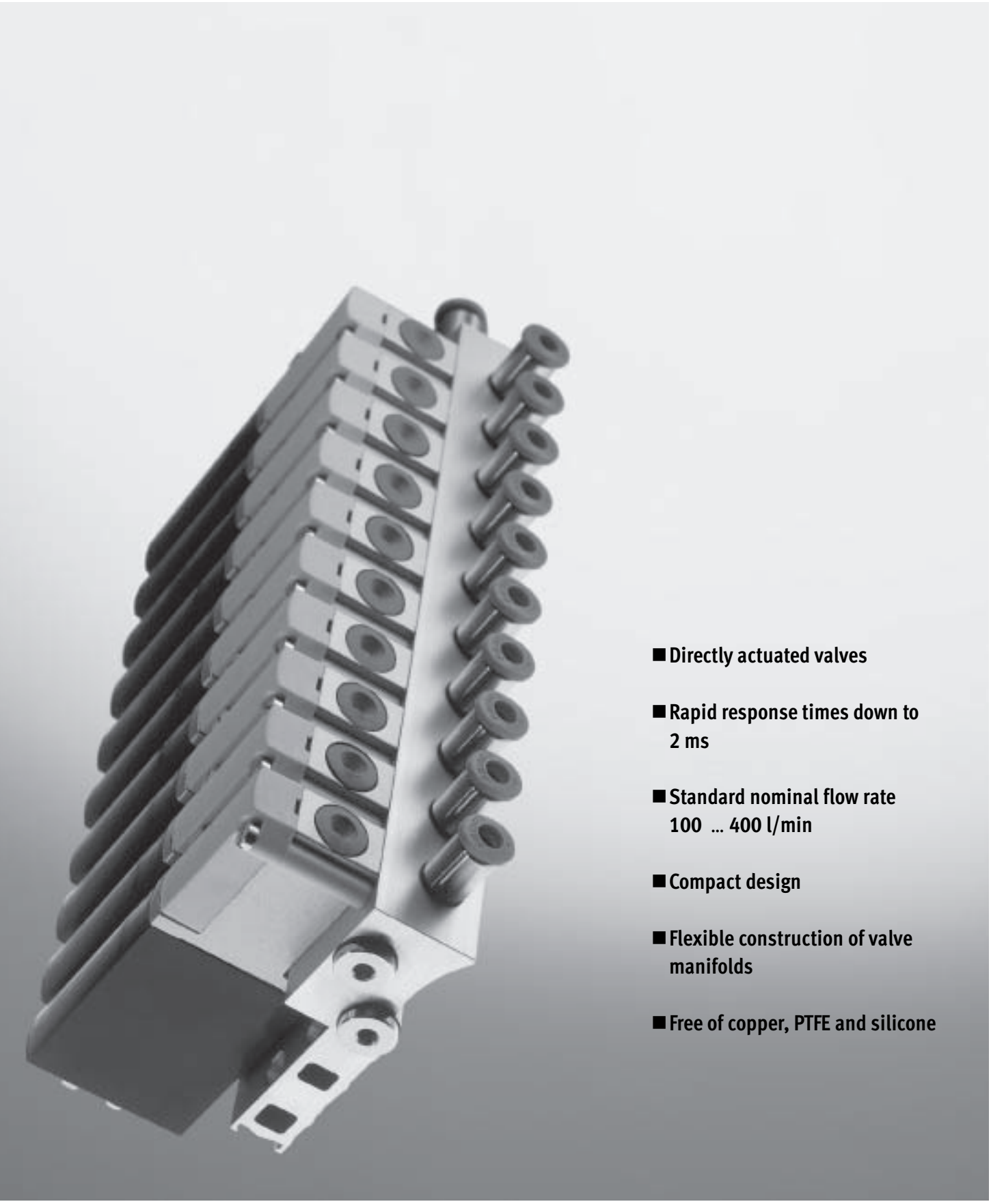
Solenoid valves MH2/MH3/MH4, fast-switching valves

FESTO



- 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, PTFE and silicone

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

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

The new generation of 24 V DC fast-switching valves that truly live up to their name: response times down to 2 ms permit extremely short cycle times or create alternative productivity reserves. And all this with a non-deviating repetition accuracy of less than 0.2 ms.

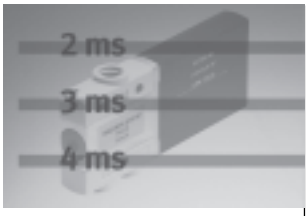
Fast-switching valves are easily retrofitted into existing systems or can be used as a pace-setter for newly designed systems. Compact design including maximum component density for sub-base valve variants. Indispensable for sorting parts by means of air ejector, in flap control systems, for gluing, dosing, packaging and, of course, very well suited for vacuum applications as well.

Faster: Installation
Massively reduced: sizing and installation times. Pre-assembled cables to IP65 or alternatively cables with M8 plugs for connection to multi-pin distributors or output modules on valve terminals. Up to 10 pre-assembled and tested valves are available fitted on a manifold.

Faster: Response times
100% duty cycle and continuous three-shift operation even with manifold mounting guarantee short and accurate cycle times. One highlight for the designer is that simple and direct activation via PLC standard outputs 24 V DC/1 A is possible, thus avoiding over-excitation to 48 V – with in excess of 100,000,000 cycles! This makes these valves ideal for bonding applications or metering pharmaceutical products, for example.

Faster, more versatile, more universal: Flexibility
Even greater flexibility thanks to the range of widths available: MH2 = 10 mm with a flow rate of 100 l/min, MH3 = 14 mm with a flow rate of 200 l/min and MH4 with a flow rate of 400 l/min.

MH fast-switching valves increase cycle rates, shorten cycle times and create production reserves.



Fast switching!

Simple and direct activation via PLC standard outputs 24 V DC/1 A, thus avoiding over-excitation to 48 V – with in excess of 100,000,000 cycles!

High flow rate!

100% duty cycle and continuous three-shift operation even on a PR manifold rail guarantee short and accurate cycle times.

Rapid ejection cycles!

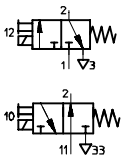
Repetition accuracy better than 0.2 ms. MH fast-switching valves for more accurate dosing, gluing or ejection.

Arguments for a faster decision
The fast-switching valves MH2, MH3 and MH4 open up new, unimagined productivity reserves. For buyers and designers who like to make fast decisions.

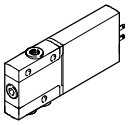
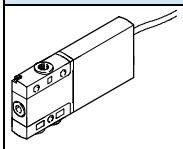
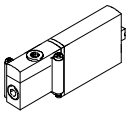
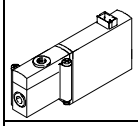
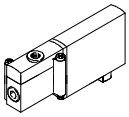
	Advantages for designers	Advantages for purchasers
1. Faster switching times	■ Extremely high cycle rates ■ Generally faster systems ■ Maximum repetition accuracy ■ Problem-free use of a vacuum	■ Greater system productivity ■ Everything from a single source
2. Quick installation	■ Reduced planning costs ■ Modular design principle for greater versatility ■ Simulation software	■ Reduced ordering expenses ■ Less effort required for mounting
3. No need for special over-excitation	■ Activation via standard PLC 24 V DC interface ■ No additional components	■ No costs associated with oversized solutions ■ Protects the material ensuring a longer service life ■ Use of standard PLC

Solenoid valves MH2, fast-switching valves

Product range overview

Function	Symbol	Version	Response time [ms]		Operating voltage [V DC]	Free of copper, PTFE and silicone	➔ Page
			2	7			
3/2-way valve[2]	**Standard nominal flow rate 100 l/min**						
		Individual valve	■[1]	■	5, 12, 24	■	2 / 3.2-8
		Semi in-line valve	■[1]	■	5, 12, 24	■	2 / 3.2-13
		Sub-base valve	■[1]	■	5, 12, 24	■	2 / 3.2-23

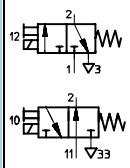
1) Response time of 2 ms only with voltage of 24 V DC and plug vanes or moulded-in cable
2) Can be used as a 2/2-way valve by sealing port 1 or 3

Mounting options				
Mechanical connection		Individual valve	Semi in-line valve	Sub-base valve
Electrical connection				
Plug vanes				
	Direct mounting	■	–	–
	Individual sub-base	–	■	■
	Manifold mounting	–	■	■
Moulded-in cable				
	Direct mounting	■	–	–
	Individual sub-base	–	■	■
	Manifold mounting	–	■	■
Plug connection at rear (HC)				
	Individual sub-base	–	■	■
	Manifold mounting	–	■	■
Plug connection on top (TC)				
	Individual sub-base	–	■	■
	Manifold mounting	–	■	■
Plug connection underneath (-PI)				
	Individual sub-base with plug base	–	■	■
	Manifold mounting with plug bases	–	■	■
	Manifold mounting with plug bases and electrical multi-pin connection	–	■	■

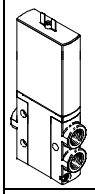
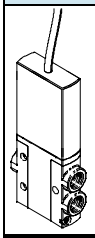
Solenoid valves MH3, fast-switching valves

Product range overview

FESTO

Function	Symbol	Version	Response time [ms]		Operating voltage [V DC]	Free of copper, PTFE and silicone	→ Page
			3	8			
3/2-way valve[1)]	**Standard nominal flow rate 200 l/min**						
		Individual valve	■	■	24	■	2 / 3.2-40
		Semi in-line valve	■	■	24	■	2 / 3.2-45
		Sub-base valve	■	■	24	■	2 / 3.2-52

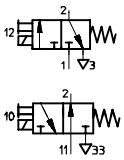
1) Can be used as a 2/2-way valve by sealing port 1 or 3

Mounting options				
Mechanical connection		Individual valve	Semi in-line valve	Sub-base valve
Electrical connection				
Plug vanes				
	Direct mounting	■	–	–
	Individual sub-base	–	■	■
	Manifold mounting	–	■	■
Moulded-in cable				
	Direct mounting	■	–	–
	Individual sub-base	–	■	■
	Manifold mounting	–	■	■

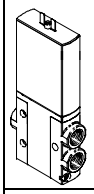
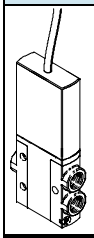
Solenoid valves MH4, fast-switching valves

Product range overview

FESTO

Function	Symbol	Version	Response time [ms]		Operating voltage [V DC]	Free of copper, PTFE and silicone	➔ Page
			3.5	9			
3/2-way valve[1)]	**Standard nominal flow rate 400 l/min**						
		Individual valve	■	■	24	■	2 / 3.2-61
		Semi in-line valve	■	■	24	■	2 / 3.2-65
		Sub-base valve	■	■	24	■	2 / 3.2-72

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

Mounting options				
Mechanical connection		Individual valve	Semi in-line valve	Sub-base valve
Electrical connection				
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 – Valves

MH	P	2	–	M		5	H	–	3/2	–	O	–	M5	–	TC

Valve family	
MH	Miniature and fast-switching valves

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

Size	
2	Flow rate 100 l/min

Drive function	
M	Solenoid, switching

Response time	
	7 ms
S	2 ms

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

Manual override	
H	Resetting

Valve function	
3/2	3/2-way valve

Normal position	
G	Closed
O	Open

Pneumatic connection	
2	Nominal size 2 mm
M5	Thread M5
M7	Thread M7
QS4	Push-in fitting for tubing O.D. 4 mm

Electrical connection	
	Plug vanes for plug socket KMYZ-...
K	Moulded-in cable, 2.5 m long
HC	Plug connection at rear for plug socket KMH
TC	Plug connection on top for plug socket KMH
PI	Plug connection underneath for push-in connection

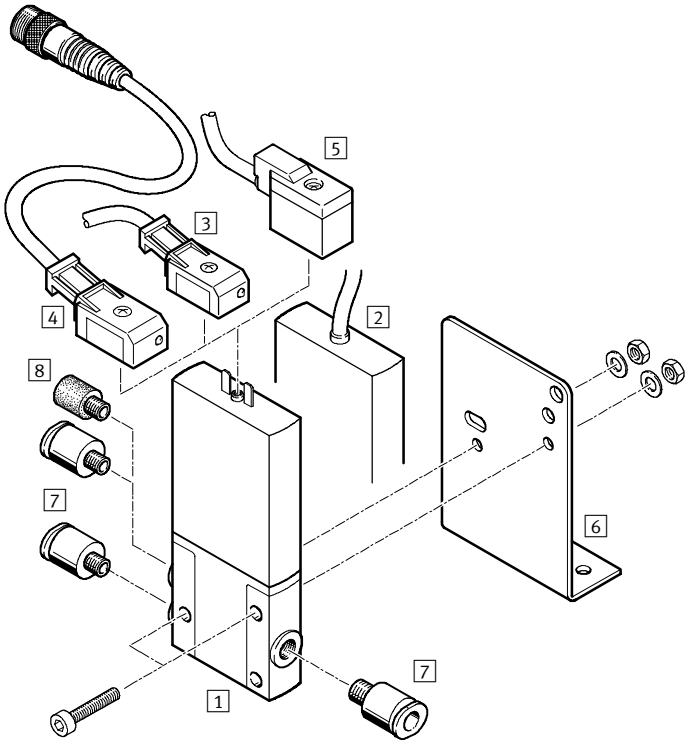
- Note

Additional variants and accessories can be configured and ordered through the MH2 modular product system ➔ 2 / 3.2-32.

Solenoid valves MHE2, fast-switching valves

Peripherals overview – Individual valve

Connection via plug vanes
Connection via moulded-in cable

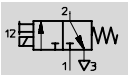


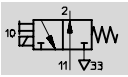
Valves and accessories		
	Brief description	**➔ Page**
1 Individual valve MHE2-...	With plug vanes	2 / 3.2-9
2 Individual valve MHE2-...-K	With moulded-in cable	2 / 3.2-9
3 Plug socket with cable KMYZ-3 (IP65)	With LED and PUR cable	2 / 3.2-38
4 Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable and M8 plug	2 / 3.2-38
5 Plug socket with cable KMYZ-4 (IP40)	With PVC cable	2 / 3.2-38
6 Mounting bracket MHE2-BG-L	–	2 / 3.2-11
7 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
8 Silencer UC	For fitting in exhaust ports	Volume 3

Solenoid valves MHE2, fast-switching valves

Technical data – Individual valve

Function





Voltage
5, 12, 24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C

General technical data		
Valve function		3/2-way, single solenoid[1]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
Assembly position		Any
Grid dimension	[mm]	14
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]	50

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

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µ Vacuum, grade of filtration 40 µ
Operating pressure range	[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[1]		1

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

Solenoid valves MHE2, fast-switching valves

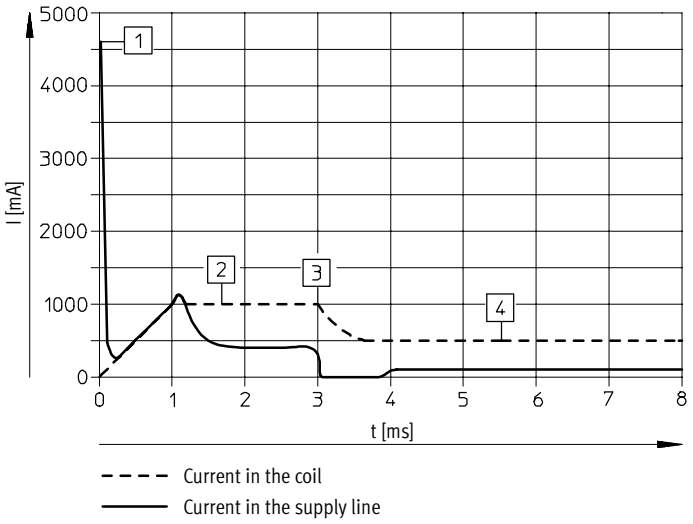
Technical data – Individual valve

FESTO

Electrical data		
Operating voltage	[V DC]	5 ±10%, 12 ±10% or 24 ±10%
Connection type		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	5 for 3 ms approx. (pull 1 A), then 2.88 W
Without fast-switching electronics	[W]	2.88
Protection class to EN 60 529		
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		
Response time on/off	[ms]	2 ±10% (from 1 Hz)
Switching frequency	[Hz]	150
Without fast-switching electronics		
Response time on/off	[ms]	7 ±10% (from 1 Hz)
Switching frequency	[Hz]	50

Current curve

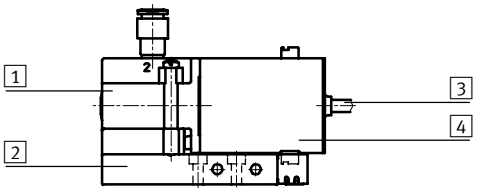


1 Capacitor charging
2 Controlled coil current 1 A
3 Drop to holding current
4 Controlled holding current 0.5 A

Solenoid valves MHE2, fast-switching valves

Technical data – Individual valve

Materials



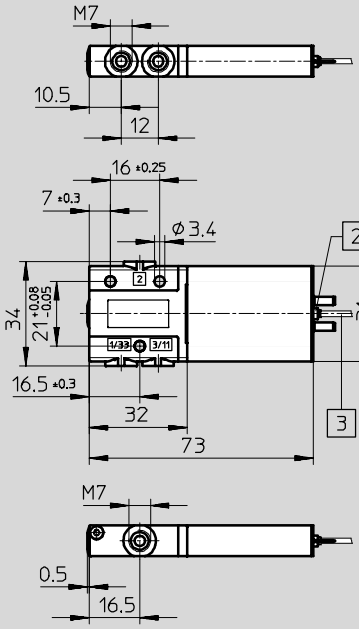
1	Housing	Die-cast zinc
2	Sub-base	Aluminium
3	Cable sheath	Polyamide
4	Coil housing	Polyamide
–	Seals	Nitrile rubber/ hydrogenated nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Dimensions

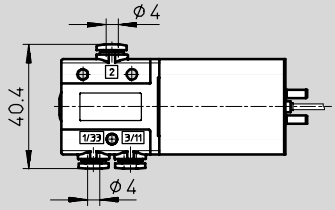
Download CAD data ➔ **www.festo.com/en/engineering**

Valve with plug vanes or moulded-in cable

MHE2-...-M7



MHE2-...-QS4

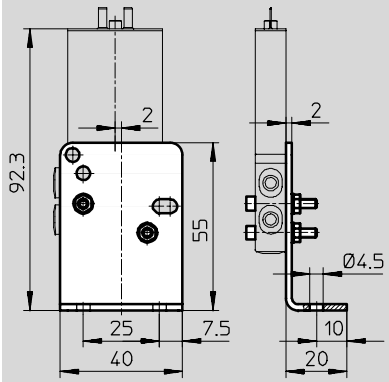


1 Manual override, resetting

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

FESTO

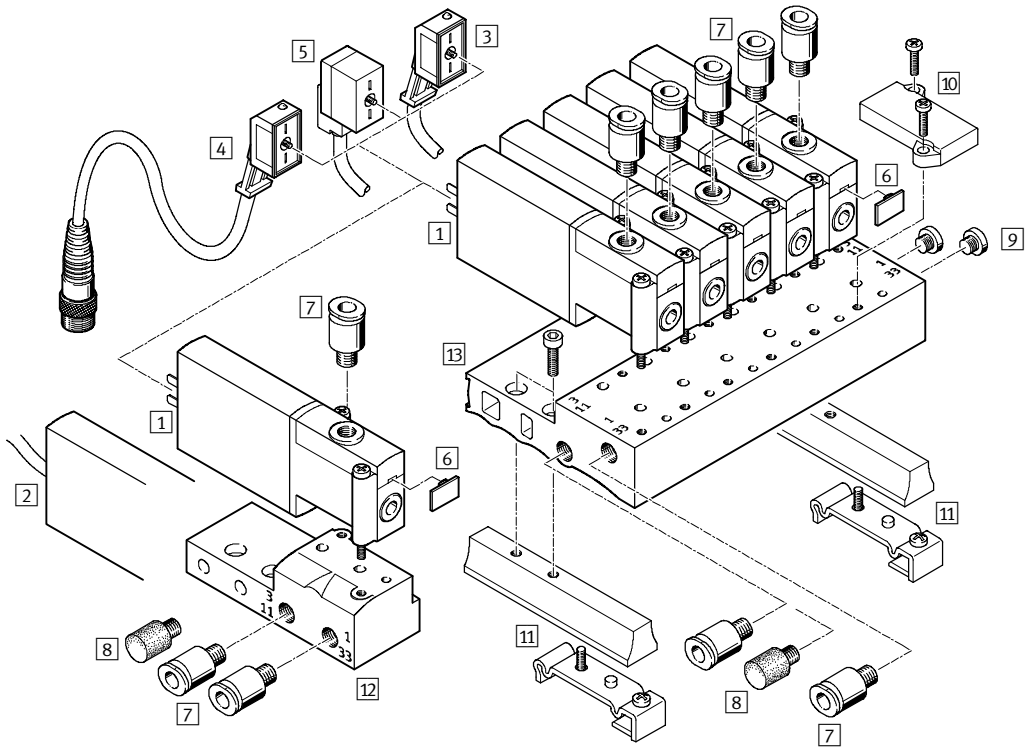
Ordering data – Valves					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 2 ms					
Connecting thread M7					
Plug vanes	24 V DC	**196 131**	**MHE2-MS1H-3/2G-M7**	**196 151**	**MHE2-MS1H-3/2O-M7**
Cable		**196 133**	**MHE2-MS1H-3/2G-M7-K**	**196 153**	**MHE2-MS1H-3/2O-M7-K**
Push-in fitting QS4					
Plug vanes	24 V DC	**196 135**	**MHE2-MS1H-3/2G-QS4**	**196 155**	**MHE2-MS1H-3/2O-QS4**
Cable		**196 137**	**MHE2-MS1H-3/2G-QS4-K**	**196 157**	**MHE2-MS1H-3/2O-QS4-K**
Response time 7 ms					
Connecting thread M7					
Plug vanes	24 V DC	**196 130**	**MHE2-M1H-3/2G-M7**	**196 150**	**MHE2-M1H-3/2O-M7**
Cable		**196 132**	**MHE2-M1H-3/2G-M7-K**	**196 152**	**MHE2-M1H-3/2O-M7-K**
Push-in fitting QS4					
Plug vanes	24 V DC	**196 134**	**MHE2-M1H-3/2G-QS4**	**196 154**	**MHE2-M1H-3/2O-QS4**
Cable		**196 136**	**MHE2-M1H-3/2G-QS4-K**	**196 156**	**MHE2-M1H-3/2O-QS4-K**

Ordering data – Product-specific accessories		
Designation	Part No.	Type
Mounting bracket	**196 165**	**MHE2-BG-L**

Solenoid valves MHP2, fast-switching valves

Peripherals overview – Semi in-line valve

Connection via plug vanes
Connection via moulded-in cable ...-K

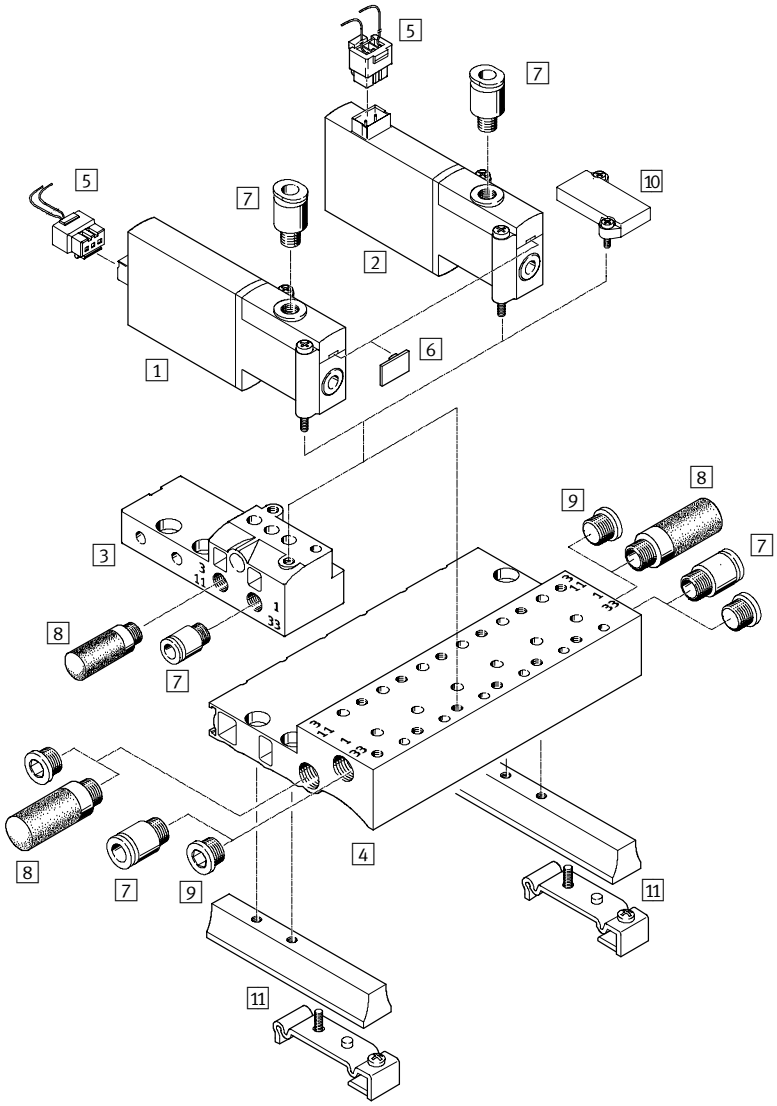


Valves and accessories			
		Brief description	**➔ Page**
1	Semi in-line valve MHP2-...-...	With plug vanes	2 / 3.2-16
2	Semi in-line valve MHP2-...-K	With moulded-in cable	2 / 3.2-16
3	Plug socket with cable KMYZ-3 (IP65)	With LED and PUR cable	2 / 3.2-38
4	Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable and M8 plug	2 / 3.2-38
5	Plug socket with cable KMYZ-4 (IP40)	With PVC cable	2 / 3.2-38
6	Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-38
7	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
8	Silencer UC	For fitting in exhaust ports	Volume 3
9	Blanking plug B	For sealing unused ports	2 / 3.2-38
10	Blanking plate MHAP2-BP-3	For sealing vacant positions	2 / 3.2-38
11	H-rail mounting MHAP2-BG-NRH-35	–	2 / 3.2-38
12	Individual sub-base MHP2-AS-3-M5	For semi in-line valve	2 / 3.2-19
13	Manifold block MHP2-PR...-3	For semi in-line valve	2 / 3.2-19

Solenoid valves MHP2, fast-switching valves

Peripherals overview – Semi in-line valve

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

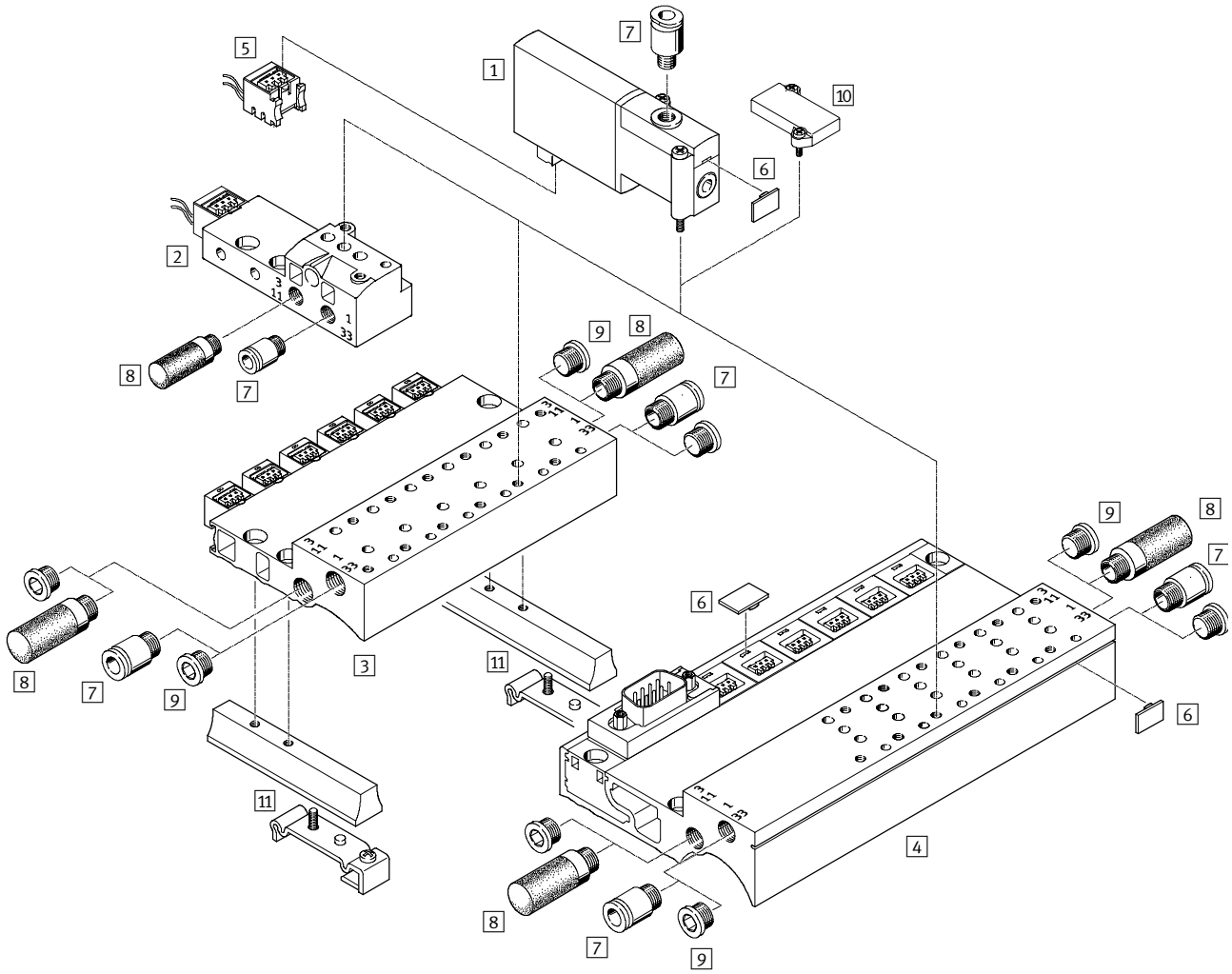


Valves and accessories			
		Brief description	**➔ Page**
1	Semi in-line valve MHP2-...-HC	Plug connection at rear	2 / 3.2-16
2	Semi in-line valve MHP2-...-TC	Plug connection on top	2 / 3.2-16
3	Individual sub-base MHP2-AS-3-M5	For semi in-line valve	2 / 3.2-19
4	Manifold block MHP2-PR...-3	For semi in-line valve	2 / 3.2-19
5	Plug socket KMH (IP40)	With cable	2 / 3.2-38
6	Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-38
7	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
8	Silencer UC	For fitting in exhaust ports	Volume 3
9	Blanking plug B	For sealing unused ports	2 / 3.2-38
10	Blanking plate MHAP2-BP-3	For sealing vacant positions	2 / 3.2-38
11	H-rail mounting MHAP2-BG-NRH-35	–	2 / 3.2-38

Solenoid valves MHP2, fast-switching valves

Peripherals overview – Semi in-line valve

Plug connection underneath ...-PI



Valves and accessories			
		Brief description	**➔ Page**
1	Semi in-line valve MHP2-...-PI	Plug connection underneath	2 / 3.2-16
2	Individual sub-base MHP2-AS-3-M5-PI	For semi in-line valve	2 / 3.2-19
3	Manifold block MHP2-PR...-3-PI	With plug bases	2 / 3.2-19
4	Manifold block MHP2-PR...-3-PI-D...	With plug bases and electrical multi-pin connection	2 / 3.2-20
5	Plug base MHAP-PI (IP40)	–	2 / 3.2-38
6	Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-38
7	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
8	Silencer UC	For fitting in exhaust ports	Volume 3
9	Blanking plug B	For sealing unused ports	2 / 3.2-38
10	Blanking plate MHAP2-BP-3-PI	For sealing vacant positions	2 / 3.2-38
11	H-rail mounting MHAP2-BG-NRH-35	–	2 / 3.2-38

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve

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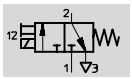
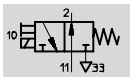
Function

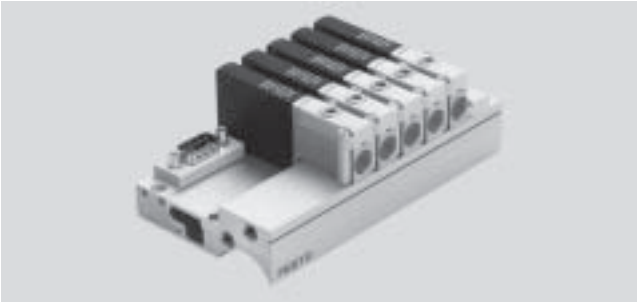




Voltage
5, 12, 24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C



General technical data		
Valve function		3/2-way, single solenoid[1)]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
Assembly position		Any
Grid dimension	[mm]	14
Nominal diameter	[mm]	2
Standard nominal flow rate	[l/min]	100
Type of mounting		On sub-base
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 port 1 or 3

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µ Vacuum, grade of filtration 40 µ
Operating pressure range	[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[1)]		1

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

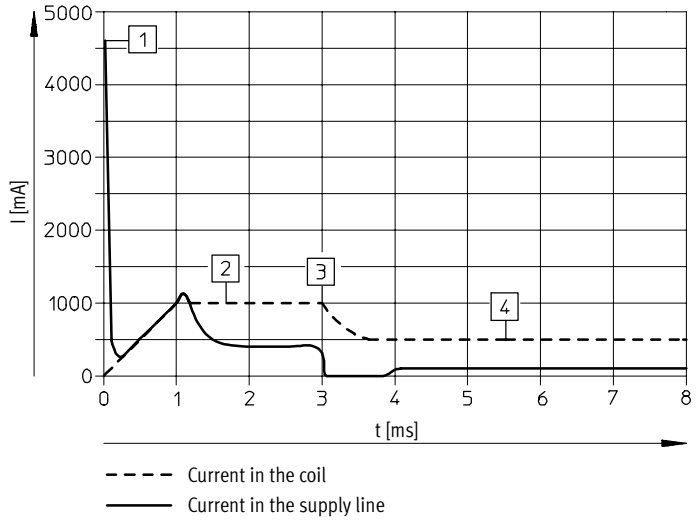
Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve

Electrical data		
Operating voltage	[V DC]	5 ±10%, 12 ±10% or 24 ±10%
Connection type		Plug vanes, moulded-in cable or plug connection
Power consumption		
With fast-switching electronics	[W]	5 for 3 ms approx. (pull 1 A), then 2.88 W
Without fast-switching electronics	[W]	2.88
Protection class to EN 60 529		
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		
Response time on/off	[ms]	2 ±10% (from 1 Hz)
Switching frequency	[Hz]	150
Without fast-switching electronics		
Response time on/off	[ms]	7 ±10% (from 1 Hz)
Switching frequency	[Hz]	50

Current curve



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

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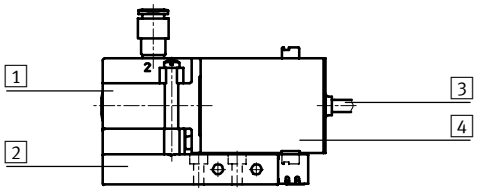
Materials

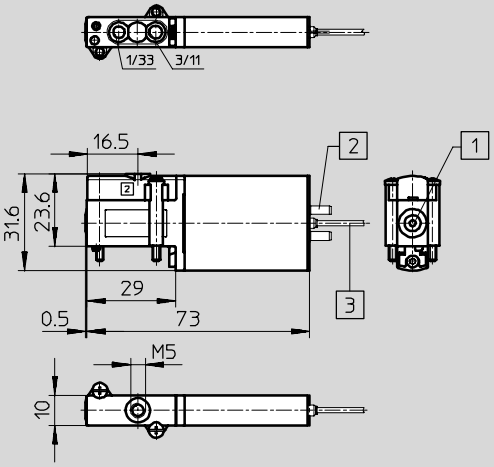


1	Housing	Die-cast zinc
2	Sub-base	Aluminium
3	Cable sheath	Polyamide
4	Coil housing	Polyamide
–	Seals	Nitrile rubber/ hydrogenated nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Dimensions

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

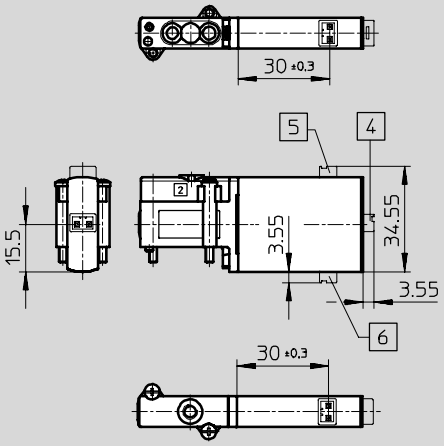
Valve with plug vanes or moulded-in cable ...-K



1 Manual override, resetting

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

Valve with plug connection ...-TC/HC/PI



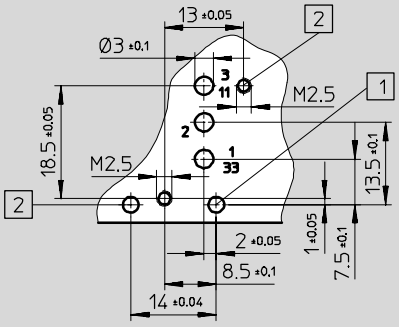
3 Cable 2.5 m

4 Plug connection HC

5 Plug connection TC

6 Plug connection PI

Port pattern on sub-bases



1 Hole for coding pin, $1.7^{+0.2}$ mm deep

2 Mounting thread, 4.6^{+1} mm deep

Note

Semi in-line valves have no port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not applicable.
If used as a 2/2-way valve, normally open, port 1/33 is not applicable.

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve

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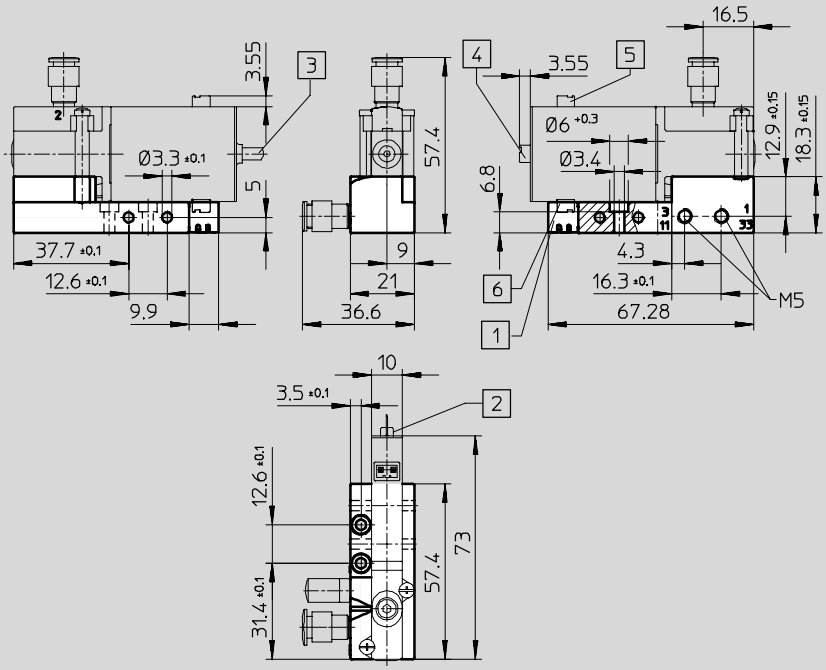
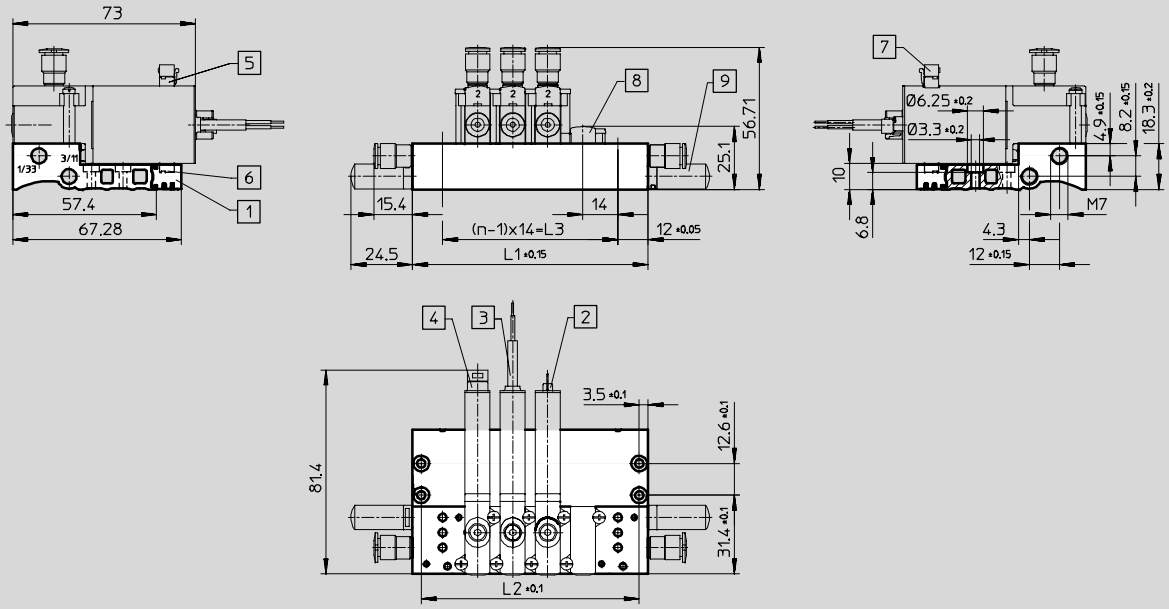
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug base MHAP-PI
2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
3 Cable 2.5 m
4 Plug connection HC
5 Plug connection TC
6 Plug connection PI

Manifold mounting



1 Plug base MHAP-PI
2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
3 Cable 2.5 m
4 Plug connection HC
5 Plug connection TC
6 Plug connection PI
7 Plug socket with cable KMH
8 Blanking plate MHAP2-BP-3
9 Silencer UC

Number of valves n	L1	L2	L3
2	38	31	14
3	52	45	18
4	66	59	42

Number of valves n	L1	L2	L3
5	80	73	56
6	94	87	70
7	108	101	84

Number of valves 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

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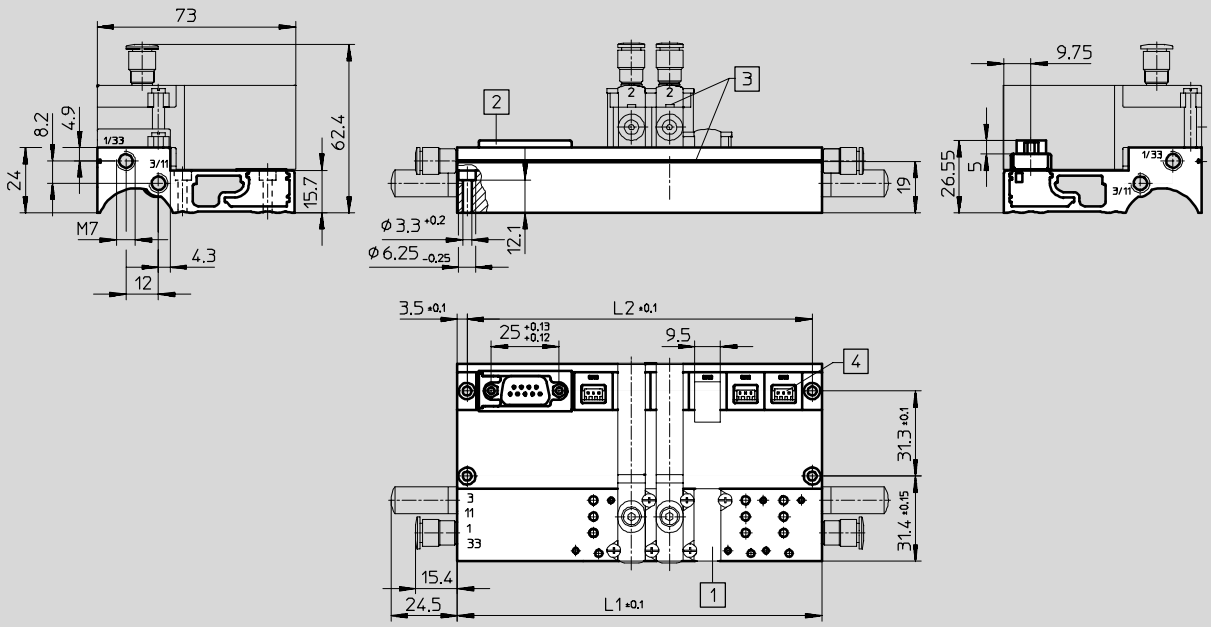
Dimensions – Manifold mounting with electrical multi-pin connection Download CAD data ➔ **www.festo.com/en/engineering**



1 Blanking plate MHAP2-BP-3

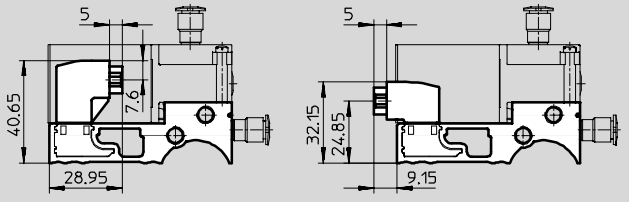
2 Sub-D plug, plug outlet to top (standard)

3 Slot for inscription labels

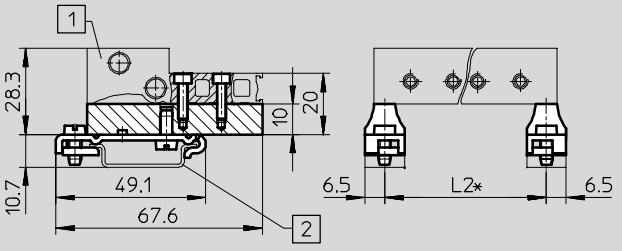
4 Plug base MHAP-PI

Number of valves n	L1	L2
2	78	71
4	106	99
6	134	127
8	162	155
10	212	205

Electrical multi-pin connection – Plug directions



H-rail mounting MHAP-BG-NRH-35



1 Manifold block

2 Mounting rail NRH-35-2000

* See dimensions table for manifold block used

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve

Ordering data – Valves					
Electrical connection	Operating voltage	Normally closed Part No.	Type	Normally open Part No.	Type
Response time 2 ms					
Connecting thread M5					
Plug vanes	24 V DC	**196 123**	**MHP2-MS1H-3/2G-M5**	**196 143**	**MHP2-MS1H-3/2O-M5**
Cable	24 V DC	**196 125**	**MHP2-MS1H-3/2G-M5-K**	**196 145**	**MHP2-MS1H-3/2O-M5-K**
Push-in fitting QS4					
Plug vanes	24 V DC	**196 127**	**MHP2-MS1H-3/2G-QS4**	**196 147**	**MHP2-MS1H-3/2O-QS4**
Cable	24 V DC	**196 129**	**MHP2-MS1H-3/2G-QS4-K**	**196 149**	**MHP2-MS1H-3/2O-QS4-K**
Response time 7 ms					
Connecting thread M5					
Plug vanes	24 V DC	**196 122**	**MHP2-M1H-3/2G-M5**	**196 142**	**MHP2-M1H-3/2O-M5**
Cable	24 V DC	**196 124**	**MHP2-M1H-3/2G-M5-K**	**196 144**	**MHP2-M1H-3/2O-M5-K**
Plug connection at rear	5 V DC	**197 429**	**MHP2-M4H-3/2G-M5-HC**	**197 411**	**MHP2-M4H-3/2O-M5-HC**
	12 V DC	**197 430**	**MHP2-M5H-3/2G-M5-HC**	**197 412**	**MHP2-M5H-3/2O-M5-HC**
	24 V DC	**197 431**	**MHP2-M1H-3/2G-M5-HC**	**197 413**	**MHP2-M1H-3/2O-M5-HC**
Plug connection on top	5 V DC	**197 432**	**MHP2-M4H-3/2G-M5-TC**	**197 414**	**MHP2-M4H-3/2O-M5-TC**
	12 V DC	**197 433**	**MHP2-M5H-3/2G-M5-TC**	**197 415**	**MHP2-M5H-3/2O-M5-TC**
	24 V DC	**197 434**	**MHP2-M1H-3/2G-M5-TC**	**197 416**	**MHP2-M1H-3/2O-M5-TC**
Plug connection underneath	5 V DC	**197 435**	**MHP2-M4H-3/2G-M5-PI**	**197 417**	**MHP2-M4H-3/2O-M5-PI**
	12 V DC	**197 436**	**MHP2-M5H-3/2G-M5-PI**	**197 418**	**MHP2-M5H-3/2O-M5-PI**
	24 V DC	**197 437**	**MHP2-M1H-3/2G-M5-PI**	**197 419**	**MHP2-M1H-3/2O-M5-PI**
Push-in fitting QS4					
Plug vanes	24 V DC	**196 126**	**MHP2-M1H-3/2G-QS4**	**196 146**	**MHP2-M1H-3/2O-QS4**
Cable	24 V DC	**196 128**	**MHP2-M1H-3/2G-QS4-K**	**196 148**	**MHP2-M1H-3/2O-QS4-K**

Note

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

Solenoid valves MHP2, fast-switching valves

Technical data – Semi in-line valve

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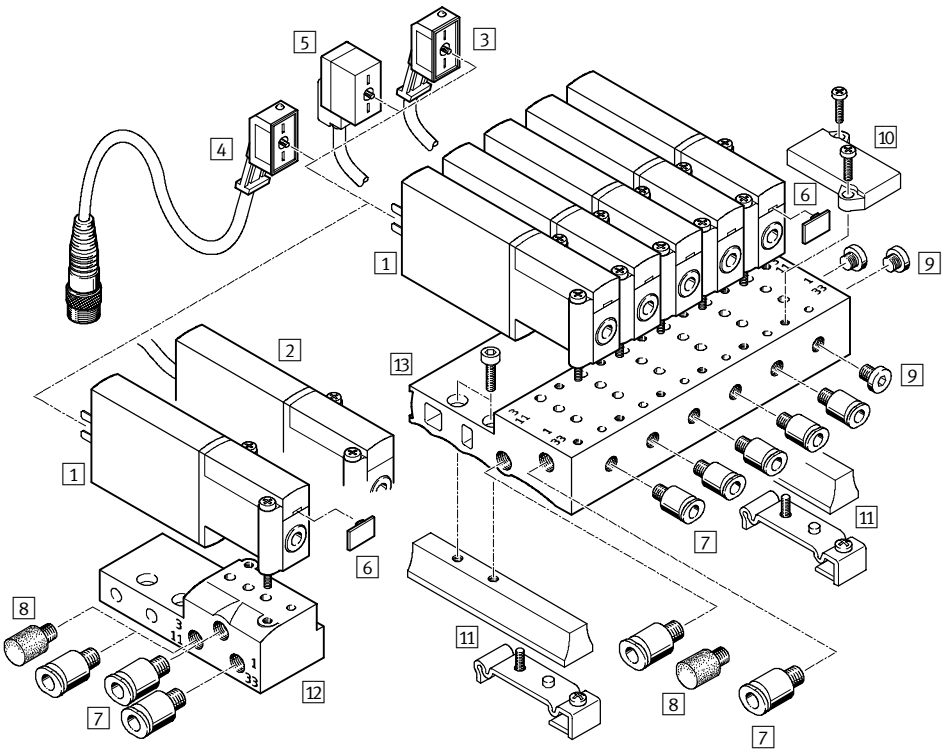
Ordering data – Product-specific accessories			
Designation		Part No.	Type
Valves with plug vanes, cable, plug connection at rear or on top			
Individual sub-base		**197 439**	**MHP2-AS-3-M5**
Manifold block for ...	2 valves	**197 442**	**MHP2-PR2-3**
	4 valves	**197 443**	**MHP2-PR4-3**
	6 valves	**197 444**	**MHP2-PR6-3**
	8 valves	**197 445**	**MHP2-PR8-3**
	10 valves	**197 446**	**MHP2-PR10-3**
Valves with plug connection underneath			
Individual sub-base		**197 441**	**MHP2-AS-3-M5-PI**
Manifold block with plug bases for ...	2 valves	**197 452**	**MHP2-PR2-3-PI**
	4 valves	**197 453**	**MHP2-PR4-3-PI**
	6 valves	**197 454**	**MHP2-PR6-3-PI**
	8 valves	**197 455**	**MHP2-PR8-3-PI**
	10 valves	**197 456**	**MHP2-PR10-3-PI**
Manifold block with plug bases and electrical multi-pin connection for ...	6 valves	**197 463**	**MHP2-PR6-3-PI-D9**
	8 valves	**197 464**	**MHP2-PR8-3-PI-D9**
	10 valves	**197 465**	**MHP2-PR10-3-PI-D25**

Note

Additional variants and accessories can be configured and ordered through the MH2 modular product system ➔ from 2 / 3.2-32.

Connection via plug vanes
Connection via moulded-in cable ...-K

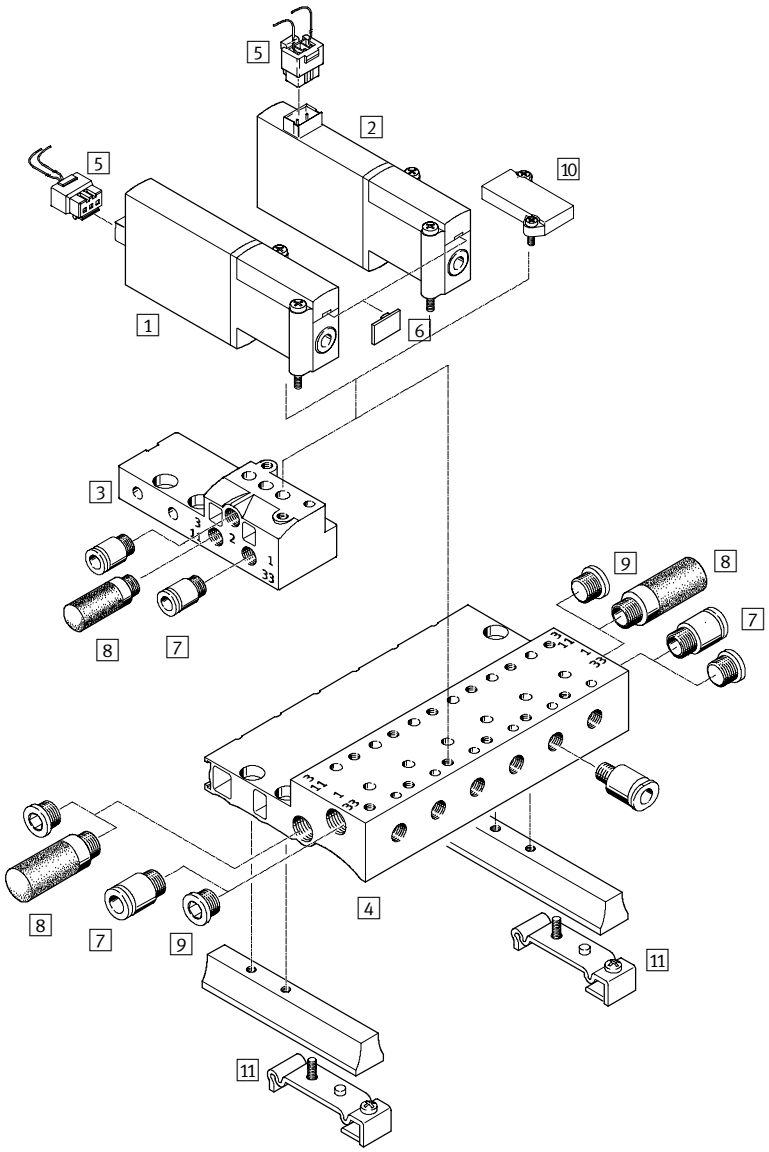


Valves and accessories			
		Brief description	➔ Page
1	Sub-base valve MHA2-...	With plug vanes	2 / 3.2-26
2	Sub-base valve MHA2-...-K	With moulded-in cable	2 / 3.2-26
3	Plug socket KMYZ-3 (IP65)	With LED and PUR cable	2 / 3.2-38
4	Plug socket KMYZ-3 (IP65)	With LED, PUR cable and M8 plug	2 / 3.2-38
5	Plug socket KMYZ-4 (IP40)	With PVC cable	2 / 3.2-38
6	Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-38
7	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
8	Silencer UC	For fitting in exhaust ports	Volume 3
9	Blanking plug B	For sealing unused ports	2 / 3.2-38
10	Blanking plate MHAP2-BP-3	For sealing vacant positions	2 / 3.2-38
11	H-rail mounting MHAP2-BG-NRH-35	–	2 / 3.2-38
12	Individual sub-base MHA2-AS-3-M5	For sub-base valve	2 / 3.2-29
13	Manifold block MHA2-PR...-3-M5	For sub-base valve	2 / 3.2-29

Solenoid valves MHA2, fast-switching valves

Peripherals overview – Sub-base valve

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

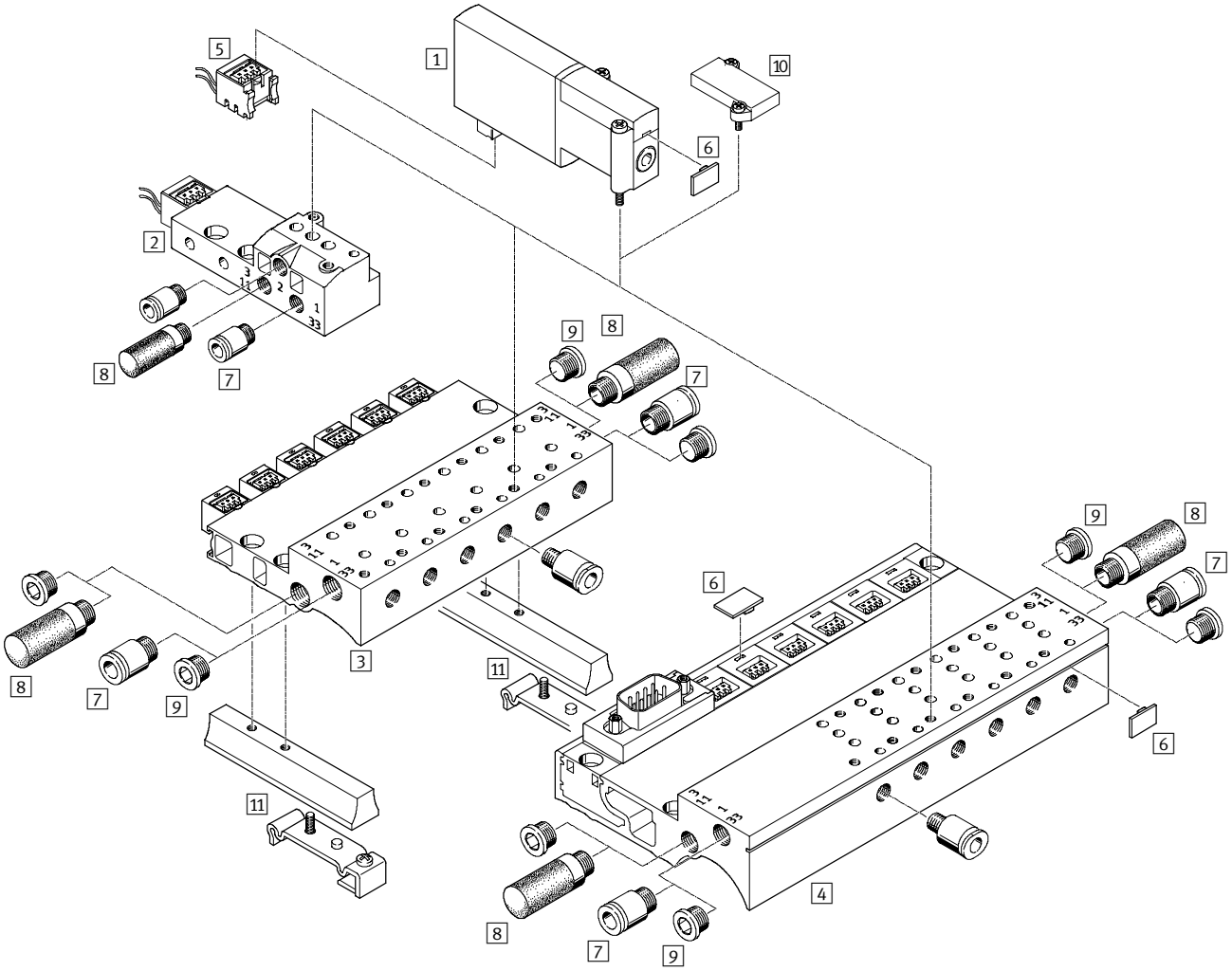


Valves and accessories			
		Brief description	**➔ Page**
1	Sub-base valve MHA2-...-HC	Plug connection at rear	2 / 3.2-26
2	Sub-base valve MHA2-...-TC	Plug connection on top	2 / 3.2-26
3	Individual sub-base MHA2-AS-3-M5	For sub-base valve	2 / 3.2-29
4	Manifold block MHA2-PR...-3	For sub-base valve	2 / 3.2-29
5	Plug socket KMH (IP40)	With cable	2 / 3.2-38
6	Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-38
7	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
8	Silencer UC	For fitting in exhaust ports	Volume 3
9	Blanking plug B	For sealing unused ports	2 / 3.2-38
10	Blanking plate MHAP2-BP-3	For sealing vacant positions	2 / 3.2-38
11	H-rail mounting MHAP2-BG-NRH-35	–	2 / 3.2-38

Solenoid valves MHA2, fast-switching valves

Peripherals overview – Sub-base valve

Plug connection underneath ...-PI



Valves and accessories			
		Brief description	→ Page
1	Sub-base valve MHA2-...-PI	Plug connection underneath	2 / 3.2-26
2	Individual sub-base MHA2-AS-3-M3-PI	With plug base	2 / 3.2-29
3	Manifold block MHA2-PR...-3-M3-PI	With plug bases	2 / 3.2-29
4	Manifold block MHA2-PR...-3-M5-PI-D...	With plug bases and electrical multi-pin connection	2 / 3.2-29
5	Plug base MHAP-PI (IP40)	–	2 / 3.2-38
6	Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-38
7	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
8	Silencer UC	For fitting in exhaust ports	Volume 3
9	Blanking plug B	For sealing unused ports	2 / 3.2-38
10	Blanking plate MHAP2-BP-3-PI	For sealing vacant positions	2 / 3.2-38
11	H-rail mounting MHAP2-BG-NRH-35	–	2 / 3.2-38

Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve

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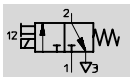
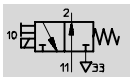
Function





Voltage
5, 12, 24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C

General technical data		
Valve function		3/2-way, single solenoid[1]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
Assembly position		Any
Grid dimension	[mm]	14
Nominal diameter	[mm]	2
Standard nominal flow rate	[l/min]	100
Type of mounting		On sub-base
Pneumatic connection		Connecting thread M5 or M7
Product weight	[g]	50

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

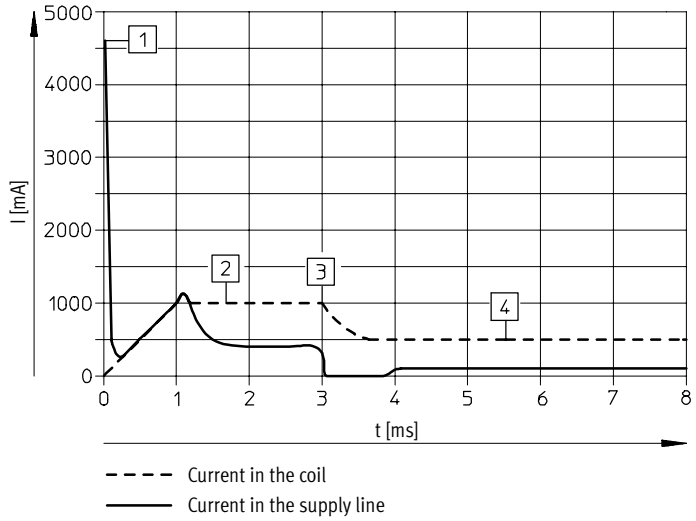
Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µ Vacuum, grade of filtration 40 µ
Operating pressure range	[bar]	–0.9 ... +8
Ambient temperature	[°C]	–5 ... +40 (100% duty cycle)
Temperature of medium	[°C]	–5 ... +40 (100% duty cycle)
Corrosion resistance class CRC[1]		1

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

Electrical data		
Operating voltage	[V DC]	5 ±10%, 12 ±10% or 24 ±10%
Connection type		Plug vanes, moulded-in cable or plug connection
Power consumption		
With fast-switching electronics	[W]	5 for 3 ms approx. (pull 1 A), then 2.88 W
Without fast-switching electronics	[W]	2.88
Protection class to EN 60 529		
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		
Response time on/off	[ms]	2 ±10% (from 1 Hz)
Switching frequency	[Hz]	150
Without fast-switching electronics		
Response time on/off	[ms]	7 ±10% (from 1 Hz)
Switching frequency	[Hz]	50

Current curve

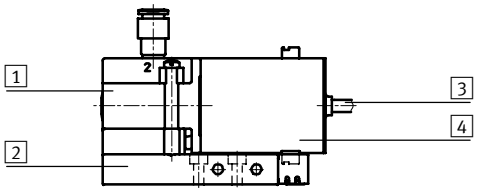


1 Capacitor charging
2 Controlled coil current 1 A
3 Drop to holding current
4 Controlled holding current 0.5 A

Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve

Materials

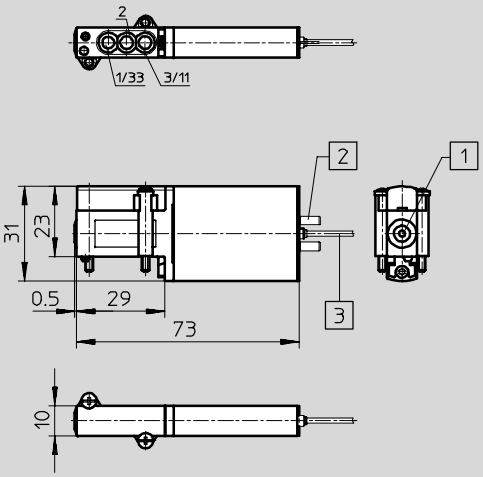


1	Housing	Die-cast zinc
2	Sub-base	Aluminium
3	Cable sheath	Polyamide
4	Coil housing	Polyamide
–	Seals	Nitrile rubber/ hydrogenated nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Dimensions

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

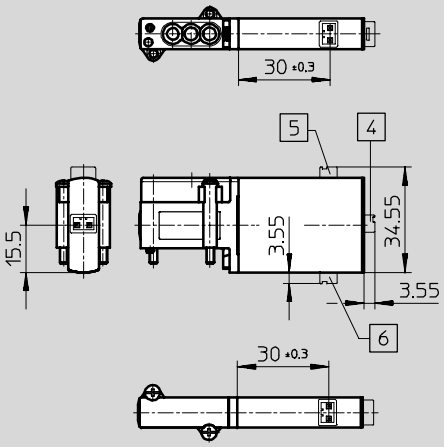
Valve with plug vanes or moulded-in cable ...-K



1 Manual override, resetting

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

Valve with plug connection ...-TC/HC/PI



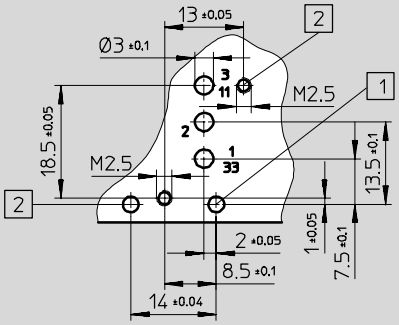
3 Cable 2.5 m

4 Plug connection HC

5 Plug connection TC

6 Plug connection PI

Port pattern on sub-bases



1 Hole for coding pin, $1.7^{+0.2}$ mm deep

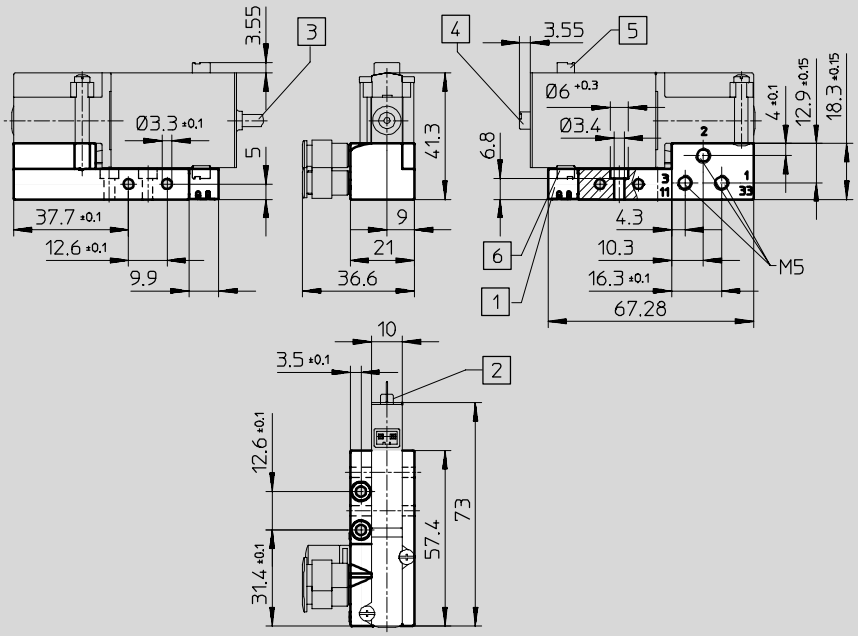
2 Mounting thread, 4.6^{+1} mm deep

Note

Semi in-line valves have no port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not applicable.
If used as a 2/2-way valve, normally open, port 1/33 is not applicable.

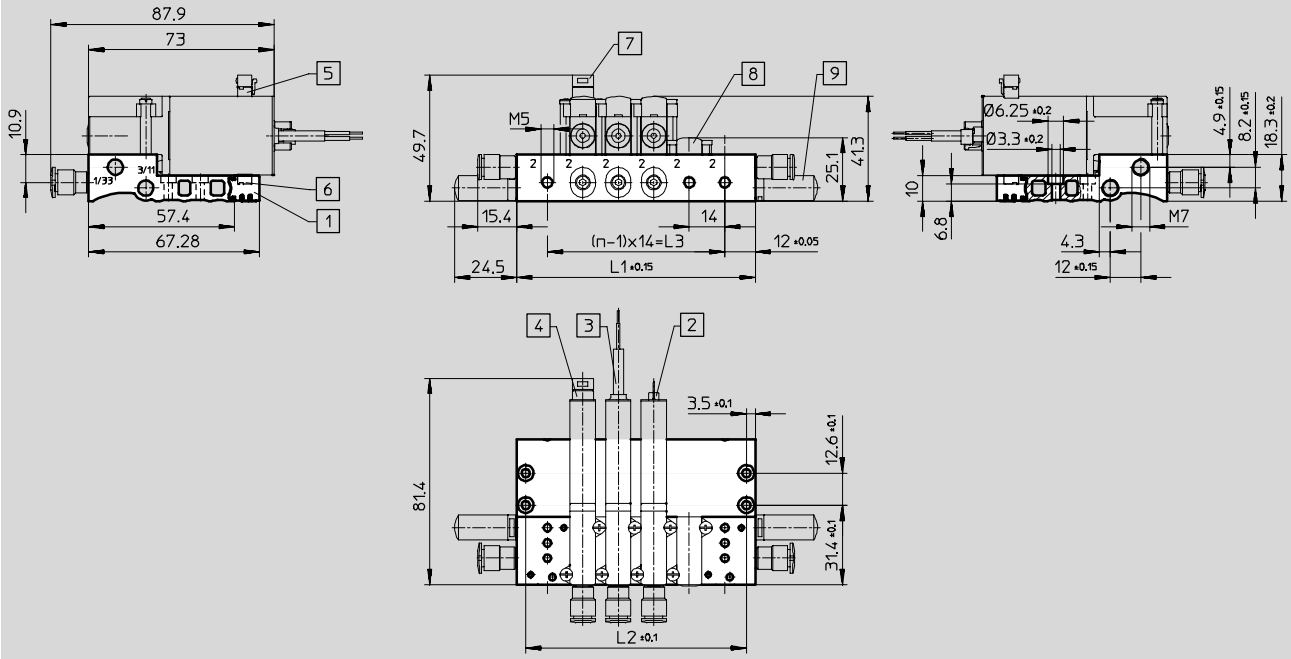
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug base MHAP-PI
2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
3 Cable 2.5 m
4 Plug connection HC
5 Plug connection TC
6 Plug connection PI

Manifold mounting



1 Plug base MHAP-PI
2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
3 Cable 2.5 m
4 Plug connection HC
5 Plug connection TC
6 Plug connection PI
7 Plug socket with cable KMH
8 Blanking plate MHAP2-BP-3
9 Silencer UC

Number of valves n	L1	L2	L3
2	38	31	14
3	52	45	18
4	66	59	42

Number of valves n	L1	L2	L3
5	80	73	56
6	94	87	70
7	108	101	84

Number of valves n	L1	L2	L3
8	122	115	98
9	136	129	112
10	150	143	126

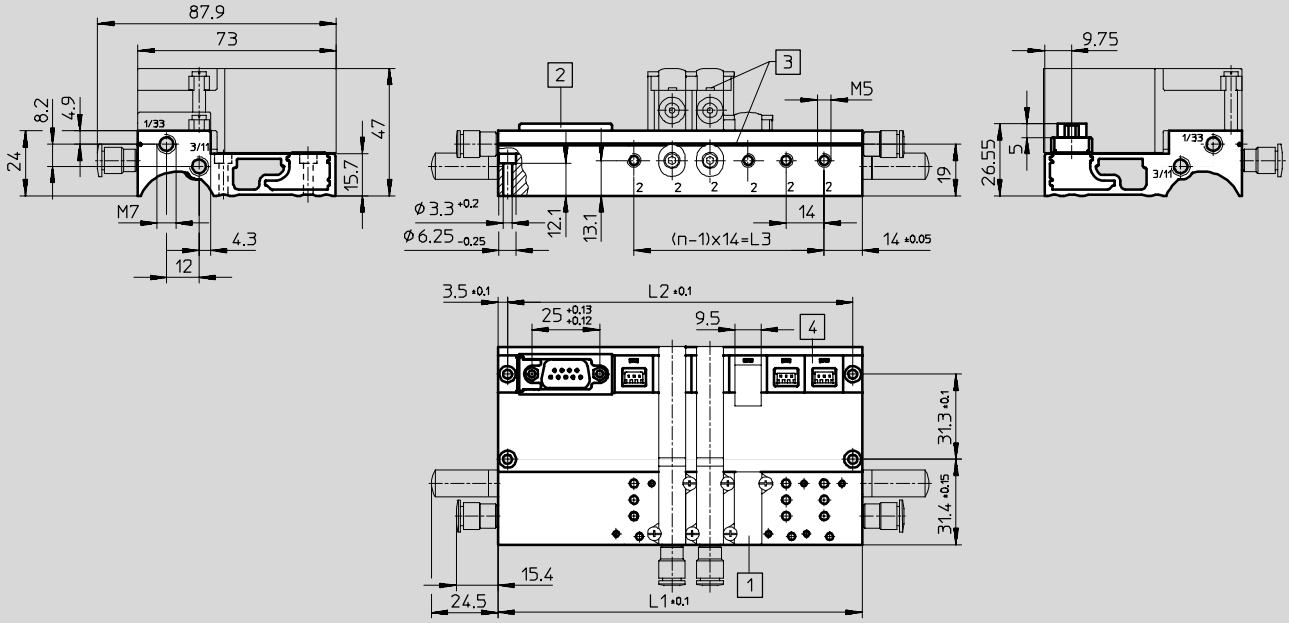
Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve

FESTO

Dimensions – Manifold mounting with electrical multi-pin connection

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



1 Blanking plate MHAP2-BP-3

2 Sub-D plug, plug outlet to top (standard)

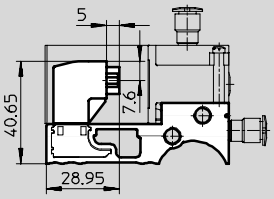
3 Slot for inscription labels

4 Plug base MHAP-PI

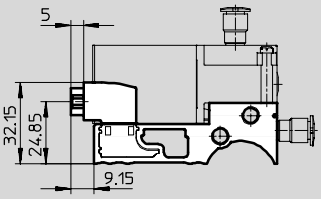
Number of valves n	L1	L2	L3
2	78	71	14
4	106	99	42
6	134	127	70
8	162	155	98
10	212	205	126

Electrical multi-pin connection – Plug directions

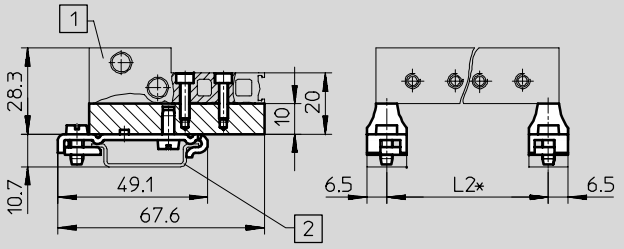
to pneumatic side



to electrical side



H-rail mounting MHAP-BG-NRH-35



1 Manifold block

2 Mounting rail NRH-35-2000

* See dimensions table for manifold block used

Solenoid valves MHA2, fast-switching valves

Technical data – Sub-base valve

Ordering data – Valves					
Electrical connection	Operating voltage	Normally closed Part No.	Type	Normally open Part No.	Type
Response time 2 ms					
Plug vanes	24 V DC	**196 119**	**MHA2-MS1H-3/2G-2**	**196 139**	**MHA2-MS1H-3/2O-2**
Cable	24 V DC	**196 121**	**MHA2-MS1H-3/2G-2-K**	**196 141**	**MHA2-MS1H-3/2O-2-K**
Response time 7 ms					
Plug vanes	24 V DC	**196 118**	**MHA2-M1H-3/2G-2**	**196 138**	**MHA2-M1H-3/2O-2**
Cable	24 V DC	**196 120**	**MHA2-M1H-3/2G-2-K**	**196 140**	**MHA2-M1H-3/2O-2-K**
Plug connection at rear	5 V DC	**197 420**	**MHA2-M4H-3/2G-2-HC**	**197 402**	**MHA2-M4H-3/2O-2-HC**
	12 V DC	**197 421**	**MHA2-M5H-3/2G-2-HC**	**197 403**	**MHA2-M5H-3/2O-2-HC**
	24 V DC	**197 422**	**MHA2-M1H-3/2G-2-HC**	**197 404**	**MHA2-M1H-3/2O-2-HC**
Plug connection on top	5 V DC	**197 423**	**MHA2-M4H-3/2G-2-TC**	**197 405**	**MHA2-M4H-3/2O-2-TC**
	12 V DC	**197 424**	**MHA2-M5H-3/2G-2-TC**	**197 406**	**MHA2-M5H-3/2O-2-TC**
	24 V DC	**197 425**	**MHA2-M1H-3/2G-2-TC**	**197 407**	**MHA2-M1H-3/2O-2-TC**
Plug connection underneath	5 V DC	**197 426**	**MHA2-M4H-3/2G-2-PI**	**197 408**	**MHA2-M4H-3/2O-2-PI**
	12 V DC	**197 427**	**MHA2-M5H-3/2G-2-PI**	**197 409**	**MHA2-M5H-3/2O-2-PI**
	24 V DC	**197 428**	**MHA2-M1H-3/2G-2-PI**	**197 410**	**MHA2-M1H-3/2O-2-PI**

- Note

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

Ordering data – Product-specific accessories			
Designation		Part No.	Type
Valves with plug vanes, cable, plug connection at rear or on top			
Individual sub-base		**197 438**	**MHA2-AS-3-M5**
Manifold block for ...	2 valves	**197 447**	**MHA2-PR2-3-M5**
	4 valves	**197 448**	**MHA2-PR4-3-M5**
	6 valves	**197 449**	**MHA2-PR6-3-M5**
	8 valves	**197 450**	**MHA2-PR8-3-M5**
	10 valves	**197 451**	**MHA2-PR10-3-M5**
Valves with plug connection underneath			
Individual sub-base		**197 440**	**MHA2-AS-3-M5-PI**
Manifold block with plug bases for ...	2 valves	**197 457**	**MHA2-PR2-3-PI-M5**
	4 valves	**197 458**	**MHA2-PR4-3-PI-M5**
	6 valves	**197 459**	**MHA2-PR6-3-PI-M5**
	8 valves	**197 460**	**MHA2-PR8-3-PI-M5**
	10 valves	**197 461**	**MHA2-PR10-3-PI-M5**
Manifold block with plug bases and electrical multi-pin connection for ...	6 valves	**197 467**	**MHA2-PR6-3-PI-D9**
	8 valves	**197 468**	**MHA2-PR8-3-PI-D9**
	10 valves	**197 469**	**MHA2-PR10-3-PI-D25**

- Note

Additional variants and accessories can be configured and ordered through the MH2 modular product system ➔ from 2 / 3.2-32.

Solenoid valves MH2, fast-switching valves, individual sub-base

Ordering data – Modular products

FESTO

M **Mandatory data**

Module No.	Valve family		Design		Operating voltage		Valve function		Plug-in direction on valve		Number of valve positions		Link type
197 335	MH2		P A		5VDC 12VDC 24VDC		C N		TC HC PI K IP		1V		PS
Ordering example													
197 335	**MH2**	–	**P**	–	**24VDC**	–	**C**	–	**IP**	–	**1V**	–	**PS**

Ordering table

Size		2	Conditions	Code		Enter code
M	Module No.	**197 335**				
	Valve family	Miniature and fast-switching valve of size 2		**MH2**		MH2
	Design	Semi in-line valve		**-P**		-P
		Sub-base valve		**-A**		
	Operating voltage [V DC]	5, 12, 24		**-...VDC**		
	Valve function	3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection on top for connecting cable with socket IP40 (KMH)		**-TC**		
		Plug connection at rear for connecting cable with socket IP40 (KMH)		**-HC**		
		Plug connection underneath via electrical link		**-PI**		
		Connection with cable end	1	**-K**		
		Plug connection at rear for connecting cable with socket IP65 (KMYZ)	1	**-IP**		
	Number of valve positions	1		**-1V**		1V
↓	Link type	Individual sub-base		**-PS**		-PS

1 **K, IP** Only with operating voltage 24VDC

Transfer order code

197 335	**MH2**	–	**P**	–		–		–		–	**1V**	–	**PS**

Solenoid valves MH2, fast-switching valves, individual sub-base

Ordering data – Modular products

FESTO

0 Options

	Number of valve positions with fast-switching function		Connecting cable with socket		Fitting for working port		Fitting in supply port		Fitting in exhaust port
	1S		K05 K01 K25 K50 K10 KI05 KI25		QB QC QD		AB AC		BB BC BU
–		–	**K25**	–	**QC**	–		–	

Ordering table

Size		2	Conditions	Code		Enter code
0	Number of valve positions with fast-switching function	1	2	**-1S**		
	Connecting cable with socket (supplied separately)	0.5 m, with socket IP40 (KMH-0,5)	3	**-K05**		
		1 m, with socket IP40 (KMH-1)	3	**-K01**		
		2.5 m, with socket IP65 (KMYZ-3-24DC-2,5-LED-PUR-B)	4	**-K25**		
		5 m, with socket IP65 (KMYZ-3-24DC-5-LED-PUR-B)	4	**-K50**		
		10 m, with socket IP65 (KMYZ-3-24DC-10-LED-PUR-B)	4	**-K10**		
		0.5 m, with socket IP40 (KMYZ-4-24DC-0,5-B)	4	**-KI05**		
		2.5 m, with socket IP40 (KMYZ-4-24DC-2,5-B)	4	**-KI25**		
	Fitting for working port	QS fitting for working port, tubing O.D. 3 mm		**-QB**		
		QS fitting for working port, tubing O.D. 4 mm		**-QC**		
		QS fitting for working port, tubing O.D. 6 mm		**-QD**		
	Fitting in supply port	QS fitting for supply, tubing O.D. 3 mm	5	**-AB**		
		QS fitting for supply, tubing O.D. 4 mm	6	**-AC**		
	Fitting in exhaust port	QS fitting for exhaust, tubing O.D. 3 mm	7	**-BB**		
		QS fitting for exhaust, tubing O.D. 4 mm		**-BC**		
		Silencer for exhaust		**-BU**		

2 **1S** Only with plug-in direction on valve K, IP.
3 **K05, K01** Not with plug-in direction on HC, TC valve.
4 **K25, K50, K10, KI05, KI25** Only with plug-in direction on valve IP.
5 **AB** Not with fitting QC, QD.
6 **AC** Not with fitting QD.
7 **BB** Not with fitting AC.

Transfer order code

–		–	**K25**	–	**QC**	–		–	**BD**

Solenoid valves MH2, fast-switching valves, individual electrical connection

Ordering data – Modular products

FESTO

M Mandatory data | O Options →

Module No.	Valve family	Design	Operating voltage	Valve function	Plug-in direction on valve	Number of valve positions	Link type	Number of valve positions with fast-switching function	Number of vacant positions
197 335	MH2	A P	5VDC 12VDC 24VDC	C N	TC HC K IP	2V ... 10V	PR	2S ... 10S	2L ... 10L
Ordering example									
197 335	**MH2**	**A**	**24VDC**	**C**	**IP**	**8V**	**PR**	**4S**	

Ordering table

Size		2	Conditions	Code	Enter code
M	Module No.	**197 335**			
	Valve family	Miniature and fast-switching valve of size 2		**MH2**	MH2
	Design	Sub-base valve		**-A**	
		Semi in-line valve		**-P**	
	Operating voltage [V DC]	5, 12, 24		**-...VDC**	
	Valve function	3/2-way valve, normally closed		**-C**	
		3/2-way valve, normally open		**-N**	
	Plug-in direction on valve	Plug connection on top for connecting cable with socket IP40 (KMH)		**-TC**	
		Plug connection at rear for connecting cable with socket IP40 (KMH)		**-HC**	
		Connection with cable end	1	**-K**	
		Plug connection at rear for connecting cable with socket IP65 (KMYZ)	1	**-IP**	
	Number of valve positions	2 ... 10		**-...V**	
	Link type	Block without electrical link		**-PR**	-PR
O	Number of valves with fast-switching function	2 ... 10	2	**-...S**	
↓	Number of vacant positions	2 ... 10		**-...L**	

1 **K, IP** Only with operating voltage 24VDC.

2 **...S** Only with plug-in direction on valve K, IP.

Transfer order code

197 335	**MH2**	–		–		–		–		–		–	**PR**	–		–

Solenoid valves MH2, fast-switching valves, individual electrical connection

Ordering data – Modular products

FESTO

[0] Options

Connecting cable with socket		Wall mounting		Fitting for working port		Fitting in supply port		Fitting in exhaust port		Fitting in supply port		Fitting in exhaust port
K05 K01 K25 K50 K10 KI05 KI25	–	H	–	QB QC QD	–	AX AC AD	–	BX BC BD BU	–	CX CC CD	–	DX DC DD DU
K25	–	**H**	–	**QC**	–	**AX**	–	**BD**	–	**CD**	–	**DX**

Ordering table

Size		2	Conditions	Code	Enter code
↓ [0]	Connecting cable with socket (supplied separately)	0.5 m, with socket IP40 (KMH-0,5)	[3]	**-K05**	
		1 m, with socket IP40 (KMH-1)	[3]	**-K01**	
		2.5 m, with socket IP65 (KMYZ-3-24DC-2,5-LED-PUR-B)	[4]	**-K25**	
		5 m, with socket IP65 (KMYZ-3-24DC-5-LED-PUR-B)	[4]	**-K50**	
		10 m, with socket IP65 (KMYZ-3-24DC-10-LED-PUR-B)	[4]	**-K10**	
		0.5 m, with socket IP40 (KMYZ-4-24DC-0,5-B)	[4]	**-KI05**	
		2.5 m, with socket IP40 (KMYZ-4-24DC-2,5-B)	[4]	**-KI25**	
	Wall mounting	H-rail mounting		**-H**	
	Fitting for working port	QS fitting for working port, tubing O.D. 3 mm		**-QB**	
		QS fitting for working port, tubing O.D. 4 mm		**-QC**	
		QS fitting for working port, tubing O.D. 6 mm		**-QD**	
	Fitting in supply port	Blanking plug for supply on left	[5]	**-AX**	
		QS fitting for supply, tubing O.D. 4 mm	[6]	**-AC**	
		QS fitting for supply, tubing O.D. 6 mm		**-AD**	
	Fitting in exhaust port	Blanking plug for exhaust on left	[7]	**-BX**	
		QS fitting for exhaust, tubing O.D. 4 mm	[8]	**-BC**	
		QS fitting for exhaust, tubing O.D. 6 mm	[9]	**-BD**	
		Silencer for exhaust		**-BU**	
	Fitting in supply port	Blanking plug for supply on right		**-CX**	
		QS fitting for supply, tubing O.D. 4 mm	[10]	**-CC**	
		QS fitting for supply, tubing O.D. 6 mm		**-CD**	
	Fitting in exhaust port	Blanking plug for exhaust on right		**-DX**	
		QS fitting for exhaust, tubing O.D. 4 mm	[8]	**-DC**	
		QS fitting for exhaust, tubing O.D. 6 mm		**-DD**	
		Silencer for exhaust		**-DU**	

[3] **K05, K01** Not with plug-in direction HC, TC.
[4] **K25, K50, K10, KI05, KI25** Only with plug-in direction IP.
[5] **AX** Not with fitting CX.
[6] **AC** Not with fitting QD.
[7] **BX** Not with fitting DX.
[8] **BC, DC** Not with fitting AD, CD.
[9] **BD** Not with fitting DC.
[10] **CC** Not with fitting QD.

Transfer order code

	–		–		–		–		–		–		–	

Solenoid valves MH2, fast-switching valves, electrical multi-pin connection

Ordering data – Modular products

FESTO

M Mandatory data | O Options →

Module No.	Valve family		Design		Operating voltage		Valve function		Plug-in direction on valve		Number of valve positions		Link type		Number of vacant positions
197 335	MH2	–	A P	–	5VDC 12VDC 24VDC	–	C N	–	PI	–	2V ... 10V	–	PRA	–	2L ... 10L
Ordering example															
197 335	**MH2**	–	**A**	–	**24VDC**	–	**C**	–	**IP**	–	**8V**	–	**PR**	–	

Ordering table

Size		2	Conditions	Code		Enter code
M	Module No.	**197 335**				
	Valve family	Miniature and fast-switching valve of size 2		**MH2**		MH2
	Design	Sub-base valve		**-A**		
		Semi in-line valve		**-P**		
	Operating voltage [V DC]	5, 12, 24		**-...VDC**		
	Valve function	3/2-way valve, normally closed		**-C**		
		3/2-way valve, normally open		**-N**		
	Plug-in direction on valve	Plug connection underneath via electrical link		**-PI**		-PI
	Number of valve positions	2, 4, 6, 8, 10		**-...V**		
	Link type	Manifold block with Sub-D plug		**-PRA**		-PRA
O ↓	Number of vacant positions	2, 4, 6, 8, 10		**-...L**		

Transfer order code

197 335	**MH2**	–		–		–		–	**PI**	–		–	**PRA**	–	

Solenoid valves MH2, fast-switching valves, electrical multi-pin connection

Ordering data – Modular products

FESTO

0 Options

Plug-in direction, Sub-D plug	Connecting cable with socket	Wall mounting	Fitting for working port	Fitting in supply port	Fitting in exhaust port	Fitting in supply port	Fitting in exhaust port
SP ST SE	S25 S50 S10 M25 M50 M10	H	QB QC QD	AX AC AD	BX BC BD BU	CX CC CD	DX DC DD DU
	– **S25**	– **H**	– **QC**	– **AX**	– **BD**	– **CD**	– **DX**

Ordering table

Size		2	Conditions	Code	Enter code
↓	Plug-in direction, Sub-D plug	To pneumatic side		**-SP**	
0		To top		**-ST**	
		To electrical side		**-SE**	
	Connecting cable with socket (supplied separately)	2.5 m, Sub-D 9-pin, 8-wire	1	**-S25**	
		5 m, Sub-D 9-pin, 8-wire	1 2	**-S50**	
		10 m, Sub-D 9-pin, 8-wire	1 2	**-S10**	
		2.5 m, Sub-D 25-pin, 12-wire	3	**-M25**	
		5 m, Sub-D 25-pin, 12-wire	2 3	**-M50**	
		10 m, Sub-D 25-pin, 12-wire	2 3	**-M10**	
	Wall mounting	H-rail mounting		**-H**	
	Fitting for working port	QS fitting for working port, tubing O.D. 3 mm		**-QB**	
		QS fitting for working port, tubing O.D. 4 mm		**-QC**	
		QS fitting for working port, tubing O.D. 6 mm		**-QD**	
	Fitting in supply port	Blanking plug for supply on left	4	**-AX**	
		QS fitting for supply, tubing O.D. 4 mm	5	**-AC**	
		QS fitting for supply, tubing O.D. 6 mm		**-AD**	
	Fitting in exhaust port	Blanking plug for exhaust on left	6	**-BX**	
		QS fitting for exhaust, tubing O.D. 4 mm	7	**-BC**	
		QS fitting for exhaust, tubing O.D. 6 mm	8	**-BD**	
		Silencer for exhaust		**-BU**	
	Fitting in supply port	Blanking plug for supply on right		**-CX**	
		QS fitting for supply, tubing O.D. 4 mm	9	**-CC**	
		QS fitting for supply, tubing O.D. 6 mm		**-CD**	
	Fitting in exhaust port	Blanking plug for exhaust on right		**-DX**	
		QS fitting for exhaust, tubing O.D. 4 mm	7	**-DC**	
		QS fitting for exhaust, tubing O.D. 6 mm		**-DD**	
		Silencer for exhaust		**-DU**	

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

2 **S50, S10, M50, M10**
Not with solenoid voltage 5VDC.

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

4 **AX** Not with fitting CX.

5 **AC** Not with fitting QD.

6 **BX** Not with fitting DX.

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

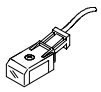
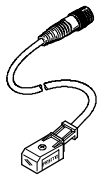
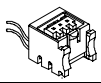
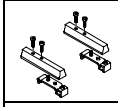
8 **BD** Not with fitting DC.

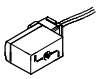
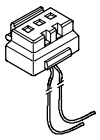
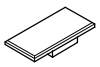
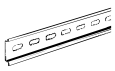
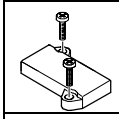
9 **CC** Not with fitting QD.

Transfer order code

	–		–		–		–		–		–	

Ordering data

		Part No.	Type
Plug socket with cable (IP65) with LED and PUR cable			
	2.5 m	**193 693**	**KMYZ-3-24DC-2,5-LED-PUR-B**
	5 m	**193 695**	**KMYZ-3-24DC-5-LED-PUR-B**
	10 m	**196 066**	**KMYZ-3-24DC-10-LED-PUR-B**
Plug socket with cable (IP65) with LED, PUR cable and M8 plug			
	0.5 m	**525 654**	**KMYZ-3-24-M8-0,5-LED-PUR**
	2.5 m	**525 655**	**KMYZ-3-24-M8-2,5-LED-PUR**
Plug base (IP40)			
		**197 260**	**MHAP-PI**
H-rail mounting			
		**525 053**	**MHAP2-BG-NRH-35**
Blanking plug B			
	M5	**3843**	**B-M5**[2]
	M7	**174 309**	**B-M7**[2]
Silencer UC			
		➔ Volume 3	
Connecting cable KMP6 (up to 8 valves)			
	2.5 m	**531 184**	**KMP6-09P-8-2,5**
	5 m	**531 185**	**KMP6-09P-8-5**
	10 m	**531 186**	**KMP6-09P-8-10**
Connecting cable KMP6 (up to 22 valves)			
	2.5 m	**530 046**	**KMP6-25P-22-2,5**
	5 m	**530 047**	**KMP6-25P-22-5**
	10 m	**530 048**	**KMP6-25P-22-10**

		Part No.	Type
Plug socket with cable (IP40) with PVC cable			
	0.5 m	**193 690**	**KMYZ-4-24DC-0,5-B**
	2.5 m	**193 691**	**KMYZ-4-24DC-2,5-B**
Plug socket with cable (IP40)			
	0.5 m	**197 263**	**KMH-0,5**
	1 m	**197 264**	**KMH-1**
Inscription labels			
		**197 289**	**MH-BZ-80X**[1]
H-rail			
	2 m	**35 430**	**NRH-35-2000**
Blanking plate			
	Plug connection	**197 470**	**MHAP-BP-3**
	Plug base	**197 471**	**MHAP-BP-3-PI**
Push-in fitting QS			
		➔ Volume 3	
Connecting cable KMP6 (up to 12 valves)			
	2.5 m	**530 049**	**KMP6-25P-12-2,5**
	5 m	**530 050**	**KMP6-25P-12-5**
	10 m	**530 051**	**KMP6-25P-12-10**

1) Scope of delivery 80 pieces
2) Scope of delivery 10 pieces

Solenoid valves MH3, fast-switching valves

Type codes – Valves

MH	P	3	–	M		1	H	–	3/2	–	O	–	QS6	

Valve family	
MH	Miniature and 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 ms
S	3 ms

Operating voltage	
1	24 V DC

Manual override	
H	Resetting

Valve function	
3/2	3/2-way valve

Normal position	
G	Closed
O	Open

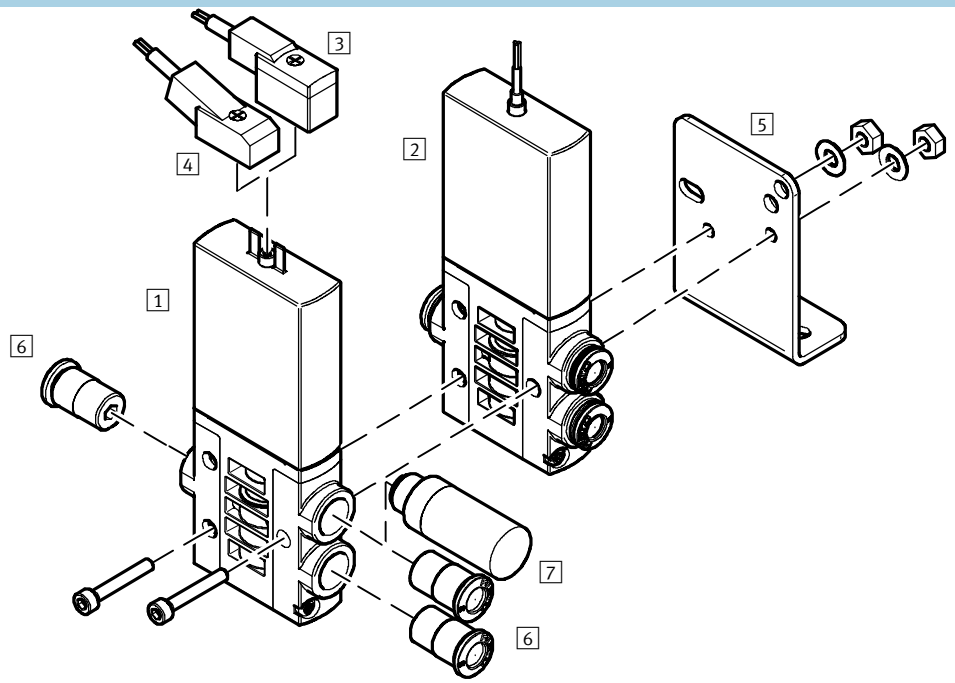
Pneumatic connection	
3	Nominal size 3 mm
⅛	Thread G⅛
QS6	Push-in fitting for tubing O.D. 6 mm

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 via plug vanes
Connection via moulded-in cable



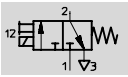
Valves and accessories		
	Brief description	**→ Page**
1 Individual valve MHE3-...	With plug vanes	2 / 3.2-41
2 Individual valve MHE3-...-K	With cable	2 / 3.2-41
3 Plug socket with cable KMYZ-4 (IP40)	With PVC cable	2 / 3.2-58
4 Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable, with M8 plug or open end	2 / 3.2-58
5 Mounting bracket MHE2-BG-L	–	2 / 3.2-44
6 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
7 Silencer UC	For fitting in exhaust ports	Volume 3

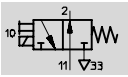
Solenoid valves MHE3, fast-switching valves

Technical data – Individual valve

FESTO

Function





Voltage
24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C

General technical data		
Valve function		3/2-way, single solenoid[1]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
Assembly position		Any
Grid dimension	[mm]	19
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 port 1 or 3

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated Vacuum
Operating pressure range	[bar]	–0.9 ... +8
Ambient temperature	[°C]	–5 ... +40
Temperature of medium	[°C]	–5 ... +40
Corrosion resistance class CRC[1]		2

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

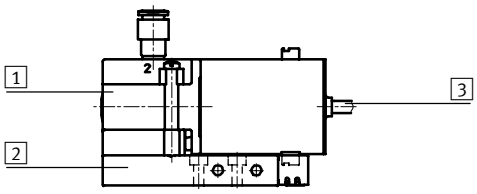
Technical data – Individual valve

FESTO

Electrical data		
Operating voltage	[V DC]	24 ±10%
Connection type		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 60 529		
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

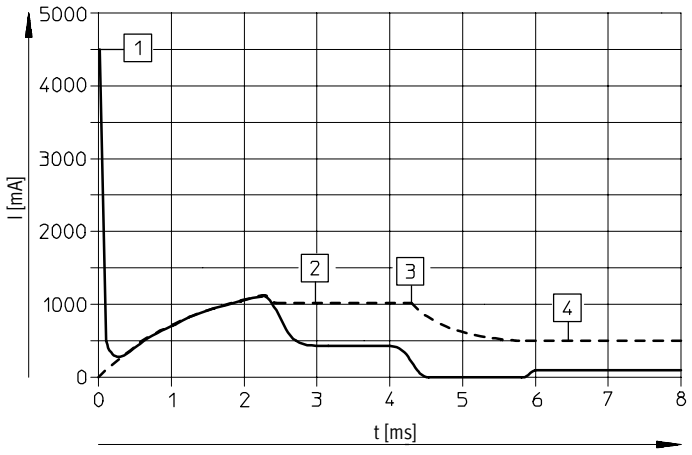
Response times and switching frequencies		
With fast-switching electronics		
Response time on/off	[ms]	3/2.3
Max. switching frequency	[Hz]	280
Without fast-switching electronics		
Response time on/off	[ms]	8/4.5
Max. switching frequency	[Hz]	130

Materials



1	Housing	Die-cast zinc
2	Sub-base	Polyamide
3	Cable sheath	Polyurethane
–	Screws	Steel
–	Seals	Nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Current curve



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

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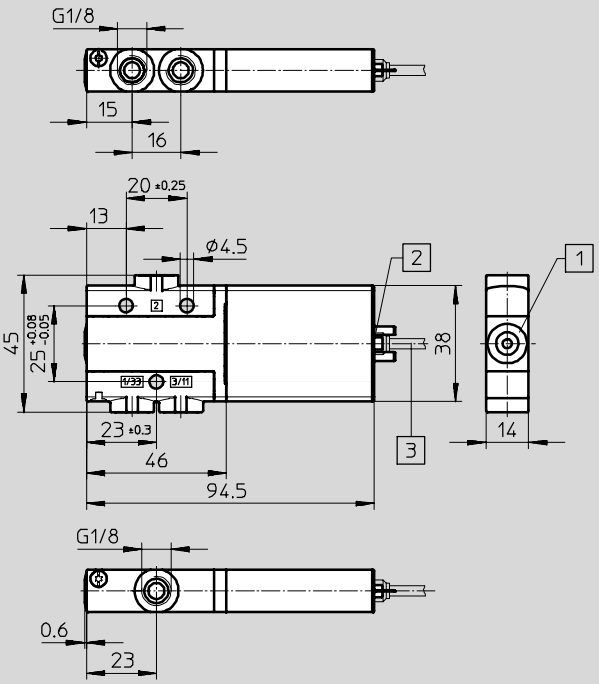
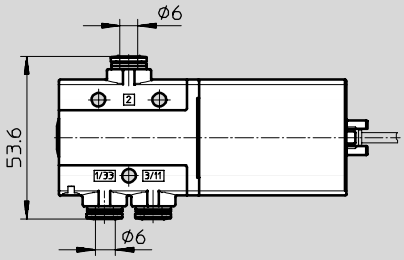
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Valve with connecting thread G1⁄8



Valve with push-in fitting QS 6

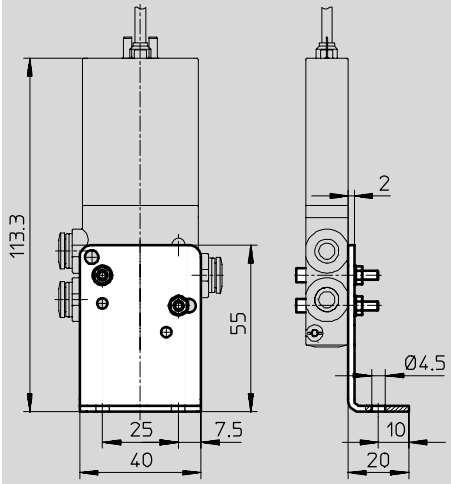


[1] Manual override, resetting

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

[3] Cable 2.5 m

Mounting bracket MHE2-BG-L



Solenoid valves MHE3, fast-switching valves

Technical data – Individual valve

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Ordering data – Valves					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 3/2.3 ms					
Connecting thread G1/8					
Plug vanes	24 V DC	**525 147**	**MHE3-MS1H-3/2G-1/8**	**525 167**	**MHE3-MS1H-3/2O-1/8**
Cable	24 V DC	**525 149**	**MHE3-MS1H-3/2G-1/8-K**	**525 169**	**MHE3-MS1H-3/2O-1/8-K**
Push-in fitting QS 6					
Plug vanes	24 V DC	**525 151**	**MHE3-MS1H-3/2G-QS6**	**525 171**	**MHE3-MS1H-3/2O-QS6**
Cable	24 V DC	**525 153**	**MHE3-MS1H-3/2G-QS6-K**	**525 173**	**MHE3-MS1H-3/2O-QS6-K**
Response time 8/4.5 ms					
Connecting thread G1/8					
Plug vanes	24 V DC	**525 146**	**MHE3-M1H-3/2G-1/8**	**525 166**	**MHE3-M1H-3/2O-1/8**
Cable	24 V DC	**525 148**	**MHE3-M1H-3/2G-1/8-K**	**525 168**	**MHE3-M1H-3/2O-1/8-K**
Push-in fitting QS 6					
Plug vanes	24 V DC	**525 150**	**MHE3-M1H-3/2G-QS6**	**525 170**	**MHE3-M1H-3/2O-QS6**
Cable	24 V DC	**525 152**	**MHE3-M1H-3/2G-QS6-K**	**525 172**	**MHE3-M1H-3/2O-QS6-K**

Ordering data – Product-specific accessories				
Designation	Weight [g]	CRC[1)]	Part No.	Type
Mounting bracket	55	2	**196 165**	**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

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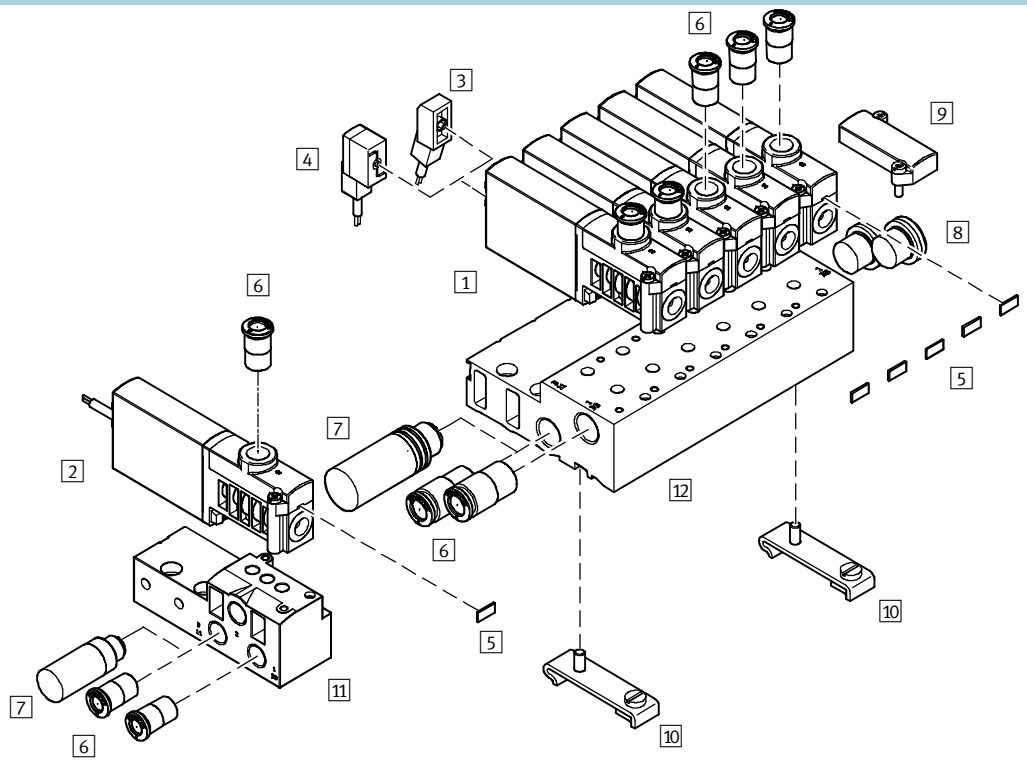
Connection via plug vanes
Connection via moulded-in cable



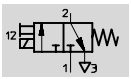
Valves and accessories			
		Brief description	**➔ Page**
1	Semi in-line valve MHP3-...	With plug vanes	2 / 3.2-46
2	Semi in-line valve MHP3-...-K	With cable	2 / 3.2-46
3	Plug socket with cable KMYZ-4 (IP40)	With PVC cable	2 / 3.2-58
4	Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable, with M8 plug or open end	2 / 3.2-58
5	Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-58
6	Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
7	Silencer UC	For fitting in exhaust ports	Volume 3
8	Blanking plug B	For sealing unused ports	2 / 3.2-58
9	Blanking plate MHAP3-BP-3	For sealing vacant positions	2 / 3.2-58
10	H-rail mounting CPV10/14-VI-BG-NRH-35	–	2 / 3.2-58
11	Individual sub-base MHP3-AS-3-⅛	For semi in-line valve	2 / 3.2-49
12	Manifold block MHP3-PR...-3	For semi in-line valve	2 / 3.2-49

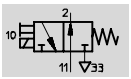
Solenoid valves MHP3, fast-switching valves

Technical data – Semi in-line valve

FESTO

Function





Voltage
24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C

General technical data		
Valve function		3/2-way, single solenoid[1]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
Assembly position		Any
Grid dimension	[mm]	19
Nominal diameter	[mm]	3
Standard nominal flow rate	[l/min]	200
Type of mounting		On sub-base, 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 port 1 or 3

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated Vacuum
Operating pressure range	[bar]	–0.9 ... +8
Ambient temperature	[°C]	–5 ... +40
Temperature of medium	[°C]	–5 ... +40
Corrosion resistance class CRC[1]		2

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

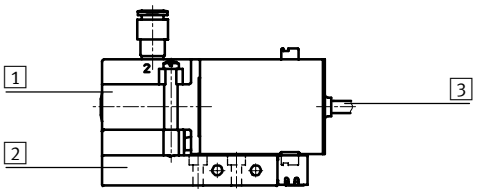
Technical data – Semi in-line valve

FESTO

Electrical data		
Operating voltage	[V DC]	24 ±10%
Connection type		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 60 529		
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

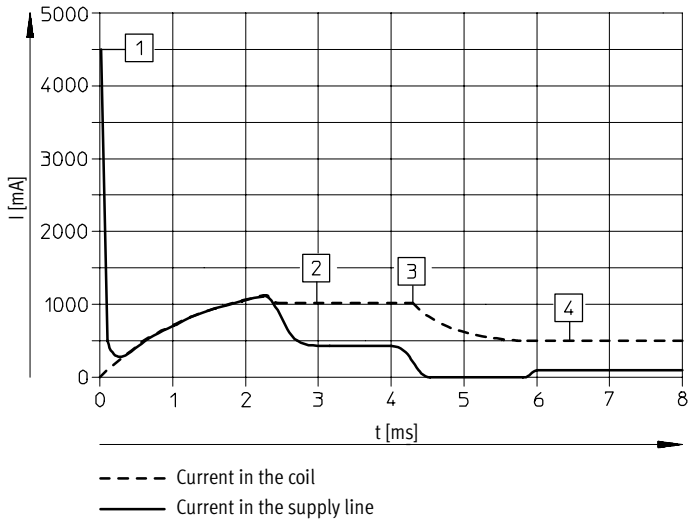
Response times and switching frequencies		
With fast-switching electronics		
Response time on/off	[ms]	3/2.3
Max. switching frequency	[Hz]	280
Without fast-switching electronics		
Response time on/off	[ms]	8/4.5
Max. switching frequency	[Hz]	130

Materials



1	Housing	Die-cast zinc
2	Sub-base	Polyamide
3	Cable sheath	Polyurethane
–	Screws	Steel
–	Seals	Nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Current curve



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

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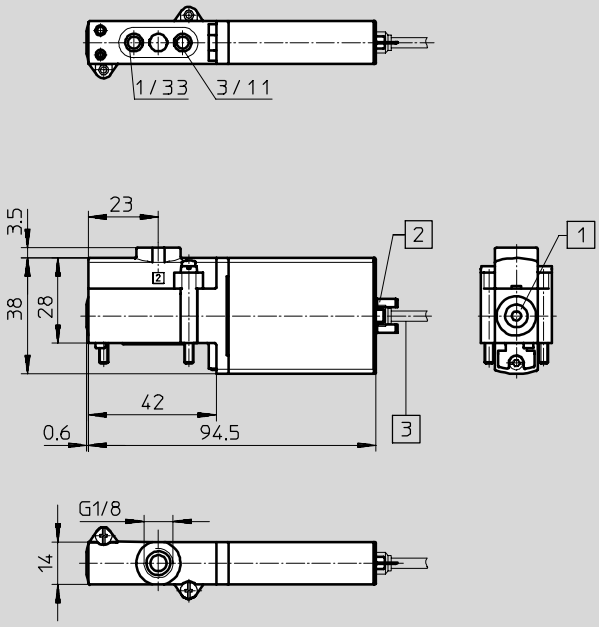
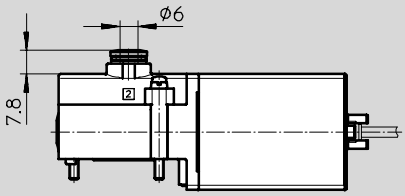
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Valve with connecting thread G1⁄8



Valve with push-in fitting QS 6

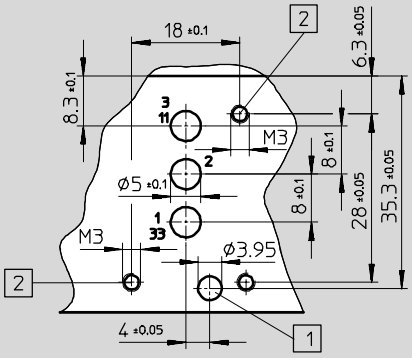


[1] Manual override, resetting

[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, 2 mm deep

[2] Mounting thread, 8 mm deep

Note

Semi in-line valves have no port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not applicable.
If used as a 2/2-way valve, normally open, port 1/33 is not applicable.

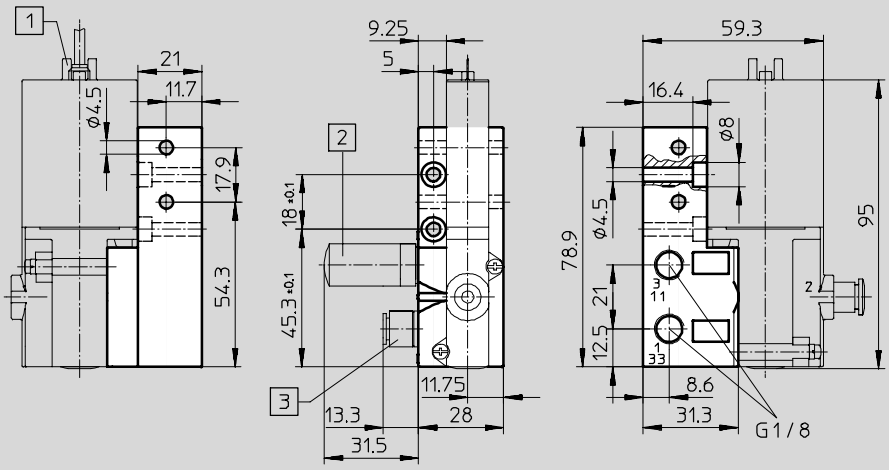
Solenoid valves MHP3, fast-switching valves

Technical data – Semi in-line valve

FESTO

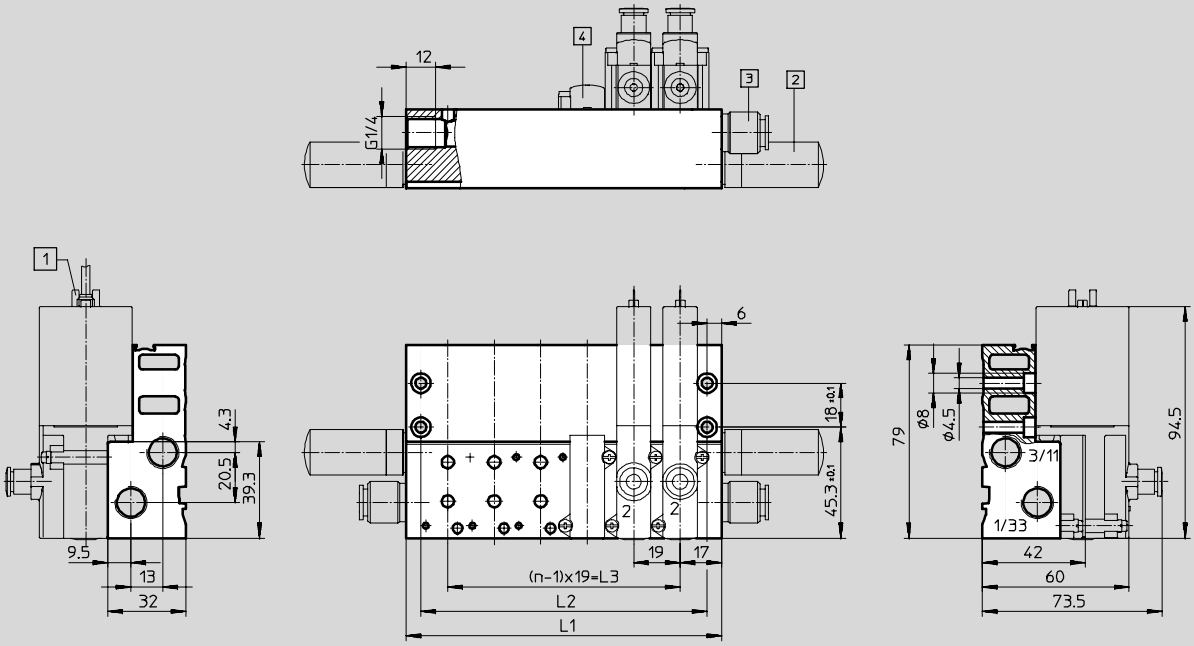
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
2 Silencer UC-⅛
3 Push-in fitting

Manifold mounting



1 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4 or moulded-in cable
2 Silencer UC-¼
3 Push-in fitting
4 Blanking plate MHAP-BP-3

Number of valves n	L1	L2	L3
2	53	41	19
4	91	79	57
6	129	117	95

Number of valves n	L1	L2	L3
8	167	155	133
10	205	193	171

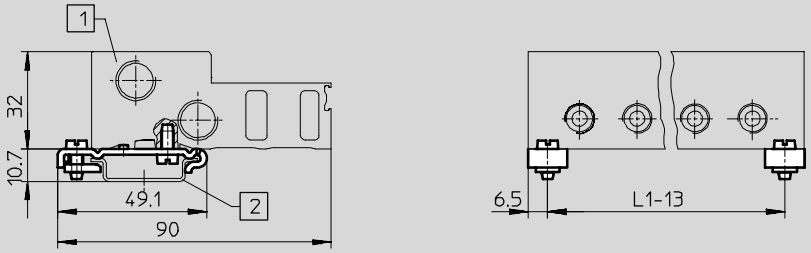
Solenoid valves MHP3, fast-switching valves

Technical data – Semi in-line valve

FESTO

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

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



1 Manifold block
2 Mounting rail NRH-35

Type	Number of valves n	L1
MHAP3-PR2-3	2	53
MHAP3-PR4-3	4	91
MHAP3-PR6-3	6	129

Type	Number of valves n	L1
MHAP3-PR8-3	8	167
MHAP3-PR10-3	10	205

Ordering data – Valves

Electrical connection	Operating voltage	Normally closed Part No.	Type	Normally open Part No.	Type
Response time 3/2.3 ms					
Connecting thread G1/8					
Plug vanes	24 V DC	**525 139**	**MHP3-MS1H-3/2G-1/8**	**525 159**	**MHP3-MS1H-3/2O-1/8**
Cable	24 V DC	**525 141**	**MHP3-MS1H-3/2G-1/8-K**	**525 161**	**MHP3-MS1H-3/2O-1/8-K**
Push-in fitting QS 6					
Plug vanes	24 V DC	**525 143**	**MHP3-MS1H-3/2G-QS6**	**525 163**	**MHP3-MS1H-3/2O-QS6**
Cable	24 V DC	**525 145**	**MHP3-MS1H-3/2G-QS6-K**	**525 165**	**MHP3-MS1H-3/2O-QS6-K**
Response time 8/4.5 ms					
Connecting thread G1/8					
Plug vanes	24 V DC	**525 138**	**MHP3-M1H-3/2G-1/8**	**525 158**	**MHP3-M1H-3/2O-1/8**
Cable	24 V DC	**525 140**	**MHP3-M1H-3/2G-1/8-K**	**525 160**	**MHP3-M1H-3/2O-1/8-K**
Push-in fitting QS 6					
Plug vanes	24 V DC	**525 142**	**MHP3-M1H-3/2G-QS6**	**525 162**	**MHP3-M1H-3/2O-QS6**
Cable	24 V DC	**525 144**	**MHP3-M1H-3/2G-QS6-K**	**525 164**	**MHP3-M1H-3/2O-QS6-K**

Note

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

Solenoid valves MHP3, fast-switching valves

Technical data – Semi in-line valve

FESTO

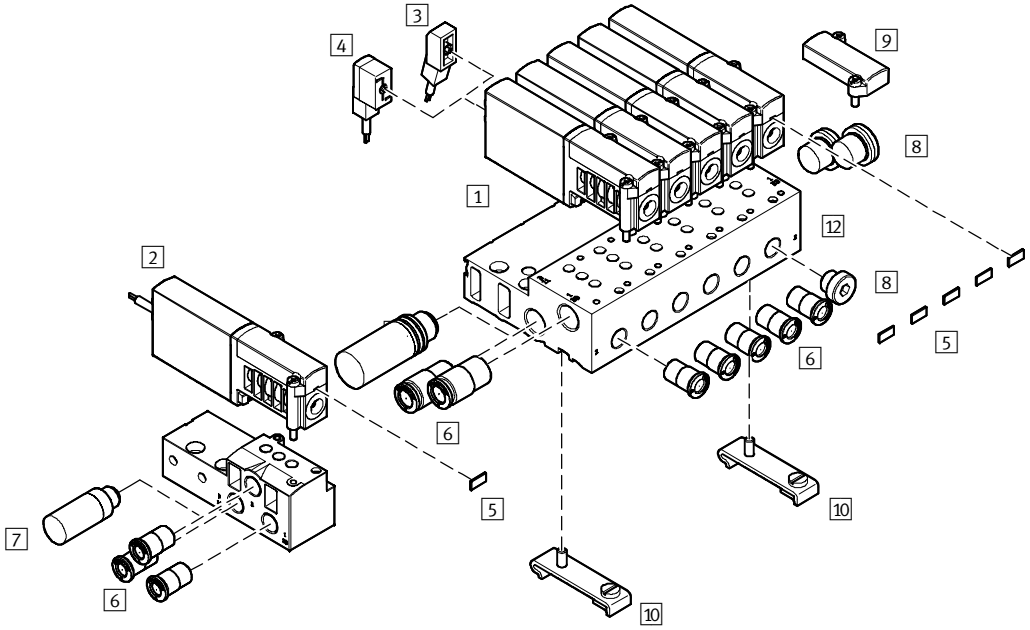
Ordering data – Product-specific accessories			
Designation		Part No.	Type
Individual sub-base			
For semi in-line valve		**525 215**	**MHP3-AS-3-⅛**
Manifold block			
For semi in-line valve	2 valves	**525 216**	**MHP3-PR2-⅛**
	4 valves	**525 217**	**MHP3-PR4-⅛**
	6 valves	**525 218**	**MHP3-PR6-⅛**
	8 valves	**525 219**	**MHP3-PR8-⅛**
	10 valves	**525 220**	**MHP3-PR10-⅛**

Solenoid valves MHA3, fast-switching valves

Peripherals overview – Sub-base valve

FESTO

Connection via plug vanes
Connection via moulded-in cable



Valves and accessories		
	Brief description	➔ Page
1 Sub-base valve MHA3-...	With plug vanes	2 / 3.2-53
2 Sub-base valve MHA3-...-K	With cable	2 / 3.2-53
3 Plug socket with cable KMYZ-4 (IP40)	With PVC cable	2 / 3.2-58
4 Plug socket with cable KMYZ-3 (IP65)	With LED, PUR cable, with M8 plug or open end	2 / 3.2-58
5 Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-58
6 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
7 Silencer UC	For fitting in exhaust ports	Volume 3
8 Blanking plug B	For sealing unused ports	2 / 3.2-58
9 Blanking plate MHAP3-BP-3	For sealing vacant positions	2 / 3.2-58
10 H-rail mounting CPV10/14-VI-BG-NRH-35	–	2 / 3.2-58
11 Individual sub-base MHA3-AS-3-1⁄8	For sub-base valve	2 / 3.2-56
12 Manifold block MHA3-PR...-3-1⁄8	For sub-base valve	2 / 3.2-56

Solenoid valves MHA3, fast-switching valves

Technical data – Sub-base valve

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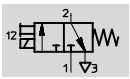
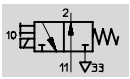
Function





Voltage
24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C

General technical data		
Valve function		3/2-way, single solenoid[1]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
Assembly position		Any
Grid dimension	[mm]	19
Nominal diameter	[mm]	3
Standard nominal flow rate	[l/min]	200
Type of mounting		On sub-base, 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 port 1 or 3

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated Vacuum
Operating pressure range	[bar]	–0.9 ... +8
Ambient temperature	[°C]	–5 ... +40
Temperature of medium	[°C]	–5 ... +40
Corrosion resistance class CRC[1]		2

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

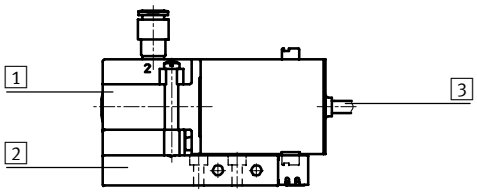
Technical data – Sub-base valve

FESTO

Electrical data		
Operating voltage	[V DC]	24 ±10%
Connection type		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 60 529		
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

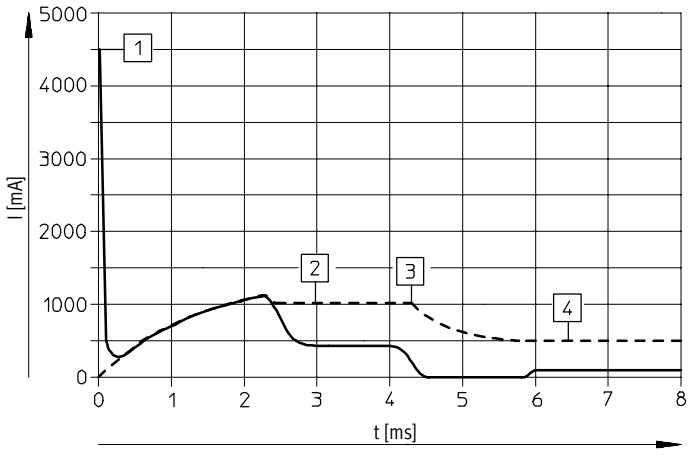
Response times and switching frequencies		
With fast-switching electronics		
Response time on/off	[ms]	3/2.3
Max. switching frequency	[Hz]	280
Without fast-switching electronics		
Response time on/off	[ms]	8/4.5
Max. switching frequency	[Hz]	130

Materials



1	Housing	Die-cast zinc
2	Sub-base	Polyamide
3	Cable sheath	Polyurethane
–	Screws	Steel
–	Seals	Nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Current curve



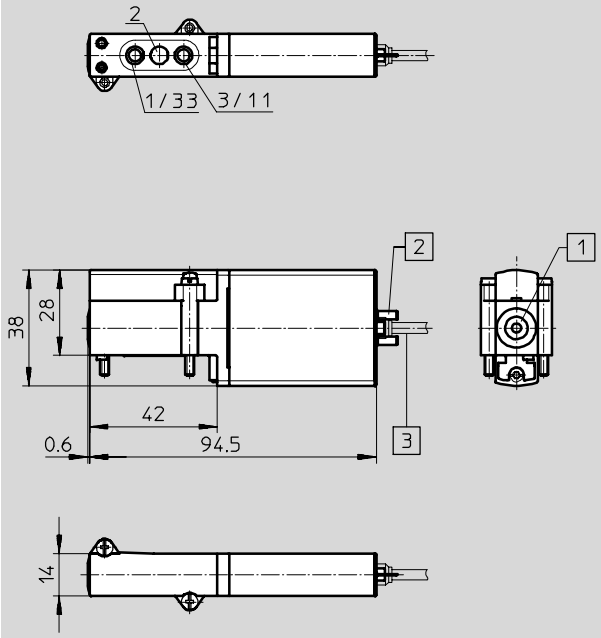
1 Capacitor charging
2 Controlled coil current 1 A
3 Drop to holding current
4 Controlled holding current 0.5 A

Solenoid valves MHA3, fast-switching valves

Technical data – Sub-base valve

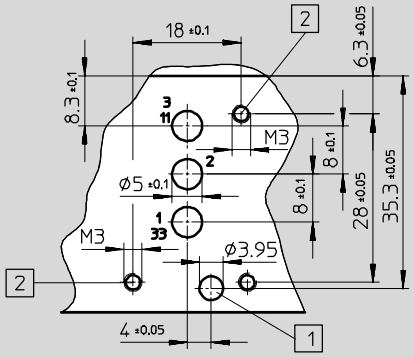
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Valve



1 Manual override, resetting
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, 2 mm deep
2 Mounting thread, 8 mm deep

Note

Semi in-line valves have no port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not applicable.
If used as a 2/2-way valve, normally open, port 1/33 is not applicable.

Solenoid valves MHA3, fast-switching valves

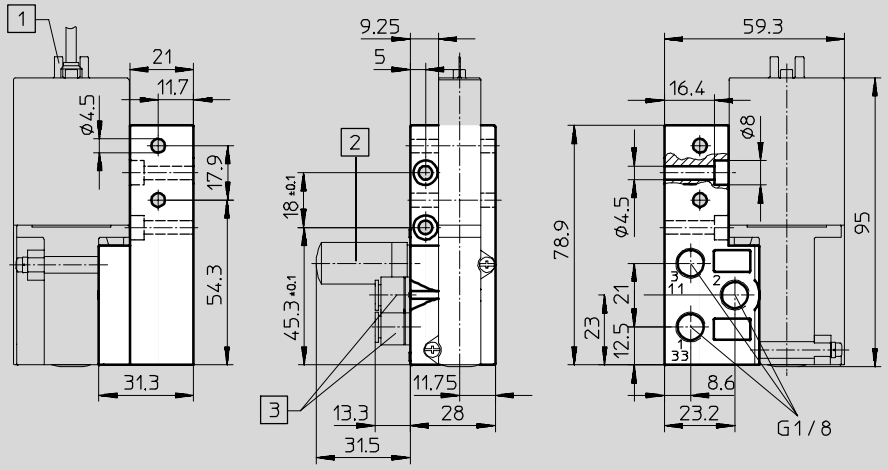
Technical data – Sub-base valve

FESTO

Dimensions

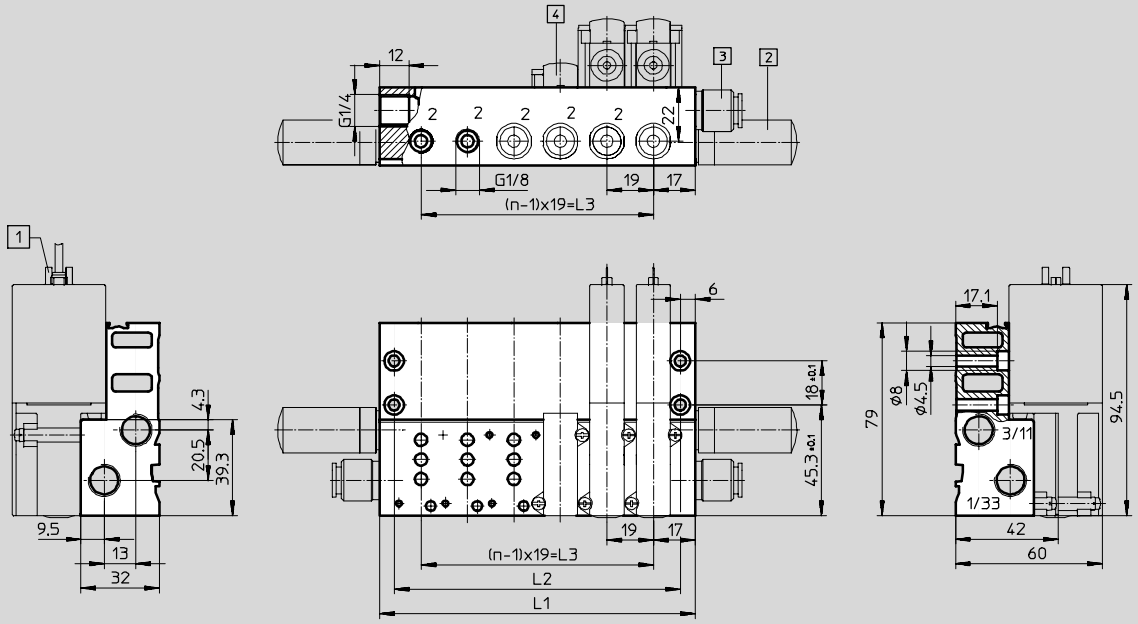
Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
2 Silencer UC-⅛
3 Push-in fitting

Manifold mounting



1 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4 or moulded-in cable
2 Silencer UC-¼
3 Push-in fitting
4 Blanking plate MHAP-BP-3

Number of valves n	L1	L2	L3
2	53	41	19
4	91	79	57
6	129	117	95

Number of valves n	L1	L2	L3
8	167	155	133
10	205	193	171

Solenoid valves MHA3, fast-switching valves

Technical data – Sub-base valve

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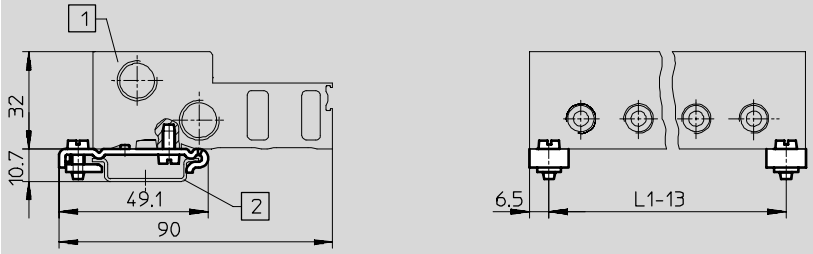
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

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



1 Manifold block
2 Mounting rail NRH-35

Type	Number of valves n	L1
MHAP3-PR2-3	2	53
MHAP3-PR4-3	4	91
MHAP3-PR6-3	6	129

Type	Number of valves n	L1
MHAP3-PR8-3	8	167
MHAP3-PR10-3	10	205

Ordering data – Valves

Electrical connection	Operating voltage	Normally closed Part No.	Type	Normally open Part No.	Type
Response time 3/2.3 ms					
Plug vanes	24 V DC	**525 135**	**MHA3-MS1H-3/2G-3**	**525 155**	**MHA3-MS1H-3/2O-3**
Cable	24 V DC	**525 137**	**MHA3-MS1H-3/2G-3-K**	**525 157**	**MHA3-MS1H-3/2O-3-K**
Response time 8/4.5 ms					
Plug vanes	24 V DC	**525 134**	**MHA3-M1H-3/2G-3**	**525 154**	**MHA3-M1H-3/2O-3**
Cable	24 V DC	**525 136**	**MHA3-M1H-3/2G-3-K**	**525 156**	**MHA3-M1H-3/2O-3-K**

Note

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

Ordering data – Product-specific accessories

Designation		Part No.	Type
Individual sub-base			
For sub-base valve		**525 214**	**MHA3-AS-3-⅛**
Manifold block			
For sub-base valve	2 valves	**525 221**	**MHA3-PR2-⅛**
	4 valves	**525 222**	**MHA3-PR4-⅛**
	6 valves	**525 223**	**MHA3-PR6-⅛**
	8 valves	**525 224**	**MHA3-PR8-⅛**
	10 valves	**525 225**	**MHA3-PR10-⅛**

Solenoid valves MH3, fast-switching valves

Accessories

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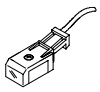
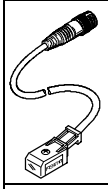
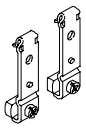
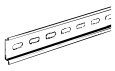
Ordering data

		Part No.	Type
Plug socket with cable (IP65) with LED and PUR cable			
	2.5 m	**193 693**	**KMYZ-3-24-2,5-LED-PUR-B**
	5 m	**193 695**	**KMYZ-3-24-5-LED-PUR-B**
	10 m	**196 066**	**KMYZ-3-24-10-LED-PUR-B**
Plug socket with cable (IP65) with LED, PUR cable and M8 plug			
	0.5 m	**525 654**	**KMYZ-3-24-M8-0,5-LED-PUR**
	2.5 m	**525 655**	**KMYZ-3-24-M8-2,5-LED-PUR**
H-rail mounting			
		**162 556**	**CPV10/14-VI-BG-NRH-35**
Blanking plug B			
	G1⁄8	**3 569**	**B-1⁄8**[2]
	G1⁄4	**3 568**	**B-1⁄4**[2]
Silencer UC			
		➔ Volume 3	

		Part No.	Type
Plug socket with cable (IP40) with PVC cable			
	0.5 m	**193 690**	**KMYZ-4-24-0,5-B**
	2.5 m	**193 691**	**KMYZ-4-24-2,5-B**
Inscription label			
		**197 259**	**MH-BZ-80X**[1]
H-rail			
	2 m	**35 430**	**NRH-35-2000**
Blanking plate			
		**525 226**	**MHAP3-BP-3**
Push-in fitting QS			
		➔ Volume 3	

1) Scope of delivery 80 pieces
2) Scope of delivery 10 pieces

Core Range

Solenoid valves MH4, fast-switching valves

Type codes – Valves

MH	P	4	–	M		1	H	–	3/2	–	O	–	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

	9 ms
S	3.5 ms

Operating voltage

1	24 V DC

Manual override

H	Resetting

Valve function

3/2	3/2-way valve

Normal position

G	Closed
O	Open

Pneumatic connection

4	Nominal size 4 mm
¼	Thread G¼
QS8	Push-in fitting for tubing O.D. 8 mm

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

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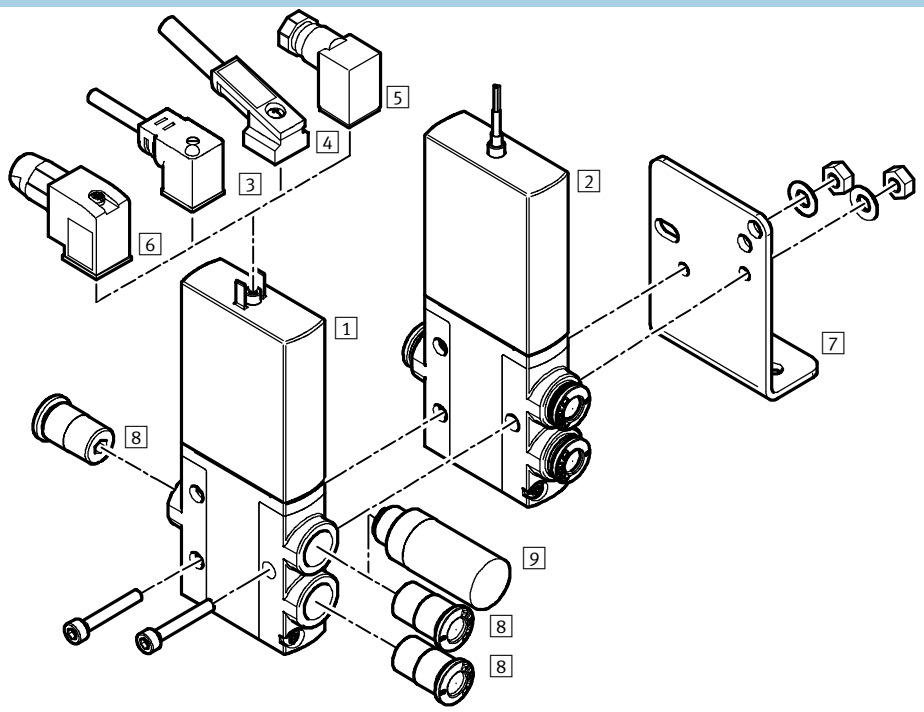
Connection via plug vanes
Connection via moulded-in cable



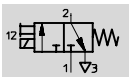
Valves and accessories		
	Brief description	**→ Page**
1 Individual valve MHE4-...	With plug vanes	2 / 3.2-61
2 Individual valve MHE4-...-K	With cable	2 / 3.2-61
3 Plug socket with cable KMEB-1 (IP65)	PVC cable, with or without LED	2 / 3.2-78
4 Plug socket with cable KMEB-2 (IP65)	With LED, without LED; PUR cable, with or without LED	2 / 3.2-78
5 Plug socket MSSD-E (IP65)	With clamping screw	2 / 3.2-78
6 Plug socket MSSD-E (IP65)	With insulation displacement connector	2 / 3.2-78
7 Mounting bracket MHE2-BG-L	–	2 / 3.2-64
8 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
9 Silencer UC	For fitting in exhaust ports	Volume 3

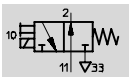
Solenoid valves MHE4, fast-switching valves

Technical data – Individual valve

FESTO

Function





Voltage
24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C

General technical data		
Valve function		3/2-way, single solenoid[1]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
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 port 1 or 3

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated Vacuum
Operating pressure range	[bar]	–0.9 ... +8
Ambient temperature	[°C]	–5 ... +40
Temperature of medium	[°C]	–5 ... +40
Corrosion resistance class CRC[1]		2

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

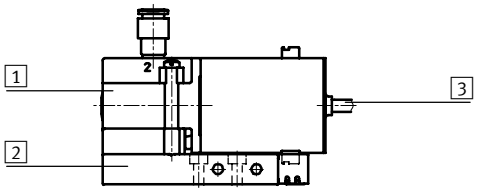
Technical data – Individual valve

FESTO

Electrical data		
Operating voltage	[V DC]	24 ±10%
Connection type		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 60 529		
With moulded-in cable		IP65
With plug socket with cable KMEB		IP65

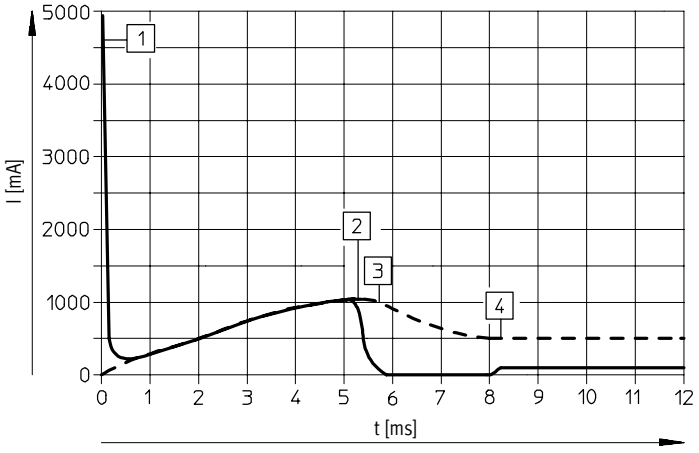
Response times and switching frequencies		
With fast-switching electronics		
Response time on/off	[ms]	3.5/3.5
Max. switching frequency	[Hz]	280
Without fast-switching electronics		
Response time on/off	[ms]	9/5
Max. switching frequency	[Hz]	120

Materials



1	Housing	Die-cast zinc
2	Sub-base	Polyamide
3	Cable sheath	Polyurethane
–	Screws	Steel
–	Seals	Nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Current curve



Current in the coil

Current in the supply line

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

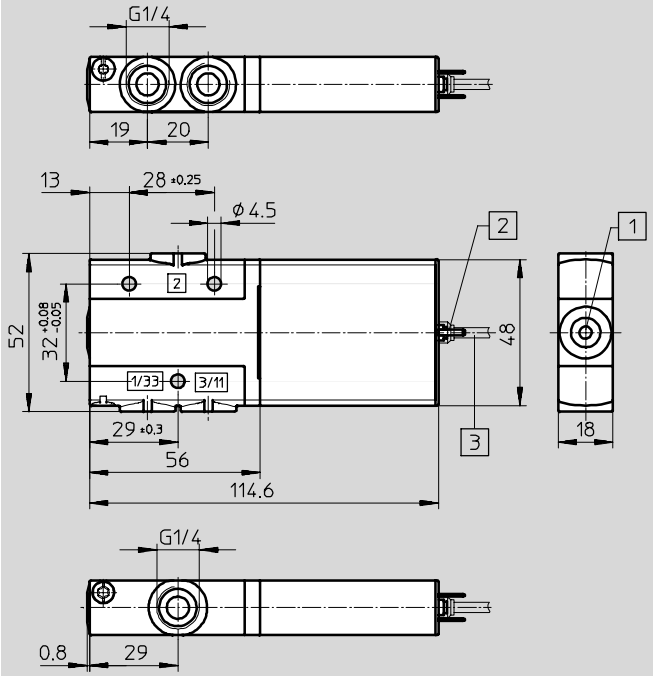
Solenoid valves MHE4, fast-switching valves

Technical data – Individual valve

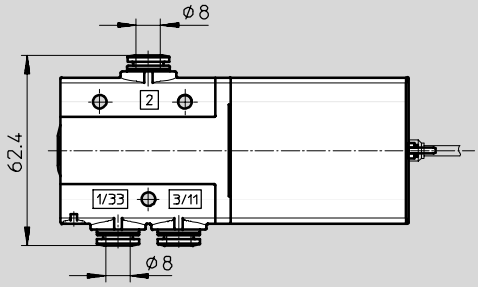
FESTO

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

Valve with connecting thread G¼



Valve with push-in fitting QS 8

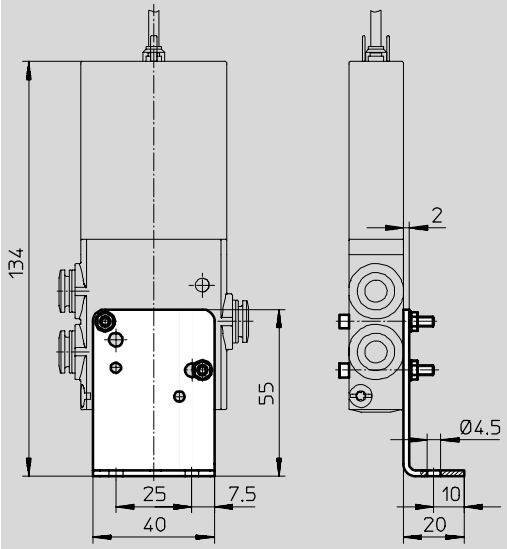


1 Manual override, resetting

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

FESTO

Ordering data – Valves					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 3.5/3.5 ms					
Connecting thread G¼					
Plug vanes	24 V DC	**525 187**	**MHE4-MS1H-3/2G-¼**	**525 207**	**MHE4-MS1H-3/2O-¼**
Cable	24 V DC	**525 189**	**MHE4-MS1H-3/2G-¼-K**	**525 209**	**MHE4-MS1H-3/2O-¼-K**
Push-in fitting QS 8					
Plug vanes	24 V DC	**525 191**	**MHE4-MS1H-3/2G-QS8**	**525 211**	**MHE4-MS1H-3/2O-QS8**
Cable	24 V DC	**525 193**	**MHE4-MS1H-3/2G-QS8-K**	**525 213**	**MHE4-MS1H-3/2O-QS8-K**
Response time 9/5 ms					
Connecting thread G¼					
Plug vanes	24 V DC	**525 186**	**MHE4-M1H-3/2G-¼**	**525 206**	**MHE4-M1H-3/2O-¼**
Cable	24 V DC	**525 188**	**MHE4-M1H-3/2G-¼-K**	**525 208**	**MHE4-M1H-3/2O-¼-K**
Push-in fitting QS 8					
Plug vanes	24 V DC	**525 190**	**MHE4-M1H-3/2G-QS8**	**525 210**	**MHE4-M1H-3/2O-QS8**
Cable	24 V DC	**525 192**	**MHE4-M1H-3/2G-QS8-K**	**525 212**	**MHE4-M1H-3/2O-QS8-K**

Ordering data – Product-specific accessories				
Designation	Weight [g]	CRC[1)]	Part No.	Type
Mounting bracket	55	2	**196 165**	**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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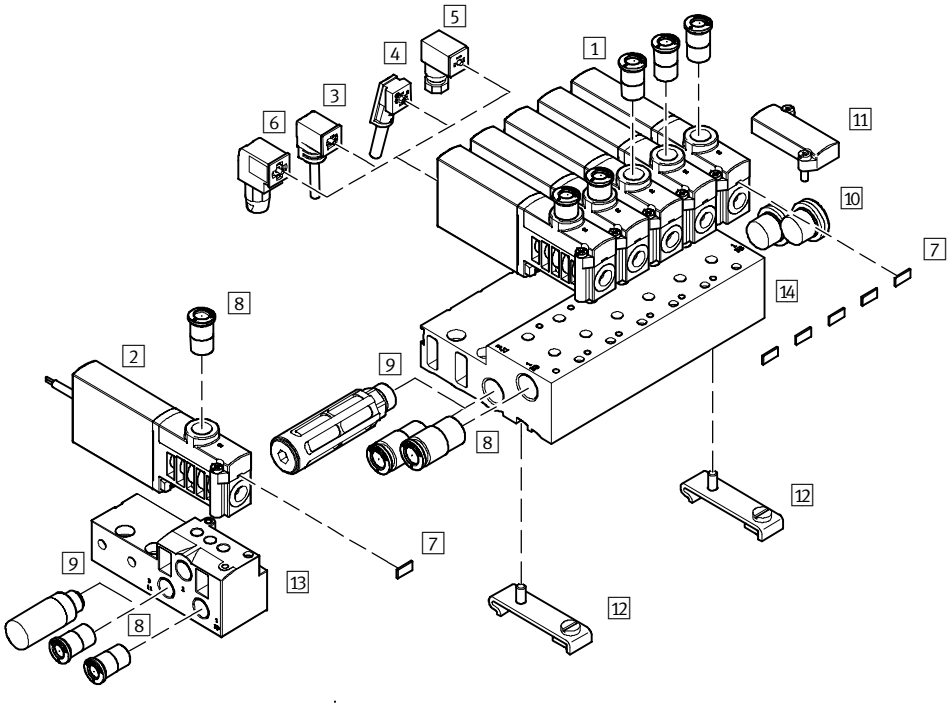
Connection via plug vanes
Connection via moulded-in cable



Valves and accessories		
	Brief description	**➔ Page**
1 Semi in-line valve MHP4-...	With plug vanes	2 / 3.2-66
2 Semi in-line valve MHP4-...-K	With cable	2 / 3.2-66
3 Plug socket MSSD-E (IP65)	With clamping screws	2 / 3.2-78
4 Plug socket MSSD-E (IP65)	With insulation displacement connectors	2 / 3.2-78
5 Plug socket with cable KMEB-1 (IP65)	PVC cable, with or without LED	2 / 3.2-78
6 Plug socket with cable KMEB-2 (IP65)	PUR cable, with or without LED	2 / 3.2-78
7 Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-78
8 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
9 Silencer UC	For fitting in exhaust ports	Volume 3
10 Blanking plug B	For sealing unused ports	2 / 3.2-78
11 Blanking plate MHAP4-BP-3	For sealing vacant positions	2 / 3.2-78
12 H-rail mounting CPV10/14-VI-BG-NRH-35	–	2 / 3.2-78
13 Individual sub-base MHP4-AS-3-¼	For semi in-line valve	2 / 3.2-69
14 Manifold block MHP4-PR...-3	For semi in-line valve	2 / 3.2-69

Solenoid valves MHP4, fast-switching valves

Technical data – Semi in-line valve

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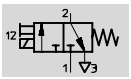
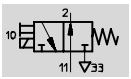
Function





Voltage
24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C

General technical data		
Valve function		3/2-way, single solenoid[1]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
Assembly position		Any
Grid dimension	[mm]	24
Nominal diameter	[mm]	4
Standard nominal flow rate	[l/min]	400
Type of mounting		On sub-base, via through-hole
Pneumatic connection		Connecting thread G¼
		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 port 1 or 3

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated Vacuum
Operating pressure range	[bar]	–0.9 ... +8
Ambient temperature	[°C]	–5 ... +40
Temperature of medium	[°C]	–5 ... +40
Corrosion resistance class CRC[1]		2

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

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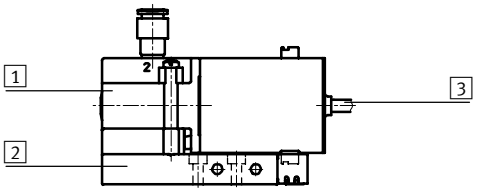
Electrical data		
Operating voltage	[V DC]	24 ±10%
Connection type		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	Pull: 8.5 Hold: 2.125
Without fast-switching electronics	[W]	5.6
Protection class to EN 60 529		
With moulded-in cable		IP65
With plug socket with cable KMEB		IP65

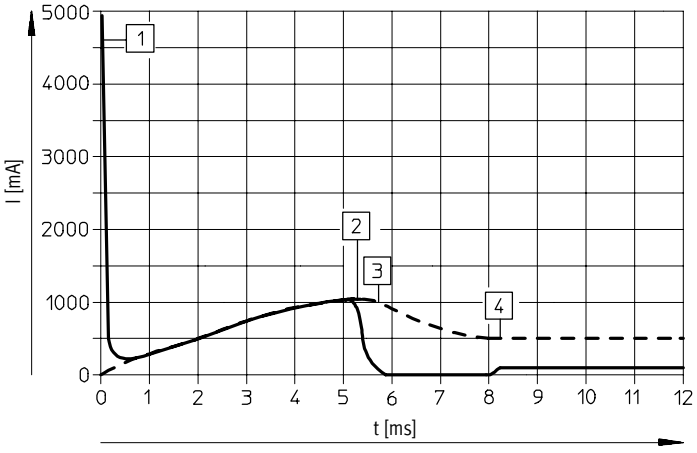
Response times and switching frequencies		
With fast-switching electronics		
Response time on/off	[ms]	3.5/3.5
Max. switching frequency	[Hz]	210
Without fast-switching electronics		
Response time on/off	[ms]	9/5
Max. switching frequency	[Hz]	120

Materials



1	Housing	Die-cast zinc
2	Sub-base	Polyamide
3	Cable sheath	Polyurethane
–	Screws	Steel
–	Seals	Nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Current curve



Current in the coil

Current in the supply line

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

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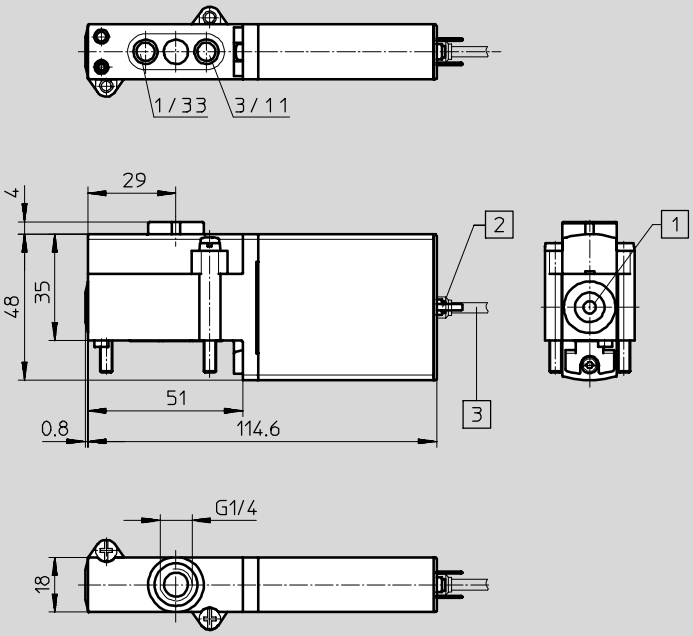
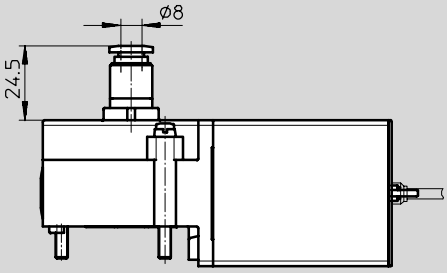
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Valve with connecting thread G¼



Valve with push-in fitting QS 8

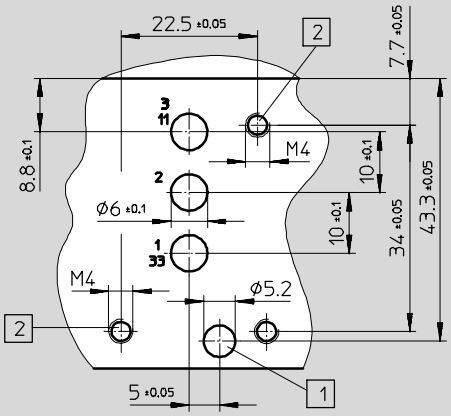


[1] Manual override, resetting

[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

Note

Semi in-line valves have no port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not applicable.
If used as a 2/2-way valve, normally open, port 1/33 is not applicable.

Solenoid valves MHP4, fast-switching valves

Technical data – Semi in-line valve

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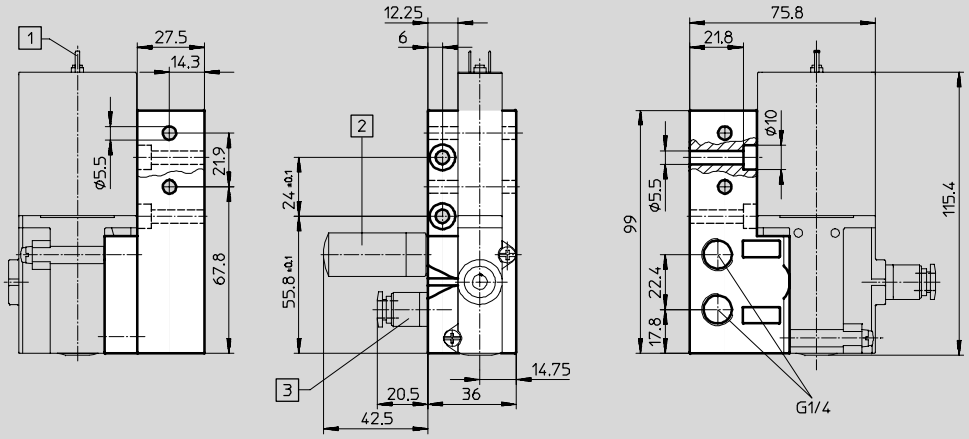
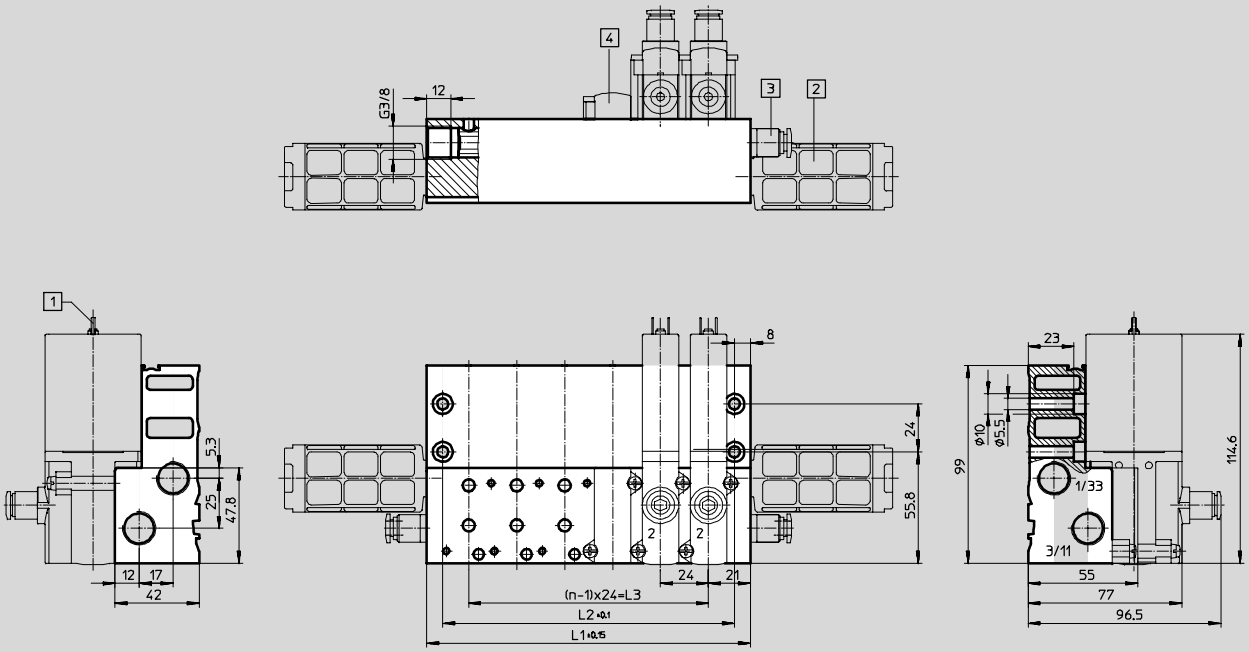
Individual sub-base



1 Plug vanes for plug socket with cable KMEB
2 Silencer UC-¼
3 Push-in fitting

Manifold mounting



1 Plug vanes for plug socket with cable KMEB or moulded-in cable
2 Silencer UC-⅜
3 Push-in fitting
4 Blanking plate MHAP4-BP-3

Number of valves n	L1	L2	L3
2	66	50	24
4	114	98	72
6	162	146	120

Number of valves 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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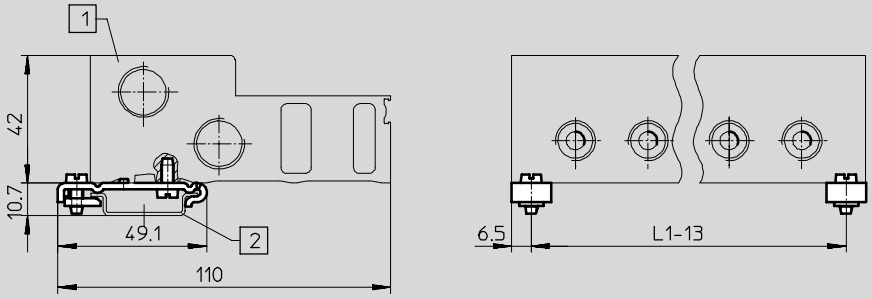
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

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



1 Manifold block
2 Mounting rail NRH-35

Type	Number of valves n	L1
MHA4/MHP4-PR2-3	2	66
MHA4/MHP4-PR4-3	4	114
MHA4/MHP4-PR6-3	6	162

Type	Number of valves n	L1
MHA4/MHP4-PR8-3	8	210
MHA4/MHP4-PR10-3	10	258

Ordering data – Valves

Electrical connection	Operating voltage	Normally closed Part No.	Type	Normally open Part No.	Type
Response time 3.5/3.5 ms					
Connecting thread G¼					
Plug vanes	24 V DC	**525 179**	**MHP4-MS1H-3/2G-¼**	**525 199**	**MHP4-MS1H-3/2O-¼**
Cable	24 V DC	**525 181**	**MHP4-MS1H-3/2G-¼-K**	**525 201**	**MHP4-MS1H-3/2O-¼-K**
Push-in fitting QS 8					
Plug vanes	24 V DC	**525 183**	**MHP4-MS1H-3/2G-QS8**	**525 203**	**MHP4-MS1H-3/2O-QS8**
Cable	24 V DC	**525 185**	**MHP4-MS1H-3/2G-QS8-K**	**525 205**	**MHP4-MS1H-3/2O-QS8-K**
Response time 9/5 ms					
Connecting thread G¼					
Plug vanes	24 V DC	**525 178**	**MHP4-M1H-3/2G-¼**	**525 198**	**MHP4-M1H-3/2O-¼**
Cable	24 V DC	**525 180**	**MHP4-M1H-3/2G-¼-K**	**525 200**	**MHP4-M1H-3/2O-¼-K**
Push-in fitting QS 8					
Plug vanes	24 V DC	**525 182**	**MHP4-M1H-3/2G-QS8**	**525 202**	**MHP4-M1H-3/2O-QS8**
Cable	24 V DC	**525 184**	**MHP4-M1H-3/2G-QS8-K**	**525 204**	**MHP4-M1H-3/2O-QS8-K**

Note

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

Solenoid valves MHP4, fast-switching valves

Technical data – Semi in-line valve

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Ordering data – Product-specific accessories			
Designation		Part No.	Type
Individual sub-base			
For semi in-line valve		**525 228**	**MHP4-AS-3-¼**
Manifold block			
For semi in-line valve	2 valves	**525 229**	**MHP4-PR2-3**
	4 valves	**525 230**	**MHP4-PR4-3**
	6 valves	**525 231**	**MHP4-PR6-3**
	8 valves	**525 232**	**MHP4-PR8-3**
	10 valves	**525 233**	**MHP4-PR10-3**

Solenoid valves MHA4, fast-switching valves

Peripherals overview – Sub-base valve

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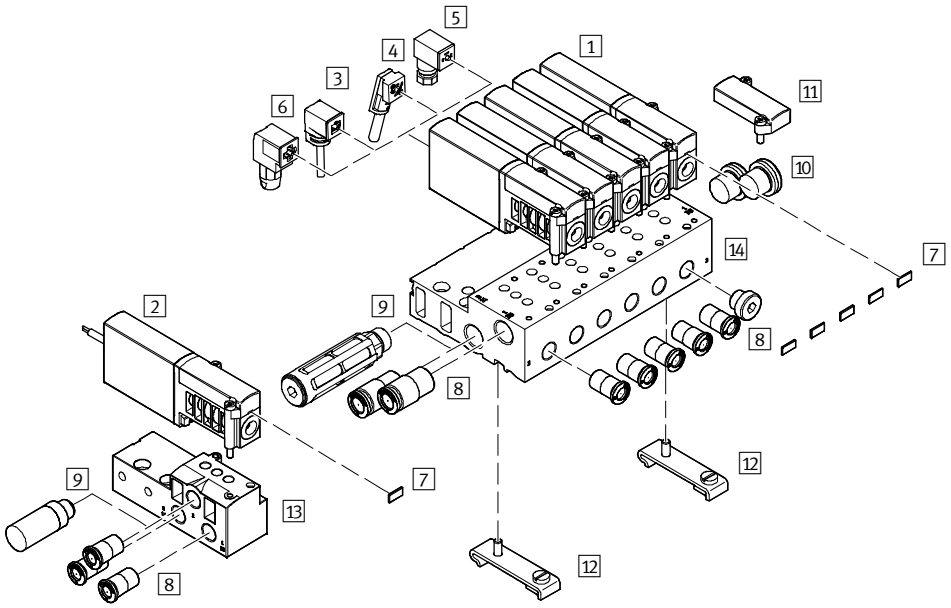
Connection via plug vanes
Connection via moulded-in cable



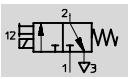
Valves and accessories		
	Brief description	**➔ Page**
1 Sub-base valves MHA4-...	With plug vanes	2 / 3.2-78
2 Sub-base valves MHA4-...-K	With cable	2 / 3.2-78
3 Plug socket with cable KMEB-1 (IP65)	PVC cable, with or without LED	2 / 3.2-78
4 Plug socket with cable KMEB-2 (IP65)	PUR cable, with or without LED	2 / 3.2-78
5 Plug socket MSSD-E (IP65)	With clamping screws	2 / 3.2-78
6 Plug socket MSSD-E (IP65)	With insulation displacement connectors	2 / 3.2-78
7 Inscription label MH-BZ-80X	For identifying the valves	2 / 3.2-78
8 Push-in fitting QS	For connecting compressed air tubing with standard O.D.	Volume 3
9 Silencer UC	For fitting in exhaust ports	Volume 3
10 Blanking plug B	For sealing unused ports	2 / 3.2-78
11 Blanking plate MHAP4-BP-3	For sealing vacant positions	2 / 3.2-78
12 H-rail mounting CPV10/14-VI-BG-NRH-35	–	2 / 3.2-78
13 Individual sub-base MHA4-AS-3-¼	For sub-base valves	2 / 3.2-76
14 Manifold block MHA4-PR...-3	For sub-base valves	2 / 3.2-76

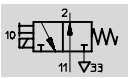
Solenoid valves MHA4, fast-switching valves

Technical data – Sub-base valve

FESTO

Function





Voltage
24 V DC

Pressure
–0.9 ... +8 bar

Temperature range
–5 ... +40°C

General technical data		
Valve function		3/2-way, single solenoid[1]
Design		Poppet valve
Sealing principle		Soft
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Exhaust function		Flow control
Manual override		Resetting
Assembly position		Any
Grid dimension	[mm]	24
Nominal diameter	[mm]	4
Standard nominal flow rate	[l/min]	400
Type of mounting		On sub-base, via through-hole
Pneumatic connection		Connecting thread G¼
Product weight	[g]	270

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

Operating and environmental conditions		
Operating medium		Filtered compressed air, lubricated or unlubricated Vacuum
Operating pressure range	[bar]	–0.9 ... +8
Ambient temperature	[°C]	–5 ... +40
Temperature of medium	[°C]	–5 ... +40
Corrosion resistance class CRC[1]		2

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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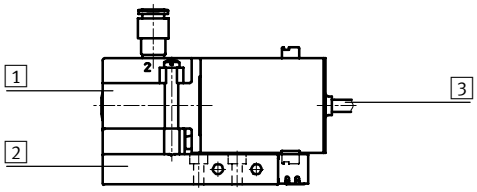
Electrical data		
Operating voltage	[V DC]	24 ±10%
Connection type		Plug vanes or moulded-in cable
Power consumption		
With fast-switching electronics	[W]	Pull: 8.5 Hold: 2.125
Without fast-switching electronics	[W]	5.6
Protection class to EN 60 529		
With moulded-in cable		IP65
With plug socket with cable KMEB		IP65

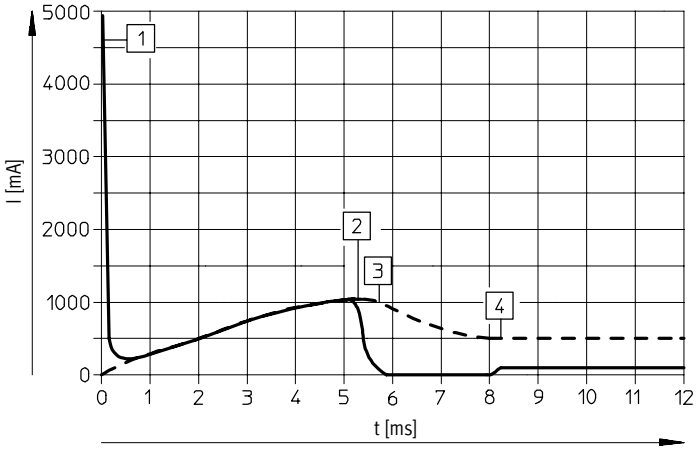
Response times and switching frequencies		
With fast-switching electronics		
Response time on/off	[ms]	3.5/3.5
Max. switching frequency	[Hz]	210
Without fast-switching electronics		
Response time on/off	[ms]	9/5
Max. switching frequency	[Hz]	120

Materials



1	Housing	Die-cast zinc
2	Sub-base	Polyamide
3	Cable sheath	Polyurethane
–	Screws	Steel
–	Seals	Nitrile rubber
	Note on materials	Free of copper, PTFE and silicone

Current curve



Current in the coil

Current in the supply line

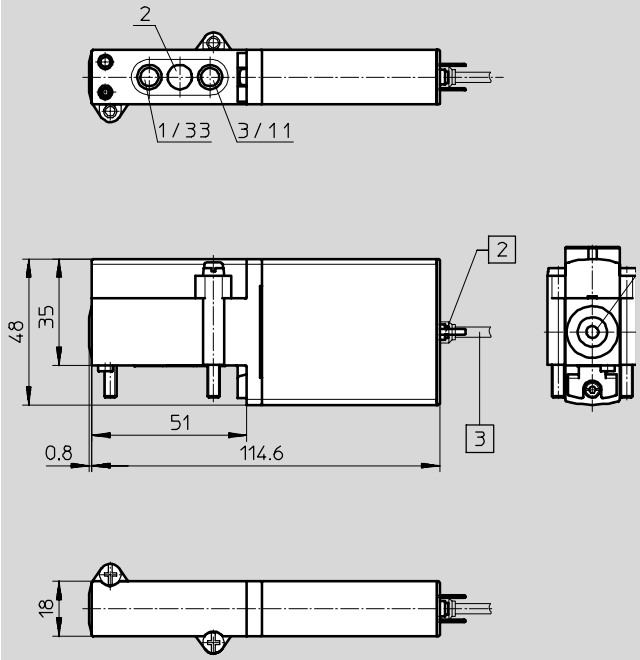
1 Capacitor charging
2 Controlled coil current 1 A
3 Drop to holding current
4 Controlled holding current 0.5 A

Solenoid valves MHA4, fast-switching valves

Technical data – Sub-base valve

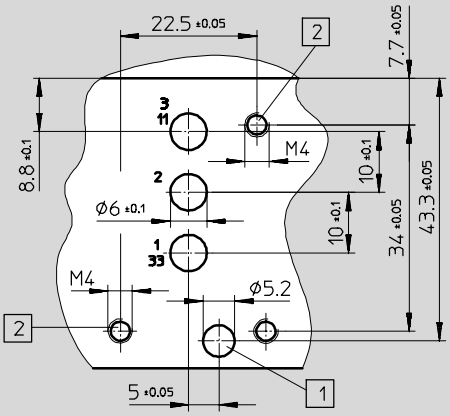
Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

Valve



1 Manual override, resetting
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

Note

Semi in-line valves have no port 2.
If used as a 2/2-way valve, normally closed, port 3/11 is not applicable.
If used as a 2/2-way valve, normally open, port 1/33 is not applicable.

Solenoid valves MHA4, fast-switching valves

Technical data – Sub-base valve

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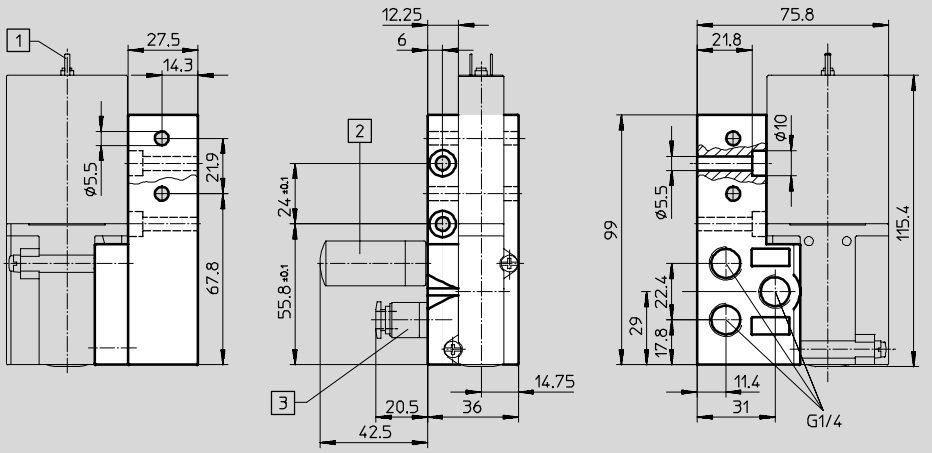
Dimensions

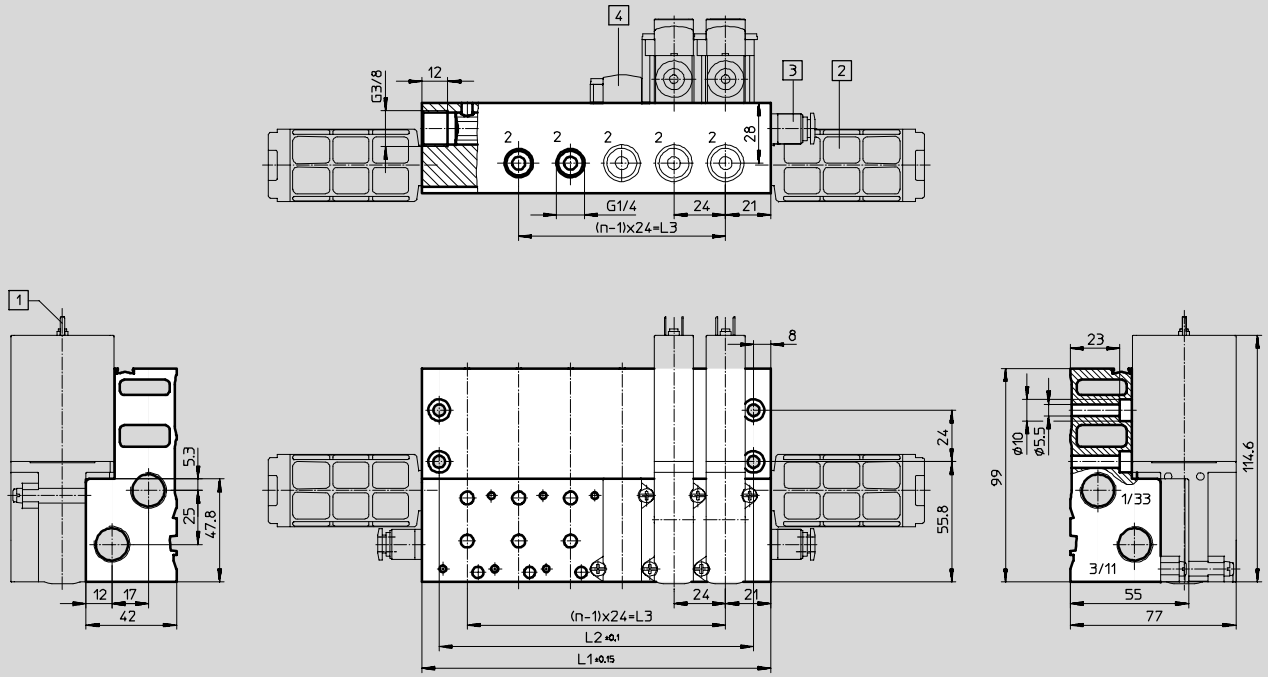
Download CAD data ➔ **www.festo.com/en/engineering**

Individual sub-base



1 Plug vanes for plug socket with cable KMEB
2 Silencer UC-¼
3 Push-in fitting

Manifold mounting



1 Plug vanes for plug socket with cable KMEB or moulded-in cable
2 Silencer UC-⅜
3 Push-in fitting
4 Blanking plate MHAP4-BP-3

Number of valves n	L1	L2	L3
2	66	50	24
4	114	98	72
6	162	146	120

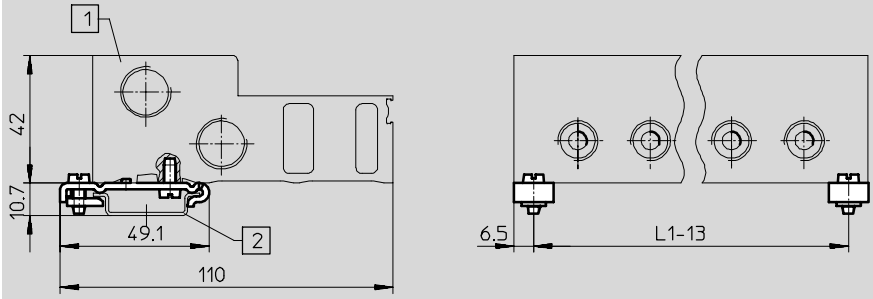
Number of valves n	L1	L2	L3
8	210	194	168
10	258	242	216

Solenoid valves MHA4, fast-switching valves

Technical data – Sub-base valve

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

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



1 Manifold block
2 Mounting rail NRH-35

Type	Number of valves n	L1
MHA4/MHP4-PR2-3	2	66
MHA4/MHP4-PR4-3	4	114
MHA4/MHP4-PR6-3	6	162

Type	Number of valves n	L1
MHA4/MHP3-PR8-3	8	210
MHA4/MHP4-PR10-3	10	258

Ordering data – Valves

Electrical connection	Operating voltage	Normally closed Part No.	Type	Normally open Part No.	Type
Response time 3.5/3.5 ms					
Plug vanes	24 V DC	**525 175**	**MHA4-MS1H-3/2G-4**	**525 195**	**MHA4-MS1H-3/2O-4**
Cable	24 V DC	**525 177**	**MHA4-MS1H-3/2G-4-K**	**525 197**	**MHA4-MS1H-3/2O-4-K**
Response time 9/5 ms					
Plug vanes	24 V DC	**525 174**	**MHA4-M1H-3/2G-4**	**525 194**	**MHA4-M1H-3/2O-4**
Cable	24 V DC	**525 176**	**MHA4-M1H-3/2G-4-K**	**525 196**	**MHA4-M1H-3/2O-4-K**

Note

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

Ordering data – Product-specific accessories

Designation		Part No.	Type
Individual sub-base			
For sub-base valve		**525 227**	**MHA4-AS-3-¼**
Manifold block			
For sub-base valve	2 valves	**525 234**	**MHA4-PR2-¼**
	4 valves	**525 235**	**MHA4-PR4-¼**
	6 valves	**525 236**	**MHA4-PR6-¼**
	8 valves	**525 237**	**MHA4-PR8-¼**
	10 valves	**525 238**	**MHA4-PR10-¼**

Solenoid valves MH4, fast-switching valves

Accessories

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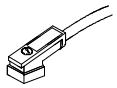
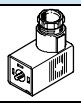
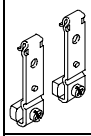
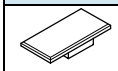
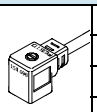
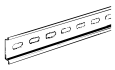
Ordering data

		Part No.	Type
Plug socket with cable (IP65) with PUR cable			
	2.5 m	**174 844**	**KMEB-2-24-2,5-LED**
	5 m	**174 845**	**KMEB-2-24-5-LED**
	2.5 m	**174 846**	**KMEB-2-230AC-2,5**
	5 m	**174 847**	**KMEB-2-230AC-5**
Plug socket with screw terminal			
		**151 687**	**MSSD-EB**
H-rail mounting			
		**162 556**	**CPV10/14-VI-BG-NRH-35**
Blanking plug B			
	G1/4	**3 568**	**B-1/4**[2]
	G3/8	**3 570**	**B-3/8**[2]
Silencer UC			
		➔ Volume 3	
Inscription label			
		**197 259**	**MH-BZ-80X**[1]

		Part No.	Type
Plug socket with cable (IP65) with PVC cable			
	2.5 m	**151 688**	**KMEB-1-24-2,5-LED**
	5 m	**151 689**	**KMEB-1-24-5-LED**
	10 m	**193 457**	**KMEB-1-24-10-LED**
	2.5 m	**151 690**	**KMEB-1-230AC-2,5**
	5 m	**151 691**	**KMEB-1-230AC-5**
Plug sockets with insulation displacement connector			
		**192 745**	**MSSD-EB-S-M14**
H-rail			
	2 m	**35 430**	**NRH-35-2000**
Blanking plate			
		**525 239**	**MHAP4-BP-3**
Push-in fitting QS			
		➔ Volume 3	

1) Scope of delivery 80 pieces
2) Scope of delivery 10 pieces

Note

The shortest possible switching time is achieved with a plug socket with cable without LED.

Core Range