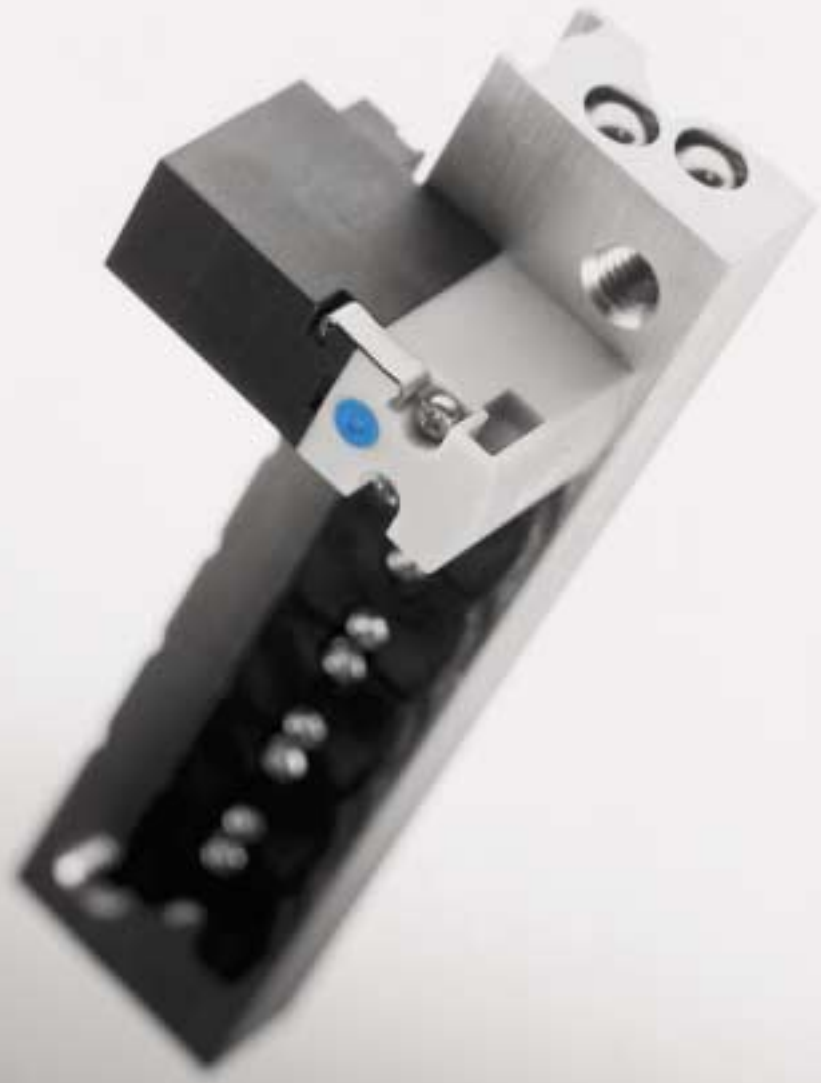
Miniature Valves MH1

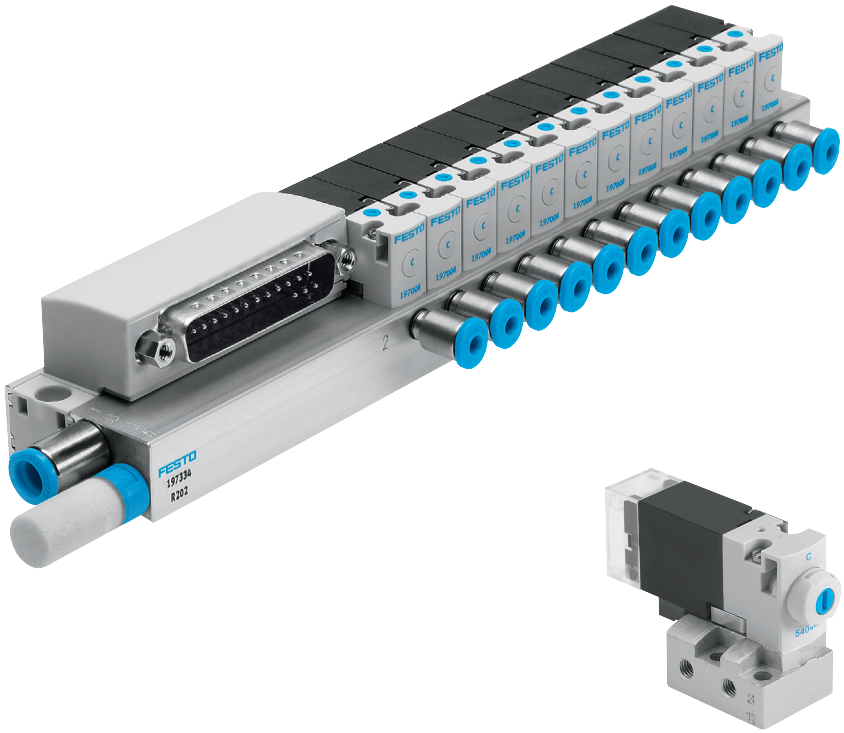


FESTO

Extremely small,
fast and versatile

Info 206 →→

MH1 Miniature Valves



Benefits and Applications of the MH1 Miniature Valve
The MH1 offers maximum reliability, even in constant operation and with a 100% duty cycle. It is compatible with the wide range of Festo compact cylinders, rotary actuators and slides. Ideally suited for the pilot control of process valves. Its vacuum functionality is well suited for light assembly applications.

Extremely Versatile
The MH1 can be connected by a pneumatic multiple connector plate or electrical multi-pin plug. Electrical connection may be horizontal, top or bottom. Also included is a connection for mounting on a PCB.

Extremely Fast
The MH1 miniature valve's response time is just 4 ms.

Extremely Small
The MH1 Miniature Valve is an ideal valve solution in confined spaces. It offers a choice of 14 l/min in the 2/2-way version or 10 l/min in the 3/2-way version. It can also be mounted on an individual subbase, or preassembled on a PR manifold.

Ordering Data

MH1 Miniature Valve Manifolds

FESTO

M Mandatory data									O Options →	
Module No.	**Valve family**	**Design**	**Voltage supply**	**Valve function**	**Plug conn. on valve**	**Valve positions**	**Linking method**	**Unused positions**	**Plug-in direction**
197334	MH1	A, P	5VDC, 12VDC, 24VDC	D, C, N	TC, HC, PI	2V ... 24V	PS, PR, PRA, PCD, PCM	1L ... 24L	SP, ST, SE
Ordering example									
197 334	**MH1**	**A**	**24VDC**	**C**	**PI**	**14V**	**PRA**	**2L**	**SE**

Ordering table

Size		1	Conditions	Code	Enter code
M	Module No.	**197334**			
	Valve family	Miniature valve size 1		**MH1**	MH1
	Design	Sub-base valve		**-A**	-A
		Semi in-line valve		**-P**	
	Voltage supply [V DC]	5		**-5VDC**	
		12		**-12VDC**	
		24		**-24VDC**	
	Valve function	2/2-way valve, normally closed		**-D**	
		3/2-way valve, normally closed		**-C**	
		3/2-way valve, normally open		**-N**	
	Plug connection on valve	Top connection	1	**-TC**	
		Horizontal connection	1	**-HC**	
		Bottom connection		**-PI**	
	Number of valve positions		2	**-...V**	
	Linking method	Individual subbase		**-PS**	
		Manifold block without elctrical linking		**-PR**	
		Manifold block with electrical linking (Sub-D plug)		**-PRA**	
		PCB mounting		**-PCD**	
		PCB mounting with pneumatic multiple connector plate	3	**-PCM**	
O	Number of unused positions	1 ... 24	5	**-...L**	
	Plug-in direction of Sub-D plug	to pneumatic side	5	**-SP**	
		to top	5	**-ST**	
		to electrical side	5	**-SE**	
	Cables	Connecting cable with socket, 1.64 ft / 0.5 m	6	**-K05**	
		Connecting cable with socket, 3.28 ft / 1 m	6	**-K01**	
		Connecting cable 8.2 ft / 2.5 m, Sub-D, 9-pin, 9-conductor	5 7	**-S25**	
		Connecting cable 16.4 ft / 5 m, Sub-D, 9-pin, 9-conductor	5 7	**-S50**	
		Connecting cable 32.8 ft / 10 m, Sub-D, 9-pin, 9-conductor	5 7	**-S10**	
		Connecting cable 8.2 ft / 2.5 m, Sub-D, 25-pin, 18-conductor	5 8	**-M25**	
		Connecting cable 16.4 ft / 5 m, Sub-D, 25-pin, 18-conductor	5 8	**-M50**	
		Connecting cable 32.8 ft / 10 m, Sub-D, 25-pin, 18-conductor	5 8	**-M10**	
		Connecting cable 8.2 ft / 2.5 m, Sub-D, 25-pin, 25-conductor	5 9	**-L25**	
		Connecting cable 16.4 ft /5 m, Sub-D, 25-pin, 25-conductor	5 9	**-L50**	
		Connecting cable 32.8 ft / 10 m, Sub-D, 25-pin, 25-conductor	5 9	**-L10**	
↓	Additional functions	Status display via LED	10	**-LED**	
	Manual override	Non-detenting/detenting	11	**-N**	

1 Only available with PS or PR
2 2 3, 4, ... 22 with PR
2 2, 4, 6, ... 24 with PRA
2 2, 4, 6, 8, 10 with PCD
2 4, 6, 8, 10 with PCM
2 1 with PS
3 Only with A
4 Not used
5 Only with PRA
6 Not with PI
7 Max. 8 valve positions
8 Only with 10 or 12 valve positions
9 Min. 10 valve positions
10 Only with 24VDC and N
11 Code N only with LED.
11 Omit code N for non-detenting
12 Not with AB
13 Only with PR or PRA
14 Not with CX
15 Not with PR or PRA

Transfer order code

197 334	**MH1**	**A**								

Ordering Data

MH1 Miniature Valve Manifolds

FESTO

➔ 0 **Options**

	Cables		Addi-tional functions		Manual override		Working line		Supply port, left side		Exhaust channel, left side		Supply port, right side		Exhaust channel, right side
	S25 M25 L25 S50 M50 L50 S10 M10 L10 K05 K01		LED		N		QB, QC, QL, QM, QO		AX, AB, AC, AD, AL, AM, AO, AP		BX, BB, BC, BD, BL, BM, BO, BP, BU		CX, CC, CD, CO, CP		DX, DC, DD. DO, DP, DU
–	**L25**	–	**LED**	–	**N**	–	**QC**	–	**AX**	–	**BD**	–	**CD**	–	**DX**

Ordering table

Size		1	Conditions	Code		Enter code
↓	Working line	Push-in connector for 3 mm O.D. tubing		**-QB**		
0		Push-in connector for 4 mm O.D. tubing	12	**-QC**		
		Push-in connector for 1/8" O.D. tubing		**-QL**		
		Push-in connector for 5/32" O.D. tubing	22	**-QM**		
		Push-in connector for 3/16" O.D. tubing	22 23	**-QO**		
	Supply port, left side	Blanking plug	13 14	**-AX**		
		Push-in connector for 3 mm O.D. tubing	15	**-AB**		
		Push-in connector for 4 mm O.D. tubing	16	**-AC**		
		Push-in connector for 6 mm O.D. tubing	17 18	**-AD**		
		Push-in connector for 1/8" O.D. tubing	15	**-AL**		
		Push-in connector for 5/32" O.D. tubing	15	**-AM**		
		Push-in connector for 3/16" O.D. tubing	17 25	**-AO**		
		Push-in connector for 1/4" O.D. tubing	17 24	**-AP**		
	Exhaust channel, left side	Blanking plug	13 19	**-BX**		
		Push-in connector for 3 mm O.D. tubing	15 20	**-BB**		
		Push-in connector for 4 mm O.D. tubing	21	**-BC**		
		Push-in connector for 6 mm O.D. tubing	13 17	**-BD**		
		Push-in connector for 1/8" O.D. tubing	15 26	**-BL**		
		Push-in connector for 5/32" O.D. tubing	15 26	**-BM**		
		Push-in connector for 3/16" O.D. tubing	27	**-BO**		
		Push-in connector for 1/4" O.D. tubing	17	**-BP**		
		Silencer		**-BU**		
	Supply port, right side	Blanking plug	13 28	**-CX**		
		Push-in connector for 4 mm O.D. tubing	13	**-CC**		
		Push-in connector for 6 mm O.D. tubing	13 18	**-CD**		
		Push-in connector for 3/16" O.D. tubing	11 25	**-CO**		
		Push-in connector for 1/4" O.D. tubing	13 24	**-CP**		
	Exhaust channel, right side	Blanking plug	13 29	**-DX**		
		Push-in connector for 4 mm O.D. tubing	13 21	**-DC**		
		Push-in connector for 6mm O.D. tubing	13 15	**-DD**		
		Push-in connector for 3/16" O.D. tubing	13 27	**-DO**		
		Push-in connector for 1/4" O.D. tubing	13 15	**-DP**		
		Silencer	13 15	**-DU**		

16 Not with BB
17 Not with PS
18 Not with BB, BC, or DC
19 Not with DX
20 Not with CC or DC
21 Not with CD or AD
22 Not with AL
23 Not with AM
24 Not with BL, BM, BO, or DO
25 Not with BL or BM
26 Not with CD or CP
27 Not with CP or AP
28 Not with AX
29 Not with BX

Transfer order code

–		–		–		–		–		–		–		–	

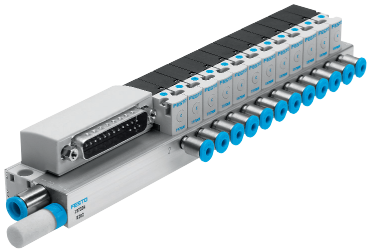
MH1 Miniature Valves

Technical Data			
Function	2/2-way valve normally closed	3/2-way valve normally closed	3/2-way valve, normally open
Capacity			
- Nominal flow rate	14 l/min (2 › 0 bar)	10 l/min	10 l/min
- Response time (on/off)	4/5 ms	4/4 ms	4/4 ms
Width	10 mm		
Connection			
- Power consumption	1 W		
- Electrical	5 V DC, 12 V DC, 24 V DC		
- Electro-mechanical	Plug connection at rear, top, bottom (plug-in)		
- Mechanical	Ind. valve assembly on sub-base, battery manifold assembly 2...24 valves		
- Pneumatic	M3, M7		
Pressure range	-0.9...2 bar	0...8 bar	0...6 bar
Degree of protection	IP40		

Versatile Connection Concepts
With individual subbase connection or pre-mounted on a PR manifold, the MH1 miniature valve is suitable for a wide variety of requirements. Versatility is also important, when it comes to electrical connections: the three different plug directions meet this need.

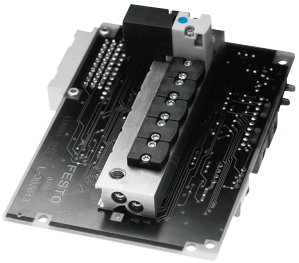
Small Valves for a Wide Range of Applications
Miniature valves are designed for more than just the electronics industry. They are also suitable for the light assembly, medical technology, and semiconductor industries; in short, anywhere extremely compact, fast-switching valves are required, or where pilot valves are needed for valves coming in contact with media (process industry).

Fast Switching Times
With response times of approximately 4 ms, all concerns and needs are met. Vacuum functions can also be easily implemented. Expect 100% duty cycle even in the case of three-shift operation; maximum cost-effectiveness is guaranteed.



In-line valve manifold with semi in-line (plug-in), pre-mounted on PR manifold (electrical multi-pin)

Individual subbase with semi in-line (top connector)



Valve manifold for PCB assembly

In-line valve manifold with subbase (horizontal connector), pre-mounted on a PR manifold

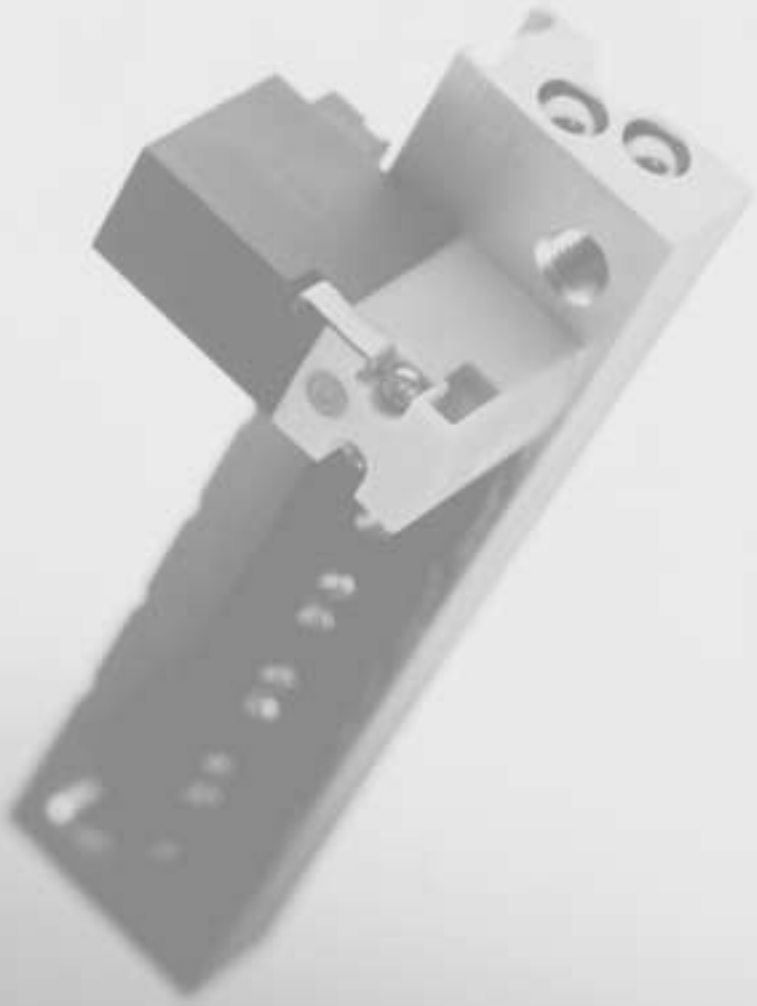
In-line valve manifold with semi in-line (top connector)

Festo Corporation

For ordering assistance, or to find your nearest Festo Distributor,
Call: 1.800.99.FESTO
Fax: 1.800.96.FESTO
Email: customer.service@us.festo.com
Visit: www.festo.com/usa

For technical support,
Call: 1.866.GO.FESTO
Fax: 1.800.96.FESTO
Email: product.support@us.festo.com

Miniaturization in Detail: The MH1 Valve Series



Festo Corporation Mission
Enhance the business success of our customers by providing cost-efficient automation solutions with innovative products and services.

We accomplish this through:
- The commitment and conduct of our employees
- Allocation of capital
- Continuous improvement of internal processes
- Product innovation with reliability
- Application knowledge

Extremely miniaturized
The new generation of miniaturized poppet valves: You can choose between flow rates of .014 Cv (14 l/min) on the 2/2-way versions or .010 Cv (10 l/min) on the 3/2-way versions, either as an individual sub-base valve or preassembled on the PR style manifold. For higher flow rate requirements (up to .10 Cv / 100 l/min) select the MH2 valve series. See Info 207, Fast Switching Valves.

Extremely versatile and fast
All new miniature valves can be interlinked by pneumatic and/or electrical multi-pin connections. Even the electrical terminals offer selection options, including horizontal, top and bottom mounting, plus printed circuit board assemblies.

Selectable Power Supply, Variable Connections

- 24 V DC, Version M1H
- 12 V DC, Version M5H
- 5 V DC, Version M4H
- Plug connection horizontal (HC)
- Plug connection top (TC)
- Plug connection bottom (PI)
- Electrical multi-pin connection
- Connection HC and TC for cable KMH-0.5 or KMH-1 with single plug connector IP40 capable

Flexible: The Pneumatic Connection System

- M3 connection standard
- Optional 3 mm, 4 mm, 1/8", 5/32", 3/16" tubing connection
- As semi-in-line (MHP1- ...) or sub-base version (MHA1- ...)
- Single sub-base connection or PR manifold
- Manifold strip specifically for printed circuit board assembly
- The plug-in printed circuit board assembly, has a pneumatic multipole option

Printed circuit board (PCB) with 3/2-way valve manifold strip

Not only for the electronics industry

Miniature valves are also ideal for the light assembly industry, medical engineering, semiconductor industry and wherever extremely compact and ultrafast switching valves are needed for direct pilot control.

Miniature valves are suitable for piloting process valves and controlling Festo compact cylinders, rotary actuators or slide units. See actuator overview on pages 32-33.

Valve switching is accomplished in less than 5 ms, so high speed applications can be easily accommodated. Vacuum functionality is also available with 2/2-way versions.

When operating at 100% duty cycle at three-shift operations per day, the MH1 valve series insures maximum productivity.

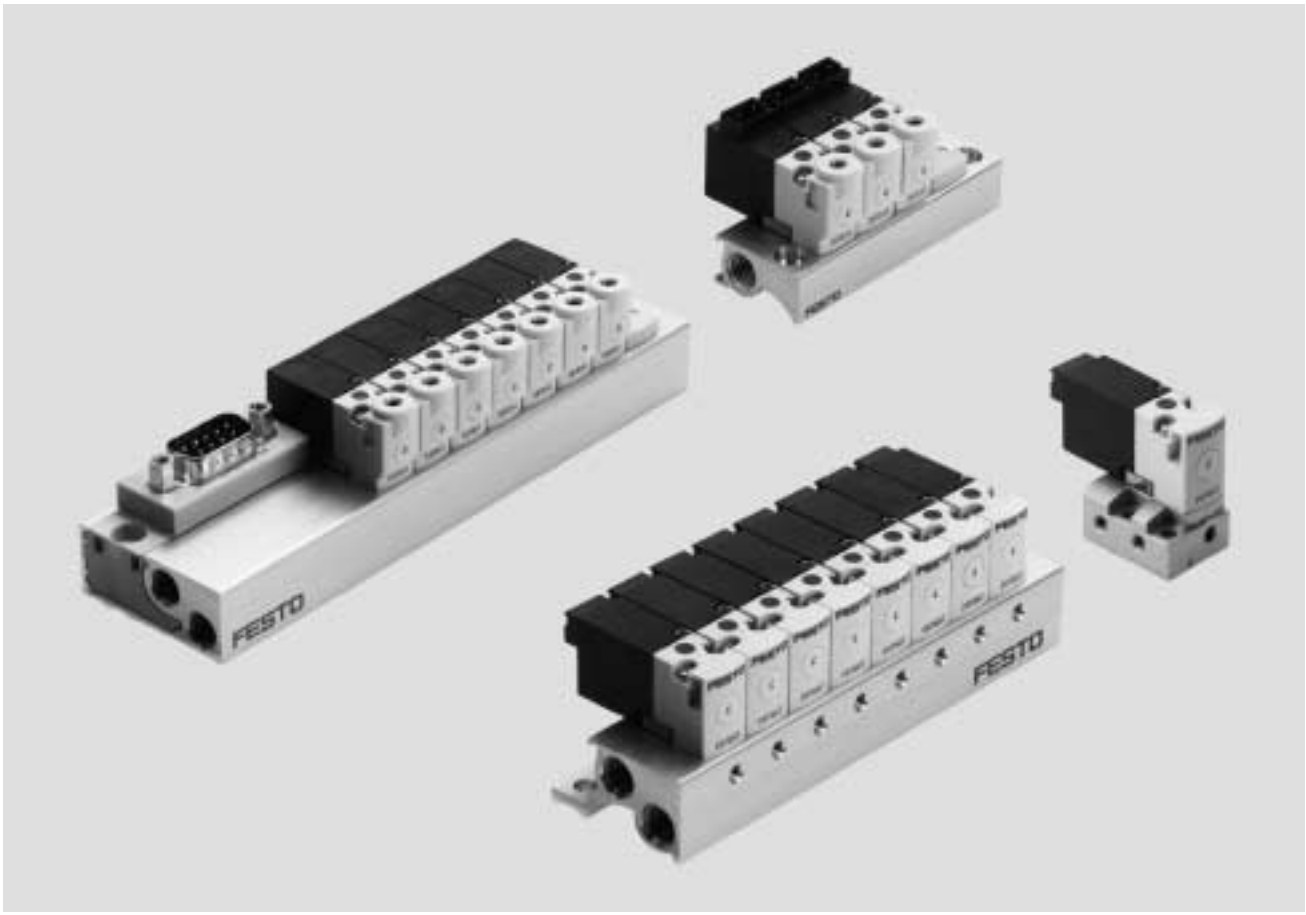
	Advantages for Designers	Advantages for Purchasing
1. Maximum Flexibility	– Easy to install – Miniaturized valves suitable for virtually any application – Ultracompact, center spacing grid 10 mm / 0.39 inches – Sufficient flow for miniaturized drives or process valves	– Provides one-stop shopping for entire miniaturization range – Preassembled units reduce setup time and inventory costs
2. Low-cost Innovative Product Design	– Diverse mounting and connection options – Printed circuit board mounting (PCB) – Electrical and pneumatic multi-pin connections	– Competitively priced – Single source solution
3. Security Provided by a Global System Partner	– Optimum performance with matched products, and a wide range of components – One-stop shopping for components provides easy planning	– One-stop shopping for pneumatic and electronic systems eliminates multiple suppliers

Miniature Valves MH1

Key features at a glance

New

Directly actuated valves



Width
0.39 in / 10 mm

Flow rate
.010 ... .014 Cv /
10 ... 14 l/min

Voltages
5 V DC
12 V DC
24 V DC

Extremely compact valve series for the semiconductor and electronics industries. Directly actuated valves with response times under 5 ms. Optimized installations:
- 100% duty cycle and continuous three-shift operation are guaranteed even on a manifold block
- short cycle times
- precise cycle times

Design flexibility with valve manifold construction:
- Suitable for expansion up to 22 valves
- Various electrical and pneumatic connection options
- Mounting and electrical connection are on a printed circuit board

Valve series MHP1, MHA1
Order code for component parts
➔ Page 5

Overview
➔ Pages 6 ... 9

Product range overview
➔ Page 10

Technical data
➔ Page 11

Basic 2/2-way and 3/2-way valves
Dimensions
➔ Page 12

2/2-way valves and valve manifolds
Valves and manifolds
➔ Pages 13 ... 14

Ordering data
– Component parts and accessories
➔ Page 15

3/2-way valves and valve manifolds
Valves and valve manifolds
➔ Pages 16 ... 17

Multi-pin manifolds
➔ Pages 18 ... 19

Electrical connections, Sub-D plugs
➔ Pages 20 ... 21

Printed circuit board assemblies
➔ Pages 22 ... 24

Ordering data
– Component parts and accessories
➔ Pages 25 ... 27

MH1 modular system
Ordering data
– Manifolds without LED
➔ Pages 28 ... 29

– Manifolds with LED
➔ Pages 30 ... 31

197027		MHP1	–	M4H	–	3/2 O	–	M3	–	HC

Part No.

Type

MHP		Semi in-line valve
MHA		Sub-base valve
	1	Flow rate .010 ... .014 Cv / 10 ... 14 l/min

Mode of operation

M		Solenoid, switching
	1H	24 V DC / manual override
	4H	5 V DC / manual override
	5H	12 V DC / manual override

Valve function

2/2		2/2-way valve
3/2		3/2-way valve
	G	Normally closed
	O	Normally open

Pneumatic connection

M3	Threaded connection M3 (Semi in-line valve)
0.6	Nominal width 0.02 in / 0.6 mm (3/2-way sub-base valve)
0.9	Nominal width 0.03 in / 0.9 mm (2/2-way sub-base valve)

Plug connection

HC	Plug connection horizontal
TC	Plug connection on top
PI	Plug connection on bottom

Ordering Instructions:

1) Use this ordering method when ordering individual component parts, in this case, valves.

2) See ordering data for component parts on pages 15 and 25 ... 27.

3) Please specify the complete order code when ordering, which includes the part number and the type.

Note:
Manifold blocks (sub-base and semi in-line) with an odd number of valves that range from 11 ... 22 valves, as well as further variants, can be configured and ordered using the MH1 modular system (see pages 28 ... 31).

Semi in-line valve MHP1-...-HC, MHP1-...-TC

1 Semi in-line valve MHP1-...-HC

2 Semi in-line valve MHP1-...-TC

3 Individual sub-base

4 Semi in-line manifold block

5 Plug socket with cable
KMH-0.5
KMH-1

6 Inscription label
MH-BZ-80x

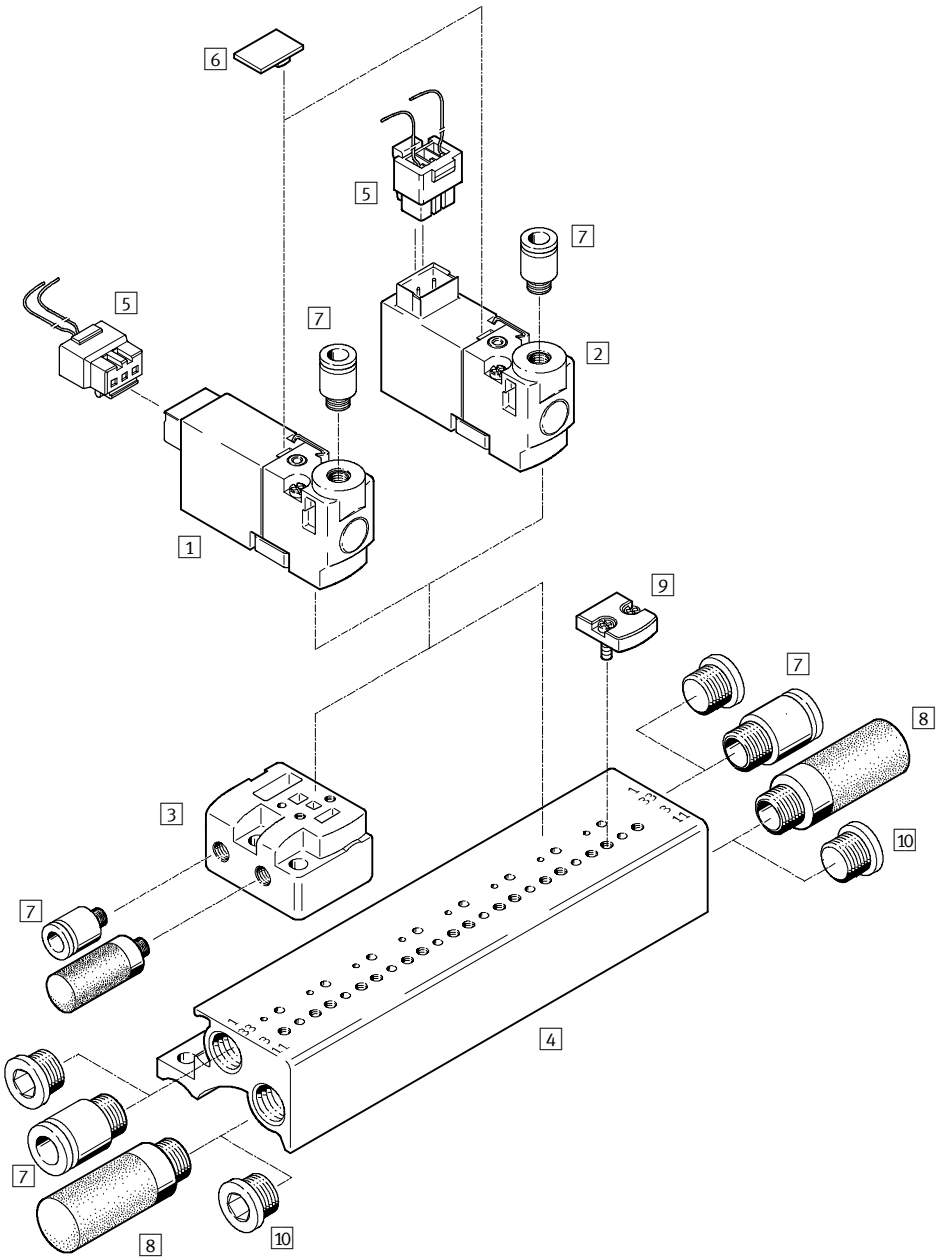
7 QS push-pull/threaded fitting*

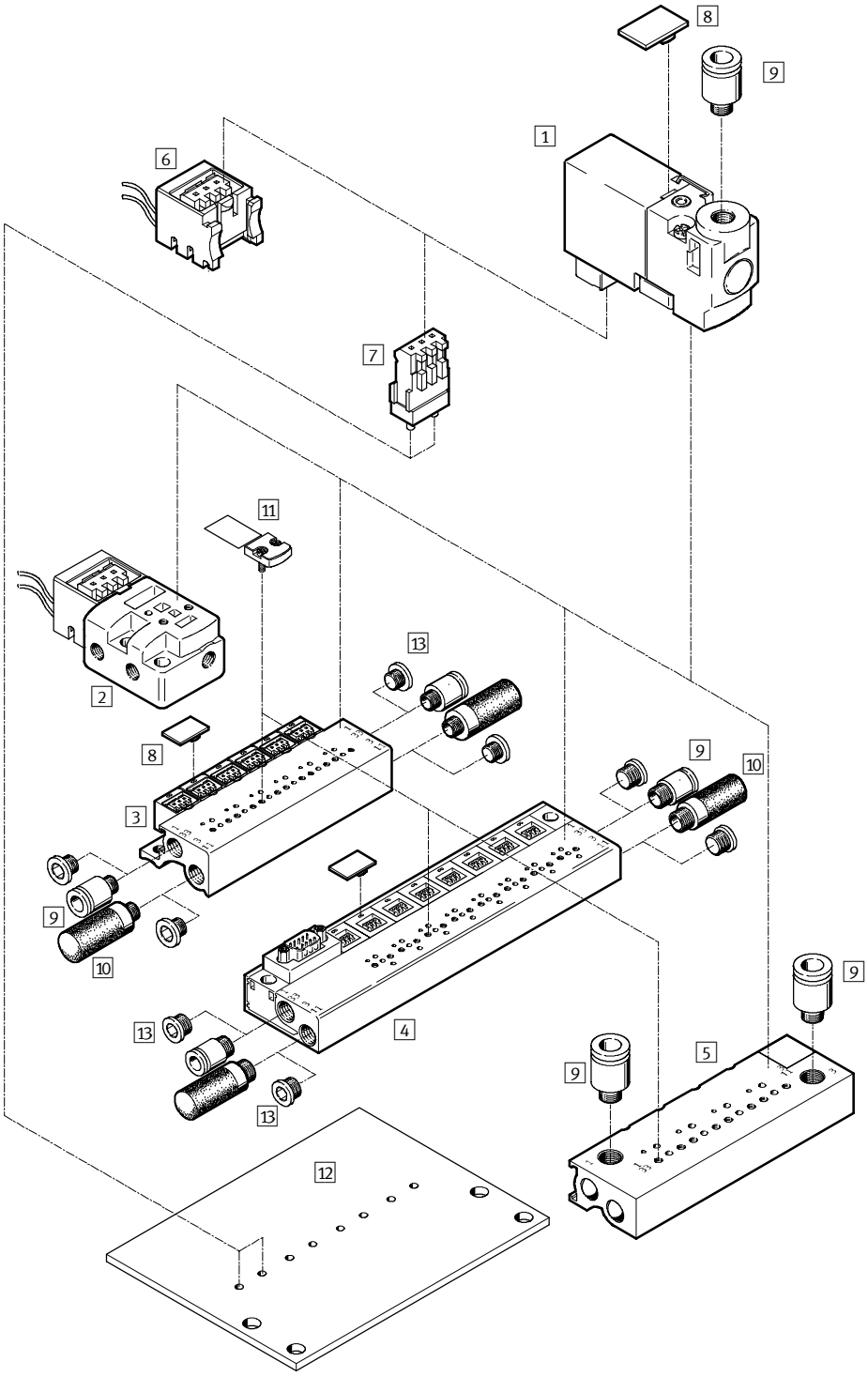
8 Silencer UC for fitting in exhaust ports*

9 Blanking plate MHAP1-BP-3 for unused positions

10 Blanking plug B for sealing unused ports*

*➔ www.festo-usa.com
- Online Pneumatic Catalog





Semi in-line valve MHP1-...-PI

1 Semi in-line valve MHP1-...-PI

2 Individual sub-base

3 Semi in-line manifold block with base plugs

4 Semi in-line manifold block with base plugs and electrical multi-pin connection (available with or without LED)

5 Semi in-line manifold block for mounting on PCB

6 Base plug
MHAP-PI

7 Soldering base
PCBC-A-10
PCBC-A-100

8 Inscription label
MH-BZ-80x
(not for use with LED version)

9 QS push-pull/threaded fitting*

10 Silencer UC for fitting in exhaust ports*

11 Blanking plate MHAP1-BP-3-PI for unused positions

12 Printed circuit board (customer's own)
See page 24 for information necessary to fabricate PCB.

13 Blanking plug B for sealing unused ports*

*➔ www.festo-usa.com
- Online Pneumatic Catalog

Miniature Valves MH1

Overview

-⊙- **New**

Directly actuated valves

Sub-base valve MHA1-...-HC, MHA1-...-TC

1 Sub-base valve MHA1-...-HC

2 Sub-base valve MHA1-...-TC

3 Individual sub-base

4 Sub-base manifold block

5 Plug socket with cable
KMH-0.5
KMH-1

6 Inscription label
MH-BZ-80x

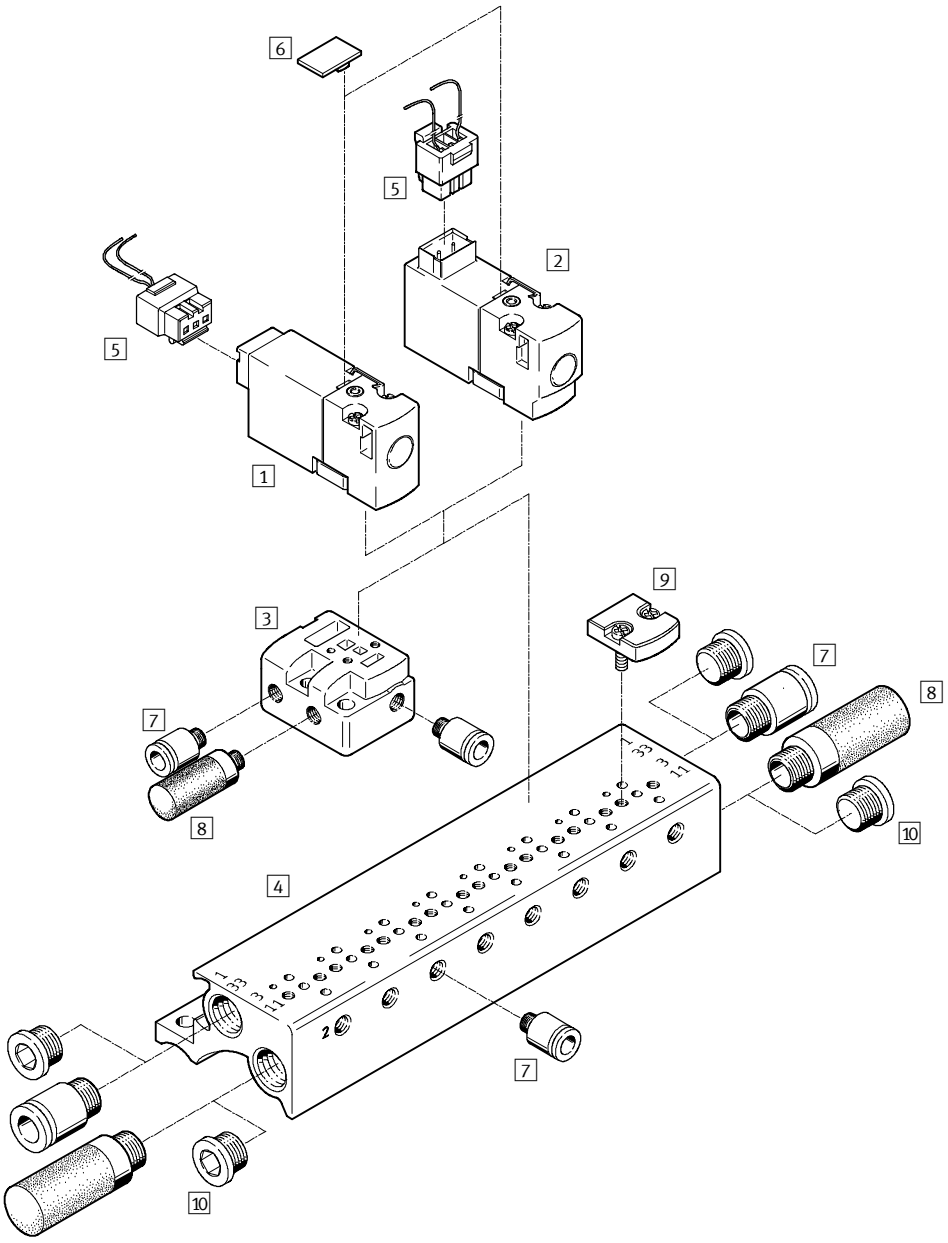
7 QS push-pull/threaded fitting*

8 Silencer UC for fitting in exhaust ports*

9 Blanking plate MHAP1-BP-3 for unused positions

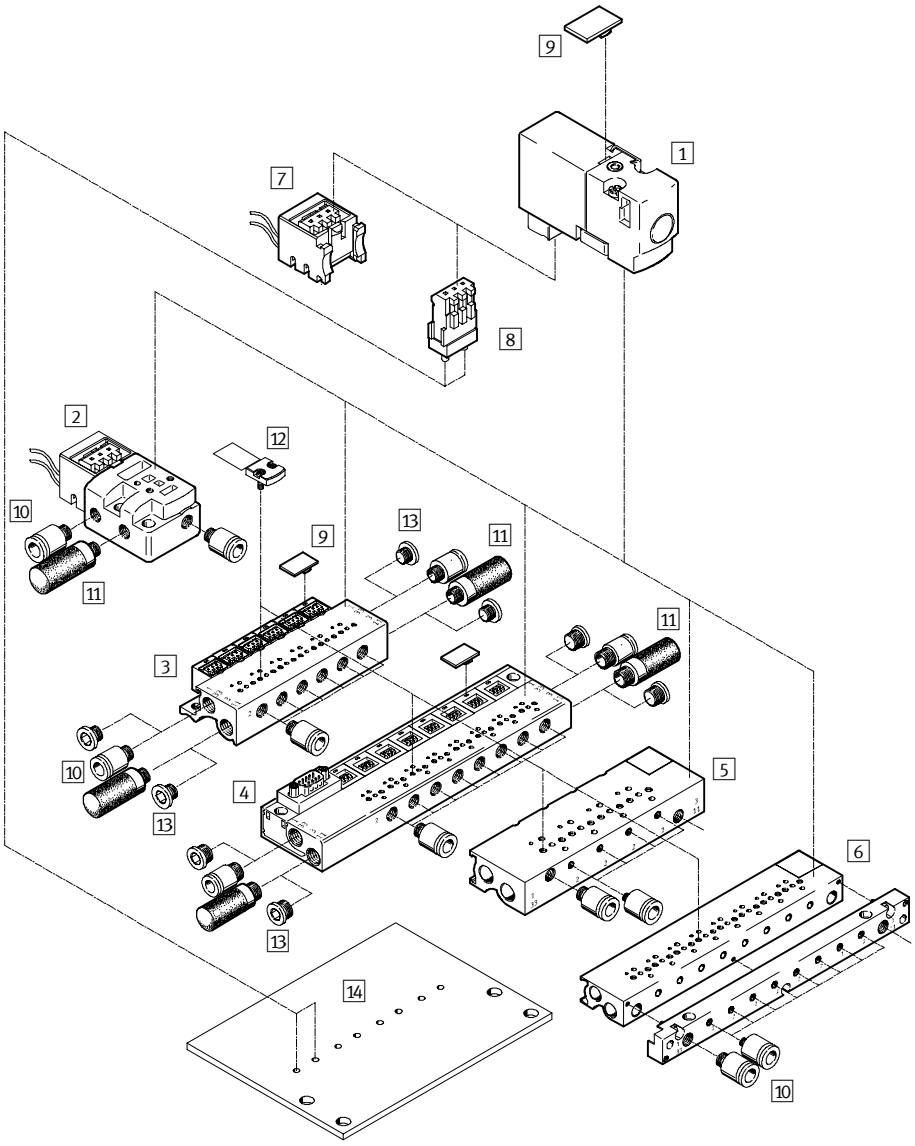
10 Blanking plug B for sealing unused ports*

*➔ www.festo-usa.com
- Online Pneumatic Catalog



Miniature Valves MH1

Overview



Sub-base valve MHA1-...-PI

1 Sub-base valve MHA1-...-PI

2 Individual sub-base
with base plug

3 Sub-base manifold block
with base plugs

4 Sub-base manifold block with
base plugs and electrical
multi-pin connection
(available with or without LED)

5 Sub-base manifold block for
mounting on PCB

6 Sub-base manifold block
for mounting on PCB with
pneumatic multiple connector
plate

7 Base plug
MHAP-PI

8 Soldering base
PCBC-A-10
PCBC-A-100

9 Inscription label
MH-BZ-80x
(not for use with LED version)

10 QS push-pull/threaded fitting*

11 Silencer UC for fitting in exhaust
ports*

12 Blanking plate MHAP1-BP-3-PI
for unused positions

13 Blanking plug B for sealing
unused ports*

14 Printed circuit board
(customer's own)
See page 24 for information
necessary to fabricate PCB.

*➔ www.festo-usa.com
- Online Pneumatic Catalog

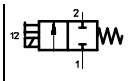
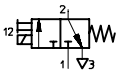
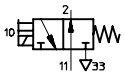
Miniature Valves MH1

Product range overview

New

Directly actuated valves

Variants

Function		 **2/2-way valve Normally closed**	 **3/2-way valve Normally closed**	 **3/2-way valve Normally open**
Performance	Nominal flow rate	.014 Cv / 14 l/min (30 ... 0 psi / 2 ... 0 bar)	.010 Cv / 10 l/min	.010 Cv / 10 l/min
	Response time (on/off)	4/5 ms	4/4 ms	4/4 ms
Connection	Electrical	5 V DC, 12 V DC, 24 V DC		
	Electromechanical	Plug connection horizontal, on top, underneath		
	Mechanical	Individual valve mounting on sub-base, manifold mounting from 2 ... 22 valves		
	Pneumatic	M3, M7 (M7 is for manifold supply and exhaust only)		

Mounting options

(filled cells indicate availability)

Mechanical connection	**Individual valve mounting**				**Manifold mounting**			
	Semi in-line valve		Sub-base valve		Semi in-line valve		Sub-base valve	
Plug connection horizontal (HC) / on top (TC)								
Individual sub-base								
Semi in-line manifold block								
Sub-base manifold block								
Accessories								
Plug socket with cable								
Blanking plate								
Inscription label								
Plug connection underneath (PI)								
Individual sub-base with base plug								
In-line manifold block with base plugs								
In-line manifold block with electrical multi-pin connection								
In-line manifold block for mounting on PCB								
Sub-base manifold block with base plugs								
Sub-base manifold block with electrical multi-pin connection								
Sub-base manifold block for mounting on PCB								
Sub-base manifold block for mounting on PCB, with pneumatic multipole connector plate								
Accessories								
Base plug								
Soldering base								
Blanking plate								
Inscription label								

Function			2/2-way valve	3/2-way valve
Medium			Compressed air (filtered, lubricated or unlubricated), inert gas, or vacuum	Compressed air (filtered, lubricated or unlubricated), inert gas
Nominal flow rate			.014 Cv / 14 l/min (30 ... 0 psi / 2 ... 0 bar)	.010 Cv / 10 l/min
Design			Poppet valve, directly actuated	
Width			10 mm	
Type of mounting			Mounting screws M1.6 x 15	
Pneumatic connection				
	Individual valve mounting	1, 33	M3	M3
		2	M3	M3
		3, 11	–	M3
	Manifold mounting	1, 33	M7	M7
		2	M3	M3
		3, 11	–	M7
	Manifold mounting on PCB	1, 33	M7	M7
		2	M3	M3
		3, 11	–	M7
Nominal size			0.03 in / 0.9 mm	0.02 in / 0.6 mm
Operating pressure range				
	Normally open		–	0 ... 90 psi / 0 ... 6 bar
	Normally closed		26.6 in Hg ... 30 psi / –0.9 ... +2 bar	0 ... 120 psi / 0 ... 8 bar
Response time and switching frequency				
	Response time (on/off)		4/5 ms	4/4 ms
	Switching frequency		20 Hz	
Temperature range				
	Individual mounting		23 ... 122 °F / –5 ... +50 °C (100% duty cycle)	
	Manifold mounting		23 ... 104 °F / –5 ... +40 °C (100% duty cycle)	
Materials				
	Valve housing		PA	
	Seals		NBR	
Weight			0.11 lb / 0.05 kg	
Connection type			Crimp connectors	
Operating voltage			5 V DC ±10%, 12 V DC ±10% or 24 V DC ±10%	
Power consumption			1 W	
Duty cycle			100%	
Protection class				
	Plug socket	KMH-...	IP40 (EN 60529)	
	Base plug	MHAP-PI	IP40 (EN 60529)	
	Soldering base	PCBC-A-...	IP40 (EN 60529)	

Connect the pneumatic supply and exhaust tubing to the following ports:

Sub-base with...	Compressed air to connection:	Exhaust to connection:
2/2-way valve, closed	1	N/A
3/2-way valve, closed	1	3
3/2-way valve, open	11	33

Miniature Valves MH1

Dimensions

New

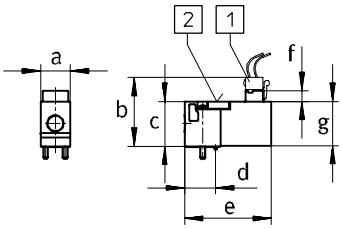
Directly actuated valves

2/2-way valve
3/2-way valve
Basic valves

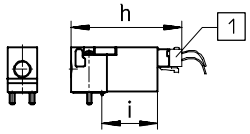
a 0.38 in / 9.8 mm
b 0.88 in / 22.6 mm
c 0.57 in / 14.7 mm
d 0.40 in / 10.2 mm
e 1.12 in / 28.5 mm
f 0.13 in / 3.55 mm
g 0.57 in / 14.4 mm
h 1.43 in / 36.4 mm
i 0.72 in / 18.3 mm
j 0.13 in / 3.55 mm

Sub-base valve

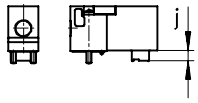
MHA1-...-TC



MHA1-...-HC



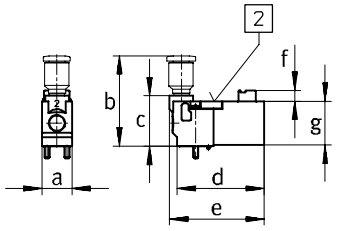
MHA1-...-PI



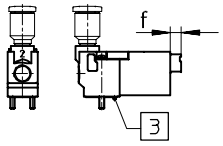
a 0.38 in / 9.8 mm
b 1.16 in / 29.6 mm
c 0.64 in / 16.5 mm
d 1.12 in / 28.5 mm
e 1.22 in / 31 mm
f 0.13 in / 3.55 mm
g 0.57 in / 14.4 mm

Semi in-line valve

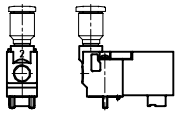
MHP1-...-TC



MHP1-...-HC



MHP1-...-PI



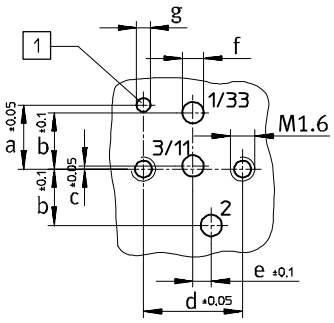
1 Plug socket KMH-...

2 Manual override, push to reset

3 Location pin

Port pattern on sub-bases

a 0.16 in / 4.2 mm
b 0.14 in / 3.7 mm
c 0.008 in / 0.2 mm
d 0.25 in / 6.5 mm
e 0.05 in / 1.2 mm
f 0.06 in / 1.4 mm
g 0.035 in / 0.9 mm



Note:
Semi in-line valves do not have port 2 in the sub-base. 2/2-way valves do not have port 3/11.

± shown in mm

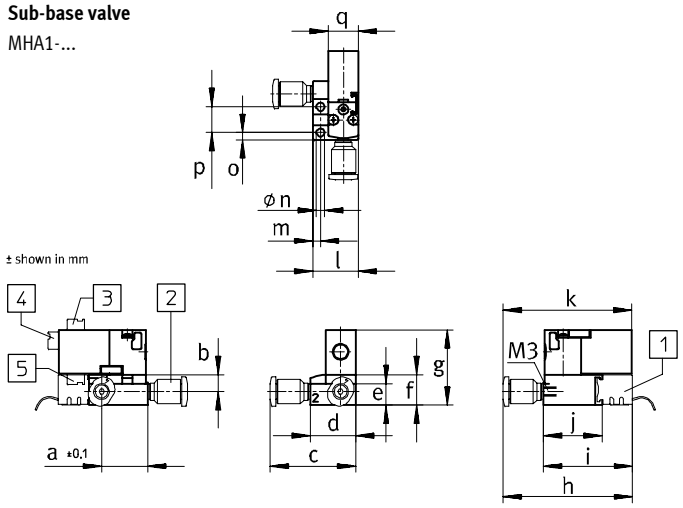
1 Hole for location pin

Accessories for 2/2-way valve
➔ See page 15

Accessories for 3/2-way valve
➔ See pages 25 ... 27

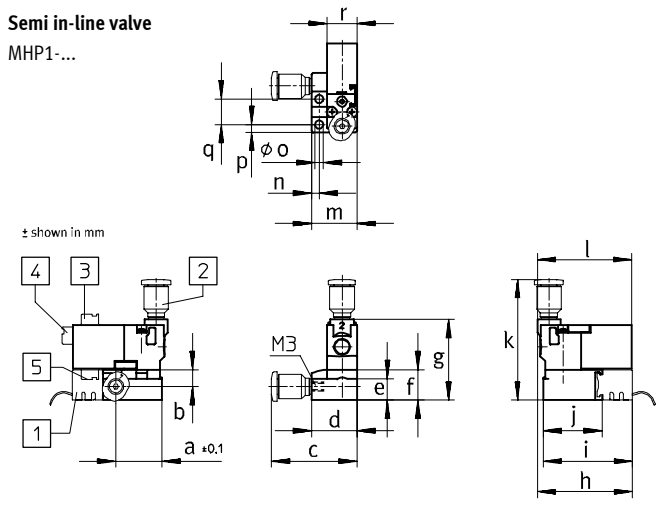
Sub-base valve
MHA1-...

2/2-way valve
Individual valve mounting



a 0.59 in / 15.1 mm
b 0.22 in / 5.5 mm
c 1.10 in / 28 mm
d 0.58 in / 14.9 mm
e 0.27 in / 7 mm
f 0.39 in / 10 mm
g 0.97 in / 24.7 mm
h 1.66 in / 42.4 mm
i 1.15 in / 29.3 mm
j 0.75 in / 19.3 mm
k 1.66 in / 42.2 mm
l 0.59 in / 14.9 mm
m 0.10 in / 2.5 mm
n 0.11 in / 2.7 mm
o 0.09 in / 2.45 mm
p 0.33 in / 8.4 mm
q 0.38 in / 9.8 mm

Semi in-line valve
MHP1-...



a 0.59 in / 15.1 mm
b 0.21 in / 5.5 mm
c 1.10 in / 28 mm
d 0.59 in / 14.9 mm
e 0.27 in / 7 mm
f 0.39 in / 10 mm
g 1.04 in / 26.5 mm
h 1.23 in / 31.2 mm
i 1.15 in / 29.3 mm
j 0.76 in / 19.3 mm
k 1.56 in / 39.6 mm
l 1.22 in / 31 mm
m 0.59 in / 14.9 mm
n 0.10 in / 2.5 mm
o 0.11 in / 2.7 mm
p 0.09 in / 2.45 mm
q 0.33 in / 9.8 mm
r 0.38 in / 9.8 mm

1 Base plug MHAP-PI
2 Connector QSM-...
3 Plug connection TC
4 Plug connection HC
5 Plug connection PI

Accessories
➔ See page 15

Miniature Valves MH1

Dimensions

New

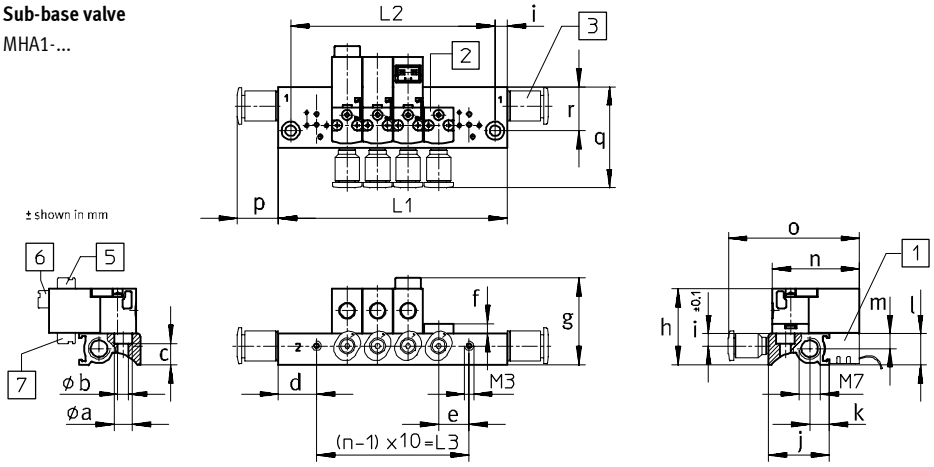
Directly actuated valves

2/2-way valve
Manifold mounting

a 0.23 in / 6 mm
b 0.13 in / 3.5 mm
c 0.27 in / 7 mm
d 0.49 in / 12.5 mm
e 0.39 in / 10 mm
f 0.12 in / 3.3 mm
g 1.12 in / 28.45 mm
h 0.98 in / 24.9 mm
i 0.15 in / 4 mm
j 0.78 in / 20 mm
k 0.24 in / 6.3 mm
l 0.40 in / 10.2 mm
m 0.19 in / 4.9 mm
n 1.12 in / 28.5 mm
o 1.69 in / 42.9 mm
p 0.53 in / 13.5 mm
q 1.3 in / 33.1 mm
r 0.56 in / 14.4 mm

1 Base plug MHAP-PI
2 Blanking plate MHAP1
3 Connector QSM-...
5 Plug connection TC
6 Plug connection HC
7 Plug connection PI

Sub-base valve
MHA1-...

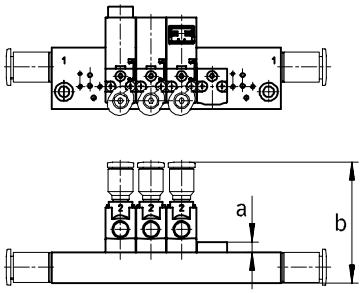


n = number of valve positions

Number of valve positions	L1 (±0.15 mm) in /mm	L2 (±0.1 mm) in / mm	L3 in / mm
2	1.38 / 35	1.06 / 27	0.39 / 10
3	1.77 / 45	1.45 / 37	0.78 / 20
4	2.16 / 55	1.85 / 47	1.18 / 30
5	2.56 / 65	2.24 / 57	1.57 / 40
6	2.95 / 75	2.63 / 67	1.97 / 50
7	3.34 / 85	3.03 / 77	2.36 / 60
8	3.74 / 95	3.42 / 87	2.75 / 70
9	4.13 / 105	3.81 / 97	3.15 / 80
10	4.53 / 115	4.21 / 107	3.54 / 90
11	4.92 / 125	4.60 / 117	3.93 / 100

Number of valve positions	L1 (±0.15 mm) in / mm	L2 (±0.1 mm) in / mm	L3 in / mm
12	5.31 / 135	5.00 / 127	4.33 / 110
13	5.70 / 145	5.39 / 137	4.72 / 120
14	6.10 / 155	5.78 / 147	5.11 / 130
15	6.49 / 165	6.18 / 157	5.51 / 140
16	6.88 / 175	6.57 / 167	5.90 / 150
17	7.28 / 185	6.96 / 177	6.29 / 160
18	7.67 / 195	7.36 / 187	6.69 / 170
19	8.07 / 205	7.75 / 197	7.08 / 180
20	8.46 / 215	8.15 / 207	7.48 / 190
21	8.85 / 225	8.54 / 217	7.87 / 200
22	9.25 / 235	8.93 / 227	8.26 / 210

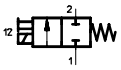
Semi in-line valve
MHP1-...



a 0.039 in / 3.3 mm
b 1.55 in / 39.5 mm

Accessories
➔ See next page

2/2-way valve
Normally closed



Designation			Part No.	Type
Semi in-line valve	Plug connection horizontal	5 V DC	197045	MHP1-M4H-2/2G-M3-HC
		12 V DC	197046	MHP1-M5H-2/2G-M3-HC
		24 V DC	197047	MHP1-M1H-2/2G-M3-HC
	Plug connection on top	5 V DC	197048	MHP1-M4H-2/2G-M3-TC
		12 V DC	197049	MHP1-M5H-2/2G-M3-TC
		24 V DC	197050	MHP1-M1H-2/2G-M3-TC
	Plug connection on bottom	5 V DC	197051	MHP1-M4H-2/2G-M3-PI
		12 V DC	197052	MHP1-M5H-2/2G-M3-PI
		24 V DC	197053	MHP1-M1H-2/2G-M3-PI
Sub-base valve	Plug connection horizontal	5 V DC	197036	MHA1-M4H-2/2G-0.9-HC
		12 V DC	197037	MHA1-M5H-2/2G-0.9-HC
		24 V DC	197038	MHA1-M1H-2/2G-0.9-HC
	Plug connection on top	5 V DC	197039	MHA1-M4H-2/2G-0.9-TC
		12 V DC	197040	MHA1-M5H-2/2G-0.9-TC
		24 V DC	197041	MHA1-M1H-2/2G-0.9-TC
	Plug connection on bottom	5 V DC	197042	MHA1-M4H-2/2G-0.9-PI
		12 V DC	197043	MHA1-M5H-2/2G-0.9-PI
		24 V DC	197044	MHA1-M1H-2/2G-0.9-PI

Accessories

Designation		Part No.	Type
Semi in-line valve			
Individual sub-base	Plug connection	197188	MHP1-AS-2-M3
	Base plug	197190	MHP1-AS-2-M3-PI
Semi in-line manifold block, plug connection for ...	2 valves	197196	MHP1-P2-2
	4 valves	197197	MHP1-P4-2
	6 valves	197198	MHP1-P6-2
	8 valves	197200	MHP1-P8-2
	10 valves	197201	MHP1-P10-2
Semi in-line manifold block with base plugs for ...	2 valves	197217	MHP1-P2-2-PI
	4 valves	197218	MHP1-P4-2-PI
	6 valves	197219	MHP1-P6-2-PI
	8 valves	197220	MHP1-P8-2-PI
	10 valves	197221	MHP1-P10-2-PI
Sub-base valve			
Individual sub-base	Plug connection	197187	MHA1-AS-2-M3
	Base plug	197189	MHA1-AS-2-M3-PI
Sub-base manifold block, plug connection for ...	2 valves	197207	MHA1-P2-2-M3
	4 valves	197208	MHA1-P4-2-M3
	6 valves	197209	MHA1-P6-2-M3
	8 valves	197210	MHA1-P8-2-M3
	10 valves	197211	MHA1-P10-2-M3
Sub-base manifold block with base plugs for ...	2 valves	197227	MHA1-P2-2-M3-PI
	4 valves	197228	MHA1-P4-2-M3-PI
	6 valves	197229	MHA1-P6-2-M3-PI
	8 valves	197230	MHA1-P8-2-M3-PI
	10 valves	197231	MHA1-P10-2-M3-PI

Note: Manifold blocks (sub-base and semi in-line) with an odd number of valves that range from 11 ... 22 valves, as well as further variants, can be configured and ordered using the MH1 modular system (see pages 28 ... 31).

Accessories

Designation		Part No.	Type
Blanking plate	Plug connection	197257	MHAP1-BP-3
	Base plug	197258	MHAP1-BP-3-PI
Inscription label		197259	MH-BZ-80x
Base plug	Plug-in	197260	MHAP-PI
Screws	For valves	645502	M1.6 x 15
	For blanking plates	645503	M1.6 x 5
Seal	For valves and blanking plates	645380	MH1
Soldering base	10 pieces	197261	PCBC-A-10
	100 pieces	197262	PCBC-A-100
Plug socket with cable	1.64 ft / 0.5 m	197263	KMH-0.5
	3.28 ft / 1 m	197264	KMH-1
Push-pull/threaded fittings QS		➔ www.festo-usa.com Online Pneumatic Catalog	
Silencer UC			

Miniature Valves MH1

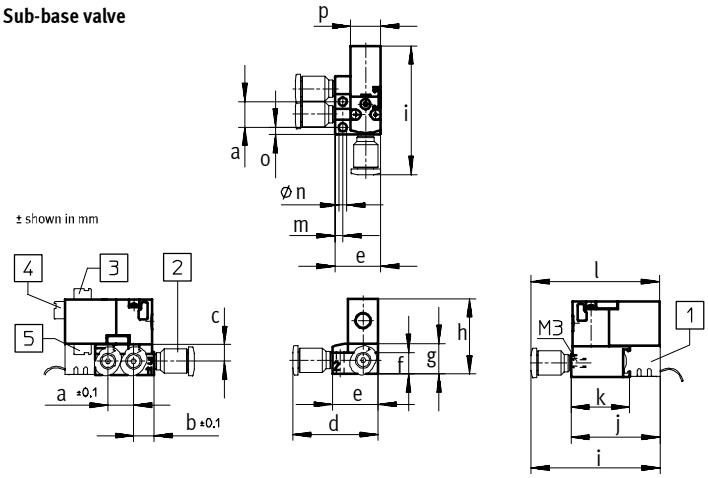
Dimensions

New

Directly actuated valves

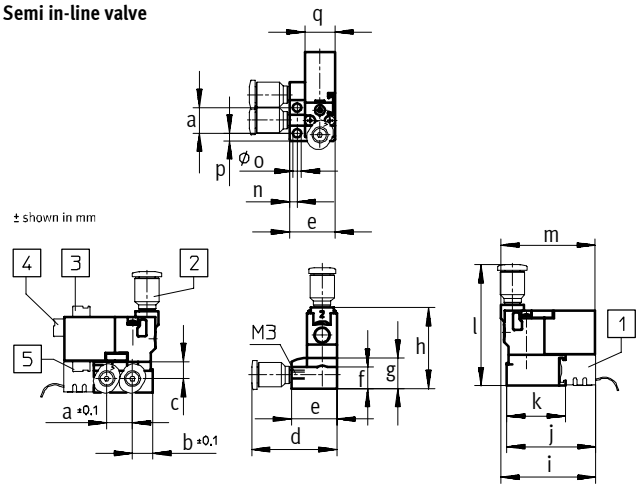
3/2-way valve
Individual valve mounting

Sub-base valve



a 0.33 in / 8.4 mm
b 0.26 in / 6.7 mm
c 0.22 in / 5.5 mm
d 1.1 in / 28 mm
e 0.58 in / 14.9 mm
f 0.27 in / 7 mm
g 0.39 in / 10 mm
h 0.97 in / 24.7 mm
i 1.67 in / 42.4 mm
j 1.15 in / 29.3 mm
k 0.76 in / 19.3 mm
l 1.66 in / 42.2 mm
m 0.098 in / 2.5 mm
n 0.10 in / 2.7 mm
o 0.096 in / 2.45 mm
p 0.38 in / 9.8 mm

Semi in-line valve



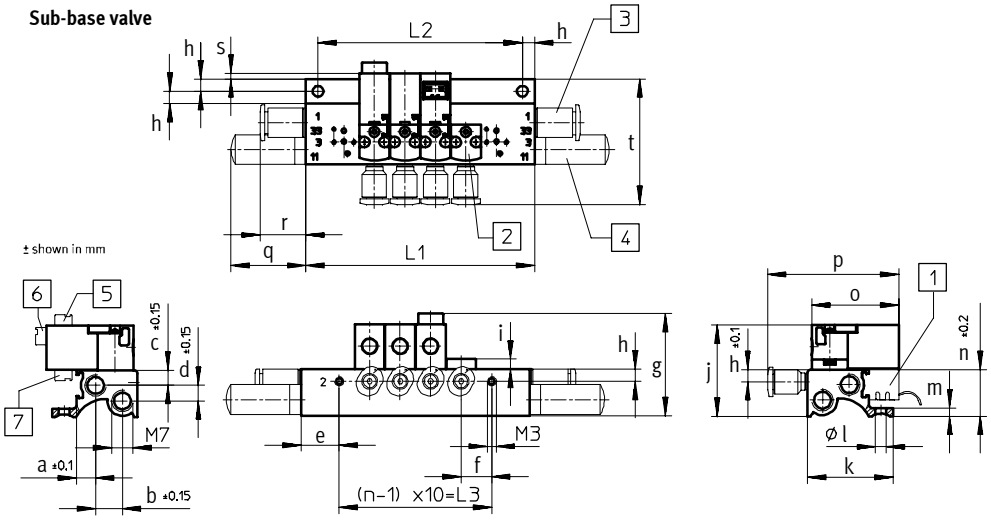
a 0.33 in / 8.4 mm
b 0.26 in / 6.7 mm
c 0.22 in / 5.5 mm
d 1.1 in / 28 mm
e 0.58 in / 14.9 mm
f 0.27 in / 7 mm
g 0.39 in / 10 mm
h 1.04 in / 26.5 mm
i 1.22 in / 31.2 mm
j 1.15 in / 29.3 mm
k 0.76 in / 19.3 mm
l 1.55 in / 39.6 mm
m 1.22 in / 31 mm
n 0.098 in / 2.5 mm
o 0.10 in / 2.7 mm
p 0.096 in / 2.45 mm
q 0.38 in / 9.8 mm

1 Base plug MHAP-PI
2 Connector QSM-...
3 Plug connection TC
4 Plug connection HC
5 Plug connection PI

Accessories

➔ See pages 25 ... 27

Sub-base valve



n = number of valve positions

3/2-way valve
Manifold mounting

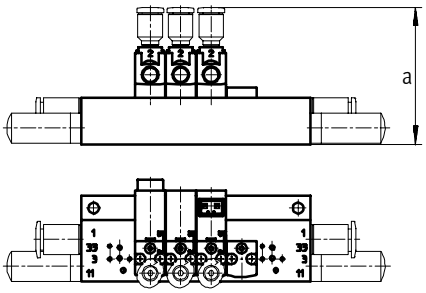
a 0.24 in / 6.3 mm
b 0.34 in / 8.8 mm
c 0.19 in / 4.9 mm
d 0.20 in / 5.1 mm
e 0.49 in / 12.5 mm
f 0.39 in / 10 mm
g 1.32 in / 33.55 mm
h 0.15 in / 4 mm
i 0.12 in / 3.3 mm
j 1.18 in / 30 mm
k 1.10 in / 28 mm
l 0.13 in / 3.5 mm
m 0.11 in / 2.8 mm
n 0.60 in / 15.3 mm
o 1.12 in / 28.5 mm
p 1.68 in / 42.9 mm
q 0.96 in / 24.5 mm
r 0.53 in / 13.5 mm
s 0.07 in / 1.9 mm
t 1.61 in / 41.1 mm

Number of valve positions	L1 (±0.15 mm) in /mm	L2 (±0.1 mm) in / mm	L3 in / mm
2	1.38 / 35	1.06 / 27	0.39 / 10
3	1.77 / 45	1.45 / 37	0.78 / 20
4	2.16 / 55	1.85 / 47	1.18 / 30
5	2.56 / 65	2.24 / 57	1.57 / 40
6	2.95 / 75	2.63 / 67	1.97 / 50
7	3.34 / 85	3.03 / 77	2.36 / 60
8	3.74 / 95	3.42 / 87	2.75 / 70
9	4.13 / 105	3.81 / 97	3.15 / 80
10	4.53 / 115	4.21 / 107	3.54 / 90
11	4.92 / 125	4.60 / 117	3.93 / 100

Number of valve positions	L1 (±0.15 mm) in / mm	L2 (±0.1 mm) in / mm	L3 in / mm
12	5.31 / 135	5.00 / 127	4.33 / 110
13	5.70 / 145	5.39 / 137	4.72 / 120
14	6.10 / 155	5.78 / 147	5.11 / 130
15	6.49 / 165	6.18 / 157	5.51 / 140
16	6.88 / 175	6.57 / 167	5.90 / 150
17	7.28 / 185	6.96 / 177	6.29 / 160
18	7.67 / 195	7.36 / 187	6.69 / 170
19	8.07 / 205	7.75 / 197	7.08 / 180
20	8.46 / 215	8.15 / 207	7.48 / 190
21	8.85 / 225	8.54 / 217	7.87 / 200
22	9.25 / 235	8.93 / 227	8.26 / 210

1 Base plug MHAP-PI
2 Blanking plate MHAP1
3 Connector QSM-...
4 Silencer
5 Plug connection TC
6 Plug connection HC
7 Plug connection PI

In-line valve



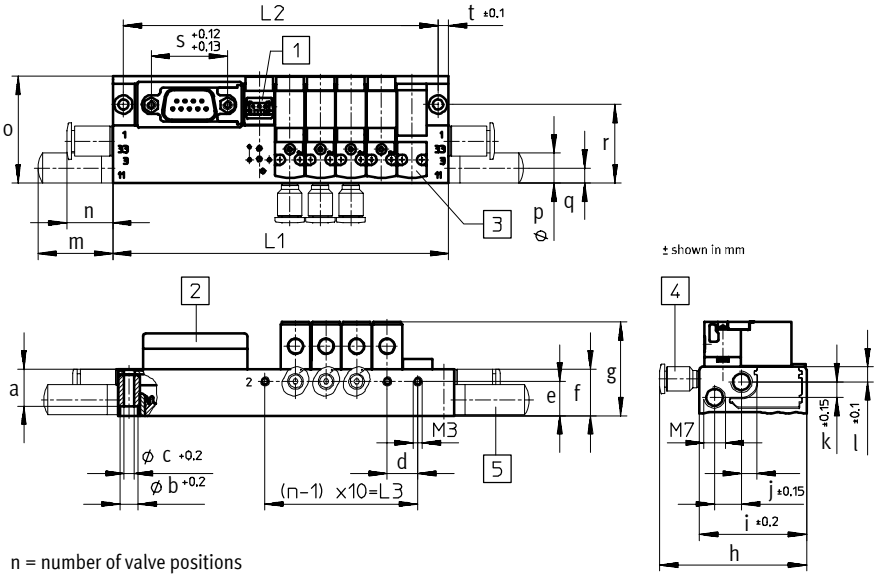
a 1.75 in / 44.6 mm

Accessories
➔ See pages 25 ... 27

3/2-way valve
Sub-base manifold mounting
with electrical multi-pin connection

a 0.47 in / 12.1 mm
b 0.23 in / 6 mm
c 0.12 in / 3.3 mm
d 0.39 in / 10 mm
e 0.44 in / 11.3 mm
f 0.60 in / 15.3 mm
g 1.21 in / 30.8 mm
h 1.89 in / 48.1 mm
i 1.37 in / 35 mm
j 0.34 in / 8.8 mm
k 0.20 in / 5.1 mm
l 0.19 in / 4.9 mm
m 0.96 in / 24.5 mm
n 0.59 in / 15 mm
o 1.37 in / 35 mm
p 0.40 in / 10.4 mm
q 0.20 in / 5.3 mm
r 1.01 in / 25.7 mm
s 0.98 in / 25 mm
t 0.13 in / 3.5 mm

Manifold with 9-pin connector



n = number of valve positions

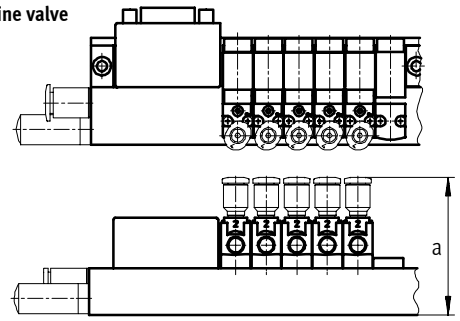
1 Base plug MHAP-PI
2 Sub-D plug 9 pin
3 Blanking plate MHAP1
4 Connector QSM-...
5 Silencer

Number of valve positions	L1 (±0.1 mm) in / mm	L2 (±0.15 mm) in / mm	L3 in / mm
2	2.75 / 70	2.48 / 63	0.39 / 10
4	3.54 / 90	3.26 / 83	1.18 / 30
6	4.33 / 110	4.05 / 0.3	1.96 / 50
8	5.11 / 130	4.84 / 123	2.75 / 70

Multi-pin cables
➔ See pages 20 ... 21

Accessories
➔ See pages 25 ... 27

Semi in-line valve



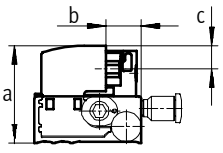
a 1.76 in / 44.9 mm

Electrical multi-pin connection

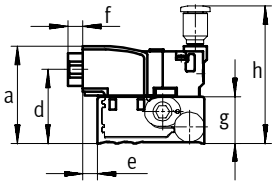
a 1.25 in / 31.75 mm
b 0.45 in / 11.65 mm
c 0.29 in / 7.6 mm
d 0.95 in / 24.15 mm
e 0.18 in / 4.75 mm
f 0.19 in / 5 mm
g 0.60 in / 15.3 mm
h 1.76 in / 44.9 mm
i 1.03 in / 26.2 mm
j 0.83 in / 21.2 mm
k 0.44 in / 11.3 mm

Plug directions

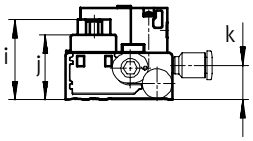
to pneumatic side



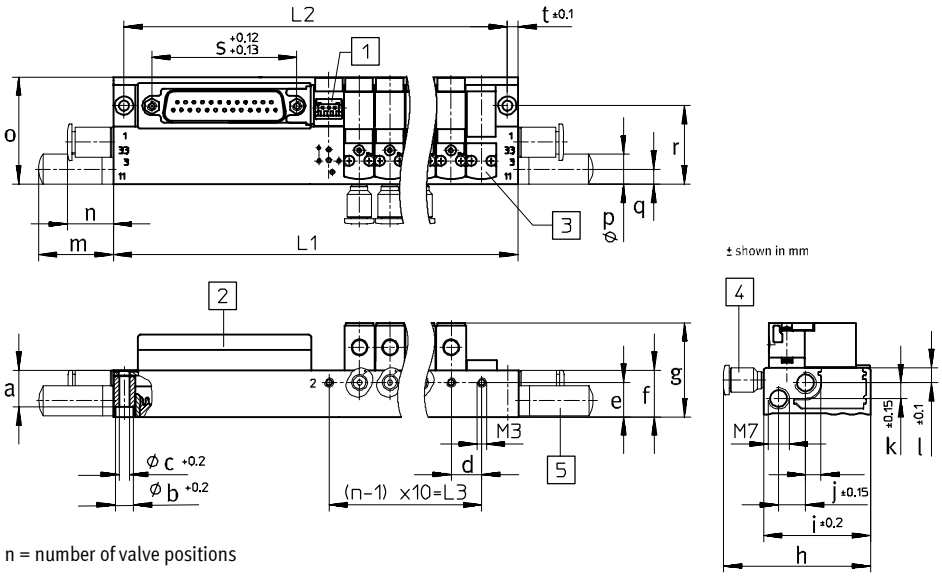
to electrical side



to top



Manifold with 25-pin connector



n = number of valve positions

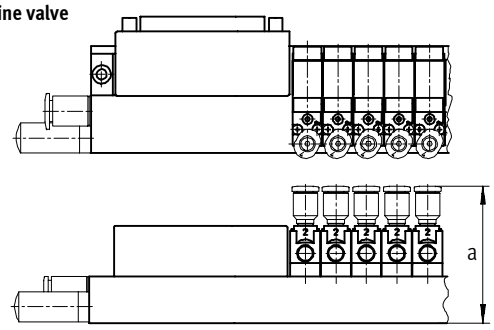
Number of valve positions	L1 (±0.15 mm) in / mm	L2 (±0.1 mm) in / mm	L3 in / mm
10	4.53 / 115	4.21 / 107	3.54 / 90
12	5.31 / 135	5.00 / 127	4.33 / 110
14	6.10 / 155	5.78 / 147	5.11 / 130
16	6.88 / 175	6.57 / 167	5.90 / 150
18	7.67 / 195	7.36 / 187	6.69 / 170
20	8.46 / 215	8.15 / 207	7.48 / 190
22	9.25 / 235	8.93 / 227	8.26 / 210

3/2-way valve
Sub-base manifold mounting
with electrical multi-pin connection

a 0.47 in / 12.1 mm
b 0.23 in / 6 mm
c 0.12 in / 3.3 mm
d 0.39 in / 10 mm
e 0.44 in / 11.3 mm
f 0.60 in / 15.3 mm
g 1.21 in / 30.8 mm
h 1.89 in / 48.1 mm
i 1.37 in / 35 mm
j 0.34 in / 8.8 mm
k 0.20 in / 5.1 mm
l 0.19 in / 4.9 mm
m 0.96 in / 24.5 mm
n 0.59 in / 15 mm
o 1.37 in / 35 mm
p 0.40 in / 10.4 mm
q 0.20 in / 5.3 mm
r 1.01 in / 25.7 mm
s 0.98 in / 25 mm
t 0.13 in / 3.5 mm

1 Base plug MHAP-PI
2 Sub-D plug 25-pin
3 Blanking plate MHAP1
4 Connector QSM-...
5 Silencer

Semi in-line valve



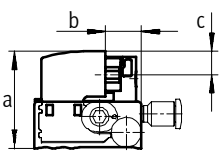
a 1.75 in / 44.6 mm

Multi-pin cables
➔ See pages 20 ... 21

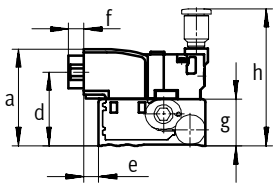
Accessories
➔ See pages 25 ... 27

Plug directions

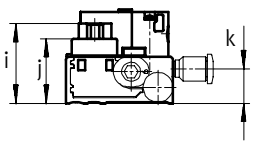
to pneumatic side



to electrical side



to top



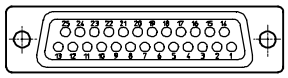
Electrical multi-pin connection

a 1.25 in / 31.75 mm
b 0.45 in / 11.65 mm
c 0.29 in / 7.6 mm
d 0.95 in / 24.15 mm
e 0.18 in / 4.75 mm
f 0.19 in / 5 mm
g 0.60 in / 15.3 mm
h 1.76 in / 44.9 mm
i 1.03 in / 26.2 mm
j 0.83 in / 21.2 mm
k 0.44 in / 11.3 mm

Pin arrangement:
Viewed from plug-in direction

25-pin Sub-D plug with 25 Conductor Cable

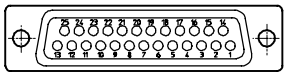
Contact number	Color code	Valve position
1	White	1
2	Brown	2
3	Green	3
4	Yellow	4
5	Gray	5
6	Pink	6
7	Blue	7
8	Red	8
9	Black	9
10	Purple	10
11	Gray-Pink	11
12	Red-Blue	12
13	White-Green	13
14	Brown-Green	14
15	White-Yellow	15
16	Yellow-Brown	16
17	White-Gray	17
18	Gray-Brown	18
19	White-Pink	19
20	Pink-Brown	20
21	White-Blue	21
22	Brown-Blue	22
23	White-Red	common
24	Brown-Red	common
25	White-Black	common



Part No.	Type
530046	KMP6-25P-20-2.5
530047	KMP6-25P-20-5
530048	KMP6-25P-20-10

25-pin Sub-D plug with 18 Conductor Cable

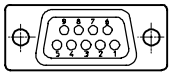
Contact number	Color code	Valve position
1	White	1
2	Brown	2
3	Green	3
4	Yellow	4
5	Gray	5
6	Pink	6
7	Blue	7
8	Red	8
9	Black	9
10	Purple	10
11	Gray-Pink	11
12	Red-Blue	12
13	White-Green	13
14	Brown-Green	14
15	White-Yellow	15
23	White-Green	common
24	Brown-Green	common
25	White-Yellow	common



Part No.	Type
530049	KMP6-25P-12-2.5
530050	KMP6-25P-12-5
530051	KMP6-25P-12-10

9-pin Sub-D plug with 9 Conductor Cable

Contact number	Color code	Valve position
1	White	1
2	Brown	2
3	Green	3
4	Yellow	4
5	Gray	5
6	Pink	6
7	Blue	7
8	Red	8
9	Black	common

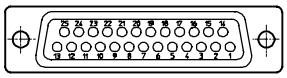


Part No.	Type
531184	KMP6-09P-8-2.5
531185	KMP6-09P-8-5
531186	KMP6-09P-8-10

Each common point must be connected. Use 0 V at common for positive switching signals.
Use appropriate voltage (5, 12 or 24 V DC, depending on coil) at common for negative switching signals.

25-pin Sub-D plug with 25 Conductor Cable

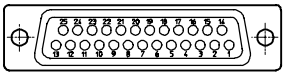
Contact number	Color code	Valve position
1	White	1
2	Brown	2
3	Green	3
4	Yellow	4
5	Gray	5
6	Pink	6
7	Blue	7
8	Red	8
9	Black	9
10	Purple	10
11	Gray-Pink	11
12	Red-Blue	12
13	White-Green	13
14	Brown-Green	14
15	White-Yellow	15
16	Yellow-Brown	16
17	White-Gray	17
18	Gray-Brown	18
19	White-Pink	19
20	Pink-Brown	20
21	White-Blue	21
22	Brown-Blue	22
23	White-Red	23
24	Brown-Red	24
25	White-Black	common



Part No.	Type
530046	KMP6-25P-20-2.5
530047	KMP6-25P-20-5
530048	KMP6-25P-20-10

25-pin Sub-D plug with 18 Conductor Cable

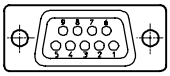
Contact number	Color code	Valve position
1	White	1
2	Brown	2
3	Green	3
4	Yellow	4
5	Gray	5
6	Pink	6
7	Blue	7
8	Red	8
9	Black	9
10	Purple	10
11	Gray-Pink	11
12	Red-Blue	12
13	White-Green	13
14	Brown-Green	14
15	White-Yellow	15
23	White-Green	not assigned
24	Brown-Green	not assigned
25	White-Yellow	common



Part No.	Type
530049	KMP6-25P-12-2.5
530050	KMP6-25P-12-5
530051	KMP6-25P-12-10

9-pin Sub-D plug with 9 Conductor Cable

Contact number	Color code	Valve position
1	White	1
2	Brown	2
3	Green	3
4	Yellow	4
5	Gray	5
6	Pink	6
7	Blue	7
8	Red	8
9	Black	common



Part No.	Type
531184	KMP6-09P-8-2.5
531185	KMP6-09P-8-5
531186	KMP6-09P-8-10

Pin arrangement:
Viewed from plug-in direction

Each common point must be connected. Use 0 V at common for positive switching signals.
Use appropriate voltage (24 V DC) at common for negative switching signals.

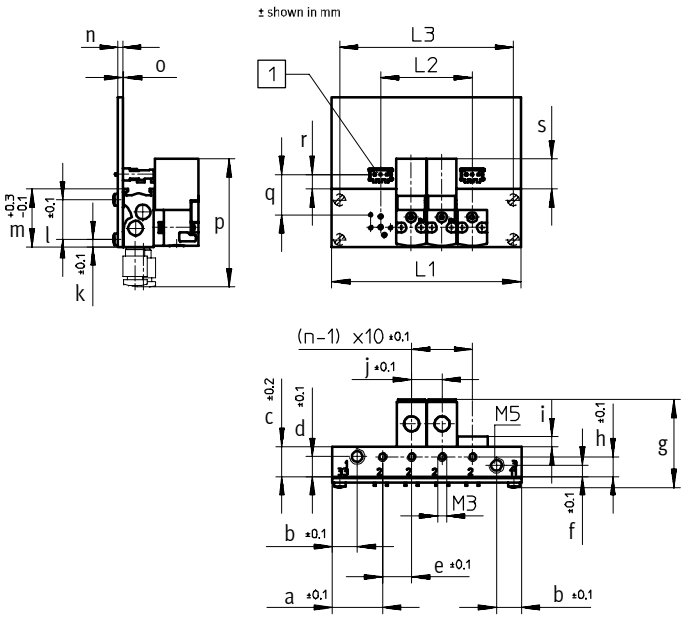
3/2-way valve

Printed circuit board (PCB) mounting

Sub-base valve

a 0.54 in / 16.5 mm
b 0.32 in / 8.15 mm
c 0.38 in / 9.8 mm
d 0.25 in / 6.6 mm
e 0.37 in / 9.5 mm
f 0.14 in / 3.7 mm
g 1.13 in / 28.9 mm
h 0.25 in / 6.5 mm
i 0.01 in / 3.3 mm
j 0.39 in / 10 mm
k 0.09 in / 2.4 mm
l 0.51 in / 13 mm
m 0.74 in / 19 mm
n 0.05 in / 1.5 mm
o 0.01 in / 0.4 mm
p 1.65 in / 41.95 mm
q 0.51 in / 13.2 mm
r 0.18 in / 4.75 mm
s 0.38 in / 9.85 mm

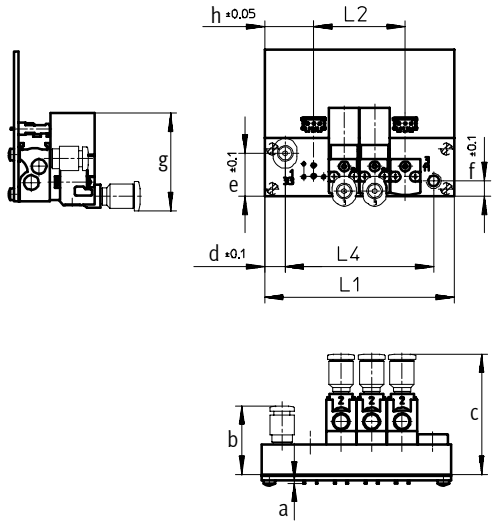
1 Soldering base PCBC-A-...



In-line valve

a 0.039 in / 1 mm
b 0.88 in / 22.4 mm
c 1.55 in / 39.4 mm
d 0.26 in / 6.7 mm
e 0.55 in / 14 mm
f 0.19 in / 5 mm
g 1.26 in / 32.1 mm
h 0.62 in / 16 mm

± shown in mm

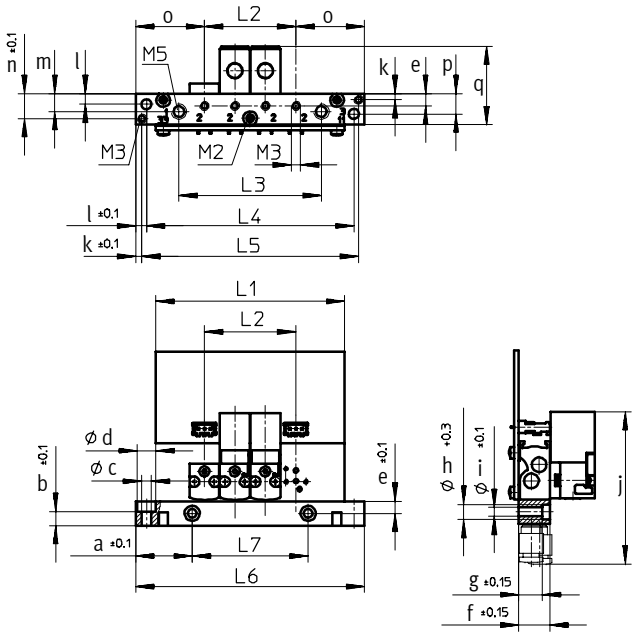


Number of valve positions	L1 (±0.15 mm) in / mm	L2 in / mm	L3 (±0.1 mm) in / mm	L4 (±0.1 mm) in / mm
4	2.44 / 62	1.18 / 30	2.24 / 57	1.91 / 48.6
6	3.22 / 82	1.96 / 50	3.03 / 77	2.70 / 68.6
8	4.01 / 102	2.75 / 70	3.81 / 97	3.48 / 88.6
10	4.80 / 122	3.54 / 90	4.60 / 117	4.27 / 108.6

Note:
The printed circuit board is not included.

Accessories
➔ See pages 25 ... 27

Sub-base valve



a 0.72 in / 18.5 mm
b 0.17 in / 4.5 mm
c 0.12 in / 3.3 mm
d 0.24 in / 6.1 mm
e 0.15 in / 4 mm
f 0.40 in / 10.2 mm
g 0.30 in / 7.8 mm
h 0.19 in / 4.95 mm
i 0.11 in / 2.9 mm
j 1.94 in / 49.45 mm
k 0.07 in / 2 mm
l 0.13 in / 3.5 mm
m 0.23 in / 5.9 mm
n 0.32 in / 8.2 mm
o 0.88 in / 22.5 mm
p 0.26 in / 6.7 mm
q 1.01 in / 25.7 mm

± shown in mm

3/2-way valve

Printed circuit board (PCB) mounting with pneumatic multipole connector plate

Number of valve positions	L1 (±0.15 mm) in / mm	L2 in / mm	L3 (±0.15 mm) in / mm	L4 in / mm	L5 (±0.1 mm) in / mm	L6 (±0.2 mm) in / mm	L7 (±0.1 mm) in / mm
4	2.44 / 62	1.18 / 30	1.83 / 46.7	2.67 / 68	2.79 / 71	2.95 / 75	1.49 / 38
6	3.22 / 82	1.96 / 50	2.62 / 66.7	3.46 / 88	3.58 / 91	3.74 / 95	2.28 / 58
8	4.01 / 102	2.75 / 70	3.41 / 86.7	4.25 / 108	4.37 / 111	4.13 / 105	3.07 / 78
10	4.80 / 122	3.54 / 90	4.20 / 106.7	5.03 / 128	5.15 / 131	4.52 / 115	3.85 / 98

Note:
The printed circuit board is not included.

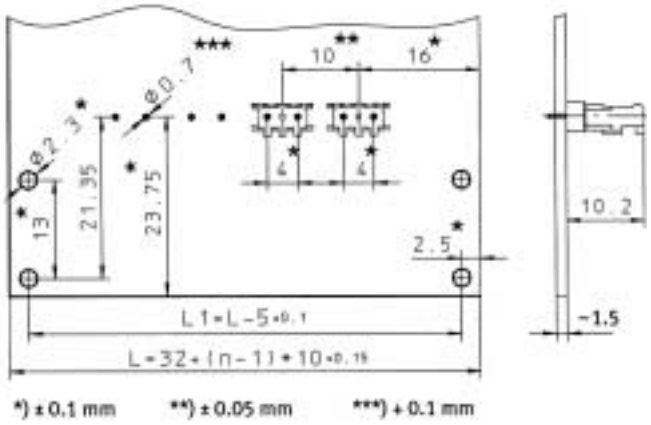
Accessories
➔ See pages 25 ... 27

Printed circuit board (PCB)

Dimensions for soldering sockets

Soldering sockets

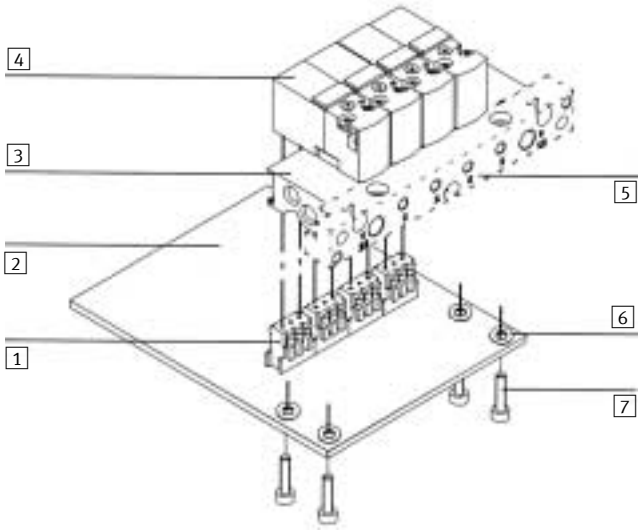
- Drill the contact holes for the soldering sockets in your printed circuit board. The dimensions for the contact holes are shown in the following diagram.
- Insert the soldering sockets in the printed circuit board.
- Solder the contacts to the printed circuit board.



All dimensions in mm.

mm ➔ inches, divide by 25.4

Fitting the manifold block onto the printed circuit board.



1 One soldering socket per valve location

2 Printed circuit board (PCB)

3 Manifold block

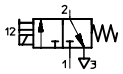
4 Valve

5 Pneumatic multipole (optional)

6 Spacer

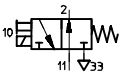
7 Screws for fastening the manifold block

3/2-way valve
Normally closed



Designation			Part No.	Type
Semi in-line valve	Plug connection horizontal	5 V DC	197009	MHP1-M4H-3/2G-M3-HC
		12 V DC	197010	MHP1-M5H-3/2G-M3-HC
		24 V DC	197011	MHP1-M1H-3/2G-M3-HC
	Plug connection on top	5 V DC	197012	MHP1-M4H-3/2G-M3-TC
		12 V DC	197013	MHP1-M5H-3/2G-M3-TC
		24 V DC	197014	MHP1-M1H-3/2G-M3-TC
	Plug connection underneath	5 V DC	197015	MHP1-M4H-3/2G-M3-PI
		12 V DC	197016	MHP1-M5H-3/2G-M3-PI
		24 V DC	197017	MHP1-M1H-3/2G-M3-PI
Sub-base valve	Plug connection horizontal	5 V DC	197000	MHA1-M4H-3/2G-0.6-HC
		12 V DC	197001	MHA1-M5H-3/2G-0.6-HC
		24 V DC	197002	MHA1-M1H-3/2G-0.6-HC
	Plug connection on top	5 V DC	197003	MHA1-M4H-3/2G-0.6-TC
		12 V DC	197004	MHA1-M5H-3/2G-0.6-TC
		24 V DC	197005	MHA1-M1H-3/2G-0.6-TC
	Plug connection underneath	5 V DC	197006	MHA1-M4H-3/2G-0.6-PI
		12 V DC	197007	MHA1-M5H-3/2G-0.6-PI
		24 V DC	197008	MHA1-M1H-3/2G-0.6-PI

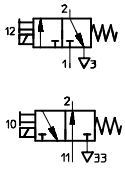
3/2-way valve
Normally open



Designation			Part No.	Type
Semi in-line valve	Plug connection horizontal	5 V DC	197027	MHP1-M4H-3/2O-M3-HC
		12 V DC	197028	MHP1-M5H-3/2O-M3-HC
		24 V DC	197029	MHP1-M1H-3/2O-M3-HC
	Plug connection on top	5 V DC	197030	MHP1-M4H-3/2O-M3-TC
		12 V DC	197031	MHP1-M5H-3/2O-M3-TC
		24 V DC	197032	MHP1-M1H-3/2O-M3-TC
	Plug connection underneath	5 V DC	197033	MHP1-M4H-3/2O-M3-PI
		12 V DC	197034	MHP1-M5H-3/2O-M3-PI
		24 V DC	197035	MHP1-M1H-3/2O-M3-PI
Sub-base valve	Plug connection horizontal	5 V DC	197018	MHA1-M4H-3/2O-0.6-HC
		12 V DC	197019	MHA1-M5H-3/2O-0.6-HC
		24 V DC	197020	MHA1-M1H-3/2O-0.6-HC
	Plug connection on top	5 V DC	197021	MHA1-M4H-3/2O-0.6-TC
		12 V DC	197022	MHA1-M5H-3/2O-0.6-TC
		24 V DC	197023	MHA1-M1H-3/2O-0.6-TC
	Plug connection underneath	5 V DC	197024	MHA1-M4H-3/2O-0.6-PI
		12 V DC	197025	MHA1-M5H-3/2O-0.6-PI
		24 V DC	197026	MHA1-M1H-3/2O-0.6-PI

3/2-way valve

Accessories



Note: Manifold blocks (sub-base and semi in-line) with an odd number of valves that range from 11 ... 22 valves, as well as further variants, can be configured and ordered using the MH1 modular system (see pages 28 ... 31).

Designation		Part No.	Type
Semi in-line valve			
Individual sub-base	Plug connection	197184	MHP1-AS-3-M3
	Base plug	197186	MHP1-AS-3-M3-PI
Semi in-line manifold block, plug connection for ...	2 valves	197191	MHP1-PR2-3
	4 valves	197192	MHP1-PR4-3
	6 valves	197193	MHP1-PR6-3
	8 valves	197194	MHP1-PR8-3
	10 valves	197195	MHP1-PR10-3
Semi in-line manifold block with base plugs for ...	2 valves	197212	MHP1-PR2-3-PI
	4 valves	197213	MHP1-PR4-3-PI
	6 valves	197214	MHP1-PR6-3-PI
	8 valves	197215	MHP1-PR8-3-PI
	10 valves	197216	MHP1-PR10-3-PI
Semi in-line manifold block with base plugs, with electrical multi-pin connection for ...	4 valves	197233	MHP1-PR4-3-PI-D9
	6 valves	197234	MHP1-PR6-3-PI-D9
	8 valves	197235	MHP1-PR8-3-PI-D9
	10 valves	197236	MHP1-PR10-3-PI-D25
Semi in-line manifold block for PCB mounting for ...	2 valves	197242	MHP1-PR2-3-PI-PCB
	4 valves	197243	MHP1-PR4-3-PI-PCB
	6 valves	197244	MHP1-PR6-3-PI-PCB
	8 valves	197245	MHP1-PR8-3-PI-PCB
	10 valves	197246	MHP1-PR10-3-PI-PCB
Sub-base valve			
Individual sub-base	Plug connection	197183	MHA1-AS-3-M3
	Base plug	197185	MHA1-AS-3-M3-PI
Sub-base manifold block, plug connection for ...	2 valves	197202	MHA1-PR2-3-M3
	4 valves	197203	MHA1-PR4-3-M3
	6 valves	197204	MHA1-PR6-3-M3
	8 valves	197205	MHA1-PR8-3-M3
	10 valves	197206	MHA1-PR10-3-M3
Sub-base manifold block with base plugs for ...	2 valves	197222	MHA1-PR2-3-M3-PI
	4 valves	197223	MHA1-PR4-3-M3-PI
	6 valves	197224	MHA1-PR6-3-M3-PI
	8 valves	197225	MHA1-PR8-3-M3-PI
	10 valves	197226	MHA1-PR10-3-M3-PI
Sub-base manifold block with base plugs, with electrical multi-pin connection for ...	4 valves	197238	MHA1-PR4-3-M3-PI-D9
	6 valves	197239	MHA1-PR6-3-M3-PI-D9
	8 valves	197240	MHA1-PR8-3-M3-PI-D9
	10 valves	197241	MHA1-PR10-3-M3-PI-D25
Sub-base manifold block for PCB mounting for ...	2 valves	197247	MHA1-PR2-3-M3-PI-PCB
	4 valves	197248	MHA1-PR4-3-M3-PI-PCB
	6 valves	197249	MHA1-PR6-3-M3-PI-PCB
	8 valves	197250	MHA1-PR8-3-M3-PI-PCB
	10 valves	197251	MHA1-PR10-3-M3-PI-PCB
Sub-base manifold block for PCB mounting, with pneumatic multipole connector plate for ...	4 valves	197253	MHA1-PR4-3-PI-PCBM
	6 valves	197254	MHA1-PR6-3-PI-PCBM
	8 valves	197255	MHA1-PR8-3-PI-PCBM
	10 valves	197256	MHA1-PR10-3-PI-PCBM

3/2-way valve accessories

Designation		Part No.	Type
Blanking plate	Plug connection	197257	MHAP1-BP-3
	Base plug	197258	MHAP1-BP-3-PI
Inscription label		197259	MH-BZ-80x
Screws	For valves	645502	M1.6 x 15
	For blanking plates	645503	M1.6 x 5
Seal	For valves and blanking plates	645380	MH1
Base plug	Plug-in	197260	MHAP-PI
Soldering base	10 pieces	197261	PCBC-A-10
	100 pieces	197262	PCBC-A-100
Plug socket with cable	1.64 ft / 0.5 m	197263	KMH-0.5
	3.28 ft / 1 m	197264	KMH-1
Cable with 9-pin Sub-D plug	8.2 ft / 2.5 m	531184	KMP6-09P-8-2.5
	16.4 ft / 5 m	531185	KMP6-09P-8-5
	32.8 ft / 10 m	531186	KMP6-09P-8-10
Cable with 25-pin Sub-D plug 18 conductor version	8.2 ft / 2.5 m	530049	KMP6-25P-12-2.5
	16.4 ft / 5 m	530050	KMP6-25P-12-5
	32.8 ft / 10 m	530051	KMP6-25P-12-10
Cable with 25-pin Sub-D plug 25 conductor version	8.2 ft / 2.5 m	530046	KMP6-25P-20-2.5
	16.4 ft / 5 m	530047	KMP6-25P-20-5
	32.8 ft / 10 m	530048	KMP6-25P-20-10
Push-pull/threaded fittings QS		Online Pneumatic Catalog	
Silencer UC		➔ www.festo-usa.com	

Miniature Valves MH1, Manifolds without LED

Ordering data – Mandatory entries

New

Directly actuated valves

Mandatory Codes

Manifold No.	Type	Design	Voltage	Valve function	Plug connection	Number of valve positions	Linking method
197334	MH1	A, P	5 V DC, 12 V DC, 24 V DC	D, C, N	TC, HC, PI	...V	PS, PR, PRA PCD, PCM
Ordering example							
197334	**MH1** –	**A** –	**12 V DC** –	**D** –	**TC** –	**14V** –	**PR** –

Mandatory entries		Conditions	Code	Enter code	Condition description
Module No.	197334	–	–	197334	
Type	Miniature valve	–	**MH1**	MH1	1) Only available with PS or PR
Design	Sub-base valve	–	**A**		2) Not with PR
	Semi In-line valve	–	**P**		3) 2, 3, 4, ... 22 with PR 2, 4, 6, ... 22 with PRA 2, 4, 6, 8, 10 with PCD 4, 6, 8, 10 with PCM 1 with PS
Voltage	5 V DC	–	**5 V DC**		
	12 V DC	–	**12 V DC**		
	24 V DC	–	**24 V DC**		
Valve function	2/2-way valve, normally closed	–	**D**		
	3/2-way valve, normally closed	–	**C**		
	3/2-way valve, normally open	–	**N**		
Plug connection on valve	Connection on top	1	**TC**		4) Only with A
	Connection horizontal	1	**HC**		
	Connection on bottom	–	**PI**		
Number of valve positions	–	3	**...V**		
Linking method	Individual sub-base	–	**PS**		
	Manifold block without electrical linking	–	**PR**		
	Manifold block with electrical linking (Sub-D plug)	–	**PRA**		
	PCB mounting	–	**PCD**		
	PCB mounting with pneumatic multiple connector plate	4	**PCM**		

Ordering Instructions

1) Use this order configuration to order pre-assembled valve manifolds and single valve sub-bases.
2) The order number consists of a part number and a type. Please configure the order number by filling in the appropriate codes.
3) Pay close attention to the conditions column.
4) Manifolds with a 9-pin Sub-D plug will have 2 ... 8 valves. Manifolds with a 25-pin Sub-D plug will have 9 ... 22 valves. Refer to page 20 for pinout.
5) Transfer the order codes to complete the order number (see below).

Transfer the order code

197334	**MH1**	–		–		–		–		–		–	–

Optional Codes

Number of unused positions		Plug-in direction, Sub-D plug		Connecting cable with socket		Working line		Supply port, left side		Exhaust channel, left side		Supply port, right side		Exhaust channel, right side
...L		SP, ST, SE		K05, K01, L25, L50, L10, S25, S10, M25, M50, M10, SS0		QB, QC, QL, QM, QO		AX, AB, AC, AD, AL, AM, AO, AP		BX, BB, BC, BD, BL, BM, BO, BP, BU		CX, CC, CD, CO, CP		DX, DC, DD, DO, DP, DU
2L	–	**ST**	–	**K05**	–	**QC**	–	**AX**	–	**BC**	–	**CD**	–	**DX**

Optional Entries		Conditions	Code	Enter code	Condition description
Number of unused positions	–	12	**...L**		
Plug-in direction, Sub-D plug	to pneumatic side	5	**SP**		5) Only with PRA
	to top	5	**ST**		6) Not with PI
	to electrical side	5	**SE**		7) Not with AB
Cables	Connecting cable with socket, 1.64 ft / 0.5 m	6	**K05**		8) Only with PR or PRA
	Connecting cable with socket, 3.28 ft / 1 m	6	**K01**		9) Not with CX
	24 conducter, 25-pin Sub-D plug, 8.2 ft / 2.5 m	5	**L25**		10) Not with PR or PRA
	24 conducter, 25-pin Sub-D plug, 16.4 ft / 5 m	5	**L50**		11) Not with BB
	24 conducter, 25-pin Sub-D plug, 32.8 ft / 10 m	5	**L10**		12) Not with PS
	12 conducter, 25-pin Sub-D plug, 8.2 ft / 2.5 m	5	**M25**		13) Not with BB, BC or DC
	12 conducter, 25-pin Sub-D plug, 16.4 ft / 5 m	5	**M50**		14) Not with DX
	12 conducter, 25-pin Sub-D plug, 32.8 ft / 10 m	5	**M10**		15) Not with CC or CD
	9-pin Sub-D plug, 8.2 ft / 2.5 m	5	**S25**		16) Not with CD or AD
	9-pin Sub-D plug, 16.4 ft / 5 m	5	**S50**		17) Not with DC
	9-pin Sub-D plug, 32.8 ft / 10 m	5	**S10**		18) Not with AL
Working line	Push-pull connector for 3 mm O.D. tubing	–	**QB**		19) Not with AM
	Push-pull connector for 4 mm O.D. tubing	7	**QC**		20) Not with BL, BM, BO or DO
	Push-pull connector for 1/8" O.D. tubing	–	**QL**		21) Not with BL or BM
	Push-pull connector for 5/32" O.D. tubing	18	**QM**		22) Not with CO or CP
	Push-pull connector for 3/16" O.D. tubing	18, 19	**QO**		23) Not with CP or AP
Supply port, left side	Blanking plug	8, 9	**AX**		24) Not with AX
	Push-pull connector for 3 mm O.D. tubing	10	**AB**		25) Not with BX
	Push-pull connector for 4 mm O.D. tubing	11	**AC**		
	Push-pull connector for 6 mm O.D. tubing	12, 13	**AD**		
	Push-pull connector for 1/8" O.D. tubing	10	**AL**		
	Push-pull connector for 5/32" O.D. tubing	10	**AM**		
	Push-pull connector for 3/16" O.D. tubing	12, 21	**AO**		
	Push-pull connector for 1/4" O.D. tubing	12, 20	**AP**		
Exhaust channel, left side	Blanking plug	8, 14	**BX**		
	Push-pull connector for 3 mm O.D. tubing	10, 15	**BB**		
	Push-pull connector for 4 mm O.D. tubing	16	**BC**		
	Push-pull connector for 6 mm O.D. tubing	8, 12	**BD**		
	Push-pull connector for 1/8" O.D. tubing	10, 22	**BL**		
	Push-pull connector for 5/32" O.D. tubing	10, 22	**BM**		
	Push-pull connector for 3/16" O.D. tubing	23	**BO**		
	Push-pull connector for 1/4" O.D. tubing	12	**BP**		
	Silencer	–	**BU**		
Supply port, right side	Blanking plug	8, 24	**CX**		
	Push-pull connector for 4 mm O.D. tubing	8	**CC**		
	Push-pull connector for 6 mm O.D. tubing	8, 13	**CD**		
	Push-pull connector for 3/16" O.D. tubing	8, 21	**CO**		
	Push-pull connector for 1/4" O.D. tubing	8, 20	**CP**		
Exhaust channel, right side	Blanking plug	8, 25	**DX**		
	Push-pull connector for 4 mm O.D. tubing	8, 16	**DC**		
	Push-pull connector for 6 mm O.D. tubing	8, 12	**DD**		
	Push-pull connector for 3/16" O.D. tubing	8, 23	**DO**		
	Push-pull connector for 1/4" O.D. tubing	8, 12	**DP**		
	Silencer	8, 12	**DU**		

Miniature Valves MH1, Manifolds with LED

Ordering data – Mandatory entries

New

Directly actuated valves

Mandatory Codes

Manifold No.	Type	Design	Voltage	Valve function	Plug connection	Number of valve positions	Linking method
	MH1	A, P	24 V DC	D, C, N	PI	...V	PRA
Order example							
*	**MH1** –	**A** –	**24 V DC** –	**D** –	**PI** –	**24V** –	**PRA** –

Mandatory entries		Conditions	Code	Enter code	Condition description
Module No.	*	–	–	*	
Type	Miniature valve	–	**MH1**	MH1	1) PI only
Design	Sub-base valve	–	**A**		
	Semi in-line valve	–	**P**		
Voltage	24 V DC	–	**24 V DC**		
Valve function	2/2-way valve, normally closed	–	**D**		
	3/2-way valve, normally closed	–	**C**		
	3/2-way valve, normally open	–	**N**		
Plug connection on valve	Connection on bottom	1	**PI**		
Number of valve positions	8, 16 or 24	–	**8V, 16V or 24V**		
Linking method	Manifold block with electrical linking (Sub-D plug)	–	**PRA**		

Ordering Instructions:

1) Use this order configuration to order pre-assembled valve manifolds with LED. Manifolds can be configured with any number of valves using a fixed number of valve positions, 8, 16 or 24.
2) The order number consists of a part number and a type. Please configure the order number by filling in the appropriate codes. Please contact Festo for numerical manifold number.
3) Manifolds with a 9-pin Sub-D plug will range from 2 ... 8 valves.
   Manifolds with a 25-pin Sub-D plug will range from 9 ... 24 valves.
   See page 21 for pinout.
4) Pay close attention to the conditions column.
5) Transfer the order codes to complete the order number (see below).

Transfer the order code

*	**MH1**	–		–	**24 V DC**	–		–	**PI**	–		–	**PRA**	–

* See ordering instructions item 2.

Optional Codes

Number of unused positions		Plug-in direction, Sub-D plug		Connecting cable with socket		Working line		Supply port, left side		Exhaust channel, left side		Supply port, right side		Exhaust channel, right side
...L		ST		L25, L50, L10, S25, S10, M25, M50, M10, SS0		QB, QC, QL, QM, QO		AX, AO, AC, AD, AP		BX, B0, BC, BD, BU, BP		CX, CC, CD, CO,CP		DX, DC, DD, DU, DO, DP
2L	–	**ST**	–	**L25**	–	**QC**	–	**AX**	–	**BC**	–	**BC**	–	**CD**

Optional Entries		Conditions	Code	Enter code	Condition description
Number of unused positions	–	–	**...L**		
Plug-in direction, Sub-D plug	to top	–	**ST**		2) Not with CX
Cables	24 conducter, 25-pin Sub-D plug, 8.2 ft / 2.5 m	–	**L25**		3) Not with BC or DC
	24 conducter, 25-pin Sub-D plug, 16.4 ft / 5 m	–	**L50**		4) Not with DX
	24 conducter, 25-pin Sub-D plug, 32.8 ft / 10 m	–	**L10**		5) Not with CD or AD
	12 conducter, 25-pin Sub-D plug, 8.2 ft / 2.5 m	–	**M25**		6) Not with BO
	12 conducter, 25-pin Sub-D plug, 16.4 ft / 5 m	–	**M50**		7) Not with DO
	12 conducter, 25-pin Sub-D plug, 32.8 ft / 10 m	–	**M10**		8) Not with AP
	9-pin Sub-D plug, 8.2 ft / 2.5 m	–	**S25**		9) Not with CP
	9-pin Sub-D plug, 16.4 ft / 5 m	–	**S50**		10) Not with BX
	9-pin Sub-D plug, 32.8 ft / 10 m	–	**S10**		11) Not with AX
Working line	Push-pull connector for 3 mm O.D. tubing	–	**QB**		
	Push-pull connector for 4 mm O.D. tubing	–	**QC**		
	Push-pull connector for 1/8" O.D. tubing	–	**QL**		
	Push-pull connector for 5/32" O.D. tubing	–	**QM**		
	Push-pull connector for 3/16" O.D. tubing	–	**QO**		
Supply port, left side	Blanking plug	2	**AX**		
	Push-pull connector for 4 mm O.D. tubing	–	**AC**		
	Push-pull connector for 6 mm O.D. tubing	3	**AD**		
	Push-pull connector for 3/16" O.D. tubing	–	**AO**		
	Push-pull connector for 1/4" O.D. tubing	6, 7	**AP**		
Exhaust channel, left side	Blanking plug	4	**BX**		
	Push-pull connector for 4 mm O.D. tubing	5	**BC**		
	Push-pull connector for 6 mm O.D. tubing	–	**BD**		
	Push-pull connector for 3/16" O.D. tubing	8, 9	**BO**		
	Push-pull connector for 1/4" O.D. tubing	–	**BP**		
	Silencer	–	**BU**		
Supply port, right side	Blanking plug	11	**CX**		
	Push-pull connector for 4 mm O.D. tubing	–	**CC**		
	Push-pull connector for 6 mm O.D. tubing	3	**CD**		
	Push-pull connector for 3/16" mm O.D. tubing	–	**CO**		
	Push-pull connector for 1/4" mm O.D. tubing	6, 7	**CP**		
Exhaust channel, right side	Blanking plug	10	**DX**		
	Push-pull connector for 4 mm O.D. tubing	5	**DC**		
	Push-pull connector for 6 mm O.D. tubing	–	**DD**		
	Push-pull connector for 3/16" mm O.D. tubing	8, 9	**DO**		
	Push-pull connector for 1/4" mm O.D. tubing	–	**DP**		
	Silencer	–	**DU**		

		ST											

Actuators

Compact and Miniature Actuators

Compact Cylinders, Types AEVC /ADVC

- Single and double acting
- Piston rod variants with male, female or no thread
- Mounting hole pattern to VDMA 24562 (ø 32-100 mm)
- Magnetic end-position piston sensing capability
- Wide selection of mounting options

Bore ø	Metric: 4, 6, 10, 12, 16, 20, 25, 32, 40, 50, 63, 80, 100 mm
Stroke Lengths	2.5 to 25 mm
Force	1.68 to 1059 lbf / 7.5 to 4712 N

Mini Rodless Slides, Type SLG

- Double acting
- Ultra flat design
- Precision, rigid, recirculating ball bearing guide
- Shock absorber option
- Adapter plates for multi-axis handling modules available
- Magnetic end-position piston sensing capability
- Infinitely adjustable stroke with fine end-position adjustment
- Choice of supply ports

Bore ø	Metric: 8, 12, 18 mm
Stroke Lengths	100 to 900 mm
Force	6.74 to 34.39 lbf / 30 to 153 N

Mini Precision Guide Units, Type DFC

- Double acting
- Two guide rods support high side forces
- Resists torque to 3.54 in-lb
- Friction or ball bearing
- Magnetic end-position piston sensing capability

Bore ø	Metric: 4, 6, 10 mm
Stroke Lengths	5 to 30 mm
Force	1.7 to 10.6 lbf / 7.56 to 47.2 N

Mini Slide Units, Types SLT /SLS /SLF

- Double acting
- Precision rigid guide
- Adapter plates for multi-axis handling modules available (SLT and SLF only)
- Adjustable end cushioning (SLT only)
- Multiple mounting options
- Magnetic end-position piston sensing capability

Bore ø	Metric: 6, 10, 16, 20, 25 mm
Stroke Lengths	5 to 200 mm
Force	3.8 to 132 lbf / 16.9 to 587 N

Miniature and Micro Actuators

Miniature Rectangular Cylinders, Type EZH

- Single acting
- Non-rotating piston
- Narrow profile design
- Rated for over 10 million cycles
- Compact, lightweight
- Magnetic end-position piston sensing capability

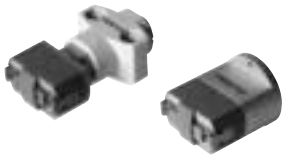
Bore ø	Metric: 3.6, 5.6, 12, 22 mm
Stroke Lengths	10 to 50 mm
Force	0.68 to 46 lbf / 3 to 205 N

Miniature Polymer Cylinders, Type EFK / EFKL / DFK

- Single and double acting
- Integral mounting flange and fitting connections
- Light weight
- Stainless steel piston rod
- Non-rotating piston rod (EFKL)

Bore ø	Metric: 8, 10, 12, 16, 20, 25 mm
Stroke Lengths	10 to 50 mm
Force	4.5 to 59.5 lbf / 20.01 to 266.7 N

Micro Grippers, Types HGPM/HGWM



- Single acting
- Compact design
- Angle and parallel grippers
- Open and closed jaw versions
- External or internal gripping
- Up to 20° opening angle
- Mounting options for custom gripping fingers
- Adapter kits for direct mounting to drive units and rotary actuators
- Mounting options:
  – Through holes
  – Flange mounting
  – With set screw and either direct or integrated air supply
  – With external thread and lock nut

Bore ø	Metric: 8 and 12 mm
Gripping Torque	0.97 to 3.4 lb. in. / 11 to 38 Ncm [90 psi / 6 bar]
Repetition Accuracy	‹ 0.02, ‹ 0.05 mm

Micro Cylinders, Type EG

- Single acting
- Extremely small and compact
- Barbed-fitting connections
- Corrosion resistant

Bore ø	Metric: 2.5, 4, 6 mm
Stroke Lengths	5 to 25 mm
Force	0.38 to 3.15 lbf / 1.69 to 14 N

E-Commerce

Online Shopping Made Easy

www.festo-usa.com

The Festo Online Shop allows you to easily find the products you need: check prices, order products, and follow delivery status. The Festo Shop also offers online support using the "call-back" feature. To join, simply complete the online web form at www.festo-usa.com or Email our Customer Service Department at customerservice_us@festo.com for more information.

Simple Product Selection Using Three Methods

- Image Search - Based upon product photos
- Direct Search - Based upon part number, type, name, or key word
- Feature Search - Based upon key product characteristics

Immediate Price and Availability

Use this feature to quickly access pricing and availability information for any product, then order immediately or save the information to a "shopping basket".

24/7 Order Tracking

Check the status of all orders, whether placed online or not. If the product has already shipped, a link is supplied to check with the carrier (only for carriers who support online tracking).

Multiple User Levels Reduce Administrative Costs

The optional multiple user level functionality allows a “standard” user (e.g. Engineering) to select products, obtain price and availability information, and create local shopping baskets. When ready to purchase, these baskets can be instantly forwarded to an “administrator” user (e.g. Purchasing). The administrator can approve a shopping basket and convert it into an order with just a few mouse clicks.

Simple Quote to Order Conversion

Product information can be stored in local shopping baskets and given a specific name. These baskets can be accessed at a later date, modified if so desired, and easily converted to an order. The user has the option of retaining the local shopping baskets (for example, as standard bills of materials) to be used again for simplified future reordering.

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