

Fast-switching Valves MH2/MH3/MH4



The fast response times of MH valves provide shorter cycle times and create productivity reserves

- Width 10/14/18 mm, flow rate up to 400 l/min
- Response times down to 2 ms
- Balanced precision pulsing
- Directly actuated valves
- Long service life of > 500 million switching cycles
- Integrated electrical over-excitation
- Actuation using standard PLC outputs (24 V, 1 A)

Features

MH2

- Nominal flow rate 100 l/min
- Valve function 3/2 or 5/2 way
- Operating voltage 24 V DC
- Response times:
 - 2 ms with fast-switching electronics
 - 7 ms without fast-switching electronics
- Design:
 - Individual valve
 - Semi-in-line valve
 - Sub-base valve

MH3

- Nominal flow rate 200 l/min
- Valve function 3/2 way
- Operating voltage 24 V DC
- Response times:
 - 3 ms with fast-switching electronics
 - 8 ms without fast-switching electronics
- Design:
 - Individual valve
 - Semi-in-line valve
 - Sub-base valve

MH4

- Nominal flow rate 400 l/min
- Valve function 3/2 way
- Operating voltage 24 V DC
- Response times:
 - 3.5 ms with fast-switching electronics
 - 9 ms without fast-switching electronics
- Design:
 - Individual valve
 - Semi-in-line valve
 - Sub-base valve

Contents

MH2

- Product Range Overview → 2
- Individual valve, 3/2-way → 4
- Individual valve, 5/2-way → 8
- Semi in-line valve, 3/2-way → 11
- Semi in-line valve, 5/2-way → 15
- Sub-base valve, 3/2-way → 19
- Sub-base valve, 5/2-way → 23
- Accessories → 27

MH3

- Product Range Overview → 36
- Individual valve, 3/2-way → 38
- Semi in-line valve, 3/2-way → 42
- Sub-base valve, 3/2-way → 47
- Accessories → 52

MH4

- Product Range Overview → 58
- Individual valve, 3/2-way → 60
- Semi in-line valve, 3/2-way → 64
- Sub-base valve, 3/2-way → 69
- Accessories → 73

→ www.festo.com/catalog/mh

Product Range Overview

Fast-switching Valves MH2



Function	ISO Symbol	Design	Response Time [ms]				Operating Voltage [V DC]	Free of Copper and PTFE	→ Page
			with MS1 Coil		with M1 Coil				
			Off	On	Off	On			
3/2-way Valve ¹⁾	Standard nominal flow rate 100 l/min								
		Individual valve	2	1.7	3.5	7	24	■	4
		Semi in-line valve	2	1.7	3.5	7	24	■	11
		Sub-base valve	2	1.7	3.5	7	24	■	19

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

Function	ISO Symbol	Design	Response Time [ms]		Operating Voltage [V DC]	Free of Copper and PTFE	→ Page
			with MS1 Coil				
			Off	On			
5/2-way Valve	Standard nominal flow rate 100 l/min						
		Individual valve	1.7	1.9	24	■	8
		Semi in-line valve	1.7	1.9	24	■	15
		Sub-base valve	1.7	1.9	24	■	23

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

Type Codes

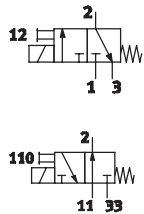
Fast-switching Valves MH2

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

Technical Data

Fast-switching Valves MHE2, Individual 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

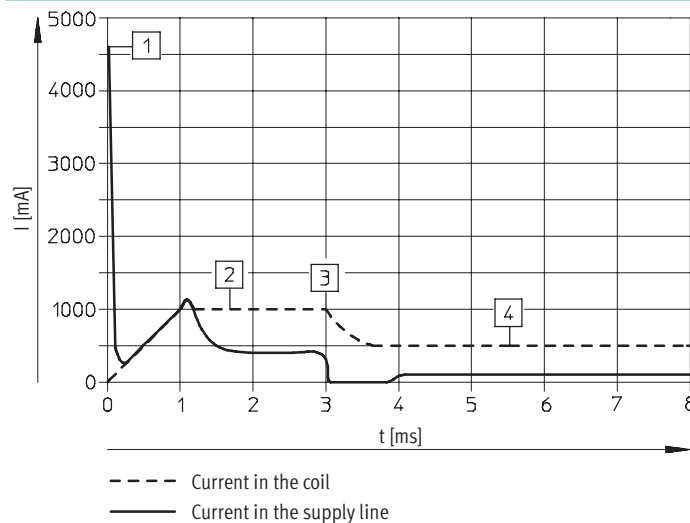
Fast-switching Valves MHE2, Individual 3/2-way Valves

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

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

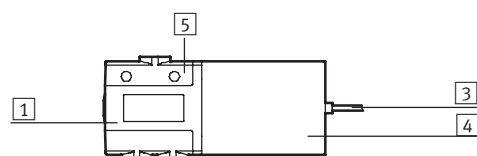
1) The ambient temperature must be limited as from 125 Hz.

Current Path for Valves with Fast-switching Electronics



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

Materials



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

Dimensional Drawings

Fast-switching Valves MHE2, Individual 3/2-way Valves

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

Valve with plug vanes or moulded-in cable

MHE2-...-M7

MHE2-...-QS4

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

Mounting bracket MHE2-BG-L

Ordering Data

Fast-switching Valves MHE2, Individual 3/2-way Valves

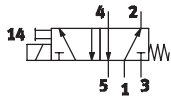
FESTO

Ordering Data					
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-3/20-M7
Cable		196 133	MHE2-MS1H-3/2G-M7-K	196 153	MHE2-MS1H-3/20-M7-K
Push-in connector QS 4					
Plug vanes	24 V DC	196 135	MHE2-MS1H-3/2G-QS4	196 155	MHE2-MS1H-3/20-QS4
Cable		196 137	MHE2-MS1H-3/2G-QS4-K	196 157	MHE2-MS1H-3/20-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-3/20-M7
Cable		196 132	MHE2-M1H-3/2G-M7-K	196 152	MHE2-M1H-3/20-M7-K
Push-in connector QS 4					
Plug vanes	24 V DC	196 134	MHE2-M1H-3/2G-QS4	196 154	MHE2-M1H-3/20-QS4
Cable		196 136	MHE2-M1H-3/2G-QS4-K	196 156	MHE2-M1H-3/20-QS4-K

Technical Data

Fast-switching Valves MHE2, Individual 5/2-way Valves

ISO Symbol



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

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

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

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

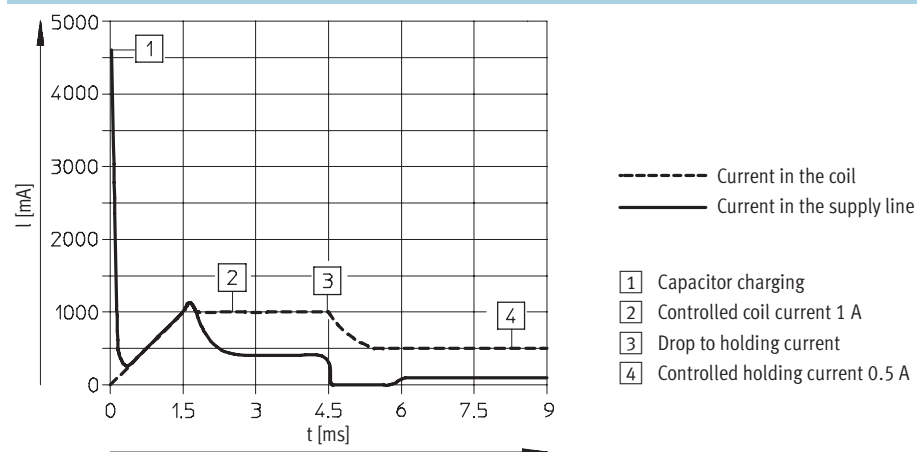
Technical Data

Fast-switching Valves MHE2, Individual 5/2-way Valves

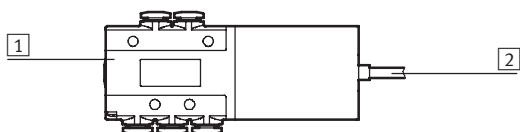
Response Times and Switching Frequencies		
Response time on	[ms]	1.9 +10% ... -30%
Response time off	[ms]	1.7 +10% ... -30%
Maximum switching frequency	[Hz]	300 ¹⁾
CE symbol		In accordance with EU EMC Directive

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

Current Path for Valves with Fast-switching Electronics



Materials



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

Dimensional Drawings, Ordering Data

Fast-switching Valves MHE2, Individual 5/2-way Valves



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

Valve with plug vanes or moulded-in cable

MHE2-...-M7

MHE2-...-QS4

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

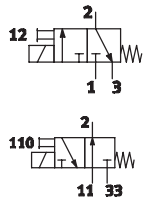
Mounting bracket MHE2-BG-L

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

Technical Data

Fast-switching Valves MHP2, Semi In-line 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

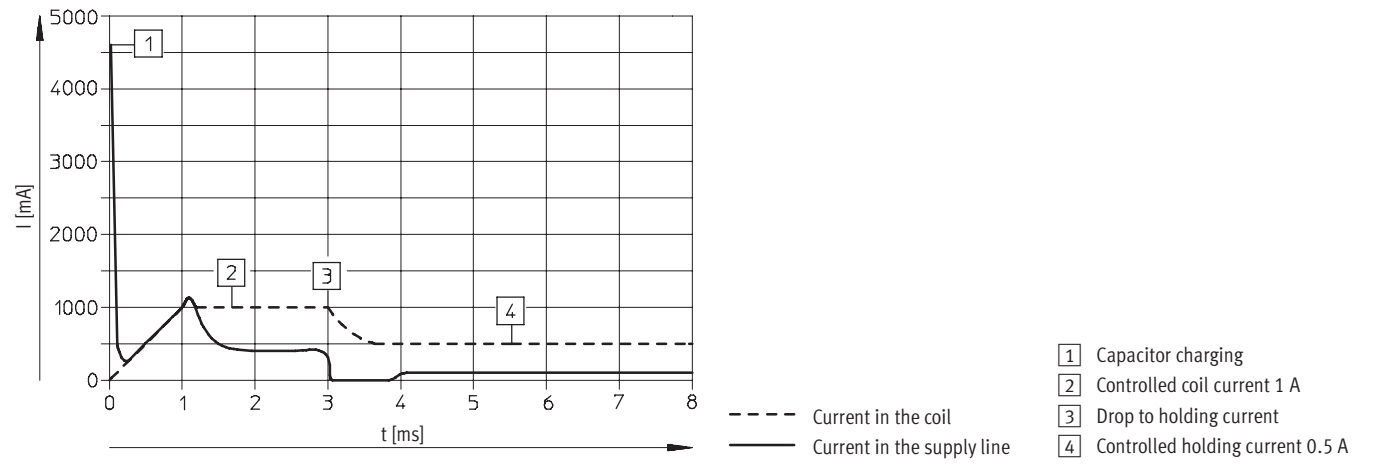
Fast-switching Valves MHP2, Semi In-line 3/2-way Valves

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

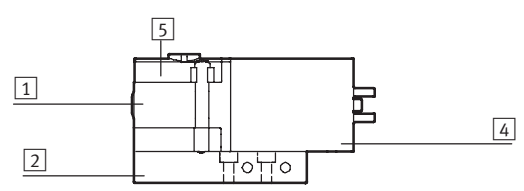
Response Times and Switching Frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	1.7/2 +10% ... -30%
Maximum switching frequency	[Hz]	330 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	7/3.5
Maximum switching frequency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

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

Current Path for Valves with Fast-switching Electronics



Materials



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

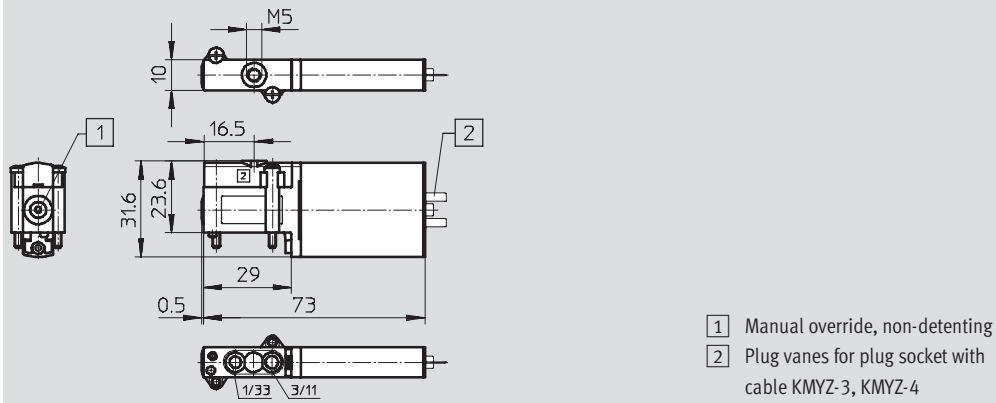
Dimensional Drawings

Fast-switching Valves MHP2, Semi In-line 3/2-way Valves

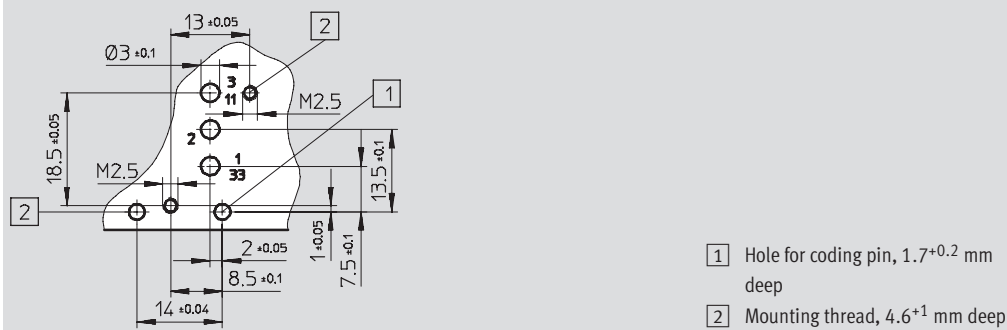
Dimensions

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

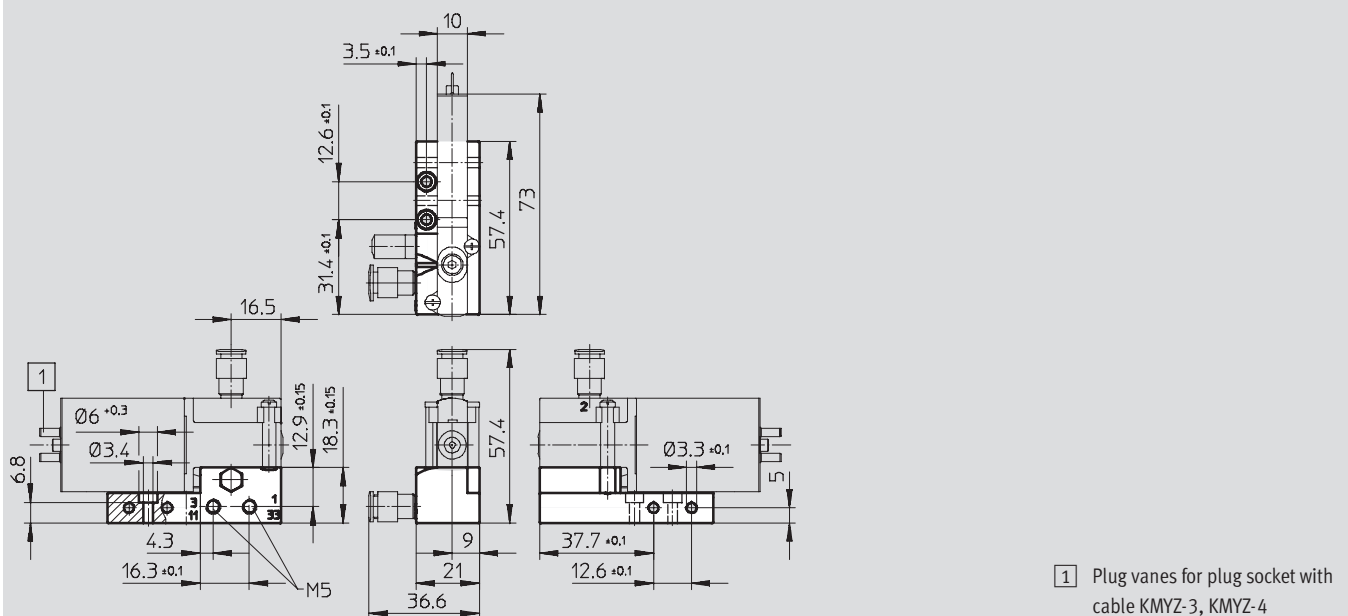
Valve with plug vanes



Port pattern on sub-bases



Individual sub-base



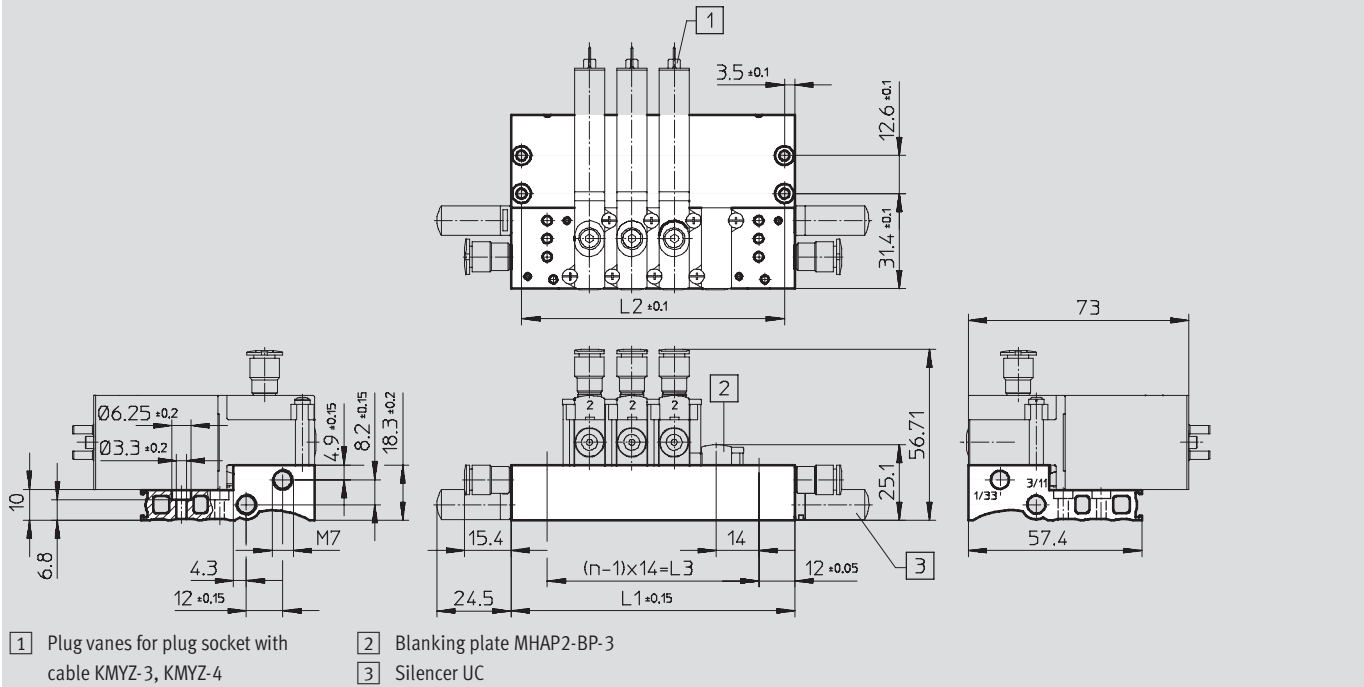
Dimensional Drawings, Ordering Data

Fast-switching Valves MHP2, Semi In-line 3/2-way Valves

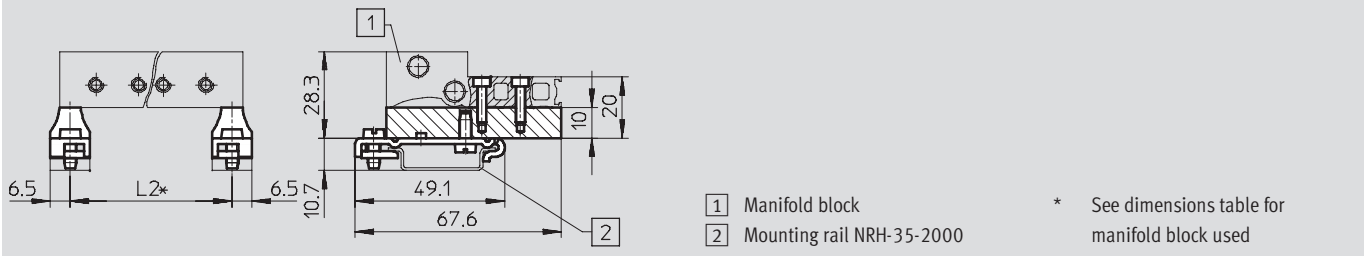


Dimensions Download CAD Data → www.festo.com/us/cad

Manifold mounting



H-rail mounting MHAP-BG-NRH-35



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

Ordering Data

Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 2 ms					
Plug vanes	24 V DC	196 123	MHP2-MS1H-3/2G-M5	196 143	MHP2-MS1H-3/20-M5
Response time 7 ms					
Plug vanes	24 V DC	196 122	MHP2-M1H-3/2G-M5	196 142	MHP2-M1H-3/20-M5

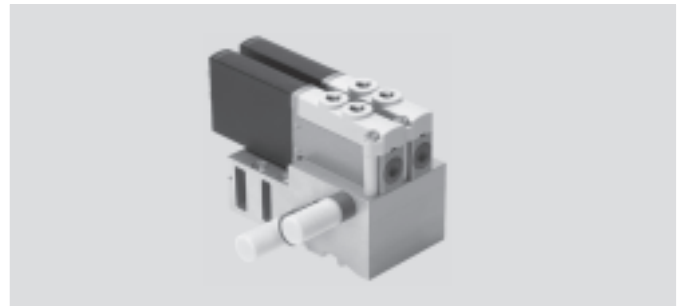
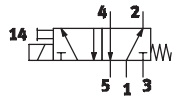
Note

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

Technical Data

Fast-switching Valves MHP2, Semi In-line 5/2-way Valves

ISO Symbol



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

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

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

Technical Data

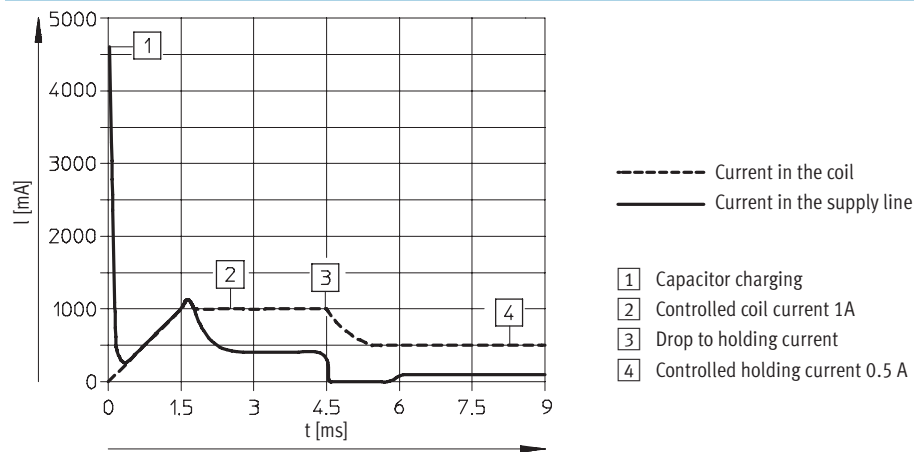
Fast-switching Valves MHP2, Semi In-line 5/2-way Valves

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

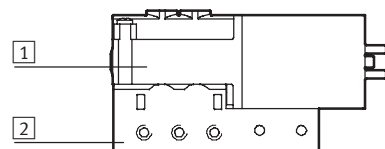
Response Times and Switching Frequencies		
Response time on	[ms]	1.9 +10% ... -30%
Response time off	[ms]	1.7 +10% ... -30%
Maximum switching frequency	[Hz]	300 ¹⁾
CE symbol		In accordance with EU EMC Directive

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

Current Path for Valves with Fast-switching Electronics



Materials



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

Dimensional Drawings

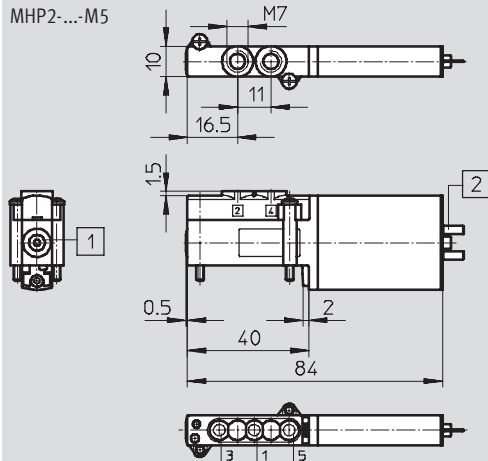
Fast-switching Valves MHP2, Semi In-line 5/2-way Valves

Dimensions

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

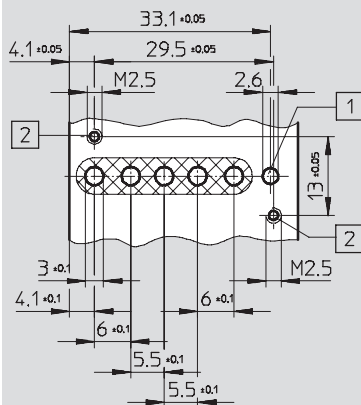
Valve with plug vanes or moulded-in cable ...-K

MHP2-...-M5



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

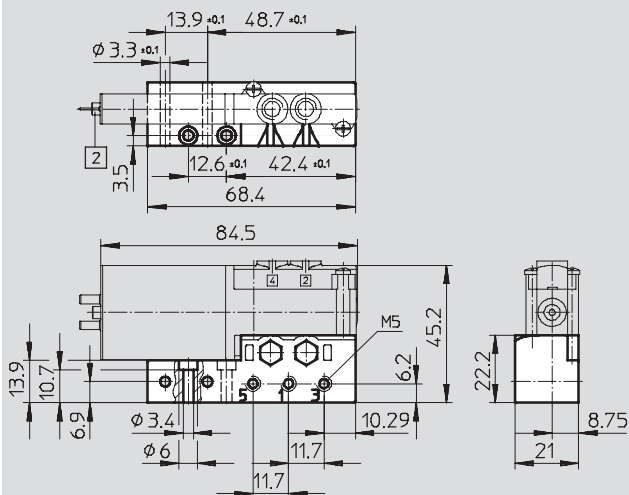
Port pattern on sub-bases



Note

- 1 Hole for coding pin, 1.7 mm deep
 - 2 Mounting thread, 4.6 mm deep
- Semi in-line valves do not require ports 2 and 4.

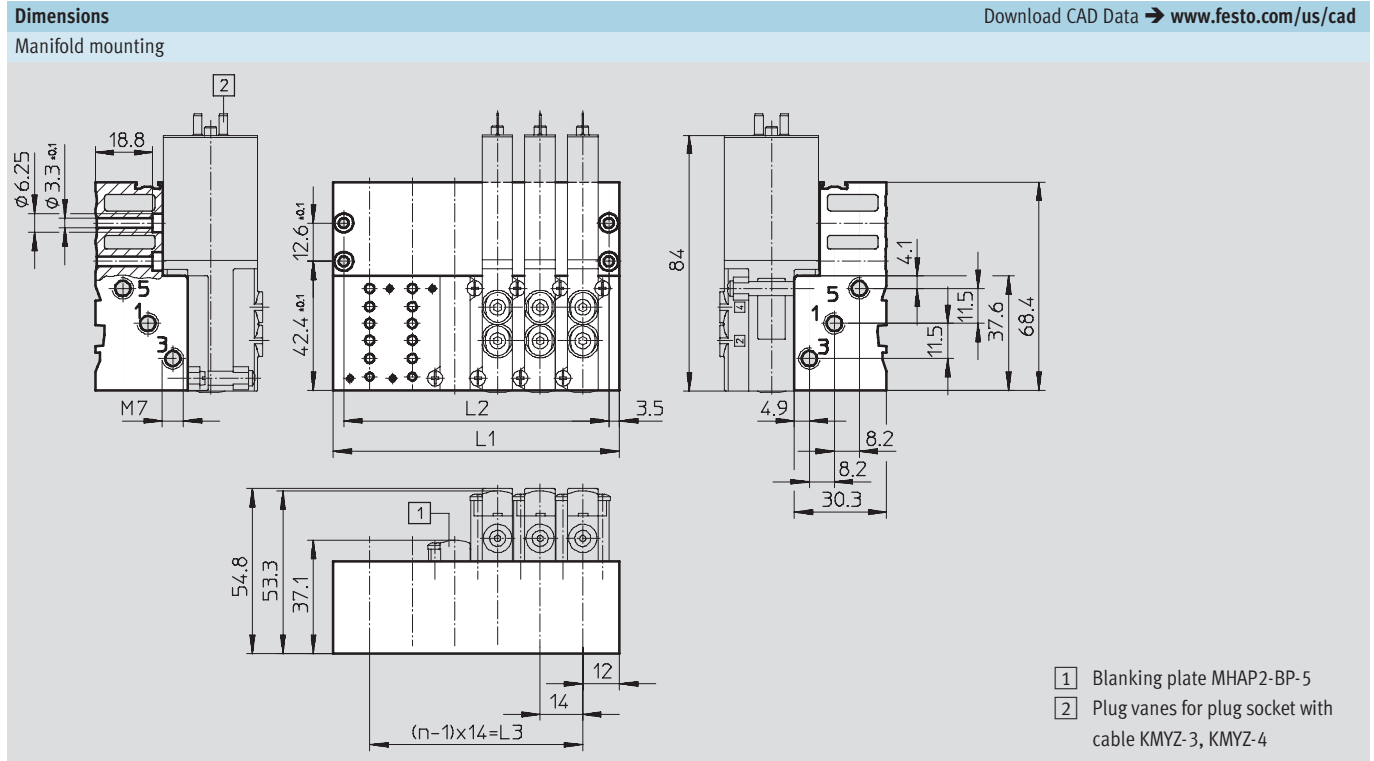
Individual sub-base



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

Dimensional Drawings, Ordering Data

Fast-switching Valves MHP2, Semi In-line 5/2-way Valves



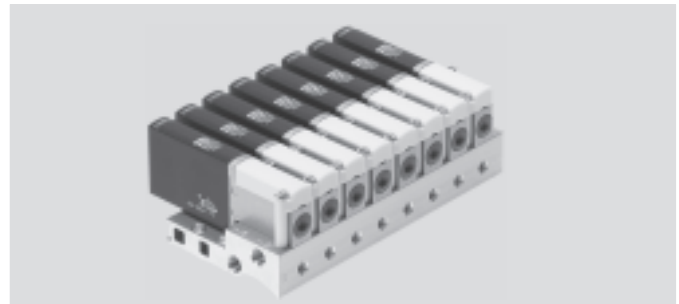
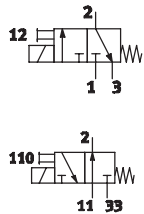
Valve positions n	2	3	4	5	6	7	8	9	10
L1	38	52	66	80	94	108	122	136	150
L2	31	45	59	73	87	101	115	129	143
L3	14	28	42	56	70	84	98	112	126

Ordering Data			
Electrical connection	Operating voltage	Part No.	Type
Connecting thread M5			
Plug vanes	24 V DC	525 105	MHP2-MS1H-5/2-M5

Technical Data

Fast-switching Valves MHA2, Sub-base 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

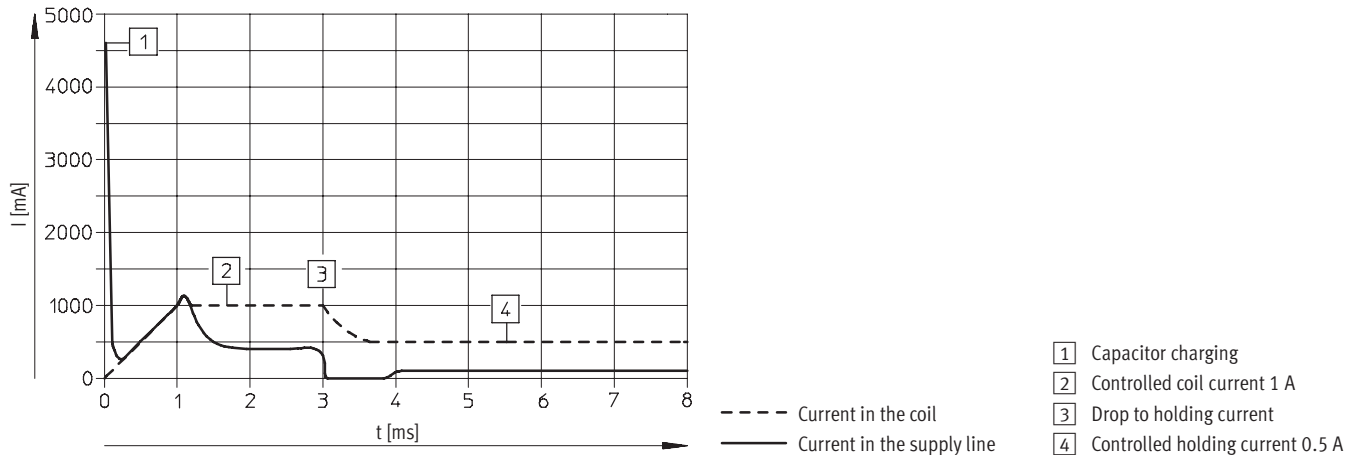
Fast-switching Valves MHA2, Sub-base 3/2-way Valves

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

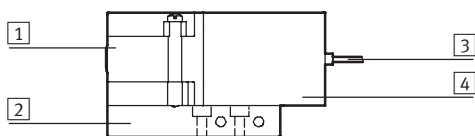
Response Times and Switching Frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	1.7/2 +10% ... -30%
Maximum switching frequency	[Hz]	330 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	7/3.5
Maximum switching frequency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

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

Current Path for Valves with Fast-switching Electronics



Materials



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

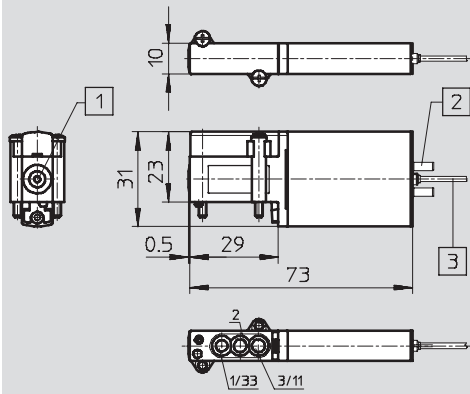
Dimensional Drawings

Fast-switching Valves MHA2, Sub-base 3/2-way Valves

Dimensions

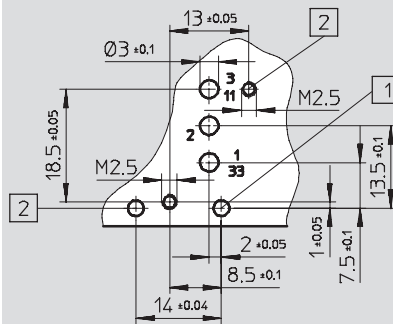
Download CAD Data → www.festo.com/us/cad

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



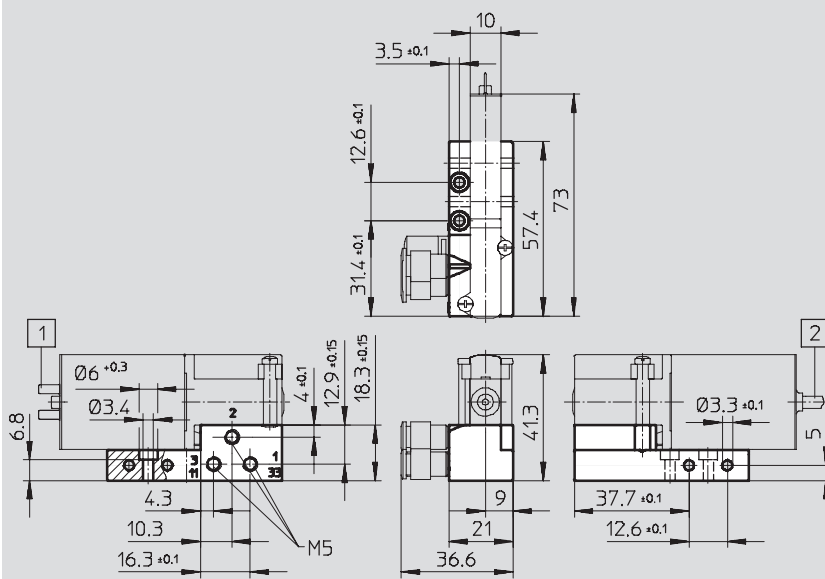
- 1 Manual override, non-detenting
- 2 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 3 Cable 2.5 m

Port pattern on sub-bases



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

Individual sub-base



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

Dimensional Drawings, Ordering Data

Fast-switching Valves MHA2, Sub-base 3/2-way Valves



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

Manifold mounting

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

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

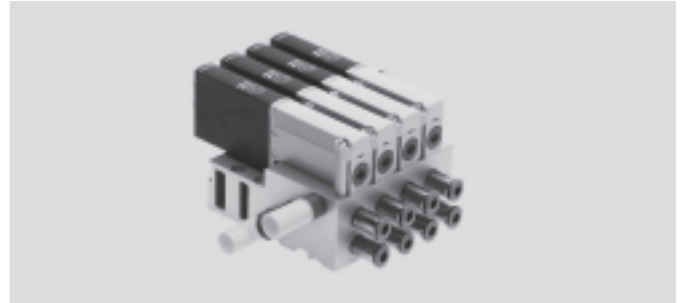
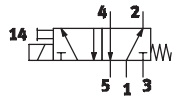
Ordering Data					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 2 ms					
Plug vanes	24 V DC	196 119	MHA2-MS1H-3/2G-2	196 139	MHA2-MS1H-3/2O-2
Cable	24 V DC	196 121	MHA2-MS1H-3/2G-2-K	196 141	MHA2-MS1H-3/2O-2-K
Response time 7 ms					
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

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

Technical Data

Fast-switching Valves MHA2, Sub-base 5/2-way Valves

ISO Symbol



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

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

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

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

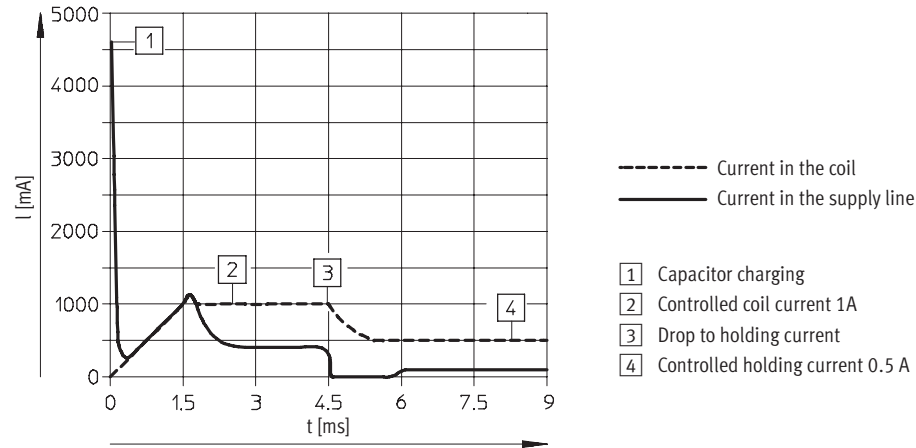
Technical Data

Fast-switching Valves MHA2, Sub-base 5/2-way Valves

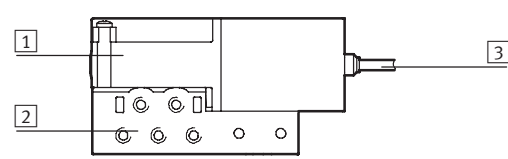
Response Times and Switching Frequencies		
Response time on	[ms]	1.9 +10% ... -30%
Response time off	[ms]	1.7 +10% ... -30%
Maximum switching frequency	[Hz]	300 ¹⁾
CE symbol		In accordance with EU EMC Directive

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

Current Path for Valves with Fast-switching Electronics



Materials



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

Dimensional Drawings

Fast-switching Valves MHA2, Sub-base 5/2-way Valves

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

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

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

Port pattern on sub-bases

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

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

Individual sub-base

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

Dimensional Drawings, Ordering Data

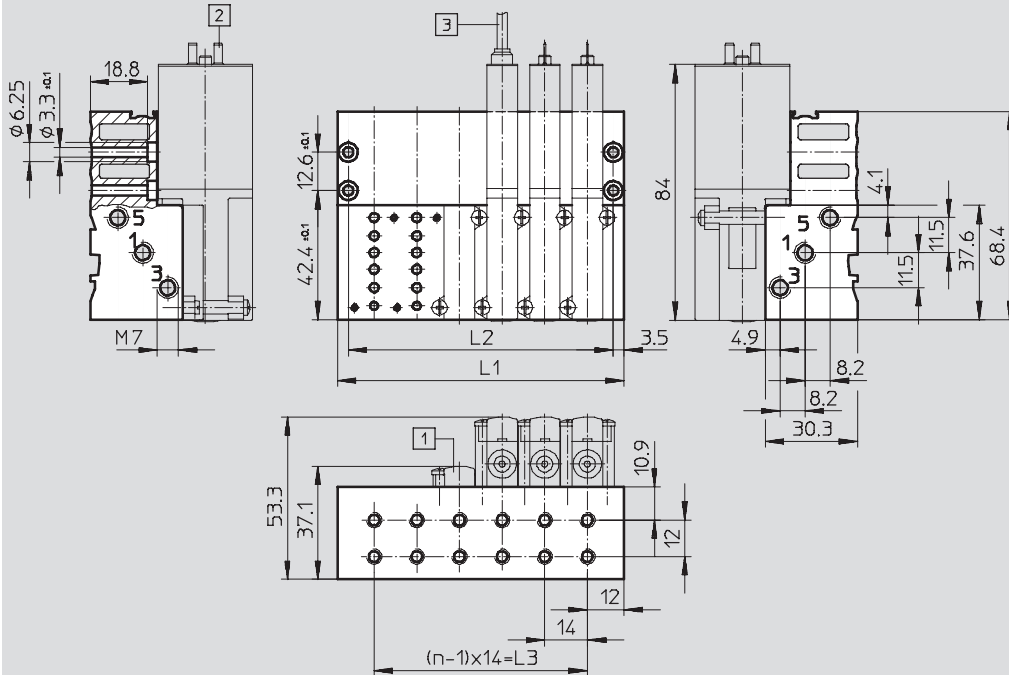
Fast-switching Valves MHA2, Sub-base 5/2-way Valves



Dimensions

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

Manifold mounting



1 Blanking plate MHAP2-BP-5

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

3 Cable 2.5 m

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

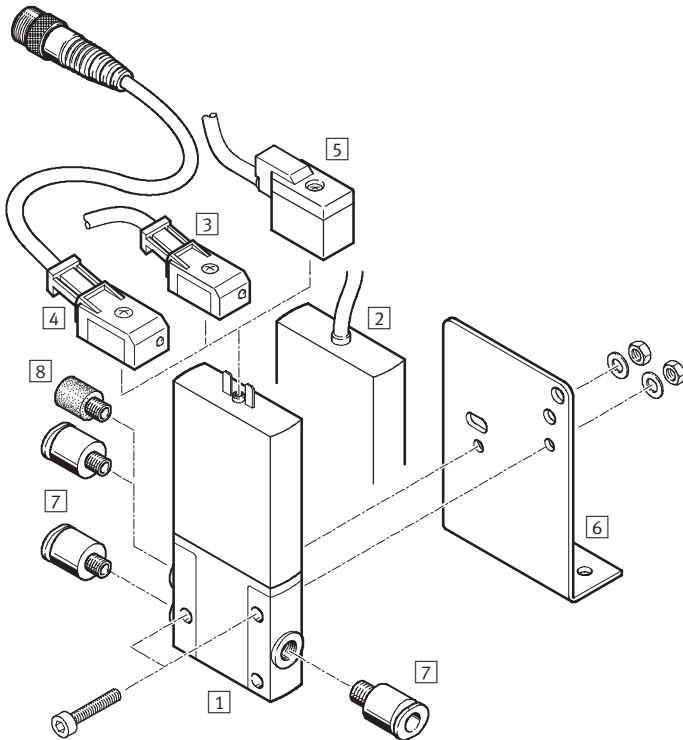
Ordering Data

Electrical connection	Operating voltage	Part No.	Type
Plug vanes	24 V DC	525101	MHA2-MS1H-5/2-2
Cable	24 V DC	525103	MHA2-MS1H-5/2-2-K

Accessories

Fast-switching Valves MHE2

Individual 3/2-way Valve

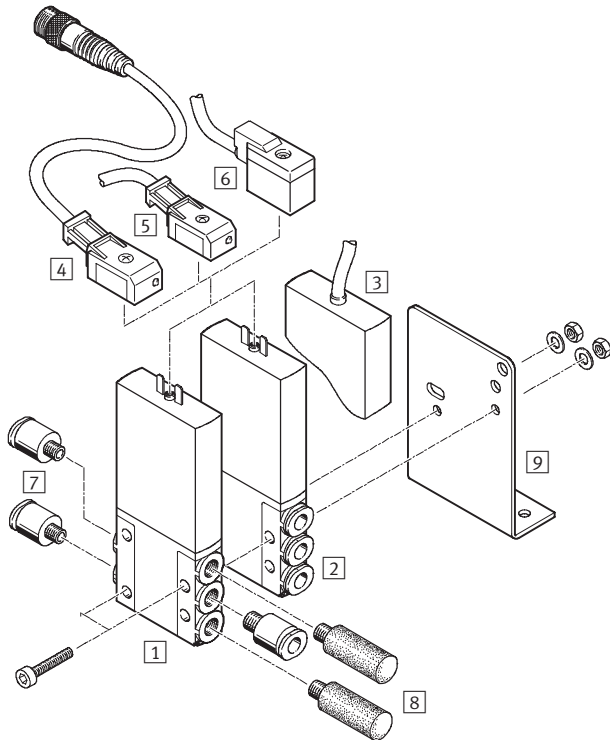


Valves and Accessories		Brief description	→ Page
1	Individual valve MHE2-...	With plug vanes	4
2	Individual valve MHE2-...-K	With moulded-in cable	4
3	Plug socket with cable KMYZ-3	With LED and PUR cable (IP65)	33
4	Plug socket with cable KMYZ-3	With LED, PUR cable and M8 plug (IP65)	33
5	Plug socket with cable KMYZ-4	With PVC cable (IP40)	33
6	Mounting bracket MHE2-BG-L	-	33
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	34
		For connecting compressed air tubing with standard O.D., inch series	35
8	Silencers U/UC	For fitting in exhaust ports	34

Accessories

Fast-switching Valves MHE2

Individual 5/2-way Valve

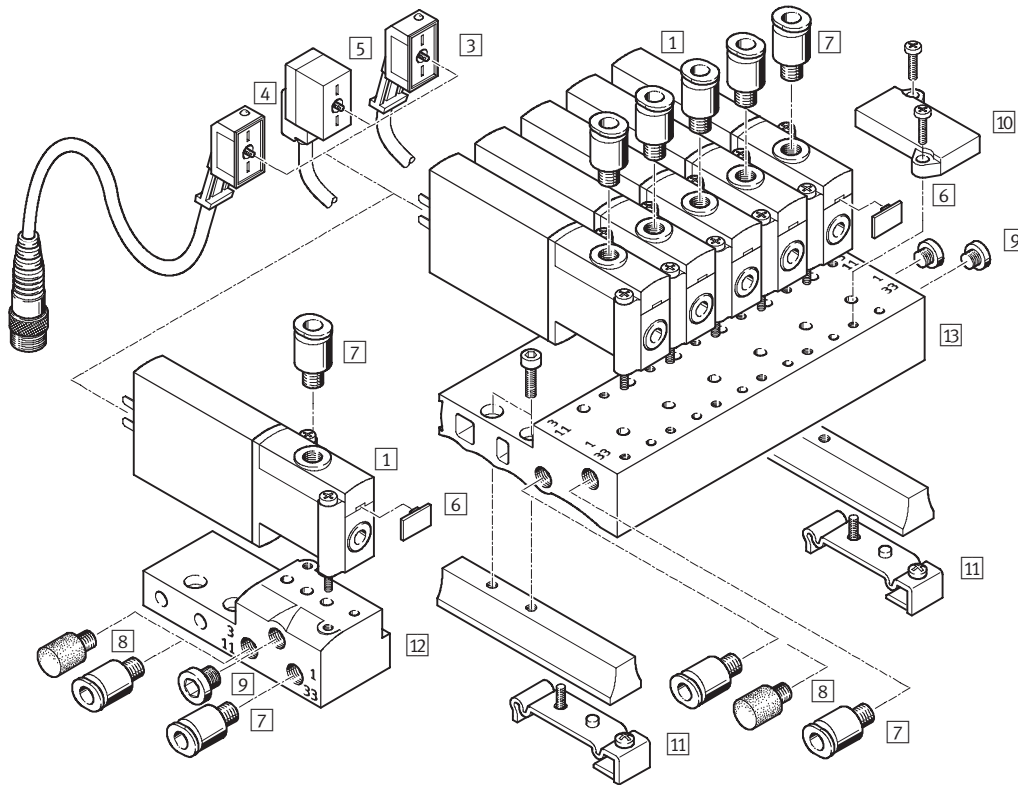


Valves and Accessories		Brief description	→ Page
1	Individual valve MHE2-...QS-4	With plug vanes and connection QS-4	8
2	Individual valve MHE2-...-M7	With plug vanes and connection M7	8
3	Individual valve MHE2-...-K	With moulded-in cable	8
4	Plug socket with cable KMYZ-3	With LED, PUR cable and M8 plug (IP65)	33
5	Plug socket with cable KMYZ-3	With LED and PUR cable (IP65)	33
6	Plug socket with cable KMYZ-4	With PVC cable (IP40)	33
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	34
		For connecting compressed air tubing with standard O.D., inch series	35
8	Silencers U/UC	For fitting in exhaust ports	34
9	Mounting bracket MHE2-BG-L	-	33

Accessories

Fast-switching Valves MHP2

Semi in-line 3/2-way Valve

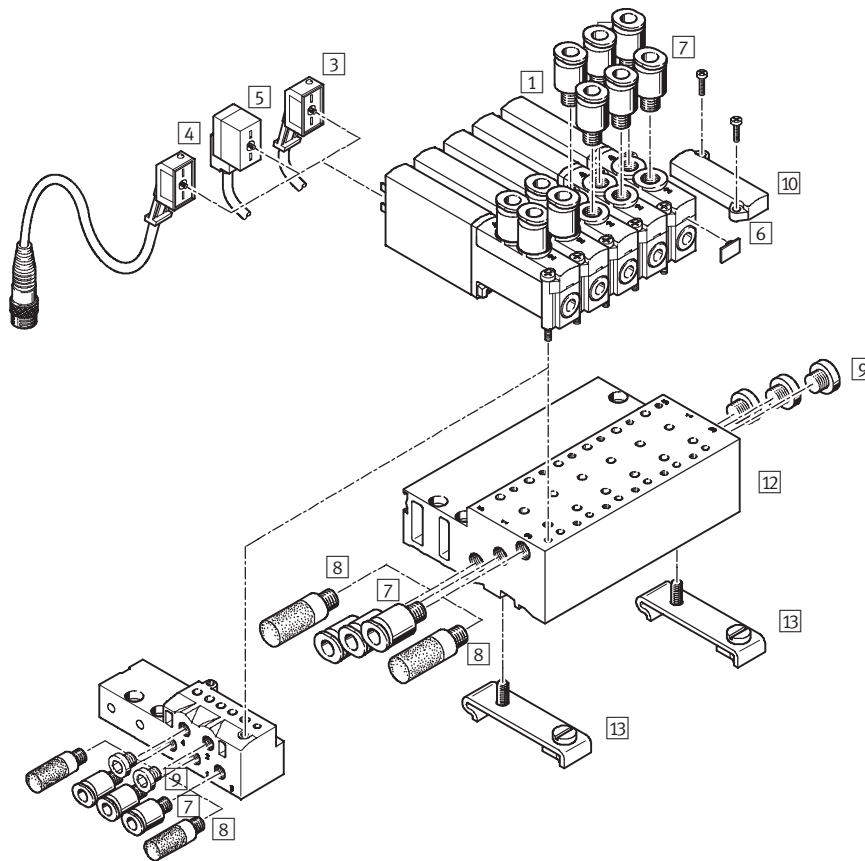


Valves and Accessories			
	Brief description	→ Page	
1	Semi in-line valve MHP2-...	With plug vanes	11
2	Semi in-line valve MHP2-...-K	With moulded-in cable	11
3	Plug socket with cable KMYZ-3	With LED and PUR cable (IP65)	33
4	Plug socket with cable KMYZ-3	With LED, PUR cable and M8 plug (IP65)	33
5	Plug socket with cable KMYZ-4	With PVC cable (IP40)	33
6	Inscription label MH-BZ-80X	For identifying the valves	33
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series For connecting compressed air tubing with standard O.D., inch series	34 35
8	Silencers U/UC	For fitting in exhaust ports	34
9	Blanking plug B	For sealing unused ports	33
10	Blanking plate MHAP2-BP-3	For sealing vacant positions	33
11	Hat-rail mounting MHAP2-BG-NRH-35	-	33
12	Individual sub-base MHA2-AS-3-M5	The individual sub-base is designed for use with sub-base valves. For use with semi in-line valves the output port (2) must be sealed with a blanking plug	33
13	Manifold block MHP2-PR...-3	For semi in-line valve	33

Accessories

Fast-switching Valves MHP2

Semi in-line 5/2-way Valve

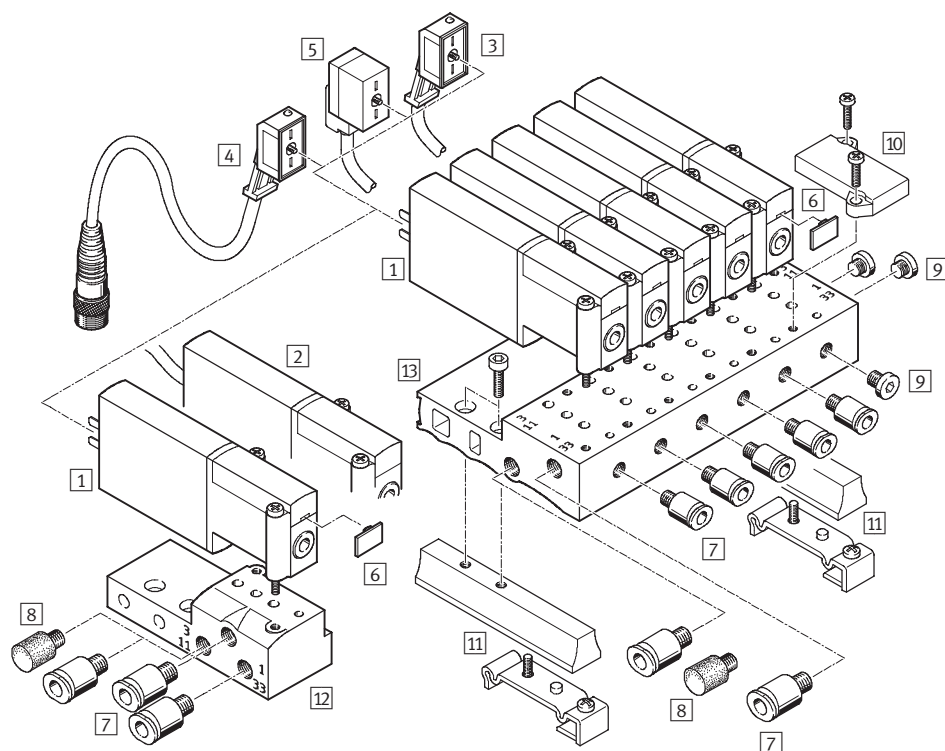


Valves and Accessories			
	Brief description	→ Page	
1	Semi in-line valve MHP2-...	With plug vanes	15
3	Plug socket with cable KMYZ-3	With LED and PUR cable (IP65)	33
4	Plug socket with cable KMYZ-3	With LED, PUR cable and M8 plug (IP65)	33
5	Plug socket with cable KMYZ-4	With PVC cable (IP40)	33
6	Inscription label MH-BZ-80X	For identifying the valves	33
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	34
		For connecting compressed air tubing with standard O.D., inch series	35
8	Silencers U/UC	For fitting in exhaust ports	34
9	Blanking plug B	For sealing unused ports	33
10	Blanking plate MHAP2-BP-5	For sealing vacant positions	33
11	Individual sub-base MHA2-AS-3-M5	The individual sub-base is designed for use with sub-base valves. For use with semi in-line valves the output port (2) must be sealed with a blanking plug	33
12	Manifold block MHP2-PR...-5	For semi in-line valve	33
13	H-rail mounting CPV10/14-VI-BG-NRH-35	-	33

Accessories

Fast-switching Valves MHA2

Sub-base 3/2-way Valve

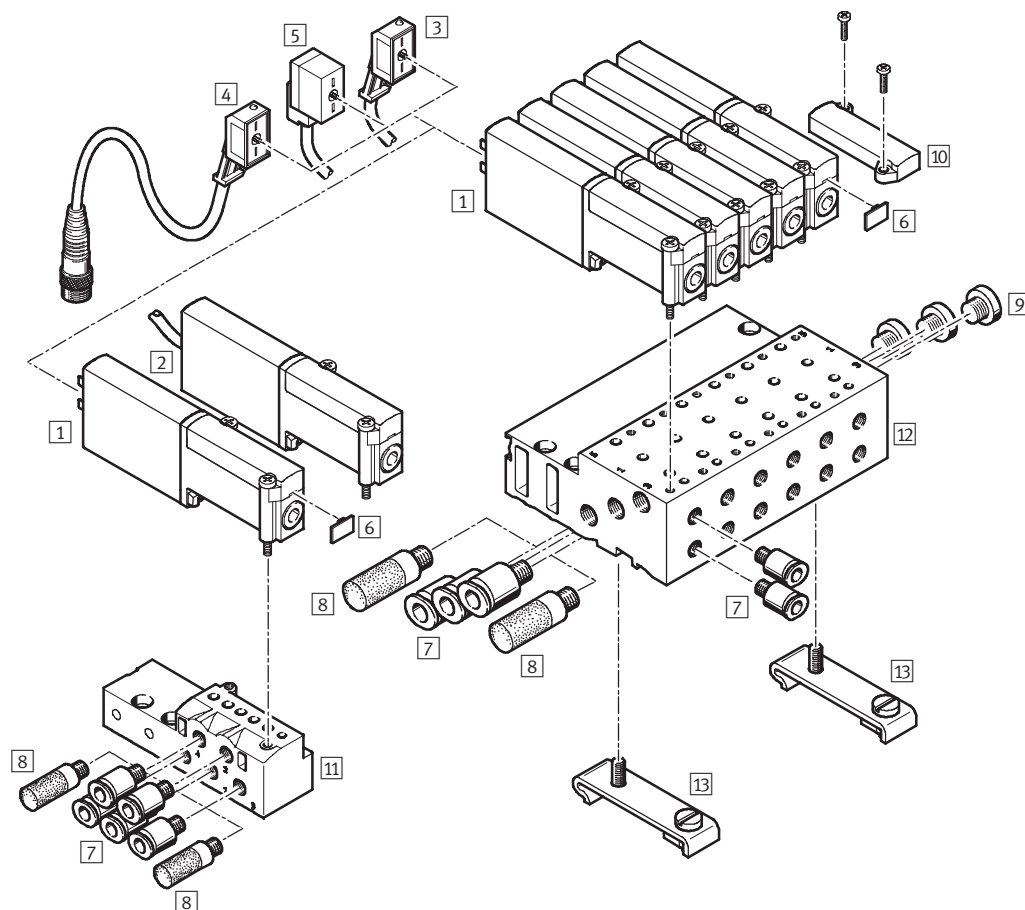


Valves and Accessories		Brief description	→ Page
1	Sub-base valve MHA2-...	With plug vanes	19
2	Sub-base valve MHA2-...-K	With moulded-in cable	19
3	Plug socket KMYZ-3	With LED and PUR cable (IP 65)	33
4	Plug socket KMYZ-3	With LED, PUR cable and M8 plug (IP 65)	33
5	Plug socket KMYZ-4	With PVC cable (IP 40)	33
6	Inscription label MH-BZ-80X	For identifying the valves	33
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	34
		For connecting compressed air tubing with standard O.D., inch series	35
8	Silencers U/UC	For fitting in exhaust ports	34
9	Blanking plug B	For sealing unused ports	33
10	Blanking plate MHAP2-BP-3	For sealing vacant positions	33
11	H-rail mounting MHAP2-BG-NRH-35	-	33
12	Individual sub-base MHA2-AS-3-M5	For sub-base valve	33
13	Manifold block MHA2-PR...-3-M5	For sub-base valve	33

Accessories

Fast-switching Valves MHA2

Sub-base 5/2-way Valve



Valves and Accessories			
	Brief description	→ Page	
1	Sub-base valve MHA2-...	With plug vanes	23
2	Sub-base valve MHA2-...-K	With moulded-in cable	23
3	Plug socket KMYZ-3	With LED and PUR cable (IP 65)	33
4	Plug socket KMYZ-3	With LED, PUR cable and M8 plug (IP 65)	33
5	Plug socket KMYZ-4	With PVC cable (IP 40)	33
6	Inscription label MH-BZ-80X	For identifying the valves	33
7	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	34
		For connecting compressed air tubing with standard O.D., inch series	35
8	Silencers U/UC	For fitting in exhaust ports	34
9	Blanking plug B	For sealing unused ports	33
10	Blanking plate MHAP2-BP-5	For sealing vacant positions	33
11	Individual sub-base MHA2-AS-5-M5	For sub-base valve	33
12	Manifold block MHA2-PR...-5-M5	For sub-base valve	33
13	H-rail mounting CPV10/14-VI-BG-NRH-35	-	33

Accessories

Fast-switching Valves MH...2



Ordering Data – Mounting Accessories					
Designation	3/2-way valves		5/2-way valves		
	Part No.	Type	Part No.	Type	
Individual valve			Individual valve		
Mounting bracket	196 165	MHE2-BG-L	196 165	MHE2-BG-L	
Semi in-line valves			Semi in-line valves		
Individual sub-base	197 438	MHA2-AS-3-M5	525 120	MHA2-AS-5-M5	
Manifold block for ...	2 valves	197 442	MHP2-PR2-3	525 122	MHP2-PR2-5
	4 valves	197 443	MHP2-PR4-3	525 123	MHP2-PR4-5
	6 valves	197 444	MHP2-PR6-3	525 124	MHP2-PR6-5
	8 valves	197 445	MHP2-PR8-3	525 125	MHP2-PR8-5
	10 valves	197 446	MHP2-PR10-3	525 126	MHP2-PR10-5
Sub-base valves			Sub-base valves		
Individual sub-base	197 438	MHA2-AS-3-M5	525 120	MHA2-AS-5-M5	
Manifold block for ...	2 valves	197 447	MHA2-PR2-3-M5	525 127	MHA2-PR2-5-M5
	4 valves	197 448	MHA2-PR4-3-M5	525 128	MHA2-PR4-5-M5
	6 valves	197 449	MHA2-PR6-3-M5	525 129	MHA2-PR6-5-M5
	8 valves	197 450	MHA2-PR8-3-M5	525 130	MHA2-PR8-5-M5
	10 valves	197 451	MHA2-PR10-3-M5	525 131	MHA2-PR10-5-M5

Ordering Data – General Accessories			Technical data → <a href="http://www.festo.com/catalog/<type> or <order code>">www.festo.com/catalog/<type> or <order code>				
	Part No.	Type		Part No.	Type		
Plug socket with cable (IP65) with LED and PUR cable			Plug socket with cable (IP40) with PVC cable				
	2.5 m	193 693	KMYZ-3-24DC-2,5-LED-PUR-B		0.5 m	193 690	KMYZ-4-24DC-0,5-B
	5 m	193 695	KMYZ-3-24DC-5-LED-PUR-B		2.5 m	193 691	KMYZ-4-24DC-2.5-B
	10 m	196 066	KMYZ-3-24DC-10-LED-PUR-B				
Plug socket with cable (IP65) with LED, PUR cable and M8 plug			Inscription label				
	0.5 m	525 654	KMYZ-3-24-M8-0,5-LED-PUR		197 289	MH-BZ-80X ¹⁾	
	2.5 m	525 655	KMYZ-3-24-M8-2.5-LED-PUR				
H-rail mounting (3/2-way valves)			H-rail				
	525 053	MHAP2-BG-NRH-35		2 m	35 430	NRH-35-2000	
H-rail mounting (5/2-way valves)			Blanking plate (3/2-way valves)				
	162 556	CPV10/14-VI-BG-NRH-35		Plug connection	197 470	MHAP-BP-3	
Blanking plug B			Blanking plate (5/2-way valves)				
	M5	3 843	B-M5 ²⁾		525 132	MHAP-BP-5	
	M7	174 309	B-M7 ²⁾				



1) Scope of delivery 80 pieces

2) Scope of delivery 10 pieces



Accessories – Metric Series

Fast-switching Valves MH...2



FESTO

Ordering Data – Push-in Fittings QSM, Metric Thread				Technical Data → www.festo.com/catalog/QSM	
For tubing O.D. [mm]	M5 ¹⁾		M7 ¹⁾		
	Part No.	Type	Part No.	Type	
With external hex					
	3	153302	QSM-M5-3	–	
	4	153304	QSM-M5-4	–	
	6	153306	QSM-M5-6	–	
With internal hex					
	3	153313	QSM-M5-3-I	–	
	4	153315	QSM-M5-4-I	153319	QSM-M7-4-I
	6	153317	QSM-M5-6-I	153321	QSM-M7-6-I

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Taper-thread					Technical Data → www.festo.com/catalog/QS		
For tubing O.D. [mm]	R ^{1/8} ¹⁾		R ^{1/4} ¹⁾		R ^{3/8} ¹⁾		
	Part No.	Type	Part No.	Type	Part No.	Type	
With external hex							
	4	153001	QS-1/8-4	190644	QS-1/4-4	–	
	6	153002	QS-1/8-6	153303	QS-1/4-6	190645	QS-3/8-6
	8	153004	QS-1/8-8	153305	QS-1/4-8	153006	QS-3/8-8
	10	190643	QS-1/8-10	153307	QS-1/4-10	153008	QS-3/8-10
	12	–	–	164980	QS-1/4-12	153009	QS-3/8-12
With internal hex							
	4	153012	QS-1/8-4-I	–	–	–	
	6	153013	QS-1/8-6-I	153014	QS-1/4-6-I	–	
	8	153015	QS-1/8-8-I	153016	QS-1/4-8-I	153017	QS-3/8-8-I
	10	190647	QS-1/8-10-I	153018	QS-1/4-10-I	153019	QS-3/8-10-I
	12	–	–	190649	QS-1/4-12-I	153020	QS-3/8-12-I

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Cylindric Thread					Technical Data → www.festo.com/catalog/QS		
For tubing O.D. [mm]	G ^{1/8} ¹⁾		G ^{1/4} ¹⁾		G ^{3/8} ¹⁾		
	Part No.	Type	Part No.	Type	Part No.	Type	
With external hex							
	4	186095	QS-G1/8-4	–	–	–	
	6	186096	QS-G1/8-6	186097	QS-G1/4-6	–	
	8	186098	QS-G1/8-8	186099	QS-G1/4-8	186100	QS-G3/8-8
	10	–	–	186101	QS-G1/4-10	186102	QS-G3/8-10
	12	–	–	186350	QS-G1/4-12	186103	QS-G3/8-12
With internal hex							
	4	186106	QS-G1/8-4-I	–	–	–	
	6	186107	QS-G1/8-6-I	186108	QS-G1/4-6-I	–	
	8	186109	QS-G1/8-8-I	186110	QS-G1/4-8-I	186111	QS-G3/8-8-I
	10	–	–	186112	QS-G1/4-10-I	186113	QS-G3/8-10-I
	12	–	–	–	–	186114	QS-G3/8-12-I

1) Scope of delivery 10 pieces



Note

Push-in Fittings QS-G... with cylindric thread are preferably to be used in plastic threads.



Accessories – Hybrid Series


Fast-switching Valves MH...2

FESTO

Ordering Data – Push-in Fittings QS, Metric Thread				Technical Data → www.festo.com/catalog/QS	
	For tubing	M5		M7	
	O.D. [in]	Part No.	Type	Part No.	Type
With external hex					
	1/8	533209	QS-H-M5-1/8-U-M ¹⁾	–	–
	5/32	533210	QS-H-M5-5/32-U-M	–	–
	3/16	533211	QS-H-M5-3/16-U-M	–	–
	1/4	533212	QS-H-M5-1/4-U-M	–	–
With internal hex					
	1/8	183749	QSM-M5-1/8-I-U-M	183738	QSM-M7-1/8-I-U-M
	5/32	130593	QSM-M5-5/32-I-U-M	–	–
	3/16	183750	QSM-M5-3/16-I-U-M	183739	QSM-M7-3/16-I-U-M
	1/4	130591	QSM-M5-1/4-I-U-M	183740	QSM-M7-1/4-I-U-M

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Taper-thread				Technical Data → www.festo.com/catalog/QS			
	For tubing	R ¹ / ₈		R ¹ / ₄		R ³ / ₈	
	O.D. [in]	Part No.	Type	Part No.	Type	Part No. Type	
With external hex							
	1/8	533213	QS-H-1/8-1/8-U-M	–	–	–	
	5/32	533214	QS-H-1/8-5/32-U-M	–	–	–	
	3/16	533215	QS-H-1/8-3/16-U-M	533218	QS-H-1/4-3/16-U-M	–	
	1/4	533216	QS-H-1/8-1/4-U-M	533219	QS-H-1/4-1/4-U-M	533222	QS-H-3/8-1/4-U-M
	5/16	533217	QS-H-1/8-5/16-U-M	533220	QS-H-1/4-5/16-U-M	533223	QS-H-3/8-5/16-U-M
	3/8	–	–	533221	QS-H-1/4-3/8-U-M	533224	QS-H-3/8-3/8-U-M
	1/2	–	–	–	–	533225	QS-H-3/8-1/2-U-M
With internal hex							
	1/4	183741	QS-1/8-1/4-I-U-M	192809	QS-1/4-1/4-I-U-M	–	
	5/16	183742	QS-1/8-5/16-I-U-M	183743	QS-1/4-5/16-I-U-M	183745	QS-3/8-5/16-I-U-M
	3/8	–	–	183744	QS-1/4-3/8-I-U-M	183746	QS-3/8-3/8-I-U-M
	1/2	–	–	–	–	–	

Ordering Data – Silencers U/UC		Part No.	Type
Silencer			
	For thread M5	165003	UC-M5
	For thread M7	161418	UC-M7
	For thread G ¹ / ₈	161419	UC- ¹ / ₈
	For thread G ¹ / ₄	165004	UC- ¹ / ₄
	For thread G ³ / ₈	2309	U- ³ / ₈

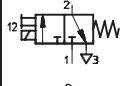
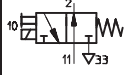
Note

Push-in Fittings QS-G... with cylindric thread are preferably to be used in plastic threads.

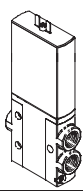
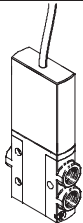
Product Range Overview

Fast-switching Valves MH3



Function	ISO Symbol	Design	Response Time [ms]				Operating Voltage [V DC]	Free of Copper and PTFE	→ Page
			with MS1 Coil		with M1 Coil				
			Off	On	Off	On			
3/2-way Valve ¹⁾	Standard nominal flow rate 200 l/min								
		Individual valve	2.3	3	4.5	8	24	■	38
		Semi in-line valve	2.3	3	4.5	8	24	■	42
	Sub-base valve	2.3	3	4.5	8	24	■	47	

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

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

Type Codes

Fast-switching Valves MH3

MH P 3 - M S 1 H - 3/2 - 0 - QS6 K

Valve Family	
MH	Fast-switching valves

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

Size	
3	Flow rate 200 l/min

Drive Function	
M	Solenoid, switching

Response Time	
-	8 ms
S	3 ms

Operating Voltage	
1	24 V DC

Manual Override	
H	Non-detenting

Valve Function	
3/2	3/2-way valve

Normal Position	
G	Closed
O	Open

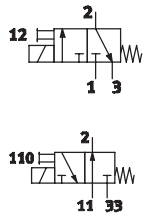
Pneumatic Connection	
3	Nominal size 3 mm
1/8	G1/8 thread
QS6	Push-in connector for 6 mm O.D. tubing

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

Technical Data

Fast-switching Valves MHE3, Individual 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

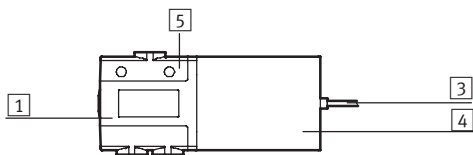
Fast-switching Valves MHE3, Individual 3/2-way Valves

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

Response Times and Switching Frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3/2.3 +10% ... -30%
Maximum switching frequency	[Hz]	280 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	8/4.5
Maximum switching frequency	[Hz]	130

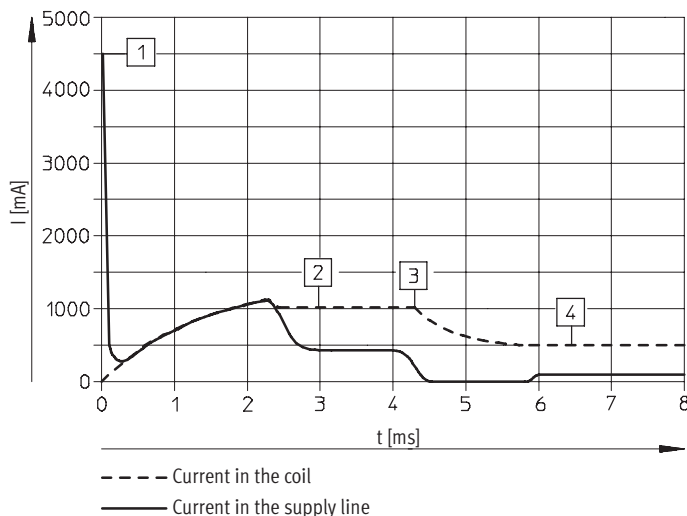
1) The ambient temperature must be limited as from 90 Hz.

Materials



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

Current Path for Valves with Fast-switching Electronics



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

Dimensional Drawings

Fast-switching Valves MHE3, Individual 3/2-way Valves

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

Valve with connecting thread G1/8

Valve with push-in fitting QS 6

G1/8

1 Manual override, non-detenting

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

3 Cable 2.5 m

Mounting bracket MHE2-BG-L

Ordering Data

Fast-switching Valves MHE3, Individual 3/2-way Valves

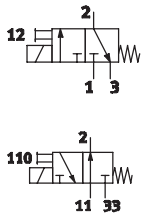
FESTO

Ordering Data					
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 connector 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 connector 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

Technical Data

Fast-switching Valves MHP3, Semi In-line 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

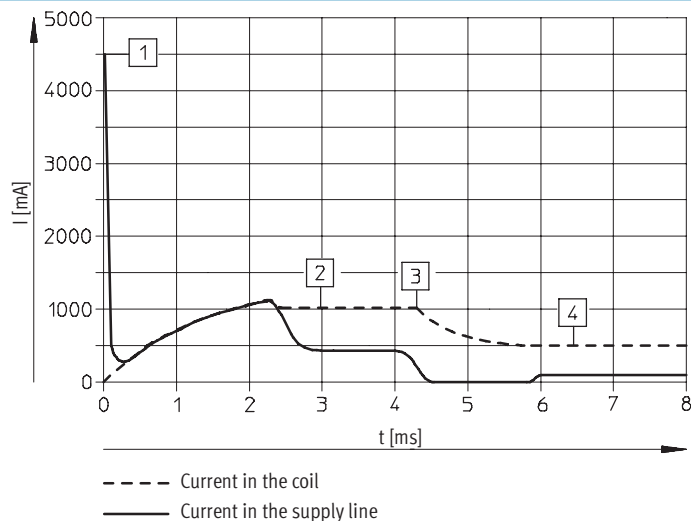
Fast-switching Valves MHP3, Semi In-line 3/2-way Valves

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

Response Times and Switching Frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3/2.3 +10% ... -30%
Maximum switching frequency	[Hz]	280 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	8/4.5
Maximum switching frequency	[Hz]	130

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

Current Path for Valves with Fast-switching Electronics



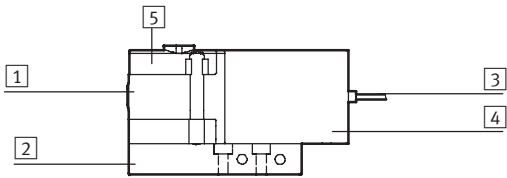
- 1 Capacitor charging
- 2 Controlled coil current 1 A
- 3 Drop to holding current
- 4 Controlled holding current 0.5 A

Dimensional Drawings

Fast-switching Valves MHP3, Semi In-line 3/2-way Valves



Materials



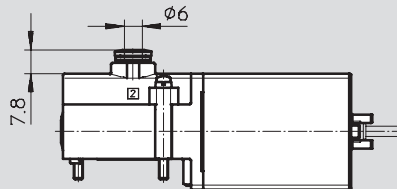
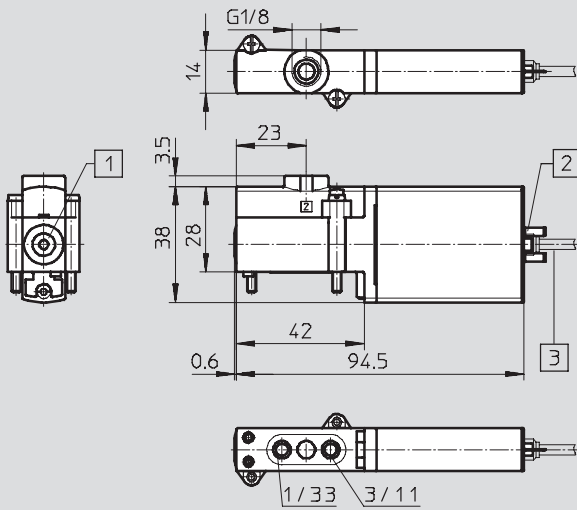
1	Body	Die-cast zinc, coated
2	Sub-base	Manifold block: Aluminium Individual sub-base: Die-cast zinc
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
5	Connection piece	Polyamide
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE

Dimensions

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

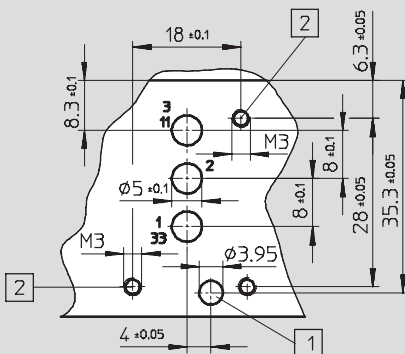
Valve with connecting thread G1/8

Valve with push-in fitting QS 6



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

Port pattern on sub-bases



Note

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

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

Dimensional Drawings

Fast-switching Valves MHP3, Semi In-line 3/2-way Valves

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

Individual sub-base

- 1 Plug vanes for plug socket with cable KMYZ-3, KMYZ-4
- 2 Silencer UC-1/8
- 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-1/4
- 3 Push-in fitting
- 4 Blanking plate MHAP-BP-3

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

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

Dimensional Drawings, Ordering Data

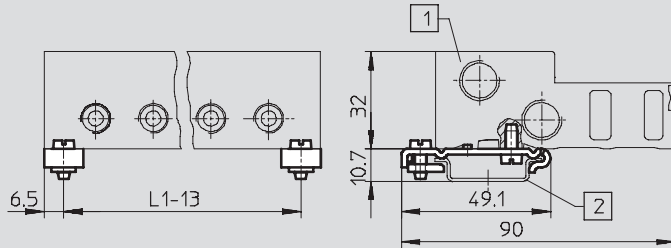
Fast-switching Valves MHP3, Semi In-line 3/2-way Valves



Dimensions

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

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



- 1 Manifold block
- 2 Mounting rail NRH-35

Type	Valve positions n	L1
MHAP3-PR2-3	2	53
MHAP3-PR4-3	4	91
MHAP3-PR6-3	6	129

Type	Valve positions n	L1
MHAP3-PR8-3	8	167
MHAP3-PR10-3	10	205

Ordering Data

Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 3/2.3 ms					
Connecting thread G $\frac{1}{8}$					
Plug vanes	24 V DC	525 139	MHP3-MS1H-3/2G- $\frac{1}{8}$	525 159	MHP3-MS1H-3/20- $\frac{1}{8}$
Cable	24 V DC	525 141	MHP3-MS1H-3/2G- $\frac{1}{8}$ -K	525 161	MHP3-MS1H-3/20- $\frac{1}{8}$ -K
Push-in connector QS 6					
Plug vanes	24 V DC	525 143	MHP3-MS1H-3/2G-QS6	525 163	MHP3-MS1H-3/20-QS6
Cable	24 V DC	525 145	MHP3-MS1H-3/2G-QS6-K	525 165	MHP3-MS1H-3/20-QS6-K
Response time 8/4.5 ms					
Connecting thread G $\frac{1}{8}$					
Plug vanes	24 V DC	525 138	MHP3-M1H-3/2G- $\frac{1}{8}$	525 158	MHP3-M1H-3/20- $\frac{1}{8}$
Cable	24 V DC	525 140	MHP3-M1H-3/2G- $\frac{1}{8}$ -K	525 160	MHP3-M1H-3/20- $\frac{1}{8}$ -K
Push-in connector QS 6					
Plug vanes	24 V DC	525 142	MHP3-M1H-3/2G-QS6	525 162	MHP3-M1H-3/20-QS6
Cable	24 V DC	525 144	MHP3-M1H-3/2G-QS6-K	525 164	MHP3-M1H-3/20-QS6-K

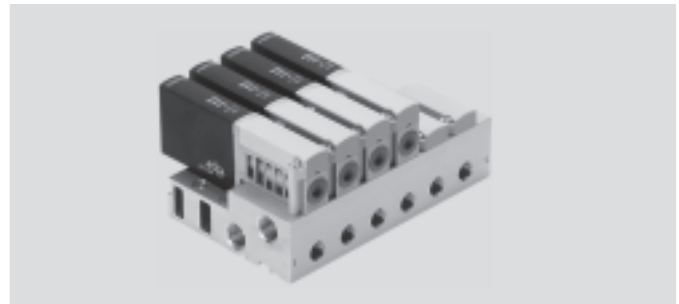
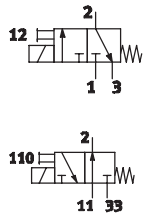
Note

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

Technical Data

Fast-switching Valves MHA3, Sub-base 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

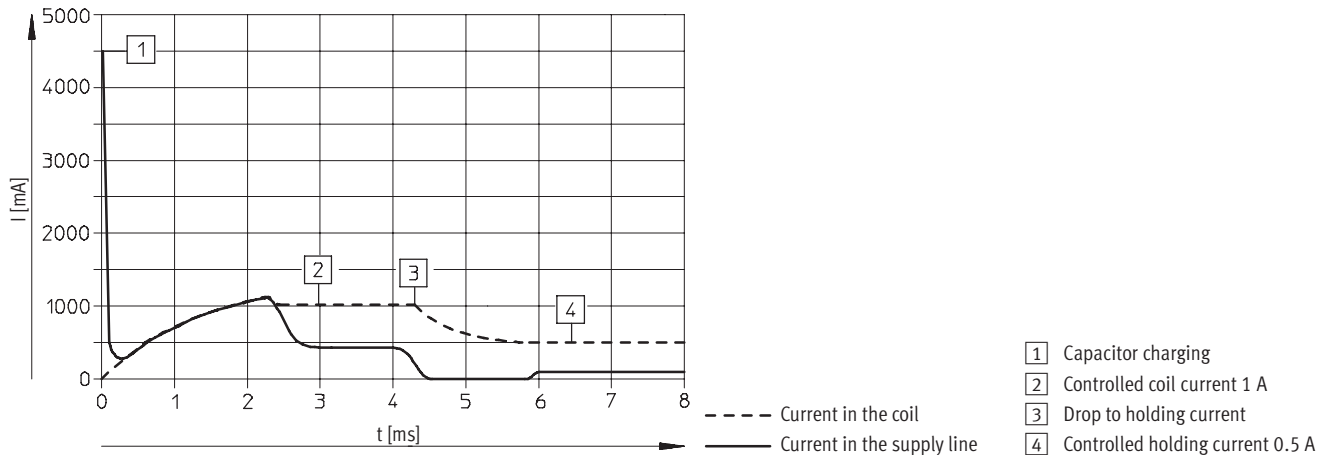
Fast-switching Valves MHA3, Sub-base 3/2-way Valves

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

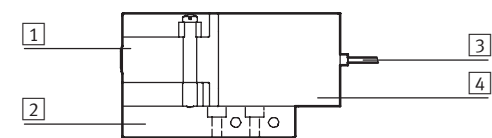
Response Times and Switching Frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3/2.3 +10% ... -30%
Maximum switching frequency	[Hz]	280 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	8/4.5
Maximum switching frequency	[Hz]	130

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

Current Path for Valves with Fast-switching Electronics



Materials



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

Dimensional Drawings

Fast-switching Valves MHA3, Sub-base 3/2-way Valves

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

Valve

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

Port pattern on sub-bases

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

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

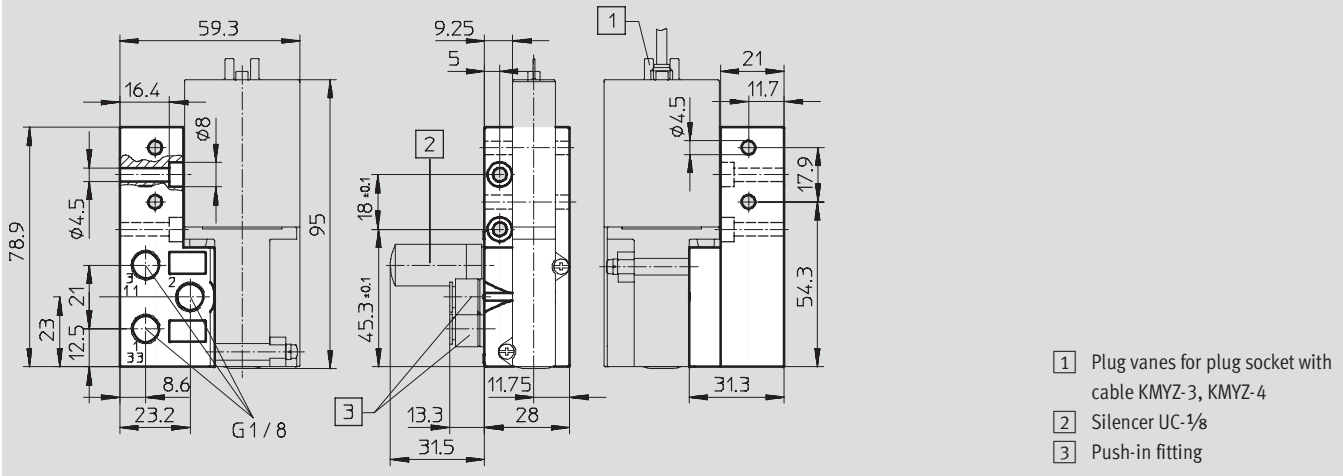
Dimensional Drawings

Fast-switching Valves MHA3, Sub-base 3/2-way Valves

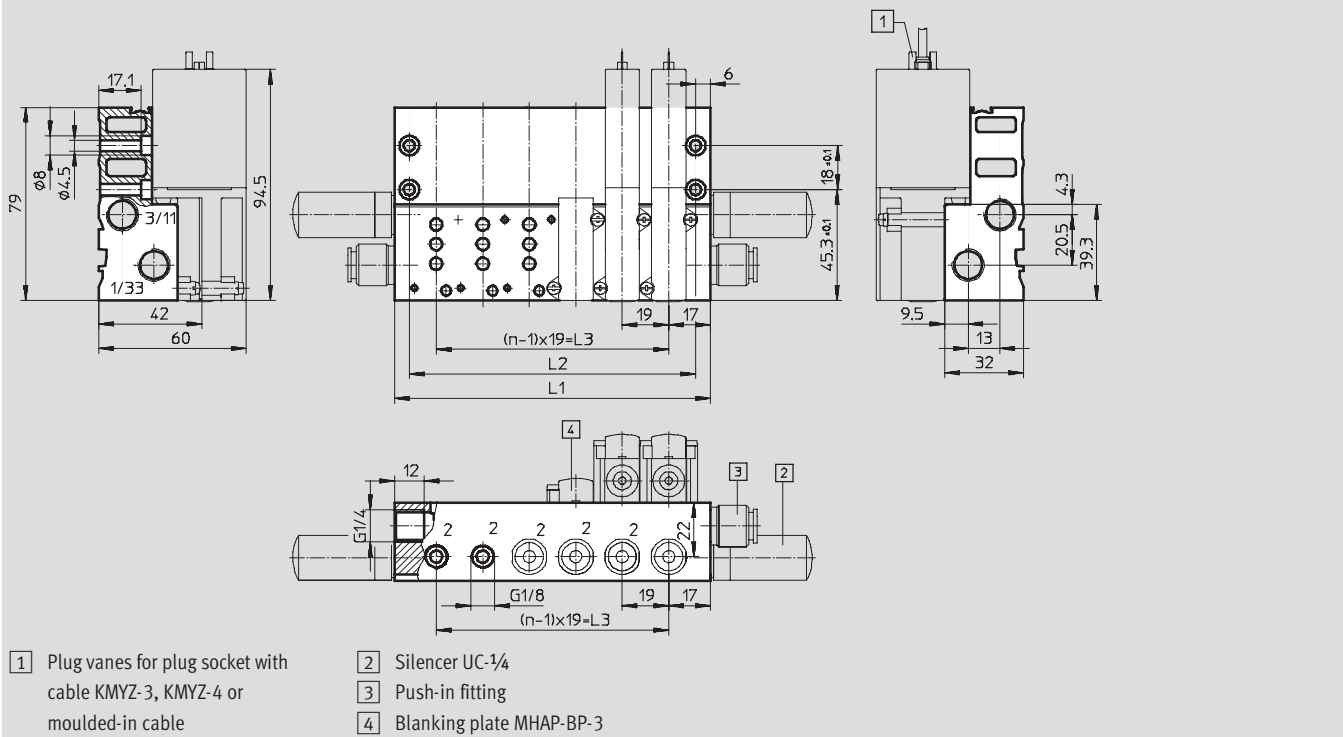
Dimensions

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

Individual sub-base



Manifold mounting



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

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

Dimensional Drawings, Ordering Data

Fast-switching Valves MHA3, Sub-base 3/2-way Valves

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

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

1 Manifold block
2 Mounting rail NRH-35

Type	Valve positions n	L1
MHAP3-PR2-3	2	53
MHAP3-PR4-3	4	91
MHAP3-PR6-3	6	129

Type	Valve positions n	L1
MHAP3-PR8-3	8	167
MHAP3-PR10-3	10	205

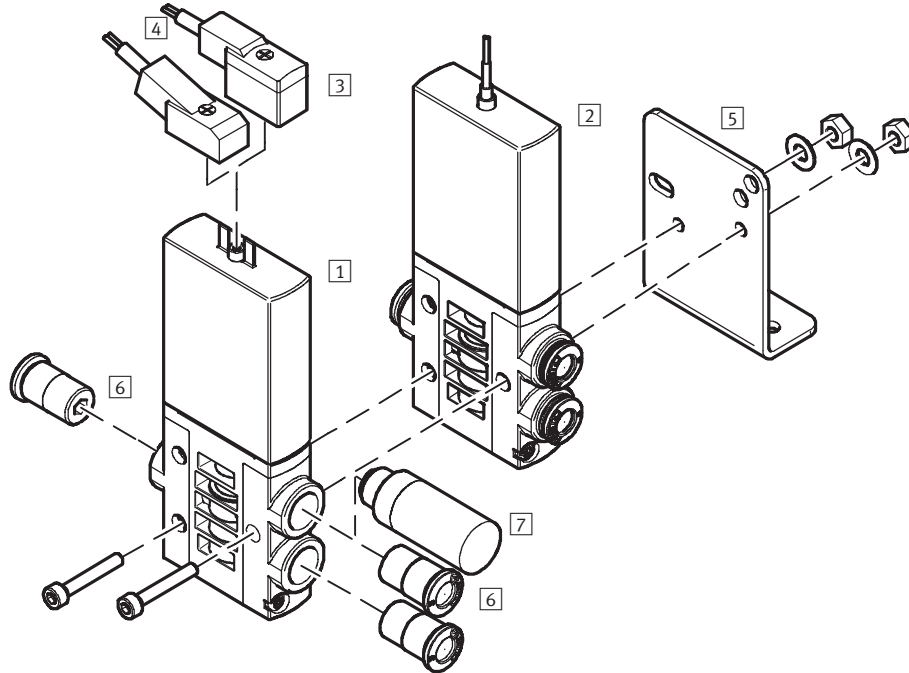
Ordering Data					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 3/2.3 ms					
Plug vanes	24 V DC	525 135	MHA3-MS1H-3/2G-3	525 155	MHA3-MS1H-3/2O-3
Cable	24 V DC	525 137	MHA3-MS1H-3/2G-3-K	525 157	MHA3-MS1H-3/2O-3-K
Response time 8/4.5 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 3/2G and type 3/2O valves must not be mixed on a manifold block.

Accessories

Fast-switching Valves MHE3

Individual 3/2-way Valve

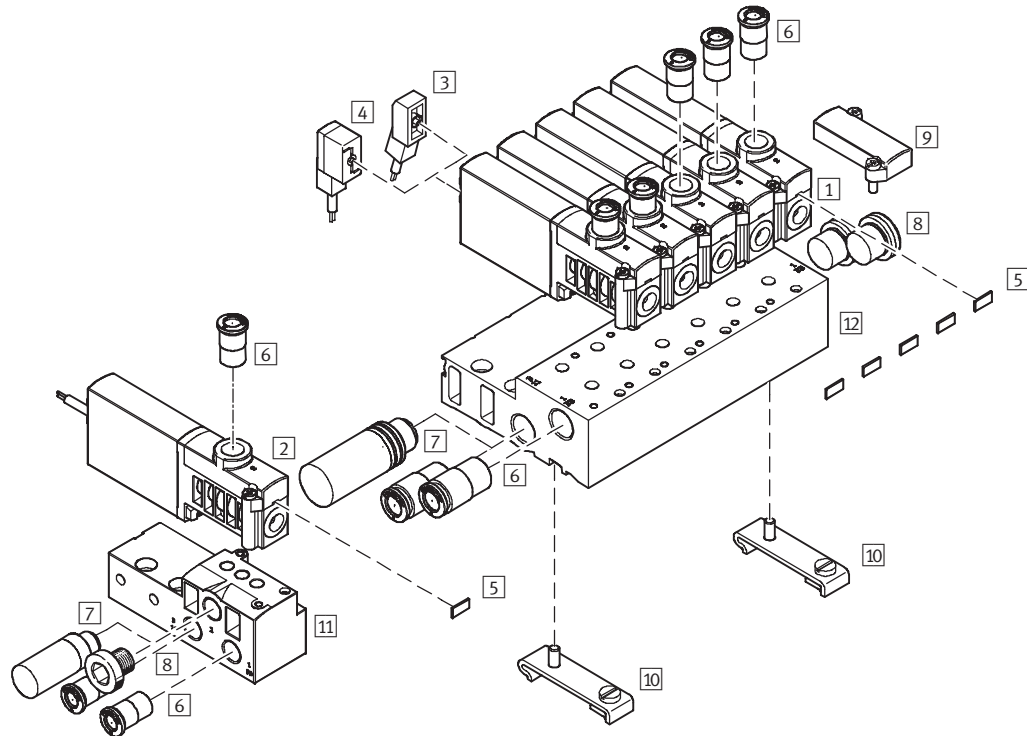


Valves and Accessories			
	Brief description	→ Page	
1	Individual valve MHE3-...	With plug vanes	38
2	Individual valve MHE3-...-K	With cable	38
3	Plug socket with cable KMYZ-4	With PVC cable (IP 40)	55
4	Plug socket with cable KMYZ-3	With LED, PUR cable, with M8 plug or open end (IP 65)	55
5	Mounting bracket MHE2-BG-L	-	55
6	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	56
		For connecting compressed air tubing with standard O.D., inch series	57
7	Silencers U/UC	For fitting in exhaust ports	56

Accessories

Fast-switching Valves MHP3

Semi in-line 3/2-way Valve

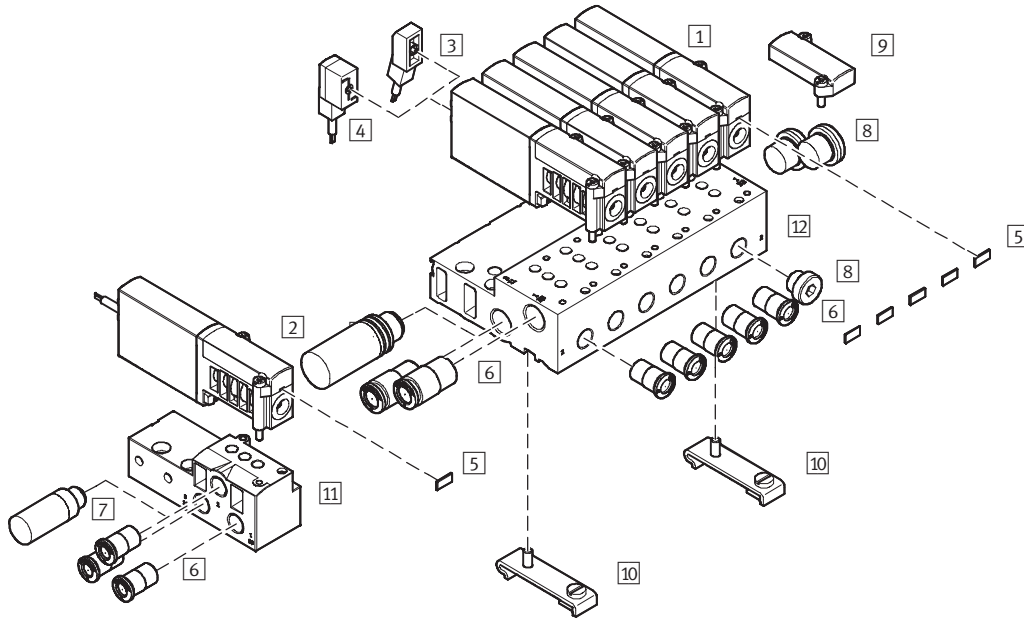


Valves and Accessories			
	Brief description	→ Page	
1	Semi in-line valve MHP3-...	With plug vanes	42
2	Semi in-line valve MHP3-...-K	With cable	42
3	Plug socket with cable KMYZ-4	With PVC cable (IP 40)	55
4	Plug socket with cable KMYZ-3	With LED, PUR cable, with M8 plug or open end (IP 65)	55
5	Inscription label MH-BZ-80X	For identifying the valves	55
6	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	56
		For connecting compressed air tubing with standard O.D., inch series	57
7	Silencers U/UC	For fitting in exhaust ports	56
8	Blanking plug B	For sealing unused ports	55
9	Blanking plate MHAP3-BP-3	For sealing vacant positions	55
10	H-rail mounting CPV10/14-VI-BG-NRH-35	-	55
11	Individual sub-base MHA3-AS-3-1/8	The individual sub-base is designed for use with sub-base valves. For use with semi in-line valves the output port (2) must be sealed with a blanking plug	55
12	Manifold block MHP3-PR...-3	For semi in-line valve	55

Accessories

Fast-switching Valves MHA3

Sub-base 3/2-way Valve



Valves and Accessories		Brief description	→ Page
1	Sub-base valve MHA3-...	With plug vanes	47
2	Sub-base valve MHA3-...-K	With cable	47
3	Plug socket with cable KMYZ-4	With PVC cable (IP 40)	55
4	Plug socket with cable KMYZ-3	With LED, PUR cable, with M8 plug or open end (IP 65)	55
5	Inscription label MH-BZ-80X	For identifying the valves	55
6	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	56
		For connecting compressed air tubing with standard O.D., inch series	57
7	Silencers U/UC	For fitting in exhaust ports	56
8	Blanking plug B	For sealing unused ports	55
9	Blanking plate MHAP3-BP-3	For sealing vacant positions	55
10	H-rail mounting CPV10/14-VI-BG-NRH-35	-	55
11	Individual sub-base MHA3-AS-3-1/8	For sub-base valve	55
12	Manifold block MHA3-PR...-3-1/8	For sub-base valve	55

Accessories

Fast-switching Valves MH...3



Ordering Data – Mounting Accessories			
Designation		Part No.	Type
Individual valve			
Mounting bracket		196 165	MHE2-BG-L
Semi in-line valves			
Individual sub-base		525 214	MHA3-AS-3-1/8
Manifold block for ...	2 valves	525 216	MHP3-PR2-1/8
	4 valves	525 217	MHP3-PR4-1/8
	6 valves	525 218	MHP3-PR6-1/8
	8 valves	525 219	MHP3-PR8-1/8
	10 valves	525 220	MHP3-PR10-1/8
Sub-base valves			
Individual sub-base		525 214	MHA3-AS-3-1/8
Manifold block for ...	2 valves	525 221	MHA3-PR2-1/8
	4 valves	525 222	MHA3-PR4-1/8
	6 valves	525 223	MHA3-PR6-1/8
	8 valves	525 224	MHA3-PR8-1/8
	10 valves	525 225	MHA3-PR10-1/8

Ordering Data		Part No.		Type		Technical data → <a href="http://www.festo.com/catalog/<type> or <order code>">www.festo.com/catalog/<type> or <order code>				
Plug socket with cable (IP65) with LED and PUR cable						Plug socket with cable (IP40) with PVC cable				
	2.5 m	193 693	KMYZ-3-24-2,5-LED-PUR-B		0.5 m	193 690	KMYZ-4-24-0,5-B			
	5 m	193 695	KMYZ-3-24-5-LED-PUR-B		2.5 m	193 691	KMYZ-4-24-2.5-B			
	10 m	196 066	KMYZ-3-24-10-LED-PUR-B							
Plug socket with cable (IP65) with LED, PUR cable and M8 plug						Inscription label				
	0.5 m	525 654	KMYZ-3-24-M8-0,5-LED-PUR		197 259		MH-BZ-80X ¹⁾			
	2.5 m	525 655	KMYZ-3-24-M8-2.5-LED-PUR							
H-rail mounting						H-rail				
	162 556		CPV10/14-VI-BG-NRH-35		2 m	35 430	NRH-35-2000			
Blanking plug B						Blanking plate				
	G1/8	3 569	B-1/8 ²⁾		525 226		MHAP3-BP-3			
	G1/4	3 568	B-1/4 ²⁾							



1) Scope of delivery 80 pieces

2) Scope of delivery 10 pieces



Accessories – Metric Series

Fast-switching Valves MH...3



FESTO

Ordering Data – Push-in Fittings QSM, Metric Thread				Technical Data → www.festo.com/catalog/QSM	
For tubing O.D. [mm]	M5 ¹⁾		M7 ¹⁾		
	Part No.	Type	Part No.	Type	
With external hex					
	3	153302	QSM-M5-3	–	
	4	153304	QSM-M5-4	–	
	6	153306	QSM-M5-6	–	
With internal hex					
	3	153313	QSM-M5-3-I	–	
	4	153315	QSM-M5-4-I	153319	QSM-M7-4-I
	6	153317	QSM-M5-6-I	153321	QSM-M7-6-I

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Taper-thread						Technical Data → www.festo.com/catalog/QS	
For tubing O.D. [mm]	R ^{1/8} ¹⁾		R ^{1/4} ¹⁾		R ^{3/8} ¹⁾		
	Part No.	Type	Part No.	Type	Part No.	Type	
With external hex							
	4	153001	QS-1/8-4	190644	QS-1/4-4	–	
	6	153002	QS-1/8-6	153303	QS-1/4-6	190645	QS-3/8-6
	8	153004	QS-1/8-8	153305	QS-1/4-8	153006	QS-3/8-8
	10	190643	QS-1/8-10	153307	QS-1/4-10	153008	QS-3/8-10
	12	–	–	164980	QS-1/4-12	153009	QS-3/8-12
With internal hex							
	4	153012	QS-1/8-4-I	–	–	–	
	6	153013	QS-1/8-6-I	153014	QS-1/4-6-I	–	
	8	153015	QS-1/8-8-I	153016	QS-1/4-8-I	153017	QS-3/8-8-I
	10	190647	QS-1/8-10-I	153018	QS-1/4-10-I	153019	QS-3/8-10-I
	12	–	–	190649	QS-1/4-12-I	153020	QS-3/8-12-I

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Cylindric Thread						Technical Data → www.festo.com/catalog/QS	
For tubing O.D. [mm]	G ^{1/8} ¹⁾		G ^{1/4} ¹⁾		G ^{3/8} ¹⁾		
	Part No.	Type	Part No.	Type	Part No.	Type	
With external hex							
	4	186095	QS-G1/8-4	–	–	–	
	6	186096	QS-G1/8-6	186097	QS-G1/4-6	–	
	8	186098	QS-G1/8-8	186099	QS-G1/4-8	186100	QS-G3/8-8
	10	–	–	186101	QS-G1/4-10	186102	QS-G3/8-10
	12	–	–	186350	QS-G1/4-12	186103	QS-G3/8-12
With internal hex							
	4	186106	QS-G1/8-4-I	–	–	–	
	6	186107	QS-G1/8-6-I	186108	QS-G1/4-6-I	–	
	8	186109	QS-G1/8-8-I	186110	QS-G1/4-8-I	186111	QS-G3/8-8-I
	10	–	–	186112	QS-G1/4-10-I	186113	QS-G3/8-10-I
	12	–	–	–	–	186114	QS-G3/8-12-I

1) Scope of delivery 10 pieces



Note

Push-in Fittings QS-G... with cylindric thread are preferably to be used in plastic threads.



Accessories – Hybrid Series


Fast-switching Valves MH...3

FESTO

Ordering Data – Push-in Fittings QS, Metric Thread				Technical Data → www.festo.com/catalog/QS	
	For tubing	M5		M7	
	O.D. [in]	Part No.	Type	Part No.	Type
With external hex					
	1/8	533209	QS-H-M5-1/8-U-M ¹⁾	–	–
	5/32	533210	QS-H-M5-5/32-U-M	–	–
	3/16	533211	QS-H-M5-3/16-U-M	–	–
	1/4	533212	QS-H-M5-1/4-U-M	–	–
With internal hex					
	1/8	183749	QSM-M5-1/8-I-U-M	183738	QSM-M7-1/8-I-U-M
	5/32	130593	QSM-M5-5/32-I-U-M	–	–
	3/16	183750	QSM-M5-3/16-I-U-M	183739	QSM-M7-3/16-I-U-M
	1/4	130591	QSM-M5-1/4-I-U-M	183740	QSM-M7-1/4-I-U-M

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Taper-thread					Technical Data → www.festo.com/catalog/QS	
	For tubing	R ¹ / ₈		R ¹ / ₄		R ³ / ₈
	O.D. [in]	Part No.	Type	Part No.	Type	Part No. Type
With external hex						
	1/4	183741	QS-1/8-1/4-I-U-M	192809	QS-1/4-1/4-I-U-M	–
	5/16	183742	QS-1/8-5/16-I-U-M	183743	QS-1/4-5/16-I-U-M	183745 QS-3/8-5/16-I-U-M
	3/8	–	–	183744	QS-1/4-3/8-I-U-M	183746 QS-3/8-3/8-I-U-M
	1/2	–	–	–	–	–
With internal hex						
	1/8	533213	QS-H-1/8-1/8-U-M	–	–	–
	5/32	533214	QS-H-1/8-5/32-U-M	–	–	–
	3/16	533215	QS-H-1/8-3/16-U-M	533218	QS-H-1/4-3/16-U-M	–
	1/4	533216	QS-H-1/8-1/4-U-M	533219	QS-H-1/4-1/4-U-M	533222 QS-H-3/8-1/4-U-M
	5/16	533217	QS-H-1/8-5/16-U-M	533220	QS-H-1/4-5/16-U-M	533223 QS-H-3/8-5/16-U-M
	3/8	–	–	533221	QS-H-1/4-3/8-U-M	533224 QS-H-3/8-3/8-U-M
	1/2	–	–	–	–	533225 QS-H-3/8-1/2-U-M

Ordering Data – Silencers U/UC		
	Part No.	Type
Silencer		
	For thread M5	165003 UC-M5
	For thread M7	161418 UC-M7
	For thread G ¹ / ₈	161419 UC- ¹ / ₈
	For thread G ¹ / ₄	165004 UC- ¹ / ₄
	For thread G ³ / ₈	2309 U- ³ / ₈

Note

Push-in Fittings QS-G... with cylindric thread are preferably to be used in plastic threads.

Product Range Overview

Fast-switching Valves MH4



Function	ISO Symbol	Design	Response Time [ms]				Operating Voltage [V DC]	Free of Copper and PTFE	→ Page
			with MS1 Coil		with M1 Coil				
			Off	On	Off	On			
3/2-way valve ¹⁾	Standard nominal flow rate 400 l/min								
		Individual valve	3.5	3.5	5	9	24	■	60
		Semi in-line valve	3.5	3.5	5	9	24	■	64
		Sub-base valve	3.5	3.5	5	9	24	■	69

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

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

Type Codes

Fast-switching Valves MH4

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

Valve Family	
MH	Miniature and fast-switching valves

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

Size	
4	Flow rate 400 l/min

Drive Function	
M	Solenoid, switching

Response Time	
-	9 ms
S	3.5 ms

Operating Voltage	
1	24 V DC

Manual Override	
H	Non-detenting

Valve Function	
3/2	3/2-way valve

Normal Position	
G	Closed
O	Open

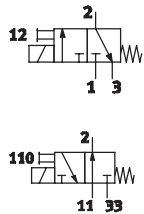
Pneumatic Connection	
4	Nominal size 4 mm
1/4	G1/4 thread
QS8	Push-in connector for 8 mm O.D. tubing

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

Technical Data

Fast-switching Valves MHE4, Individual 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

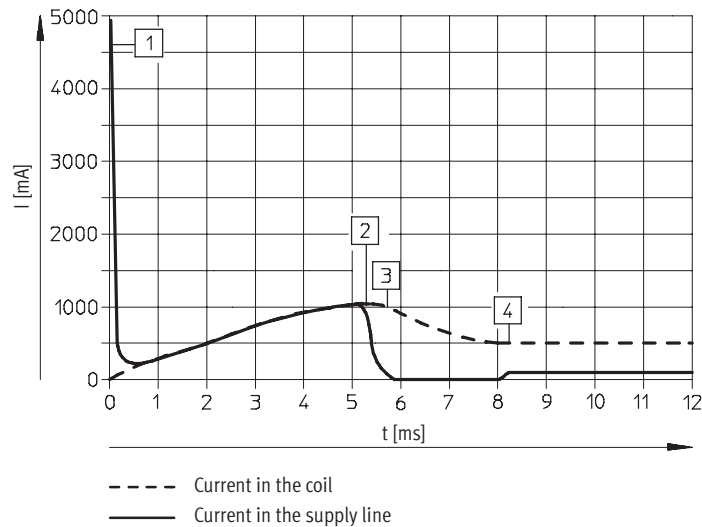
Fast-switching Valves MHE4, Individual 3/2-way Valves

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

Response Times and Switching Frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3.5/3.5 +10% ... -30%
Maximum switching frequency	[Hz]	210 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	9/5
Maximum switching frequency	[Hz]	120

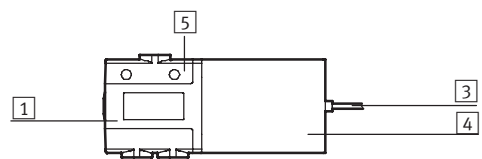
1) The ambient temperature must be limited as from 90 Hz.

Current Path for Valves with Fast-switching Electronics



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

Materials



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

Dimensional Drawings

Fast-switching Valves MHE4, Individual 3/2-way Valves

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

Valve with connecting thread G1/4

Valve with push-in fitting QS 8

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

Mounting bracket MHE2-BG-L

Ordering Data

Fast-switching Valves MHE4, Individual 3/2-way Valves

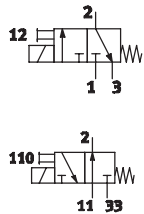
FESTO

Ordering Data					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 3.5/3.5 ms					
Connecting thread G $\frac{1}{4}$					
Plug vanes	24 V DC	525 187	MHE4-MS1H-3/2G- $\frac{1}{4}$	525 207	MHE4-MS1H-3/2O- $\frac{1}{4}$
Cable	24 V DC	525 189	MHE4-MS1H-3/2G- $\frac{1}{4}$ -K	525 209	MHE4-MS1H-3/2O- $\frac{1}{4}$ -K
Push-in connector 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 G $\frac{1}{4}$					
Plug vanes	24 V DC	525 186	MHE4-M1H-3/2G- $\frac{1}{4}$	525 206	MHE4-M1H-3/2O- $\frac{1}{4}$
Cable	24 V DC	525 188	MHE4-M1H-3/2G- $\frac{1}{4}$ -K	525 208	MHE4-M1H-3/2O- $\frac{1}{4}$ -K
Push-in connector 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

Technical Data

Fast-switching Valves MHP4, Semi In-line 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

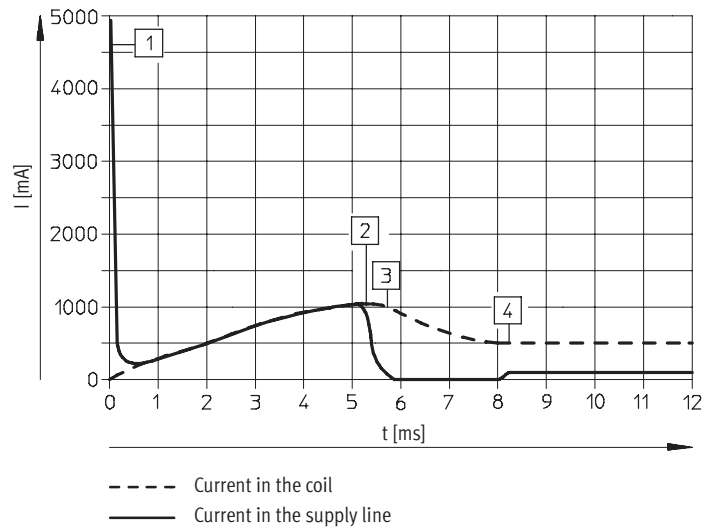
Fast-switching Valves MHP4, Semi In-line 3/2-way Valves

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

Response Times and Switching Frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3.5/3.5 +10% ... -30%
Maximum switching frequency	[Hz]	210 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	9/5
Maximum switching frequency	[Hz]	120

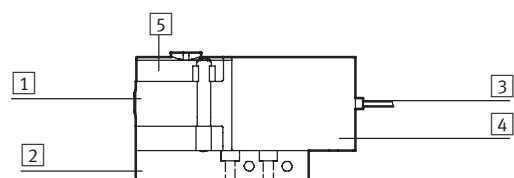
1) The ambient temperature must be limited as from 100 Hz.

Current Path for Valves with Fast-switching Electronics



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

Materials

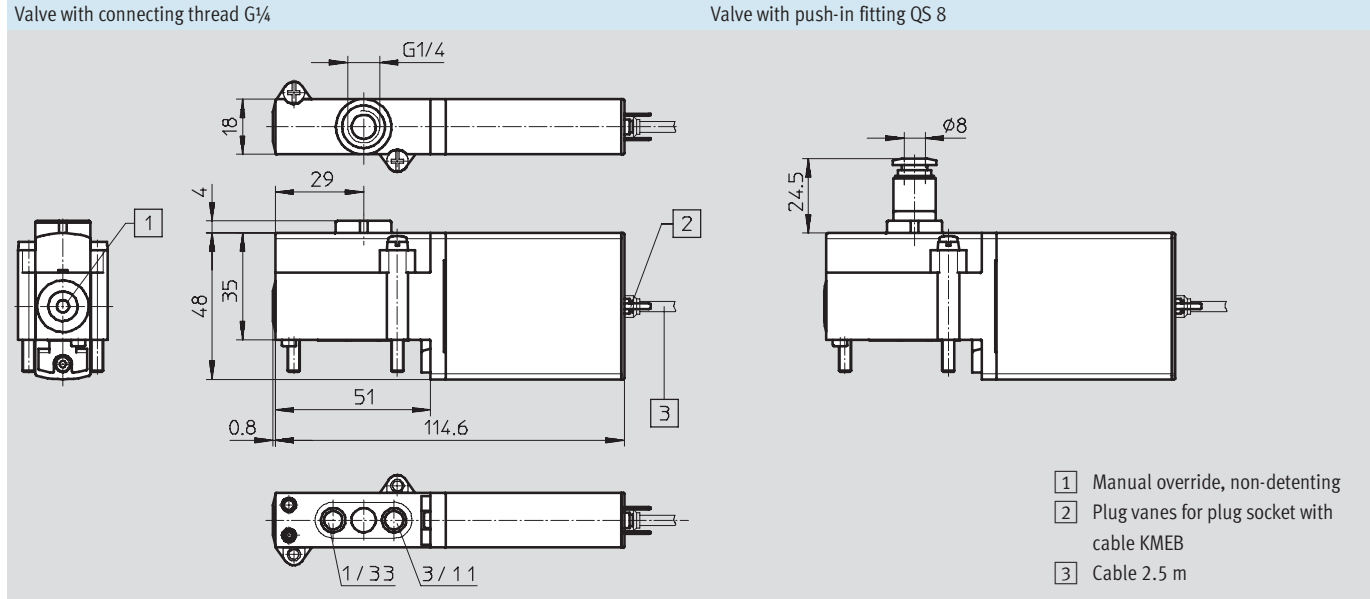


1	Body	Die-cast zinc, coated
2	Sub-base	Manifold block: Aluminium Individual sub-base: Die-cast zinc
3	Cable sheath	Polyurethane
4	Coil housing	Polyamide
5	Connection piece	Polyamide
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE

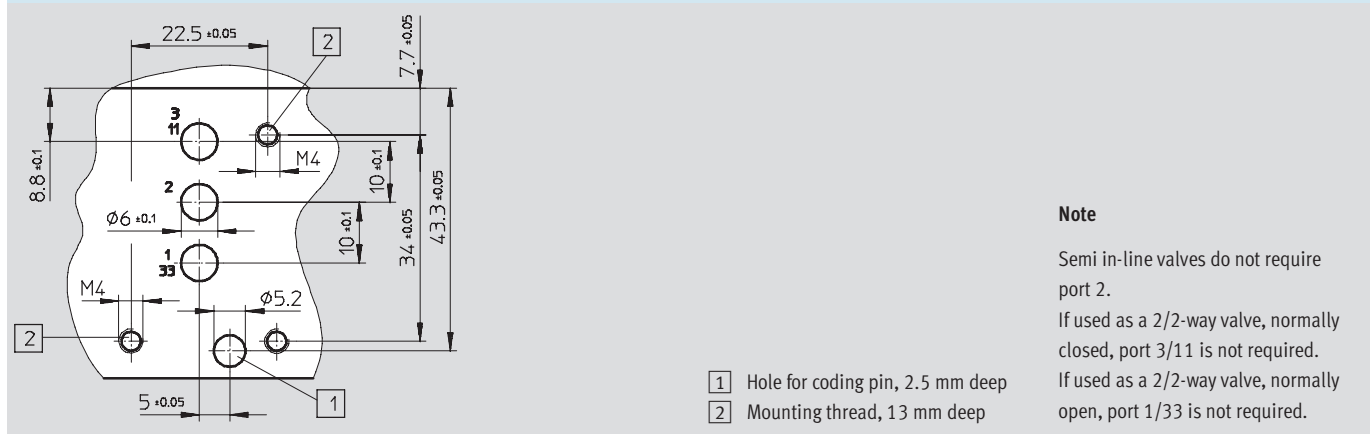
Dimensional Drawings

Fast-switching Valves MHP4, Semi In-line 3/2-way Valves

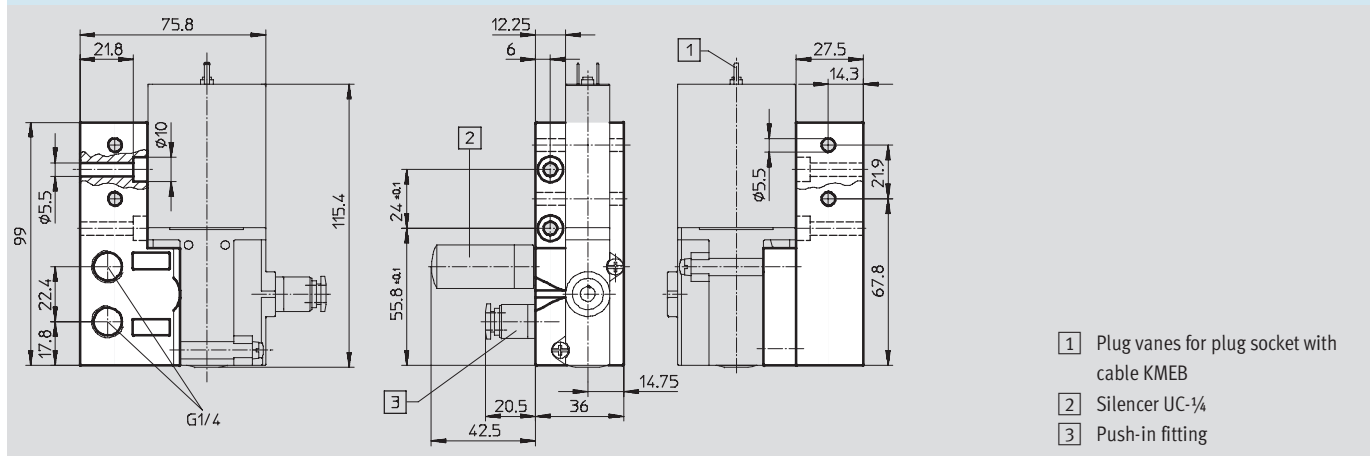
Dimensions Download CAD Data → www.festo.com/us/cad



Port pattern on sub-bases



Individual sub-base



Dimensional Drawings

Fast-switching Valves MHP4, Semi In-line 3/2-way Valves

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

Manifold mounting

1 Plug vanes for plug socket with cable KMEB or moulded-in cable
 2 Silencer UC-3/8
 3 Push-in fitting
 4 Blanking plate MHP4-BP-3

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

1 Manifold block
 2 Mounting rail NRH-35

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

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

Ordering Data

Fast-switching Valves MHP4, Semi In-line 3/2-way Valves

Ordering Data					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 3.5/3.5 ms					
Connecting thread G1/4					
Plug vanes	24 V DC	525 179	MHP4-MS1H-3/2G-1/4	525 199	MHP4-MS1H-3/2O-1/4
Cable	24 V DC	525 181	MHP4-MS1H-3/2G-1/4-K	525 201	MHP4-MS1H-3/2O-1/4-K
Push-in connector 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 G1/4					
Plug vanes	24 V DC	525 178	MHP4-M1H-3/2G-1/4	525 198	MHP4-M1H-3/2O-1/4
Cable	24 V DC	525 180	MHP4-M1H-3/2G-1/4-K	525 200	MHP4-M1H-3/2O-1/4-K
Push-in connector 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

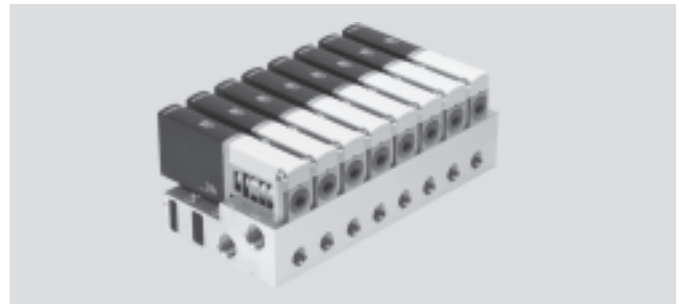
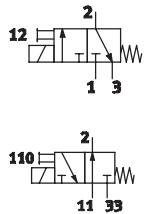
Note

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

Technical Data

Fast-switching Valves MHA4, Sub-base 3/2-way Valves

ISO Symbol



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

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

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

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

Technical Data

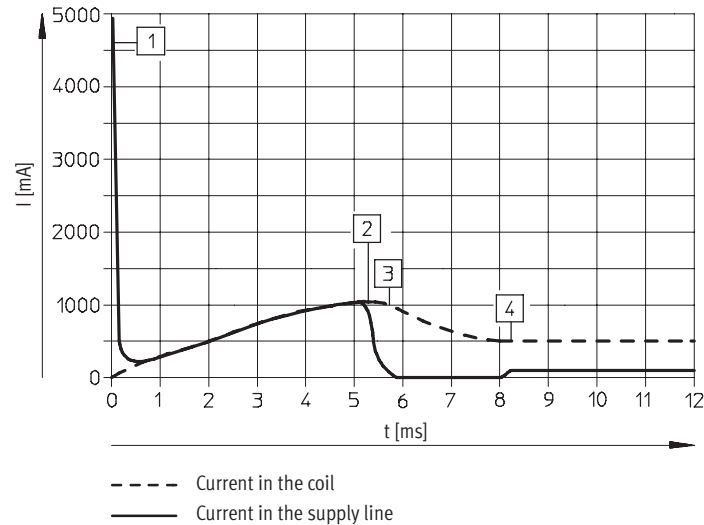
Fast-switching Valves MHA4, Sub-base 3/2-way Valves

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

Response Times and Switching Frequencies		
With fast-switching electronics		
Switching time on/off	[ms]	3.5/3.5 +10% ... -30%
Maximum switching frequency	[Hz]	210 ¹⁾
CE symbol		In accordance with EU EMC Directive
Without fast-switching electronics		
Switching time on/off	[ms]	9/5
Maximum switching frequency	[Hz]	120

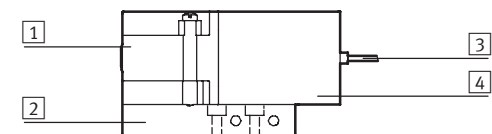
1) The ambient temperature must be limited as from 100 Hz.

Current Path for Valves with Fast-switching Electronics



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

Materials



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

Dimensional Drawings

Fast-switching Valves MHA4, Sub-base 3/2-way Valves

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

Valve

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

Port pattern on sub-bases

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

Individual sub-base

1 Plug vanes for plug socket with cable KMEB
 2 Silencer UC-1/4
 3 Push-in fitting

Dimensional Drawings, Ordering Data

Fast-switching Valves MHA4, Sub-base 3/2-way Valves



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

Manifold mounting

1 Plug vanes for plug socket with cable KMEB or moulded-in cable
 2 Silencer UC- $\frac{3}{8}$
 3 Push-in fitting
 4 Blanking plate MHAP4-BP-3

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

1 Manifold block
 2 Mounting rail NRH-35

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

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

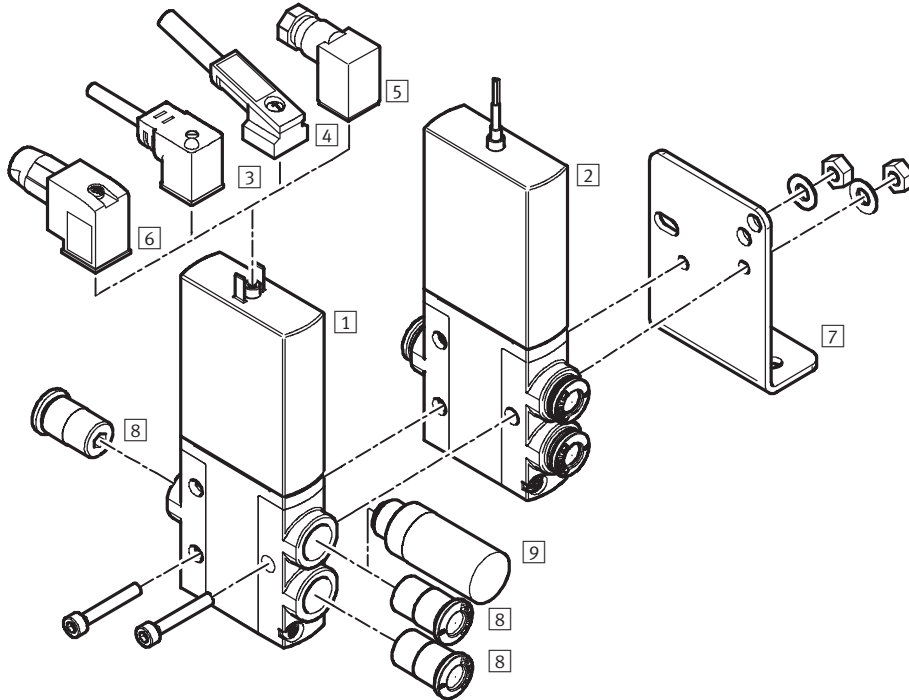
Ordering Data					
Electrical connection	Operating voltage	Normally closed		Normally open	
		Part No.	Type	Part No.	Type
Response time 3.5/3.5 ms					
Plug vanes	24 V DC	525 175	MHA4-MS1H-3/2G-4	525 195	MHA4-MS1H-3/2O-4
Cable	24 V DC	525 177	MHA4-MS1H-3/2G-4-K	525 197	MHA4-MS1H-3/2O-4-K
Response time 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 3/2G and type 3/2O valves must not be mixed on a manifold block.

Accessories

Fast-switching Valves MHE4

Individual 3/2-way Valve

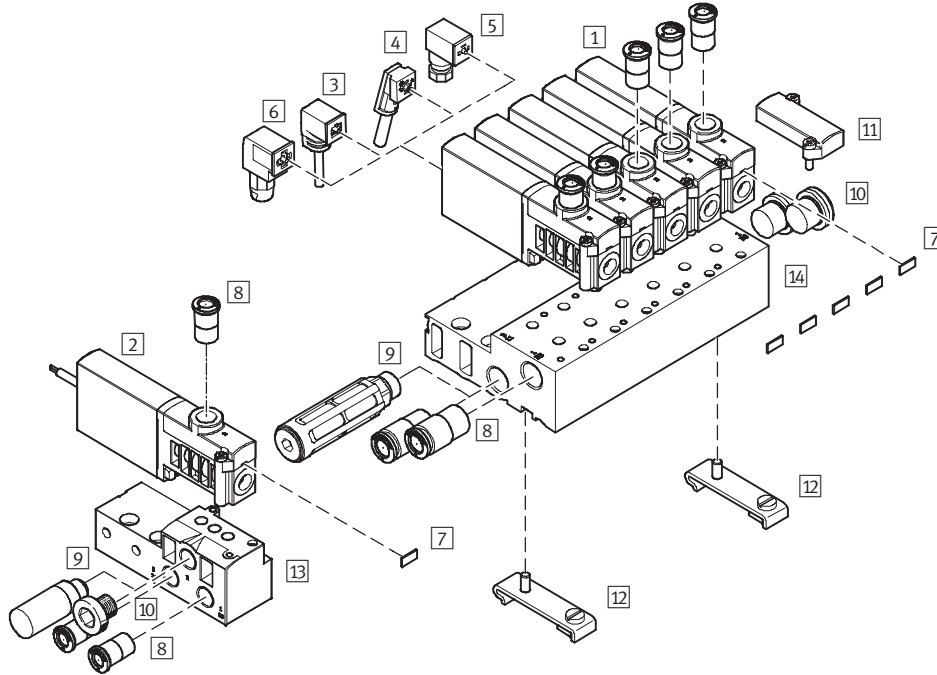


Valves and Accessories			
	Brief description	→ Page	
1	Individual valve MHE4-...	With plug vanes	60
2	Individual valve MHE4-...-K	With cable	60
3	Plug socket with cable KMEB-1	PVC cable, with or without LED (IP65)	76
4	Plug socket with cable KMEB-2	With LED, without LED; PUR cable, with or without LED (IP65)	76
5	Plug socket MSSD-EB	With clamping screw (IP65)	76
6	Plug socket MSSD-EB-S-M14	With insulation displacement connector (IP65)	76
7	Mounting bracket MHE2-BG-L	-	76
8	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series	77
		For connecting compressed air tubing with standard O.D., inch series	78
9	Silencers U/UC	For fitting in exhaust ports	78

Accessories

Fast-switching Valves MHP4

Semi in-line 3/2-way Valve

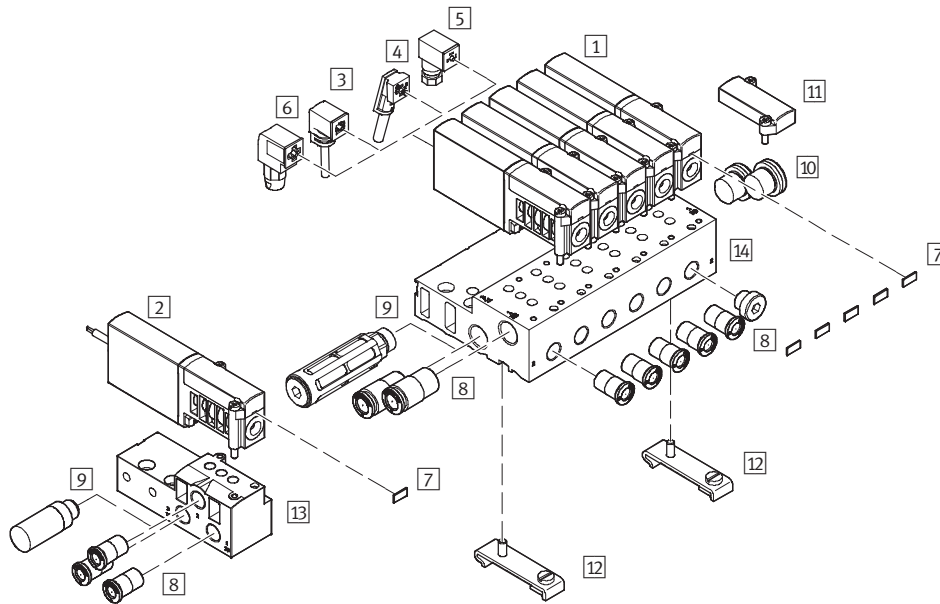


Valves and Accessories		→ Page
	Brief description	
1	Semi in-line valve MHP4-...	With plug vanes 64
2	Semi in-line valve MHP4-...-K	With cable 64
3	Plug socket MSSD-EB	With clamping screw (IP65) 76
4	Plug socket MSSD-EB-S-M14	With insulation displacement connector (IP65) 76
5	Plug socket with cable KMEB-1	PVC cable, with or without LED (IP65) 76
6	Plug socket with cable KMEB-2	PUR cable, with or without LED (IP65) 76
7	Inscription label MH-BZ-80X	For identifying the valves 76
8	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series 77
		For connecting compressed air tubing with standard O.D., inch series 78
9	Silencers U/UC	For fitting in exhaust ports 78
10	Blanking plug B	For sealing unused ports 76
11	Blanking plate MHAP4-BP-3	For sealing vacant positions 76
12	H-rail mounting CPV10/14-VI-BG-NRH-35	- 76
13	Individual sub-base MHA4-AS-3-¼	The individual sub-base is designed for use with sub-base valves. For use with semi in-line valves the output port (2) must be sealed with a blanking plug 76
14	Manifold block MHP4-PR...-3	For semi in-line valve 76

Accessories

Fast-switching Valves MHA4

Sub-base 3/2-way Valve



Valves and Accessories		
	Brief description	→ Page
1	Sub-base valve MHA4-...	With plug vanes 76
2	Sub-base valve MHA4-...-K	With cable 76
3	Plug socket with cable KMEB-1	PVC cable, with or without LED (IP65) 76
4	Plug socket with cable KMEB-2	PUR cable, with or without LED (IP65) 76
5	Plug socket MSSD-EB	With clamping screw (IP65) 76
6	Plug socket MSSD-EB-S-M14	With insulation displacement connector (IP65) 76
7	Inscription label MH-BZ-80X	For identifying the valves 76
8	Push-in fittings QS	For connecting compressed air tubing with standard O.D., metric series 77
		For connecting compressed air tubing with standard O.D., inch series 78
9	Silencers U/UC	For fitting in exhaust ports 78
10	Blanking plug B	For sealing unused ports 76
11	Blanking plate MHAP4-BP-3	For sealing vacant positions 76
12	H-rail mounting CPV10/14-VI-BG-NRH-35	– 76
13	Individual sub-base MHA4-AS-3-1/4	For sub-base valves 76
14	Manifold block MHA4-PR...-3	For sub-base valves 76

Accessories

Fast-switching Valves MH...4



Ordering Data – Mounting Accessories			
Designation		Part No.	Type
Individual valve			
Mounting bracket		196 165	MHE2-BG-L
Semi in-line valves			
Individual sub-base		525 227	MHA4-AS-3-1/4
Manifold block for ...	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
Sub-base valves			
Individual sub-base		525 227	MHA4-AS-3-1/4
Manifold block for ...	2 valves	525 234	MHA4-PR2-1/4
	4 valves	525 235	MHA4-PR4-1/4
	6 valves	525 236	MHA4-PR6-1/4
	8 valves	525 237	MHA4-PR8-1/4
	10 valves	525 238	MHA4-PR10-1/4



Ordering Data		Part No.		Type		Technical data → <a href="http://www.festo.com/catalog/<type> or <order code>">www.festo.com/catalog/<type> or <order code>					
Plug socket with cable (IP65) with PUR cable						Plug socket with cable (IP65) with PVC cable					
	2.5 m	174 844	KMEB-2-24-2,5-LED				2.5 m	151 688	KMEB-1-24-2,5-LED		
	5 m	174 845	KMEB-2-24-5-LED				5 m	151 689	KMEB-1-24-5-LED		
	2.5 m	174 846	KMEB-2-230-2,5				10 m	193 457	KMEB-1-24-10-LED		
	5 m	174 847	KMEB-2-230-5				2.5 m	151 690	KMEB-1-230AC-2,5		
					5 m	151 691	KMEB-1-230AC-5				
Plug socket with screw terminal						Plug sockets with insulation displacement connector					
		151 687	MSSD-EB					192 745	MSSD-EB-S-M14		
H-rail mounting						H-rail					
		162 556	CPV10/14-VI-BG-NRH-35				2 m	35 430	NRH-35-2000		
Blanking plug B						Blanking plate					
	G1/4	3 568	B-1/4 ²⁾					525 239	MHAP4-BP-3		
	G3/8	3 570	B-3/8 ²⁾								
Inscription label											
		197 259	MH-BZ-80X ¹⁾								

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



Accessories – Metric Series

Fast-switching Valves MH...4



FESTO

Ordering Data – Push-in Fittings QSM, Metric Thread				Technical Data → www.festo.com/catalog/QSM	
For tubing O.D. [mm]	M5 ¹⁾		M7 ¹⁾		
	Part No.	Type	Part No.	Type	
With external hex					
	3	153302	QSM-M5-3	–	
	4	153304	QSM-M5-4	–	
	6	153306	QSM-M5-6	–	
With internal hex					
	3	153313	QSM-M5-3-I	–	
	4	153315	QSM-M5-4-I	153319	QSM-M7-4-I
	6	153317	QSM-M5-6-I	153321	QSM-M7-6-I

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Taper-thread					Technical Data → www.festo.com/catalog/QS		
For tubing O.D. [mm]	R ^{1/8} ¹⁾		R ^{1/4} ¹⁾		R ^{3/8} ¹⁾		
	Part No.	Type	Part No.	Type	Part No.	Type	
With external hex							
	4	153001	QS-1/8-4	190644	QS-1/4-4	–	
	6	153002	QS-1/8-6	153303	QS-1/4-6	190645	QS-3/8-6
	8	153004	QS-1/8-8	153305	QS-1/4-8	153006	QS-3/8-8
	10	190643	QS-1/8-10	153307	QS-1/4-10	153008	QS-3/8-10
	12	–	–	164980	QS-1/4-12	153009	QS-3/8-12
With internal hex							
	4	153012	QS-1/8-4-I	–	–	–	
	6	153013	QS-1/8-6-I	153014	QS-1/4-6-I	–	
	8	153015	QS-1/8-8-I	153016	QS-1/4-8-I	153017	QS-3/8-8-I
	10	190647	QS-1/8-10-I	153018	QS-1/4-10-I	153019	QS-3/8-10-I
	12	–	–	190649	QS-1/4-12-I	153020	QS-3/8-12-I

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Cylindric Thread					Technical Data → www.festo.com/catalog/QS		
For tubing O.D. [mm]	G ^{1/8} ¹⁾		G ^{1/4} ¹⁾		G ^{3/8} ¹⁾		
	Part No.	Type	Part No.	Type	Part No.	Type	
With external hex							
	4	186095	QS-G1/8-4	–	–	–	
	6	186096	QS-G1/8-6	186097	QS-G1/4-6	–	
	8	186098	QS-G1/8-8	186099	QS-G1/4-8	186100	QS-G3/8-8
	10	–	–	186101	QS-G1/4-10	186102	QS-G3/8-10
	12	–	–	186350	QS-G1/4-12	186103	QS-G3/8-12
With internal hex							
	4	186106	QS-G1/8-4-I	–	–	–	
	6	186107	QS-G1/8-6-I	186108	QS-G1/4-6-I	–	
	8	186109	QS-G1/8-8-I	186110	QS-G1/4-8-I	186111	QS-G3/8-8-I
	10	–	–	186112	QS-G1/4-10-I	186113	QS-G3/8-10-I
	12	–	–	–	–	186114	QS-G3/8-12-I

1) Scope of delivery 10 pieces



Note

Push-in Fittings QS-G... with cylindric thread are preferably to be used in plastic threads.



Accessories – Hybrid Series


Fast-switching Valves MH...4

FESTO

Ordering Data – Push-in Fittings QS, Metric Thread				Technical Data → www.festo.com/catalog/QS	
	For tubing	M5		M7	
	O.D. [in]	Part No.	Type	Part No.	Type
With external hex					
	1/8	533209	QS-H-M5-1/8-U-M ¹⁾	–	–
	5/32	533210	QS-H-M5-5/32-U-M	–	–
	3/16	533211	QS-H-M5-3/16-U-M	–	–
	1/4	533212	QS-H-M5-1/4-U-M	–	–
With internal hex					
	1/8	183749	QSM-M5-1/8-I-U-M	183738	QSM-M7-1/8-I-U-M
	5/32	130593	QSM-M5-5/32-I-U-M	–	–
	3/16	183750	QSM-M5-3/16-I-U-M	183739	QSM-M7-3/16-I-U-M
	1/4	130591	QSM-M5-1/4-I-U-M	183740	QSM-M7-1/4-I-U-M

1) Scope of delivery 10 pieces

Ordering Data – Push-in Fittings QS, Taper-thread				Technical Data → www.festo.com/catalog/QS			
	For tubing	R ¹ / ₈		R ¹ / ₄		R ³ / ₈	
	O.D. [in]	Part No.	Type	Part No.	Type	Part No.	Type
With external hex							
	1/8	533213	QS-H-1/8-1/8-U-M	–	–	–	–
	5/32	533214	QS-H-1/8-5/32-U-M	–	–	–	–
	3/16	533215	QS-H-1/8-3/16-U-M	533218	QS-H-1/4-3/16-U-M	–	–
	1/4	533216	QS-H-1/8-1/4-U-M	533219	QS-H-1/4-1/4-U-M	533222	QS-H-3/8-1/4-U-M
	5/16	533217	QS-H-1/8-5/16-U-M	533220	QS-H-1/4-5/16-U-M	533223	QS-H-3/8-5/16-U-M
	3/8	–	–	533221	QS-H-1/4-3/8-U-M	533224	QS-H-3/8-3/8-U-M
	1/2	–	–	–	–	533225	QS-H-3/8-1/2-U-M
With internal hex							
	1/4	183741	QS-1/8-1/4-I-U-M	192809	QS-1/4-1/4-I-U-M	–	–
	5/16	183742	QS-1/8-5/16-I-U-M	183743	QS-1/4-5/16-I-U-M	183745	QS-3/8-5/16-I-U-M
	3/8	–	–	183744	QS-1/4-3/8-I-U-M	183746	QS-3/8-3/8-I-U-M
	1/2	–	–	–	–	–	–

Ordering Data – Silencers U/UC		Part No.	Type
Silencer			
	For thread M5	165003	UC-M5
	For thread M7	161418	UC-M7
	For thread G ¹ / ₈	161419	UC- ¹ / ₈
	For thread G ¹ / ₄	165004	UC- ¹ / ₄
	For thread G ³ / ₈	2309	U- ³ / ₈

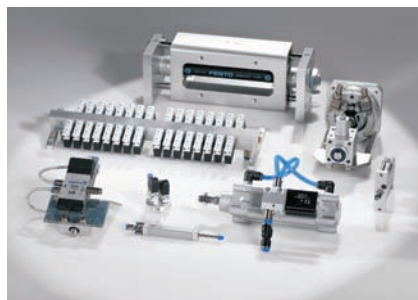
Note

Push-in Fittings QS-G... with cylindric thread are preferably to be used in plastic threads.

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation Components
Complete custom engineered solutions



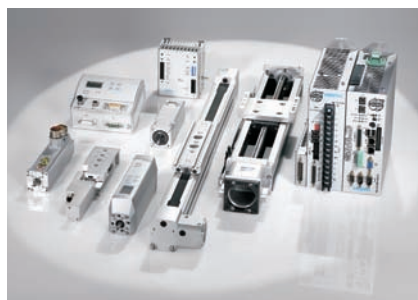
Custom Control Cabinets
Comprehensive engineering support
and on-site services



Complete Systems
Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.



Electromechanical
Electromechanical actuators, motors,
controllers & drives



Pneumatics
Pneumatic linear and rotary actuators,
valves, and air supply



PLCs and I/O Devices
PLC's, operator interfaces, sensors
and I/O devices

Supporting Advanced Automation... As No One Else Can!

Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 11,500 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 Certification

Festo Corporation is committed to provide Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

All Festo locations within the United States are registered to ISO 9001.



Festo North America

United States

Customer Resource Center

502 Earth City Expy., Suite 125
Earth City, MO 63045

For ordering assistance, or to find
your nearest Festo Distributor,

Call: 1.800.99.FESTO

Fax: 1.800.96.FESTO

Email: customer.service@us.festo.com

For technical support,

Call: 1.866.GO.FESTO

Fax: 1.800.96.FESTO

Email: product.support@us.festo.com

Headquarters

Festo Corporation
395 Moreland Road
P.O. Box 18023
Hauppauge, NY 11788
www.festo.com/us

Sales Offices

Appleton

N. 922 Tower View Drive, Suite N
Greenville, WI 54942

Boston

120 Presidential Way, Suite 330
Woburn, MA 01801

Chicago

1441 East Business Center Drive
Mt. Prospect, IL 60056

Dallas

1825 Lakeway Drive, Suite 600
Lewisville, TX 75057

Detroit - Automotive Engineering Center

2601 Cambridge Court, Suite 320
Auburn Hills, MI 48326

New York

395 Moreland Road
Hauppauge, NY 11788

Silicon Valley

2800 Collier Canyon Road
Livermore, CA 94550

Design and Manufacturing Operations



East: 395 Moreland Road, Hauppauge, NY 11788



Central: 1441 East Business Center Drive, Mt. Prospect, IL 60056



West: 2800 Collier Canyon Road, Livermore, CA 94550

Mexico

Headquarters

Festo Pneumatic, S.A.
Av. Ceylán 3, Col. Tequesquahuac
54020 Tlalnepantla, Edo. de México
Call: 011 52 [55] 53 21 66 00
Fax: 011 52 [55] 53 21 66 65
Email: festo.mexico@mx.festo.com
www.festo.com/mx



Canada

Headquarters

Festo Inc.
5300 Explorer Drive
Mississauga, Ontario L4W 5G4
Call: 1.905.624.9000
Fax: 1.905.624.9001
Email: info.ca@ca.festo.com
www.festo.com/ca



Festo Worldwide

Argentina Australia Austria Belarus Belgium Brazil Bulgaria Canada Chile China Colombia Croatia Czech Republic Denmark
Estonia Finland France Germany Great Britain Greece Hong Kong Hungary India Indonesia Iran Ireland Israel Italy Japan
Latvia Lithuania Malaysia Mexico Netherlands New Zealand Norway Peru Philippines Poland Romania Russia Serbia Singapore
Slovakia Slovenia South Africa South Korea Spain Sweden Switzerland Taiwan Thailand Turkey Ukraine United States Venezuela

www.festo.com