

## Manually operated valves

**FESTO**



Key features



**Innovative**

- Small and compact for a wide range of pneumatic applications
- Numerous valve functions can be selected: 3/2-way and 5/2-way functions
- With flow rates of up to 600 l/min, the valves offer outstanding pneumatic performance for a wide range of applications
- Lightweight
- Minimal actuating forces

**Versatile**

- Flexibility of the pneumatic working ports provides a practical solution to different requirements
- Round silencer for ducted exhaust air
- Suitable for vacuum in some cases
- Reverse operation possible in some cases
- Actuation: direct
- Pressure range from vacuum to 10 bar possible
- Versions:
  - Pushbutton valve
  - Toggle lever valve
  - Hand lever valve
  - Finger lever valve
  - Foot valve

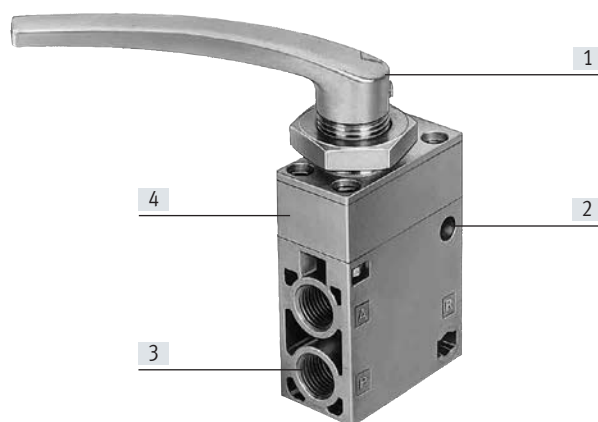
**Reliable**

- Durable thanks to tried-and-tested poppet valves
- Sturdy thanks to metal or plastic housing and connecting thread or connector

**Easy to install**

- Front panel mounting or mounting on bracket

## Characteristics



- [1] Finger lever, pushbutton, toggle lever, button switch, foot pedal as actuator
- [2] Fast mounting: via retaining bracket or screwed directly via through-hole, front panel mounting possible in some cases
- [3] Practical connection via threaded connection or connector
- [4] Various widths

**Equipment options****3/2-way valve**

- Normally open/closed
- Mechanical spring
- Vacuum operation possible
- Directly actuated
- Ducted exhaust air
- Detenting (bistable) or non-detenting (monostable)

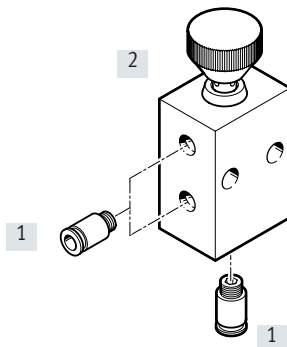
**5/2-way valve**

- Mechanical spring
- Vacuum operation possible
- Directly actuated
- Ducted exhaust air
- Detenting (bistable) or non-detenting (monostable)

Peripherals overview

Manually operated valves

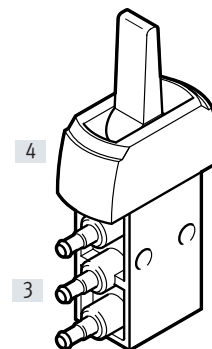
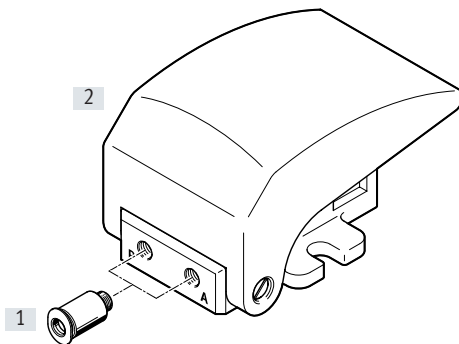
3/2-way pushbutton valve



		Brief description	→ Page/Internet
[1]	Fitting	For supply/exhaust ports	20
[2]	Pushbutton valve	K-3-M5	7

3/2-way foot valve F-3\_M5 ...

3/2-way toggle lever valve KH/O-3-PK



		Brief description	→ Page/Internet
[1]	Fitting	For supply/exhaust ports	20
[2]	Foot valve	F- ...	16
[3]	Tubing connection	For standard I.D. tubing	-
[4]	Toggle lever valve	KH/O-3-PK	9

## Key features

### Manually operated valves

Manually operated valves are used in all industrial sectors, as well as in the skilled trades.

They are used to carry out simple processes such as clamping or closing safety doors.


Depending on the required actuation (pushing, rotating/swivelling or tilting), the valves are either resetting or non-resetting.

The valves are directly actuated.

Valve functions Circuit symbol	Type	Description
<b>Pushbutton valve</b>		
	K-3-M5	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Normally closed</li> <li>• Reset via mechanical spring</li> <li>• Suitable for vacuum</li> </ul>
	K/O-3-PK-3	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Normally open/closed</li> <li>• Reset via mechanical spring</li> </ul>
<b>Toggle lever valve</b>		
	KH/O-3-PK-3	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Detenting actuation</li> <li>• Normally open/closed</li> <li>• Reset via mechanical spring</li> </ul>
<b>Finger lever valve</b>		
	TH/O-3-PK-3	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Normally open/closed</li> <li>• Reset via mechanical spring</li> </ul>
	TH-3-M5	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Normally closed</li> <li>• Reset via mechanical spring</li> <li>• Suitable for vacuum</li> </ul>
	TH-3-1/4-B	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Normally closed</li> <li>• Reset via mechanical spring</li> </ul>
	THO-3-1/4-B	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Normally open</li> <li>• Reset via mechanical spring</li> </ul>
	TH-5-1/4-B	5/2-way valve, monostable <ul style="list-style-type: none"> <li>• Reset via mechanical spring</li> <li>• Suitable for vacuum</li> </ul>

## Key features

Valve functions Circuit symbol	Type	Description
<b>Hand lever valve</b>		
	H-3-1/4-B	3/2-way valve, bistable <ul style="list-style-type: none"> <li>• Detenting actuation</li> <li>• Normally closed</li> </ul>
	H-5-1/4-B	5/2-way valve, bistable <ul style="list-style-type: none"> <li>• Detenting actuation</li> </ul>
<b>Foot valve, foot valve with detent</b>		
	F-3-1/4-B	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Normally closed</li> <li>• Reset via mechanical spring</li> </ul>
	FO-3-1/4-B	3/2-way valve, monostable <ul style="list-style-type: none"> <li>• Normally open</li> <li>• Reset via mechanical spring</li> </ul>
	FP-3-1/4-B	3/2-way valve, bistable <ul style="list-style-type: none"> <li>• Normally closed</li> <li>• Detenting actuation</li> <li>• Reset via mechanical spring</li> </ul>
	FPB-3-1/4	3/2-way valve, bistable <ul style="list-style-type: none"> <li>• Normally closed</li> <li>• Detenting actuation</li> <li>• Reset via mechanical spring</li> </ul>
	F-5-1/4-B	5/2-way valve, monostable <ul style="list-style-type: none"> <li>• Reset via mechanical spring</li> </ul>
	FP-5-1/4-B	5/2-way valve, bistable <ul style="list-style-type: none"> <li>• Detenting actuation</li> <li>• Reset via mechanical spring</li> </ul>
	FPB-5-1/4	5/2-way valve, bistable <ul style="list-style-type: none"> <li>• Detenting actuation</li> <li>• Reset via mechanical spring</li> </ul>


 **Note**


A filter must be installed upstream of valves operated in vacuum mode. This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup with connector).

## Data sheet – Pushbutton valve

-  - Flow rate  
80 l/min

Mounting either via through-hole or on front panel (in the case of F-3-M5 with flange eyes)

-  - Pressure  
-0.95 ... 8 bar

-  - Temperature range  
-10 ... +60°C



General technical data		K/O-3-PK-3	K-3-M5	F-3-M5
Type				
Standard nominal flow rate	[l/min]	80		
1 → 2				
Valve function		3/2-way valve		
Design		Poppet valve, directly actuated		
Pneumatic connection		PK-3 <sup>1)</sup>	M5	M5
Nominal width	[mm]	2.5	2.0	2.0
Weight	[g]	20	28	235
Actuating force	[N]	–	23.0	7.0
• at 6 bar				
• with normally closed position	[N]	24.0	–	–
• with normally open position	[N]	17.0	–	–

1) PK-3 = barbed fitting for plastic tubing with 3 mm nominal width

Materials		K/O-3-PK-3	K-3-M5	F-3-M5
Type				
Seal		NBR		–
Housing		Plastic	Die-cast zinc	Die-cast zinc

Operating and environmental conditions		K/O-3-PK-3	K-3-M5	F-3-M5
Type				
Operating medium		Compressed air to ISO 8573-1:2010 [–:–:–]		
Note on operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)		
Operating pressure range	[bar]	0 ... 8	–0.95 ... 8	–0.95 ... 8
Ambient temperature	[°C]	–10 ... +60		

-  - **Note**

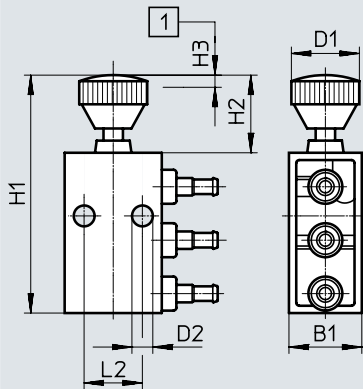
Pushbutton valves are only to be operated manually.

Data sheet – Pushbutton valve

Dimensions

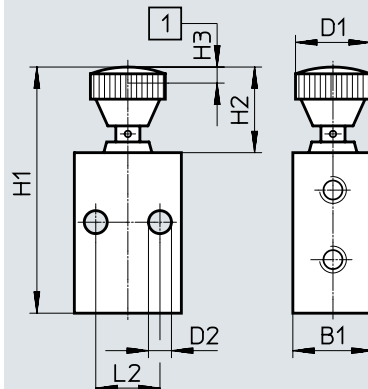
Download CAD data → [www.festo.com](http://www.festo.com)

Pushbutton valve K/O-3-PK-3



[1] Switching travel

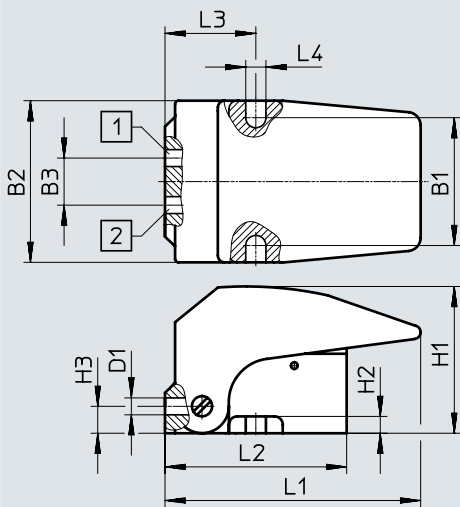
Pushbutton valve K-3-M5



[1] Switching travel

Type	B1	D1	D2	H1	H2	H3	L2
K/O-3-PK-3	15	14	4.3	49	16	2.5	12
K-3-M5	15	14	4.3	46	16	3	12

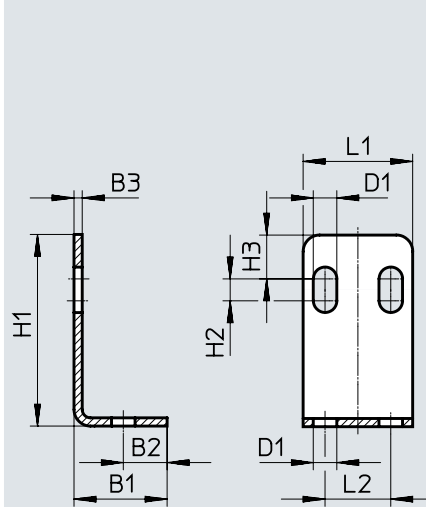
Pushbutton valve F-3-M5



[1] Compressed air supply port

[2] Working and outlet line

Mounting bracket HV-M5




Type	B1	B2	B3	D1	H1	H2	H3	L1	L2	L3	L4
F-3-M5	38	48	15	M5	43	5	7.5	76.5	54	27	6.5
HV-M5	17	8	1.5	4.3	35	4	8	20	12	-	-

Ordering data


Nominal flow rate	Valve function	Description	Normal position	Part no.	Type
80 l/min	3/2-way valve, monostable	With PK-3, tubing connector	Open/closed	13793	K/O-3-PK3
		With M5 threaded connection	Closed	3660	K-3-M5
				4452	F-3-M5



## Data sheet – Toggle lever valve

-  - Flow rate  
80 l/min

Mounting via through-hole

-  - Pressure  
0 ... 8 bar

-  - Temperature range  
-10 ... +60°C



#### General technical data

Standard nominal flow rate	[l/min]	80
1 → 2		
Valve function		3/2-way valve
Design		Poppet valve, directly actuated
Pneumatic connection		PK-3 <sup>1)</sup>
Nominal width	[mm]	2.5
Weight	[g]	20
Actuating force	[N]	-
• at 6 bar		
• with normally closed position	[N]	7.5
• with normally open position	[N]	6.5

1) PK-3 = barbed fitting for plastic tubing with 3 mm nominal width

#### Materials

Seal	NBR
Housing	Plastic

#### Operating and environmental conditions

Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Note on operating/ pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure range	[bar] 0 ... 8
Ambient temperature	[°C] -10 ... +60

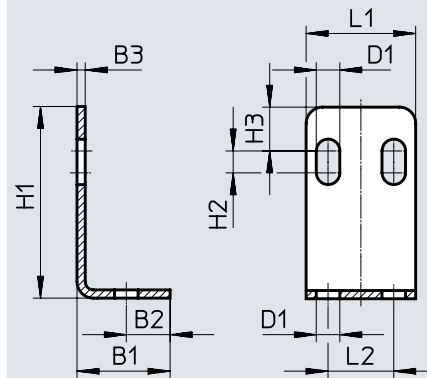
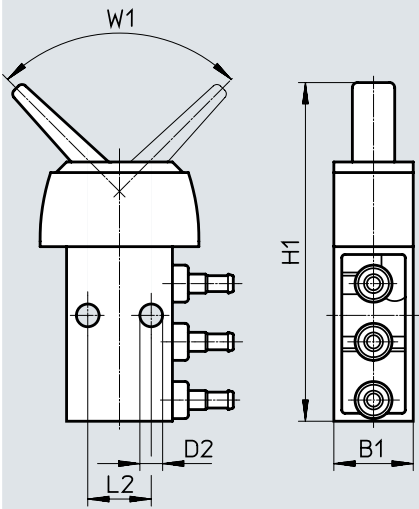
Data sheet – Toggle lever valve

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Toggle lever valve KH/O-3-PK-3

Mounting bracket HV-M5




Type	B1	B2	B3	D1	D2	H1	H2	H3	L1	L2	W1
KH/O-3-PK-3	15	-	-	-	4.3	64	-	-	-	12	90°
HV-M5	17	8	1.5	4.3	-	35	4	8	20	12	-


Ordering data

Nominal flow rate	Valve function	Description	Normal position	Part no.	Type
80 l/min	3/2-way valve, monostable	With PK-3, tubing connector	Open/closed	33003	KH/O-3-PK3

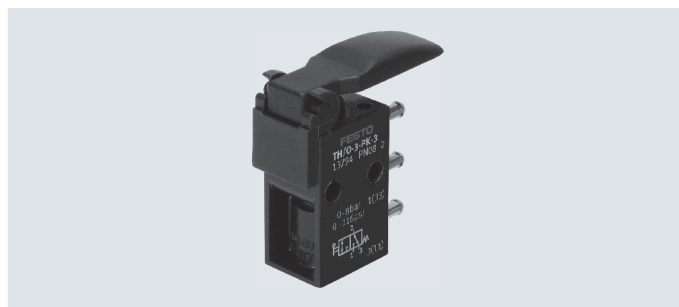
## Data sheet – Finger lever valve

-  - Flow rate  
80 ... 600 l/min

Mounting via through-hole

-  - Pressure  
-0.95 ... 10 bar

-  - Temperature range  
-10 ... +60°C



## General technical data

Type	TH/O-3-PK-3	TH-3-M5	TH-5-1/4-B	TH-3-1/4-B	THO-3-1/4-B
Standard nominal flow rate [l/min] 1 → 2	80		550	600	
Valve function	3/2-way valve		5/2-way valve	3/2-way valve	
Design	Poppet valve, directly actuated		Poppet valve, directly actuated	Poppet valve, directly actuated	
Pneumatic connection	PK-3 <sup>1)</sup>	M5	G1/4	G1/4	G1/4
Nominal width [mm]	2.5	2.0	7.0	7.0	7.0
Weight [g]	18	37	320	210	210
Actuating force [N]		14.5	34.0	10.5	22.5
• at 6 bar					
• with normally closed position [N]	8.0	–	–	–	–
• with normally open position [N]	6.0	–	–	–	–

1) PK-3 = barbed fitting for plastic tubing with 3 mm nominal width

## Materials

Type	TH/O-3-PK-3	TH-3-M5	TH-5-1/4-B	TH-3-1/4-B	THO-3-1/4-B
Seal	NBR				
Housing	Plastic	Die-cast zinc	Die-cast aluminium		

## Operating and environmental conditions

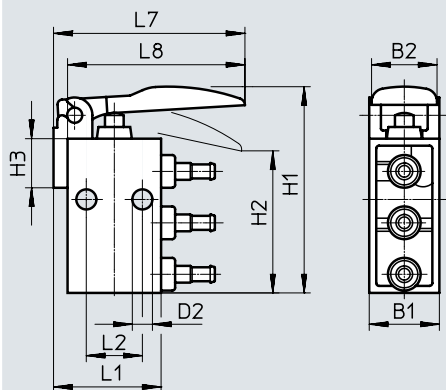
Type	TH/O-3-PK-3	TH-3-M5	TH-5-1/4-B	TH-3-1/4-B	THO-3-1/4-B
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]				
Note on operating/ pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)				
Operating pressure range [bar]	0 ... 8	-0.95 ... 8	-0.95 ... 10		
Ambient temperature [°C]	-10 ... +60				

Data sheet – Finger lever valve

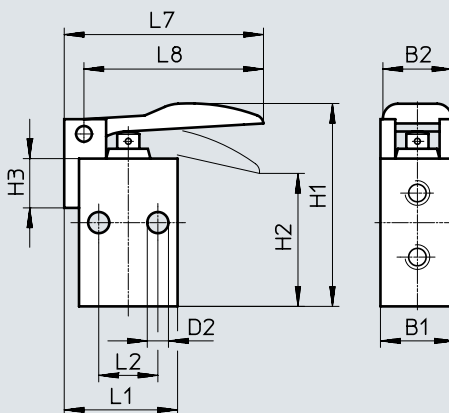
Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Finger lever valve TH/O-3-PK-3

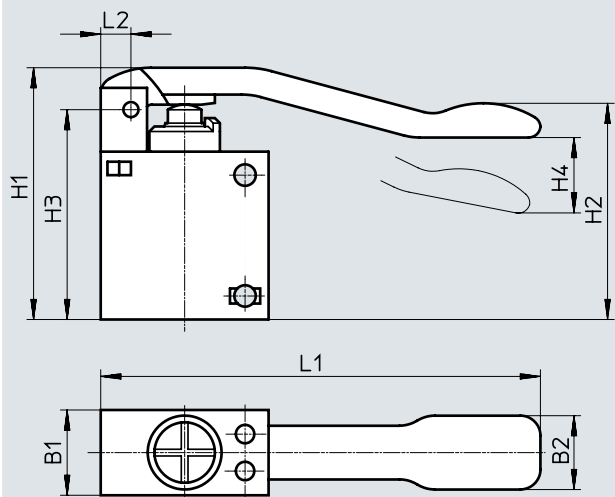


Finger lever valve TH-3-M5

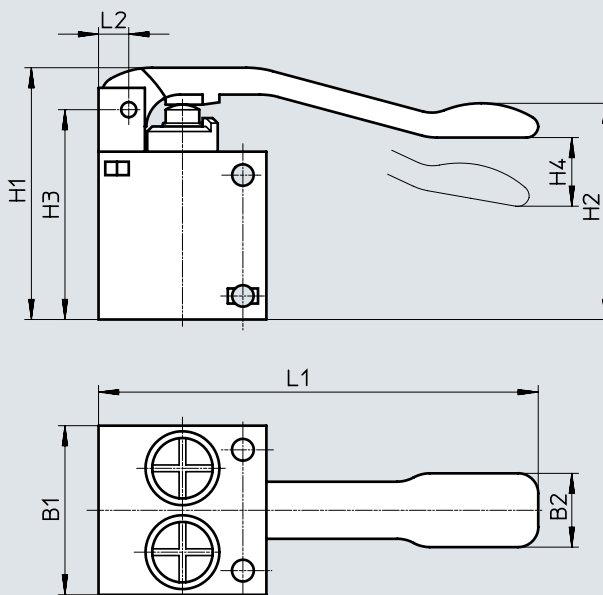


Type	B1	B2	D2	H1	H2	H3	L1	L2	L7	L8
TH/O-3-PK-3	15	14	4.3	44.6	30.4	10.5	23	12	41	38
TH-3-M5	14.8	14	4.3	42	27	10	23	12	40.5	36.5

Finger lever valve TH-3-1/4-B, THO-3-1/4-B



Finger lever valve TH-5-1/4-B



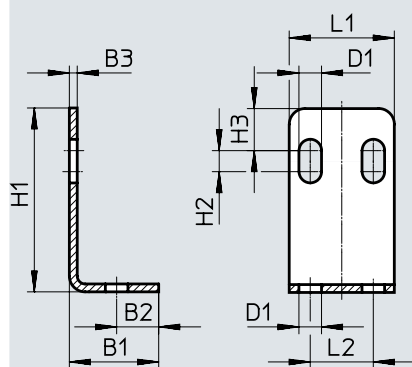
Type	B1	B2	H1	H2	H3	H4	L1	L2
TH-3-1/4-B, THO-3-1/4-B	25.4	22	75	68	62.5	23	131	9
TH-5-1/4-B	50.4	22	75	68	62.5	23	131	9

## Data sheet – Finger lever valve

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Mounting bracket HV-M5




Type	B1	B2	B3	D1	H1	H2	H3	L1	L2
HV-M5	17	8	1.5	4.3	35	4	8	20	12


## Ordering data


Nominal flow rate	Valve function	Description	Normal position	Part no.	Type
80 l/min	3/2-way valve, monostable	With PK-3, tubing connector	Open/closed	13794	TH/O-3-PK3
			Closed	6758	TH-3-M5
550 l/min	5/2-way valve, monostable	–	Closed	8994	TH-5-1/4-B
600 l/min	3/2-way valve, monostable	–	Closed	8983	TH-3-1/4-B
			Open	8990	THO-3-1/4-B

Data sheet – Hand lever valve

-  - Flow rate  
550 ... 600 l/min

Mounting either via through-hole or on front panel

-  - Pressure  
-0.95 ... 10 bar

-  - Temperature range  
-10 ... +60°C



General technical data		
Type	H-5-1/4-B	H-3-1/4-B
Standard nominal flow rate [l/min] 1 → 2	550	600
Valve function	5/2-way valve	3/2-way valve
Design	Poppet valve, directly actuated	Poppet valve, directly actuated
Pneumatic connection	G1/4	G1/4
Nominal width [mm]	7.0	7.0
Weight [g]	510	320
Actuating torque [Nm]	2.0	0.5

Materials	
Seal	NBR
Housing	Die-cast aluminium

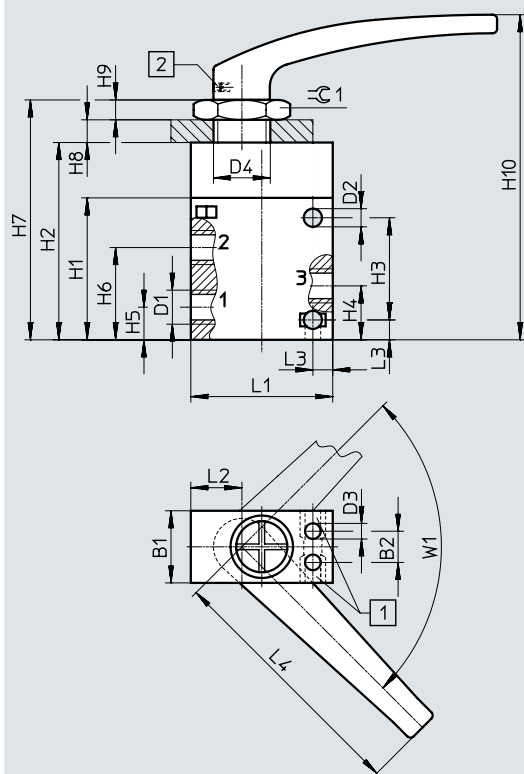
Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Note on operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure range [bar]	-0.95 ... 10
Ambient temperature [°C]	-10 ... +60

## Data sheet – Hand lever valve

### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

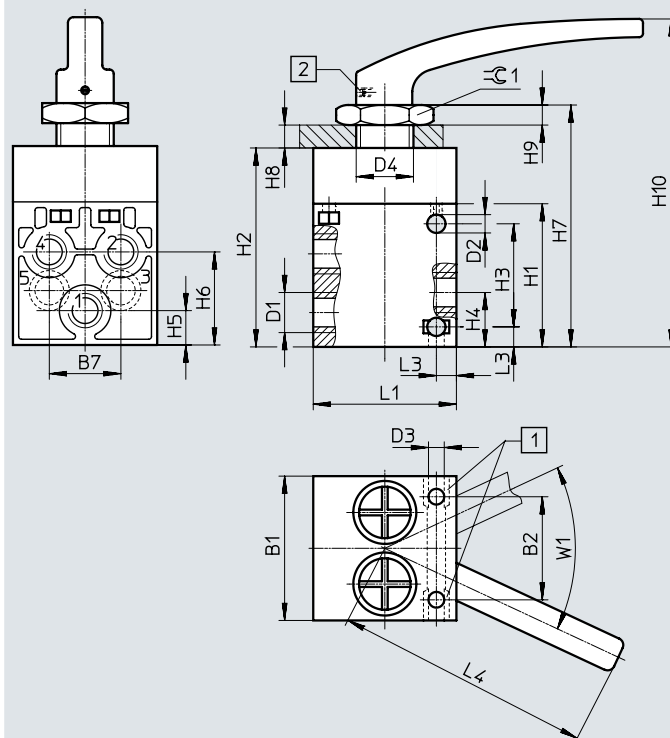
Hand lever valve H-3-1/4-B



[1] For hex nut M5

[2] Locking screw

Hand lever valve H-5-1/4-B



[1] For hex nut M5

[2] Locking screw




Type	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
H-3-1/4-B	50	69.5	36	19	11.5	32.5	84.5	0 ... 8	7	114.5
H-5-1/4-B	50	69.5	36	19	11.5	32.5	84.5	0 ... 8	7	114.5

Type	B1	B2	B7	D1	D2	D3	D4	L1	L2	L3	L4	W1	⊥ 1
H-3-1/4-B	25.4	11	–	G1/4	6.4	5.5	M20x1.5	50	18	7	90	90°	30
H-5-1/4-B	50.4	36	25	G1/4	6.4	5.5	M20x1.5	50	–	7	90	50°	30

### Ordering data

Nominal flow rate	Valve function	Part no.	Type
550 l/min	5/2-way valve, bistable	<b>8995</b>	<b>H-5-1/4-B</b>
600 l/min	3/2-way valve, bistable	<b>8987</b>	<b>H-3-1/4-B</b>

Data sheet – Foot valve

-  Flow rate  
550 ... 600 l/min
-  Pressure  
-0.95 ... 10 bar
-  Temperature range  
-10 ... +60°C

Mounted via flange eyes on the housing

Foot valves with detent are actuated by means of a foot lever with mechanical detent. The valve engages when it is first actuated, and when the foot lever is actuated again, the valve returns to its normal position.



**General technical data**

Type	FPB-3-1/4	F-5-1/4-B	FP-5-1/4-B	FPB-5-1/4	F-3-1/4-B	FO-3-1/4-B	FP-3-1/4-B
Standard nominal flow rate [l/min] 1 → 2	550				600		
Valve function	3/2-way valve		5/2-way valve		3/2-way valve		
Design	Poppet valve, directly actuated	Poppet valve, directly actuated	Poppet valve, directly actuated	Poppet valve, directly actuated	Poppet valve, directly actuated	Poppet valve, directly actuated	Poppet valve, directly actuated
Pneumatic connection	G1/4	G1/4	G1/4	G1/4	G1/4	G1/4	G1/4
Nominal width [mm]	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Weight [g]	610	705	1845	725	595	595	1760
Actuating force [N]	31.5	78.0	82.0	67.5	50.0	55.0	58.5

**Materials**

Seal	NBR
Housing	Die-cast aluminium

**Operating and environmental conditions**

Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Operating pressure range [bar]	-0.95 ... 10
Ambient temperature [°C]	-10 ... +60

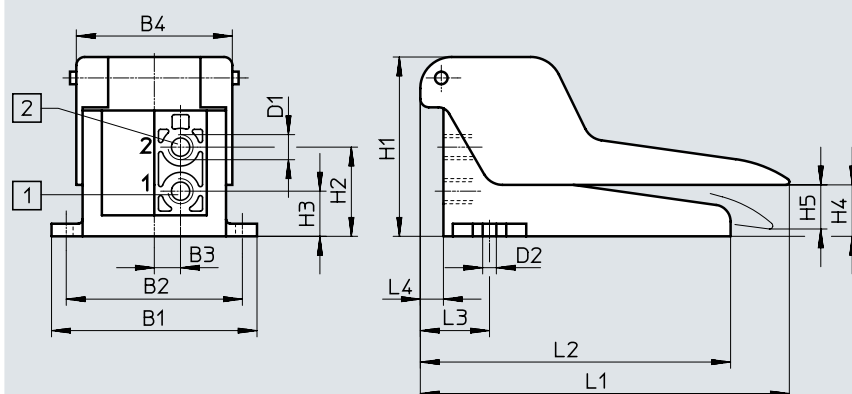


## Data sheet – Foot valve

### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

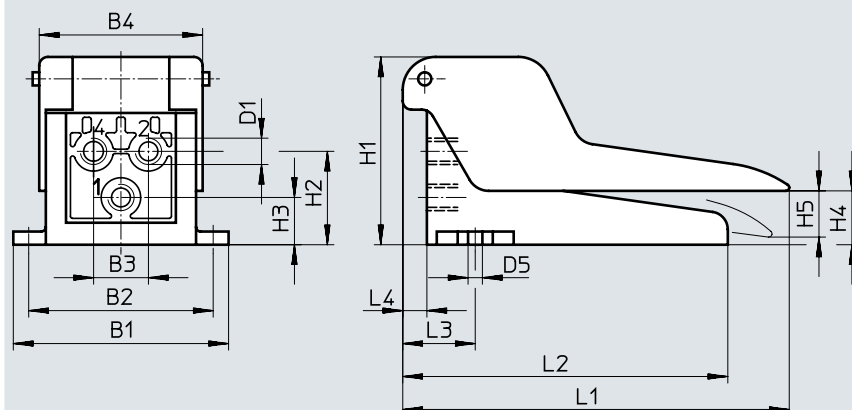
Foot valve F ... 3 ... , foot valve with detent FPB-3 ...



[1] Compressed air supply port

[2] Working port

Foot valve F-5 ... , foot valve with detent FPB-5 ...



[1] Compressed air supply port

[2] Working port

[4] Working port

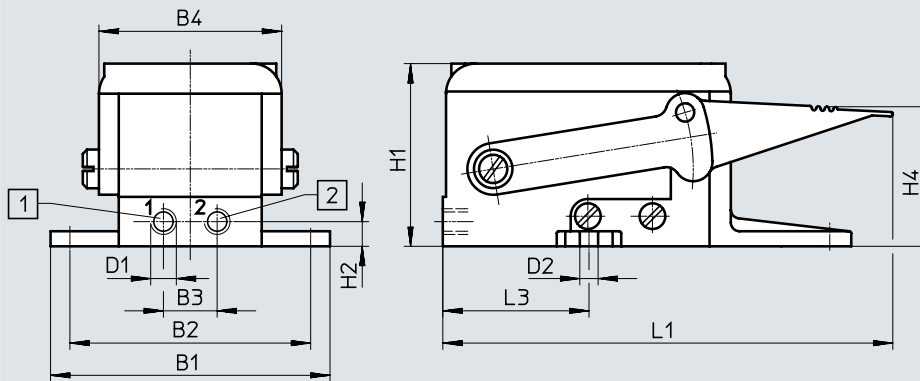
Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4
F ... 3 ... FPB-3 ...	98	84	12.5	74.4	G1/4	6.5	85.5	42.5	21.5	29	24	176	148	33	11
F-5 ... FPB-5 ...	98	84	25	74.4	G1/4	6.5	85.5	42.5	21.5	29	24	176	148	33	11

Data sheet – Foot valve

Dimensions

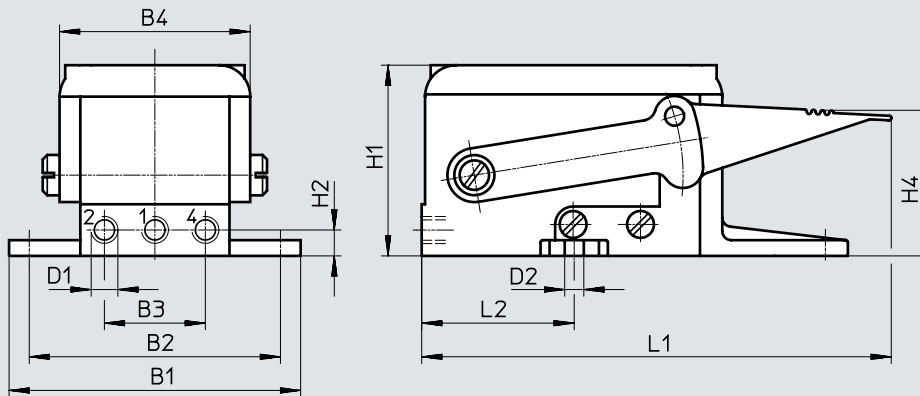
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Foot valve with detent FP-3-1/4-B



[1] Compressed air supply port [2] Working port

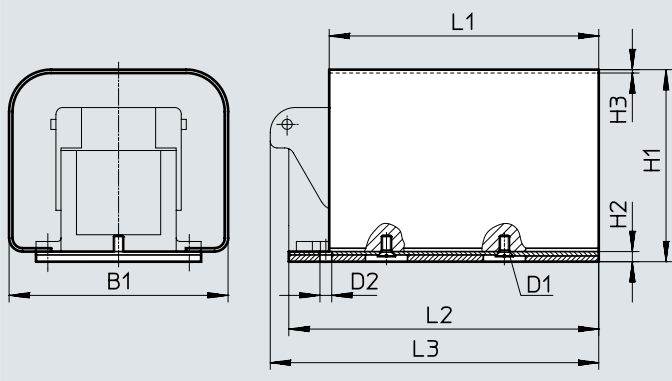
Foot valve with detent FP-5-1/4-B



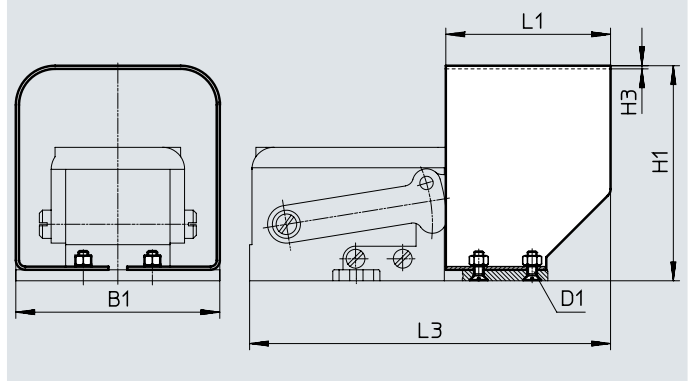
[1] Compressed air supply port [2] Working port [4] Working port

Type	B1	B2	B3	B4	D1	D2	H1	H2	H4	L1	L3
FP-3-1/4-B	130	112	25	85	G1/4	8.5	85	11.5	65	210	68
FP-5-1/4-B	130	112	45	85	G1/4	8.5	85	11.5	65	210	68

Safety guard FH, for foot valve F and foot valve with detent FPB



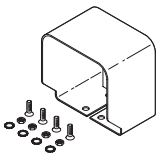
Safety guard FPH-121, for foot valve with detent FP





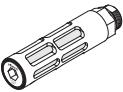
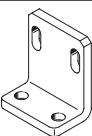
Type	B1	D1	D2	H1	H2	H3	L1	L2	L3
FH	130	M6	7	114	6	2	160	184	195
FPH-121	130	M6	-	137	-	2	105	-	230

## Ordering data – Foot valve

Ordering data				
Nominal flow rate	Valve function	Normal position	Part no.	Type
<b>Foot valve</b>				
550 l/min	3/2-way valve, bistable	–	<b>526984</b>	<b>FPB-3-1/4</b>
	5/2-way valve, bistable	–	<b>526985</b>	<b>FPB-5-1/4</b>
		–	<b>8997</b>	<b>FP-5-1/4-B</b>
	5/2-way valve, monostable	Open	<b>8992</b>	<b>F-5-1/4-B</b>
600 l/min	3/2-way valve, bistable	–	<b>8986</b>	<b>FP-3-1/4-B</b>
	3/2-way valve, monostable	Closed	<b>8984</b>	<b>F-3-1/4-B</b>
		Open	<b>8988</b>	<b>FO-3-1/4-B</b>

Ordering data				
	Description		Part no.	Type
<b>Safety guard</b>				
	For foot valve F and foot valve with detent FPB	1240 g	<b>4500</b>	<b>FH</b>
	For foot valve FP	670 g	<b>2071</b>	<b>FPH-121</b>

Accessories

Ordering data	Description	Design		Part no.	Type	PU <sup>1)</sup>
<b>Push-in fitting with external hex</b>						
	Connecting thread M5 for tubing O.D.	Mini	3 mm	153302	QSM-M5-3	10
			4 mm	153304	QSM-M5-4	10
			6 mm	153306	QSM-M5-6	10
	Connecting thread G1/8 for tubing O.D.	Standard	4 mm	186095	QS-G1/8-4	10
			Mini	186264	QSM-G1/8-4	10
		Standard	6 mm	186096	QS-G1/8-6	10
			Mini	186265	QSM-G1/8-6	10
	Connecting thread G1/4 for tubing O.D.	Standard	6 mm	186097	QS-G1/4-6	10
			8 mm	186099	QS-G1/4-8	10
			10 mm	186101	QS-G1/4-10	10
<b>Push-in fitting with internal hex</b>						
	Connecting thread M5 for tubing O.D.	Mini	3 mm	153313	QSM-M5-3-I	10
			4 mm	153315	QSM-M5-4-I	10
			6 mm	153315	QSM-M5-6-I	10
	Connecting thread G1/8 for tubing O.D.	Standard	4 mm	186106	QS-G1/8-4-I	10
			Mini	186266	QSM-G1/8-4-I	10
		Standard	6 mm	186107	QS-G1/8-6-I	10
			Mini	186267	QSM-G1/8-6-I	10
	Connecting thread G1/4 for tubing O.D.	Standard	8 mm	186109	QS-G1/8-8-I	10
			6 mm	186108	QS-G1/4-6-I	10
			8 mm	186110	QS-G1/4-8-I	10
			10 mm	186112	QS-G1/4-10-I	10
<b>Silencer</b>						
	Connecting thread	-	G1/8	2307	U-1/8	1
				161419	UC-1/8	1
			G1/4	2316	U-1/4	1
				6842	U-1/4-B	1
				165004	UC-1/4	1
<b>Mounting bracket</b>						
	For valves	-	11 g	9634	HV-M5	1
			32 g	9635	HV-1/8	1

1) Packaging unit

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