

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

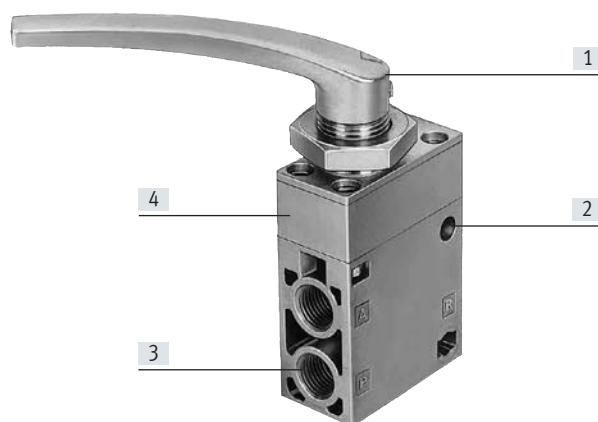
Reliable

- 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)

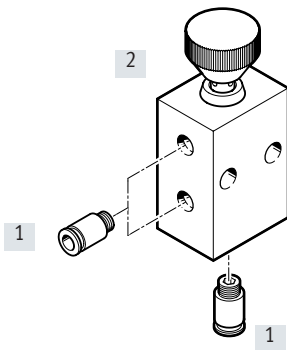
5/2-way valve

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

Peripherals overview

Manually operated valves

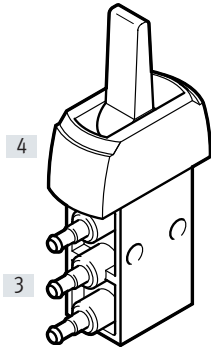
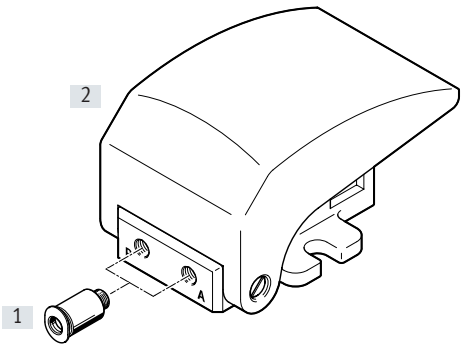
3/2-way pushbutton valve



		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

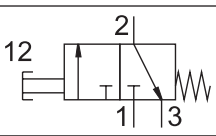
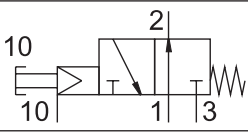
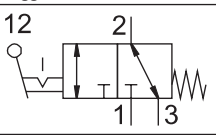
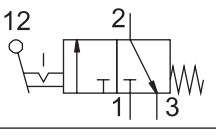
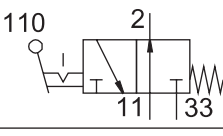
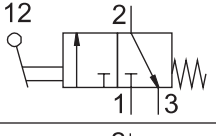
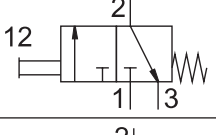
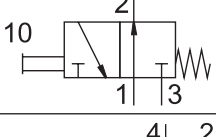
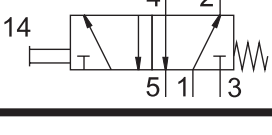
Manually operated valves

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

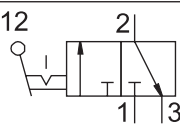
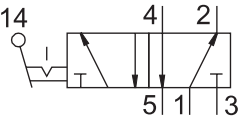
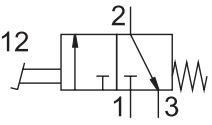
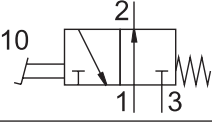
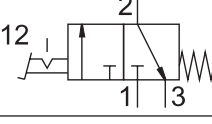
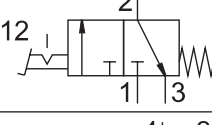
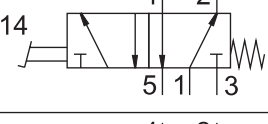
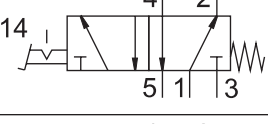
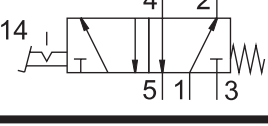
They are used to carry out simple processes such as clamping or closing safety doors.

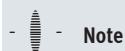
Depending on the required actuation (pushing, rotating/swivelling or tilting), the valves are either resetting or non-resetting.

The valves are directly actuated.

Valve functions		
Circuit symbol	Type	Description
Pushbutton valve		
	K-3-M5	3/2-way valve, monostable • Normally closed • Reset via mechanical spring • Suitable for vacuum
	K/O-3-PK-3	3/2-way valve, monostable • Normally open/closed • Reset via mechanical spring
Toggle lever valve		
	KH/O-3-PK-3	3/2-way valve, monostable • Detenting actuation • Normally open/closed • Reset via mechanical spring
Finger lever valve		
 	TH/O-3-PK-3	3/2-way valve, monostable • Normally open/closed • Reset via mechanical spring
	TH-3-M5	3/2-way valve, monostable • Normally closed • Reset via mechanical spring • Suitable for vacuum
	TH-3-1/4-B	3/2-way valve, monostable • Normally closed • Reset via mechanical spring
	THO-3-1/4-B	3/2-way valve, monostable • Normally open • Reset via mechanical spring
	TH-5-1/4-B	5/2-way valve, monostable • Reset via mechanical spring • Suitable for vacuum

Key features

Valve functions		
Circuit symbol	Type	Description
Hand lever valve		
	H-3-1/4-B	3/2-way valve, bistable - Detenting actuation - Normally closed
	H-5-1/4-B	5/2-way valve, bistable Detenting actuation
Foot valve, foot valve with detent		
	F-3-1/4-B	3/2-way valve, monostable - Normally closed - Reset via mechanical spring
	FO-3-1/4-B	3/2-way valve, monostable - Normally open - Reset via mechanical spring
	FP-3-1/4-B	3/2-way valve, bistable - Normally closed - Detenting actuation - Reset via mechanical spring
	FPB-3-1/4	3/2-way valve, bistable - Normally closed - Detenting actuation - Reset via mechanical spring
	F-5-1/4-B	5/2-way valve, monostable Reset via mechanical spring
	FP-5-1/4-B	5/2-way valve, bistable - Detenting actuation - Reset via mechanical spring
	FPB-5-1/4	5/2-way valve, bistable - Detenting actuation - Reset via mechanical spring



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				
Type		K/O-3-PK-3	K-3-M5	F-3-M5
Standard nominal flow rate	[l/min]	80		
1 → 2				
Valve function		3/2-way valve		
Design		Poppet valve, directly actuated		
Pneumatic connection		PK-3 ¹⁾	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				
Type		K/O-3-PK-3	K-3-M5	F-3-M5
Seal		NBR		–
Housing		Plastic	Die-cast zinc	Die-cast zinc

Operating and environmental conditions				
Type		K/O-3-PK-3	K-3-M5	F-3-M5
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**

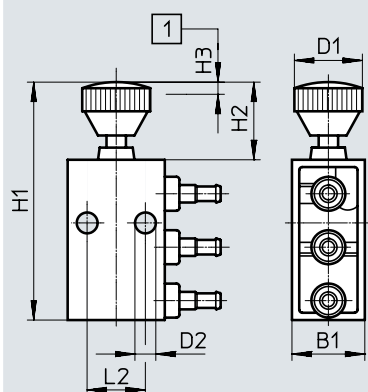
Pushbutton valves are only to be operated manually.

Data sheet – Pushbutton valve

Dimensions

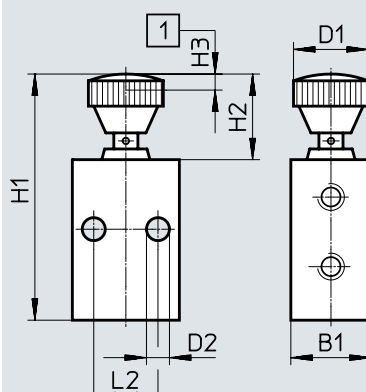
Download CAD data → www.festo.com

Pushbutton valve K/O-3-PK-3



[1] Switching travel

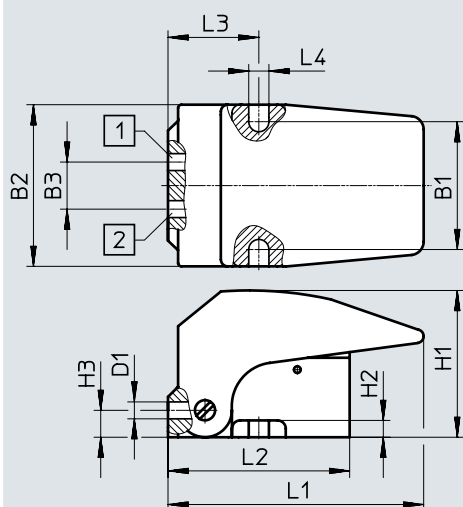
Pushbutton valve K-3-M5



[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

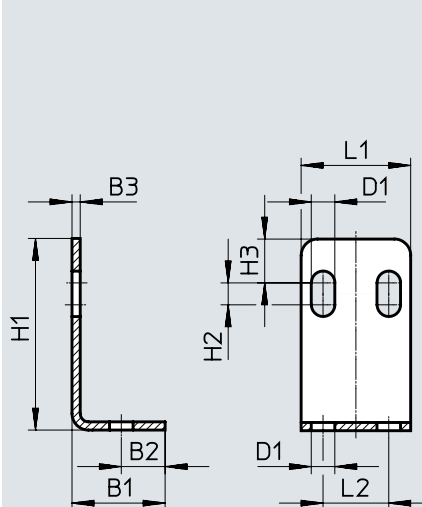
Pushbutton valve F-3-M5



[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 ¹⁾
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

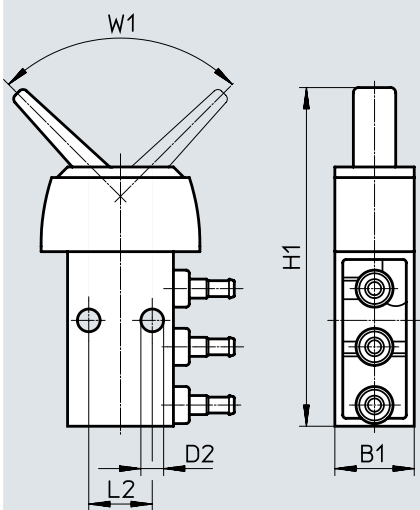
Operating and environmental conditions

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

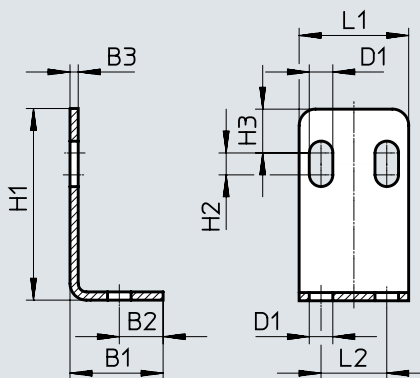
Data sheet – Toggle lever valve

Dimensions

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



Mounting bracket HV-M5


Download CAD data → www.festo.com

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

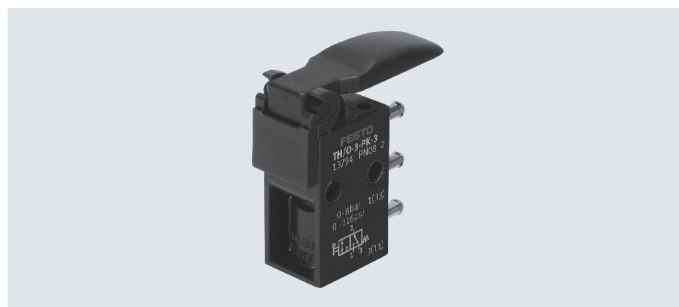
Data sheet – Finger lever valve

-  - 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
Standard nominal flow rate	[l/min]	80		550	600
1 → 2					
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 ¹⁾	M5	G1/4	G1/4
Nominal width	[mm]	2.5	2.0	7.0	7.0
Weight	[g]	18	37	320	210
Actuating force	[N]	–	14.5	34.0	10.5
• at 6 bar					22.5
• 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
Seal		NBR			
Housing		Plastic	Die-cast zinc	Die-cast aluminium	

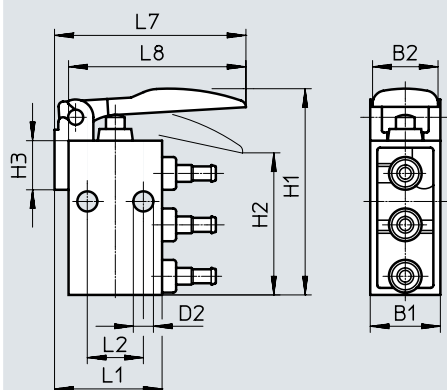
Operating and environmental conditions						
Type		TH/O-3-PK-3	TH-3-M5	TH-5-1/4-B	TH-3-1/4-B	THO-3-1/4-B
Operating medium		Compressed air to ISO 8573-1:2010 [7:-:-]				
Note on operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)				
Operating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

Data sheet – Finger lever valve

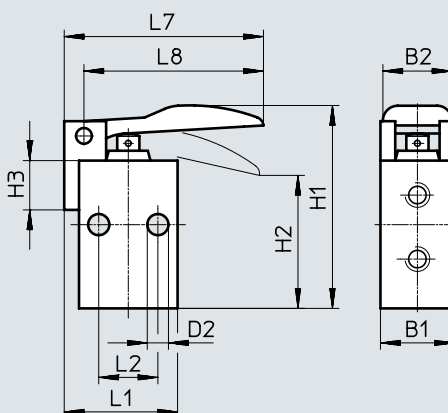
Dimensions

Download CAD data → www.festo.com

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

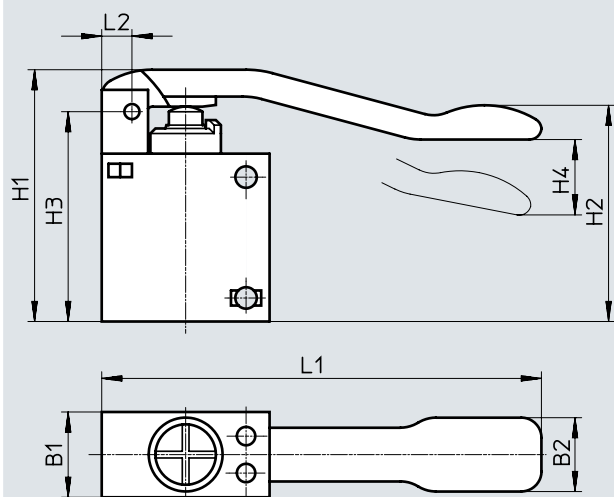


Finger lever valve TH-3-M5

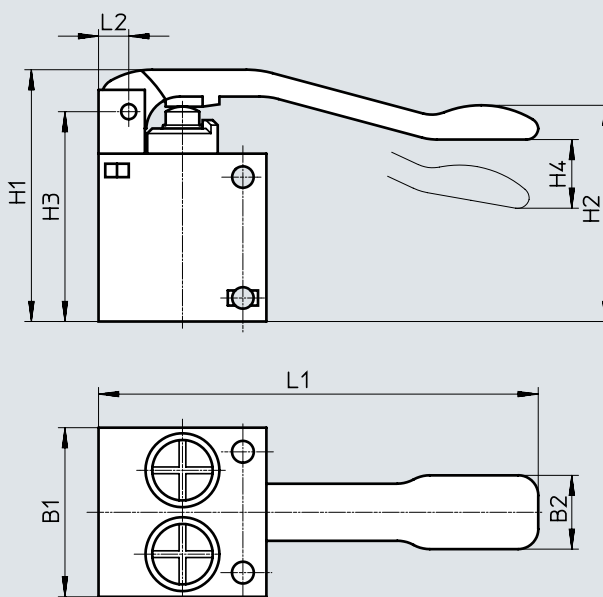


Type	B1	B2	D2	H1	H2	H3	L1	L2	L7	L8
TH/O-3-PK-3	15	14	4.3	44.6	30.4	10.5	23	12	41	38
TH-3-M5	14.8	14	4.3	42	27	10	23	12	40.5	36.5

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



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



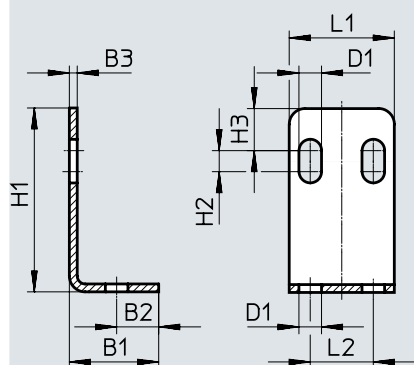
Type	B1	B2	H1	H2	H3	H4	L1	L2
TH-3-1/4-B, THO-3-1/4-B	25.4	22	75	68	62.5	23	131	9
TH-5-1/4-B	50.4	22	75	68	62.5	23	131	9

Data sheet – Finger lever valve

Dimensions

Download CAD data → www.festo.com

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

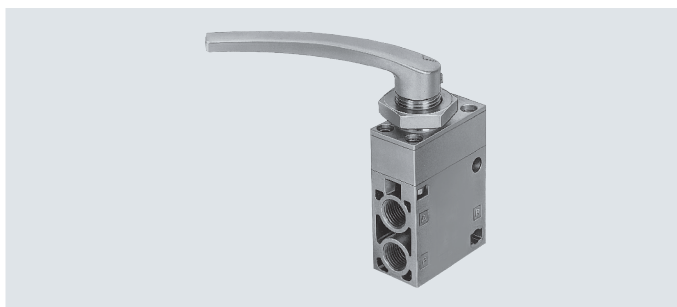
Data sheet – Hand lever valve

-  - 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

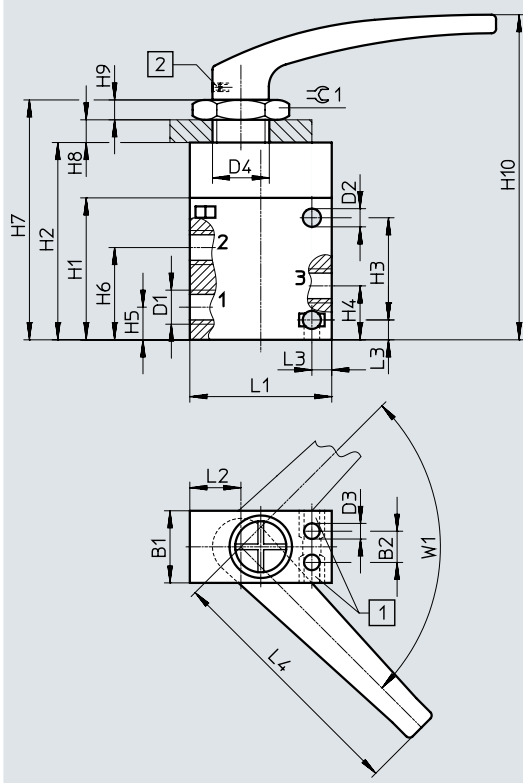
Operating and environmental conditions

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

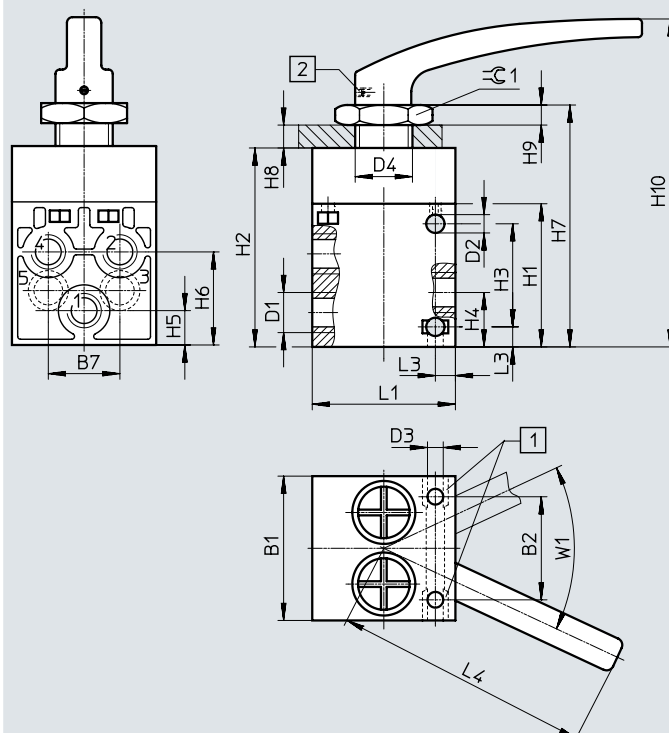
Hand lever valve H-3-1/4-B



[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	8995	H-5-1/4-B
600 l/min	3/2-way valve, bistable	8987	H-3-1/4-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

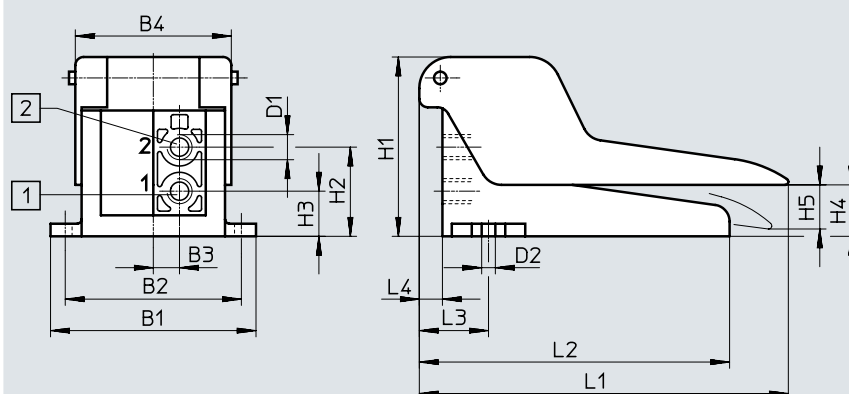
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Operating pressure range [bar]	-0.95 ... 10
Ambient temperature [°C]	-10 ... +60

Data sheet – Foot valve

Dimensions

Download CAD data → www.festo.com

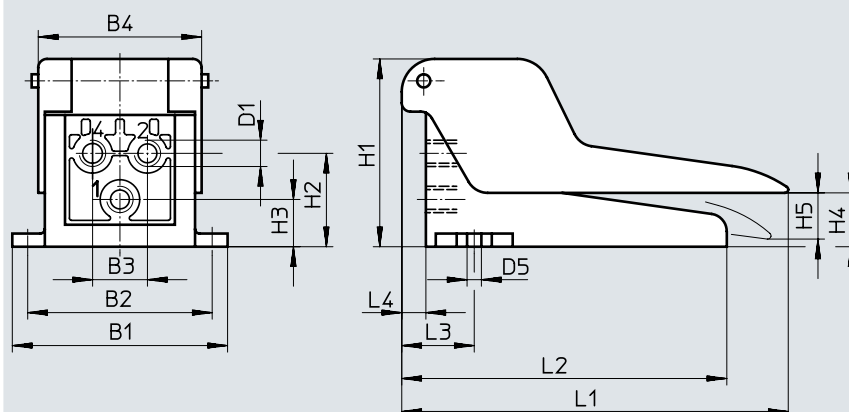
Foot valve F ... 3 ... , foot valve with detent FPB-3 ...



[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

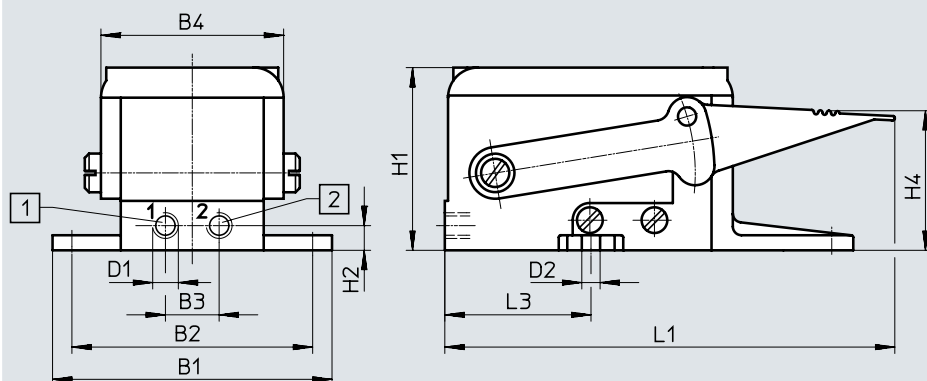
Type	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4
F ... 3 ... FPB-3 ...	98	84	12.5	74.4	G1/4	6.5	85.5	42.5	21.5	29	24	176	148	33	11
F-5 ... FPB-5 ...	98	84	25	74.4	G1/4	6.5	85.5	42.5	21.5	29	24	176	148	33	11

Data sheet – Foot valve

Dimensions

Download CAD data → www.festo.com

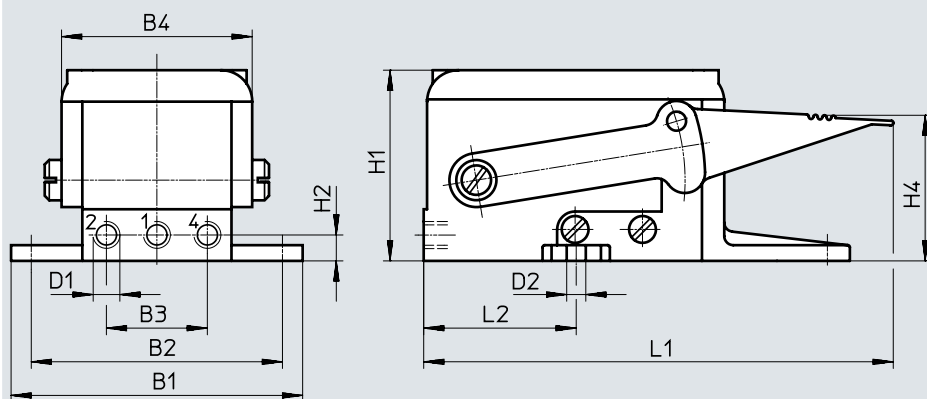
Foot valve with detent FP-3-1/4-B



[1] Compressed air supply port

[2] Working port

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



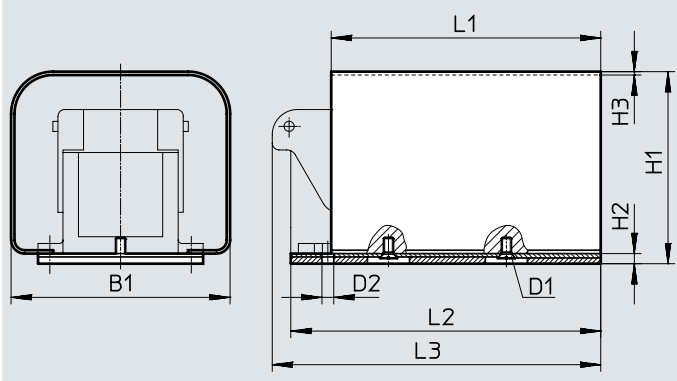
[1] Compressed air supply port

[2] Working port

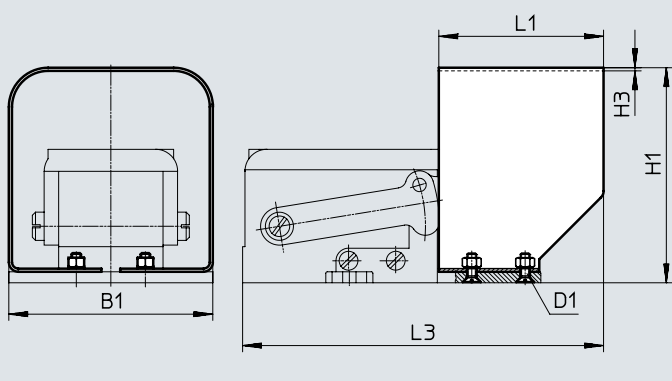
[4] Working port

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



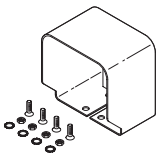
Safety guard FPH-121, for foot valve with detent FP



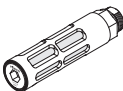
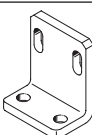
Type	B1	D1	D2	H1	H2	H3	L1	L2	L3
FH	130	M6	7	114	6	2	160	184	195
FPH-121	130	M6	–	137	–	2	105	–	230

Ordering data – Foot valve

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

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

Accessories

Ordering data							
	Description	Design		Part no.	Type	PU ¹⁾	
Push-in fitting with external hex							
	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	
Push-in fitting with internal hex							
	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		
Silencer							
	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	
Mounting bracket							
	For valves	–	11 g	9634	HV-M5	1	
			32 g	9635	HV-1/8	1	

1) Packaging unit

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