Solenoid valves MHJ, fast-switching valves





Solenoid valves MHJ9 and MHJ10, fast-switching valves

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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



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Solenoid valves MHJ9 and MHJ10, fast-switching valves

Key features



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

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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	_	•			

· • New MHJ

Solenoid valves MHJ, fast-switching valves

		MHJ	10	-	S] –	2,5	-	QS-4	-	MF
Valve ra	nge										
MHJ	Fast-switching valves										
Width											
9	9 mm										
10	10 mm										
Integrat	ed controller										
S	For MHJ10					1					
Cable le	ngth for MHJ10										
0,35	0.35 m										
2,5	2.5 m										
Push-in	connector for in-line valves										
-	Sub-base valve									1	
QS-4	Push-in connector for 4 mm O.D. tubin	וg									
Flaur ala											
Flow cla	SS										
MF	Medium flow										

Solenoid valves MHJ9, fast-switching valves



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



Solenoid valves MHJ9, fast-switching valves Peripherals overview



Valv	Valve manifold and accessories							
		Туре	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



- **L** - Voltage 12 ... 53 V DC







General technical data

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

→ Internet: www.festo.com/catalogue/...

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

·O· New MHJ9

Solenoid valves MHJ9, fast-switching valves Technical data – In-line valve, 2/2-way valves

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Electrical data in combination with connecting cable MHJ9-KMHMF					
			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	Housing		РОМ		
for connecting cable	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

Current path MHJ9



 Trigger signal ----- Coil current ----- Dynamic pressure characteristic at output ----- Current in supply line at 24 V

Solenoid valves MHJ9, fast-switching valves Technical data – Sub-base valve, 2/2-way valves



Ordering data – Valves			
	Flow	Part No.	Туре
	rate		
2	MF	553118	MHJ9-QS-4-MF
1			

Solenoid valves MHJ9, fast-switching valves Technical data – Sub-base valve, 2/2-way valve





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 μ m			
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

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Electrical data in combination with connecting cable MHJ9-KMHMF				
			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	Housing		РОМ	
for connecting cable	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

Current path MHJ9



Solenoid valves MHJ9, fast-switching valves Technical data – Sub-base valve, 2/2-way valves



MHJ9-LF/MF

Solenoid valves MHJ9, fast-switching valves Technical data – Sub-base valve, 2/2-way valve

Ordering data – Valves Flow Part No. Туре rate MF 553115 MHJ9-MF

Manifold rail MHJ9-P16 with mounting kit MHJ9-HW1



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

Max. tightening torque for socket head screws 2.9 Nm
 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 and accessories				
	Туре	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



Valv	Valve manifold and accessories					
		Туре	Brief description	→ Page/Internet		
1	Manifold rail	MHJ10-P16	With mounting kit MHJ-HW1	23		
2	Quick push-in connector	QS	For air supply 1	quick star		
3	Quick push-in connector	QS	For valve output 2	quick star		

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Solenoid valves MHJ10, fast-switching valves Technical data – In-line valve, 2/2-way valves



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 21) 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

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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 6052	9		IP65
Duty cycle		[%]	100 ²⁾
Electrical connection			Cable, 3-wire
CE mark			To EU EMC Directive ³⁾

For the switching operation, the current limiter, if available, must be set to at least 1.7 A
 Air must flow through the valve continuously
 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



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Solenoid valves MHJ10, fast-switching valves Technical data – In-line valve, 2/2-way valves

Materials PA-reinforced Housing 1 HNBR Seals Screws Steel Cable sheath PUR 1 Download CAD data → www.festo.com Dimensions Sub-base valve with cable end \bigcirc 9 1 ଂକ୍ୱ \$2.4 Wiring allocation: BU = GNDBN = Operating voltage positive m BK = Trigger signal 18 L1 = 67.8 mm 31,5 L2 L2 L2 = 9.5 mm

Ordering data - Valves with QS-4 push-in connector Cable length [m] Part No. Flow rate Туре MF 0.35 557604 MHJ10-S-0,35-QS-4-MF 12 7 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

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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 21) Corrosion resistance class CRC 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

·O· New MHJ10

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Solenoid valves MHJ10, fast-switching valves Technical data – Sub-base valve, 2/2-way valves

Electrical data MF 24 ±10% = 21.6 ... 26.4¹⁾ Operating voltage [V DC] 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 100²⁾ Duty cycle [%] Electrical connection Cable, 3-wire To EU EMC Directive³⁾ CE mark

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

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



 Trigger signal
 Coil current
 Dynamic pressure characteristic at output
 Current in supply line at 24 V

Solenoid valves MHJ10, fast-switching valves Technical data – Sub-base valve, 2/2-way valves



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Solenoid valves MHJ10, fast-switching valves Technical data – Sub-base valve, 2/2-way valve

Ordering data – Valves				
	Flow	Cable length	Part No.	Туре
	rate	[m]		
2 12 4 1	MF	0.35	557601	MHJ10-S-0,35-MF
	MF	2.5	565513	MHJ10-S-2,5-MF

Manifold rail



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

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

Solenoid valves MHJ9, fast-switching valves

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Wiring allocation: BU = GNDBN = 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.	Туре		
	With control electronics for 2 sole- noid valves MF with plug sockets KMH, mounting on H-rail, for	2.5	40	553121	МНЈ9-КМН-0,5-МГ		
	Note on materials: Housing: POM Cable sheath: PVC		98	565519	MHJ9-KMH-2,5-MF		

Ordering data – H-rail									
		Length [m]	Weight [g]	Part No.	Туре				
000000		2	-	35430	NRH-35-2000				

Product Range and Company Overview

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