

Valves, mechanically actuated

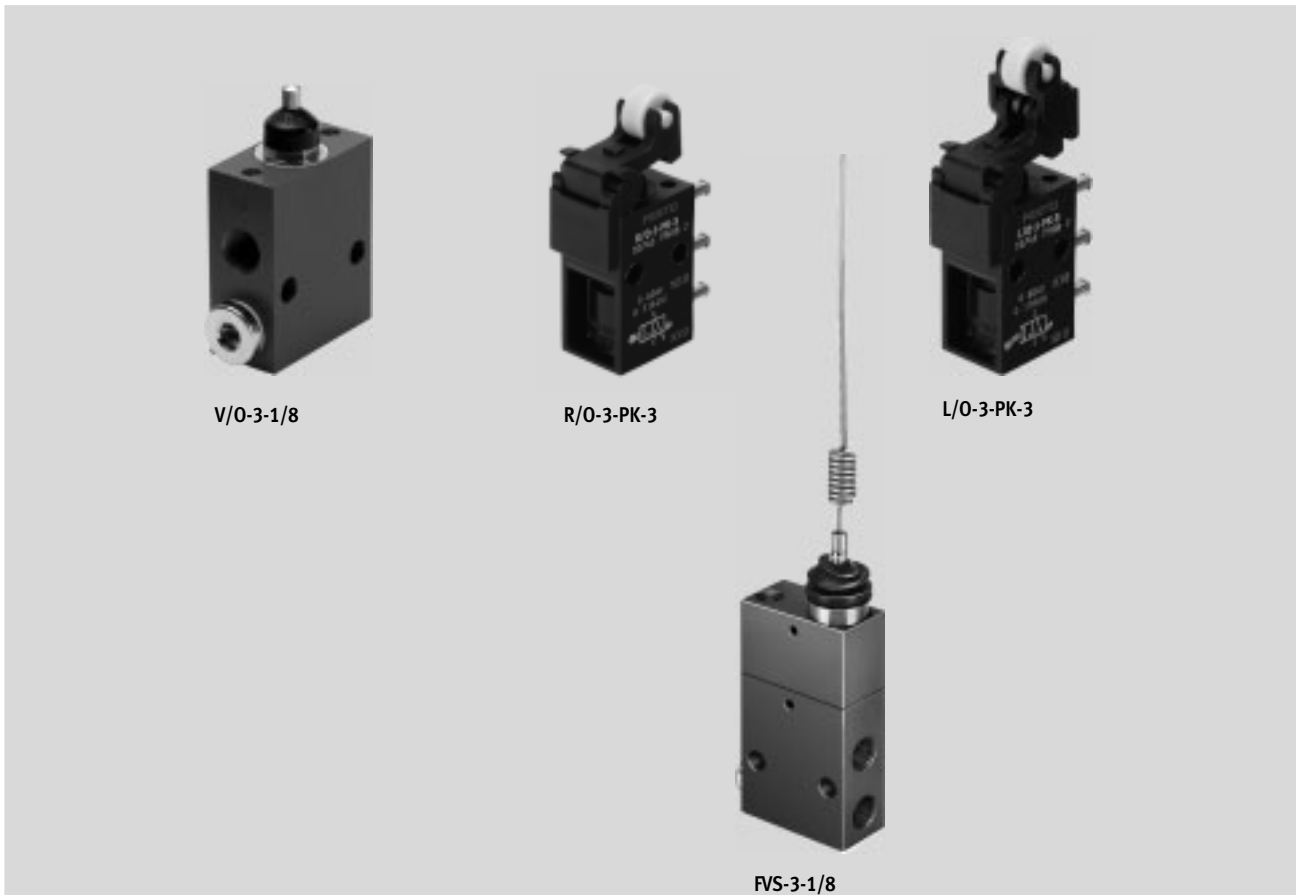
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Valves, mechanically actuated

Key features

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Innovative

- Small and compact for a wide range of pneumatic applications
- Large selection of valve functions; 3/2-way, 4/2-way and 5/2-way functions
- With flow rates of up to 600 l/min, the valves offer outstanding pneumatic performance for a great variety of applications
- Low weight
- 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 and piloted
- Pressure range from vacuum to 10 bar possible
- Version:
 - Stem actuated valve
 - Swivel lever valve
 - Roller lever valve, toggle lever valve
 - Whisker valve
 - Roller actuated valve

Reliable

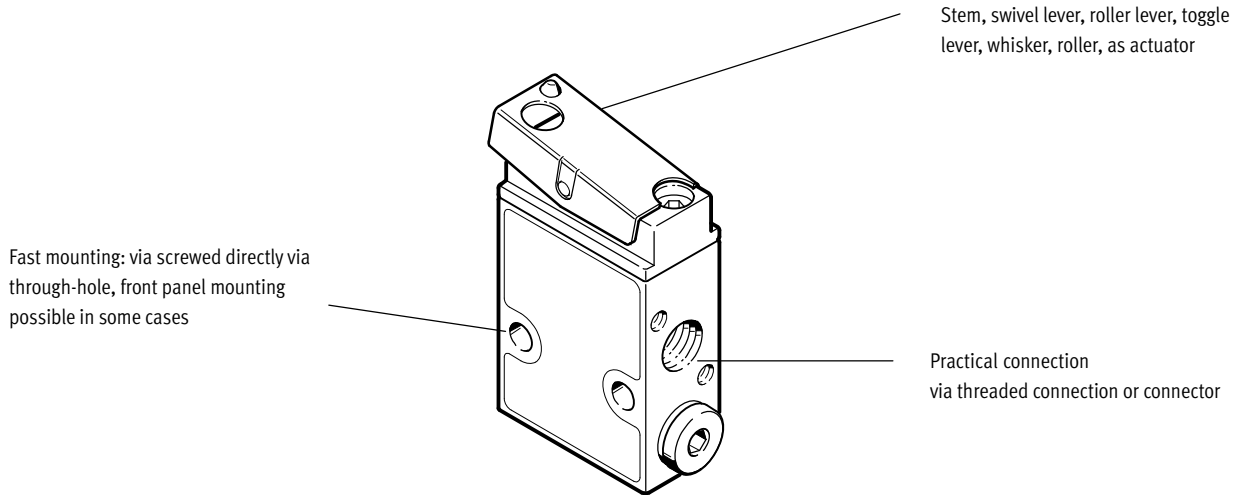
- Durable thanks to proven piston spool and piston poppet valves
- Sturdy thanks to metal or plastic housing and connecting thread or connector

Easy to mount

- Front panel mounting or mounting on bracket

Valves, mechanically actuated

Key features



Equipment options

3/2-way valve, monostable

- Normally open/closed
- Mechanical spring
- Vacuum operation possible
- Directly actuated and pneumatically piloted
- Ducted exhaust air

4/2-way valve, monostable

- Mechanical spring
- Pneumatically piloted
- Ducted exhaust air

5/2-way valve, monostable

- Pneumatic spring/mechanical spring
- Vacuum operation possible
- Reverse operation in some cases
- Pneumatically piloted
- Ducted exhaust air

Valve selection

→ Internet: www.festo.com

You order mechanically and manually operated valves using the order code:

Ordering system for valves
 → Internet: mechanically and manually operated directional control valves

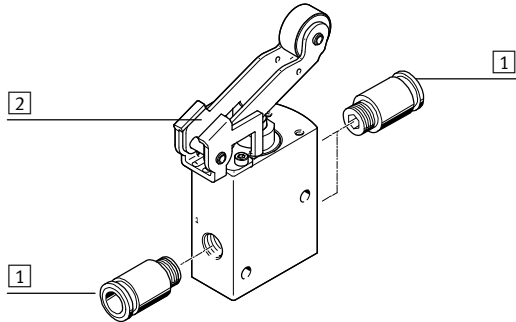
Valves, mechanically actuated

Peripherals overview

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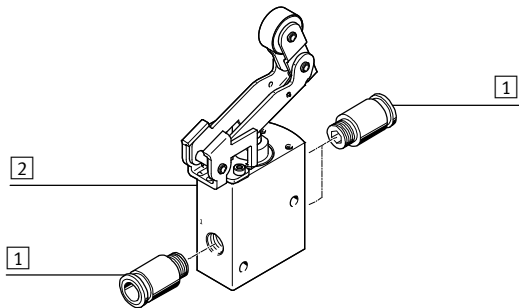
Valves, mechanically actuated

3/2-way roller lever valve R

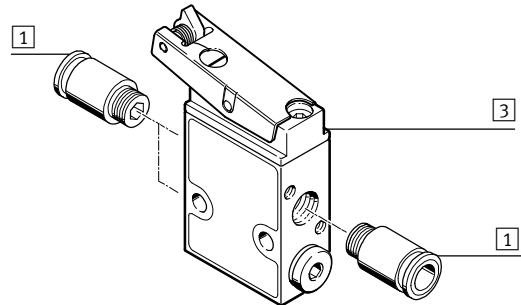


	Brief description	→ Page/Internet
1	Fitting For ports (1, 2, 3)	35
2	Roller lever valve R	23

3/2-way roller lever valve with idle return L



3/2-way toggle lever valve LS



	Brief description	→ Page/Internet
1	Fitting For supply air/exhaust ports (1, 3, 5) and working ports (2, 4)	35
2	Roller lever valve with idle return L	23
3	Toggle lever valve LS	23

Valves, mechanically actuated

Key features – Pneumatic components

Mechanically actuated valves

Mechanically actuated valves are often used as "signal valves" and feed back a pneumatic signal to the controller. This feedback, e.g. "End position reached", is realised via a stem actuated valve or roller actuated

valve. This is a simple application, but it is an extremely popular solution for smaller machines and conveying systems, e.g. for controlling simple clamping and locking operations in

semi-automated assembly and production. The modern design with metal housing combines sturdiness and functionality.

Advantages of mechanically actuated valves:

- No electronic controller required
- No programming effort required
- Easy to adjust and connect
- Control and measurement via sensors

Valve functions		
Circuit symbol	Type	Description
Stem actuated valve		
	V-3-M5 V-3-1/4-B V/O-3-PK-3	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally closed • Mechanical spring return • Suitable for vacuum (not V/O-3-PK-3)
	VO-3-1/4-B	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open • Mechanical spring return • Suitable for vacuum
	V/O-3-1/8	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open/closed • Mechanical spring return • Suitable for vacuum
	VS-3-1/8	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally closed • Pneumatically piloted, internal pilot air • Mechanical spring return
	VOS-3-1/8	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open • Pneumatically piloted, internal pilot air • Mechanical spring return
	VS-4-1/8	4/2-way valve, monostable <ul style="list-style-type: none"> • Pneumatically piloted, internal pilot air • Mechanical spring return
	V-5-1/4-B	5/2-way valve, monostable <ul style="list-style-type: none"> • Normally open/closed • Mechanical spring return • Suitable for vacuum

Valves, mechanically actuated

Key features – Pneumatic components

Valve functions		
Circuit symbol	Type	Description
Swivel lever valve		
	RW/O-3-1/8 RW/O-3-1/8-S9 RW/O-3-PK-3 RW-3-M5	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open/closed • Mechanical spring return • Suitable for vacuum (only RW/O-3-1/8)
Whisker valve		
	FVS-3-1/8 FVSO-3-1/8	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally closed • Mechanical spring return • Pneumatically piloted, internal pilot air
Roller lever valve with idle return		
	L/O-3-PK-3 L-3-M5 L-3-1/4-B L-5-1/4-B	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open/closed • Mechanical spring return
Toggle lever valve		
	LS-3-1/8 LOS-3-1/8 LO-3-1/4-B LS-4-1/8	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally closed • Mechanical spring return • Pneumatically piloted, internal pilot air
3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open • Mechanical spring return • Pneumatically piloted, internal pilot air 		
3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open • Mechanical spring return • Suitable for vacuum 		
4/2-way valve, monostable <ul style="list-style-type: none"> • Mechanical spring return • Pneumatically piloted, internal pilot air 		

Valves, mechanically actuated

Key features – Pneumatic components




Valve functions		
Circuit symbol	Type	Description
Roller lever, roller actuated valve		
	R-3-M5 R-3-1/4-B	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally closed • Mechanical spring return • Suitable for vacuum
	RO-3-1/4-B	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open • Mechanical spring return • Suitable for vacuum
	R/O-3-PK-3	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open/closed • Mechanical spring return
	RS-3-1/8	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally closed • Mechanical spring return • Pneumatically piloted, internal pilot air
	ROS-3-1/8	3/2-way valve, monostable <ul style="list-style-type: none"> • Normally open • Mechanical spring return • Pneumatically piloted, internal pilot air
	RS-4-1/8	4/2-way valve, monostable <ul style="list-style-type: none"> • Mechanical spring return • Pneumatically piloted, internal pilot air
	R-5-1/4-B	5/2-way valve, monostable <ul style="list-style-type: none"> • Mechanical spring return • Suitable for vacuum

-  - 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).

Stem actuated valves

Technical data – Stem actuated valve, standard nominal flow rate 80 ... 160 l/min

-  Flow rate
80 ... 600 l/min
-  Pressure
-0.95 ... +10 bar
-  Temperature range
-10 ... +60 °C

Mounting via through-holes



General technical data						
Type	V-3-M5	V/O-3-PK-3	VS-3-1/8 VOS-3-1/8	VS-4-1/8	V/O-3-1/8	RW/O-3-1/8
Standard nominal flow rate [l/min] 1 → 2	80		146 ... 154 (VS...) 141 ... 161 (VOS...)	140 ... 147	140	
Valve function	3/2-way valve		3/2-way valve	4/2-way valve	3/2-way valve	
Exhaust air	-	-	Flow control		-	-
Design	Disk seat valve, directly actuated		Disk seat valve, piloted		Disk seat valve, directly actuated	
Direction of flow	-	-	Non-reversible		-	-
Sealing principle	-	-	Soft		-	-
Mounting position	-	-	Any		-	-
Note on forced checking procedure	-	-	Min. 1/year		-	-
Pneumatic connection	M5	PK-3 ¹⁾	G1/8	G1/8	G1/8	
Nominal size [mm]	2.0	2.5	3.5	3.5	3.5	
Weight [g]	25	20	110	220	90	150
Actuating force [N]	23.0	17.0	3.0	3.2	28.0	28.0
• at 6 bar						
• with normally closed position [N]	-	17.0	-	-	37.5	-
• with normally open position [N]	-	24.0	-	-	-	-

1) PK-3=Barbed fitting for plastic tubing with 3 mm nominal diameter

Materials						
Type	V-3-M5	V/O-3-PK-3	VS-3-1/8 VOS-3-1/8	VS-4-1/8	V/O-3-1/8	RW/O-3-1/8
Seal	NBR					
Housing	Die-cast zinc	POM	Anodised aluminium			
Note on materials	-	-	RoHS-compliant		-	-

Stem actuated valves

Technical data – Stem actuated valve, standard nominal flow rate 80 ... 160 l/min

Operating and environmental conditions						
Type	V-3-M5	V/O-3-PK-3	VS-3-1/8 VOS-3-1/8	VS-4-1/8	V/O-3-1/8	RW/O-3-1/8
Operating medium	Compressed air to ISO 8573-1:2010 [-:-:-]					
Note on operating/pilot medium	Lubricated operation possible (required during subsequent operation)					
Operating pressure range [bar]	-0.95 ... 8	0 ... 8	3.5 ... 8		-0.95 ... 8	-0.95 ... 8
Temperature of medium [°C]	-10 ... +60					
Ambient temperature [°C]	-10 ... +60	-	-10 ... +60			
Corrosion resistance class CRC ¹⁾	-	-	2		-	-

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Technical data – Actuator attachment for swivel lever valve RW/O-3-1/8			
Swivel lever, type	ASK-02 (short)	ASL-02 (long)	ASS-02 (rod)
Max. actuating force [N]	7	Dependent on starting height	Dependent on starting height
Weight [g]	30	35	30

Materials – Swivel lever	
Swivel lever	Aluminium, steel

Stem actuated valves

Technical data – Stem actuated valve, standard nominal flow rate 550 ... 600 l/min

General technical data			
Type	V-5-1/4-B	VO-3-1/4-B	V-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	Disk seat valve, directly actuated	Disk seat valve, directly actuated	Disk seat valve, directly actuated
Pneumatic connection	G1/4	G1/4	G1/4
Nominal size [mm]	7.0	7.0	7.0
Weight [g]	240	130	130
Actuating force at 6 bar [N]	163.8 ... 200.2	115.2 ... 140.8	63 ... 77

Materials	
Seal	NBR
Housing	Die-cast aluminium

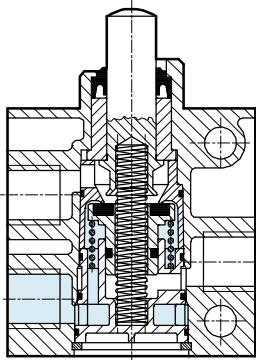
Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]
Note on operating/pilot medium	Lubricated operation possible (required during subsequent operation)
Operating pressure range [bar]	-0.95 ... 10
Temperature of medium [°C]	-10 ... +60
Ambient temperature [°C]	-10 ... +60

Stem actuated valves

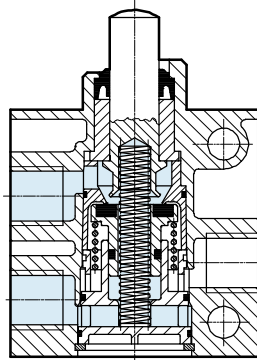
Sectional views

Sectional view

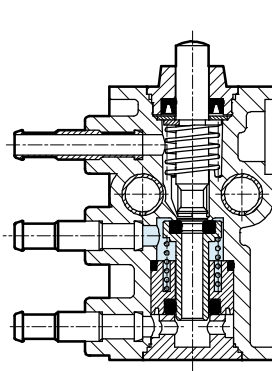
V-3-1/4-B, normally closed



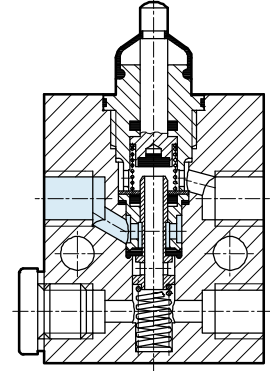
VO-3-1/4-B, normally open



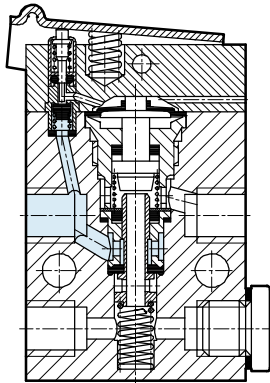
V/O-3-PK-3



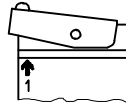
V/O-3-1/8



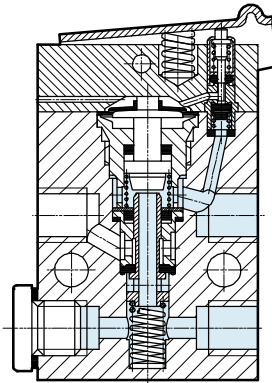
V ... -3-1/8, normally closed



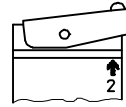
Actuator attachment at left
(number 1 on the attachment above
number 1 on the housing)



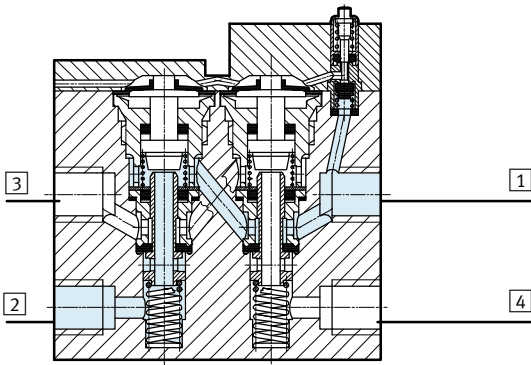
V ... -3-1/8, normally open



Actuator attachment at right
(number 1 on the attachment above
number 2 on the housing)

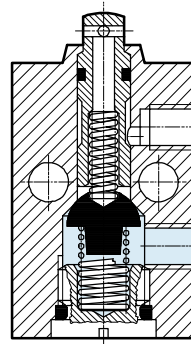


VS-4-1/8



- 1 Supply port
- 2, 4 Working port
- 3 Exhaust port

V-3-M5



-  - Note

The sectional views, shown on the stem actuated valve, also apply in principle to the roller lever, toggle lever and swivel lever valves. The

function remains the same, only the operation via actuator attachments differs.

Stem actuated valves

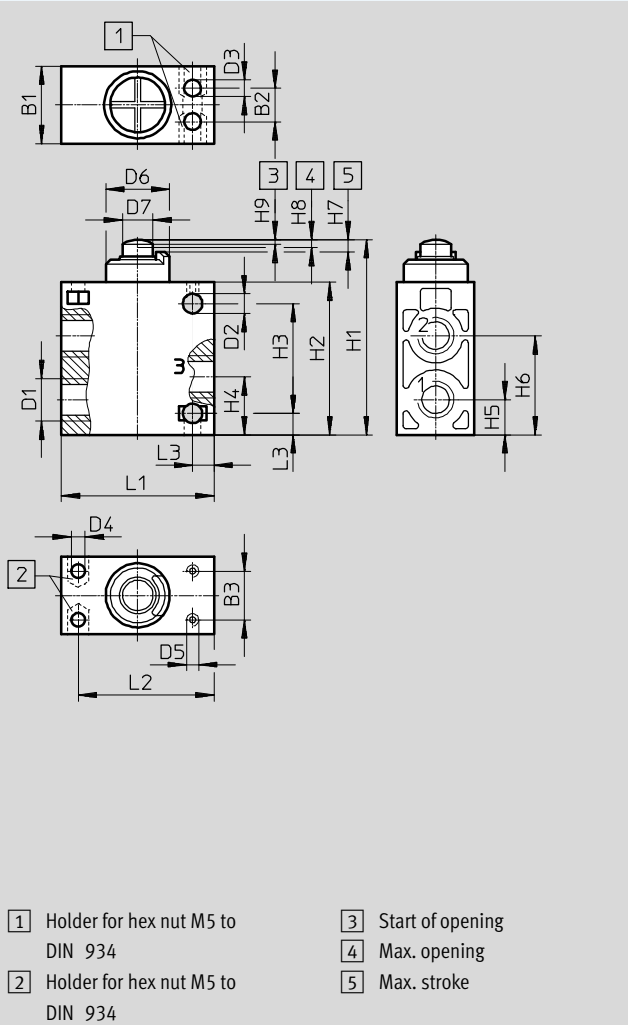
Technical data

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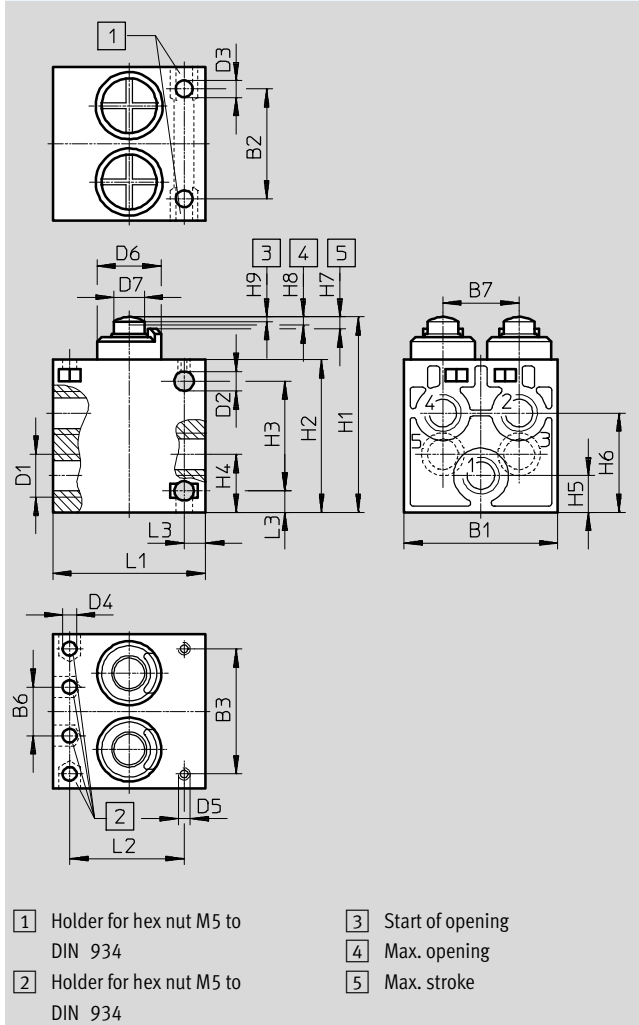
Dimensions

Download CAD data → www.festo.com

Stem actuated valve V-3-1/4-B, VO-3-1/4-B



Stem actuated valve V-5-1/4-B



Stem actuated valve	B1	B2	B3	B6	B7	D1	D2	D3	D4	D5	D6	D7
V-3-1/4-B, VO-3-1/4-B	25.4	11	16	–	–	G1/4	6.4	5.5	4.5	M4	21	10
V-5-1/4-B	50.4	36	41	16	25	G1/4	6.4	5.5	4.5	M4	21	10

Stem actuated valve	L1	L2	L3	H1	H2	H3	H4	H5	H6	H7	H8	H9
V-3-1/4-B, VO-3-1/4-B	50	44.5	7	64	50	36	19	11.5	32.5	4	2.6	1.7
V-5-1/4-B	50	37.5	7	64	50	36	19	11.5	32.5	4	2.6	1.7

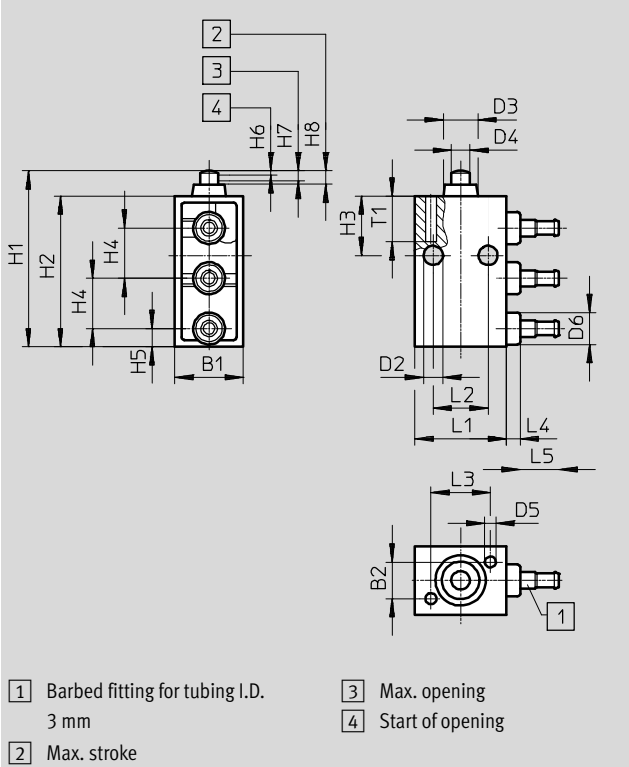
Stem actuated valves

Technical data

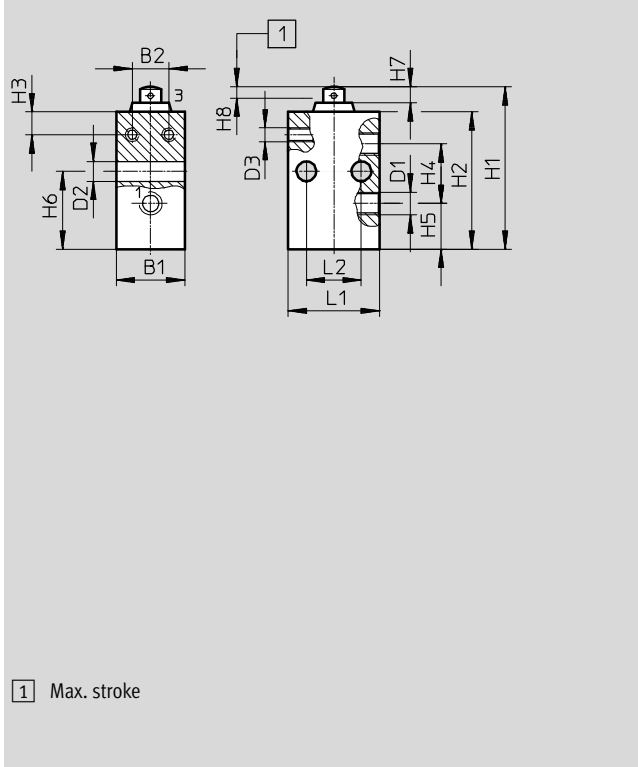
Dimensions

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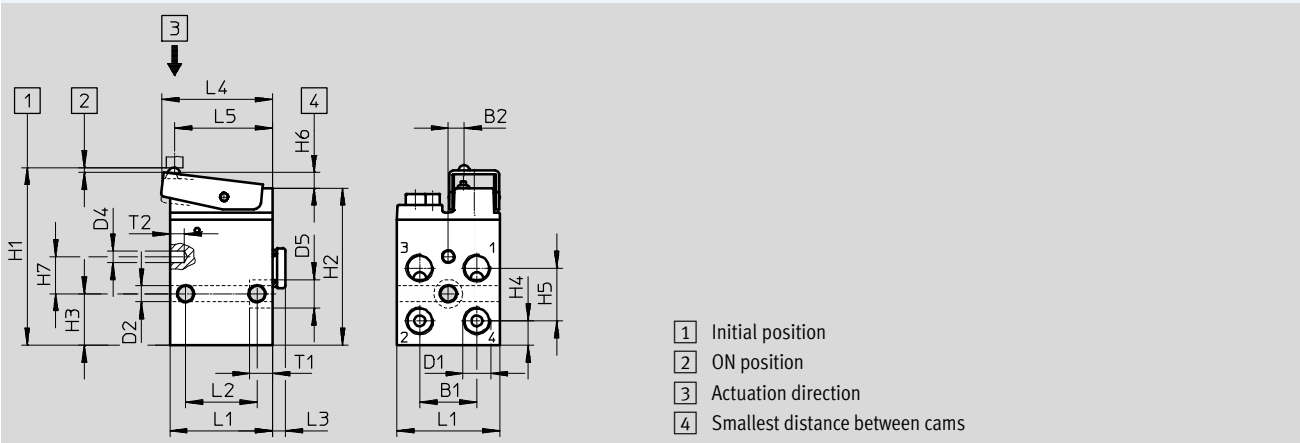
Stem actuated valve V/O-3-PK-3



Stem actuated valve V-3-M5



Stem actuated valve VS-4-1/8



Stem actuated valve	B1	B2	D1	D2	D3	D4	D5	D6	T1	T2
V/O-3-PK-3	15	8	-	4.3	7.5	4	2.4	7	10	-
V-3-M5	15	8	M5	4.3	M3	-	-	-	-	-
VS-4-1/8	20	5.5	G1/8	5.3	-	4.1	10	-	8	5

Stem actuated valve	L1	L2	L3	L4	L5	H1	H2	H3	H4	H5	H6	H7	H8	H14
V/O-3-PK-3	20	12	13	3	8.5	38.5	33	13	11	4	0.9	2.1	2.9	-
V-3-M5	-	-	-	-	-	35.5	30	8	13	10	17	3.5	2.5	-
VS-4-1/8	36	25	5	39	35.5	62.5	55	18	8.5	18.5	5.5	-	-	13

Stem actuated valves

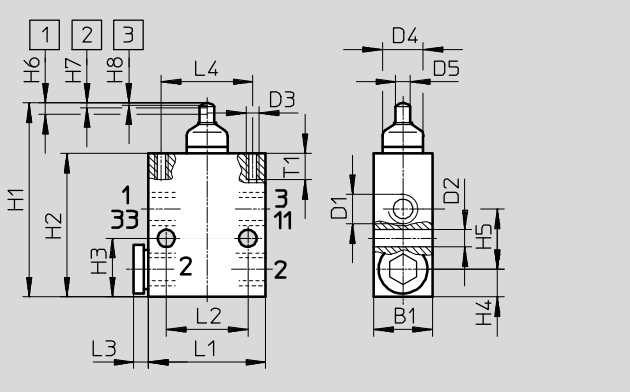
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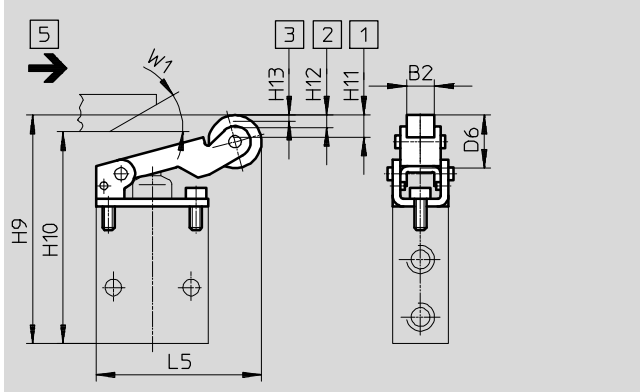
Dimensions

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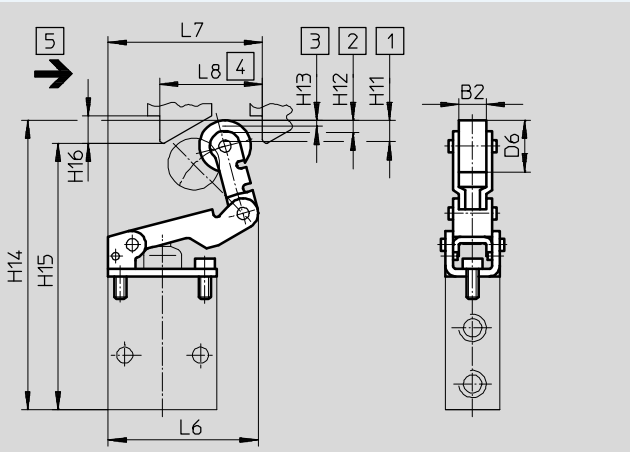
Stem actuated valve V/O-3-1/8



Roller lever AR-01 as actuator attachment for stem actuated valve V/O-3-1/8



Roller lever with idle return AL-01 as actuator attachment for stem actuated valve V/O-3-1/8



- 1 Max. stroke
- 2 Max. opening
- 3 Start of opening
- 4 Min. actuation stroke
- 5 Actuation direction

Stem actuated valve	B1	D1	D2	D3	D4	D5	L1	L2	L3	L4	H1	H2	H3	H4	H5	H6	H7 ±0.2	H8 ±0.2	T1
V/O-3-1/8	18	G1/8	5.3	M4	12.5	4.5	36	25	4.5	28	59.5	44	18	8.5	18.5	3.5	1.4	0.6	8

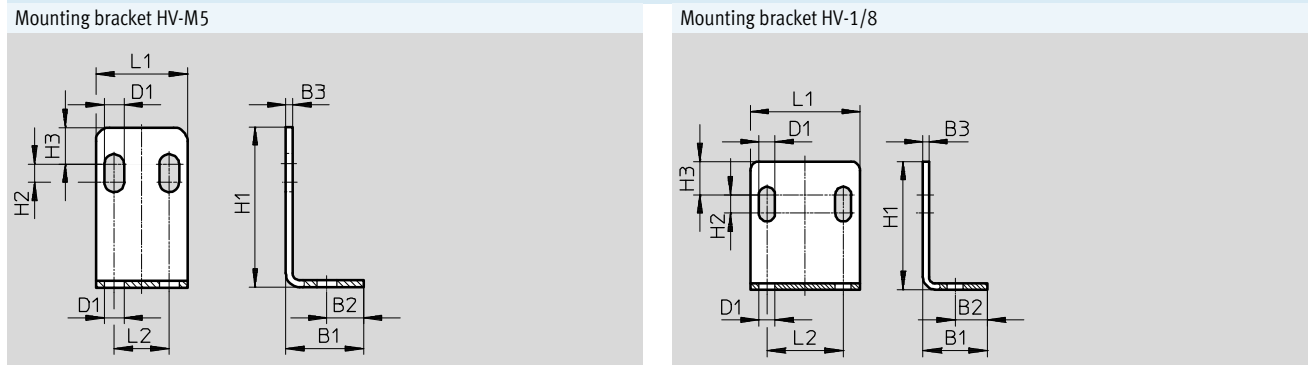
Roller lever	B2	D6	L5	L6	L7	L8	H9	H10 min.	H11	H12 +0.2	H13 +0.2	H14	H15 min.	H16	W1
AR-01	8	17	54	-	-	-	71	64	7	4	2	-	-	-	30°
AL-01	8	17	-	50.5	51	34	-	-	7	4	2	93.5	86.5	9	-

Stem actuated valves

Technical data

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Dimensions Download CAD data → www.festo.com




Mounting bracket	B1	B2	B3	D1	L1	L2	H1	H2	H3
HV-M5	17	8	1.5	4.3	20	12	35	4	8
HV-1/8	21	10.5	2	5.3	36	25	42	6	11


Ordering data						
Nominal flow rate [l/min]	Valve function	Description	Mechanical reset	Normal position	Part No.	Type
Stem actuated valve						
80	3/2-way valve, monostable	Suitable for vacuum	■	Closed	3626	V-3-M5
		Suitable for vacuum	■	Open/closed	10747	V/O-3-PK-3
140 ... 147	4/2-way valve, monostable	–	■	–	3394	VS-4-1/8
140	3/2-way valve, monostable	Suitable for vacuum	■	Open/closed	4938	V/O-3-1/8
146 ... 154	3/2-way valve, monostable	–	■	Closed	2334	VS-3-1/8
141 ... 161	3/2-way valve, monostable	–	■	Open	2952	VOS-3-1/8
550	5/2-way valve, monostable	Suitable for vacuum	■	–	6809	V-5-1/4-B
600	3/2-way valve, monostable	Suitable for vacuum	■	Closed	6808	V-3-1/4-B
				Open	9157	VO-3-1/4-B


Swivel lever valves

Technical data – Swivel lever valve, standard nominal flow rate 80 ... 140 l/min

-  Flow rate
80 ... 140 l/min

Mounting via through-holes

-  Pressure
-0.95 ... 8 bar

-  Temperature range
-10 ... +60 °C



General technical data			
Type	RW-3-M5	RW/O-3-PK-3	RW/O-3-1/8
Standard nominal flow rate [l/min] 1 → 2	80	80	140
Valve function	3/2-way valve	3/2-way valve	3/2-way valve
Design	Piston poppet valve, directly actuated	Piston poppet valve, directly actuated	Disk seat valve, directly actuated
Pneumatic connection	M5	NW3 (barbed fitting)	G1/8
Nominal size [mm]	2	2.5	3.5
Weight [g]	65	40	150
Actuating force at 6 bar [N]	14.5	13.0 (RW) 16.0 (RWO)	28.0

Materials			
Type	RW-3-M5	RW/O-3-PK-3	RW/O-3-1/8
Seal	NBR	NBR	NBR
Housing	Die-cast zinc	POM	Anodised aluminium

Operating and environmental conditions			
Type	RW-3-M5	RW/O-3-PK-3	RW/O-3-1/8
Operating medium	Compressed air to ISO 8573-1:2010 [-:-:-]		
Operating pressure range [bar]	-0.95 ... 8	0 ... 8	-0.95 ... 8
Temperature of medium [°C]	-10 ... +60		

Technical data – Actuator attachment for swivel lever valve RW/O-3-1/8				
Swivel lever, type	ASK-01 (short)	ASK-02 (short)	ASL-02 (long)	ASS-02 (rod)
Max. actuating force [N]	-	7	Dependent on starting height	Dependent on starting height
Weight [g]	20	30	35	30

Materials – Swivel lever				
Swivel lever, type	ASK-01 (short)	ASK-02 (short)	ASL-02 (long)	ASS-02 (rod)
Material	GD-Zn	Aluminium, steel		

Swivel lever valves

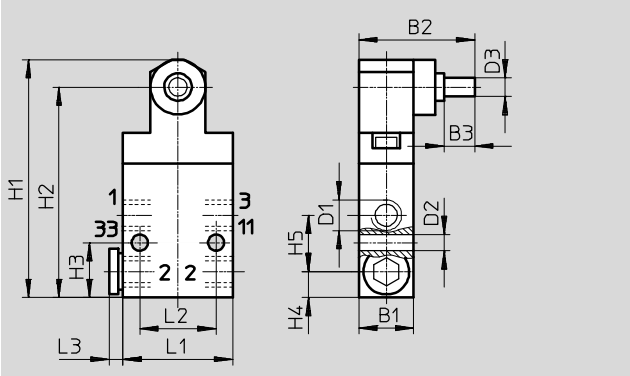
Technical data

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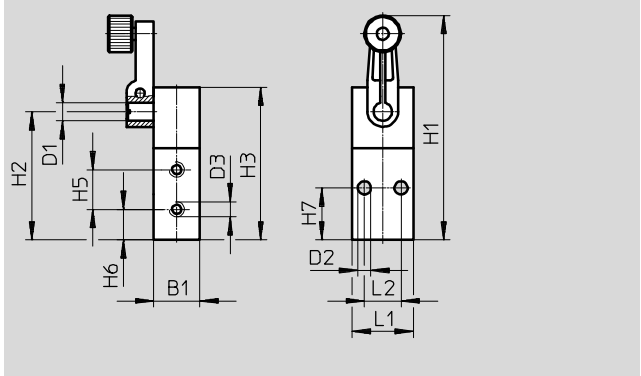
Dimensions

Download CAD data → www.festo.com

Swivel lever valve RW/O-3-1/8

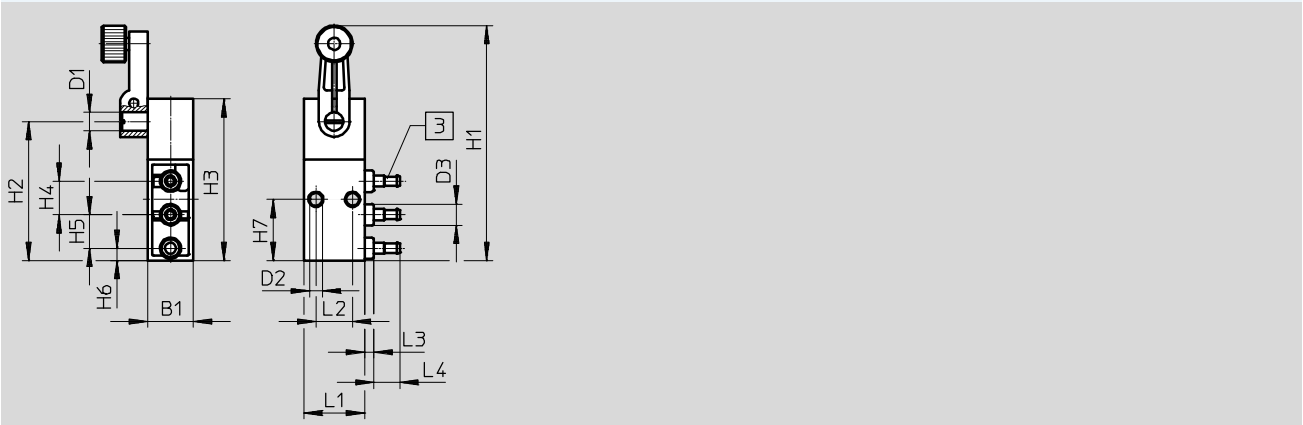


Swivel lever valve RW-3-M5



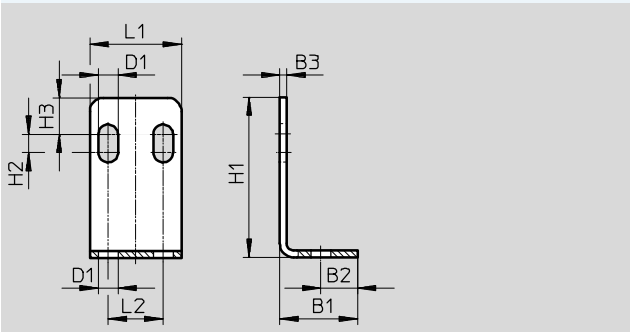
	B1	B2	B3	D1	D2	D3	L1	L2	L3	H1	H2	H3	H4	H5	H6	H7	H8	H9
RW/O-3-1/8 ...	18	38	10	G1/8	5.3	6	36	25	4.5	78	69	18	8.5	18.5	-	-	-	-
RW-3-M5	30	15	-	12	4.3	M5	20	12	-	73.5	70.5	50	25.5	15	10	13	10.6	3

Swivel lever valve RW/O-3-PK-3

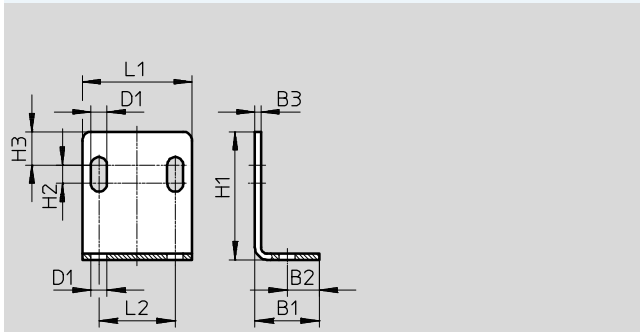


	B1	D1	D2	D3	L1	L2	L3	L4	H1	H2	H3	H4	H5	H6	H7	H8	H9
RW/O-3-PK-3	15	6	4.3	7	20	12	3	8.5	77	45,5	53	11	11	4	20	-	-

Mounting bracket HV-M5



Mounting bracket HV-1/8



Mounting bracket	B1	B2	B3	D1	L1	L2	H1	H2	H3
HV-M5	17	8	1.5	4.3	20	12	35	4	8
HV-1/8	21	10.5	2	5.3	36	25	42	6	11

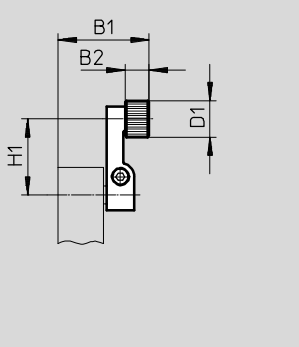
Swivel lever valves

Technical data

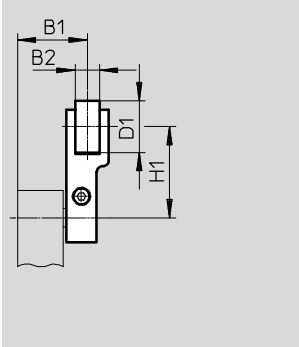
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Actuator attachment for swivel lever valve

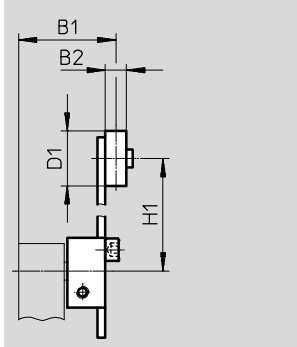
Swivel lever, short ASK-01



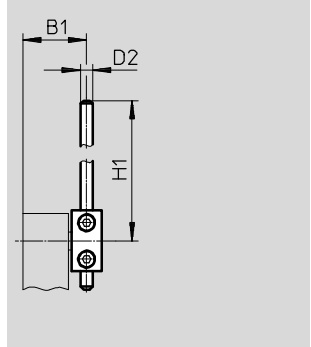
Swivel lever, short ASK-02



Swivel lever, long ASL-02



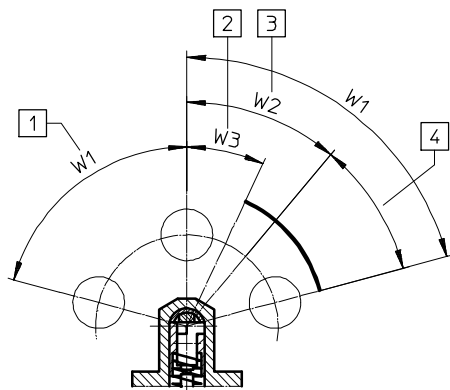
Swivel lever rod ASS-02



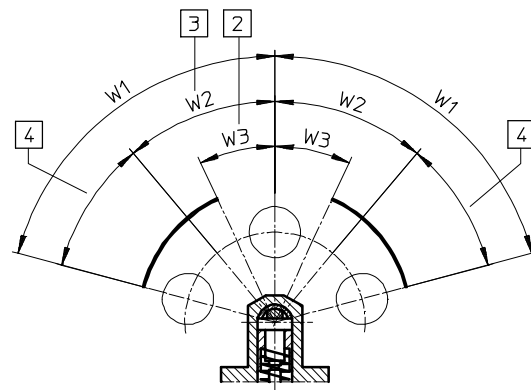
Actuator attachment	B1	B2	D1	D2	H1
ASK-01	30	8	12	–	25
ASK-02	23	8	17	–	30
ASL-02	32	7	18	–	25 ... 85
ASS-02	21	–	–	4	30 ... 140

Actuating ranges are set by converting the switching head

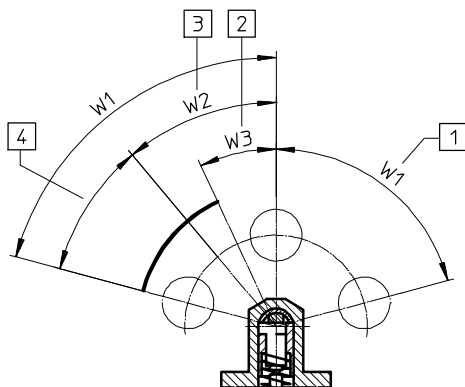
Default settings (upon delivery)



Valve components 1 and 2 turned 90° around the longitudinal axis



Valve components 1 and 2 turned 180° around the longitudinal axis







- 1 (w1) Idling, or max. angle position (75°)
- 2 (w3) Start of opening (25° ± 8°)
- 3 (w2) Max. opening angle (40° ± 5°)
- 4 Overtravel

Swivel lever valves

Technical data




Ordering data						
Nominal flow rate [l/min]	Valve function	Description	Mechanical reset	Normal position	Part No.	Type
Swivel lever valve						
80	3/2-way valve, monostable	Suitable for vacuum	■	Closed	4031	RW-3-M5
80	3/2-way valve, monostable	Not suitable for vacuum	■	Open/closed	10750	RW/O-3-PK-3
140	3/2-way valve, monostable	Suitable for vacuum	■	Open/closed	4937	RW/O-3-1/8

Ordering data					
	Description	Part No.	Type	PU ¹⁾	
Actuator attachment					
	Short swivel lever, version 1	13248	ASK-01	1	
	Short swivel lever, version 2	5835	ASK-02	1	
	Long swivel lever	5836	ASL-02	1	
	Swivel lever rod	4789	ASS-02	1	

1) Packaging unit

Whisker valves

Technical data – Whisker valve, standard nominal flow rate 146 ... 175 l/min

-  Flow rate
146 ... 175 l/min
 -  Pressure
3.5 ... 8 bar
 -  Temperature range
-10 ... +60 °C
- Mounting via through-holes



General technical data		
Type	FVS-3-1/8	FVSO-3-1/8
Version	Whisker valve	
Standard nominal flow rate [l/min] 1 → 2	146	175
Valve function	3/2-way valve, closed, monostable	3/2-way valve, open, monostable
Exhaust air	Flow control	
Design	Disk seat valve, piloted	
Direction of flow	Non-reversible	
Sealing principle	Soft	
Mounting position	Any	
Note on forced checking procedure	Switching frequency at least 1/year	
Type of actuation	Mechanical	
Type of reset	Mechanical spring	
Pneumatic connection	G1/8	
Nominal size [mm]	3.5	
Weight [g]	130	
Actuating force at 6 bar [N]	→ Graph	

Materials	
Seal	NBR
Housing	Anodised aluminium
Note on materials	RoHS-compliant

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [-:-:-]
Pilot 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]	3.5 ... 8
Temperature of medium [°C]	-10 ... +60
Ambient temperature [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	2

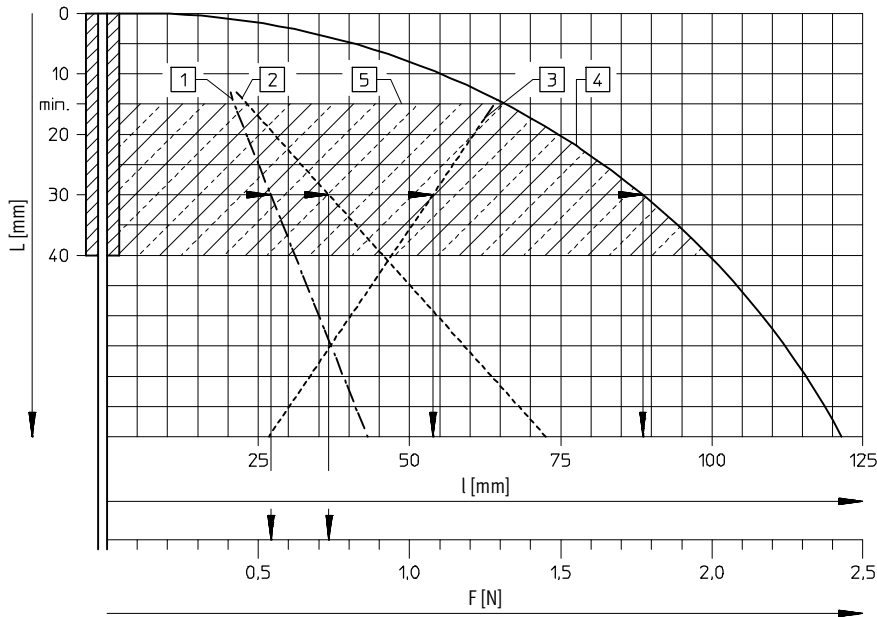
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Whisker valves

Technical data – Whisker valve, standard nominal flow rate 146 ... 175 l/min

Switching forces F and switching travel l at 6 bar as a function of approach distance L

Whisker valve



This piloted valve with extremely low actuating forces is particularly suited for systems where dissimilar parts or actuating elements without precision positioning are to be sensed, or where the actuating levels are different. The whisker can be approached from any direction perpendicular to the whisker axis, or can be passed.

- 1 Switching force
- 2 Passing force
- 3 Switching travel
- 4 Overtravel
- 5 Permissible approach range

Example:

A distance of 30 mm from the end of the spring results in:

Switching travel 54 mm
Switching force 0.57 N

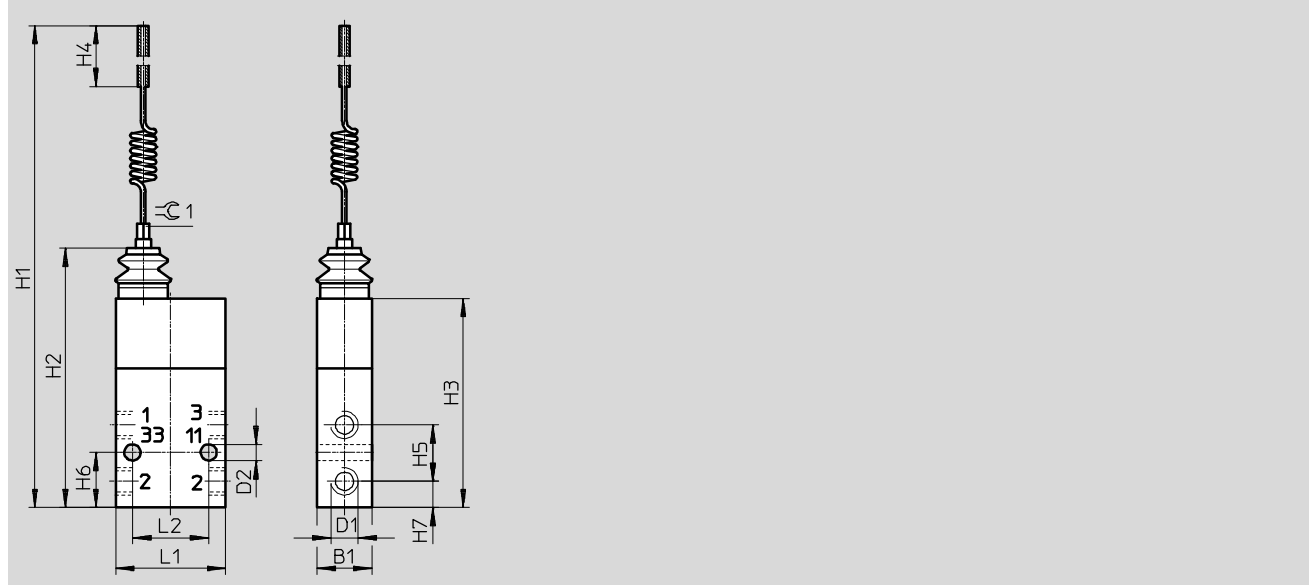
Overtravel 88 mm
Passing force 0.75 N

Whisker valves

Technical data – Whisker valve, standard nominal flow rate 146 ... 175 l/min

Dimensions Download CAD data → www.festo.com

Whisker valve FVS, FVSO






Whisker valve	B1	D1	D2	H1	H2	H3	H4 max.	H5	H6	H7	L1	L2	☉ 1
FVS, FVSO	18	G1/8	5.3	220	85	68.5	40	18.5	18	8.5	36	25	4

Ordering data						
Nominal flow rate [l/min]	Valve function	Description	Normal position	Pilot air ¹⁾	Part No.	Type
Whisker valve						
146	3/2-way valve, monostable	Whisker valve	Closed	Internal	3876	FVS-3-1/8
175	3/2-way valve, monostable	Whisker valve	Open	Internal	3877	FVSO-3-1/8

1) With piloted valves

Roller lever valves with idle return, toggle lever valves

Technical data – Roller lever valve with idle return, toggle lever valve, standard nominal flow rate 80 ... 175 l/min

-  Flow rate
80 ... 600 l/min
-  Pressure
-0.95 ... 8 bar
-  Temperature range
-10 ... +60 °C

Mounting via through-holes



General technical data					
Type	L/O-3-PK-3	L-3-M5	LS-3-1/8	LOS-3-1/8	LS-4-1/8
Version	Roller lever valve with idle return		Toggle lever valve		
Standard nominal flow rate [l/min] 1 → 2	80		146	175	128
Valve function	3/2-way valve		3/2-way valve	3/2-way valve	4/2-way valve
Design	Disk seat valve, directly actuated		Disk seat valve, piloted		
Direction of flow	-	-	Non-reversible		
Sealing principle	-	-	Soft		
Mounting position	-	-	Any		
Pneumatic connection	PK-3 ¹⁾	M5	G1/8	G1/8	G1/8
Nominal size [mm]	2.5	2	3.5	3.5	3.5
Weight [g]	19	43	110	110	220
Actuating force [N]	-	16.5	1.7	1.8	2.2
• at 6 bar					
• with normally closed position	[N]	10.0	-	-	-
• with normally open position	[N]	13.0	-	-	-

1) Barbed fitting for plastic tubing with 3 mm nominal diameter

Materials					
Type	L/O-3-PK-3	L-3-M5	LS-3-1/8	LOS-3-1/8	LS-4-1/8
Seal	NBR				
Housing	POM	Die-cast zinc	Anodised aluminium		
Note on materials	-	-	RoHS-compliant		

Operating and environmental conditions					
Type	L/O-3-PK-3	L-3-M5	LS-3-1/8	LOS-3-1/8	LS-4-1/8
Operating medium	Compressed air to ISO 8573-1:2010 [---:--]				
Note on operating/pilot medium	-	Lubricated operation possible (required during subsequent operation)			
Operating pressure range [bar]	0 ... 8	-0.95 ... 8	3.5 ... 8		
Temperature of medium [°C]	-	-	-10 ... +60		
Ambient temperature [°C]	-10 ... +60				
Corrosion resistance class CRC ¹⁾	-	-	2		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Roller lever valves with idle return, toggle lever valves

FESTO

Technical data – Roller lever valve with idle return, toggle lever valve, standard nominal flow rate 550 ... 600 l/min

General technical data			
Type	L-5-1/4-B	L-3-1/4-B	LO-3-1/4-B
Version	Toggle lever valve	Toggle lever valve	Toggle lever valve
Standard nominal flow rate [l/min] 1 → 2	550	600	600
Valve function	5/2-way valve	3/2-way valve, closed	3/2-way valve, open
Design	Disk seat valve, directly actuated	Disk seat valve, directly actuated	Disk seat valve, directly actuated
Pneumatic connection	G1/4	G1/4	G1/4
Nominal size [mm]	7.0	7.0	7.0
Weight [g]	360	250	250
Actuating force [N]	71.5	24.5	50.0

Materials			
Type	L-5-1/4-B	L-3-1/4-B	LO-3-1/4-B
Seal	NBR		
Housing	Die-cast aluminium		

Operating and environmental conditions			
Type	L-5-1/4-B	L-3-1/4-B	LO-3-1/4-B
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]		
Note on operating/pilot medium	Lubricated operation possible (required during subsequent operation)		
Operating pressure range [bar]	-0.95 ... 10		
Ambient temperature [°C]	-10 ... +60		

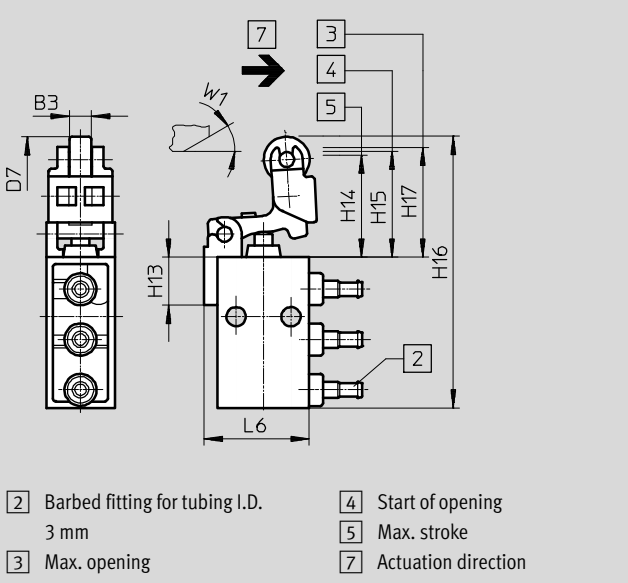
Roller lever valves with idle return, toggle lever valves

Technical data

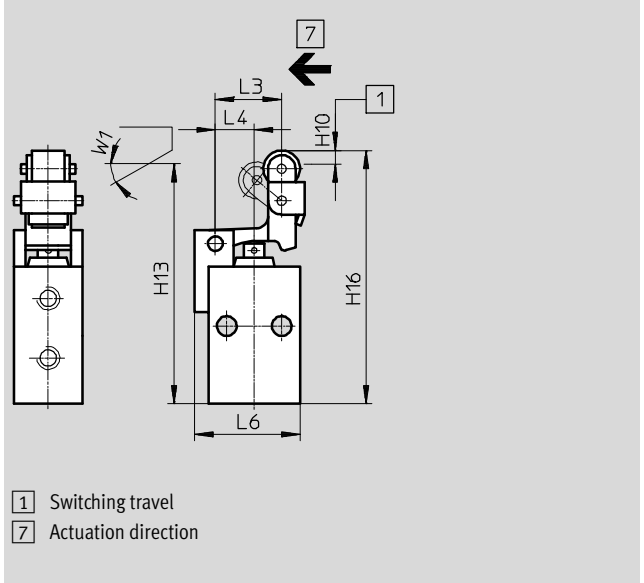
Dimensions

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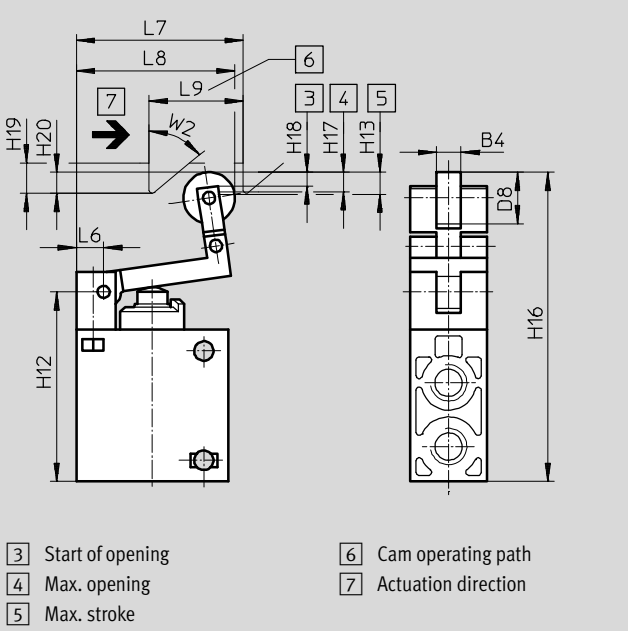
Roller lever valve with idle return L/O-3-PK-3



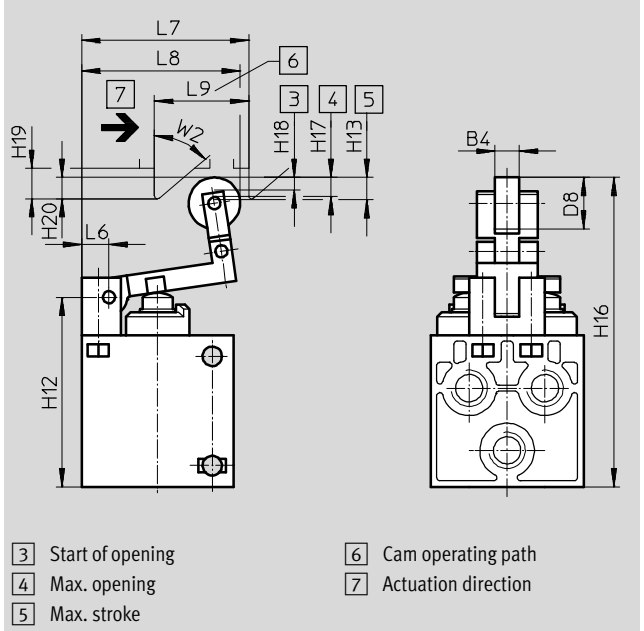
Roller lever valve with idle return L-3-M5



Roller lever valve with idle return L-3-1/4-B, LO-3-1/4-B



Roller lever valve with idle return L-5-1/4-B



Roller lever valve with idle return	B3	B4	D7	D8	L3	L4	L6	L7	L8	L9
L/O-3-PK-3	4.8	-	10	-	-	-	23	-	-	-
L-3-M5	-	-	-	-	14.5	8.5	23	-	-	-
L-3-1/4-B, LO-3-1/4-B	-	8	-	17	-	-	9	55	54	31
L-5-1/4-B	-	8	-	17	-	-	9	55	54	31

Roller lever valve with idle return	H10	H12	H13	H14	H15	H16	H17	H18	H19	H20	W1	W2
L/O-3-PK-3	-	-	10.5	22.3	23.2	59.5	24	-	-	-	30°	-
L-3-M5	3	-	52.5	-	-	55.5	-	-	-	-	30°	-
L-3-1/4-B, LO-3-1/4-B	-	62.5	7.4	-	-	102	6.3	4.1	10	7	-	50°
L-5-1/4-B	-	62.5	7.4	-	-	102	6.3	4.1	10	7	-	50°

Roller lever valves with idle return, toggle lever valves

Technical data

Dimensions Download CAD data → www.festo.com

Toggle lever valve LS-3-1/8, LOS-3-1/8

1 Initial position
2 ON position
5 Bottom edge of control rail or cam

6 Idle return
7 Min. switching travel

Toggle lever valve LS-4-1/8

1 Initial position
2 ON position
5 Bottom edge of control rail or cam

6 Idle return
7 Min. switching travel

Toggle lever valve	B4	B5	L8	L9	H10	H11	H12 +0.2, -0.3	H13	W1
LS-3-1/8, LOS-3-1/8	4.4	-	49.5	13.5	66	62.5	7.5	6	50°
LS-4-1/8	4.4	9	49.5	13.5	66	62.5	7.5	6	50°

Mounting bracket HV-M5


Mounting bracket HV-1/8

Mounting bracket	B1	B2	B3	D1	L1	L2	H1	H2	H3
HV-M5	17	8	1.5	4.3	20	12	35	4	8
HV-1/8	21	10.5	2	5.3	36	25	42	6	11

Roller lever valves with idle return, toggle lever valves

Ordering data


Ordering data						
Nominal flow rate [l/min]	Valve function	Description	Mechanical reset	Normal position	Part No.	Type
Toggle lever valve						
128	4/2-way valve, monostable	Toggle lever valve	■	–	3416	LS-4-1/8
146	3/2-way valve, monostable	Toggle lever valve	■	Closed	2186	LS-3-1/8
175	3/2-way valve, monostable	Toggle lever valve	■	Open	2950	LOS-3-1/8
Roller lever valve with idle return						
80	3/2-way valve, monostable	Roller lever valve with idle return	■	Open/closed	10749	L/O-3-PK-3
		Roller lever valve with idle return, suitable for vacuum		Closed	3628	L-3-M5
550	5/2-way valve, monostable	Roller lever valve with idle return, suitable for vacuum	■	–	8993	L-5-1/4-B
600	3/2-way valve, monostable	Roller lever valve with idle return, suitable for vacuum	■	Closed	8982	L-3-1/4-B
				Open	8989	LO-3-1/4-B

Ordering data					
	Description	Part No.	Type	PU ¹⁾	
Actuator attachment					
	For roller lever valve with idle return L-3-M5, roller lever with idle return with mounting screws	6513	AL-05	1	


1) Packaging unit


Roller lever valves, roller actuated valves

Technical data – Roller lever valve, roller actuated valve, standard nominal flow rate 80 ... 170 l/min

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

Mounting either via through-holes or on front panel

-  - Pressure
-0.95 ... 10 bar

-  - Temperature range
-10 ... +60 °C



General technical data					
Type	R/O-3-PK-3	R-3-M5	RS-3-1/8	ROS-3-1/8	RS-4-1/8
Version	Roller lever valve				
Standard nominal flow rate [l/min] 1 → 2	80		151	169	128
Valve function	3/2-way valve, open/closed		3/2-way valve	3/2-way valve	4/2-way valve
Exhaust air	-	-	Flow control		
Design	Disk seat valve, directly actuated		Disk seat valve, piloted		
Direction of flow	-	-	Non-reversible		
Sealing principle	-		Soft		
Mounting position	-		Any		
Note on forced checking procedure	-		Min. 1/year		
Pneumatic connection	PK-3 ¹⁾	M5	G1/8	G1/8	G1/8
Nominal size [mm]	2.5	2	3.5	3.5	3.5
Weight [g]	18	40	120	120	230
Actuating force [N]	-	16.5	1.7	1.9	1.8
• at 6 bar					
• with normally closed position [N]	10.0	-	-	-	-
• with normally open position [N]	15.0	-	-	-	-

1) Barbed fitting for plastic tubing with 3 mm nominal diameter

Roller lever valves, roller actuated valves

FESTO

Technical data – Roller lever valve, roller actuated valve, standard nominal flow rate 80 ... 170 l/min

Materials					
Type	R/O-3-PK-3	R-3-M5	RS-3-1/8	ROS-3-1/8	RS-4-1/8
Seal	NBR				
Housing	POM	Die-cast zinc	Anodised aluminium		
Note on materials	–	–	RoHS-compliant		

Operating and environmental conditions					
Type	R/O-3-PK-3	R-3-M5	RS-3-1/8	ROS-3-1/8	RS-4-1/8
Operating medium	Compressed air to ISO 8573-1:2010 [–:–:–]				
Note about operating/pilot medium	Lubricated operation possible (required during subsequent operation)				
Operating pressure range [bar]	0 ... 8	–0.95 ... 8	3.5 ... 8	3.5 ... 8	3.5 ... 8
Temperature of medium [°C]	–	–	–10 ... +60		
Ambient temperature [°C]	–10 ... +60				
Corrosion resistance class CRC ¹⁾	–	–	2		

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Technical data – Actuator attachment		
Type	AR-01	AL-01
Version	Roller lever	Roller lever with idle return
Max. actuating force [N]	10	12
Weight [g]	42	52

Materials – Actuator attachment	
Actuator attachment	Galvanised steel

Roller lever valves, roller actuated valves

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Technical data – Roller lever valve, roller actuated valve, standard nominal flow rate 550 ... 600 l/min

General technical data			
Type	R-5-1/4-B	R-3-1/4-B	RO-3-1/4-B
Version	Roller lever valve	Roller lever valve	Roller lever valve
Standard nominal flow rate [l/min] 1 → 2	550	600	600
Valve function	5/2-way valve	3/2-way valve, closed	3/2-way valve, open
Design	Disk seat valve, directly actuated	Disk seat valve, directly actuated	Disk seat valve, directly actuated
Pneumatic connection	G1/4	G1/4	G1/4
Nominal size [mm]	7.0	7.0	7.0
Weight [g]	340	230	230
Actuating force [N]	75.0	26.0	48.0

Materials	
Seal	NBR
Housing	Die-cast aluminium

Operating and environmental conditions	
Operating medium	Compressed air to ISO 8573-1:2010 [---:--]
Note on operating/pilot medium	Lubricated operation possible (required during subsequent operation)
Operating pressure range [bar]	-0.95 ... 10
Ambient temperature [°C]	-10 ... +60

Roller lever valves, roller actuated valves

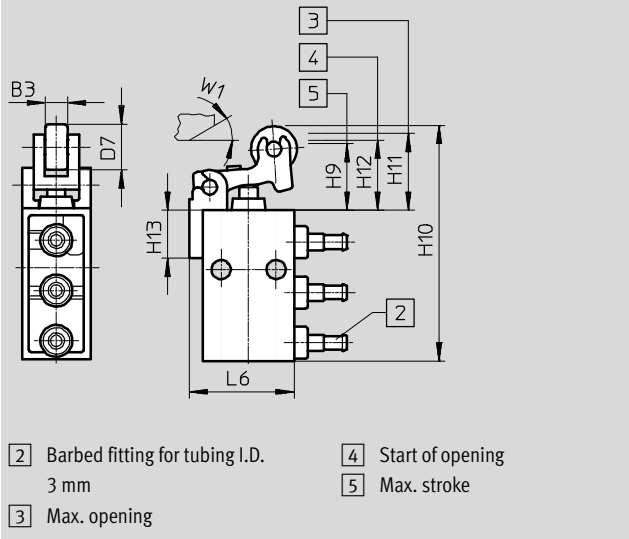
Technical data

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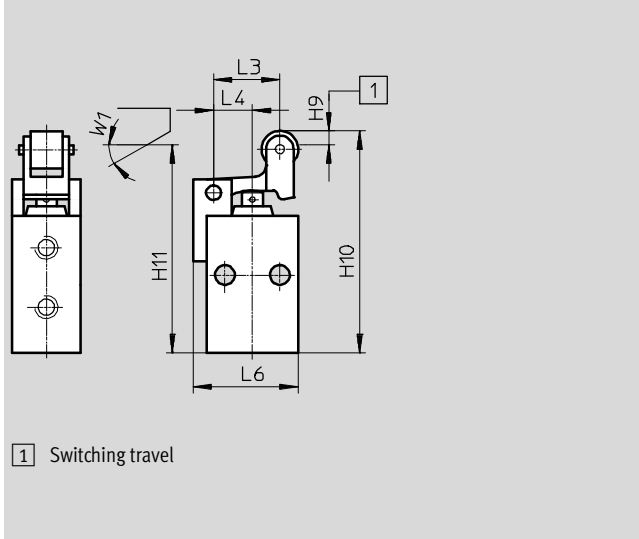
Dimensions

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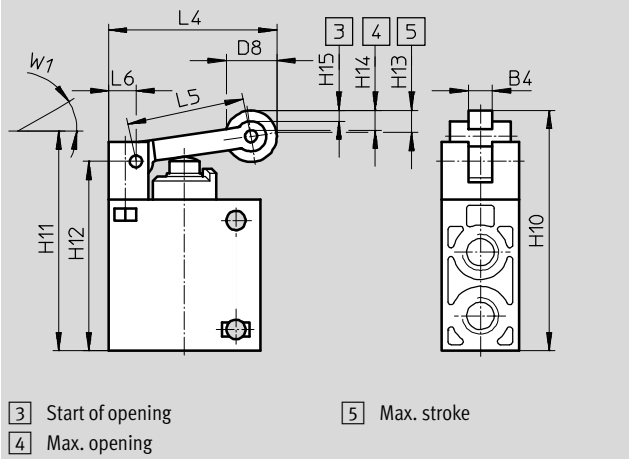
Roller lever valve R/O-3-PK-3



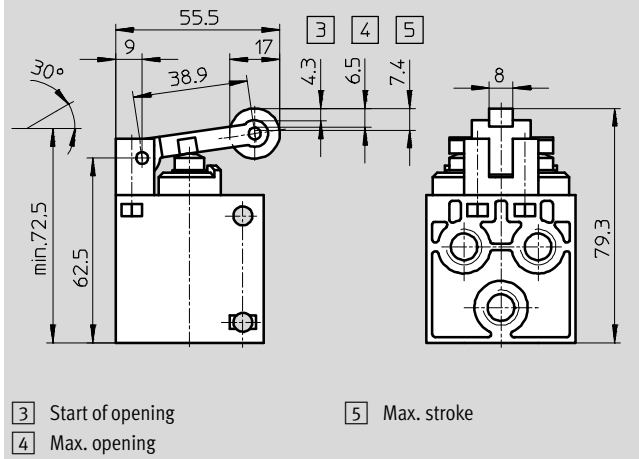
Roller lever valve R-3-M5



Roller lever valve R-3-1/4-B, RO-3-1/4-B



Roller lever valve R-5-1/4-B



Roller lever valve	B3	B4	D7	D8	L3	L4	L5	L6
R/O-3-PK-3	4.8	-	10	-	-	-	-	23
R-3-M5	-	-	-	-	14.5	8.5	-	23
R-3-1/4-B, RO-3-1/4-B	-	8	-	17	-	55.5	39	9
R-5-1/4-B	-	8	-	17	-	55.5	39	9

Roller lever valve	H9	H10	H11	H12	H13	H14	H15	W1
R/O-3-PK-3	14.5	51.5	16.8	18.5	10.5	-	-	30°
R-3-M5	3	48.5	45.5	-	-	-	-	30°
R-3-1/4-B, RO-3-1/4-B	-	79.3	min. 72.5	62.5	7.4	6.5	4.3	30°
R-5-1/4-B	-	79.3	min. 72.5	62.5	7.4	6.5	4.3	30°

Roller lever valves, roller actuated valves

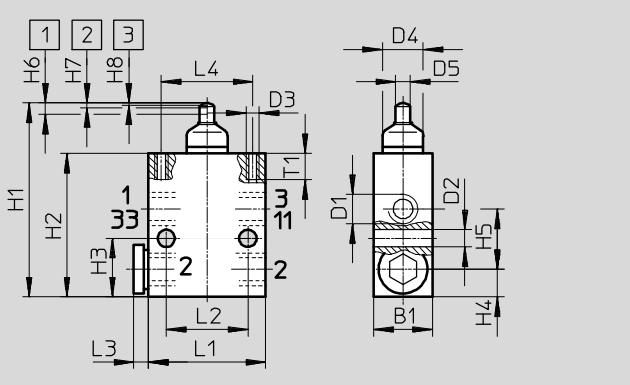
Technical data



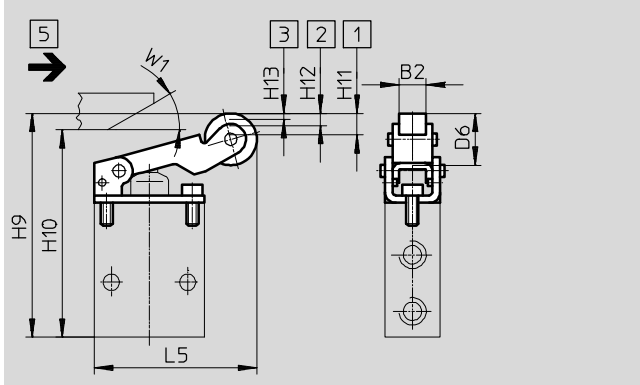
Dimensions

Download CAD data → www.festo.com

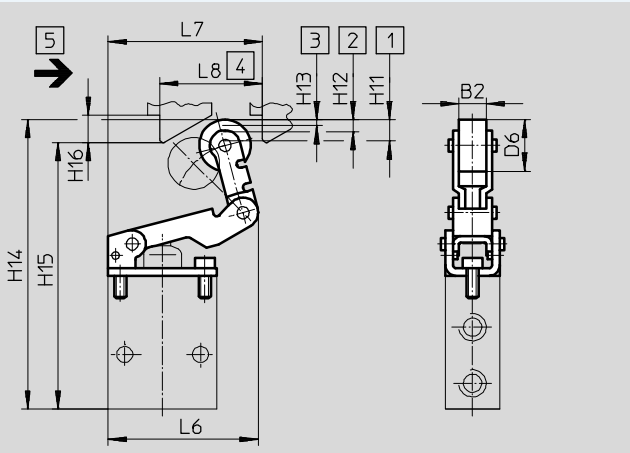
Basic valve, stem actuated valve V/O-3-1/8



Roller lever AR-01 as actuator attachment for stem actuated valve V/O-3-1/8



Roller lever with idle return AL-01 as actuator attachment for stem actuated valve V/O-3-1/8



- 1 Max. stroke
- 2 Max. opening
- 3 Start of opening
- 4 Min. actuation stroke
- 5 Actuation direction

- - Note

The stem actuated valve V/O-3-1/8 can be extended with an actuator attachment for the roller lever or

toggle lever valve. The technical data is listed with the stem actuated valve.

Stem actuated valve	B1	D1	D2	D3	D4	D5	L1	L2	L3	L4	H1	H2	H3	H4	H5	H6	H7 ±0.2	H8 ±0.2	T1
V/O-3-1/8	18	G1/8	5.3	M4	12.5	4.5	36	25	4.5	28	59.5	44	18	8.5	18.5	3.5	1.4	0.6	8

Actuator attachment	B2	D6	L5	L6	L7	L8	H9	H10 min.	H11	H12 +0.2	H13 +0.2	H14	H15 min.	H16	W1
AR-01	8	17	54	-	-	-	71	64	7	4	2	-	-	-	30°
AL-01	8	17	-	50.5	51	34	-	-	7	4	2	93.5	86.5	9	-

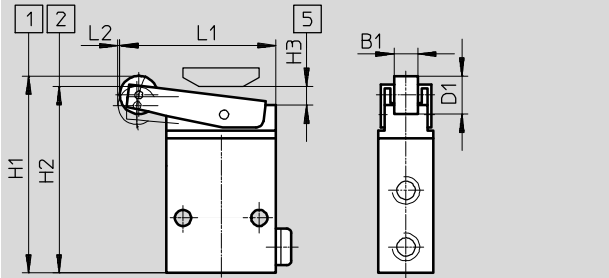
Roller lever valves, roller actuated valves

Technical data

Dimensions

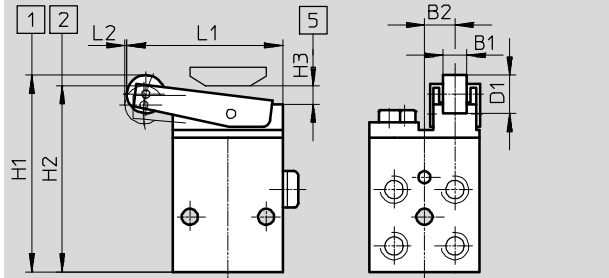
Download CAD data → www.festo.com

Roller lever valve RS-3-1/8, ROS-3-1/8



- 1 Initial position
- 2 ON position
- 5 Bottom edge of control rail or cam

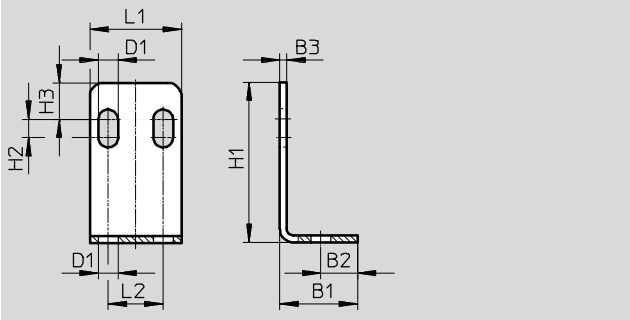
Roller lever valve RS-4-1/8



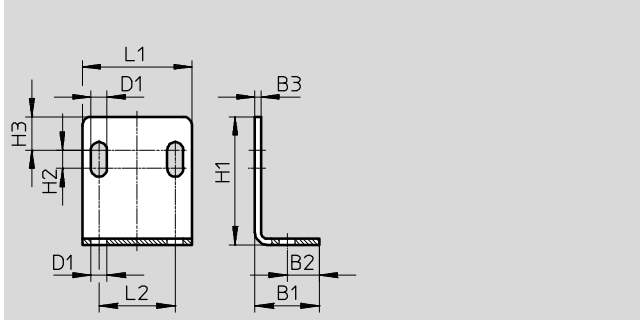
- 1 Initial position
- 2 ON position
- 5 Bottom edge of control rail or cam

Roller lever valve	B1	B2	D1	L1	L2	H1	H2	H3 +0.2, -0.3
RS-3-1/8, ROS-3-1/8	7.7	-	12.5	51.5	0.5	64.5	61	6
RS-4-1/8	7.7	9	12.5	51.5	0.5	64.5	61	6

Mounting bracket HV-M5



Mounting bracket HV-1/8






Mounting bracket	B1	B2	B3	D1	L1	L2	H1	H2	H3
HV-M5	17	8	1.5	4.3	20	12	35	4	8
HV-1/8	21	10.5	2	5.3	36	25	42	6	11

Roller lever valves, roller actuated valves

Ordering data

Ordering data						
Nominal flow rate [l/min]	Valve function	Description	Mechanical reset	Normal position	Part No.	Type
Roller lever valve						
80	3/2-way valve, monostable	Roller lever valve	■	Open/closed	10748	R/O-3-PK-3
				Closed	3629	R-3-M5
128	4/2-way valve, monostable	Roller lever valve	■	–	2949	RS-4-1/8
151	3/2-way valve, monostable	Roller lever valve	■	Closed	2272	RS-3-1/8
169	3/2-way valve, monostable	Roller lever valve	■	Open	2270	ROS-3-1/8
550	5/2-way valve, monostable	Roller lever valve, suitable for vacuum	■	–	8996	R-5-1/4-B
600	3/2-way valve, monostable	Roller lever valve, suitable for vacuum	■	Closed	8985	R-3-1/4-B
				Open	8991	RO-3-1/4-B

Ordering data				
	Description	Part No.	Type	PU ¹⁾
Actuator attachment				
	For stem actuated valve V/O-3-1/8, roller lever	4936	AR-01	1
	For stem actuated valve V/O-3-1/8, roller lever with idle return	4941	AL-01	1
	For roller lever valve R-3-M5, roller lever with mounting screws	6512	AR-05	1

1) Packaging unit

Valves, mechanically actuated

Accessories

FESTO

Ordering data					
	Description		Part No.	Type	PU ¹⁾
Push-in fitting with external hex (Mini version)					
	Connecting thread M5 for tubing O.D.	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.	4 mm	186264	QSM-G1/8-4	10
		6 mm	186265	QSM-G1/8-6	10
Push-in fitting with external hex (Standard version)					
	Connecting thread G1/8 for tubing O.D.	4 mm	186095	QS-G1/8-4	10
		6 mm	186096	QS-G1/8-6	10
	Connecting thread G1/4 for tubing O.D.	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 (Mini version)					
	Connecting thread M5 for tubing O.D.	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.	4 mm	186266	QSM-G1/8-4-I	10
		6 mm	186267	QSM-G1/8-6-I	10
Push-in fitting with internal hex (Standard version)					
	Connecting thread G1/8 for tubing O.D.	4 mm	186106	QS-G1/8-4-I	10
		6 mm	186107	QS-G1/8-6-I	10
		8 mm	186109	QS-G1/8-8-I	10
	Connecting thread G1/4 for tubing O.D.	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 with push-in connector and threaded connection M5	11 g	9634	HV-M5	1
	For valves with push-in connector and threaded connection G1/8	32 g	9635	HV-1/8	1

1) Packaging unit