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

FESTO



Key features

Fast-switching valves from Festo: it's not just the switching that's fast

Pros that switch as fast as 2 milliseconds

Speed, dynamic response and precision are more sought after than ever before in modern automation. The solution lies in pneumatic components. The result: shorter cycle times in return for comparatively low investment costs for the components. Maximum process reliability, sturdiness and service life are guaranteed.

High speed in production

The fast-switching valves are a technological treat for all things high-speed. With switching times ≤ 2 ms and a repetition accuracy ≤ 0.2 ms, they represent the pinnacle of what is technologically achievable worldwide – even in 24-hour continuous operation with over 500 million cycles.

Simple to retrofit in existing systems, or setting the pace for newly designed systems. Naturally compact, including maximum component density. Indispensable for sorting parts using an air ejector, in flap control systems, for gluing, dispensing, packaging and, of course, also suitable for pick & place vacuum applications, for example (continuous holding not possible).

Faster switching

Extremely short switching times enable short cycle times. Extremely precise switching makes it possible to control the timing of process sequences accurately.

High output and very good machine utilisation are included. Excellent repetition accuracy of switching times ensures consistent processes, improves process and part quality and reduces rejects and rework.

Faster installation

With a variety of connection options such as thread or integrated push-in tubing connectors and a range of mounting options for individual valves or valve manifold assembly, the installation can be perfectly adapted to onsite circumstances while the footprint is kept to a minimum.

Fast-switching valves can be used directly in the application without additional protective measures. As a result, very short pneumatic lines guarantee short signal paths and fast response times.

Key features

Fast-switching valves from Festo: it's not just the switching that's fast



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

Advantages for designers



- Very high cycle rates
- Extremely short cycle times
- Maximum repetition accuracy
- Suitable for vacuum thanks to directly actuated poppet valve (time limited)
- Flexible design principle
- Direct activation via standard PLC possible
- Direct mounting in the application with IP65 protection

Advantages for installation



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

Advantages for purchasers



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

Key features

Fast and precise - sturdy and economical

High performance, process stability and extremely easy handling

Fast-switching valves MH increase switching frequencies and improve process and part quality with their excellent repetition accuracy.

Integrated: the fast-switching electronics

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

Optimised: systems and processes

- On-site assembly thanks to IP65 not sensitive to dust and humidity
- Direct activation with 24 V DC/1 A use of PLC standard outputs
- With an extremely long service life of 500 million cycles, and continuous three-shift operation with no need for maintenance, optimum efficiency comes as standard!

Key features

- Repetition accuracy ≤ 0.2 ms for accurate dispensing/bonding, for example
- Switching time ≤ 3 ms for short cycle times and very quick response characteristics
- 10 mm width for compact assembly
- Choice of connections as an individual valve, semi in-line or sub-base variant, enabling need-optimised installation
- Degree of protection IP65 enables direct mounting in the application without additional safeguarding
- Easy installation via direct activation from the standard PLC with 24 V DC/1 A

Fast valves and an optimised control chain – two guarantees for success

To generate speed in pneumatics, the valve and cylinder must be perfectly matched. The correct combination can result in a 30% increase in efficiency. Cylinders with small diameters and short strokes need fast valves!

Length means losses – focus on tubing

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

Small and nearby – the clever alternative

Short tubing with a small diameter is ideal for mounting valves close to the cylinder. The small and light fast-switching valves are suitable for direct mounting in the application, thanks also to their degree of protection IP65. By using them together with smaller and lighter fittings, the weight is reduced, too. This results in particular in an improvement in the efficiency of moving systems.

Small and fast – a good combination

The switching time plays a crucial role with small cylinder volumes, especially with short-stroke cylinders. In the adjacent example, the combination with a fast-switching valve is 30% faster. In concrete terms, this means that the cylinder controlled using the fast-switching valve is already in the end position before the cylinder with the universal valve even begins to move.

This equates to a significant increase in both the efficiency and the economy of the system, especially when taking into account that the two valves have comparable space requirements and weight, and the fast-switching valve uses less air and lasts 10 times as long!

Product range overview

Function	Circuit symbol	Design	Switching time [ms]				Operating voltage	→ Page/
			Off ²⁾	On ²⁾	Off	On	[V DC]	Internet
3/2-way valve ¹⁾	Standard nominal flo	ow rate 100 l/min						
	12 7 7 7 3	Individual valve	2	1.7	3.5	7	24	9
		Semi in-line valve	2	1.7	3.5	7	24	22
		Sub-base valve	2	1.7	3.5	7	24	39
	110 2 1 WW 111 33							

- Can be used as a 2/2-way valve by sealing port 3 or 33
 With integrated fast-switching electronics

Function	Circuit symbol	Design	Switching time [ms]	On	Operating voltage [V DC]	→ Page/ Internet		
5/2-way valve Standard nominal flow rate 100 l/min								
	4 2	Individual valve	1.7	1.9	24	16		
	14 7 1 1 1 W	Semi in-line valve	1.7	1.9	24	31		
	311113	Sub-base valve	1.7	1.9	24	48		

Mounting options Design		Individual valve		Semi in-line valv	/A	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		,	,				
<u></u>	Direct mounting	•	•	_	_	_	_
	Individual sub-base	-	-	•	•	•	
	Manifold assembly	-	-	•	•	•	•
Moulded-in cable	Direct mounting		•				
	Individual sub-base						_
10 E		_	_	_	_		

Solenoid valves MH3, fast-switching valves

Product range overview

Function	Circuit symbol	rcuit symbol Design		g time [ms]			Operating voltage	→ Page/
			Off ²⁾	On ²⁾	Off	On	[V DC]	Internet
3/2-way valve ¹⁾	Standard nominal flo	ow rate 200 l/min						
	12 7 T T W	Individual valve	2.8	2.3	4.5	8.3	24	56
		Semi in-line valve	2.8	2.3	4.5	8.3	24	63
		Sub-base valve	2.8	2.3	4.5	8.3	24	72
	110 2 1 1 1 1 33							

Can be used as a 2/2-way valve by sealing port 3 or 33
 With integrated fast-switching electronics

Mounting options Design		Individual valve	Semi in-line valve	Sub-base valve
	<u> </u>	ilidividual valve	Selli III-IIIe valve	Sub-base valve
Plug vanes				
(Dec	Direct mounting	•	_	_
	Individual sub-base	-	•	•
	Manifold assembly	_	•	-
Moulded-in cable				
	Direct mounting	•	-	-
	Individual sub-base	-	•	•
	Manifold assembly	_	•	
V 569				

Product range overview

Function	Circuit symbol	Design	Switching time [ms]				Operating voltage	→ Page/
			Off ²⁾	On ²⁾	Off	On	[V DC]	Internet
3/2-way valve ¹⁾	Standard nominal flow rate 400 l/min							
	12 7 7 7	Individual valve	3.5	3.5	5	10.5	24	81
		Semi in-line valve	3.5	3.5	5	10.5	24	86
		Sub-base valve	3.5	3.5	5	10.5	24	95
	110 2 1 WW 111 33							

- Can be used as a 2/2-way valve by sealing port 3 or 33
 With integrated fast-switching electronics

Mounting options				
Design		Individual valve	Semi in-line valve	Sub-base valve
Plug vanes				
(Jan	Direct mounting	•	-	-
	Individual sub-base	-	•	•
	Manifold assembly	-	•	•
Moulded-in cable				
//	Direct mounting	•	-	-
	Individual sub-base	-	•	•
	Manifold assembly	-	*	•

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

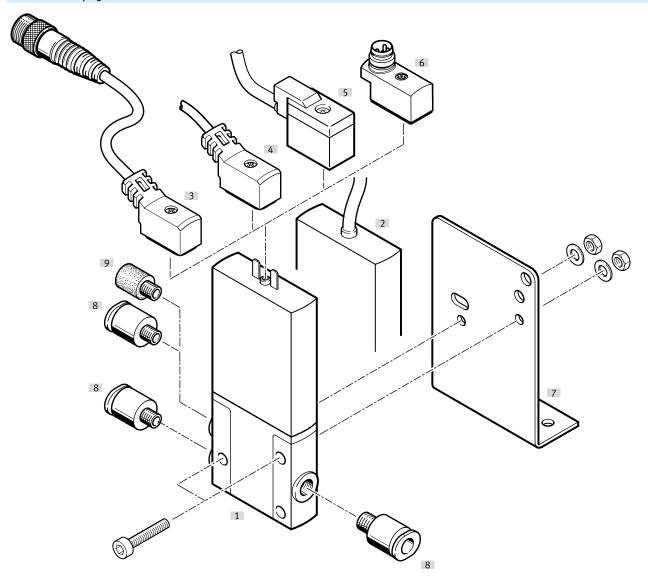
Type codes

001	Series
MHA2	Solenoid valve MHA2
MHE2	Solenoid valve MHE2
MHP2	Solenoid valve MHP2
MHA3	Solenoid valve MHA3
MHE3	Solenoid valve MHE3
MHP3	Solenoid valve MHP3
MHA4	Solenoid valve MHA4
MHE4	Solenoid valve MHE4
MHP4	Solenoid valve MHP4
002	Drive system
М	Solenoid, switching
003	Nominal operating voltage
1	24 V DC
004	Manual override
Н	Non-detenting
005	Valve function
3/2	3/2-way valve
5/2	5/2-way valve

006	Normal position	
	5/2-way valve	
G	Closed	
0	Open	
007	Pneumatic connection	
2	Sub-base, nominal width 2 mm	
3	Sub-base, nominal width 3 mm	
4	Sub-base, nominal width 4 mm	
1/8	Thread G1/8	
1/4	Thread G1/4	
M5	Thread M5	
M7	Thread M7	
QS-4	Push-in connector, 4 mm	
QS-6	Push-in connector 6 mm	
QS-8	Push-in connector 8 mm	
008	Electrical connection	
	Plug tabs	
K	Moulded cable, 2.5 m long	

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

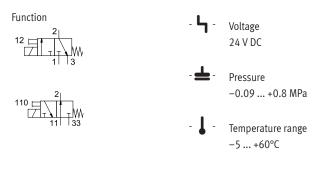
Connection with plug vanes – Connection with moulded-in cable



Designation Typ		Туре	Description	→ Page/Internet
[1]	Individual valve	MHE2	With plug vanes	14
[2]	Individual valve	MHE2K	With moulded-in cable, IP55	14
[3]	Connecting cable	NEBV	PUR cable, signal status indication with LED, plug M8x1 3-pin, IP65	15
[4]	Connecting cable	NEBV	PUR cable, signal status indication with LED, IP65	15
[5]	Plug socket with cable	KMYZ-4	PVC cable, without signal status indication, IP50	15
[6]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	15
[7]	Mounting bracket	MHE2-BG-L	For wall mounting	15
[8]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	15
[9]	Silencer	UC	For fitting in exhaust ports	15

Solenoid valves MHE2, fast-switching valves

Datasheet – Individual valve, 3/2-way valve





General technical data		
Valve function		3/2 way, single solenoid ¹⁾
Design		Pressure relief poppet valve
Overlap		Negative overlap
Sealing principle		Soft
Reset method		Mechanical spring
Actuation type		Electrical
Type of control		Direct
Direction of flow		Reversible with restrictions ²⁾
Exhaust function		Can be throttled
Manual override		Non-detenting
Mounting position		Any
Width	[mm]	10
Grid dimension	[mm]	14
Note on grid dimension		Minimum distance between the valves is 4 mm
Nominal width	[mm]	2
Standard nominal flow rate	[l/min]	100
Type of mounting		Via through-hole
Pneumatic connection		M7 connecting thread
		Push-in connector for tubing O.D. 4 mm
Product weight	[g]	60

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

²⁾ Slight leakage can occur in the pressure range $-0.8\,\mathrm{bar}$ to $+0.5\,\mathrm{bar}$.

Datasheet – Individual valve, 3/2-way valve

Operating and environmental conditions							
			With fast-switching electronics	Without fast-switching electronics			
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [7:4:4]			
Note on the operating/pilot medium			Lubricated operation possible (in which case	e lubricated operation will always be required)			
Operating pressure		[MPa]	-0.09 +0.8				
		[bar]	-0.9 +8				
	Reversible	[MPa]	-0.09 +0.1				
		[bar]	-0.9 +1				
		[psi]	-13.05 +14.5				
Ambient temperature		[°C]	-5 +60				
Temperature of medium		[°C]	-5 +60				
Restricted ambient temperature and temperature of	medium		As a function of switching frequency (see	-			
			graph)				
Corrosion resistance class CRC ¹⁾			2	2			
CE marking (see declaration of conformity) ³⁾			To EU EMC Directive ²⁾	_			
			To EU RoHS Directive	-			
UKCA marking (see declaration of conformity) ³⁾			To UK instructions for EMC	-			
			To UK RoHS instructions	-			
Certification			c UL us - Recognized (OL)	c UL us - Recognized (OL)			
			RCM	-			
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27					
Vibration resistance			Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6				

¹⁾ More information: www.festo.com/x/topic/kbk

³⁾ More information: www.festo.com/catalogue/... \rightarrow Support/Downloads.

Electrical data				
			With fast-switching electronics	Without fast-switching electronics
Electrical connection			2-pin plug or cable	
Operating voltage		[V DC]	24	
Permissible voltage fluctuations			±10%	
Power consumption		[W]	5 for approx. 3 ms (high-current phase,	2.88
			inrush current 1 A)	
		[W]	1.25 (low-current phase)	-
Reverse polarity protection			Bipolar	-
Duty cycle		[%]	100	100
Additional functions			Spark arresting	-
			Holding current reduction	-
			Protective circuit	-
Degree of protection to EN 60529	Electrical connection: 2-pin plug		IP65	IP65
	Electrical connection: cable		IP55	IP55

Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	1.7	7
	Off	[ms]	2	3.5
Tolerance for switching time	On	[%]	+1030	-
	Off	[%]	+1030	-
Switching time variation from 1 Hz upwards		[ms]	0.2	-
Maximum switching frequency		[Hz]	330	130

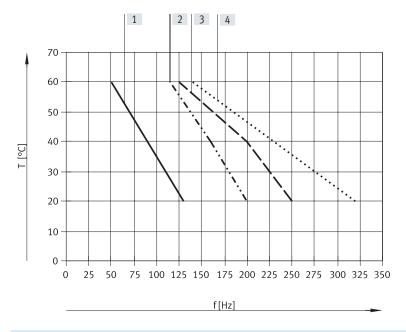
Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

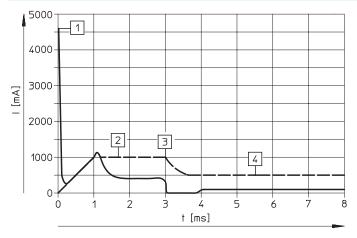
Datasheet - Individual valve, 3/2-way valve

Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly, 6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised
- [4] Individual valve, through-flow, 0.6 MPa

Current curve for valves with fast-switching electronics (MHE2-MS1H)



----- Internal current in the coil
------ External current in the supply line

- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

Datasheet – Individual valve, 3/2-way valve

Download CAD data → www.festo.com Valve with plug vanes or moulded-in cable MHE2-...-3/0...-M7 MHE2-...-3/0...-QS-4 MHE2-...-3/0...-QS-4 II Manual override, non-detenting 12 Plug vanes 13 Cable, 2.5 m



Туре	B1	B2	В3	D1	D2 Ø	D3 Ø	H1	H2	Н3	H4	L1	L2	L3	L4	L5	L6	L7	L8	L9
MHE23/0M7	10	-	-	M7	-	3.4	34	-	31	21	73	32	16.5	16	7	12	10.5	16.5	0.5
MHE23/0QS-4	10	-	-	-	4	3.4	34	40.4	31	21	73	32	16.5	16	7	12	10.5	16.5	0.5
MHE2-BG-L	20	10	2	4.5	-	-	55	92.3	-	-	40	25	7.5	-	-	-	-	-	_

Solenoid valves MHE2, fast-switching valves

Datasheet – Individual valve, 3/2-way valve

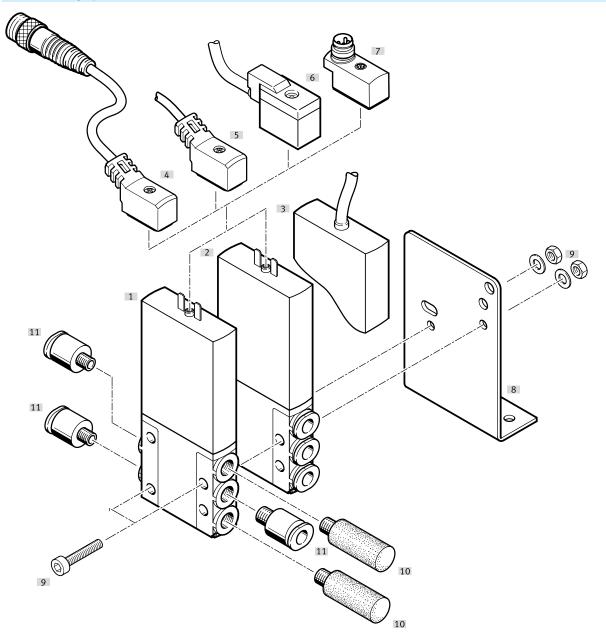
Ordering data						
					Part no.	Туре
Valves						
<u></u>	Electrical connection:	With fast-switching	Pneumatic connection: thread	Normally open	196151	MHE2-MS1H-3/20-M7
i i	2-pin plug	electronics, switching	M7	Normally closed	196131	MHE2-MS1H-3/2G-M7
		time 2 ms	Pneumatic connection: push-in	Normally open	196155	MHE2-MS1H-3/20-QS-4
0			connector for tubing O.D. 4 mm	Normally closed	196135	MHE2-MS1H-3/2G-QS-4
		Without fast-switching	Pneumatic connection: thread	Normally open	196150	MHE2-M1H-3/20-M7
		electronics, switching	M7	Normally closed	196130	MHE2-M1H-3/2G-M7
		time 7 ms	Pneumatic connection: push-in	Normally open	196154	MHE2-M1H-3/20-QS-4
			connector for tubing O.D. 4 mm	Normally closed	196134	MHE2-M1H-3/2G-QS-4
	Electrical connection:	With fast-switching	Pneumatic connection: thread	Normally open	196153	MHE2-MS1H-3/20-M7-K
	cable	electronics, switching	M7	Normally closed	196133	MHE2-MS1H-3/2G-M7-K
290		time 2 ms	Pneumatic connection: push-in	Normally open	196157	MHE2-MS1H-3/20-QS-4-K
2021			connector for tubing O.D. 4 mm	Normally closed	196137	MHE2-MS1H-3/2G-QS-4-K
,		Without fast-switching	Pneumatic connection: thread	Normally open	196152	MHE2-M1H-3/20-M7-K
		electronics, switching	M7	Normally closed	196132	MHE2-M1H-3/2G-M7-K
		time 7 ms	Pneumatic connection: push-in	Normally open	196156	MHE2-M1H-3/20-QS-4-K
			connector for tubing O.D. 4 mm	Normally closed	196136	MHE2-M1H-3/2G-QS-4-K

Datasheet – Individual valve, 3/2-way valve

Ordering data						
					Part no.	Туре
Connecting cable (for	valves with 2-pin plug)					Datasheets → Internet: nebv
	2-pin socket,	PUR cable,	Signal status	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
	open cable end 2-wire	degree of protection	indication with LED	Length 5 m	8047672	NEBV-Z4WA2L-P-E-5-N-LE2-S1
		IP65		Length 10 m	8047670	NEBV-Z4WA2L-P-E-10-N-LE2-S1
<i></i>		PVC cable,	Without signal status	Length 0.5 m	193690	KMYZ-4-24-0.5-B
		degree of protection IP40	indication	Length 2.5 m	193691	KMYZ-4-24-2.5-B
À	2-pin socket, plug	PUR cable,	Signal status	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
	M8x1 3-pin	degree of protection IP65	indication with LED	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1
Adapter (for valves wi	th 2-pin plug)					
	2-pin socket	Signal status	Plug M8, 3-pin		571686	VAVE-C8-1R8
	- F	indication with LED	Plug M8, 4-pin		573194	VAVE-C8-1R1
Wall mounting						1
000000000000000000000000000000000000000	Mounting bracket				196165	MHE2-BG-L
Silencer						Datasheets → Internet: uc
	Push-in sleeve with O.D.	. 4 mm		1 piece	165006	UC-QS-4H
	With M7 threaded conne	ection		1 piece	161418	UC-M7
600				50 pieces	534218	UC-M7-50
	I			1		
Push-in fitting						Datasheets → Internet: gs
	Male thread M7 with int	ernal hex for tuhing O D	4 mm	10 pieces	153319	QSM-M7-4-I
	mate timeda m/ with fill	sat nex for tubing 0.D.	,	100 pieces	133006	QSM-M7-4-I QSM-M7-4-I-100
			6 mm	100 pieces	153321	QSM-M7-4-1-100 QSM-M7-6-I
	Male thread M7 with ext	tornal hove nuch in	4 mm	10 pieces		OSML-M7-4
	L-fitting rotatable throug		4 (1111)	<u>'</u>	186352	1 1
	L-IILLING TOLALADIE ENTOUG	יוו אַסט-, וטו נעטוווצ ט.ט.	(100 pieces	130773	QSML-M7-4-100
			6 mm	10 pieces	186353	QSML-M7-6
				100 pieces	130774	QSML-M7-6-100

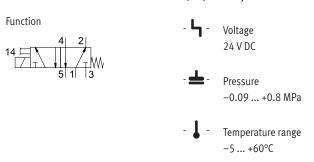
Peripherals overview – Individual valve, 5/2-way valve

Connection with plug vanes – Connection with moulded-in cable



Design	ation	Туре	Description	→ Page/Internet
[1]	Individual valve	MHE2M7	With plug vanes and connection M7	21
[2]	Individual valve	MHE2QS-4	With plug vanes and push-in connector for standard O.D. tubing	21
[3]	Individual valve	MHE2K	With moulded-in cable, IP55	21
[4]	Connecting cable	NEBV	PUR cable, signal status indication with LED, plug M8x1 3-pin, IP65	21
[5]	Connecting cable	NEBV	PUR cable, signal status indication with LED, IP65	21
[6]	Plug socket with cable	KMYZ-4	PVC cable, without signal status indication, IP50	21
[7]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	21
[8]	Mounting bracket	MHE2-BG-L	For wall mounting	21
[9]	Retaining screws	_	Hole diameter see dimensional drawing	_
[10]	Silencer	UC	For fitting in exhaust ports	21
[11]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	21

Datasheet – Individual valve, 5/2-way valve





General technical data		
Valve function		5/2-way, single solenoid
Design		Pressure relief poppet valve
Overlap		Negative overlap
Sealing principle		Soft
Reset method		Mechanical spring
Actuation type		Electrical
Type of control		Direct
Direction of flow		Not reversible
Exhaust function		Can be throttled
Manual override		Non-detenting
Mounting position		Any
Width	[mm]	10
Grid dimension	[mm]	14
Note on grid dimension		Minimum distance between the valves is 4 mm
Nominal width	[mm]	2
Standard nominal flow rate	[l/min]	90
Type of mounting		Via through-hole
Pneumatic connection		M7 connecting thread
		Push-in connector for tubing O.D. 4 mm
Max. tightening torque of fitting	[Nm]	2
Product weight	[g]	70

Datasheet – Individual valve, 5/2-way valve

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[MPa]	-0.09 +0.8
	[bar]	-0.9 +8
Ambient temperature	[°C]	-5 +60
Temperature of medium	[°C]	-5 +60
Restricted ambient temperature and temperature of medium		As a function of switching frequency (see graph)
Corrosion resistance class CRC ¹⁾		2
CE marking (see declaration of conformity) ³⁾		To EU EMC Directive ²⁾
		To EU RoHS Directive
UKCA marking (see declaration of conformity) ³⁾		To UK instructions for EMC
		To UK RoHS instructions
Certification		c UL us - Recognized (OL)
		RCM
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

¹⁾ More information: www.festo.com/x/topic/kbk

B) More information: www.festo.com/catalogue/... → Support/Downloads.

Electrical data				
Electrical connection			2-pin plug	Cable
Operating voltage		[V DC]	24	
Permissible voltage fluctuat	ions	[%]	±10	
Power consumption	Low-current phase	[W]	1.625	
	High-current phase	[W]	6.5	
Reverse polarity protection			Bipolar	
Duty cycle		[%]	100	
Additional functions			Spark arresting	
			Holding current reduction	
			Protective circuit	
Degree of protection to EN 6	0529		IP65	IP55

Switching times and frequencies			
Switching time	On	[ms]	1.9
	Off	[ms]	1.7
Tolerance for switching time	On	[%]	+1030
	Off	[%]	+1030
Switching time variation from 1 Hz		[ms]	0.2
upwards			
Maximum switching frequency		[Hz]	300

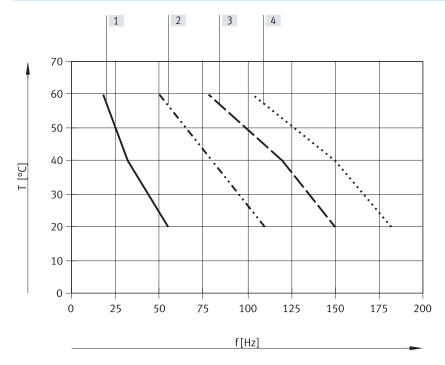
Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

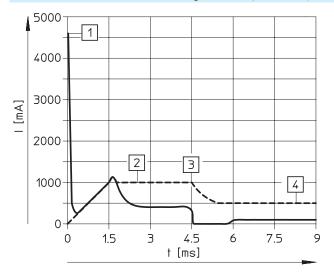
Datasheet - Individual valve, 5/2-way valve

Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly, 6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised
- [4] Individual valve, through-flow, 0.6 MPa

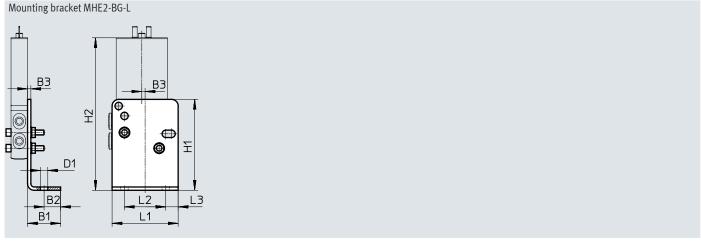
Current curve for valves with fast-switching electronics (MHE2-MS1H)



----- Internal current in the coil
----- External current in the supply line

- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

Datasheet – Individual valve, 5/2-way valve



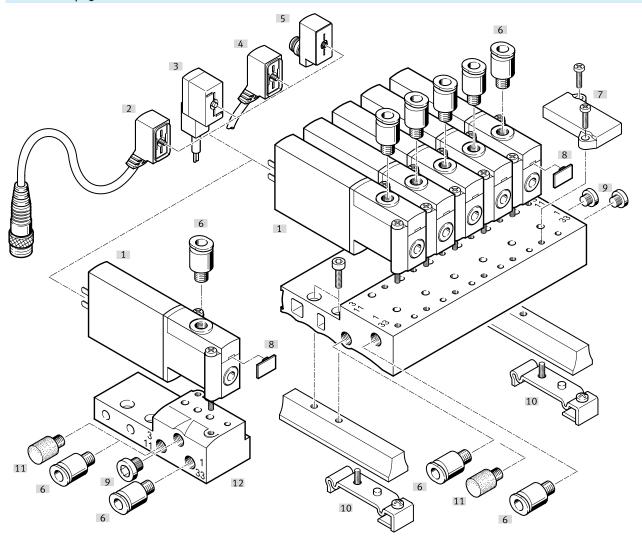
Туре	B1	B2	В3	D1	D2 Ø	D3 Ø	H1	H2	H3	H4	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
MHE25/2-M7	10	-	-	M7	-	3.4	34	-	31	21	84	43	16.3	25	9	11.5	10.5	16.5	0.5	11
MHE25/2-QS-4	10	-	-	-	4	3.4	34	40.4	31	21	84	43	16.3	25	9	11.5	10.5	16.5	0.5	11
MHE2-BG-L	20	10	2	4.5	-	-	55	92.3	-	-	40	25	7.5	-	-	-	-	-	-	-

Datasheet – Individual valve, 5/2-way valve

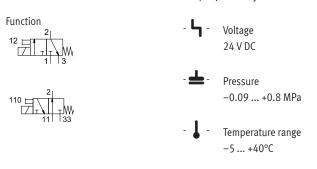
Ordering data					Part no.	Туре
Valves						
<u> </u>	Electrical connection:	With fast-switching	Pneumatic connection:	thread M7	525113	MHE2-MS1H-5/2-M7
	2-pin plug	electronics, switching time 2 ms	Pneumatic connection: push-in connector for tubing O.D. 4 mm		525117	MHE2-MS1H-5/2-QS-4
<u>*</u>	Electrical connection:	With fast-switching	Pneumatic connection:	thread M7	525115	MHE2-MS1H-5/2-M7-K
\$ 20 0 000	cable	electronics, switching time 2 ms	Pneumatic connection: thread M/ Pneumatic connection: push-in connector for tubing O.D. 4 mm		525119	MHE2-MS1H-5/2-QS-4-K
Connecting cable (for	valves with 2-pin plug)	Taua II I	In	Tr. or a a		Datasheets → Internet: neb
	2-pin socket,	PUR cable, degree of	Signal status	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
M	open cable end 2-wire	protection IP65	indication with LED	Length 5 m	8047672	NEBV-Z4WA2L-P-E-5-N-LE2-S1
		D10 11 1 6		Length 10 m	8047670	NEBV-Z4WA2L-P-E-10-N-LE2-S1
		PVC cable, degree of	Without signal status	Length 0.5 m	193690	KMYZ-4-24-0.5-B
		protection IP40	indication	Length 2.5 m	193691	KMYZ-4-24-2.5-B
A	2-pin socket, plug	PUR cable, degree of	Signal status	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
	M8x1 3-pin	protection IP65	indication with LED	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1
Adapter (for valves wi			T			J
	2-pin socket	Signal status indica-	Plug M8, 3-pin		571686	VAVE-C8-1R8
		tion with LED	Plug M8, 4-pin		573194	VAVE-C8-1R1
Wall mounting						
000	Mounting bracket				196165	MHE2-BG-L
Silencer						Datasheets → Internet: u
	Push-in sleeve with O.D.	4 mm		1 piece	165006	UC-QS-4H
	With M7 threaded conne			1 piece	161418	UC-M7
				50 pieces	534218	UC-M7-50
	l					
Push-in fitting						Datasheets → Internet: q
	Male thread M7 with int	ernal hex for tuhing O D	4 mm	10 pieces	153319	QSM-M7-4-I
	mate timead Wi/ With fill	emar nex for tubing O.D.	7 11111	100 pieces	133006	QSM-M7-4-I QSM-M7-4-I-100
			6 mm			QSM-M7-4-1-100 QSM-M7-6-I
	Malakhar 1887 11 1	barral barra at 1.1.1	6 mm	10 pieces	153321	
	Male thread M7 with ext		4 mm	10 pieces	186352	QSML-M7-4
	L-fitting rotatable throug	th 360 ¹² , for tubing O.D.		100 pieces	130773	QSML-M7-4-100
-			6 mm	10 pieces	186353	QSML-M7-6
				100 pieces	130774	QSML-M7-6-100

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

Connection via plug vanes



Design	Designation Type		Description	→ Page/Internet
[1]	1] Semi in-line valve MHP2		With plug vanes	29
[2]	Connecting cable	NEBV	PUR cable, signal status indication with LED, plug M8x1 3-pin, IP65	29
[3]	Plug socket with cable	KMYZ-4	PVC cable, without signal status indication, IP50	29
[4]	Connecting cable NEBV		PUR cable, signal status indication with LED, IP65	29
[5]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	29
[6]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	30
[7]	Cover plate	MHAP2-BP-3	For sealing vacant positions	29
[8]	Inscription label	MH-BZ-80X	For identifying the valves	30
[9]	Blanking plug	В	For sealing unused ports	30
[10]	H-rail mounting	MHAP2-BG-NRH-35	For mounting the manifold block on H-rails to EN 60715	29
[11]	Silencer	UC	For fitting in exhaust ports	30
[12]	Individual sub-base	MHA2-AS-3-M5	For semi in-line valve, the individual sub-base is also used for the sub-base valve; here the outlet	29
			port must be sealed with a blanking plug	
	Manifold block	MHP2-PR3	For semi in-line valves	29





General technical data		
Valve function		3/2 way, single solenoid ¹⁾
Design		Pressure relief poppet valve
Overlap		Negative overlap
Sealing principle		Soft
Reset method		Mechanical spring
Actuation type		Electrical
Type of control		Direct
Direction of flow		Reversible with restrictions ²⁾
Exhaust function		Can be throttled
Manual override		Non-detenting
Mounting position		Any
Width	[mm]	10
Grid dimension	[mm]	14
Note on grid dimension		Minimum distance between the valves is 4 mm
Nominal width	[mm]	2
Standard nominal flow rate	[l/min]	100
Type of mounting		On PR rail
Pneumatic connection	2	M5 connecting thread
	1, 3, 11, 33	Sub-base
Product weight	[g]	60

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

²⁾ Slight leakage can occur in the pressure range -0.8 bar to +0.5 bar.

Operating and environmental conditions							
, -			With fast-switching electronics	Without fast-switching electronics			
Operating medium		-	Compressed air to ISO 8573-1:2010 [Compressed air to ISO 8573-1:2010 [7:4:4]			
Note on the operating/pilot medium		Lubricated operation possible (in which	ch case lubricated operation will always be required)				
Operating pressure		[MPa]	-0.09 +0.8				
		[bar]	-0.9 +8				
	Reversible	[MPa]	-0.09 +0.1				
		[bar]	-0.9 +1				
		[psi]	-13.05 +14.5				
Ambient temperature		[°C]	-5 +40				
Temperature of medium		[°C]	-5 +40				
Restricted ambient temperature and temperature	of medium		As a function of switching frequency (s	As a function of switching frequency (see graph)			
Corrosion resistance class CRC ¹⁾			2				
CE marking (see declaration of conformity) ³⁾			To EU EMC Directive ²⁾	-			
			To EU RoHS Directive	-			
UKCA marking (see declaration of conformity) ³⁾			To UK instructions for EMC	-			
			To UK RoHS instructions	-			
Certification			c UL us - Recognized (OL)	c UL us - Recognized (OL)			
			RCM	-			
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27				
Vibration resistance			Transport application test with severity level 2 to FN 942017-4 and				
			EN 60068-2-6				

¹⁾ More information: www.festo.com/x/topic/kbk

³⁾ More information: www.festo.com/catalogue/... \Longrightarrow Support/Downloads.

Electrical data			
		With fast-switching electronics	Without fast-switching electronics
Electrical connection		Plug, 2-pin	
Operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	±10	
Power consumption	[W]	5 for approx. 3 ms (high-current phase, in-	2.88
		rush current 1 A)	
	[W]	1.25 (low-current phase)	-
Reverse polarity protection		Bipolar	-
Duty cycle	[%]	100	100
Additional functions		Spark arresting	-
		Holding current reduction	-
		Protective circuit	-
Degree of protection to EN 60529		IP65	IP65

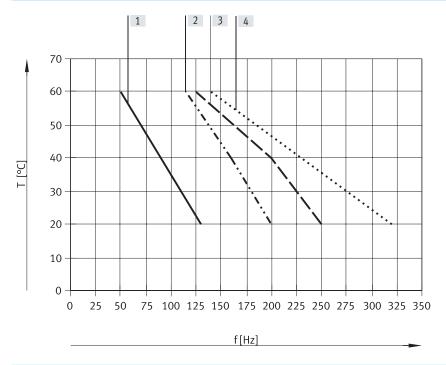
Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	1.7	7
	Off	[ms]	2	3.5
Tolerance for switching time	On	[%]	+1030	-
	Off	[%]	+1030	-
Switching time variation from 1 Hz		[ms]	0.2	-
upwards				
Maximum switching frequency		[Hz]	330	130

Materials	
Housing	Coated die-cast zinc
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 -> Support/Downloads.

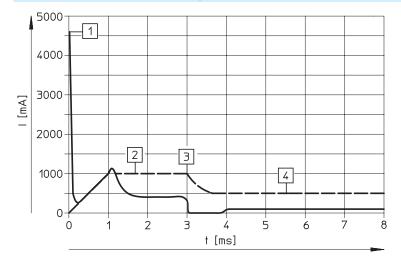
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly, 6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised
- [4] Individual valve, through-flow, 0.6 MPa

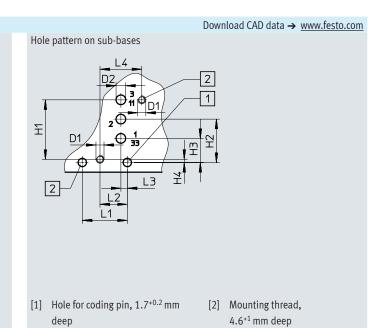
Current curve for valves with fast-switching electronics (MHP2-MS1H)



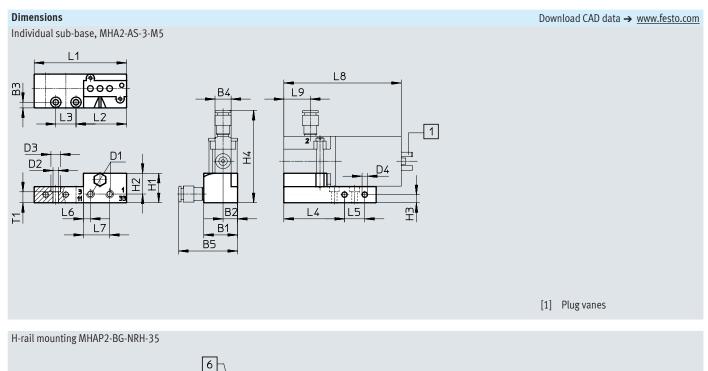
----- Internal current in the coil
------ External current in the supply line

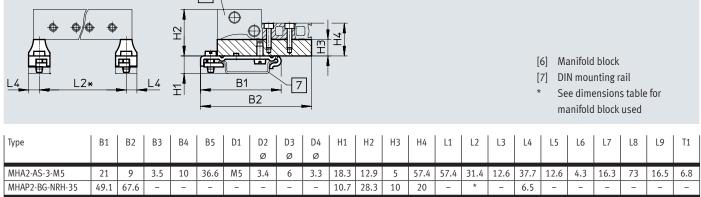
- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

Valve with plug vanes, MHP2-...-3/2...-M5 Valve with plug vanes, MHP2-...-3/2...-M5 L3 L2 L2 L9 L2 L2 Plug vanes [2] Plug vanes

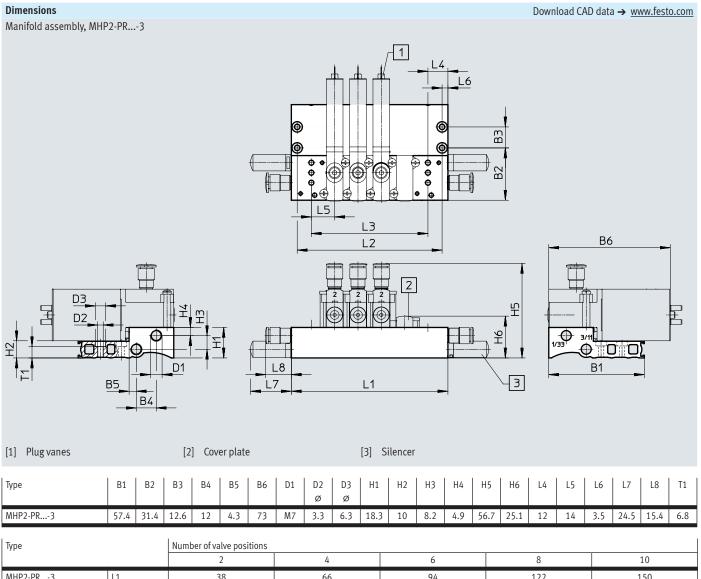


Туре	B1	D1	D2 Ø	H1	H2	Н3	H4	L1	L2	L3	L4	L9
MHP23/2M5	10	M5	-	31.6	23.6	-	-	73	29	16.5	-	0.5
Hole pattern	-	M2.5	3	18.5	13.5	7.5	1	14	8.5	2	13	-





^{*} See dimensions table for manifold block used



MHP2-PR...-3 L1 L2 L3

- Note

Valve types 3/2G and 3/20 must not be mixed on one manifold block.

Ordering data					Part no.	Туре
Valves						*
	With fast-switching electronics	Switching time on	Normally open		196143	MHP2-MS1H-3/20-M5
		1.7 ms	Normally closed		196123	MHP2-MS1H-3/2G-M5
	Without fast-switching electronics	Switching time on	Normally open		196142	MHP2-M1H-3/20-M5
		7 ms	Normally closed		196122	MHP2-M1H-3/2G-M5
Manifold rail						
Mainiota fait	Individual sub-base ¹⁾			1 valve position	197438	MHA2-AS-3-M5
	Pneumatic connection: thread M5			1 valve position	177430	MIIAZ-NO-J-MJ
	Manifold block			2 valve positions	197442	MHP2-PR2-3
	Pneumatic connection: thread M7			4 valve positions	197443	MHP2-PR4-3
				6 valve positions	197444	MHP2-PR6-3
				8 valve positions	197445	MHP2-PR8-3
				10 valve positions	197446	MHP2-PR10-3
Cover plate						
	Vacant valve positions must be sea	led with a cover plate		197470	MHAP2-BP-3	
Connecting cable						Datasheets → Internet: nebv
Connecting capte	2-pin socket,	PUR cable, degree	Signal status	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
	open cable end 2-wire	of protection IP65	indication with LED	Length 5 m	8047671	NEBV-Z4WA2L-P-E-5-N-LE2-S1
//	open cable end 2-wire	or protection in 03	Indication with LLD	Length 10 m	8047672	NEBV-Z4WA2L-P-E-10-N-LE2-S1
		PVC cable, degree	Without signal	Length 0.5 m	193690	KMYZ-4-24-0.5-B
		of protection IP40	status indication	Length 2.5 m	193691	KMYZ-4-24-2.5-B
	2-pin socket, plug M8x1 3-pin	PUR cable, degree	Signal status	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
	7 7 77 10	of protection IP65	indication with LED	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1
Adapter	12:	C: 1.1.1.1.1.1	DI MO 2 :		F74/0/	VANE CO ADO
	2-pin socket	Signal status indi- cation with LED	Plug M8, 3-pin Plug M8, 4-pin		571686 573194	VAVE-C8-1R8 VAVE-C8-1R1
H-rail mounting						
	For 3/2-way solenoid valves				525053	MHAP2-BG-NRH-35
H-rail						
	To EN 60715			2 m	35430	NRH-35-2000

¹⁾ Seal ports 2 and 4 on the individual sub-base with blanking plugs. These ports on the individual sub-base have no function when using semi in-line valves.

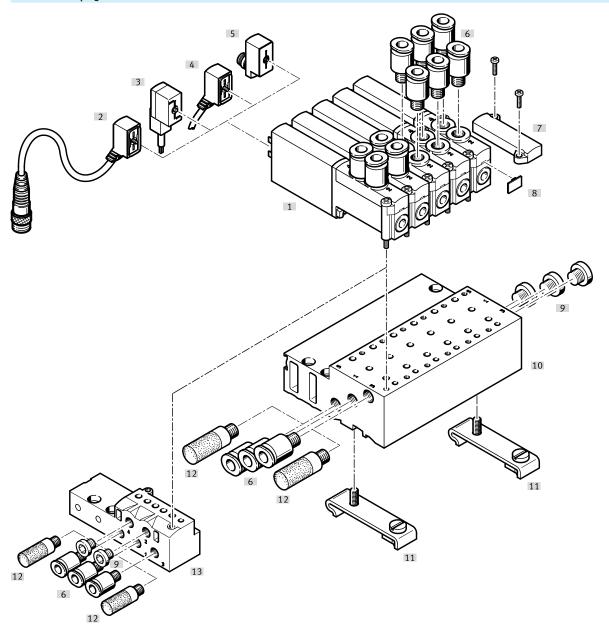
Solenoid valves MHP2, fast-switching valves

Datasheet – Semi in-line valve, 3/2-way valve

				Part no.	Туре
Silencer					Datasheets → Internet: u
	With threaded connection	M5	1 piece	165003	UC-M5
			50 pieces	534217	UC-M5-50
		M7	1 piece	161418	UC-M7
			50 pieces	534218	UC-M7-50
ush-in fitting					Datasheets → Internet: o
usii-iii iittiiig	Male thread M5 with internal hex for tubing O.D.	4 mm	10 pieces	153315	QSM-M5-4-I
	mate thread my material next of tability orbi	6 mm	10 pieces	153317	QSM-M5-6-I
	Male thread M7 with internal hex for tubing O.D.	4 mm	10 pieces	153319	OSM-M7-4-I
			100 pieces	133006	OSM-M7-4-I-100
		6 mm	10 pieces	153321	QSM-M7-6-I
	Male thread M5 with external hex, push-in L-fitting	4 mm	10 pieces	153333	QSML-M5-4
	rotatable through 360° , for tubing O.D.		100 pieces	130771	QSML-M5-4-100
		6 mm	10 pieces	153335	QSML-M5-6
			100 pieces	130772	QSML-M5-6-100
	Male thread M7 with external hex, push-in L-fitting	4 mm	10 pieces	186352	QSML-M7-4
	rotatable through 360° , for tubing O.D.		100 pieces	130773	QSML-M7-4-100
		6 mm	10 pieces	186353	QSML-M7-6
			100 pieces	130774	QSML-M7-6-100
lanking plug	For thread M5		10 -:	3843	B-M5
	For thread M7		10 pieces	0 - 10	B-M7
	For thread M7		10 pieces	174309	B-M7
			-		
scription label					
	For solenoid valve		80 pieces in a frame	197259	MH-BZ-80X

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

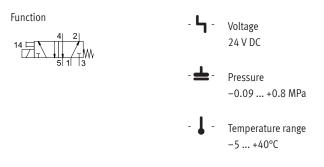
Connection via plug vanes

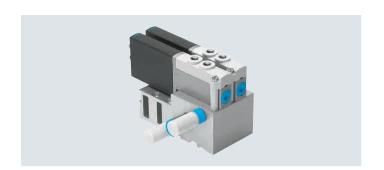


Design	ation	Туре	Description	→ Page/Internet
[1]	Semi in-line valve	MHP2	With plug vanes	37
[2]	Connecting cable	NEBV	PUR cable, signal status indication with LED, plug M8x1 3-pin, IP65	37
[3]	Plug socket with cable	KMYZ-4	PVC cable, without signal status indication, IP50	37
[4]	Connecting cable	NEBV	PUR cable, signal status indication with LED, IP65	37
[5]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	37
[6]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	38
[7]	Cover plate	MHAP2-BP-5	For sealing vacant positions	37
[8]	Inscription label	MH-BZ-80X	For identifying the valves	38
[9]	Blanking plug	В	For sealing unused ports	38
[10]	Manifold block	MHP2-PR5	For semi in-line valves	37
[11]	H-rail mounting	CPV10/14-VI-BG-NRH-35	For mounting the manifold block on H-rails to EN 60715	37
[12]	Silencer	UC	For fitting in exhaust ports	38
[13]	Individual sub-base	MHA2-AS-5-M5	For semi in-line valve, the individual sub-base is also used for sub-base valves and must be	37
			sealed with a blanking plug here	

Solenoid valves MHP2, fast-switching valves

Datasheet – Semi in-line valve, 5/2-way valves





General technical data								
Valve function		5/2-way, single solenoid						
Design		Pressure relief poppet valve						
Overlap		Negative overlap						
Sealing principle		Soft						
Reset method		Mechanical spring						
Actuation type		Electrical						
Type of control		Direct						
Direction of flow		Not reversible						
Exhaust function		Can be throttled						
Manual override		Non-detenting						
Mounting position		Any						
Width	[mm]	10						
Grid dimension	[mm]	14						
Note on grid dimension		Minimum distance between the valves is 4 mm						
Nominal width	[mm]	2						
Standard nominal flow rate	[l/min]	90						
Type of mounting		On PR rail						
Max. tightening torque for valve mounting	[Nm]	0.4						
Pneumatic connection	1, 3, 5	Sub-base						
	2,4	M5 connecting thread						
Max. tightening torque of fitting	[Nm]	1.5						
Product weight	[g]	70						

Operating and environmental conditions									
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]							
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)							
Operating pressure		-0.09 +0.8							
	[bar]	-0.9 +8							
Ambient temperature	[°C]	-5 +40							
Temperature of medium	[°C]	-5 +40							
Restricted ambient temperature and temperature of medium		As a function of switching frequency							
Corrosion resistance class CRC ¹⁾		2							
CE marking (see declaration of conformity) ³⁾		To EU EMC Directive ²⁾							
		To EU RoHS Directive							
UKCA marking (see declaration of conformity) ³⁾		To UK instructions for EMC							
		To UK RoHS instructions							
Certification		c UL us - Recognized (OL)							
		RCM							
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27							
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6							

 $^{1) \}quad \hbox{More information: www.festo.com/x/topic/kbk} \\$

³⁾ More information: www.festo.com/catalogue/... \rightarrow Support/Downloads.

Electrical data								
Electrical connection			Plug, 2-pin					
Operating voltage [V DC]		[V DC]	24					
Permissible voltage fluctuations [%]		[%]	±10					
Power consumption	Low-current phase	[W]	1.625					
	High-current phase	[W]	6.5					
Reverse polarity protection			Bipolar					
Duty cycle [%]		[%]	100					
Additional functions			Spark arresting					
			Holding current reduction					
			Protective circuit					
Degree of protection to EN 60529			IP65					

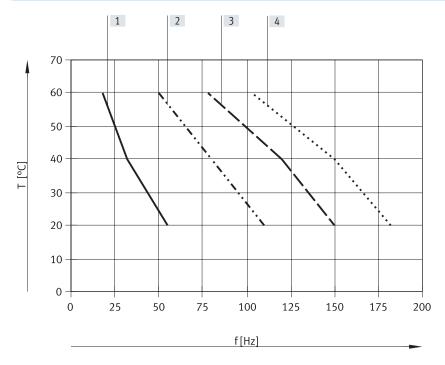
Switching times and frequencies			
Switching time	On	[ms]	1.9
	Off	[ms]	1.7
Tolerance for switching time	On	[%]	+1030
	Off	[%]	+1030
Maximum switching frequency		[Hz]	300
Switching time variation from 1 Hz		[ms]	0.2
upwards			

Materials									
Housing	Coated die-cast zinc								
Seals	HNBR, NBR								
Screws	Galvanised steel								
Note on materials	RoHS-compliant								
PWIS conformity	VDMA24364-B1/B2-L								

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 → Support/Downloads.

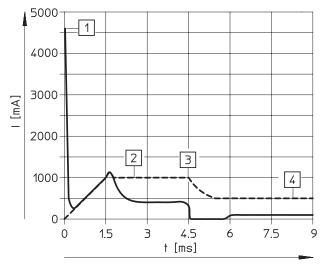
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Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly, 6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised
- [4] Individual valve, through-flow, 0.6 MPa

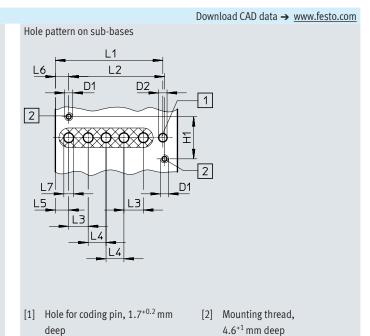
Current curve for valves with fast-switching electronics (MHP2-MS1H)



----- Internal current in the coil
External current in the supply line

- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

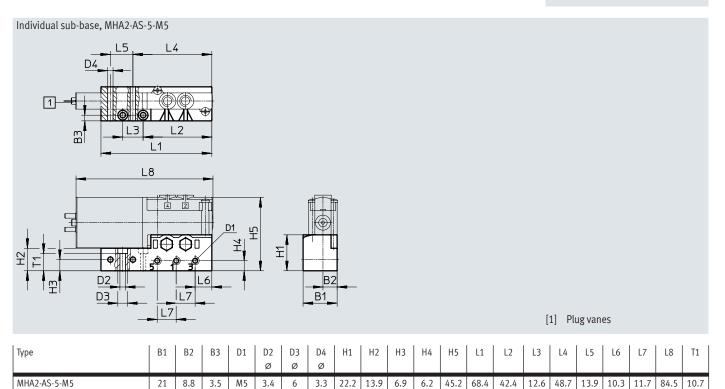
Valve with plug vanes, MHP2-...-5/2...-M5 D1 L10 L9 L2 L1 Manual override, non-detenting [2] Plug vanes

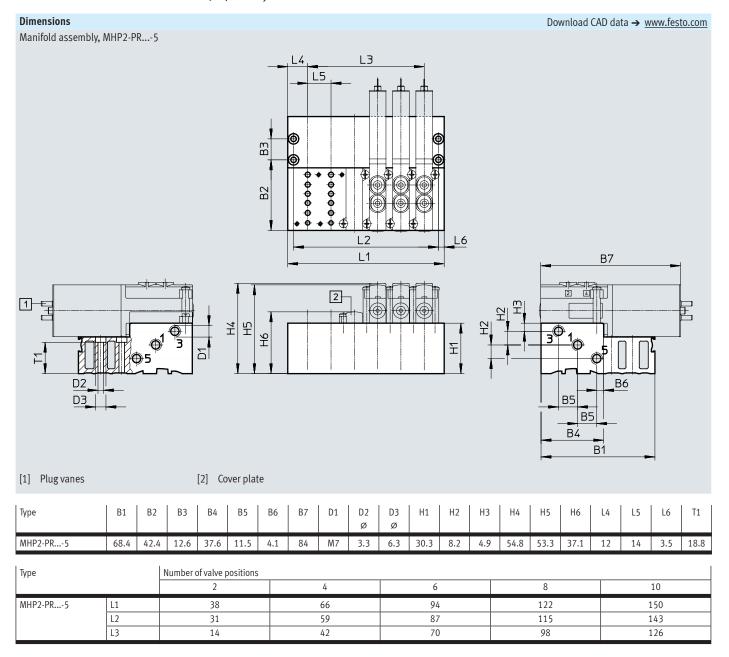


Туре	B1	D1	D2 Ø	H1	H2	Н3	H4	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
MHP25/2M5	10	M5	-	31	23	1.5	-	84	40	-	-	-	-	-	16.5	0.5	11
Hole pattern	-	M2.5	2.6	13	-	-	-	33.1	29.5	6	5.5	4.1	4.1	3	-	-	-



Ports 2 and 4 are not required with semi in-line valves.





Datasheet – Semi in-line valve, 5/2-way valve

With fast-switching electronics Note: The second of the s	Switching time on 1.9	ms		Part no. 525105	Type MHP2-MS1H-5/2-M5
ndividual sub-base ¹⁾	Switching time on 1.9	ms		525105	MHP2-MS1H-5/2-M5
ndividual sub-base ¹⁾	Switching time on 1.9	ms		525105	MHP2-MS1H-5/2-M5
			1 valve position	525120	MHA2-AS-5-M5
	5				
				525122	MHP2-PR2-5
Pneumatic connection 1, 3, 5: the	read M7		4 valve positions	525123	MHP2-PR4-5
			6 valve positions	525124	MHP2-PR6-5
			8 valve positions	525125	MHP2-PR8-5
			10 valve positions	525126	MHP2-PR10-5
<u> </u>					
/acant valve positions must be s	ealed with a cover plate	2.		525132	MHAP2-BP-5
					Datasheets → Internet: nebv
)-nin socket	PLIR cable degree of	Signal status	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
The state of the s	_				NEBV-Z4WA2L-P-E-5-N-LE2-S1
pen cable ena 2 vine	protection ii o	maleation with ELD			NEBV-Z4WA2L-P-E-10-N-LE2-S1
	DVC cable degree of	Without cianal			KMYZ-4-24-0.5-B
	protection IP40	status indication	Length 2.5 m	193691	KMYZ-4-24-2.5-B
2-pin socket, plug M8x1 3-pin	PUR cable, degree of	Signal status	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
, p. 10 mars 1 mars	protection IP65	indication with LED	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1
2-pin socket	Signal status	Plug M8, 3-pin		571686	VAVE-C8-1R8
· 	indication with LED	Plug M8, 4-pin		573194	VAVE-C8-1R1
or 5/2-way solenoid valves		162556	CPV10/14-VI-BG-NRH-35		
o EN 60715			2 m	35430	NRH-35-2000
		Preumatic connection 1, 3, 5: thread M7 Acant valve positions must be sealed with a cover plate Purple cable, degree of protection IP65 PVC cable, degree of protection IP40 Purple cable, degree of protection IP40 Purple cable, degree of protection IP40 Purple cable, degree of protection IP65 Purple cable, degree of protection IP65 Purple cable, degree of protection IP65 Purple cable, degree of protection IP65	Pure cable, degree of protection IP40 Pure cable, degree of protection IP65 Pvc cable, degree of protection IP40 Pvc cable	Pure cable end 2-wire Pure cable, degree of protection IP40 Pure cable and unit LED Pure cable, degree of protection IP40 Pure cabl	Prenumatic connection 1, 3, 5: thread M7 A valve positions 525123

¹⁾ Seal ports 2 and 4 on the individual sub-base with blanking plugs. These ports on the individual sub-base have no function when using semi in-line valves.

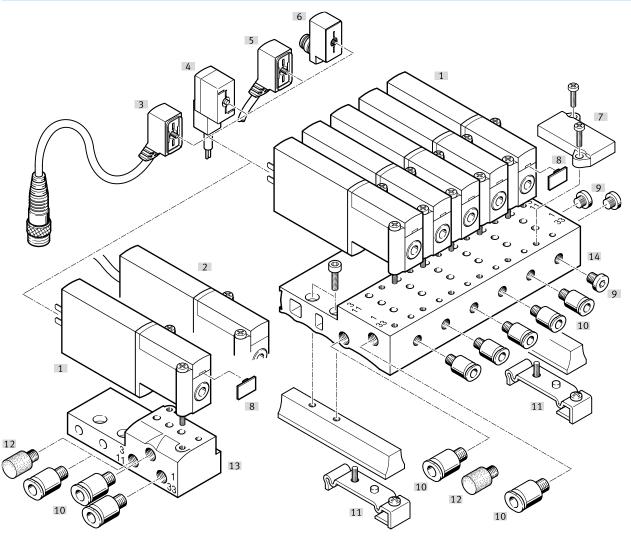
Solenoid valves MHP2, fast-switching valves

Datasheet – Semi in-line valve, 5/2-way valve

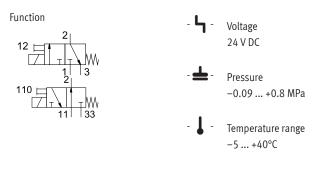
				Part no.	Туре
Silencer					Datasheets → Internet: u
	With threaded connection	M5	1 piece	165003	UC-M5
			50 pieces	534217	UC-M5-50
		M7	1 piece	161418	UC-M7
			50 pieces	534218	UC-M7-50
Nuclei in Ettina					
Push-in fitting	Mala shore d MC with internal box for twice O D	1	10	452245	Datasheets → Internet: o
	Male thread M5 with internal hex for tubing O.D.	4 mm	10 pieces	153315	QSM-M5-4-I
	MILILA IM7 THE LAND COLUMN	6 mm	10 pieces	153317	QSM-M5-6-I
	Male thread M7 with internal hex for tubing O.D.	4 mm	10 pieces	153319	QSM-M7-4-I
			100 pieces	133006	QSM-M7-4-I-100
	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 mm	10 pieces	153321	QSM-M7-6-I
	Male thread M5 with external hex, push-in L-fitting rotatable through 360°, for tubing O.D.	4 mm	10 pieces	153333	QSML-M5-4
	locatable through 500-, for tubing 0.D.		100 pieces	130771	QSML-M5-4-100
		6 mm	10 pieces	153335	QSML-M5-6
			100 pieces	130772	QSML-M5-6-100
	Male thread M7 with external hex, push-in L-fitting	4 mm	10 pieces	186352	QSML-M7-4
	rotatable through 360°, for tubing O.D.		100 pieces	130773	QSML-M7-4-100
		6 mm	10 pieces	186353	QSML-M7-6
			100 pieces	130774	QSML-M7-6-100
Blanking plug					
	For thread M5		10 pieces	3843	B-M5
	For thread M7		10 pieces	174309	B-M7
	1				
nscription label					
	For solenoid valve		80 pieces in a frame	197259	MH-BZ-80X

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

Connection with plug vanes – Connection with moulded-in cable



Design	Designation Type		Description	→ Page/Internet
[1]] Sub-base valve MHA2		With plug vanes	46
[2]	Sub-base valve	MHA2K	With moulded-in cable, IP55	46
[3]	Connecting cable	NEBV	PUR cable, signal status indication with LED, plug M8x1 3-pin, IP65	46
[4]	Plug socket with cable	KMYZ-4	PVC cable, without signal status indication, IP50	46
[5]	Connecting cable	NEBV	PUR cable, signal status indication with LED, IP65	46
[6]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	47
[7]	Cover plate	MHAP2-BP-3	For sealing vacant positions	46
[8]	Inscription label	MH-BZ-80X	For identifying the valves	47
[9]	Blanking plug	В	For sealing unused ports	47
[10]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	47
[11]	H-rail mounting	MHAP2-BG-NRH-35	For mounting the manifold block on H-rails to EN 60715	47
[12]	Silencer	UC	For fitting in exhaust ports	47
[13]	Individual sub-base	MHA2-AS-3-M5	For sub-base valve	46
[14]	Manifold block	MHA2-PR3-M5	For sub-base valve	46





General technical data		
Valve function		3/2 way, single solenoid ¹⁾
Design		Pressure relief poppet valve
Overlap		Negative overlap
Sealing principle		Soft
Reset method		Mechanical spring
Actuation type		Electrical
Type of control		Direct
Direction of flow		Reversible with restrictions
Exhaust function		Can be throttled
Manual override		Non-detenting
Mounting position		Any
Width	[mm]	10
Grid dimension	[mm]	14
Note on grid dimension		Minimum distance between the valves is 4 mm
Nominal width	[mm]	2
Standard nominal flow rate	[l/min]	100
Type of mounting		On sub-base
Pneumatic connection		Sub-base
Product weight	[g]	60

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

Operating and environmental conditions						
			With fast-switching electronics	Without fast-switching electronics		
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium			Lubricated operation possible (in which	ch case lubricated operation will always be required)		
Operating pressure		[MPa]	-0.09 +0.8			
		[bar]	-0.9 +8			
	Reversible	[MPa]	-0.09 +0.1			
		[bar]	-0.9 +1			
		[psi]	-13.05 +14.5			
Ambient temperature [°C]		-5 +40				
Temperature of medium		[°C]	-5 +40			
Restricted ambient temperature and temperature of	f medium		As a function of switching frequency (see graph)			
Corrosion resistance class CRC ¹⁾			2			
CE marking (see declaration of conformity) ³⁾			To EU EMC Directive ²⁾	-		
			To EU RoHS Directive	-		
UKCA marking (see declaration of conformity) ³⁾			To UK instructions for EMC	-		
			To UK RoHS instructions	-		
Certification			c UL us - Recognized (OL)	c UL us - Recognized (OL)		
			RCM	-		
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27			
Vibration resistance			Transport application test with severity level 2 to FN 942017-4 and			
			EN 60068-2-6			

¹⁾ More information: www.festo.com/x/topic/kbk

³⁾ More information: www.festo.com/catalogue/... \rightarrow Support/Downloads.

Electrical data				
			With fast-switching electronics	Without fast-switching electronics
Electrical connection			2-pin plug or cable	
Operating voltage		[V DC]	24	
Permissible voltage fluctuations		[%]	±10	
Power consumption		[W]	5 for approx. 3 ms (high-current phase,	2.88
			inrush current 1 A)	
		[W]	1.25 (low-current phase)	-
Reverse polarity protection			Bipolar	-
Duty cycle		[%]	100	100
Additional functions			Spark arresting	-
			Holding current reduction	-
			Protective circuit	-
Degree of protection to EN 60529	Electrical connection: 2-pin plug		IP65	IP65
	Electrical connection: cable		IP55	IP55

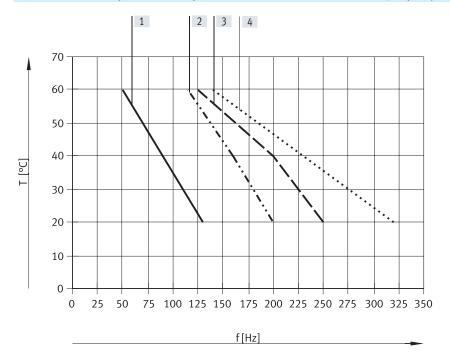
Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	1.7	7
	Off	[ms]	2	3.5
Tolerance for switching time	On	[%]	+1030	
	Off	[%]	+1030	
Switching time variation from 1 Hz		[ms]	0.2	
upwards				I
Maximum switching frequency	•	[Hz]	330	130

Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	Free of copper and PTFE
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 → Support/Downloads.

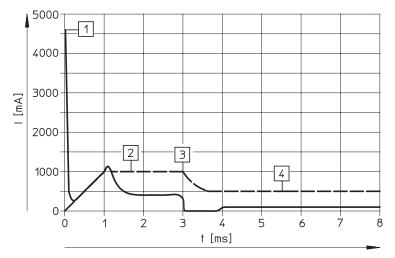
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly,6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised
- [4] Individual valve, through-flow, 0.6 MPa



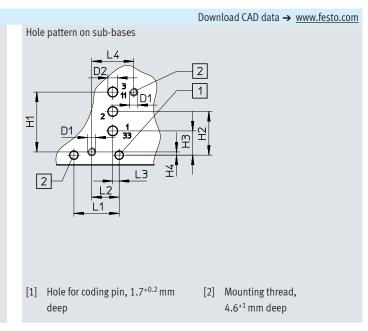


----- Internal current in the coil

External current in the supply line

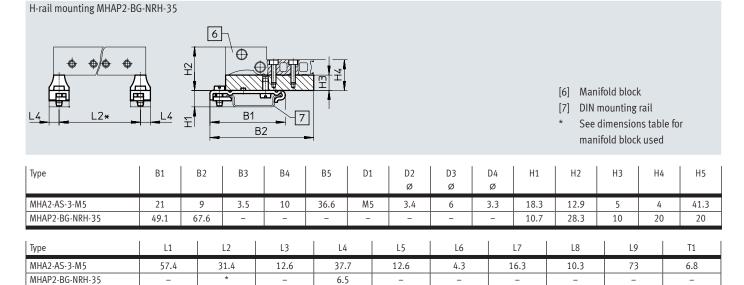
- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

Valve with plug vanes or moulded-in cable, MHA2-...-3/2... The state of the plug vanes or moulded-in cable, MHA2-...-3/2... [1] Manual override, non-detenting [2] Plug vanes [3] Cable, 2.5 m

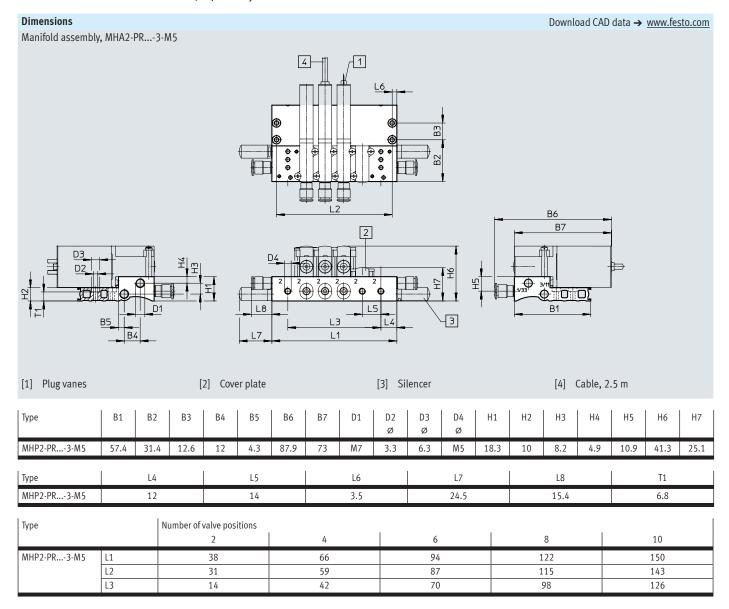


Туре	B1	D1	D2 Ø	H1	H2	Н3	H4	L1	L2	L3	L4	L9
MHA23/2	10	-	-	31	23	-	-	73	29	-	-	0.5
Hole pattern	_	M2.5	2	18.5	13.5	7.5	1	1.6	8.5	2	12	_

Download CAD data > www.festo.com Individual sub-base, MHA2-AS-3-M5 L9 L1 L3 L2 L4 L5 B1 B1 B1 B1 Cable, 2.5 m



^{*} See dimensions table for manifold block used





Valve types 3/2G and 3/20 must not be mixed on one manifold block.

Ordering data						
					Part no.	Туре
Valves						
\sim	Electrical connection:	With fast-switching el	ectronics,	Normally open	196139	MHA2-MS1H-3/20-2
	2-pin plug	switching time 2 ms		Normally closed	196119	MHA2-MS1H-3/2G-2
		Without fast-switchin	g electronics,	Normally open	196138	MHA2-M1H-3/20-2
No.		switching time 7 ms		Normally closed	196118	MHA2-M1H-3/2G-2
	Electrical connection:	With fast-switching el	ectronics,	Normally open	196141	MHA2-MS1H-3/20-2-K
	cable	switching time 2 ms		Normally closed	196121	MHA2-MS1H-3/2G-2-K
		Without fast-switchin	g electronics,	Normally open	196140	MHA2-M1H-3/20-2-K
		switching time 7 ms		Normally closed	196120	MHA2-M1H-3/2G-2-K
Manifold rail						
	Individual sub-base			1 valve position	197438	MHA2-AS-3-M5
	Pneumatic connection:	thread M5				
	Manifold block			2 valve positions	197447	MHA2-PR2-3-M5
	Pneumatic connection 1			4 valve positions	197448	MHA2-PR4-3-M5
	Pneumatic connection 2	2: thread M5		6 valve positions	197449	MHA2-PR6-3-M5
1				8 valve positions	197450	MHA2-PR8-3-M5
				10 valve positions	197451	MHA2-PR10-3-M5
Cover plate						
î	Vacant valve positions i	must be sealed with a co	over plate.		197470	MHAP2-BP-3
	'					
Connecting cable (for v	alves with 2-pin plug)					Datasheets → Internet: neb
	2-pin socket,	PUR cable, degree of	Signal status	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
	open cable end	protection IP65	indication with	Length 5 m	8047672	NEBV-Z4WA2L-P-E-5-N-LE2-S1
//	2-wire		LED	Length 10 m	8047670	NEBV-Z4WA2L-P-E-10-N-LE2-S1
		PVC cable, degree of	Without signal	Length 0.5 m	193690	KMYZ-4-24-0.5-B
		protection IP40	status	Length 2.5 m	193691	KMYZ-4-24-2.5-B
			indication			
	2-pin socket,	PUR cable, degree of	Signal status	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
	plug M8x1 3-pin	protection IP65	indication with	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1
		[LED	0 =.9	55 57 4	
			LED			

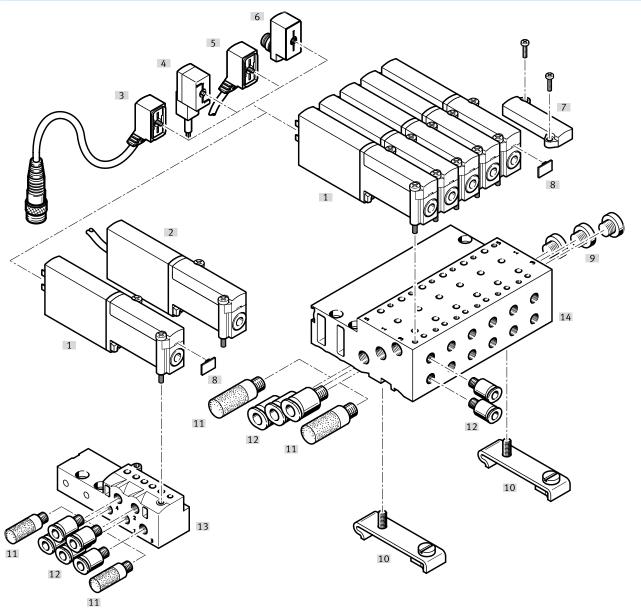


Valve types 3/2G and 3/20 must not be mixed on one manifold block.

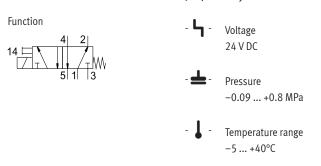
					Part no.	Туре
Adapter (for valves wit	h 2-nin nlug)					1.7
Adapter (for varves with		Signal status	Plug M8, 3-pin		571686	VAVE-C8-1R8
	1 :	indication with LED	Plug M8, 4-pin		573194	VAVE-C8-1R1
H-rail mounting						
	For 3/2-way solenoid valves				525053	MHAP2-BG-NRH-35
H-rail						
n-idit	To EN 60715			2 m	35430	NRH-35-2000
	10 EN 60715			2 111	33430	NRT-55-2000
Cilonear						District to a literal
Silencer	With threaded connection		M5	1 nioco	165003	Datasheets → Internet: uc
	with threaded connection		INIS	1 piece	165003	UC-M5-50
			M7	50 pieces 1 piece	534217	
			IVI /	<u> </u>	161418	UC-M7
				50 pieces	534218	UC-M7-50
Door by Cartering						
Push-in fitting	Maria IME SICA II 6		1,	140 :	450045	Datasheets → Internet: qs
	Male thread M5 with internal hex for	tubing O.D.	4 mm	10 pieces	153315	QSM-M5-4-I
	14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		6 mm	10 pieces	153317	QSM-M5-6-I
	Male thread M7 with internal hex for	tubing O.D.	4 mm	10 pieces	153319	QSM-M7-4-I
				100 pieces	133006	QSM-M7-4-I-100
			6 mm	10 pieces	153321	QSM-M7-6-I
	Male thread M5 with external hex, p		4 mm	10 pieces	153333	QSML-M5-4
	rotatable through 360°, for tubing 0	.D.		100 pieces	130771	QSML-M5-4-100
			6 mm	10 pieces	153335	QSML-M5-6
				100 pieces	130772	QSML-M5-6-100
	Male thread M7 with external hex, p		4 mm	10 pieces	186352	QSML-M7-4
	rotatable through 360°, for tubing O	.D.		100 pieces	130773	QSML-M7-4-100
			6 mm	10 pieces	186353	QSML-M7-6
				100 pieces	130774	QSML-M7-6-100
Blanking plug						
	For thread M5			10 pieces	3843	B-M5
	For thread M7			10 pieces	174309	B-M7
Inccrintion labor						
Inscription label	Farradoraldoral			00-1	407050	MIL D7 GOV
	For solenoid valve			80 pieces in a frame	197259	MH-BZ-80X

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

Connection with plug vanes - Connection with moulded-in cable



Designation Type		Туре	Description	→ Page/Internet
[1]] Sub-base valve MHA2		With plug vanes	54
[2]	Sub-base valve	MHA2K	With moulded-in cable, IP55	54
[3]	Connecting cable	NEBV	PUR cable, signal status indication with LED, plug M8x1 3-pin, IP65	54
[4]	Plug socket with cable KMYZ-4		PVC cable, without signal status indication, IP50	54
[5]	Connecting cable	NEBV	PUR cable, signal status indication with LED, IP65	54
[6]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	55
[7]	Cover plate	MHAP2-BP-5	For sealing vacant positions	54
[8]	Inscription label	MH-BZ-80X	For identifying the valves	55
[9]	Blanking plug	В	For sealing unused ports	55
[10]	H-rail mounting	CPV10/14-VI-BG-NRH-35	For mounting the manifold block on H-rails to EN 60715	55
[11]	Silencer	UC	For fitting in exhaust ports	55
[12]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	55
[13]	Individual sub-base	MHA2-AS-5-M5	For sub-base valve	54
[14]	Manifold block	MHA2-PR5-M5	For sub-base valve	54





General technical data		
Valve function		5/2-way, single solenoid
Design	-	Pressure relief poppet valve
Overlap		Negative overlap
Sealing principle		Soft
Reset method		Mechanical spring
Actuation type		Electrical
Type of control		Direct
Direction of flow		Not reversible
Exhaust function		Can be throttled
Manual override		Non-detenting
Mounting position		Any
Width	[mm]	10
Grid dimension	[mm]	14
Note on grid dimension		Minimum distance between the valves is 4 mm
Nominal width	[mm]	2
Standard nominal flow rate	[l/min]	90
Type of mounting		On PR rail
Max. tightening torque for valve mounting	[Nm]	0.4
Pneumatic connection		Sub-base
Product weight	[g]	70

Operating and environmental conditions		
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	[MPa]	-0.09 +0.8
	[bar]	-0.9 +8
Ambient temperature	[°C]	-5 +40
Temperature of medium	[°C]	-5 +40
Restricted ambient temperature and temperature of medium		As a function of switching frequency (see graph)
Corrosion resistance class CRC ¹⁾		2
CE marking (see declaration of conformity) ³⁾		To EU EMC Directive ²⁾
		To EU RoHS Directive
UKCA marking (see declaration of conformity) ³⁾		To UK instructions for EMC
		To UK RoHS instructions
Certification		c UL us - Recognized (OL)
		RCM
Shock resistance		Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance		Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

 $^{1) \}quad \hbox{More information: www.festo.com/x/topic/kbk} \\$

More information: www.festo.com/catalogue/... \rightarrow Support/Downloads.

Electrical data						
Electrical connection			2-pin plug	Cable		
Operating voltage		[V DC]	24			
Permissible voltage fluctuat	ions	[%]	±10			
Power consumption	Low-current phase	[W]	1.625			
	High-current phase	[W]	6.5			
Reverse polarity protection			Bipolar			
Duty cycle		[%]	100			
Additional functions			Spark arresting			
			Holding current reduction			
			Protective circuit			
Degree of protection to EN 6	0529		IP65	IP55		

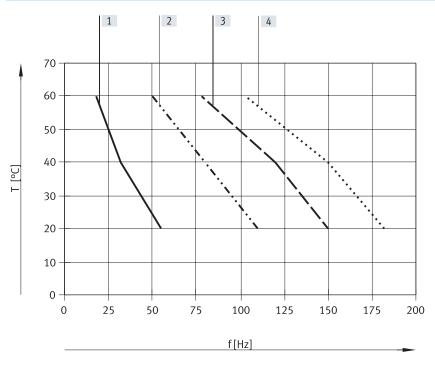
Switching times and frequencies			
Switching time	On	[ms]	1.9
	Off	[ms]	1.7
Tolerance for switching time	On	[%]	+1030
	Off	[%]	+1030
Maximum switching frequency		[Hz]	300
Switching time variation from 1 Hz		[ms]	0.2
upwards			

Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 -> Support/Downloads.

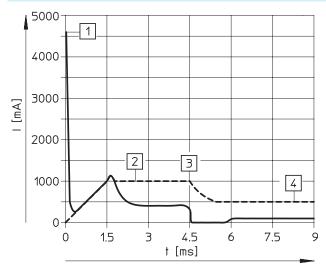
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly, 6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised
- [4] Individual valve, through-flow, 0.6 MPa

Current curve for valves with fast-switching electronics (MHA2-MS1H)



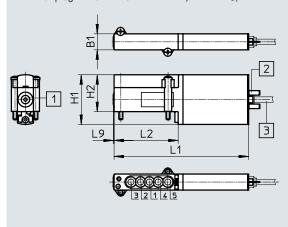
------ Internal current in the coil

External current in the supply line

- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

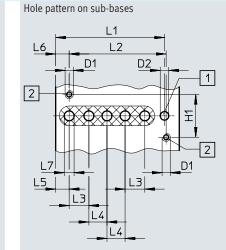
Dimensions

Valve with plug vanes or moulded-in cable, MHA2-...-5/2...



- [1] Manual override, non-detenting
- [2] Plug vanes
- [3] Cable, 2.5 m

Download CAD data → www.festo.com



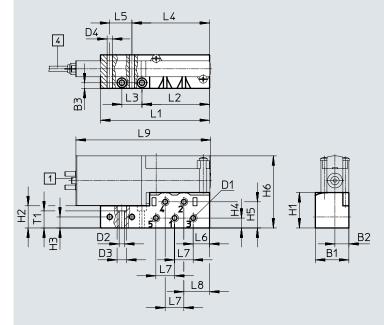
- [1] Hole for coding pin, $1.7^{+0.2}$ mm
- [2] Mounting thread,
 - 4.6+1 mm deep

Download CAD data → www.festo.com

Туре	B1	D1	D2 Ø	H1	H2	L1	L2	L3	L4	L5	L6	L7	L9
MHA25/2	10	_	-	31	23	84	40	-	-	-	-	-	0.5
Hole pattern	_	МЭГ	2.6	4.2	_	33.1	29.5		гг	4.1	4.1	2	_

Dimensions

Individual sub-base, MHA2-AS-5-M5



68.4

42.4

- [1] Plug vanes
- [4] Cable, 2.5 m

84.5

16.2

Туре	B1	B2	В3	D1	D2 Ø	D3 Ø	D4 Ø	H1	H2	Н3	H4	H5	H6
MHA2-AS-5-M5	21	8.8	3.5	M5	3.4	6	3.3	22.2	13.9	6.9	6.2	16.4	45.2
Туре	L1	L2	!	L3	L4	L5		L6	L7	L8	l	_9	T1

13.9

10.3

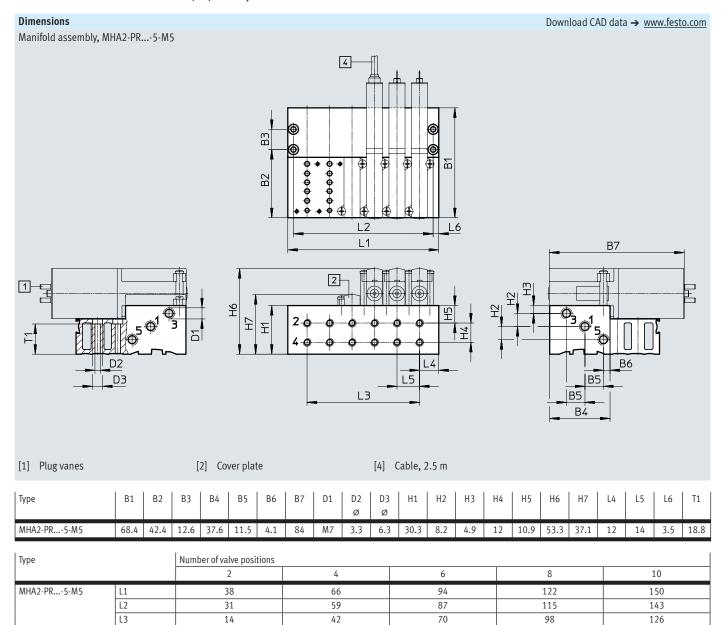
11.7

48.7

MHA2-AS-5-M5

12.6

10.7

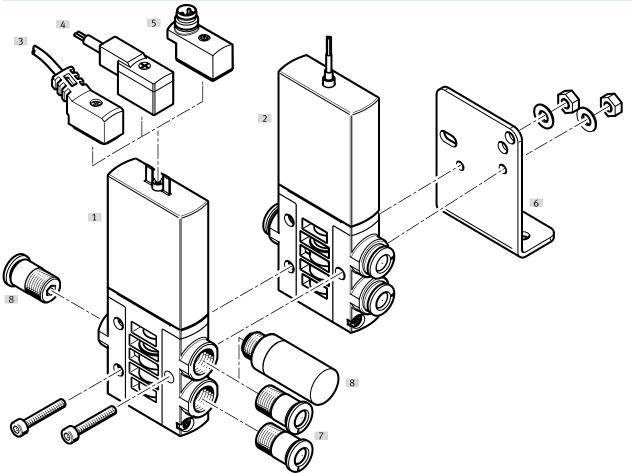


Ordering data						
					Part no.	Туре
Valves						
	Electrical connection: plug vanes	With fast-switching el	ectronics, switching tin	ne 2 ms	525101	MHA2-MS1H-5/2-2
	Electrical connection: cable	With fast-switching el	ectronics, switching tir	me 2 ms	525103	MHA2-MS1H-5/2-2-K
Manifold rail						
	Individual sub-base Pneumatic connection: thread M	5		1 valve position	525120	MHA2-AS-5-M5
	Manifold block			2 valve positions	525127	MHA2-PR2-5-M5
	Pneumatic connection 1, 3, 5: th	read M7		4 valve positions	525128	MHA2-PR4-5-M5
	Pneumatic connection 2, 4: threa	ad M5		6 valve positions	525129	MHA2-PR6-5-M5
				8 valve positions	525130	MHA2-PR8-5-M5
				10 valve positions	525131	MHA2-PR10-5-M5
Committee						
Cover plate		1 1 21				Laurana DD 5
	Vacant valve positions must be s	ealed with a cover plate	e.		525132	MHAP2-BP-5
Connecting cable (for v	valves with 2-pin plug)		T			Datasheets → Internet: nebv
	2-pin socket,	PUR cable, degree of	•	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
	open cable end 2-wire	protection IP65	indication with LED	Length 5 m	8047672	NEBV-Z4WA2L-P-E-5-N-LE2-S1
		D10 11 1 6		Length 10 m	8047670	NEBV-Z4WA2L-P-E-10-N-LE2-S1
		PVC cable, degree of	Without signal	Length 0.5 m	193690	KMYZ-4-24-0.5-B
		protection IP40	status indication	Length 2.5 m	193691	KMYZ-4-24-2.5-B
A S	2-pin socket, plug M8x1 3-pin	PUR cable, degree of	Signal status	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
		protection IP65	indication with LED	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1

Ordering data					Part no.	Туре
Adamtos (formalisa mil	th 2 nin nluc)		:		raitii0.	турс
Adapter (for valves wi		gnal status	Plug M8, 3-pi	n	571686	VAVE-C8-1R8
	1 '	dication with LED	Plug M8, 4-pi		573194	VAVE-C8-1R1
	"	araction 225	T tug mo, 4 pm		373134	WAVE CO INI
H-rail mounting						
	For 5/2-way solenoid valves				162556	CPV10/14-VI-BG-NRH-35
	101 J/2 way soleliola valves				102330	Crv10/14 W BS MAII 33
H-rail						
Por	To EN 60715			2 m	35430	NRH-35-2000
Silencer						Datasheets → Internet: u
	With threaded connection		M5	1 piece	165003	UC-M5
				50 pieces	534217	UC-M5-50
			M7	1 piece	161418	UC-M7
				50 pieces	534218	UC-M7-50
Duch in Estina						
Push-in fitting	88-1-46		4 mm	10 -:	452245	Datasheets → Internet: q: QSM-M5-4-I
	Male thread M5 with internal hex for to	ubilig O.D.	6 mm	10 pieces 10 pieces	153315 153317	QSM-M5-4-I
	Male thread M7 with internal hex for to	uhing O D	4 mm	10 pieces	153317	QSM-M7-4-I
	Mate tinead M7 With Internat nex for th	ubilig O.D.	4 111111	100 pieces	133006	QSM-M7-4-I-100
			6 mm	100 pieces	153321	QSM-M7-6-I
	Male thread M5 with external hex, pus	h in I fitting				QSML-M5-4
	rotatable through 360°, for tubing O.D		4 mm	10 pieces 100 pieces	153333	QSML-M5-4-100
	Totalable tillough 500 , for tubing 0.D	•	(mm	100 pieces	130771	QSML-M5-4-100 QSML-M5-6
			6 mm	<u> </u>	153335	QSML-M5-6-100
	Male thread M7 with external hex, pus	h in I fitting	4 mm	100 pieces 10 pieces	130772	QSML-M3-6-100 QSML-M7-4
	rotatable through 360°, for tubing O.D	•	4 111111	· ·	186352	QSML-M7-4 QSML-M7-4-100
	Totalable tillough 500 , for tubing 0.D	•	6 mm	100 pieces 10 pieces	130773	QSML-M7-4-100 QSML-M7-6
			0 111111		186353	QSML-M7-6-100
				100 pieces	130774	QSML-M7-8-100
Blanking plug						
	For thread M5			10 pieces	3843	B-M5
	For thread M7			10 pieces	174309	B-M7
Inscription label						
	For solenoid valve			80 pieces in a frame	197259	MH-BZ-80X

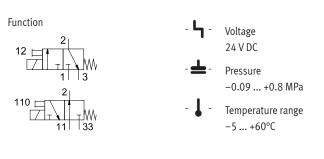
Peripherals overview – Individual valve

Connection with plug vanes — Connection with moulded-in cable



Design	Designation Type		Description	→ Page/Internet
[1]	Individual valve	MHE3	With plug vanes	61
[2]	Individual valve	MHE3K	With moulded-in cable, IP65	61
[3]	Connecting cable	NEBV	PUR cable, signal status indication with LED, IP65	62
[4]	Plug socket with cable	KMYZ-4	PVC cable, without signal status indication, IP50	62
[5]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	62
[6]	Mounting bracket	MHE2-BG-L	For wall mounting	62
[7]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	62
[8]	Silencer	UC	For fitting in exhaust ports	62

Datasheet - Individual valve





General technical data		
Valve function		3/2 way, single solenoid ¹⁾
Design		Pressure relief poppet valve
Overlap		Negative overlap
Sealing principle		Soft
Reset method		Mechanical spring
Actuation type		Electrical
Type of control		Direct
Direction of flow		Reversible with restrictions ²⁾
Exhaust function		Can be throttled
Manual override		Non-detenting
Mounting position		Any
Width	[mm]	14
Grid dimension	[mm]	19
Note on grid dimension		Minimum distance between the valves is 5 mm
Nominal width	[mm]	3
Standard nominal flow rate	[l/min]	200
Type of mounting		Via through-hole
Pneumatic connection		Connecting thread G1/8
		Push-in connector for tubing O.D. 6 mm
Product weight	[g]	120

- 1) Can be used as a 2/2-way valve by sealing port 3 or 33 $\,$
- 2) Slight leakage can occur in the pressure range -0.8 bar to +0.5 bar.

Operating and environmental conditions	With fast-switching electronics	Without fast-switching electronics
Operating medium	Compressed air to ISO 8573-1:2010 [7:4	4:4]
Note on the operating/pilot medium	Lubricated operation possible (in which	case lubricated operation will always be required)
Ambient temperature [°C]	-5 +60	
Temperature of medium [°C]	-5 +60	
Restricted ambient temperature and temperature of medium	As a function of switching frequency	-
Corrosion resistance class CRC ¹⁾	2	2
CE marking (see declaration of conformity) ³⁾	To EU EMC Directive ²⁾	-
	To EU RoHS Directive	-
UKCA marking (see declaration of conformity) ³⁾	To UK instructions for EMC	-
	To UK RoHS instructions	-
Certification	c UL us - Recognized (OL)	c UL us - Recognized (OL)
	RCM	-
Shock resistance	Shock test with severity level 2 to FN 942	2017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity le	evel 2 to FN 942017-4 and EN 60068-2-6

¹⁾ More information: www.festo.com/x/topic/kbk

3) More information: www.festo.com/catalogue/... \Longrightarrow Support/Downloads.

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 -> Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Solenoid valves MHE3, fast-switching valves

Datasheet – Individual valve

Operating and environmental conditions				
			With fast-switching electronics	Without fast-switching electronics
Operating pressure		[MPa]	-0.09 +0.8	
		[bar]	-0.9 +8	
	Reversible	[MPa]	-0.09 +0.1	
		[bar]	-0.9 +1	
		[psi]	-13.05 +14.5	
Operating pressure for		[MPa]	-0.09 +0.8	
• MHE3-M1H-3/20-1/8-K		[bar]	-0.9 +8	
• MHE3-M1H-3/20-QS-6	Reversible	[MPa]	-0.09 +0.1	
• MHE3-MS1H-3/20-1/8-K		[bar]	-0.9 +1	
• MHE3-MS1H-3/20-QS-6		[psi]	-13.05 +14.5	

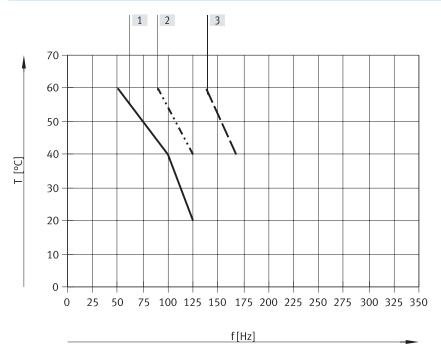
Electrical data			
		With fast-switching electronics	Without fast-switching electronics
Electrical connection		2-pin plug or cable	
Operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	±10	
Power consumption	[W]	6.5 for approx. 4.5 ms (high-current phase, inrush current 1 A)	3.7
	[W]	1.6 (low-current phase)	-
Reverse polarity protection		Bipolar	-
Duty cycle	[%]	100	100
Additional functions		Spark arresting	-
		Holding current reduction	-
		Protective circuit	-
Degree of protection to EN 60529		IP65	IP65

Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	2.3	8.3
	Off	[ms]	2.8	4.5
Tolerance for switching time	On	[%]	+1030	-
	Off	[%]	+1050	-
Switching time variation from 1 Hz		[ms]	0.2	-
upwards				
Maximum switching frequency	-	[Hz]	280	130

Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

Datasheet - Individual valve

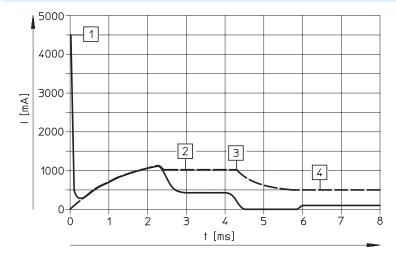
Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly,6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised

No restrictions for individual valve, through-flow, 0.6 MPa.

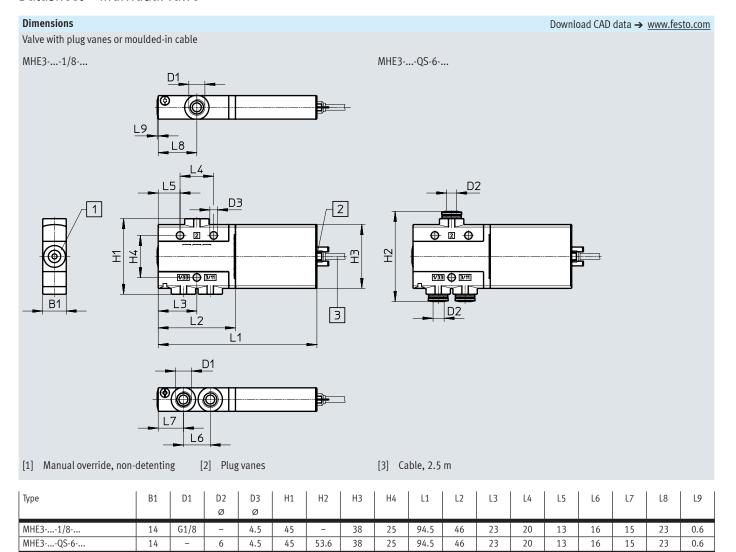
Current curve for valves with fast-switching electronics (MHE3-MS1H)



----- Internal current in the coil
------ External current in the supply line

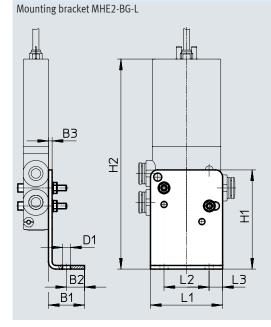
- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

Datasheet - Individual valve



Dimensions

Download CAD data → www.festo.com



Туре	B1	B2	В3	D1	H1	H2	L1	L2	L3
MHE2-BG-L	20	10	2	4.5	55	113.3	40	25	7.5

Datasheet – Individual valve

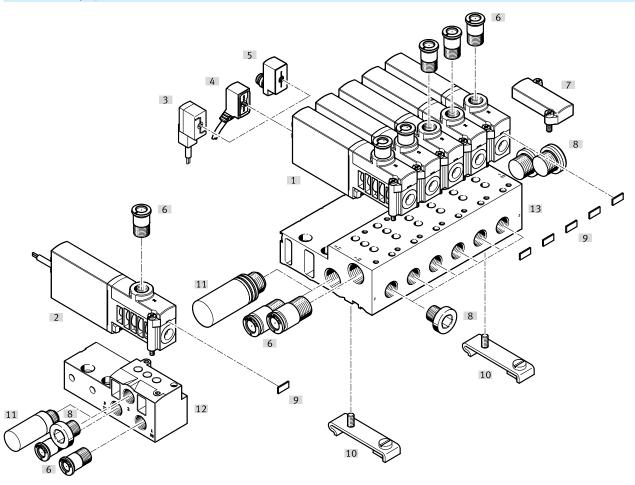
Ordering data						
					Part no.	Туре
Valves						
	Electrical connec-	With fast-switching	Pneumatic connection: thread	Normally open	525167	MHE3-MS1H-3/20-1/8
	tion: 2-pin plug	electronics, switching	G1/8	Normally closed	525147	MHE3-MS1H-3/2G-1/8
		time 2.3 ms	Pneumatic connection:	Normally open	525171	MHE3-MS1H-3/20-QS-6
			push-in connector for tubing	Normally closed	525151	MHE3-MS1H-3/2G-QS-6
			O.D. 6 mm			
		Without fast-switching	Pneumatic connection: thread	Normally open	525166	MHE3-M1H-3/20-1/8
		electronics, switching	G1/8	Normally closed	525146	MHE3-M1H-3/2G-1/8
		time 8.3 ms	Pneumatic connection:	Normally open	525170	MHE3-M1H-3/20-QS-6
			push-in connector for tubing	Normally closed	525150	MHE3-M1H-3/2G-QS-6
			O.D. 6 mm			
	Electrical connec-	With fast-switching	Pneumatic connection: thread	Normally open	525169	MHE3-MS1H-3/20-1/8-K
	tion: cable	electronics, switching	G1/8	Normally closed	525149	MHE3-MS1H-3/2G-1/8-K
		time 2.3 ms	Pneumatic connection:	Normally closed	525153	MHE3-MS1H-3/2G-QS-6-K
To the second se			push-in connector for tubing			
			O.D. 6 mm			
		Without fast-switching	Pneumatic connection: thread	Normally open	525168	MHE3-M1H-3/20-1/8-K
		electronics, switching	G1/8	Normally closed	525148	MHE3-M1H-3/2G-1/8-K
		time 8.3 ms	Pneumatic connection:	Normally closed	525152	MHE3-M1H-3/2G-QS-6-K
			push-in connector for tubing			
			O.D. 6 mm			

Datasheet – Individual valve

Ordering data						
					Part no.	Туре
Connecting cable (for	valves with 2-pin plug)					Datasheets → Internet: nebv
	2-pin socket,	PUR cable, degree of	Signal status	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
	open cable end 2-wire	protection IP65	indication with LED	Length 5 m	8047672	NEBV-Z4WA2L-P-E-5-N-LE2-S1
				Length 10 m	8047670	NEBV-Z4WA2L-P-E-10-N-LE2-S1
_//		PVC cable, degree of	Without signal	Length 0.5 m	193690	KMYZ-4-24-0.5-B
		protection IP40	status indication	Length 2.5 m	193691	KMYZ-4-24-2.5-B
<u> </u>		1000				
	2-pin socket, plug M8x1	PUR cable, degree of	Signal status	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
	3-pin	protection IP65	indication with LED	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1
Adapter (for valves w	ith 2-nin nlug)					
	2-pin socket	Signal status indication	Plug M8, 3-pin		571686	VAVE-C8-1R8
	2 pm socket	with LED	Plug M8, 4-pin		573194	VAVE-C8-1R1
		With LLD	Tiug Mo, 4-pili		373194	VAVE-CO-INI
Wall mounting						
000	Mounting bracket				196165	MHE2-BG-L
Silencer						Detechants & Internet up
Sitericer	Push-in sleeve with O.D. 6			1 piece	165007	Datasheets → Internet: uc UC-QS-6H
						UC-1/8
	With threaded connection (J1/0		1 piece 50 pieces	161419 534219	UC-1/8 UC-1/8-50
				3 - p. 0000	331223	55-7-55
Push-in fitting						Datasheets → Internet: qs
	Male thread G1/8 with exte	ernal hex for tubing O.D.	6 mm	10 pieces	186096	QS-G1/8-6
				100 pieces	132037	QS-G1/8-6-100
•			8 mm	10 pieces	186098	QS-G1/8-8
				50 pieces	132038	QS-G1/8-8-50
	Male thread G1/8 with exte	ernal hex, push-in L-fitting	6 mm	10 pieces	186117	QSL-G1/8-6
	rotatable through 360°, for			100 pieces	132049	QSL-G1/8-6-100
		J.	8 mm	10 pieces	186119	QSL-G1/8-8
				50 pieces	132050	QSL-G1/8-8-50

Peripherals overview – Semi in-line valve

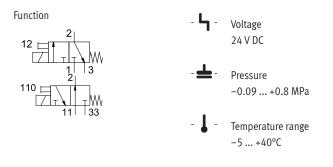
Connection with plug vanes – Connection with moulded-in cable



Design	ation	Туре	Description	→ Page/Internet
[1]	Semi in-line valve	MHP3	With plug vanes	70
[2]	Semi in-line valve	MHP3K	With moulded-in cable, IP65	70
[3]	Plug socket with cable	KMYZ-4	PVC cable, without signal status indication, IP50	70
[4]	Connecting cable	NEBV	PUR cable, signal status indication with LED, IP65	70
[5]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	70
[6]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	71
[7]	Cover plate	MHAP3-BP-3	For sealing vacant positions	70
[8]	Blanking plug	В	For sealing unused ports	71
[9]	Inscription label	MH-BZ-80X	For identifying the valves	71
[10]	H-rail mounting	CPV10/14-VI-BG-NRH-35	For mounting the manifold block on H-rails to EN 60715	71
[11]	Silencer	UC	For fitting in exhaust ports	71
[12]	Individual sub-base	MHA3-AS-3-1/8	For semi in-line valves; the individual sub-base is also used for sub-base valves and must be	70
			sealed with a blanking plug here	
[13]	Manifold block	MHA3-PR	For semi in-line valves	70

Solenoid valves MHP3, fast-switching valves

Datasheet - Semi in-line valve





General technical data			
Valve function			3/2 way, single solenoid ¹⁾
Design			Pressure relief poppet valve
Overlap			Negative overlap
Sealing principle			Soft
Reset method			Mechanical spring
Actuation type			Electrical
Type of control			Direct
Direction of flow			Reversible with restrictions ²⁾
Exhaust function			Can be throttled
Manual override			Non-detenting
Mounting position			Any
Width		[mm]	14
Grid dimension		[mm]	19
Note on grid dimension			Minimum distance between the valves is 5 mm
Nominal width		[mm]	3
Standard nominal flow rate		[l/min]	200
Type of mounting			On PR rail
Pneumatic connection	2		Connecting thread G1/8, push-in connector for tubing O.D. 6 mm
	1, 11, 3, 33		Sub-base
Product weight		[g]	120

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

²⁾ Slight leakage can occur in the pressure range –0.8 bar to +0.5 bar.

			With fast-switching electronics	Without fast-switching electronics	
Operating medium		-	Compressed air to ISO 8573-1:2010 [7:4	:4]	
Note on the operating/pilot medium			Lubricated operation possible (in which o	case lubricated operation will always be required)	
Operating pressure		[MPa]	-0.09 +0.8		
		[bar]	-0.9 +8		
	Reversible	[MPa]	-0.09 +0.1		
		[bar]	-0.9 +1		
		[psi]	-13.05 +14.5		
Ambient temperature		[°C]	-5 +40		
Temperature of medium		[°C]	-5 +40		
Restricted ambient temperature and temperatu	re of medium		As a function of switching frequency	-	
Corrosion resistance class CRC ¹⁾			2	2	
CE marking (see declaration of conformity) ³⁾			To EU EMC Directive ²⁾	-	
			To EU RoHS Directive	-	
UKCA marking (see declaration of conformity) ³⁾			To UK instructions for EMC	-	
			To UK RoHS instructions	-	
Certification			c UL us - Recognized (OL)	c UL us - Recognized (OL)	
			RCM	-	
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
Vibration resistance			Transport application test with severity le	evel 2 to FN 942017-4 and	
			EN 60068-2-6		

¹⁾ More information: www.festo.com/x/topic/kbk

³⁾ More information: www.festo.com/catalogue/... \rightarrow Support/Downloads.

Electrical data			
		With fast-switching electronics	Without fast-switching electronics
Electrical connection		2-pin plug or cable	
Operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	±10	
Power consumption	[W]	6.5 (high-current phase)	3.7
	[W]	1.6 (low-current phase)	-
Reverse polarity protection		Bipolar	-
Duty cycle	[%]	100	100
Additional functions		Spark arresting	-
		Holding current reduction	-
		Protective circuit	-
Degree of protection to EN 60529		IP65	IP65

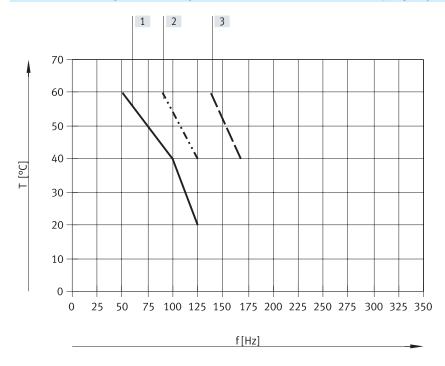
Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	2.3	8.3
	Off	[ms]	2.8	4.5
Tolerance for switching time	On	[%]	+1030	-
	Off	[%]	+1050	-
Switching time variation from 1 Hz		[ms]	0.2	-
upwards				
Maximum switching frequency		[Hz]	280	130

Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh21 → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

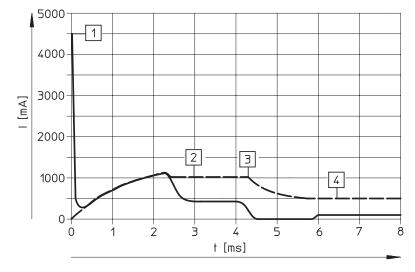
Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly,6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised

No restrictions for individual valve, through-flow, 0.6 MPa.

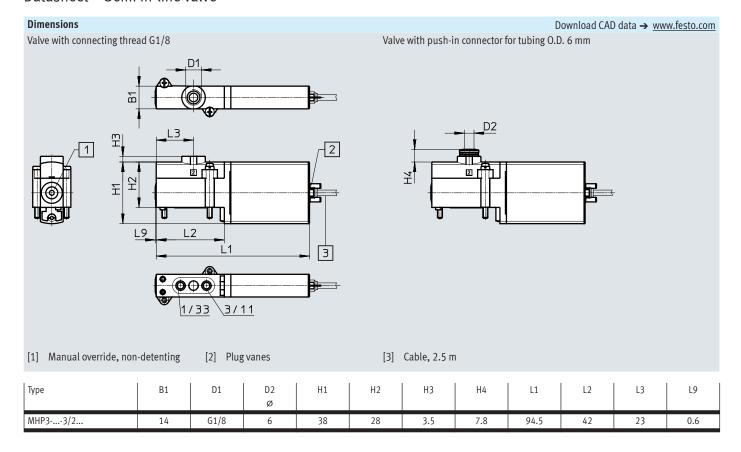
Current curve for valves with fast-switching electronics (MHP3-MS1H)



----- Internal current in the coil

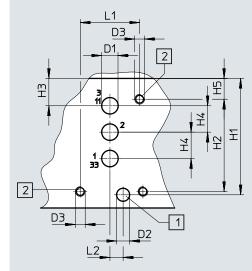
External current in the supply line

- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A



Dimensions

Hole pattern on sub-bases



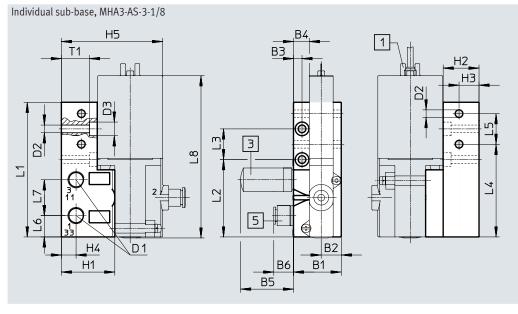
Download CAD data → www.festo.com

- 🖣 - Note

With semi in-line valves, port 2 is not used.

If used as a 2/2-way valve, normally closed, ports 3/11 are not used. If used as a 2/2-way valve, normally open, ports 1/33 are not used.

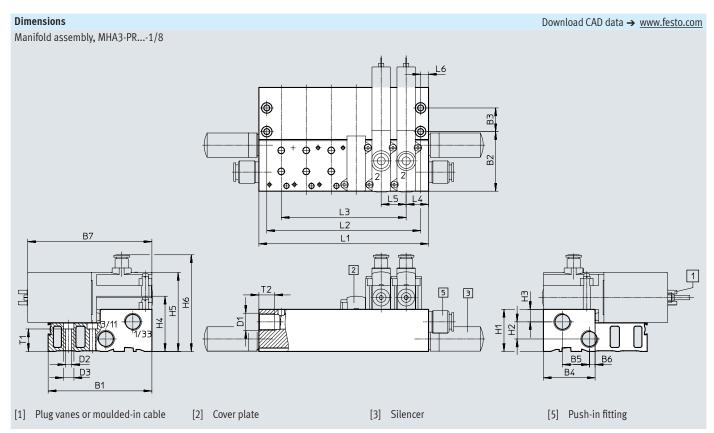
- [1] Hole for coding pin, 2mm deep
- [2] Mounting thread, 8 mm deep

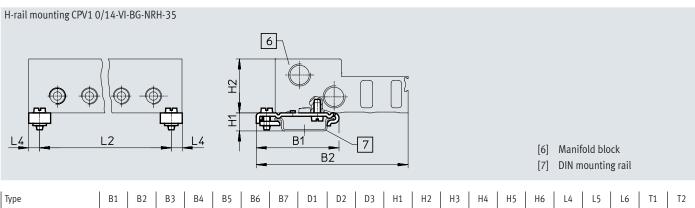


- [1] Plug vanes
- [3] Silencer
- [5] Push-in fitting

Туре	B1	B2	В3	B4	B5	В6	D1	D2 Ø	D3 Ø	H1	H2	H3	H4	H5
Hole pattern	-	-	-	-	-	-	5	4	M3	35.3	28	8.3	8	6.3
MHA3-AS-3-1/8	28	11.8	5	9.3	31.5	13.3	G1/8	4.5	8	31.3	21	11.7	8.6	59.3

Туре	L1	L2	L3	L4	L5	L6	L7	L8	T1
Hole pattern	18	4	-	-	-	-	-	-	-
MHA3-AS-3-1/8	78.9	45.3	18	54.3	17.9	12.5	21	95	16.4





Туре	B1	B2	В3	B4	B5	В6	B7	D1	D2 Ø	D3 Ø	H1	H2	Н3	H4	H5	Н6	L4	L5	L6	T1	T2
MHA3-PR1/8	79	45.3	18	39.3	20.5	4.3	94.5	G1/4	4.5	8	32	13	9.5	42	60	73.5	17	19	6	17.1	12
CPV1 0/14-VI-BG	49.1	90	-	-	-	-	-	-	-	-	10.7	32	-	-	-	-	6.5	-	-	-	-

Туре		Number of valve positions				
		2	4	6	8	10
MHA3-PR1/8	L1	53	91	129	167	205
	L2	41	79	117	155	193
	L3	19	57	95	133	171
CPV1 0/14-VI-BG	L2	40	78	116	154	192



Valve types 3/2G and 3/20 must not be mixed on one manifold block.

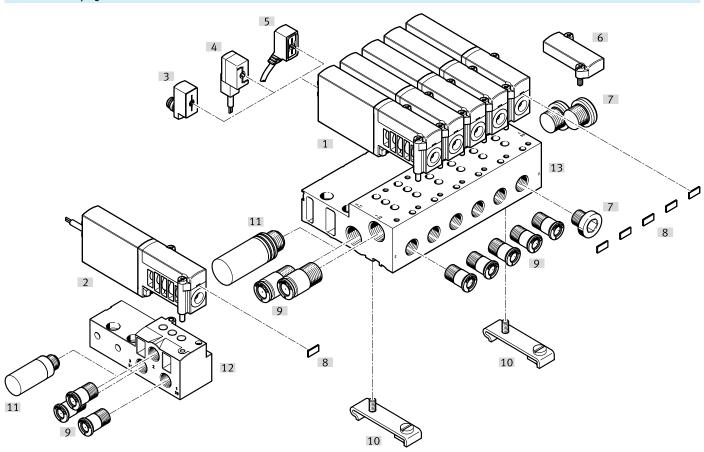
Ordering data						
		:			Part no.	Туре
Valves						
	Electrical connection:	With fast-switching	Pneumatic connection: thread	Normally open	525159	MHP3-MS1H-3/20-1/8
	2-pin plug	electronics, switch-	G1/8	Normally closed	525139	MHP3-MS1H-3/2G-1/8
0 2		ing time 2.3 ms	Pneumatic connection:	Normally closed	525143	MHP3-MS1H-3/2G-QS-6
V			push-in connector for tubing			
			O.D. 6 mm			
		Without fast-switch-	Pneumatic connection: thread	Normally open	525158	MHP3-M1H-3/20-1/8
		ing electronics,	G1/8	Normally closed	525138	MHP3-M1H-3/2G-1/8
		switching time	Pneumatic connection:	Normally closed	525142	MHP3-M1H-3/2G-QS-6
		8.3 ms	push-in connector for tubing			
			O.D. 6 mm			
	Electrical connection:	With fast-switching	Pneumatic connection:	Normally closed	525145	MHP3-MS1H-3/2G-QS-6-K
	cable	electronics, switch-	push-in connector for tubing			
A Park		ing time 2.3 ms	O.D. 6 mm			
M 26-14 21						
Manifold rail	Individual sub-base ¹⁾			1 valvo position	E2F24 A	MHA3-AS-3-1/8
		throad C1/9		1 valve position	525214	MINA2-42-3-1/0
	Pneumatic connection	: thread G1/8				
<u> </u>	Manifold block ¹⁾			2 valve positions	525221	MHA3-PR2-3-1/8
	Pneumatic connection	1 11 3 33 thread G	1//	4 valve positions	525222	MHA3-PR4-3-1/8
	Pneumatic connection		1/4			
	Fileumatic connection	2. tillead 01/6		6 valve positions	525223	MHA3-PR6-3-1/8
4				8 valve positions	525224	MHA3-PR8-3-1/8
				10 valve positions	525225	MHA3-PR10-3-1/8
Cover plate						
	Vacant valve positions	must be sealed with a	cover plate.		525226	MHAP3-BP-3
			1 2			
8						
Connecting cable (for	valves with 2-pin plug)					Datasheets → Internet: neb
M	2-pin socket,	PUR cable, degree of	Signal status indication with	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
	open cable end,	protection IP65	LED	Length 5 m	8047672	NEBV-Z4WA2L-P-E-5-N-LE2-S1
//	2-wire	F. 51.551.511 11 05		Length 10 m	8047670	NEBV-Z4WA2L-P-E-10-N-LE2-S1
//	2 11110	PVC cable, degree of	Without signal status	Length 0.5 m		
			indication		193690	KMYZ-4-24-0.5-B
		protection IP40	IIIuiCatioii	Length 2.5 m	193691	KMYZ-4-24-2.5-B
~	2 nin cocket plus	DIID cable daggef	Cignal status indication with	Longth O F m	9047473	MEDV 74WADI D E O F N MOCO C4
	2-pin socket, plug	PUR cable, degree of	Signal status indication with	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
	M8x1 3-pin	protection IP65	LED	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1
The state of the s						
\checkmark						
Adapter (for valves wi						
	2-pin socket	Signal status	Plug M8, 3-pin		571686	VAVE-C8-1R8
		indication with LED	Plug M8, 4-pin		573194	VAVE-C8-1R1
\\						

 $^{1) \}hspace{0.5cm} \text{Seal port 2 with a blanking plug. These ports have no function when using semi in-line valves.} \\$

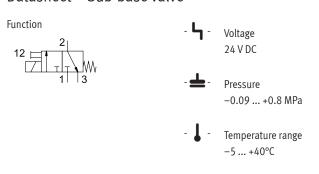
Ordering data				1	
				Part no.	Туре
H-rail mounting	1			I	
	For manifold block			162556	CPV10/14-VI-BG-NRH-35
H-rail					
	To EN 60715		2 m	35430	NRH-35-2000
Silencer					Datasheets → Internet: uc
	Push-in sleeve with O.D. 6 mm		1 piece	165007	UC-QS-6H
	With threaded connection	G1/8	1 piece	161419	UC-1/8
60			50 pieces	534219	UC-1/8-50
		G1/4	1 piece	165004	UC-1/4
			20 pieces	534220	UC-1/4-20
Push-in fitting					Datasheets → Internet: qs
	Male thread G1/8 with external hex for tubing O.D.	6 mm	10 pieces	186096	QS-G1/8-6
			100 pieces	132037	QS-G1/8-6-100
		8 mm	10 pieces	186098	QS-G1/8-8
			50 pieces	132038	QS-G1/8-8-50
	Male thread G1/4 with external hex for tubing O.D.	8 mm	10 pieces	186099	QS-G1/4-8
			50 pieces	132040	QS-G1/4-8-50
		10 mm	10 pieces	186101	QS-G1/4-10
			50 pieces	132041	QS-G1/4-10-50
	Male thread G1/8 with external hex, push-in L-fitting	6 mm	10 pieces	186117	QSL-G1/8-6
	rotatable through 360°, for tubing O.D.		100 pieces	132049	QSL-G1/8-6-100
		8 mm	10 pieces	186119	QSL-G1/8-8
			50 pieces	132050	QSL-G1/8-8-50
	Male thread G1/4 with external hex, push-in L-fitting	8 mm	10 pieces	186120	QSL-G1/4-8
	rotatable through 360°, for tubing O.D.		50 pieces	132052	QSL-G1/4-8-50
		10 mm	10 pieces	186122	QSL-G1/4-10
			50 pieces	132053	QSL-G1/4-10-50
Blanking plug					
- Simila pius	For thread G1/8		10 pieces	3568	B-1/8
	For thread G1/4		10 pieces	3569	B-1/4
-					
Inscription label	1				T
	For solenoid valve		80 pieces in a frame	197259	MH-BZ-80X

Peripherals overview – Sub-base valve

Connection with plug vanes – Connection with moulded-in cable



Design	nation	Туре	Description	→ Page/Internet
[1]	Sub-base valve	MHA3	With plug vanes	78
[2]	Sub-base valve	MHA3K	With moulded-in cable, IP65	78
[3]	Adapter	VAVE-C8	For connecting the valves via connecting cable M8 3-pin or 4-pin, IP65	78
[4]	Plug socket with cable	KMYZ-4	PVC cable, without signal status indication, IP50	78
[5]	Connecting cable	NEBV	PUR cable, signal status indication with LED, IP65	78
[6]	Cover plate	MHAP3-BP-3	For sealing vacant positions	78
[7]	Blanking plug	В	For sealing unused ports	79
[8]	Inscription label	MH-BZ-80X	For identifying the valves	79
[9]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	79
[10]	H-rail mounting	CPV10/14-VI-BG-NRH-35	For mounting the manifold block on H-rails to EN 60715	79
[11]	Silencer	UC	For fitting in exhaust ports	79
[12]	Individual sub-base	MHA3-AS-3-1/8	For sub-base valve	78
[13]	Manifold block	MHA3-PR3-1/8	For sub-base valve	78





General technical data			
Valve function		3/2 way, single solenoid ¹⁾	
Design		Pressure relief poppet valve	
Overlap		Negative overlap	
Sealing principle		Soft	
Reset method		Mechanical spring	
Actuation type		Electrical	
Type of control		Direct	
Direction of flow		Reversible with restrictions ²⁾	
Exhaust function		Can be throttled	
Manual override		Non-detenting	
Mounting position		Any	
Width	[mm]	14	
Grid dimension	[mm]	19	
Note on grid dimension		Minimum distance between the valves is 5 mm	
Nominal width	[mm]	3	
Standard nominal flow rate	[l/min]	200	
Type of mounting		On PR rail, via through-hole	
Pneumatic connection		Sub-base	
Product weight	[g]	120	

Can be used as a 2/2-way valve by sealing port 3 or 33
 Slight leakage can occur in the pressure range -0.8 bar to +0.5 bar.

Operating and environmental conditions								
			With fast-switching electronics	Without fast-switching electronics				
Operating medium			Compressed air to ISO 8573-1:2010 [7:4	4:4]				
Note on the operating/pilot medium			Lubricated operation possible (in which o	case lubricated operation will always be required)				
Operating pressure		[MPa]	-0.09 +0.8					
		[bar]	-0.9 +1					
	Reversible	[MPa]	-0.09 +0.1					
		[bar]	-0.9 +1	-0.9 +1				
		[psi]	-13.05 +14.5					
Ambient temperature		[°C]	-5 +40					
Temperature of medium		[°C]	-5 +40					
Restricted ambient temperature and temperature o	f medium		As a function of switching frequency	-				
Corrosion resistance class CRC ¹⁾			2	2				
CE marking (see declaration of conformity) ³⁾			To EU EMC Directive ²⁾	-				
			To EU RoHS Directive	-				
UKCA marking (see declaration of conformity) ³⁾			To UK instructions for EMC	-				
			To UK RoHS instructions	-				
Certification			c UL us - Recognized (OL)	c UL us - Recognized (OL)				
			RCM	-				
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27					
Vibration resistance			Transport application test with severity level 2 to FN 942017-4 and					
			EN 60068-2-6					

¹⁾ More information: www.festo.com/x/topic/kbk

³⁾ More information: www.festo.com/catalogue/... \Longrightarrow Support/Downloads.

Electrical data			
		With fast-switching electronics	Without fast-switching electronics
Electrical connection		2-pin plug or cable	
Operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	±10	
Power consumption	[W]	6.5 for approx. 4.5 ms (high-current phase,	3.7
		inrush current 1 A)	
	[W]	1.6 (low-current phase)	-
Reverse polarity protection		Bipolar	-
Duty cycle	[%]	100	100
Additional functions		Spark arresting	-
		Holding current reduction	-
		Protective circuit	-
Degree of protection to EN 60529		IP65	IP65

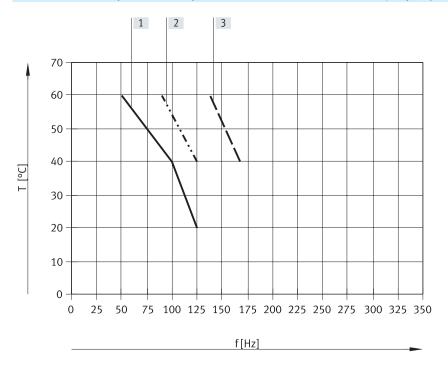
Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	2.3	8.3
	Off	[ms]	2.8	4.5
Tolerance for switching time	On	[%]	+1030	-
	Off	[%]	+1050	-
Switching time variation from 1 Hz		[ms]	0.2	-
upwards				
Maximum switching frequency		[Hz]	280	130

Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 -> Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

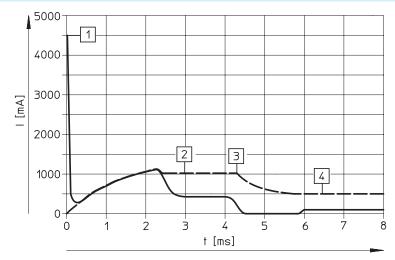
Restricted ambient temperature and temperature of medium as a function of switching frequency



- [1] Valve manifold assembly, 6 valves, unpressurised
- [2] Valve manifold assembly, 6 valves, through-flow, 0.6 MPa
- [3] Individual valve, unpressurised

No restrictions for individual valve, through-flow, 0.6 MPa.

Current curve for valves with fast-switching electronics (MHA3-MS1H)

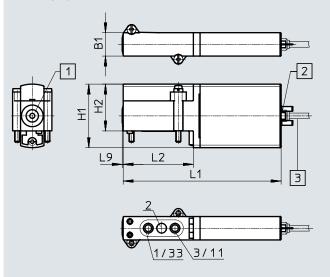


----- Internal current in the coil
------ External current in the supply line

- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

Dimensions

Valve with plug vanes or moulded-in cable, MHA3-...-3/2G...



[1] Manual override, non-detenting

- [2] Plug vanes
- [3] Cable, 2.5 m

Download CAD data → www.festo.com

Hole pattern on sub-bases

L1

D3

D1

Z

T

T

D3

D1

D2

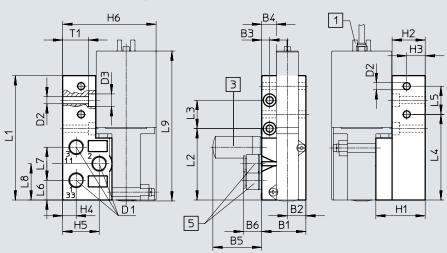
D2

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

Туре	B1	D1	D2 Ø	D3 Ø	H1	H2	Н3	H4	H5	L1	L2	L9
MHA33/2G	14	-	-	-	38	28	-	-	-	94.5	42	0.6
Hole pattern	-	5	4	M3	35.3	28	8.3	8	6.3	18	4	-

Dimensions

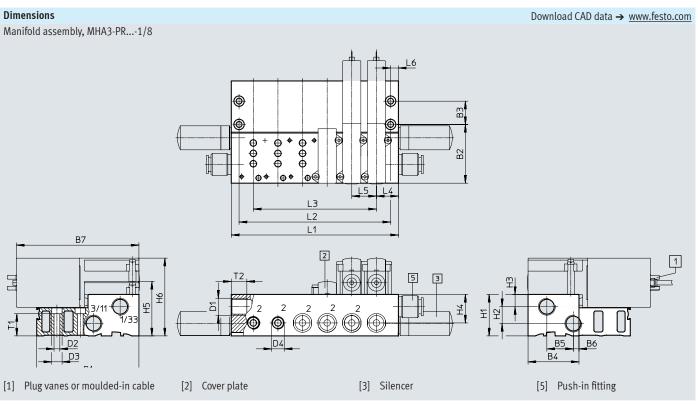
Individual sub-base, MHA3-AS-3-1/8

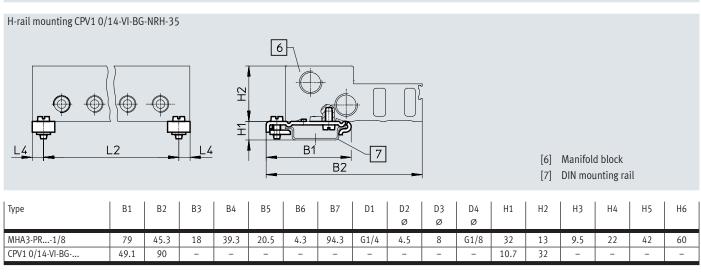


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- [1] Plug vanes
- [3] Silencer
- [5] Push-in fitting

Туре	B1	B2	В3	B4	B5	B6	D1	D2 Ø	D3 Ø	H1	H2	Н3	H4	H5	Н6
MHA3-AS-3-1/8	28	11.8	5	9.3	31.5	13.3	G1/8	4.5	8	31.3	21	11.7	8.6	23.2	59.3
Туре	L1		L2	L3		L4	L5		L6	L7		L8	L9		T1
MHA3-AS-3-1/8	78.9		45.3	18		54.3	17.9		12.5	21		23	95		16.4





Туре	L4	L5	L6	T1	T2
MHA3-PR1/8	17	19	6	17.1	12
CPV1 0/14-VI-BG	6.5	-	-	-	-

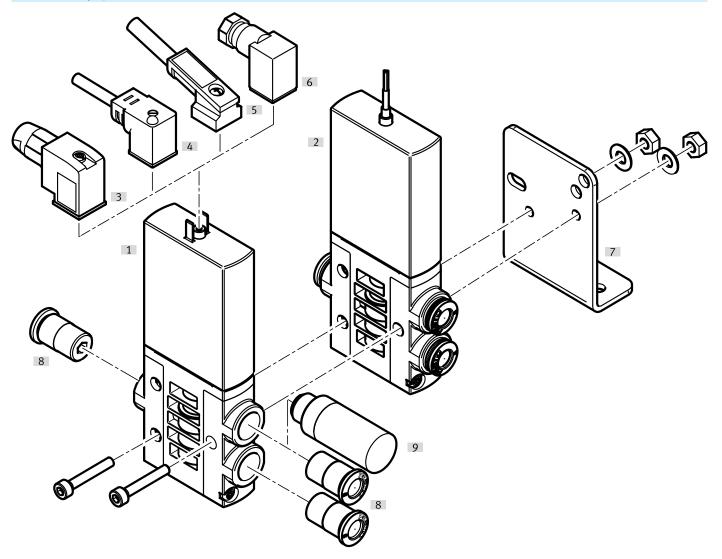
Туре		Number of valve positions				
		2	4	6	8	10
MHA3-PR1/8	L1	53	91	129	167	205
	L2	41	79	117	155	193
	L3	19	57	95	133	171
CPV1 0/14-VI-BG	L2	41	79	117	155	193

Ordering data						
					Part no.	Туре
/alves						
	Electrical connection: 2-pin plug	With fast-switching time 2.3 ms	electronics, switching	Normally closed	525135	MHA3-MS1H-3/2G-3
		Without fast-switch switching time 8.3	•	Normally closed	525134	MHA3-M1H-3/2G-3
	Electrical connection: cable	With fast-switching time 2.3 ms	electronics, switching	Normally closed	525137	MHA3-MS1H-3/2G-3-K
		Without fast-switch switching time 8.3	,	Normally closed	525136	MHA3-M1H-3/2G-3-K
Manifold rail						
	Individual sub-base			1 valve position	525214	MHA3-AS-3-1/8
	Pneumatic connection: thread G1/	/8		1 valve position	323214	MIN NO 9 1/0
\@\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Manifold block			2 valve positions	525221	MHA3-PR2-3-1/8
	Pneumatic connection 1, 11, 3, 33	3: thread G1/4		4 valve positions	525222	MHA3-PR4-3-1/8
	Pneumatic connection 2: thread G	1/8		6 valve positions	525223	MHA3-PR6-3-1/8
9.9.0				8 valve positions	525224	MHA3-PR8-3-1/8
				10 valve positions	525225	MHA3-PR10-3-1/8
Connecting cable (for	valves with 2-pin plug)	-				Datasheets → Internet: neby
	2-pin socket,	PUR cable,	Signal status	Length 2.5 m	8047671	NEBV-Z4WA2L-P-E-2.5-N-LE2-S1
	open cable end 2-wire	degree of	indication with LED	Length 5 m	8047672	NEBV-Z4WA2L-P-E-5-N-LE2-S1
		protection IP65		Length 10 m	8047670	NEBV-Z4WA2L-P-E-10-N-LE2-S1
		PVC cable, degree	Without signal	Length 0.5 m	193690	KMYZ-4-24-0.5-B
		of protection IP40	status indication	Length 2.5 m	193691	KMYZ-4-24-2.5-B
	2-pin socket, plug M8x1 3-pin	PUR cable,	Signal status	Length 0.5 m	8047673	NEBV-Z4WA2L-P-E-0.5-N-M8G3-S1
		degree of protection IP65	indication with LED	Length 2.5 m	8047674	NEBV-Z4WA2L-P-E-2.5-N-M8G3-S1
<u> </u>						
Adapter (for valves w		Tar	In			
	2-pin socket	Signal status	Plug M8, 3-pin		571686	VAVE-C8-1R8
		indication with LED	Plug M8, 4-pin		573194	VAVE-C8-1R1

Ordering data				Part no.	Туре
H-rail mounting				·	
	For manifold block			162556	CPV10/14-VI-BG-NRH-35
H-rail					
	To EN 60715		2 m	35430	NRH-35-2000
Silencer					Datasheets → Internet: u
	With threaded connection	G1/8	1 piece	161419	UC-1/8
			50 pieces	534219	UC-1/8-50
		G1/4	1 piece	165004	UC-1/4
			20 pieces	534220	UC-1/4-20
ush-in fitting					Datasheets → Internet:
N	Male thread G1/8 with external hex for tubing O.D.	6 mm	10 pieces	186096	QS-G1/8-6
			100 pieces	132037	QS-G1/8-6-100
		8 mm	10 pieces	186098	QS-G1/8-8
			50 pieces	132038	QS-G1/8-8-50
	Male thread G1/4 with external hex for tubing O.D.	8 mm	10 pieces	186099	QS-G1/4-8
			50 pieces	132040	QS-G1/4-8-50
		10 mm	10 pieces	186101	QS-G1/4-10
	11.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1		50 pieces	132041	QS-G1/4-10-50
	Male thread G1/8 with external hex, push-in L-fitting	6 mm	10 pieces	186117	QSL-G1/8-6
	rotatable through 360° for tubing O.D.		100 pieces	132049	QSL-G1/8-6-100
•		8 mm	10 pieces	186119	QSL-G1/8-8
		1	50 pieces	132050	QSL-G1/8-8-50
	Male thread G1/4 with external hex, push-in L-fitting	8 mm	10 pieces	186120	QSL-G1/4-8
	rotatable through 360°, for tubing O.D.	10	50 pieces	132052	QSL-G1/4-8-50
		10 mm	10 pieces 50 pieces	186122	QSL-G1/4-10 QSL-G1/4-10-50
			30 pieces	132053	Q3L-G1/4-10-50
lanking plug					
~	For thread G1/8		10 pieces	3568	B-1/8
	For thread G1/4		10 pieces	3569	B-1/4
necription label			I		
nscription label	For solenoid valve		80 pieces in a	197259	MH-BZ-80X
	TOI SUICIIOIU VAIVE		frame	19/239	MIII-DZ-90X

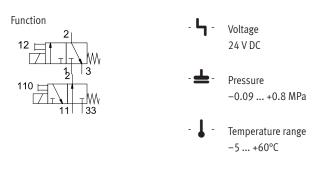
Peripherals overview – Individual valve

Connection with plug vanes - Connection with moulded-in cable



Design	Designation Type		Description	→ Page/Internet
[1]	Individual valve	MHE4	With plug vanes	84
[2]	Individual valve	MHE4K	With moulded-in cable, IP65	84
[3]	Plug socket	MSSD-EB-S-M14	With insulation displacement connector	85
[4]	Plug socket with cable	KMEB-1	PVC cable, with or without LED	85
[5]	Plug socket with cable	KMEB-2	With LED, without LED; PUR cable, with or without LED	85
[6]	Plug socket	MSSD-EB	With clamping screw	85
[7]	Mounting bracket	MHE2-BG-L	For wall mounting	85
[8]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	85
[9]	Silencer	UC	For fitting in exhaust ports	85

Datasheet - Individual valve





General technical data		
Valve function		3/2 way, single solenoid ¹⁾
Design		Pressure relief poppet valve
Overlap		Negative overlap
Sealing principle		Soft
Reset method		Mechanical spring
Actuation type		Electrical
Type of control		Direct
Direction of flow		Reversible with restrictions ²⁾
Exhaust function		Can be throttled
Manual override		Non-detenting
Mounting position		Any
Width	[mm]	18
Grid dimension	[mm]	24
Note on grid dimension		Minimum distance between the valves is 6 mm
Nominal width	[mm]	4
Standard nominal flow rate	[l/min]	400
Type of mounting		Via through-hole
Pneumatic connection		Connecting thread G1/4
		Push-in connector for tubing O.D. 8 mm
Product weight	[g]	270

- 1) Can be used as a 2/2-way valve by sealing port 3 or 33 $\,$
- 2) Slight leakage can occur in the pressure range -0.8 bar to +0.5 bar.

Operating and environmental conditions			With fast-switching electronics	Without fast-switching electronics			
Operating medium			Compressed air to ISO 8573-1:2010 [
Note on the operating/pilot medium				ch case lubricated operation will always be required)			
Operating pressure	,	[MPa]	-0.09 +0.8				
		[bar]	-0.9 +8				
	Reversible	[MPa]	-0.09 +0.1				
		[bar]	-0.9 +1				
		[psi]	-13.05 +14.5				
Ambient temperature		[°C]	−5 +60				
Temperature of medium		[°C]	−5 +60				
Corrosion resistance class CRC ¹⁾			2				
CE marking (see declaration of conformity) ³⁾			To EU EMC Directive ²⁾	-			
			To EU RoHS Directive	-			
UKCA marking (see declaration of conformity) ³⁾			To UK instructions for EMC	-			
			To UK RoHS instructions	-			
Certification			c UL us - Recognized (OL)	c UL us - Recognized (OL)			
			RCM	-			
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27				
Vibration resistance			Transport application test with severity level 2 to FN 942017-4 and				
			EN 60068-2-6				

¹⁾ More information: www.festo.com/x/topic/kbk

3) More information: www.festo.com/catalogue/... \rightarrow Support/Downloads.

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... -> Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Solenoid valves MHE4, fast-switching valves

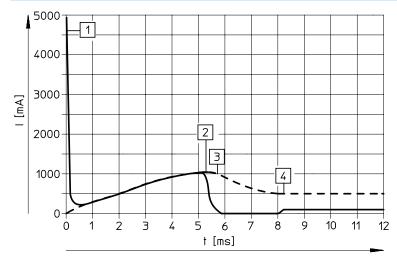
Datasheet - Individual valve

Electrical data			
		With fast-switching electronics	Without fast-switching electronics
Electrical connection		2-pin plug or cable	
Operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	±10	
Power consumption	[W]	8.5 (high-current phase)	5.6
	[W]	2.125 (low-current phase)	-
Reverse polarity protection		Bipolar	-
Duty cycle	[%]	100	100
Additional functions		Spark arresting	-
		Holding current reduction	-
		Protective circuit	-
Degree of protection to EN 60529		IP65	IP65

Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	3.5	10.5
	Off	[ms]	3.5	5
Tolerance for switching time	On	[%]	+1030	-
	Off	[%]	+1040	-
Switching time variation from 1 Hz		[ms]	0.3	-
upwards				
Maximum switching frequency		[Hz]	210	120

Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

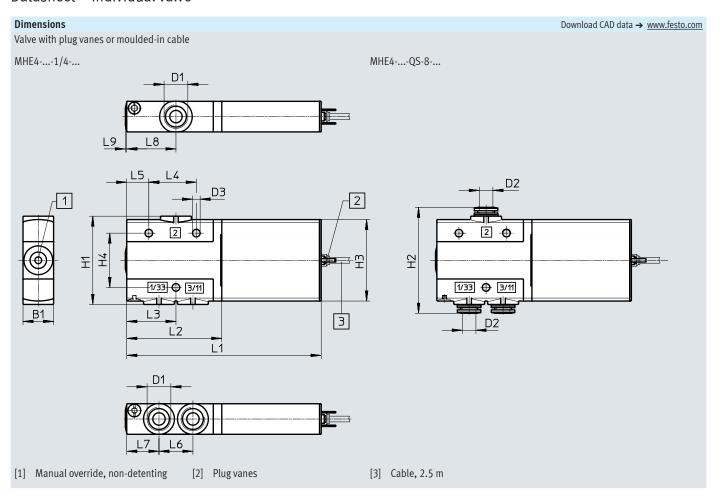
Current curve for valves with fast-switching electronics (MHE4-MS1H)

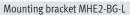


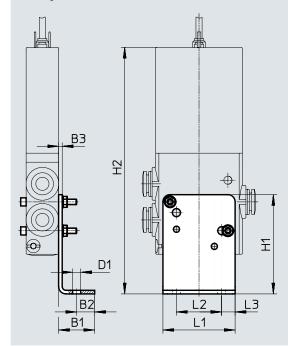
------ Internal current in the coil
------- External current in the supply line

- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

Datasheet - Individual valve







Туре	B1	B2	В3	D1	D2	D3	H1	H2	Н3	H4	L1	L2	L3	L4	L5	L6	L7	L8	L9
					Ø	Ø													
MHE41/4	18	-	-	G1/4	-	4.5	56	-	48	32	114.6	56	29	28	13	20	19	29	0.8
MHE4QS-8	18	-	ı	-	8	4.5	52	62.4	48	32	114.6	56	29	28	13	20	19	29	0.8
MHE2-BG-L	20	10	2	4.5	-	-	55	134	-	-	40	25	7.5	-	-	-	-	-	-

Solenoid valves MHE4, fast-switching valves

Datasheet – Individual valve

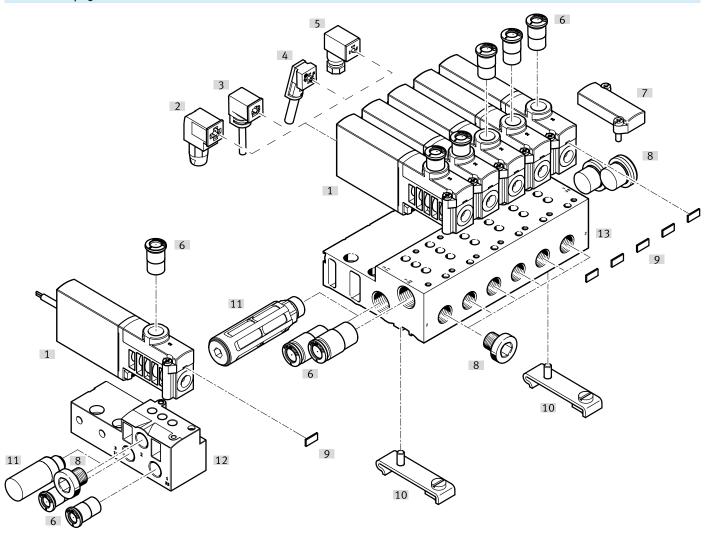
Ordering data						
					Part no.	Туре
Valves						
<i></i> ,	Electrical connec-	With fast-switching	Pneumatic connection: thread	Normally open	525207	MHE4-MS1H-3/20-1/4
· ·	tion: 2-pin plug	electronics, switching	G1/4	Normally closed	525187	MHE4-MS1H-3/2G-1/4
		time 3.5 ms	Pneumatic connection:	Normally open	525211	MHE4-MS1H-3/20-QS-8
			push-in connector for tubing	Normally closed	525191	MHE4-MS1H-3/2G-QS-8
			O.D. 8 mm			
		Without fast-switching	Pneumatic connection: thread	Normally open	525206	MHE4-M1H-3/20-1/4
		electronics, switching	G1/4	Normally closed	525186	MHE4-M1H-3/2G-1/4
		time 10.5 ms	Pneumatic connection:	Normally open	525210	MHE4-M1H-3/20-QS-8
			push-in connector for tubing	Normally closed	525190	MHE4-M1H-3/2G-QS-8
			O.D. 8 mm			
	Electrical connec-	With fast-switching	Pneumatic connection: thread	Normally closed	525189	MHE4-MS1H-3/2G-1/4-K
	tion: cable	electronics, switching	G1/4			
		time 3.5 ms	Pneumatic connection:	Normally open	525213	MHE4-MS1H-3/20-QS-8-K
The state of the s			push-in connector for tubing	Normally closed	525193	MHE4-MS1H-3/2G-QS-8-K
			O.D. 8 mm			
		Without fast-switching	Pneumatic connection: thread	Normally open	525208	MHE4-M1H-3/20-1/4-K
		electronics, switching	G1/4	Normally closed	525188	MHE4-M1H-3/2G-1/4-K
		time 10.5 ms				

Datasheet – Individual valve

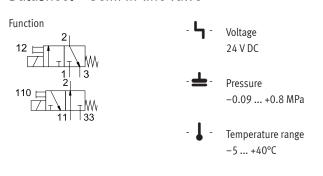
Plug socket with cable (for valves with 2-pin plug) 3-pin socket, open cable end 3-wire Signal status indication with LED 4-pin socket, open cable end 3-wire Signal status indication with LED 4-pin socket, open cable end 3-wire Signal status indication with LED 5-pin socket, plug M12 5-pin Signal status indication with LED Screw terminal Degree of protection IP65 Insulation displacement technology Degree of protection IP65 Insulation displacement technology Degree of protection IP65 Illuminating seal For mounting between plug socket (without signal status indication) and valve Screw terminal Degree of protection IP65 Insulation displacement technology Degree of protection IP65 Insulation displacement technology Degree of protection IP65 Illuminating seal For mounting between plug socket (without signal status indication) and valve Datasheets → Datasheets → Datasheets → Datasheets → Datasheets → Datasheets → Threaded connection, polymer design Screwed trunnion PE Screwed Screwed Trunnion PE Screwed trunnion PE Screwed trunnion PE Screwed Trunnion PE	Ordering data					Part no.	Туре
3-jin sacket, open cable end Swire Signal status indication with LED PBC cable, degree of protection Length 5.5 m 151689 MBEB-124-5-LED Length 10 m 193457 MBEB-124-5-LED Length 10 m 1	Plug socket with cable	(for valves with 2-pin plug)		·			
Signal status indication with LED PG	A)		PVC cable, degree of	protection	Length 2.5 m	151688	KMEB-1-24-2.5-LED
Signal status indication with LED		1 '					
Push cacket, open cable and 3wine Push cacket, open cable and 3wine Signal status indication with LED Push socket, plug M12 5-pin Cable sheath TPE-U (PU), degree Length 0.5 m 177677 KMEB-2-24-S-LED	\bigvee	Signal status indication with LED					
Open cable end 3-wife Signal status indication with LED Signal status indication P65 Signal status indication P65 Pulpus socket (flor valves with 2-pin plug)	/#		PUR cable, degree o	f protection			
Signal status indication with LED Plug socket (for valves with 2-pin plug) Angled socket Without signal status indication Mithout signal status indication Screw terminal Degree of protection IP65 Insulation displacement technology Degree of protection IP67 Illuminating seal For mounting between plug socket (without signal status indication) and valve 151717 MEB-LD-12-24DC Wall mounting Mounting bracket 196165 MHE2-BG-L Screwed trunnion PE Threaded connection, polymer design For mounting PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Screwed trunnion PE Threaded connection, polymer design For mounting Banking plug Datasheets → Datasheets → Datasheets → Datasheets → So pieces 132004 OS-61/4-8 So pieces 132004 OS-61/4-8 So pieces 132005 OS-61/4-10 So pieces 132005 OS-61/4-10 So pieces 132005 OS-61/4-10 So pieces 132005 OS-61/4-10 So pieces 132005 OS-61/4-10-50	15 50		1				
Signal status indication with LED Plug socket (for valves with 2-pin plug) Angled socket Without signal status indication Without signal status indication Pegree of protection IP65 Insulation displacement technology Degree of protection IP67 Illuminating seal For mounting between plug socket (without signal status indication) and valve For mounting between plug socket (without signal status indication) and valve Walt mounting Mounting bracket Push-in sleeve Threaded connection, polymer design Male thread with external hex Push-in fitting Male thread with external hex Push-in I, fitting, rotatable through 360°, male thread with external hex Push-in I, fitting, rotatable through 360°, male thread with external hex Push-in I, fitting, rotatable through 360°, male thread with external hex Fitting Push-in I, fitting, rotatable through 360°, male thread with external hex Fitting Push-in I, fitting, rotatable through 360°, male thread with external hex Fitting Push-in I, fitting, rotatable through 360°, male thread with external hex Fitting Push-in I, fitting, rotatable through 360°, male thread with external hex Fitting Fitting Fitting Fitting Fitting Fitting, rotatable through 360°, male thread with external hex Fitting, rotatable through 360°, male thread with external hex Fitting, rotatable through 360°, male thread with external hex Fitting, rotatable through 360°, male thread with external hex Fitting Fitting Fitting Fitting Fitting Fitting Fitting, rotatable through 360°, male thread with external hex Fitting Fi		Signal status indication with LED					
Angled socket Without signal status indication Degree of protection IP65 Degree of protection IP65 Degree of protection IP67 192745 MSSD-EB				(PU), degree	Length 0.5 m	177677	KMEB-2-24-M12-0.5-LED
Angled socket Without signal status indication Degree of protection IP65 Degree of protection IP65 Degree of protection IP67 192745 MSSD-EB	Plug socket (for valves	with 2-pin plug)					
Without signal status indication Degree of protection P65 Insulation displacement technology Degree of protection P67	3		Screw terminal		3-pin	151687	MSSD-EB
Insulation displacement technology 192745 MSSD-EBS-M14 192745 MSSD-				IP65	"	151007	
Illuminating seal	\bigvee	0 1 11 11 11 11 11 11 11 11 11 11 11 11			4-pin	192745	MSSD-EB-S-M14
Degree of protection IP67							
For mounting between plug socket (without signal status indication) and valve 151717 MEB-ID-12-24DC				IP67			
Wall mounting	Illuminating seal						
Mounting bracket 196165 MHE2-BG-L		For mounting between plug socket (withou	t signal status indicati	on) and valve		151717	MEB-LD-12-24DC
Mounting bracket 196165 MHE2-BG-L	Wall mounting						
Silencer		Mounting bracket				196165	MHE2-BG-L
Push-in sleeve							
PE Threaded connection, polymer design Screwed trunnion PE Push-in fitting Male thread with external hex Male thread with external hex Push-in L-fitting, rotatable through 360°, male thread with external hex Push-in L-fitting, rotatable through 360°, male thread with external hex Blanking plug PE 1 piece 165004 1 pieces 166004 1 pieces 534220 1 UC-1/4-20 10 pieces 186099 186099 186099 19.5-61/4-8 50 pieces 132040 10 pieces 132040 10 pieces 132041 10 pieces 132052 132052 132054 10 pieces 132053 132053 132053 132053 132053 132053 132053	Silencer						Datasheets → Internet: uc
Push-in fitting Male thread with external hex Male thread with external hex G1/4 8 mm 10 pieces 186099 QS-G1/4-8 50 pieces 132040 QS-G1/4-8-50 10 mm 10 pieces 186101 QS-G1/4-10 05 pieces 132041 QS-G1/4-10-50 10 pieces 132041 QS-G1/4-10-50 10 pieces 132041 QS-G1/4-10-50 10 pieces 132052 QSL-G1/4-8 10 pieces 132052 QSL-G1/4-8 10 pieces 132052 QSL-G1/4-10 10 pieces 132053 QSL-G1/4-10 10 pieces 132053 QSL-G1/4-10-50 10 mm 10 pieces 132053 QSL-		Push-in sleeve		8 mm	1 piece	175611	UC-QS-8H
Push-in fitting Male thread with external hex Male thread with external hex G1/4 8 mm 10 pieces 186099 QS-G1/4-8 50 pieces 132040 QS-G1/4-8-50 10 mm 10 pieces 186101 QS-G1/4-10 50 pieces 132041 QS-G1/4-10-50 10 pieces 132041 QS-G1/4-10-50 10 pieces 132041 QS-G1/4-10-50 10 pieces 132052 QSL-G1/4-8 10 pieces 132052 QSL-G1/4-8-50 10 mm 10 pieces 132053 QSL-G1/4-10 50 pieces 132053 QSL-G1/4-10-50 10 pieces 10 pieces 10 pieces 10 pieces 10 pieces 10 pieces 10 piece		Threaded connection, polymer design	Screwed trunnion	G1/4	1 piece	165004	UC-1/4
Male thread with external hex G1/4 8 mm 10 pieces 186099 QS-G1/4-8			PE		20 pieces	534220	
Male thread with external hex G1/4 8 mm 10 pieces 186099 QS-G1/4-8	Push-in fitting						Datasheets → Internet: qs
So pieces 132040 QS-G1/4-8-50		Male thread with external hex	G1/4	8 mm	10 nieces	186099	
10 mm		mate tilleda with externat liex	01/4	"""			
Push-in L-fitting, rotatable through 360°, male thread with external hex Push-in L-fitting, rotatable through 360°, male thread with external hex For pieces 132041 QS-G1/4-10-50 QSL-G1/4-8-50 QSL-G1/4-8-50 QSL-G1/4-8-50 QSL-G1/4-10-50 QSL-G1				10 mm			
Push-in L-fitting, rotatable through 360°, male thread with external hex So pieces 132052 QSL-G1/4-8				10.11111			
male thread with external hex 50 pieces 132052 QSL-G1/4-8-50		Push-in I-fitting rotatable through 360°	G1/4	8 mm	<u> </u>		-
10 mm			51/7	"""			
50 pieces 132053 QSL-G1/4-10-50 Blanking plug				10 mm			
Blanking plug				10.11111			
-, -		I		1	1 20 bicces	1,720,7,7	2-01/12070
	Blanking plug						
	O	For thread G1/4			10 pieces	3569	B-1/4
Inscription label	Inscription labor						
Inscription label	miscription tabet	Forestoneidusto			00-:	407050	MIL DZ GOV
For solenoid valve 80 pieces 197259 MH-BZ-80X		ror solenoid valve			80 pieces	19/259	MH-BZ-SUX

Peripherals overview – Semi in-line valve

Connection via plug vanes



Design	nation	Туре	Description	→ Page/Internet
[1]	Semi in-line valve	MHP4	With plug vanes	92
[2]	Plug socket with cable	KMEB-2	PUR cable, with or without LED	93
[3]	Plug socket	MSSD-EB	With clamping screw	93
[4]	Plug socket	MSSD-EB-S-M14	With insulation displacement connector	93
[5]	Plug socket with cable	KMEB-1	PVC cable, with or without LED	93
[6]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	94
[7]	Cover plate	MHAP4-BP-3	For sealing vacant positions	92
[8]	Blanking plug	В	For sealing unused ports	94
[9]	Inscription label	MH-BZ-80X	For identifying the valves	94
[10]	H-rail mounting	CPV10/14-VI-BG-NRH-35	For mounting the manifold block on H-rails to EN 60715	93
[11]	Silencers	UC	For fitting in exhaust ports	94
[12]	Individual sub-base	MHA4-AS-3-1/4	For semi in-line valves; the individual sub-base is also used for sub-base valves; the extra	92
			connection must be sealed with a plug here	
[13]	Manifold block	MHA4-PR1/4	For semi in-line valves	92





General technical data			
Valve function			3/2 way, single solenoid ¹⁾
Design			Pressure relief poppet valve
Overlap			Negative overlap
Sealing principle			Soft
Reset method			Mechanical spring
Actuation type			Electrical
Type of control			Direct
Direction of flow			Reversible with restrictions ²⁾
Exhaust function			Can be throttled
Manual override			Non-detenting
Mounting position			Any
Width		[mm]	18
Grid dimension		[mm]	24
Note on grid dimension			Minimum distance between the valves is 6 mm
Nominal width		[mm]	4
Standard nominal flow rate		[l/min]	400
Type of mounting			On PR rail
Pneumatic connection	2		Connecting thread G1/4, push-in connector for tubing O.D. 8 mm
	1, 11, 3, 33		Sub-base
Product weight		[g]	270

¹⁾ Can be used as a 2/2-way valve by sealing port 3 or 33 $\,$

²⁾ Slight leakage can occur in the pressure range -0.8 bar to +0.5 bar.

Operating and environmental conditions					
			With fast-switching electronics	Without fast-switching electronics	
Operating medium			Compressed air to ISO 8573-1:2010 [2	7:4:4]	
Note on the operating/pilot medium			Lubricated operation possible (in which	ch case lubricated operation will always be required)	
Operating pressure		[MPa]	-0.09 +0.8		
		[bar]	-0.9 +8		
	Reversible	[MPa]	-0.09 +0.1		
		[bar]	-0.9 +1		
		[psi]	-13.05 +14.5		
Ambient temperature	·	[°C]	-5 +40		
Temperature of medium		[°C]	-5 +40		
Corrosion resistance class CRC ¹⁾			2		
CE marking (see declaration of conformity) ³⁾			To EU EMC Directive ²⁾	-	
			To EU RoHS Directive	-	
UKCA marking (see declaration of conformity) ³⁾			To UK instructions for EMC	-	
			To UK RoHS instructions	-	
Certification			c UL us - Recognized (OL)	c UL us - Recognized (OL)	
			RCM	-	
Shock resistance			Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27		
Vibration resistance			Transport application test with severity level 2 to FN 942017-4 and		
			EN 60068-2-6		

¹⁾ More information: www.festo.com/x/topic/kbk

³⁾ More information: www.festo.com/catalogue/... → Support/Downloads.

Electrical data			
		With fast-switching electronics	Without fast-switching electronics
Electrical connection		Plug, 2-pin	
Operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	±10	
Power consumption	[W]	8.5 (high-current phase)	5.6
	[W]	2.125 (low-current phase)	-
Reverse polarity protection		Bipolar	-
Duty cycle	[%]	100	100
Additional functions		Spark arresting	-
		Holding current reduction	-
		Protective circuit	-
Degree of protection to EN 60529		IP65	IP65

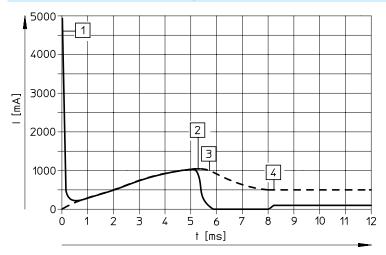
Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	3.5	10.5
	Off	[ms]	3.5	5
Tolerance for switching time	On	[%]	+1030	-
	Off	[%]	+1040	-
Switching time variation from 1 Hz		[ms]	0.3	-
upwards				
Maximum switching frequency		[Hz]	210	120

Materials	
Housing	Coated die-cast zinc
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 → Support/Downloads.

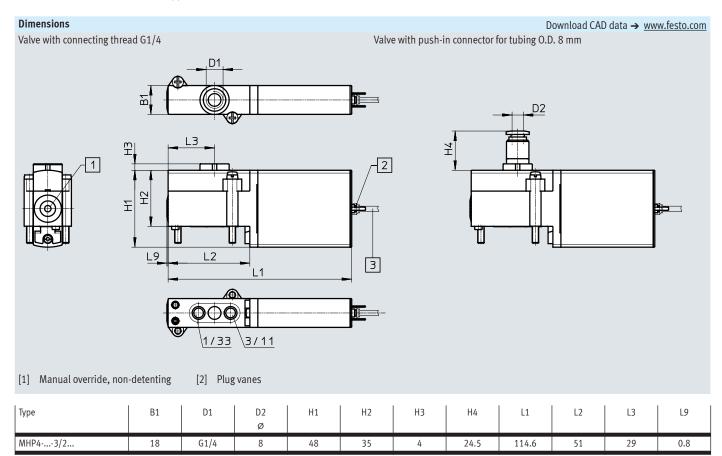
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Current curve for valves with fast-switching electronics (MHP4-MS1H)



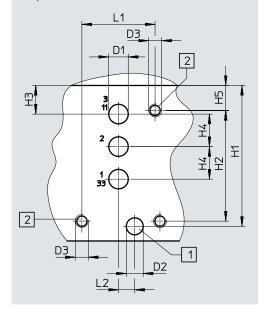
- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A

------ Internal current in the coil
------- External current in the supply line



Dimensions

Hole pattern on sub-bases



Download CAD data → www.festo.com

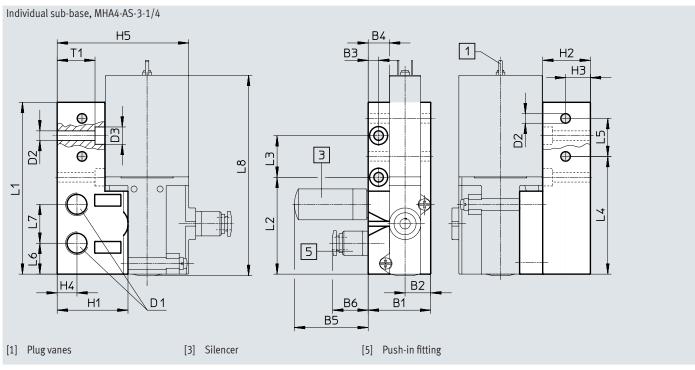
- 📱 - Note

With semi in-line valves, port 2 is not used.

If used as a 2/2-way valve, normally closed, ports 3/11 are not used. If used as a 2/2-way valve, normally open, ports 1/33 are not used.

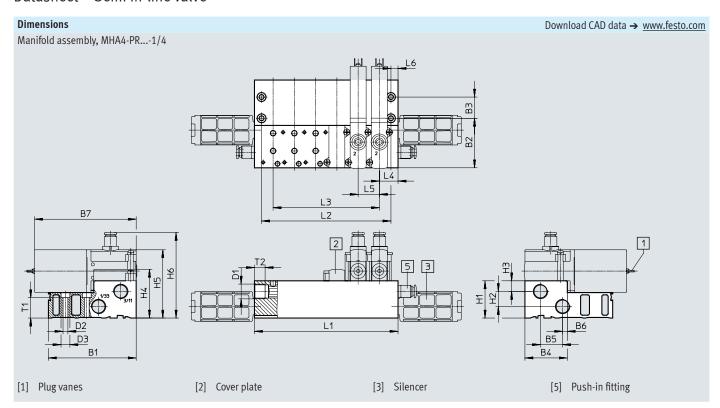
[1] Hole for coding pin, 2.5mm deep

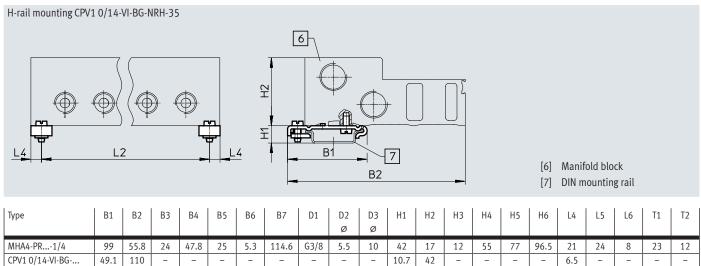
[2] Mounting thread, 13 mm deep



Туре	B1	B2	В3	B4	B5	В6	D1	D2 Ø	D3 Ø	H1	H2	Н3	H4	H5
Hole pattern	-	-	-	-	-	-	6	5.2	M4	43.3	34	8.8	10	7.7
MHA4-AS-3-1/4	36	14.8	6	12.3	42.5	20.5	G1/4	5.5	10	31	27.5	14.3	11.4	75.8

Туре	L1	L2	L3	L4	L5	L6	L7	L8	T1
Hole pattern	22.5	5	-	-	-	-	-	-	-
MHA4-AS-3-1/4	99	55.8	24	67.8	21.9	17.8	22.4	115.4	21.8





Туре		Number of valve positions	lumber of valve positions								
		2	4	6	8	10					
MHA4-PR1/4	L1	66	114	162	210	258					
	L2	50	98	146	194	242					
	L3	24	72	120	168	216					
CPV1 0/14-VI-BG	L2	53	101	149	197	245					



Valve types 3/2G and 3/20 must not be mixed on one manifold block.

Solenoid valves MHP4, fast-switching valves

Datasheet – Semi in-line valve

-					Part no.	Туре
alves						
	Electrical connec-	With fast-switching	Pneumatic connection: thread	Normally open	525199	MHP4-MS1H-3/20-1/4
	tion: 2-pin plug	electronics, switching	G1/4	Normally closed	525179	MHP4-MS1H-3/2G-1/4
3		time 3.5 ms	Pneumatic connection: push-in connector for tubing O.D. 8 mm	Normally closed	525183	MHP4-MS1H-3/2G-QS-8
		Without fast-switching	Pneumatic connection: thread	Normally open	525198	MHP4-M1H-3/20-1/4
		electronics, switching time 10.5 ms	G1/4	Normally closed	525178	MHP4-M1H-3/2G-1/4
	Individual sub-bas Pneumatic connec			1 valve position	525227	MHA4-AS-3-1/4
	Manifold block ¹⁾			2 valve positions	525234	MHA4-PR2-3-1/4
		tion 1, 11, 3, 33: thread G	3/8	4 valve positions	525235	MHA4-PR4-3-1/4
	Pneumatic connec	tion 2: thread G1/4		6 valve positions	525236	MHA4-PR6-3-1/4
				8 valve positions	525237	MHA4-PR8-3-1/4
				10 valve positions	525238	MHA4-PR10-3-1/4
Cover plate						
	Vacant valve posit	ions must be sealed with a	a cover plate.		525239	MHAP4-BP-3

¹⁾ Seal port 2 with a blanking plug. These ports have no function when using semi in-line valves.



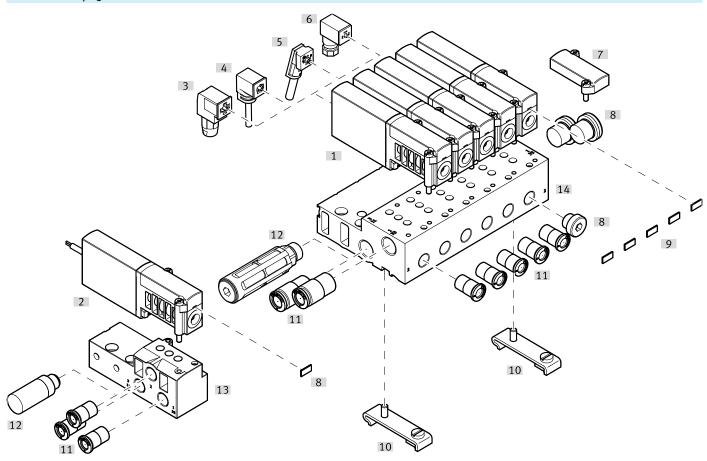
Valve types 3/2G and 3/20 must not be mixed on one manifold block.

Ordering data				Part no.	Туре
Plug socket with cabl	e				
. Al	3-pin socket,	PVC cable, degree of protection	Length 2.5 m	151688	KMEB-1-24-2.5-LED
• **	open cable end 3-wire	IP65	Length 5 m	151689	KMEB-1-24-5-LED
\downarrow	Signal status indication with LED		Length 10 m	193457	KMEB-1-24-10-LED
	4-pin socket,	PUR cable, degree of protection	Length 2.5 m	174844	KMEB-2-24-2.5-LED
	open cable end 3-wire Signal status indication with LED	IP65	Length 5 m	174845	KMEB-2-24-5-LED
	5-pin socket, plug M12 5-pin Signal status indication with LED	Cable sheath TPE-U (PU), degree of protection IP65	Length 0.5 m	177677	KMEB-2-24-M12-0.5-LED
Plug socket				454607	Mech In
	Angled socket Without signal status indication	Screw terminal Degree of protection IP65	3-pin	151687	MSSD-EB
		Insulation displacement technology Degree of protection IP67	4-pin	192745	MSSD-EB-S-M14
	I	Degree of protection in 07			
lluminating seal					
	For mounting between plug socket (wi	thout signal status indication) and valve		151717	MEB-LD-12-24DC
H-rail mounting					
	For manifold block			162556	CPV10/14-VI-BG-NRH-35
1 11					
I-rail	T EN CORE		I a	27/25	NEW OF COOK
[[o]	To EN 60715		2 m	35430	NRH-35-2000

Ordering data					Part no.	Туре
Silencer					·	Datasheets → Internet: u
	Push-in sleeve	Screwed trunnion PE	8 mm	1 piece	175611	UC-QS-8H
	Threaded connection, polymer design	Screwed trunnion	G1/4	1 piece	165004	UC-1/4
		PE		20 pieces	534220	UC-1/4-20
		Housing	G3/8	1 piece	2309	U-3/8
		Polyacetal		20 pieces	534224	U-3/8-20
ush-in fitting						Datasheets → Internet: o
	Male thread with external hex	G1/4	8 mm	10 pieces	186099	QS-G1/4-8
				50 pieces	132040	QS-G1/4-8-50
			10 mm	10 pieces	186101	QS-G1/4-10
				50 pieces	132041	QS-G1/4-10-50
		G3/8	10 mm	10 pieces	186102	QS-G3/8-10
				50 pieces	132044	QS-G3/8-10-50
			12 mm	10 pieces	186103	QS-G3/8-12
				20 pieces	132045	QS-G3/8-12-20
	Push-in L-fitting, rotatable through 360°, male thread with external hex	G1/4	8 mm	10 pieces	186120	QSL-G1/4-8
				50 pieces	132052	QSL-G1/4-8-50
			10 mm	10 pieces	186122	QSL-G1/4-10
				50 pieces	132053	QSL-G1/4-10-50
		G3/8	10 mm	10 pieces	186123	QSL-G3/8-10
				20 pieces	132056	QSL-G3/8-10-20
			12 mm	10 pieces	186124	QSL-G3/8-12
				20 pieces	132057	QSL-G3/8-12-20
Blanking plug						
	For thread G1/4			10 pieces	3569	B-1/4
	For thread G3/8		10 pieces	3570	B-3/8	
nscription label						
	For solenoid valve			80 pieces	197259	MH-BZ-80X

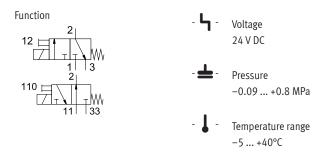
Peripherals overview – Sub-base valve

Connection with plug vanes – Connection with moulded-in cable



Design	ation	Туре	Description	→ Page/Internet
[1]	Sub-base valves	MHA4	With plug vanes	101
[2]	Sub-base valves	MHA4K	With moulded-in cable, IP65	101
[3]	Plug socket	MSSD-EB-S-M14	With insulation displacement connector	102
[4]	Plug socket with cable	KMEB-1	PVC cable, with or without LED	102
[5]	Plug socket with cable	KMEB-2	PUR cable, with or without LED	102
[6]	Plug socket	MSSD-EB	With clamping screw	102
[7]	Cover plate	MHAP4-BP-3	For sealing vacant positions	101
[8]	Blanking plug	В	For sealing unused ports	103
[9]	Inscription label	MH-BZ-80X	For identifying the valves	103
[10]	H-rail mounting	CPV10/14-VI-BG-NRH-35	For mounting the manifold block on H-rails to EN 60715	102
[11]	Push-in fittings	QS	For connecting compressed air tubing with standard O.D.	103
[12]	Silencer	UC	For fitting in exhaust ports	103
[13]	Individual sub-base	MHA4-AS-3-1/4	For sub-base valves	101
[14]	Manifold block	MHA4-PR1/4	For sub-base valves	101

Solenoid valves MHA4, fast-switching valves





General technical data			
Valve function			3/2 way, single solenoid ¹⁾
Design			Pressure relief poppet valve
Overlap			Negative overlap
Sealing principle			Soft
Reset method			Mechanical spring
Actuation type			Electrical
Type of control			Direct
Direction of flow			Reversible with restrictions ²⁾
Exhaust function			Can be throttled
Manual override			Non-detenting
Mounting position			Any
Width		[mm]	18
Grid dimension		[mm]	24
Note on grid dimension			Minimum distance between the valves is 6 mm
Nominal width		[mm]	4
Standard nominal flow rate		[l/min]	400
Type of mounting			On PR rail
Pneumatic connection	1, 11, 2, 3, 33		Sub-base
Product weight		[g]	270

Can be used as a 2/2-way valve by sealing port 3 or 33
 Slight leakage can occur in the pressure range –0.8 bar to +0.5 bar.

Operating and environmental conditions						
			With fast-switching electronics	Without fast-switching electronics		
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]		
Note on the operating/pilot medium			Lubricated operation possible (in which	ch case lubricated operation will always be required)		
Operating pressure		[MPa]	-0.09 +0.8			
	[bar]		-0.9 +8			
	Reversible	[MPa]	-0.09 +1			
		[bar]	-0.9 +1			
		[psi]	-13.05 +14.5			
Ambient temperature		[°C]	-5 +40			
Temperature of medium	·	[°C]	-5 +40			
Corrosion resistance class CRC ¹⁾	·		2			
CE marking (see declaration of conformity) ³⁾			To EU EMC Directive ²⁾	-		
			To EU RoHS Directive	-		
UKCA marking (see declaration of conformity) ³⁾			To UK instructions for EMC	-		
			To UK RoHS instructions	-		
Certification			c UL us - Recognized (OL)	c UL us - Recognized (OL)		
			RCM	-		
Shock resistance			Shock test with severity level 2 to FN 9	942017-5 and EN 60068-2-27		
Vibration resistance			Transport application test with severit	ry level 2 to FN 942017-4 and EN 60068-2-6		

More information: www.festo.com/x/topic/kbk

³⁾ More information: www.festo.com/catalogue/... \rightarrow Support/Downloads.

Electrical data			
		With fast-switching electronics	Without fast-switching electronics
Electrical connection		2-pin plug or cable	
Operating voltage	[V DC]	24	
Permissible voltage fluctuations	[%]	±10	
Power consumption	[W]	8.5 (high-current phase)	5.6
	[W]	2.125 (low-current phase)	-
Reverse polarity protection		Bipolar	-
Duty cycle	[%]	100	100
Additional functions		Spark arresting	-
		Holding current reduction	-
		Protective circuit	-
Degree of protection to EN 60529		IP65	IP65

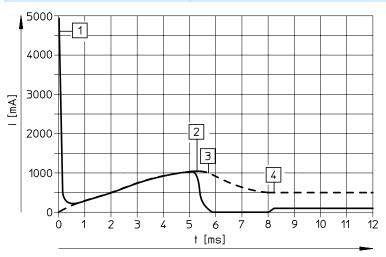
Switching times and frequencies				
			With fast-switching electronics	Without fast-switching electronics
Switching time	On	[ms]	3.5	10.5
	Off	[ms]	3.5	5
Tolerance for switching time	On	[%]	+1030	-
	Off	[%]	+1040	-
Switching time variation from 1 Hz		[ms]	0.3	-
upwards				
Maximum switching frequency		[Hz]	210	120

Materials	
Housing	Coated die-cast zinc
Cable sheath	PUR
Seals	HNBR, NBR
Screws	Galvanised steel
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B1/B2-L

²⁾ For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/mh2 -> Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Current curve for valves with fast-switching electronics (MHA4-MS1H)

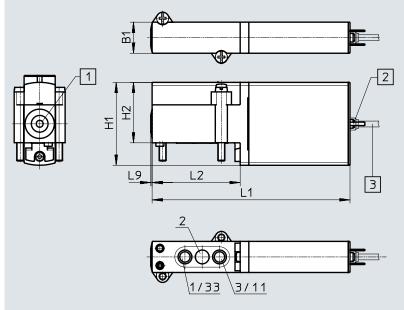


----- Internal current in the coil
------ External current in the supply line

- [1] Capacitor charging
- [2] Controlled coil current 1 A
- [3] Holding current reduction
- [4] Controlled holding current 0.5 A



Valve with plug vanes or moulded-in cable, MHA4-...-3/2...

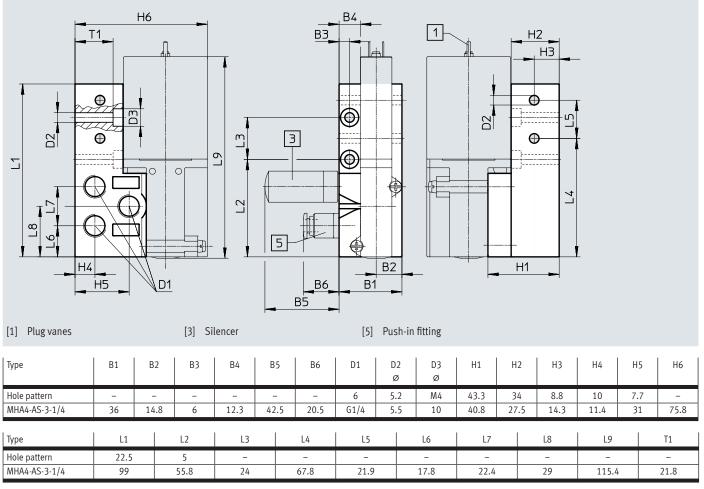


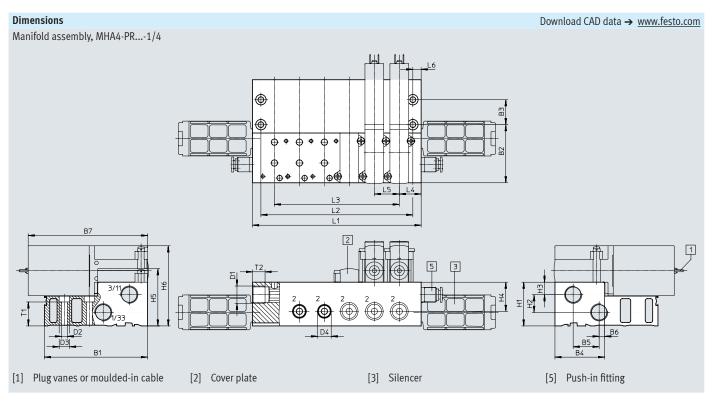
Download CAD data → www.festo.com

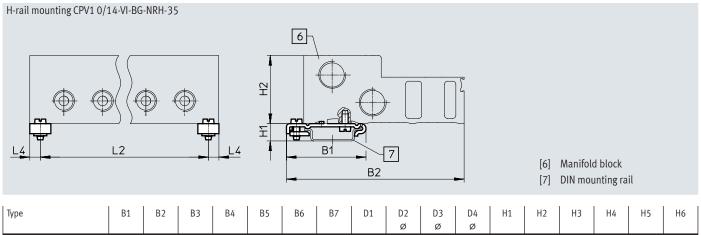
- [1] Manual override, non-detenting
- [2] Plug vanes
- [3] Cable, 2.5 m

Туре	B1	H1	H2	L1	L2	L9
MHA43/2	18	48	35	114.6	51	0.8

Dimensions Download CAD data → www.festo.com Hole pattern on sub-bases L1 D3<u>.</u> D1 2 宁 2 D3_ 1 [1] Hole for coding pin, 2.5mm D2 deep <u>L2</u> [2] Mounting thread, 13 mm deep Individual sub-base, MHA4-AS-3-1/4







MHA4-PK1/4	99	55.8	24	47.8	25	5.3	114.6	63/8	5.5	10	G1/4	42	17	12	28	55	//	
CPV1 0/14-VI-BG	49.1	110	-	-	-	-	-	-	-	-	-	10.7	42	-	-	-	-	
Туре		L4				L5			L6			T1				T2		
MHA4-PR1/4		21			:	24			8			23				12		

Туре		Number of valve positions								
		2	4	6	8	10				
MHA4-PR1/4	L1	66	114	162	210	258				
	L2	50	98	146	194	242				
	L3	24	72	120	168	216				
CPV1 0/14-VI-BG	L2	53	101	149	197	245				

CPV1 0/14-VI-BG-..

6.5

Ordering data				Part no.	Туре
Valves		· · · · · · · · · · · · · · · · · · ·			71
	Electrical connection: 2-pin plug	With fast-switching electronics, switching time 3.5 ms	Normally closed	525175	MHA4-MS1H-3/2G-4
		Without fast-switching electronics, switching time 10.5 ms	Normally closed	525174	MHA4-M1H-3/2G-4
	Electrical connection: cable	With fast-switching electronics, switching time 3.5 ms	Normally closed	525177	MHA4-MS1H-3/2G-4-K
		Without fast-switching electronics,	Normally open	525196	MHA4-M1H-3/20-4-K
9		switching time 10.5 ms	Normally closed	525176	MHA4-M1H-3/2G-4-K
	Individual sub-base Pneumatic connection: thread G1/4		1 valve position	525227	MHA4-AS-3-1/4
	Manifold block	00.11 1.00/0	2 valve positions	525234	MHA4-PR2-3-1/4
	Pneumatic connection 1, 11, 3	•	4 valve positions	525235	MHA4-PR4-3-1/4
	Pneumatic connection 2: threa	d G1/4	6 valve positions	525236	MHA4-PR6-3-1/4
			8 valve positions	525237	MHA4-PR8-3-1/4
			10 valve positions	525238	MHA4-PR10-3-1/4
Cover plate					
Lover plate	Vacant valve positions must be	spaled with a sover plate		525239	MHAP4-BP-3
	vacant vaive positions must be	sealeu will a Covel plate.		525239	MITAT 4-DF-3



Note

Valve types 3/2G and 3/20 must not be mixed on one manifold block.

				Part no.	Туре	
lug socket with o	cable (for valves with plug vanes)					
- A	3-pin socket,	PVC cable, degree of protection	Length 2.5 m	151688	KMEB-1-24-2.5-LED	
	open cable end 3-wire	IP65	Length 5 m	151689	KMEB-1-24-5-LED	
\bigvee	Signal status indication with LED		Length 10 m	193457	KMEB-1-24-10-LED	
//	4-pin socket,	PUR cable, degree of protection	Length 2.5 m	174844	KMEB-2-24-2.5-LED	
	open cable end 3-wire Signal status indication with LED	IP65	Length 5 m	174845	KMEB-2-24-5-LED	
	5-pin socket, plug M12 5-pin Signal status indication with LED	Cable sheath TPE-U (PU), degree of protection IP65	Length 0.5 m	177677	KMEB-2-24-M12-0.5-LED	
Plug socket (for va	alves with plug vanes)					
	Angled socket	Screw terminal	3-pin	151687	MSSD-EB	
Υľ	Without signal status indication	Degree of protection IP65				
√		Insulation displacement	4-pin	192745	MSSD-EB-S-M14	
		technology				
		Degree of protection IP67				
lluminating seal		4h ak ai al akaku a iza di akia\ d		151717	MEB-LD-12-24DC	
	For mounting between plug socket (WI	For mounting between plug socket (without signal status indication) and valve				
H-rail mounting						
	For manifold block			162556	CPV10/14-VI-BG-NRH-35	
I-rail						
	To EN 60715		2 m	35430	NRH-35-2000	
//0/	10 211 007 13			33433	33 2000	

Ordering data					1	
			_		Part no.	Туре
ilencer						Datasheets → Internet:
	Push-in sleeve	Screwed trunnion PE	8 mm	1 piece	175611	UC-QS-8H
	Threaded connection, polymer design	Screwed trunnion	G1/4	1 piece	165004	UC-1/4
		PE		20 pieces	534220	UC-1/4-20
		Housing	G3/8	1 piece	2309	U-3/8
		POM		20 pieces	534224	U-3/8-20
ush-in fitting						Datasheets → Internet:
	Male thread with external hex	G1/4	8 mm	10 pieces	186099	QS-G1/4-8
				50 pieces	132040	QS-G1/4-8-50
			10 mm	10 pieces	186101	QS-G1/4-10
				50 pieces	132041	QS-G1/4-10-50
		G3/8	10 mm	10 pieces	186102	QS-G3/8-10
				50 pieces	132044	QS-G3/8-10-50
			12 mm	10 pieces	186103	QS-G3/8-12
				20 pieces	132045	QS-G3/8-12-20
	Push-in L-fitting, rotatable through 360°,	G1/4	8 mm	10 pieces	186120	QSL-G1/4-8
	male thread with external hex			50 pieces	132052	QSL-G1/4-8-50
			10 mm	10 pieces	186122	QSL-G1/4-10
				50 pieces	132053	QSL-G1/4-10-50
		G3/8	10 mm	10 pieces	186123	QSL-G3/8-10
				20 pieces	132056	QSL-G3/8-10-20
				10 pieces	186124	QSL-G3/8-12
				20 pieces	132057	QSL-G3/8-12-20
lanking plug						
√	For thread G1/4			10 pieces	3569	B-1/4
	For thread G3/8			10 pieces	3570	B-3/8
scription label	·			•	4	
- A Language	For solenoid valve			80 pieces	197259	MH-BZ-80X
	FOI SOLEIIOIU VALVE			ou pieces	19/259	MIT-BZ-8UA

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