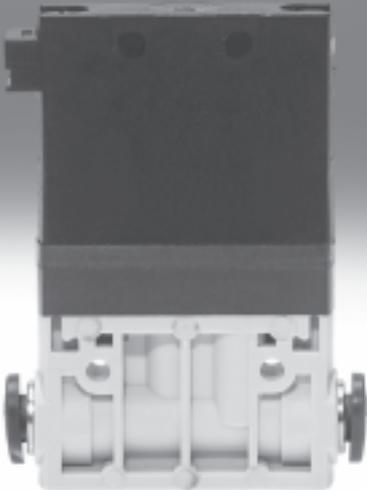


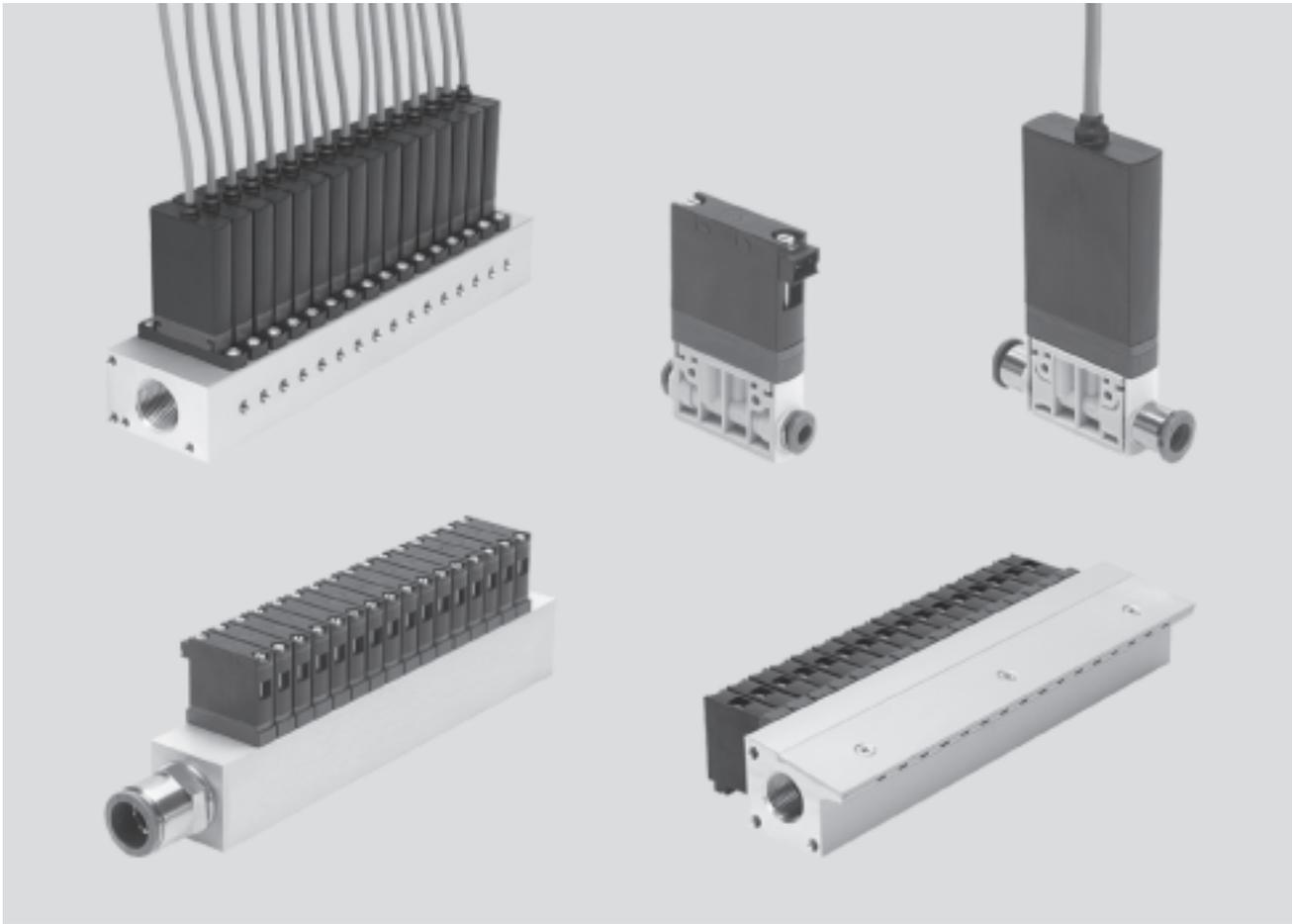
Solenoid valves MHJ, fast-switching valves



Solenoid valves MHJ9 and MHJ10, fast-switching valves

Key features

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Innovative

- Individual electrical connection via connecting cable and square plug sockets with integrated switching electronics for MHJ9 or via moulded-in cable for MHJ10, whereby the switching electronics are contained in the valve
- Manifold rail with air nozzle outlet for MHJ9
- Response times of less than one millisecond
- Signal control range 3 ... 30 V DC

Versatile

- Modular system offering a range of configuration options
- Identical basic valves for individual valve and manifold assembly
- Flexible air supply with air connection at both ends on the manifold rails
- Control of the MHJ9 valves without plug socket with cable MHJ9-KMH subject to consultation with Festo

Reliable

- Reliability of service thanks to valves that can be replaced easily and quickly
- No electrical plug connectors with MHJ10 thanks to integrated control electronics
- Manifold rail with air nozzle outlet for MHJ9
- Up to 7 billion switching cycles

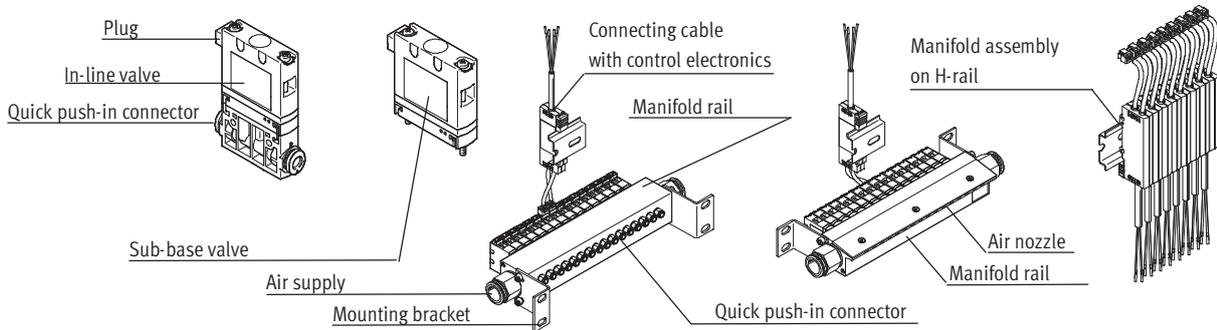
Easy to mount

- Solid wall mounting or H-rail mounting of the connecting cables with MHJ9
- Direct mounting of manifold rail with air nozzle outlet for MHJ9 with connecting cable block on H-rail in the application

Solenoid valves MHJ9 and MHJ10, fast-switching valves

Key features

MHJ9



In-line valve

- Integrated quick push-in connector
- Electrical connection IP40
- Modular design

Valve manifold with individual outputs

- Air supply at both ends
- Mounting bracket assembly in 4 directions
- Sturdy manifold rail

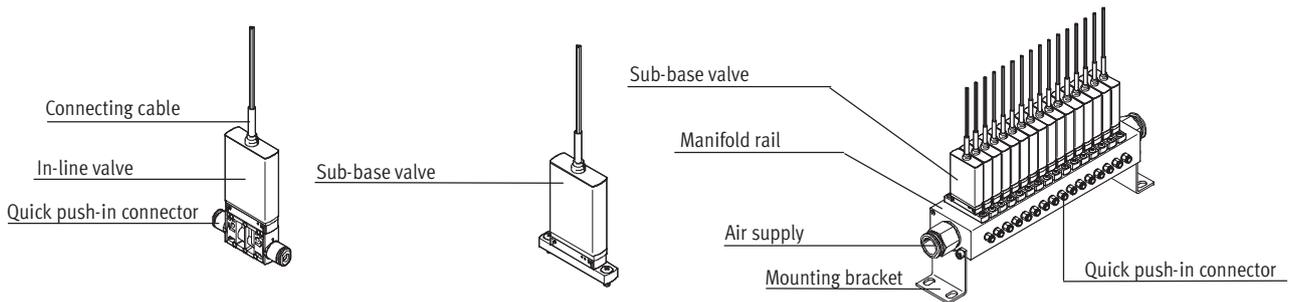
Valve manifold with air gun nozzles

- Air supply at both ends
- Mounting bracket assembly in 4 directions
- Accessible air ducts

Connecting cable with control electronics for 2 valves

- Individual mounting or on H-rail

MHJ10



In-line valve

- Integrated quick push-in connector
- Electrical connection with moulded-in connecting cable
- Modular design

Valve manifold with individual outputs

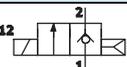
- Air supply at both ends
- Mounting bracket assembly in 2 directions
- Stable manifold rail

Integrated control electronics

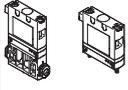
- Compact design
- Quick installation

Solenoid valves MHJ9 and MHJ10, fast-switching valves

Product range overview

Function	Circuit symbol	Design	Response time ¹⁾		Operating voltage [V DC]		→ Page/ Internet
			Off	On	MHJ9	MHJ10	
2/2-way valve		MF = Standard nominal flow rate 100 l/min					
		In-line valve	-	-	12 ... 53	24	8, 17
		Sub-base valve	-	-			11, 20

1) Response times are dependent on pressure and voltage

Mounting options			
Design	In-line valve	Sub-base valve	
MHJ9 with plug			
	Direct mounting	■	-
	Manifold assembly	-	■
MHJ10 with moulded-in cable			
	Direct mounting	■	-
	Manifold assembly	-	■

Solenoid valves MHJ, fast-switching valves

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Type codes

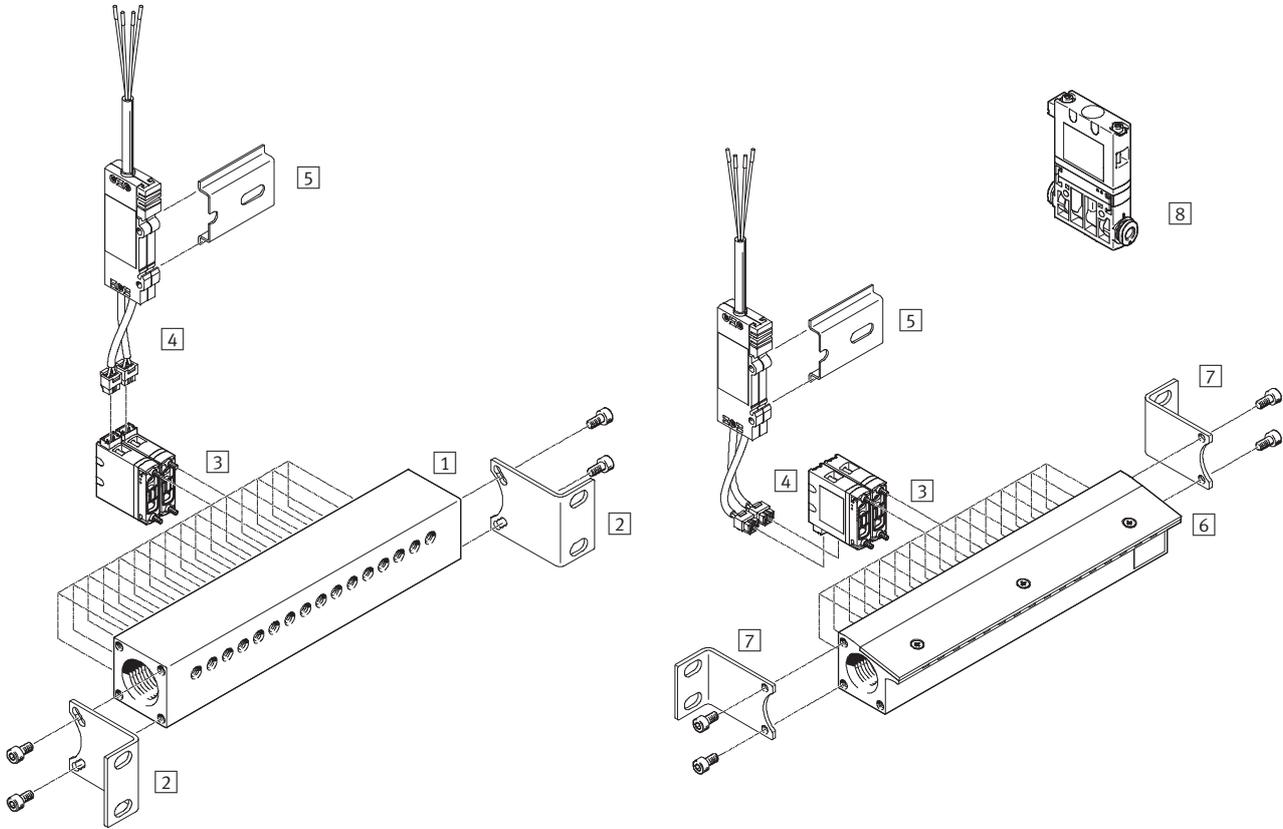
		MHJ	10	-	S	-	2,5	-	QS-4	-	MF
Valve range											
MHJ	Fast-switching valves										
Width											
9	9 mm										
10	10 mm										
Integrated controller											
S	For MHJ10										
Cable length for MHJ10											
0,35	0.35 m										
2,5	2.5 m										
Push-in connector for in-line valves											
-	Sub-base valve										
QS-4	Push-in connector for 4 mm O.D. tubing										
Flow class											
MF	Medium flow										

Solenoid valves MHJ9, fast-switching valves

System overview

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Valve manifold design



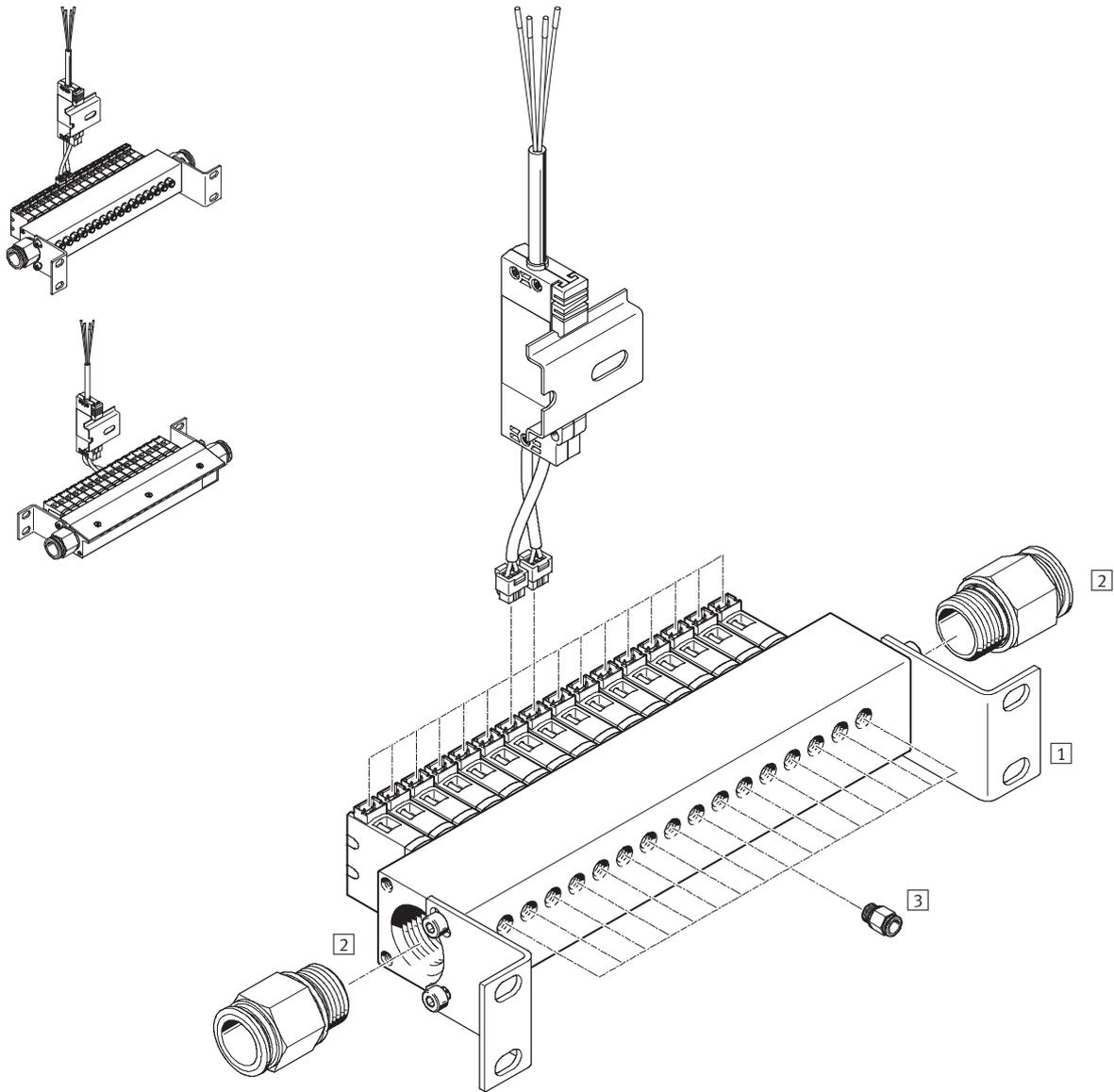
Valve manifold and accessories

	Type	Brief description	→ Page/Internet
1	MHJ9-P16	Manifold rail With 16 valve positions	14
2	MHJ-HW1	Mounting kit Consisting of 2 mounting brackets and 4 socket head screws	14
3	MHJ9 ...	Sub-base valve 2/2-way solenoid valve	11
4	MHJ-KMH- ...-MF	Connecting cable With control electronics for 2 solenoid valves	24
5	NRH-35-2000	H-rail 2 m long	24
6	MHJ9-PN16	Manifold rail With 16 valve positions	14
7	MHJ-HW2	Mounting kit Consisting of 2 mounting brackets and 4 socket head screws	14
8	MHJ9 ...	In-line valve 2/2-way solenoid valve	8

Solenoid valves MHJ9, fast-switching valves

Peripherals overview

Valve manifold with accessories

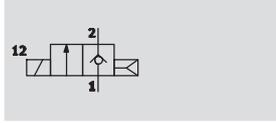


Valve manifold and accessories			
	Type	Brief description	→ Page/Internet
1	Manifold rail	MHJ10-P16 With mounting kit MHJ-HW1	14
2	Quick push-in connector	QS... For air supply 1	quick star
3	Quick push-in connector	QS... For valve output 2	quick star

Solenoid valves MHJ9, fast-switching valves

Technical data – In-line valve, 2/2-way valve

Function



2/2-way valve

 - Voltage
12 ... 53 V DC

 - Pressure
+0.5 ... +6 bar

 - Temperature range
-5 ... +60 °C



General technical data		
		MF
Valve function		2/2-way, closed, single solenoid
Design		Poppet valve without mechanical spring return
Sealing principle		Hard
Service life in billions of switching cycles ¹⁾		5
Actuation type		Electrical
Reset method		Pneumatic spring
Type of control		Direct
Direction of flow		Non-reversible
Mounting position		Any
Width	[mm]	9 ²⁾
Grid dimension	[mm]	9.5
Standard nominal flow rate	[l/min]	100
C value	[l/sbar]	0.4
b value		0.38
Type of mounting		In-line installation or via through-holes
Max. tightening torque for valve mounting	[Nm]	0.28
Pneumatic connection 1 and 2		QS4
Product weight	[g]	30

1) The long service life of the valves can only be achieved with the "hard" sealing principle, which, however, results in minor leakage when the valve is closed

2) Min. permitted grid dimension 9.5 mm

Operating and environmental conditions		
		MF
Operating medium		Filtered compressed air, unlubricated, grade of filtration 40 µm
Operating pressure	[bar]	+0.5 ... +6
Ambient temperature	[°C]	-5 ... +60
Temperature of medium	[°C]	-5 ... +60
Storage temperature	[°C]	-20 ... +50
Corrosion resistance class CRC		2 ¹⁾
Certification		Note on materials: RoHS-compliant

1) Corrosion resistance class 2 according to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Solenoid valves MHJ9, fast-switching valves

FESTO

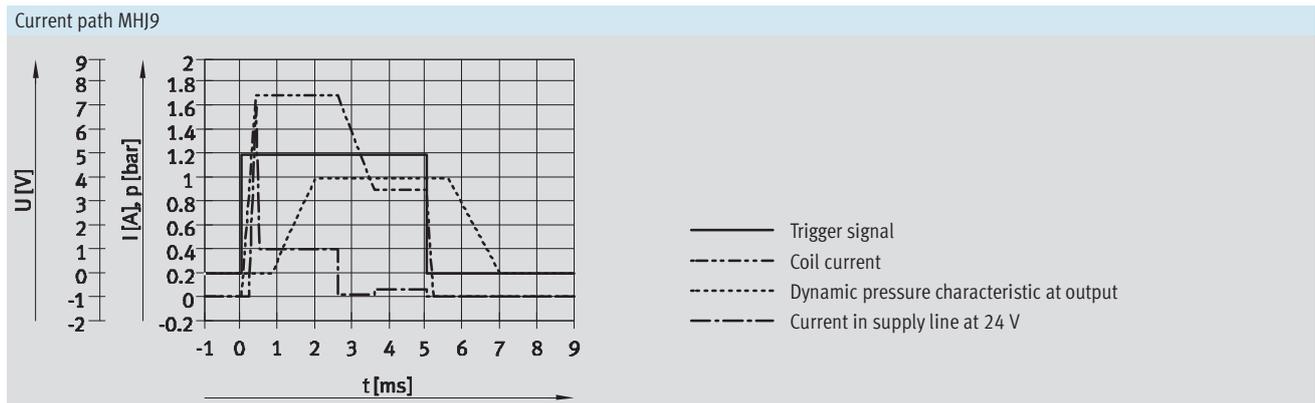
Technical data – In-line valve, 2/2-way valves

Electrical data in combination with connecting cable MHJ9-KMH-...-MF			
			MF
Operating voltage range	[V DC]	12 ... 53 ¹⁾	
Control signal range	[V DC]	3... 30	
Output per channel	Low-current phase	[W]	2
	High-current phase	[W]	7
Duty cycle	[%]	100 ²⁾	
Electrical connection	to valve	2-pin, 2 plugs KMH	
	to control system	4-wire, 2 control lines and common power supply	
Protection class to EN 60529		IP40	
Information on materials for connecting cable	Housing	POM	
	Cable sheath	PVC	
	Note on materials	RoHS-compliant	
CE mark		To EU EMC Directive in combination with connecting cable ³⁾	

- 1) For the switching operation, the current limiter, if present, must be set to at least 1.7 A
- 2) Air must flow through the valve continuously
- 3) Max. permissible cable length 2.5 m

Response times ¹⁾ and switching frequencies		
		MF
Maximum switching frequency	[Hz]	1,000 ²⁾
Response times at 12 V DC and 4 bar		
Response time on	[ms]	1.1
Response time off	[ms]	0.4
Response times at 24 V DC and 0.5 bar		
Response time on	[ms]	0.7
Response time off	[ms]	0.5
Response times at 24 V DC and 4 bar		
Response time on	[ms]	0.8
Response time off	[ms]	0.4
Response times at 24 V DC and 6 bar		
Response time on	[ms]	0.9
Response time off	[ms]	0.4
Response times at 48 V DC and 4 bar		
Response time on	[ms]	0.6
Response time off	[ms]	0.4

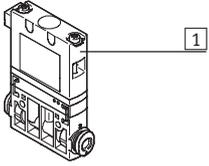
- 1) Tolerance±15%
- 2) The ambient temperature must be limited with frequencies in excess of 140 Hz



Solenoid valves MHJ9, fast-switching valves

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

Materials

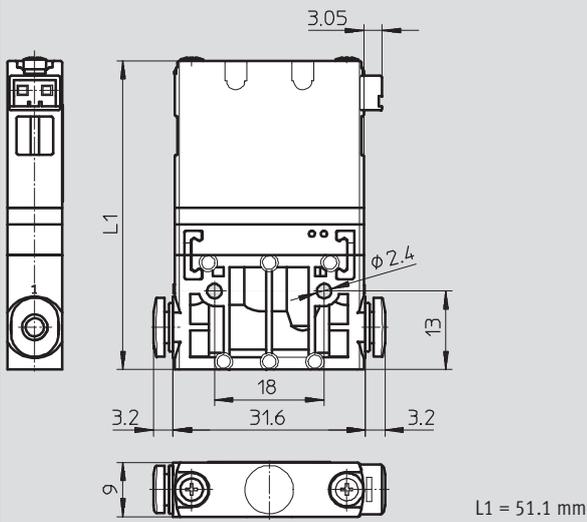


1	Housing	PA-reinforced
-	Seals	HNBR
-	Screws	Steel

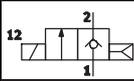
Dimensions

Download CAD data → www.festo.com

In-line valve



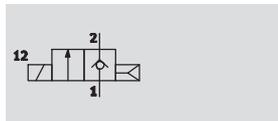
Ordering data – Valves

	Flow rate	Part No.	Type
	MF	553118	MHJ9-QS-4-MF

Solenoid valves MHJ9, fast-switching valves

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

Function



2/2-way valve

 Voltage
12 ... 53 V DC

 Pressure
+0.5 ... +6 bar

 Temperature range
-5 ... +50 °C



General technical data	
	MF
Valve function	2/2-way, closed, single solenoid
Design	Poppet valve without mechanical spring return
Sealing principle	Hard
Service life in billions of switching cycles ¹⁾	5
Actuation type	Electrical
Reset method	Pneumatic spring
Type of control	Direct
Direction of flow	Non-reversible
Mounting position	Any
Width [mm]	9 ²⁾
Grid dimension [mm]	9.5
Standard nominal flow rate [l/min]	100
C value [l/sbar]	0.4
b value	0.38
Type of mounting	On individual/manifold sub-base
Pneumatic connection	Sub-base M7
Product weight [g]	25

1) The long service life of the valves can only be achieved with the "hard" sealing principle, which, however, results in minor leakage when the valve is closed

2) Min. permitted grid dimension 9.5 mm

Operating and environmental conditions	
	MF
Operating medium	Filtered compressed air, unlubricated, grade of filtration 40 µm
Operating pressure [bar]	+0.5 ... +6
Ambient temperature [°C]	-5 ... +50
Temperature of medium [°C]	-5 ... +50
Storage temperature [°C]	-20 ... +50
Corrosion resistance class CRC	2 ¹⁾
Certification	Note on materials: RoHS-compliant

1) Corrosion resistance class 2 according to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Solenoid valves MHJ9, fast-switching valves

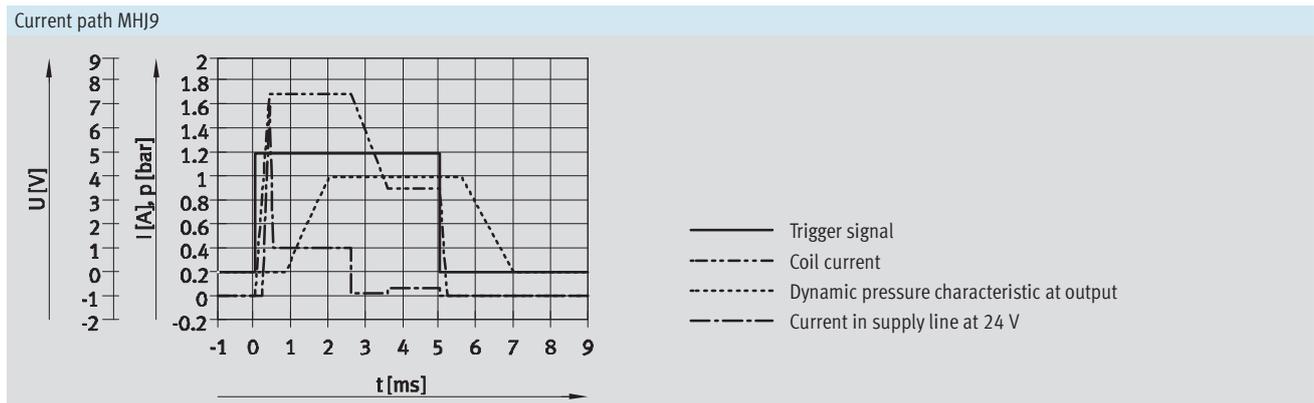
Technical data – Sub-base valve, 2/2-way valves

Electrical data in combination with connecting cable MHJ9-KMH-...-MF			
			MF
Operating voltage range	[V DC]	12 ... 53 ¹⁾	
Control signal range	[V DC]	3 ... 30	
Output per channel	Low-current phase	[W]	2
	High-current phase	[W]	7
Duty cycle	[%]	100 ¹⁾	
Electrical connection	to valve	2-pin, 2 plugs KMH	
	to control system	4-wire, 2 control lines and common power supply	
Protection class to EN 60529			IP40
Information on materials for connecting cable	Housing	POM	
	Cable sheath	PVC	
	Note on materials	RoHS-compliant	
CE mark			To EU EMC Directive in combination with connecting cable ³⁾

- 1) For the switching operation, the current limiter, if available, must be set to at least 1.7 A
- 2) Air must flow through the valve continuously
- 3) Max. permissible cable length 2.5 m

Response times ¹⁾ and switching frequencies		
		MF
Maximum switching frequency	[Hz]	1,000 ²⁾
Response times at 12 V DC and 4 bar		
Response time on	[ms]	1.1
Response time off	[ms]	0.4
Response times at 24 V DC and 0.5 bar		
Response time on	[ms]	0.7
Response time off	[ms]	0.5
Response times at 24 V DC and 4 bar		
Response time on	[ms]	0.8
Response time off	[ms]	0.4
Response times at 24 V DC and 6 bar		
Response time on	[ms]	0.9
Response time off	[ms]	0.4
Response times at 48 V DC and 4 bar		
Response time on	[ms]	0.6
Response time off	[ms]	0.4

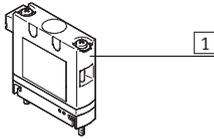
- 1) Tolerance±15%
- 2) The ambient temperature must be limited with frequencies in excess of 130 Hz



Solenoid valves MHJ9, fast-switching valves

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

Materials

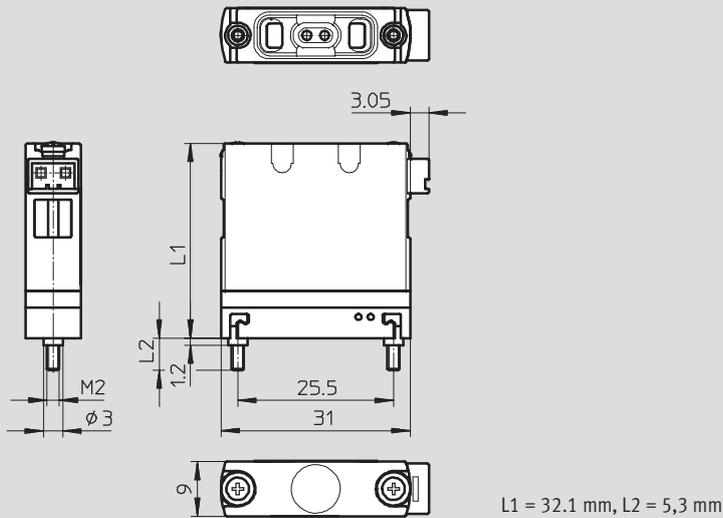


1	Housing	PA-reinforced
-	Seals	HNBR
-	Screws	Steel

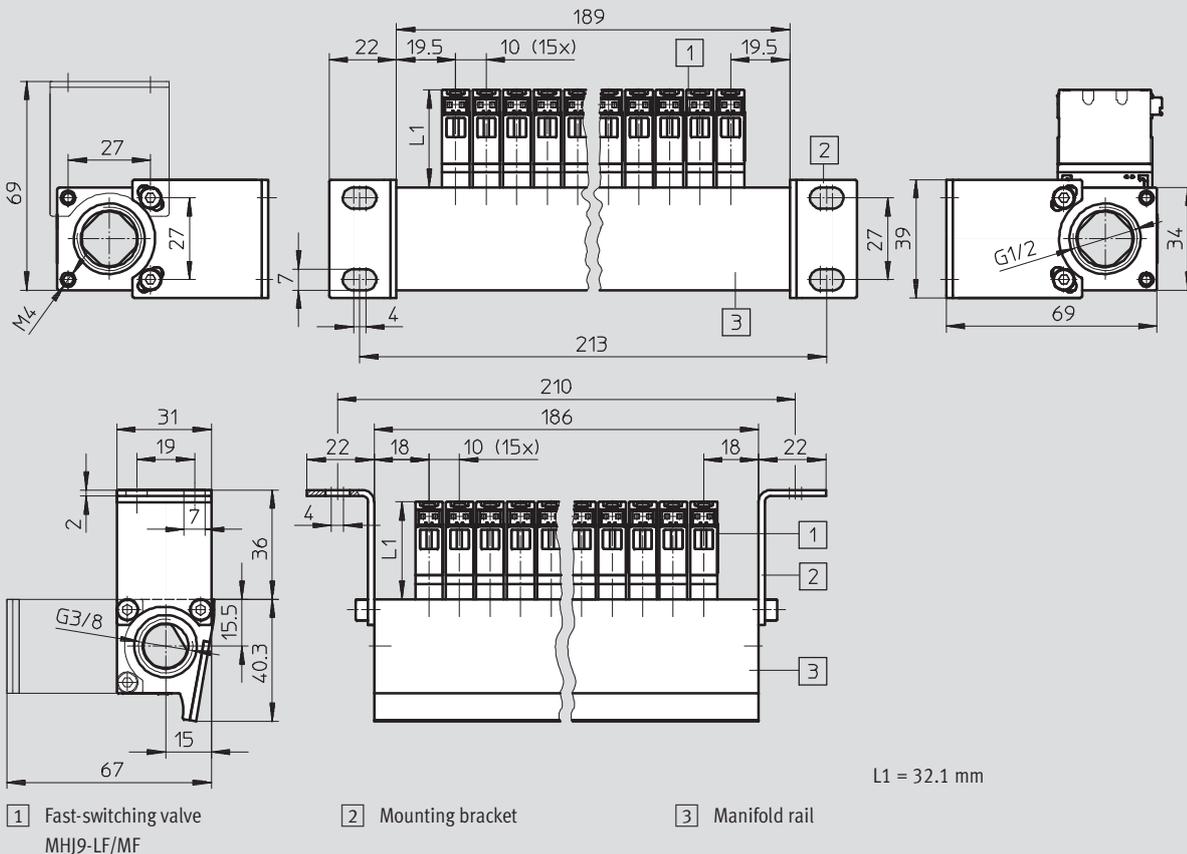
Dimensions

Download CAD data → www.festo.com

Sub-base valve



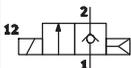
Manifold assembly



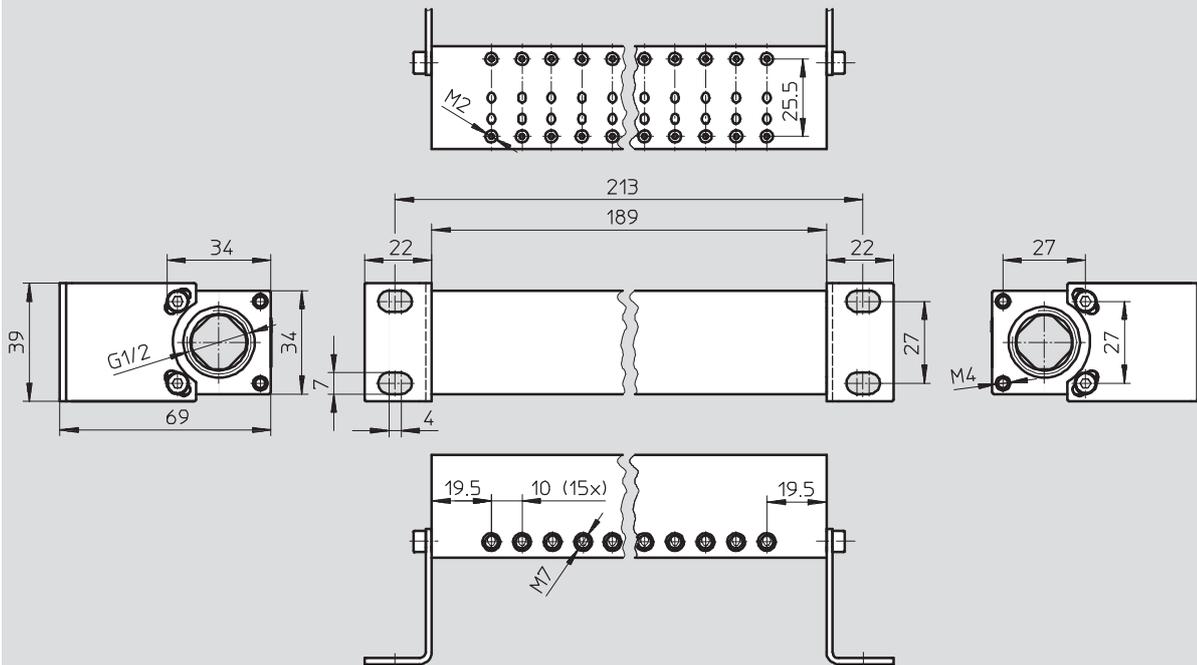
Solenoid valves MHJ9, fast-switching valves

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

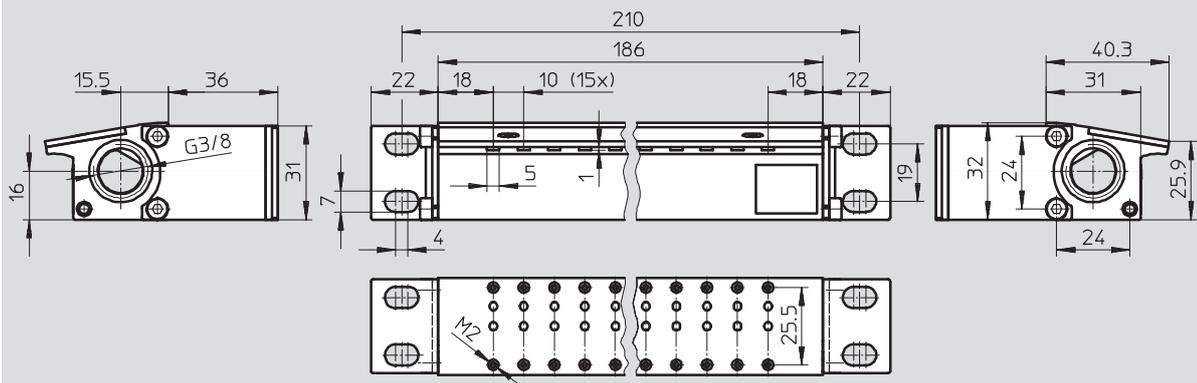
Ordering data – Valves

	Flow rate	Part No.	Type
	MF	553115	MHJ9-MF

Manifold rail MHJ9-P16 with mounting kit MHJ9-HW1



Manifold rail MHJ9-PN16 with mounting kit MHJ9-HW2



Ordering data – Product-specific accessories

Designation		Weight [g]	Part No.	Type
Manifold rail	For 16 MHJ9... valves, without mounting bracket	428	553125	MHJ9-P16
Mounting kit ¹⁾	Consisting of 2 mounting brackets and 4 socket head screws M4x8 DIN912	75	565455	MHJ-HW1
Manifold rail	For 16 MHJ9... valves, without mounting bracket	390	553123	MHJ9-PN16
Mounting kit ¹⁾	Consisting of 2 mounting brackets and 4 socket head screws M4x8 DIN912 ²⁾	65	565456	MHJ-HW2

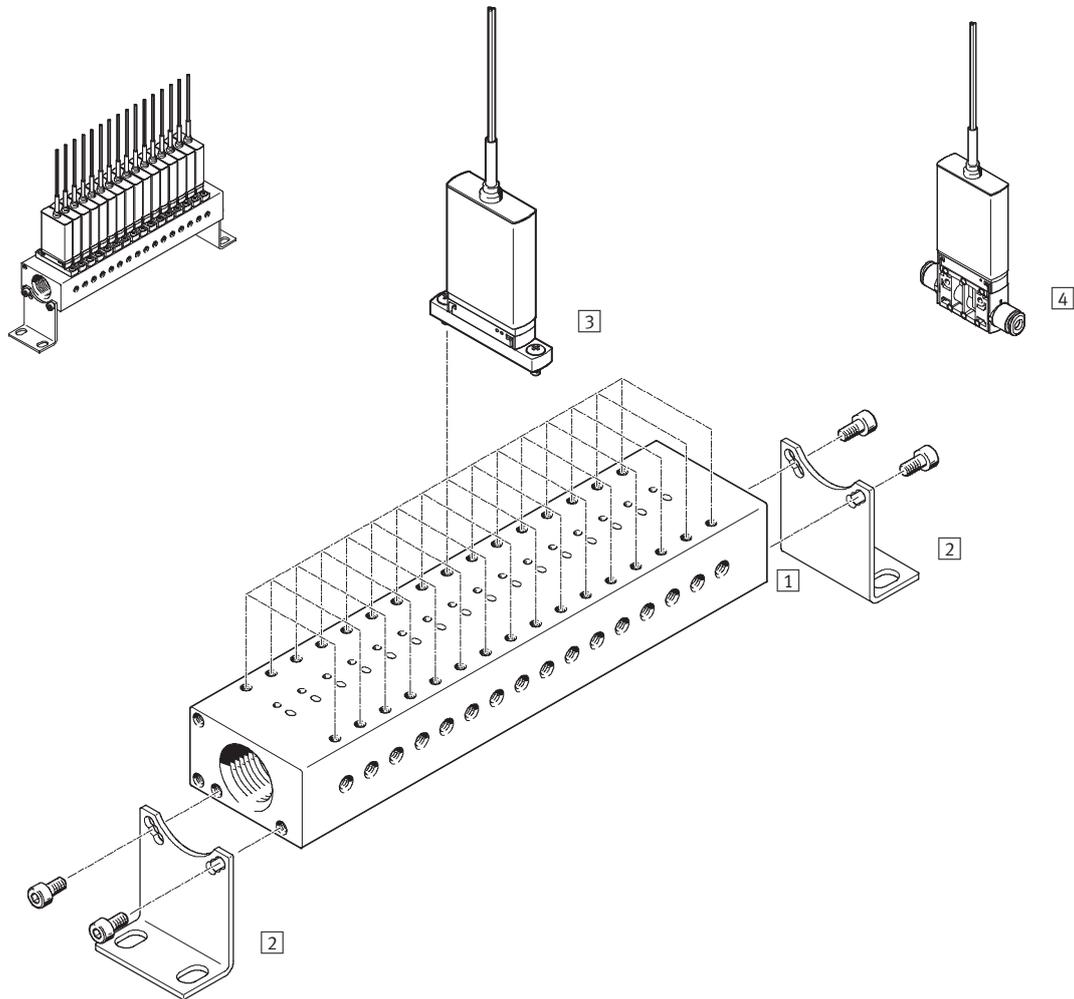
1) Max. tightening torque for socket head screws 2.9 Nm

2) Note on materials: steel, corrosion resistance class 1 to Festo standard 940 070

Solenoid valves MHJ10, fast-switching valves

System overview

Individual valve, valve manifold design

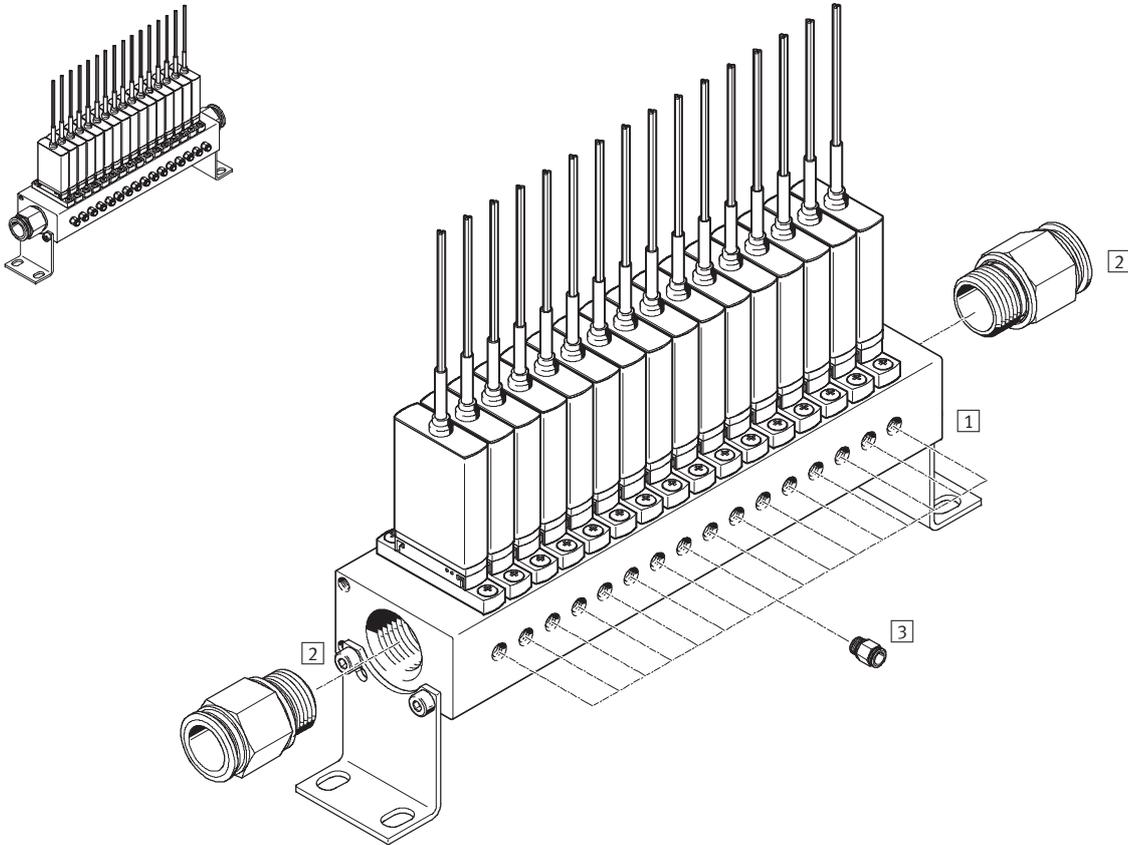


Individual valve, valve manifold and accessories				
	Type	Brief description	→ Page/Internet	
1	Manifold rail	MHJ10-P16	With 16 valve positions	23
2	Mounting kit	MHJ-HW1	Consisting of 2 mounting brackets and 4 socket head screws	23
3	Sub-base valve	MHJ10 ...	2/2-way solenoid valve	20
4	In-line valve	MHJ10 ...	2/2-way solenoid valve	17

Solenoid valves MHJ10, fast-switching valves

Peripherals overview

Valve manifold with accessories



Valve manifold and accessories

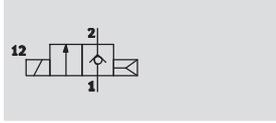
	Type	Brief description	→ Page/Internet
1	MHJ10-P16	With mounting kit MHJ-HW1	23
2	QS...	For air supply 1	quick star
3	QS...	For valve output 2	quick star

Solenoid valves MHJ10, fast-switching valves

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Technical data – In-line valve, 2/2-way valves

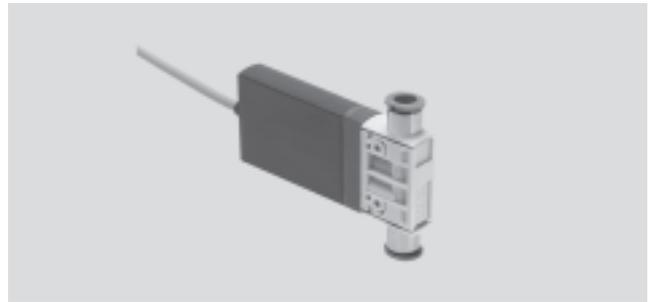
Function



2/2-way valve


 Voltage
24 V DC

 Pressure
+0.5 ... +6 bar

 Temperature range
-5 ... +60 °C


General technical data	
	MF
Valve function	2/2-way, closed, single solenoid
Design	Poppet valve without spring return
Sealing principle	Hard
Service life in billions of switching cycles ¹⁾	5
Actuation type	Electrical
Type of control	Direct
Direction of flow	Non-reversible
Mounting position	Any
Width [mm]	10 ²⁾
Grid dimension [mm]	10.5
Standard nominal flow rate [l/min]	100
C value [l/sbar]	0.4
b value	0.38
Type of mounting	In-line installation or via through-holes
Max. tightening torque for valve mounting [Nm]	0.7
Pneumatic connection 1 and 2	QS4
Product weight [g]	40

1) The long service life of the valves can only be achieved with the "hard" sealing principle, which, however, results in minor leakage when the valve is closed

2) Min. permitted grid dimension 10.5 mm

Operating and environmental conditions	
	MF
Operating medium	Filtered compressed air, unlubricated, grade of filtration 40 µm
Operating pressure [bar]	+0.5 ... +6
Ambient temperature [°C]	-5 ... +60
Temperature of medium [°C]	-5 ... +60
Corrosion resistance class CRC	2 ¹⁾
Certification	RoHS-compliant

1) Corrosion resistance class 2 according to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Solenoid valves MHJ10, fast-switching valves

Technical data – In-line valve, 2/2-way valves

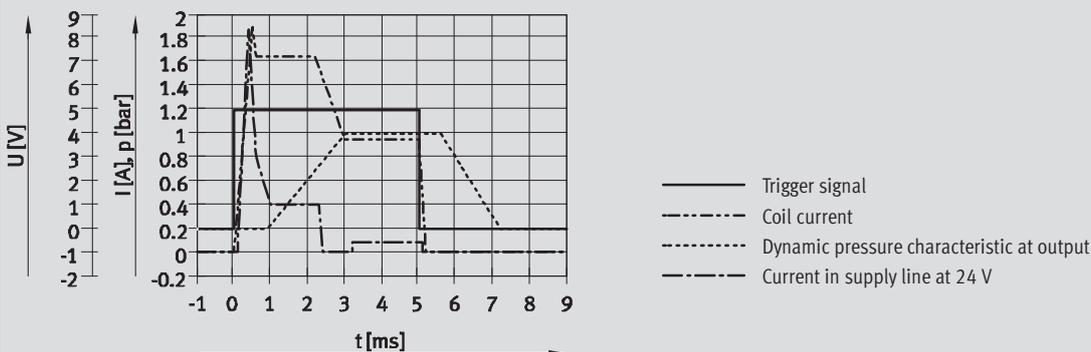
Electrical data			
			MF
Operating voltage	[V DC]	24 ±10% = 21.6 ... 26.4 ¹⁾	
Control signal range	[V DC]	3 ... 30	
Performance	Low-current phase	[W]	2
Performance	High-current phase	[W]	7
Protection class to EN 60529			IP65
Duty cycle	[%]	100 ²⁾	
Electrical connection			Cable, 3-wire
CE mark			To EU EMC Directive ³⁾

- 1) For the switching operation, the current limiter, if available, must be set to at least 1.7 A
- 2) Air must flow through the valve continuously
- 3) Max. permissible cable length 2.5 m

Response times ¹⁾ and switching frequencies		
		MF
Maximum switching frequency	[Hz]	1,000 ²⁾
Response times at 24 V DC and 0.5 bar		
Response time on	[ms]	0.8
Response time off	[ms]	0.5
Response times at 24 V DC and 4 bar		
Response time on	[ms]	0.8
Response time off	[ms]	0.4
Response times at 24 V DC and 6 bar		
Response time on	[ms]	0.9
Response time off	[ms]	0.4

- 1) Tolerance ±15%
- 2) The ambient temperature must be limited with frequencies in excess of 200 Hz

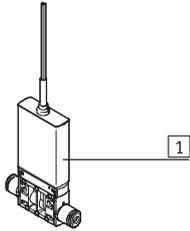
Current path MHJ10



Solenoid valves MHJ10, fast-switching valves

Technical data – In-line valve, 2/2-way valves

Materials

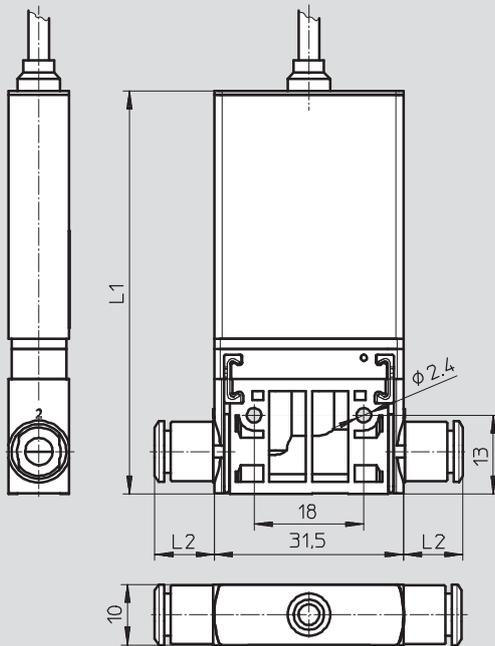


1	Housing	PA-reinforced
-	Seals	HNBR
-	Screws	Steel
-	Cable sheath	PUR

Dimensions

Download CAD data → www.festo.com

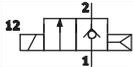
Sub-base valve with cable end



Wiring allocation:
 BU = GND
 BN = Operating voltage positive
 BK = Trigger signal

L1 = 67.8 mm
 L2 = 9.5 mm

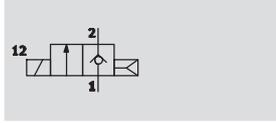
Ordering data – Valves with QS-4 push-in connector

	Flow rate	Cable length [m]	Part No.	Type
	MF	0.35	557604	MHJ10-S-0,35-QS-4-MF
	MF	2.5	565515	MHJ10-S-2,5-QS-4-MF

Solenoid valves MHJ10, fast-switching valves

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

Function



2/2-way valve

 - Voltage
24 V DC

 - Pressure
+0.5 ... +6 bar

 - Temperature range
-5 ... +50 °C



General technical data		
		MF
Valve function		2/2-way, closed, single solenoid
Design		Poppet valve without spring return
Sealing principle		Hard
Service life in billions of switching cycles ¹⁾		5
Actuation type		Electrical
Type of control		Direct
Direction of flow		Non-reversible
Mounting position		Any
Width	[mm]	10
Grid dimension	[mm]	11 ²⁾
Standard nominal flow rate	[l/min]	100
C value	[l/sbar]	0.4
b value		0.38
Type of mounting		On individual/manifold sub-base
Pneumatic connection		Connecting thread M7
Product weight	[g]	40

1) The long service life of the valves can only be achieved with the "hard" sealing principle, which, however, results in minor leakage when the valve is closed

2) Min. permitted grid dimension 10.5 mm

Operating and environmental conditions		
		MF
Operating medium		Filtered compressed air, unlubricated, grade of filtration 40 µm
Operating pressure	[bar]	+0.5 ... +6
Ambient temperature	[°C]	-5 ... +50
Temperature of medium	[°C]	-5 ... +50
Corrosion resistance class CRC		2 ¹⁾
Certification		RoHS-compliant

1) Corrosion resistance class 2 according to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents

Solenoid valves MHJ10, fast-switching valves

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

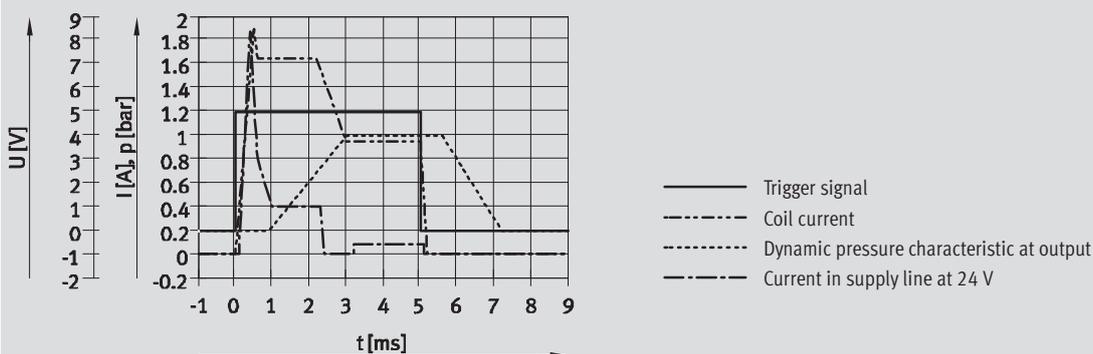
Electrical data			
			MF
Operating voltage	[V DC]		24 ±10% = 21.6 ... 26.4 ¹⁾
Control signal range	[V DC]		3 ... 30
Output	Low-current phase	[W]	2
Output	High-current phase	[W]	7
Protection class to EN 60529			IP65
Duty cycle	[%]		100 ²⁾
Electrical connection			Cable, 3-wire
CE mark			To EU EMC Directive ³⁾

- 1) For the switching operation, the current limiter, if available, must be set to at least 1.7 A
- 2) Air must flow through the valve continuously
- 3) Max. permissible cable length 2.5 m

Response times ¹⁾ and switching frequencies		
		MF
Maximum switching frequency	[Hz]	1,000 ²⁾
Response times at 24 V DC and 0.5 bar		
Response time on	[ms]	0.8
Response time off	[ms]	0.5
Response times at 24 V DC and 4 bar		
Response time on	[ms]	0.8
Response time off	[ms]	0.4
Response times at 24 V DC and 6 bar		
Response time on	[ms]	0.9
Response time off	[ms]	0.4

- 1) Tolerance ±15%
- 2) The ambient temperature must be limited with frequencies in excess of 140 Hz

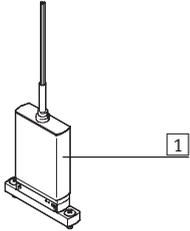
Current path MHJ10



Solenoid valves MHJ10, fast-switching valves

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

Materials

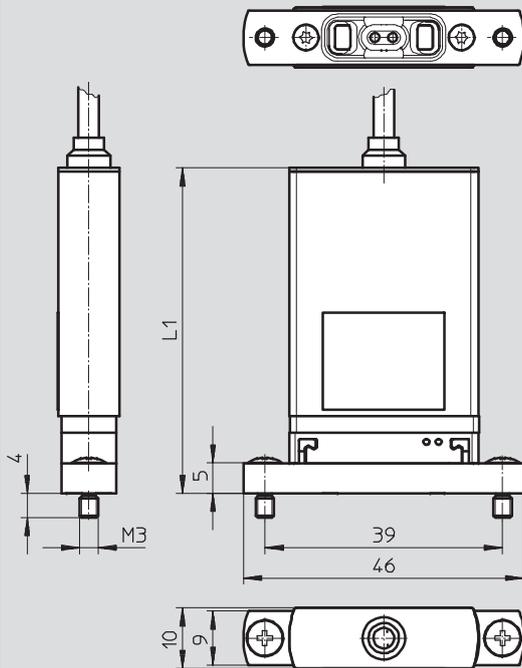


1	Housing	PA-reinforced
-	Seals	HNBR
-	Screws	Steel
-	Cable sheath	PUR

Dimensions

Download CAD data → www.festo.com

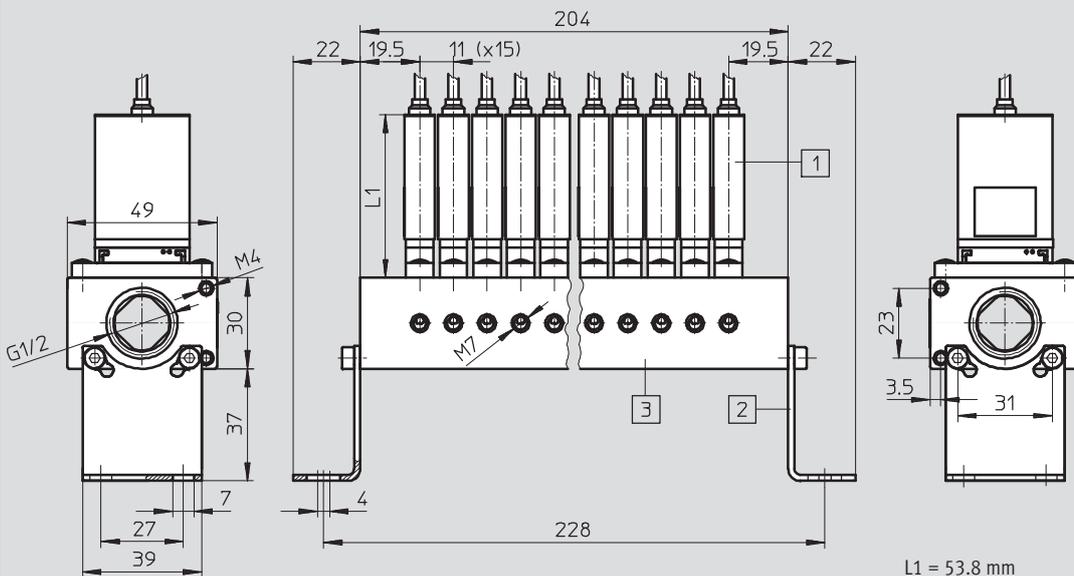
Sub-base valve with cable end



Wiring allocation:
 BU = GND
 BN = Operating voltage positive
 BK = Trigger signal

L1 = 53.8 mm

Manifold assembly



1 Fast-switching valve MHJ10-MF

2 Mounting bracket

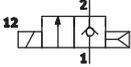
3 Manifold rail

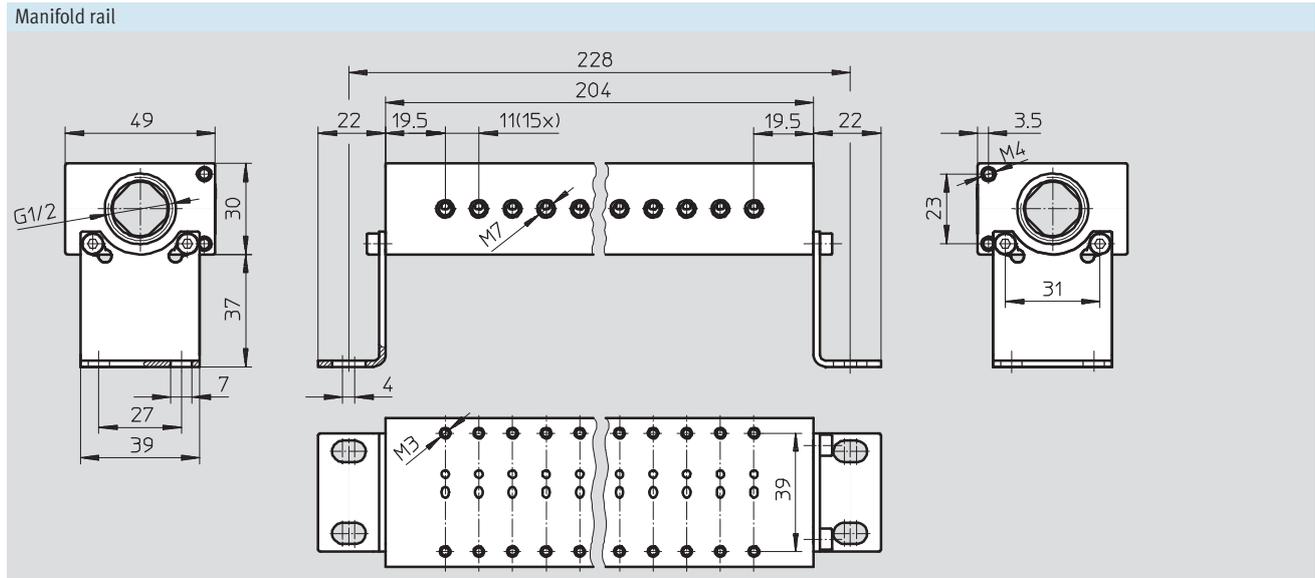
L1 = 53.8 mm

Solenoid valves MHJ10, fast-switching valves

FESTO

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

Ordering data – Valves				
	Flow rate	Cable length [m]	Part No.	Type
	MF	0.35	557601	MHJ10-S-0,35-MF
	MF	2.5	565513	MHJ10-S-2,5-MF



Ordering data – Product-specific accessories				
Designation		Weight [g]	Part No.	Type
Manifold rail	For 16 MHJ10... valves, without mounting bracket	635	557608	MHJ10-P16
Mounting kit ¹⁾	Consisting of 2 mounting brackets and 4 socket head screws M4x8 DIN912 ²⁾	75	565455	MHJ-HW1

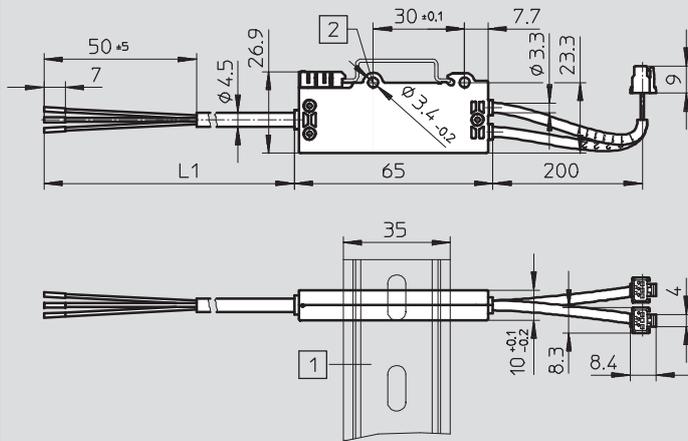
1) Max. tightening torque for socket head screws 2.9 Nm
 2) Note on materials: steel, corrosion resistance class 1 to Festo standard 940 070

Solenoid valves MHJ9, fast-switching valves

Accessories

FESTO

Connecting cable



Wiring allocation:

BU = GND

BN = Operating voltage positive

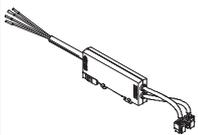
BK = Trigger 1

WH = Trigger 2

1 H-rail to EN 50022

2 2 holes for wall mounting

Ordering data – Connecting cables

		Cable length [m]	Weight [g]	Part No.	Type
	With control electronics for 2 solenoid valves MF with plug sockets KMH, mounting on H-rail, for static applications Note on materials: Housing: POM Cable sheath: PVC	0.5	40	553121	MHJ9-KMH-0,5-MF
		2.5	98	565519	MHJ9-KMH-2,5-MF

Ordering data – H-rail

		Length [m]	Weight [g]	Part No.	Type
		2	-	35430	NRH-35-2000