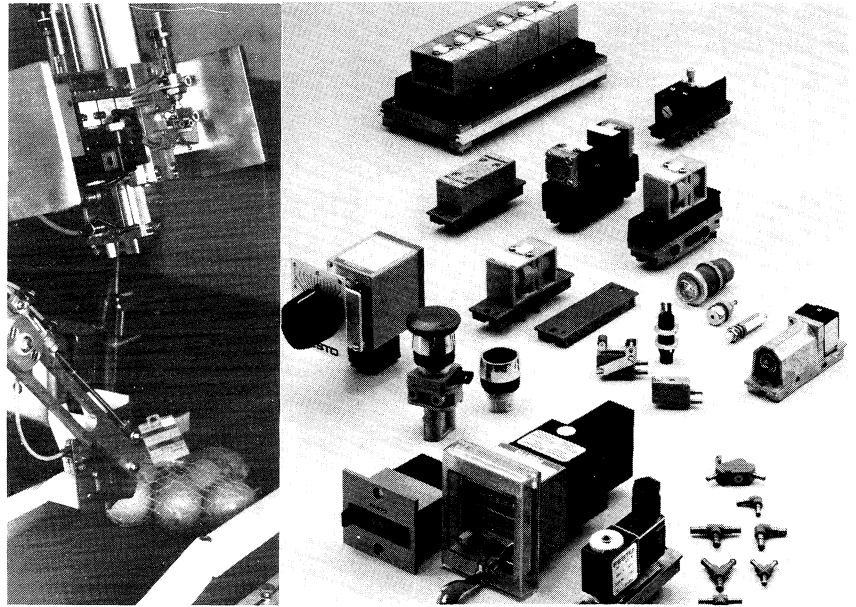


- A complete, modular system for signal input, processing and power output.
- Built-in design flexibility easily packaged for hybrid, electro-pneumatic or all-pneumatic operation.
- Compact, miniature size even fits on robotic arms.
- Operates in normal pressure range (up to 120 psi).
- Field-proven, reliable, long life performance.
- Fast response, low air consumption.
- Low maintenance components are easily installed.
- Forms neat, orderly control panel arrays.
- All components available locally from stock.
- Cost-effective.



### Flexible Control System Design with Compact "M5" Components

The modular "M5" system of compact controls provides the design flexibility to meet the varied requirements of distributed and/or centralized automation control applications.

The "M5" system is based on miniature-size M5-thread connections (approximately 10/32 UNF) and barbed fittings for 3 mm and 4 mm tubing. Most components are sub-base mounted on standard "2N" (3-1/2" / 88 mm) sub-bases which simplify installation and maintenance.

The "M5" system includes one of the largest selections of signal input, signal processors, directional control and power elements, plus accessories available from any single source supplier. And Festo has the expertise to put it all together for you in a neat, pre-packaged control panel.

### Control Elements

#### Signal Input

- Pushbuttons, manually operated hand/foot valves
- Limit switches and end-stops
- Non-contact sensors
- Flow controls
- Counters, indicators

#### Signal Processors

- Sequencing controls: - FSS-12 "Quickstepper"  
- "Stepper" modular sequencing
- Adjustable pressure sequence valves
- Pneumatic-electric interfaces, vacuum or pressure
- AND-gates, OR-gates, flow controls
- Time-delay valves
- Special function valves

#### Directional Control/Power Valves

- Air piloted valves
- Solenoid valves
- Low-wattage solenoid valves
- Sub-bases and manifolds

#### Accessories/Structural Elements

- Fittings, couplings, connectors
- Tubing
- Silencers
- FRL's
- Control cabinet structural frames

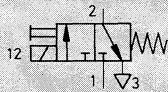
# Compact 2000 / M5/2N System Valves

Low Watt, 3/2 Single Solenoid Valves

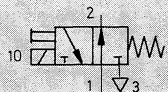
## Single Solenoid Valve

With Sub-base and Manual Override  
Without Socket

Type MEH-...



Type MOEH-...



**Accessories:**  
(Ordered Separately)

**Standard Sockets,** Type MSSD-E  
see page 649

**Sockets with cable,** Type KME-...  
see page 650

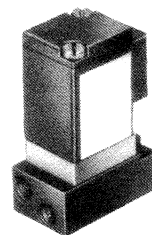
**LED Gaskets,** Type ME-LC-...  
see page 651

For 2N mounting frame, see page 635.

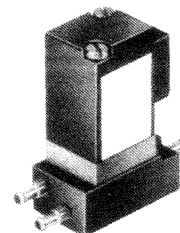
This valve has low, 1.5W power consumption allowing direct triggering by electronic controls or PLCs.

The valve exhaust is connected to exhaust port 3 (R) through an integral duct. With the MEH valve, the valve exhaust can be directly vented to the atmosphere, if a seal under the cap is removed.

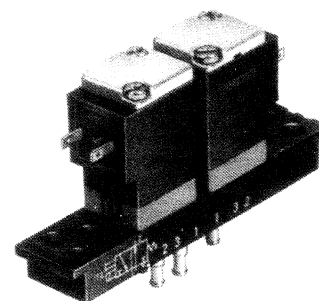
Type MEH-3-M5  
MOEH-3-M5



Type MEH-3-PK-3  
MOEH-3-PK-3



Type MEH-3-PK-3 x 2  
MOEH-3-PK-3 x 2  
(Two valves on a sub-base)



- 1 (P) = Supply port
- 2 (A) = Operating or outlet port
- 3 (R) = Exhaust port

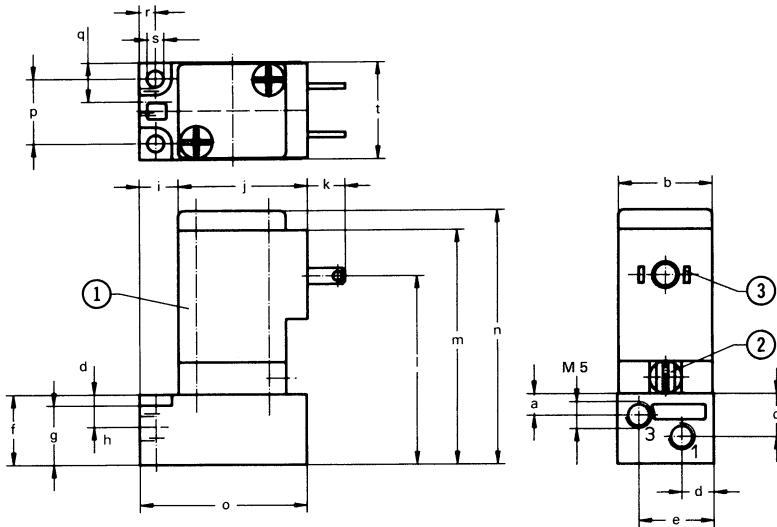
Order Number Part No./Type	15341 MEH-3-M5	15339 MEH-3-PK-3	15340 MEH-3-PK-3 x 2
	15710 MOEH-3-M5	14011 MOEH-3-PK-3	15711 MOEH-3-PK-3 x 2
Medium	Compressed air (filtered, lubricated or unlubricated) or vacuum*		
Design	Poppet valve, directly actuated with spring return		
Mounting	Through-holes in housing		
Connection	M5	Barbed fitting for 3 mm tubing	
Nominal Size	0.04 in / 0.9 mm		
C <sub>v</sub> Factor (1 → 2)	0.022 C <sub>v</sub> / 22 l/min		
Operating Pressure Range	26.6 in Hg to 120 psi / -0.9 to 8 bar		
Response Time at 90 psi / 6 bar	On: 10 ms, Off: 16 ms		
Voltage	24V DC		
Power Consumption	1.5 W		
Duty Cycle	100%		
Type of Protection	IP 65 (DIN 40050)		
Ambient Temperature	23 to 122° F / -5 to +50° C		
Medium Temperature	23 to 122° F / -5 to +50° C		
Materials	Housing: Steel, copper, brass, plastic; Seals: Buna N		
Weight	0.088 lb / 0.040 kg		0.176 lb / 0.080 kg

\*Vacuum connection at 1 (P)

# Compact 2000 / M5/2N System Valves

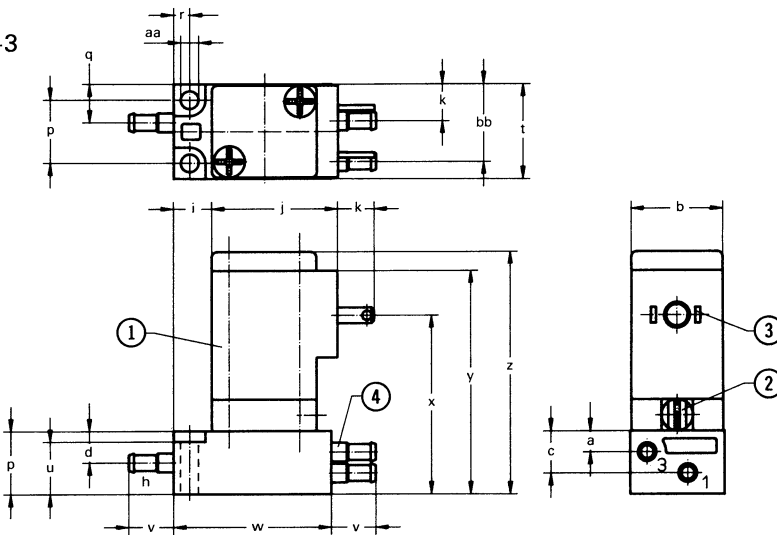
Low Watt, 3/2 Single Solenoid Valves, Dimensions

Type MEH-3-M5  
MOEH-3-M5



- ① Solenoid coil can be rotated 180°
- ② Base plate with manual override can be rotated 180°
- ③ For socket conforming to DIN 46247 or solenoid plug socket Type MSSD-E
- ④ Barbed fitting for 3 mm tubing

Type MEH-3-PK-3  
MOEH-3-PK-3

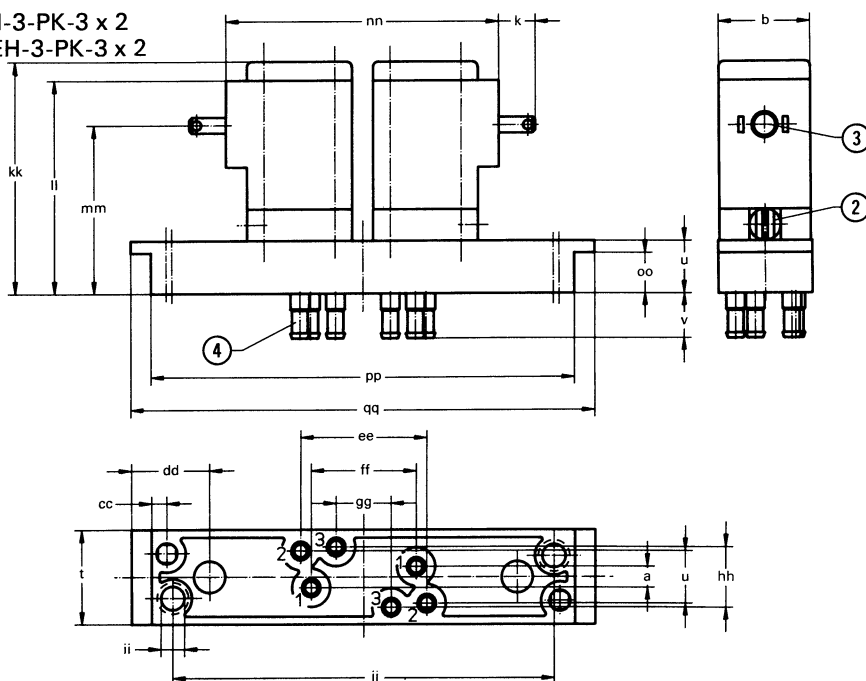


- 1 (P) = Supply
- 2 (A) = Working or Outlet
- 3 (R) = Exhaust

### Dimensions

a	0.16 in / 4 mm
b	0.69 in / 17.5 mm
c	0.31 in / 8 mm
d	0.24 in / 6 mm
e	0.55 in / 14 mm
f	0.51 in / 13 mm
g	0.43 in / 11 mm
h	0.08 in / 2 mm
i	0.28 in / 7.2 mm
j	0.94 in / 24 mm
k	0.27 in / 7 mm
l	1.38 in / 35 mm
m	1.71 in / 43.5 mm
n	1.85 in / 47.1 mm
o	1.22 in / 31 mm
p	0.47 in / 12 mm
q	0.29 in / 7.3 mm
r	0.12 in / 3 mm
s	0.12 in / 3.1 mm
t	0.71 in / 18 mm
u	0.39 in / 10 mm
v	0.33 in / 8.5 mm
w	1.18 in / 30 mm
x	1.34 in / 34 mm
y	1.67 in / 42.5 mm
z	1.81 in / 46.1 mm
aa	0.13 in / 3.4 mm
bb	0.58 in / 14.75 mm
cc	0.11 in / 2.9 mm
dd	0.59 in / 14.9 mm
ee	0.95 in / 24.1 mm
ff	0.79 in / 20.1 mm
gg	0.41 in / 10.5 mm
hh	0.45 in / 11.5 mm
ii	0.18 in / 4.5 mm
jj	2.87 in / 72.8 mm
kk	1.74 in / 44.1 mm
ll	1.60 in / 40.5 mm
mm	1.26 in / 32 mm
nn	2.05 in / 52 mm
oo	0.30 in / 7.7 mm
pp	3.18 in / 80.8 mm
qq	3.48 in / 88.5 mm

Type MEH-3-PK-3 x 2  
MOEH-3-PK-3 x 2



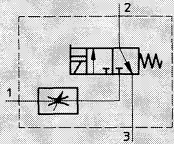
# Compact 2000 / M5/2N System Valves

Low Watt, 3/2 Single Solenoid Valves with Integral Flow Control or Quick Exhaust

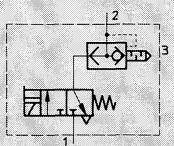
## Single Solenoid Valve

Without socket, with sub-base and manual override

With integral flow control  
Type MEH-3-GRO-...



With integral quick exhaust  
Type MEH-3-SEU-...

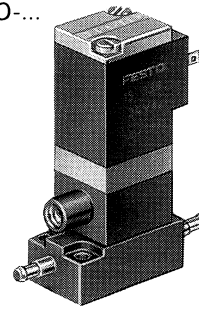


**Accessories:**  
(Ordered Separately)

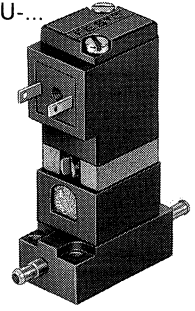
**Standard Sockets**, Type MSSD-E  
see page 649  
**Sockets with cable**, Type KME-...  
see page 650

**LED Gaskets**, Type ME-LD-...  
see page 651

MEH-3-GRO-...



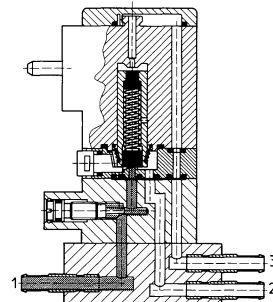
MEH-3-SEU-...



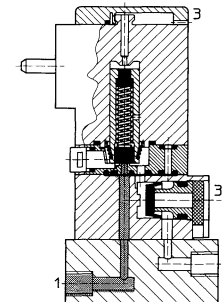
These compact valves have built-in flow control or quick exhaust. They feature low, 1.5W power consumption, allowing direct triggering by electronic controls or PLCs.

The valve exhaust is connected to exhaust port 3 (R) through an integral duct. With the MEH valve, the valve exhaust can be directly vented to the atmosphere, if a seal under the cap is removed.

MEH-3-GRO-...



MEH-3-SEU-...



1 (P) = Supply  
2 (A) = Working or outlet  
3 (R) = Exhaust

Order Number	With Flow Control	15176 MEH-3-GRO-PK-3	15177 MEH-3-GRO-M5
Part No./Type	With Quick Exhaust	15178 MEH-3-SEU-PK-3	15179 MEH-3-SEU-M5
Medium		Compressed air (Filtered, lubricated or unlubricated) or vacuum*	
Design		Poppet valve, directly actuated with return spring	
Mounting		Through-holes in housing	
Connection		Barbed fitting for 3 mm tubing	M5
Nominal Size		0.04 in / 0.9 mm	
C <sub>V</sub> Factor (1 → 2) / (2 → 3)		GRO: 0.015 C <sub>V</sub> / 15 l/min / 0.017 C <sub>V</sub> / 17 l/min; SEU: 0.017 C <sub>V</sub> / 17 l/min / 0.065 C <sub>V</sub> / 65 l/min	
Operating Pressure Range		GRO: 0 to 120 psi / 0 to 8 bar; SEU: 7.5 to 120 psi / 0.5 to 8 bar	
Response Time	On/Off	18/24 ms	
	GRO		
	at 90 psi / 6 bar		
	SEU	17/9 ms	
Ambient Temperature		23 to 122°F / -5 to +50°C	
Medium Temperature		23 to 122°F / -5 to +50°C	
Materials		Housing: Steel, copper, brass, plastic; Seals: Buna N	
Weight		0.154 lb / 0.070 kg	
Voltage		24V DC	
Power Consumption		1.5 W	
Duty Cycle		100%	
Type of Protection		IP 65 (DIN 40050)	

\* Vacuum connection at 1 (P)

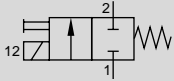
# Compact 2000 / M5/2N System Valves

## 2/2 Single Solenoid Valves

### Single Solenoid Valve

#### Type MFH-2-M5

Spring Return and Manual Override



#### Accessories:

(Ordered Separately)

#### Solenoid F-coils

with socket, see page 647

without socket, see page 648

#### Standard Sockets, Type MSSD-F

see page 649

#### Sockets with cable, Type KMF-...

see page 650

#### LED Gaskets, Type MF-LD-...

see page 651

#### Indicator Inserts, Type MFL-...-...

see page 652

#### Solenoid Inserts, Type MFZ-...

see page 653

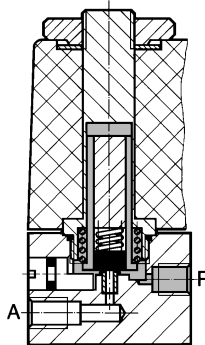
Certification: UR, CSA

Permissible torque on solenoid mounting

nuts = 13 lb in / 150 Ncm

When the solenoid is energized, the valve shifts and remains shifted until the solenoid is deenergized.

Valve shown with solenoid and socket accessories.



1 (P) = Supply  
2 (A) = Working or  
Outlet Port

Order Number	4573 MFH-2-M5	
Medium	Compressed air (filtered, lubricated or unlubricated)	
Mounting	Holes through housing	
Connection	M5	
Orifice Size	0.06 in / 1.5 mm	
C <sub>v</sub> Factor (P → A)	0.058 C <sub>v</sub> / 58 l/min	
Pressure Range	0 to 120 psi / 0 to 8 bar	
Response Time at 90 psi / 6 bar	On: 10 ms Off: 10 ms	
Medium Temperature	14 to 140°F / -10 to +60°C	
Ambient Temperature	23 to 104°F / -5 to +40°C	
Design	Seat valve, directly actuated, with spring return	
Materials	Housing: Al, blue anodized. Seals: Buna N	
Weight	0.243 lb / 0.110 kg	
Direct Current	Standard Voltage	12, 24 V
	Available Voltage	12 to 220 V
Alternating Current	Standard Voltage	24, 42, 110, 220 V / 50 Hz or 50 and 60 Hz
	Available Voltage	12 to 240 V / 50 or 60 Hz
Power Consumption	DC: 4.5 W; AC: Holding 6 VA, Inrush 7.5 VA	
ED Switching Time	100% continuous duty	
Type of Protection	IP 65 (DIN 40050)	

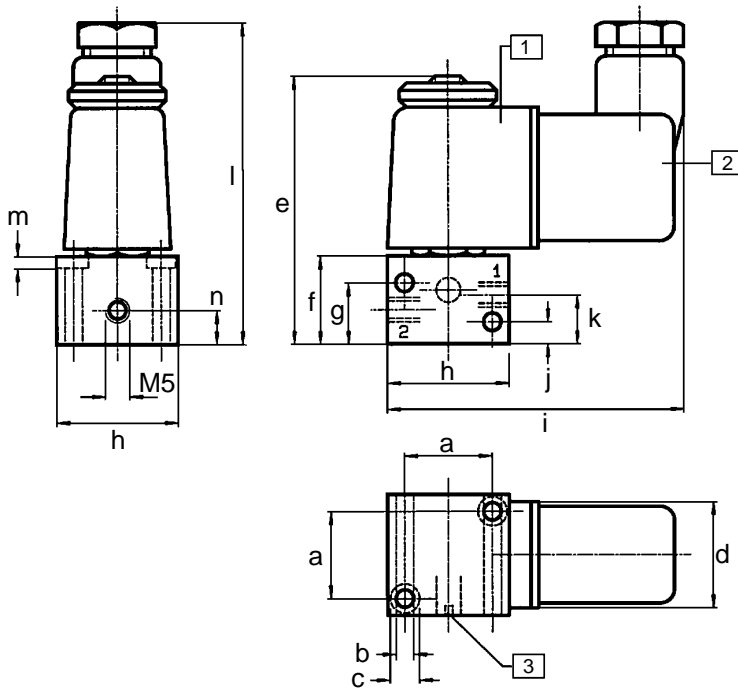
} For solenoids,  
see pages 647-648.

# Compact 2000 / M5/2N System Valves

## 2/2 Single Solenoid Valves, Dimensions

**FESTO**

Type MFH-2-M5



- ① Solenoid coil can be rotated
- ② Socket can be turned 180°
- ③ Manual override

### Dimensions

a	0.71 in / 18 mm	f	0.71 in / 18 mm	k	0.39 in / 10 mm
b	0.14 in / 3.6 mm	p	0.49 in / 12.5 mm	l	2.64 in / 67 mm
c	0.24 in / 6 mm	q	0.99 in / 25 mm	m	0.09 in / 2.4 mm
d	0.87 in / 22 mm	r	2.40 in / 61 mm	n	0.28 in / 7 mm
e	2.05 in / 52 mm	s	0.18 in / 4.5 mm		

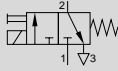
# Compact 2000 / M5/2N System Valves

## 3/2 Single Solenoid Valves

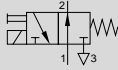
### Single Solenoid Valve

Spring Return and Manual Override

Type MFH-3-M5



Type MOFH-3-M5



When the solenoid is energized, the valve shifts and remains shifted until the solenoid is deenergized.

#### Accessories:

(Ordered Separately)

#### Solenoid F-coils

with socket, see page 647

without socket, see page 648

#### Standard Sockets, Type MSSD-F

see page 649

#### Sockets with cable, Type KMF-...

see page 650

#### LED Gaskets, Type MF-LD-...

see page 651

#### Indicator Inserts, Type MFL-...-...

see page 652

#### Solenoid Inserts, Type MFZ-...

see page 653

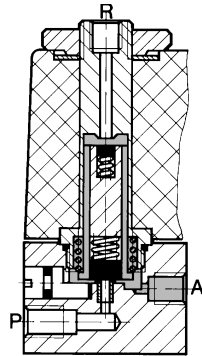
Certification for MFH-3-M5: UR

Permissible torque on solenoid mounting nuts = 13 lb in / 150 Ncm

Valve shown with solenoid and socket accessories.



Example: Type MFH-3-M



1 (P) = Supply  
2 (A) = Working or Outlet Port  
3 (R) = Exhaust

Order Number	4450 MFH-3-M5	4543 MOFH-3-M5
Medium	Compressed air (filtered, lubricated or unlubricated)	
Mounting	Holes through housing	
Connection	M5	
Orifice Size	0.05 in / 1.3 mm	
C <sub>v</sub> Factor (P → A)	0.05 C <sub>v</sub> / 50 l/min	
Pressure Range	0 to 120 psi / 0 to 8 bar	0 to 97.5 psi / 0 to 6.5 bar
Response Time at 90 psi / 6 bar	On: 10 ms Off: 16 ms	On: 12 ms Off: 8.5 ms
Ambient Temperature	23 to 104°F / -5 to +40°C	
Medium Temperature	14 to 140°F / -10 to +60°C	
Design	Seat valve, directly actuated, with spring return	
Materials	Housing: Al, blue anodized. Seals: Buna N	
Weight	0.209 lb / 0.095 kg	
Direct Current	Standard Voltage	12, 24 V
	Available Voltage	12 to 220 V
Alternating Current	Standard Voltage	24, 42, 110, 220 V / 50 Hz or 50 and 60 Hz
	Available Voltage	12 to 240 V / 50 or 60 Hz
Power Consumption	DC	4.5 W
	AC	Inrush 7.5 VA, Holding 6 VA
ED Switching Time	100%	
Type of Protection	IP 65 (DIN 40050)	

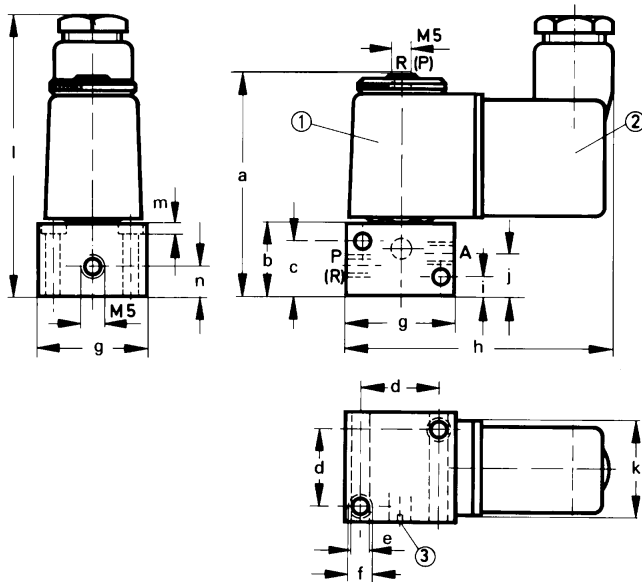
For solenoids, see pages 647-648.

# Compact 2000 / M5/2N System Valves

## 3/2 Single Solenoid Valves, Dimensions

**FESTO**

Type MFH-3-M5  
MOFH-3-M5 (connections in parentheses)



- ① Solenoid coil can be rotated
- ② Socket can be turned 180°
- ③ Manual override

### Dimensions

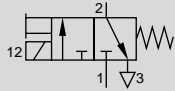
a	2.05 in / 52 mm
b	0.71 in / 18 mm
c	0.49 in / 12.5 mm
d	0.71 in / 18 mm
e	0.14 in / 3.6 mm
f	0.24 in / 6 mm
g	0.99 in / 25 mm
h	2.40 in / 61 mm
i	0.18 in / 4.5 mm
j	0.39 in / 10 mm
k	0.87 in / 22 mm
l	2.64 in / 67 mm
m	0.09 in / 2.4 mm
n	0.28 in / 7 mm



### Single Solenoid Valve

With spring return, manual override integrated quick exhaust and silencer.

#### Type MFH-3-1/8-SEU



When voltage is applied, the solenoid is energized and the valve is shifted.

The integrated quick exhaust makes it possible to achieve a rapid advance or return, e.g. for control of cylinders.

#### Accessories:

(Order Separately)

#### Solenoid F-coils

with socket, see page 647

without socket, see page 648

#### Standard Sockets, Type MSSD-F

see page 649

#### Sockets with cable, Type KMF-...

see page 650

#### LED Gaskets, Type MF-LD-...

see page 651

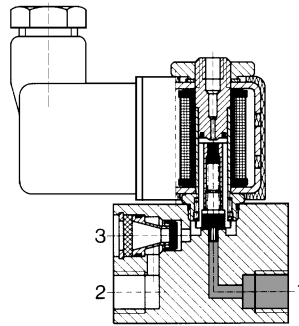
#### Indicator Inserts, Type MFL-...

see page 652

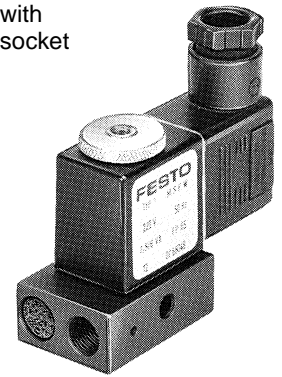
#### Solenoid Inserts, Type MFZ-...

see page 653

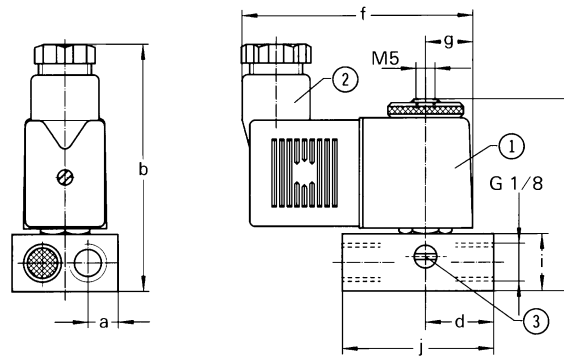
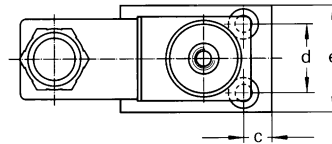
- 1 (P) = Supply Port
- 2 (A) = Working or Outlet Port
- 3 (R) = Exhaust Port



Valve shown with solenoid and socket accessories.



- ① Coil can be rotated
- ② Socket can be turned 180°
- ③ Manual override



#### Dimensions

a	0.31 in / 8 mm	e	1.10 in / 28 mm	h	1.99 in / 50.5 mm	k	0.17 in / 4.4 mm
b	2.56 in / 65 mm	f	2.40 in / 61 mm	i	0.59 in / 15 mm	l	0.87 in / 22 mm
c	0.30 in / 7.5 mm	g	0.49 in / 12.5 mm	j	1.57 in / 40 mm	m	0.18 in / 4.5 mm
d	0.71 in / 18 mm						

Permissible torque on solenoid mounting nuts = 13 lb in / 150 Ncm

Order Number	Part No./Type	11121 MFH-3-1/8-SEU
Medium		Compressed air (filtered, lubricated or unlubricated)
Design		Poppet valve, directly actuated at one end, with spring return
Mounting		Through-holes in housing
Connection		G 1/8 ISO
Orifice Size		0.05 in / 1.3 mm (1 → 2), 0.11 in / 2.8 mm (2 → 3)
C <sub>v</sub> Factor		0.04 C <sub>v</sub> / 40 l/min (1 → 2), 0.130 C <sub>v</sub> / 130 l/min (2 → 3)
Pressure Range		7.5 to 120 psi / 0.5 to 8 bar
Response Time at 90 psi / 6 bar		On: 12 ms, Off: 16 ms
Ambient Temperature		23 to 104°F / -5 to +40°C
Medium Temperature		14 to 140°F / -10 to +60°C
Materials		Housing: Blue-anodized aluminum; Seals: Buna N
Weight		0.285 lb / 0.130 kg
Direct Current	Standard Voltage	12, 24 V
	Available Voltage	12 to 220 V
Alternating Current	Standard Voltage	24, 42, 110, 220 V / 50 Hz or 50 and 60 Hz
	Available Voltage	12 to 240 V / 50 or 60 Hz
Power Consumption		DC: 4.5 WA; AC: Holding 6 VA, Inrush 7.5 VA
Duty Cycle		100%
Degree of Protection		IP 65 (DIN 40050)