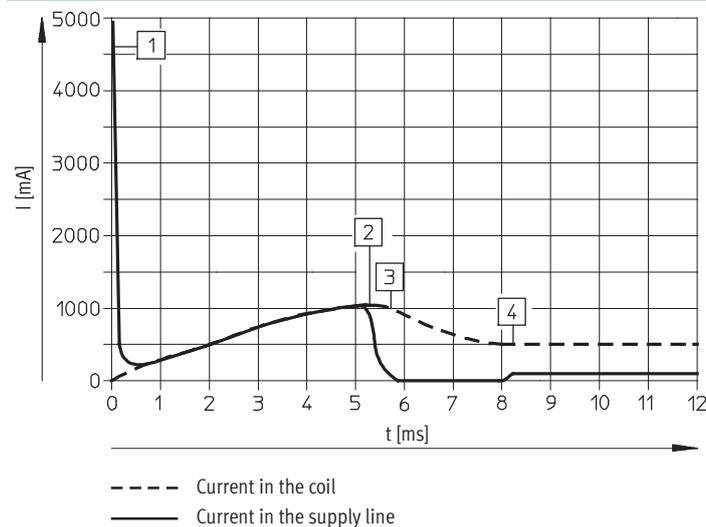
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Electrical data		
Operating voltage	[V DC]	24 ±10%
Type of connection		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	Pull: 8.5 Hold: 2.125
Without fast-switching electronics	[W]	5.6
Protection class to EN 60529		
With moulded-in cable		IP65
With plug socket with cable KMEB		IP65

Response times and switching frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3.5/3.5 +10% ... -30%
Maximum switching frequency	[Hz]	210 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	10.5/5
Maximum switching frequency	[Hz]	120

1) The ambient temperature must be limited as from 100 Hz.

Current path for valves with fast-switching electronics

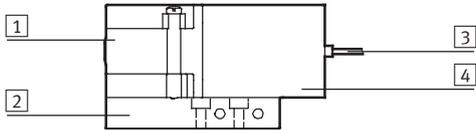


- 1] Capacitor charging
- 2] Controlled coil current 1 A
- 3] Drop to holding current
- 4] Controlled holding current 0.5 A

Solenoid valves MHA4, fast-switching valves

Technical data – Sub-base valve

Materials

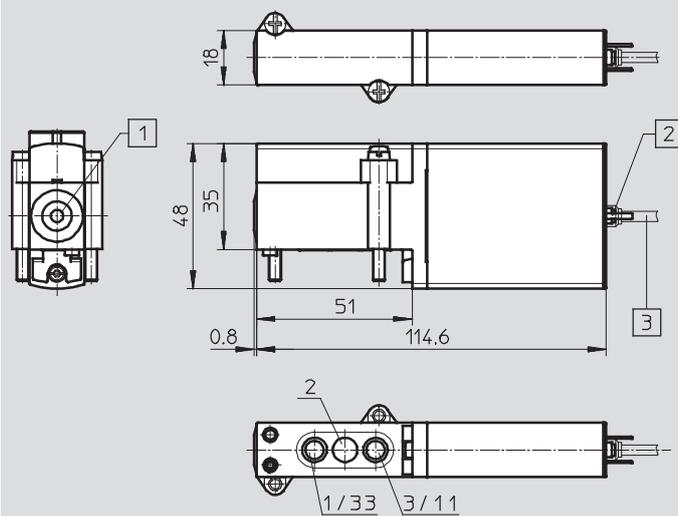


1	Body	Die-cast zinc, coated
2	Sub-base	Manifold block: Aluminium Individual sub-base: Die-cast zinc
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
-	Seals	Nitrile rubber/ hydrogenated nitrile rubber
Note on materials		Free of copper and PTFE

Dimensions

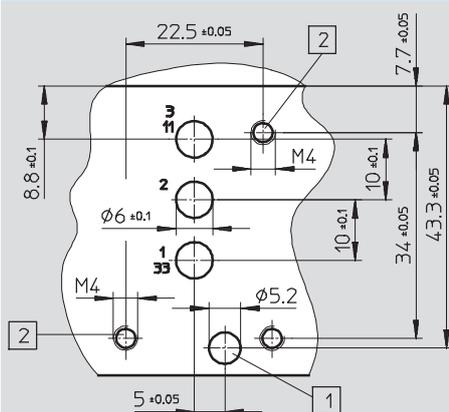
Download CAD Data → www.festo.com/us/cad

Valve



- 1 Manual override, non-detenting
- 2 Plug vanes for plug socket with cable KMEB
- 3 Cable 2.5 m

Port pattern on sub-bases



- 1 Hole for coding pin, 2.5 mm deep
- 2 Mounting thread, 13 mm deep

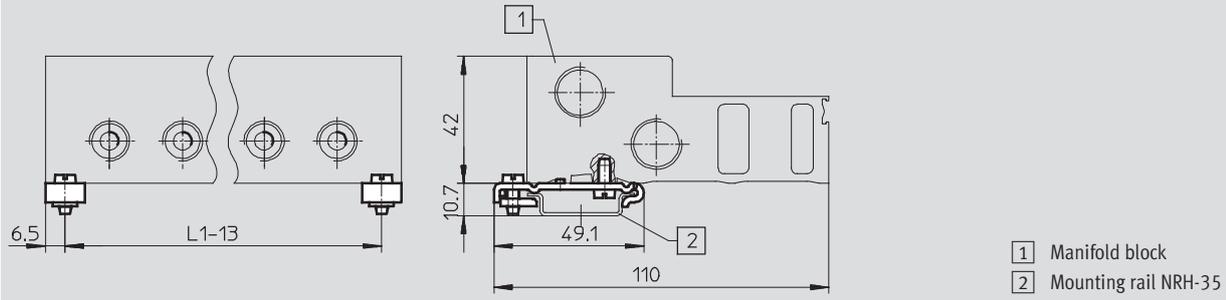
Solenoid valves MHA4, fast-switching valves

Technical data – Sub-base valve

Dimensions

Download CAD Data → www.festo.com/us/cad

H-rail mounting CPV10/14-VI-BG-NRH-35



Type	Valve positions n	L1
MHA4-PR2-3	2	66
MHA4-PR4-3	4	114
MHA4-PR6-3	6	162

Type	Valve positions n	L1
MHA4-PR8-3	8	210
MHA4-PR10-3	10	258

Ordering data – Valves

Normal position		Electrical connection	Part No.	Type
Response time 3.5/3.5 ms				
Operating voltage 24 V DC	Normally closed	Plug vanes	525175	MHA4-MS1H-3/2G-4
		Cable	525177	MHA4-MS1H-3/2G-4-K
Response time 10.5/5 ms				
Operating voltage 24 V DC	Normally open	Cable	525196	MHA4-M1H-3/20-4-K
		Plug vanes	525174	MHA4-M1H-3/2G-4
	Normally closed	Cable	525176	MHA4-M1H-3/2G-4-K

Note

Type 3/2G and type 3/20 valves must not be mixed on a manifold block.

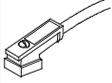
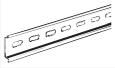
Ordering data – Product-specific accessories

Designation		Part No.	Type
Individual sub-base	1 valve	525227	MHA4-AS-3-1/4
Manifold block for	2 valves	525234	MHA4-PR2-1/4
	4 valves	525235	MHA4-PR4-1/4
	6 valves	525236	MHA4-PR6-1/4
	8 valves	525237	MHA4-PR8-1/4
	10 valves	525238	MHA4-PR10-1/4

Solenoid valves MH4, fast-switching valves

Accessories

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Ordering data			Part No.	Type
Plug socket with cable				
	Protection class IP65 with LED, PUR cable, open cable end	Length 2.5 m	174844	KMEB-2-24-2,5-LED
		Length 5 m	174845	KMEB-2-24-5-LED
	Protection class IP65 without LED, PUR cable, open cable end	Length 2.5 m	174846	KMEB-2-230-2,5
		Length 5 m	174847	KMEB-2-230-5
	Protection class IP65 with LED, PVC cable, open cable end	Length 2.5 m	151688	KMEB-1-24-2,5-LED
		Length 5 m	151689	KMEB-1-24-5-LED
		Length 10 m	193457	KMEB-1-24-10-LED
	Protection class IP65 without LED, PVC cable, open cable end	Length 2.5 m	151690	KMEB-1-230AC-2,5
		Length 5 m	151691	KMEB-1-230AC-5
Plug socket				
	Plug socket, angled, 3-pin, screw terminal		151687	MSSD-EB
	Plug socket, angled, 3-pin, insulation displacement connection		192745	MSSD-EB-S-M14
H-rail mounting				
	For manifold block		162556	CPV10/14-VI-BG-NRH-35
Blanking plug				
	For G1/4 thread	10 pieces	3568	B-1/4
	For G3/8 thread	10 pieces	3570	B-3/8
Inscription label				
	For solenoid valve	80 labels in frame	197259	MH-BZ-80X
H-rail				
		2 m	35430	NRH-35-2000
Blanking plate				
	For manifold block		525239	MHAP4-BP-3
Silencer				
			→ Internet: uc	
Push-in fittings				
			→ Internet: quick star	

Product Range and Company Overview

A Complete Suite of Automation Services

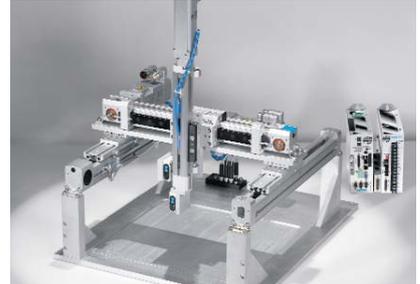
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