

G1/8 - 3/2-Way Valves - Series K9

Actuation:

- Rotary lever, indexed
- Rotary lever, spring return
- Rotary lever, indexed, secured in two positions
- Pushbutton
- Cam operation
- Toggle cam operation
- Plunger operated
- Cam operated, free cam left or free cam right
- Pivoted lever
- Pedal
- Actuators for panel mounting



Operating information

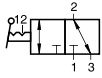
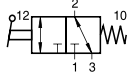
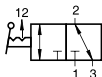
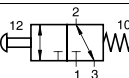
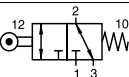
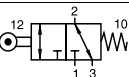
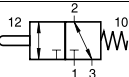
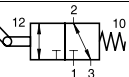
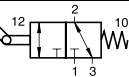
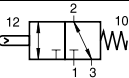
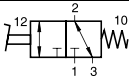
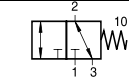







System	Poppet Valve	Pneumatic Characteristics	Nominal pressure	6 bar
Mounting	2 Screws M4		Operating pressure range	0 – 10 bar
Tube connection	Thread	Nominal flow	220 l/min	
Port size	G1/8	Flow direction	1 → 2 normally closed 3 → 2 normally open	
Installation	In any position	Actuation	Manual, mechanical and pedal actuated	
Ambient temperature range	-10 °C to +55 °C	Actuation		
Medium temperature range	+5 °C* to +60 °C	Stroke	1.5 – 3 mm	
	Note: Please consult us for operating temperatures below 0° C			
Medium	Filtered and lubricated or filtered and unlubricated air			
Lubrication	None or oil mist lubrication			
			* -10°C when using dry compressed air	

Actuation Forces, Rotation Angles and Weight

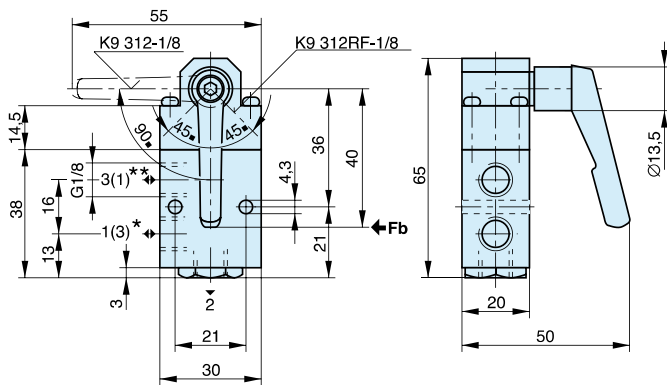
Description	Type	Actuation force (N)	Rotation angle	Weight mass (kg)
Rotary lever, indexed	K9 312-1/8	4.5	±45°, 90°	0.110
Rotary lever, spring return	K9 312RF-1/8	4.5	±45°, 90°	0.110
Rotary lever, indexed secured in both positions	K9 312S-1/8	4.5	±45°, 90°	0.110
Pushbutton	K9 314RF-1/8	25	–	0.075
Cam operation	K9 321RF-1/8	11	–	0.070
Toggle cam operation	K9 324RF-1/8	5	±40°	0.120
Plunger operated	K9 323RF-1/8	32	–	0.050
Cam operated free cam left	K9 325RF-1/8	5	±40°	0.120
Cam operated free cam right	K9 326RF-1/8	5	±40°	0.120
Pivoted lever	K9 329RF-1/8	2*	±40°	0.115
Pedal	K9 331RF-1/8	12	–	0.800
Basic valve for panel mounting actuators	K9 390RF-1/8	35	–	0.060

* at a distance of 100 mm from fulcrum

Order Instructions – 3/2 Way Poppet Valves, Series K9

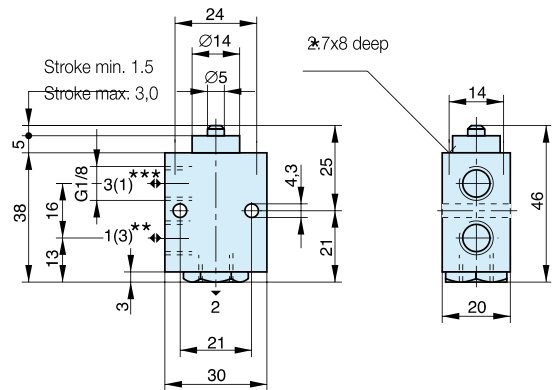
Actuation	Symbol	Mounting Ø (mm)	Order Instructions Type	Order code
Rotary lever, indexed			K9312-1/8	PA 10269
Rotary lever, spring return			K9312RF-1/8	PA 10270
Rotary lever, indexed secured in both positions			K9312S-1/8	PA 10349
Pushbutton			K9314RF-1/8	PA 10271
Cam operation			K9321RF-1/8	PA 10272
Toggle cam operation			K9324RF-1/8	PA 10273
Plunger operated			K9323RF-1/8	PA 10235
Cam operated free cam left			K9325RF-1/8	PA 10274
Cam operated free cam right			K9326RF-1/8	PA 10275
Pivoted lever			K9329RF-1/8	PA 10276
Pedal			K9331RF-1/8	PA 10277
Panel mounting valve with adaptor for interchangeable actuation			K9390RF-1/8	PA 10278
Rotary lever, indexed		22 30	12T-22 12T-30	KX 9355 KX 9314
Rotary lever, spring return		22 30	12T-RF-22 12T-RF-30	KX 9356 KX 9315
Pushbutton		22 30	13T-RF-22 13T-RF-30	KX 9357 KX 9316
Mushroom pushbutton		22 30	15T-RF-22 15T-RF-30	KX 9358 KX 9317
Locking switch		22 30	16T-22 16T-30	KX 9359 KX 9318
Rotary switch		22 30	17T-22 17T-30	KX 9360 KX 9319
Mushroom switch Emergency Shutdown		22 30	18T-22 18T-30	KX 9361 KX 9320

Rotary Lever – Type: K9 312.-1/8



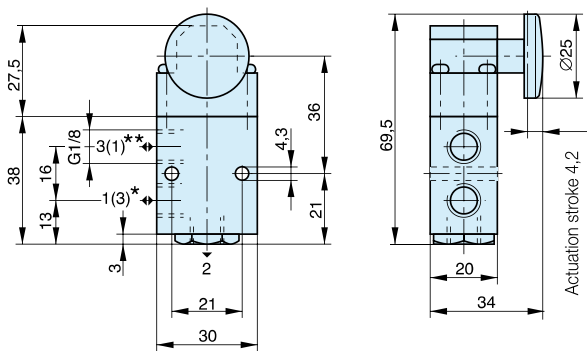
* = P when used as “normally closed”
 ** = P when used as “normally open”

Plunger Operated – Type: K9 323RF-1/8



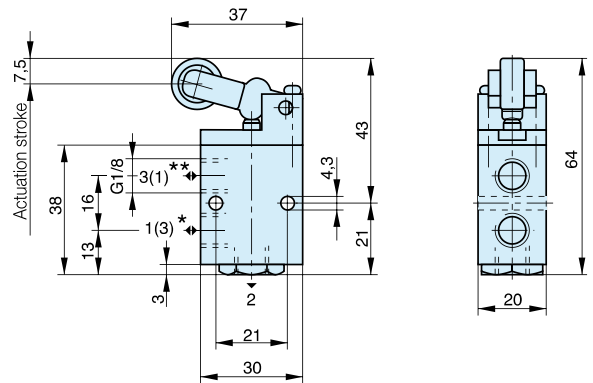
* Self tapping screws CM 3x.. DIN 7500 to be used
 ** = P when used as “normally closed”
 *** = P when used as “normally open”

Pushbutton – Type: K9 314RF-1/8



* = P when used as “normally closed”
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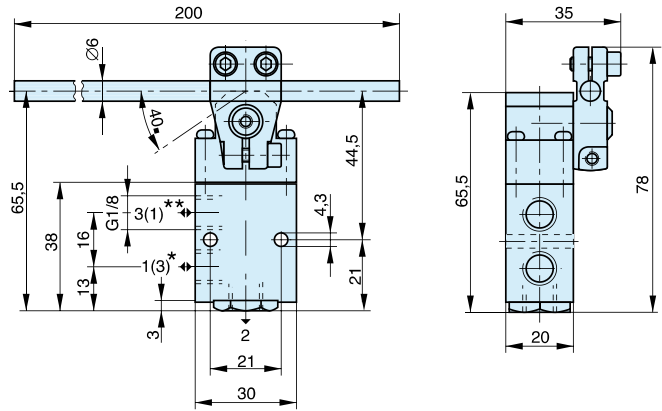
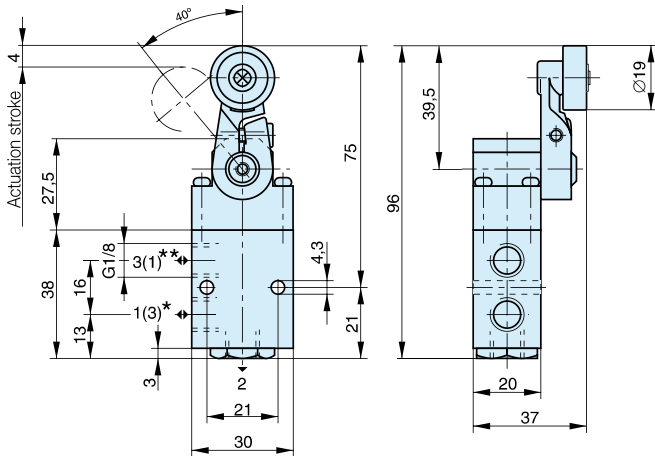
Cam operation– Type: K9 321RF-1/8



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Toggle Cam Operation – Type: K9 324RF-1/8

Pivoted Lever – Type: K9 329RF-1/8

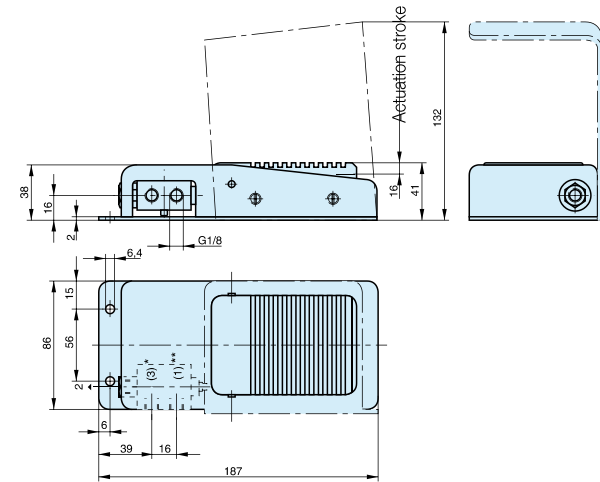
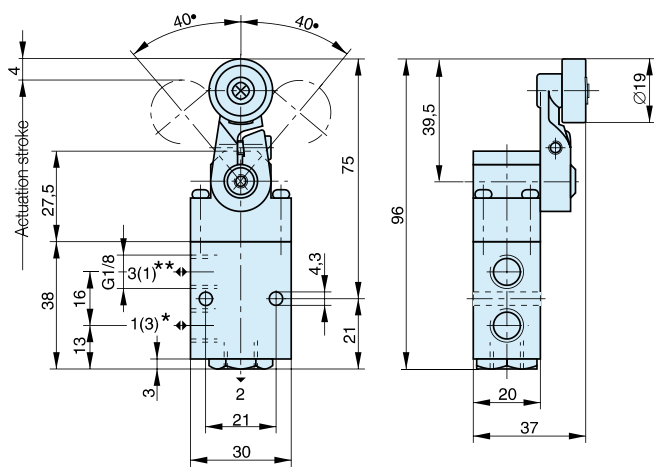


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**Cam Operated free cam left / right
 Type: K9 325RF-1/8, K9 326RF-1/8**

Pedal – Type: K9 331RF-1/8

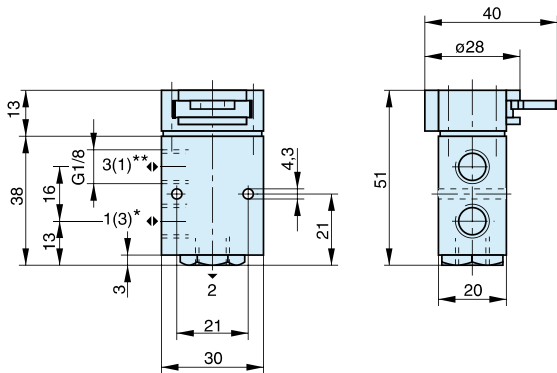


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 ** = P when used as “normally open”

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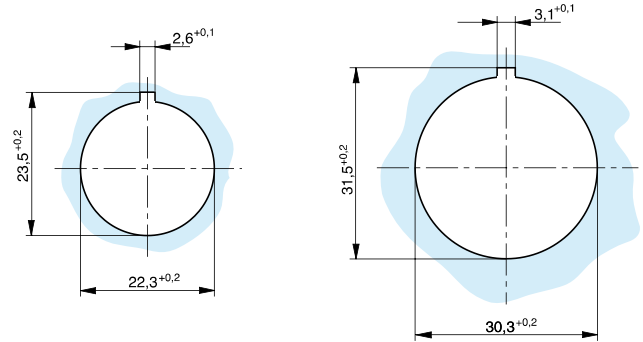
**Basic Valve with adaptor for panel mounting
 Type: K9 390RF-1/8**

**Mounting holes for mounting
 diameters 22 and 30 mm**



Mounting diameter Ø22 mm

Mounting diameter Ø30 mm



* = P when used as "normally closed"
 ** = P when used as "normally open"

Rotary Lever, indexed – Type: 12T-22, 12T-30

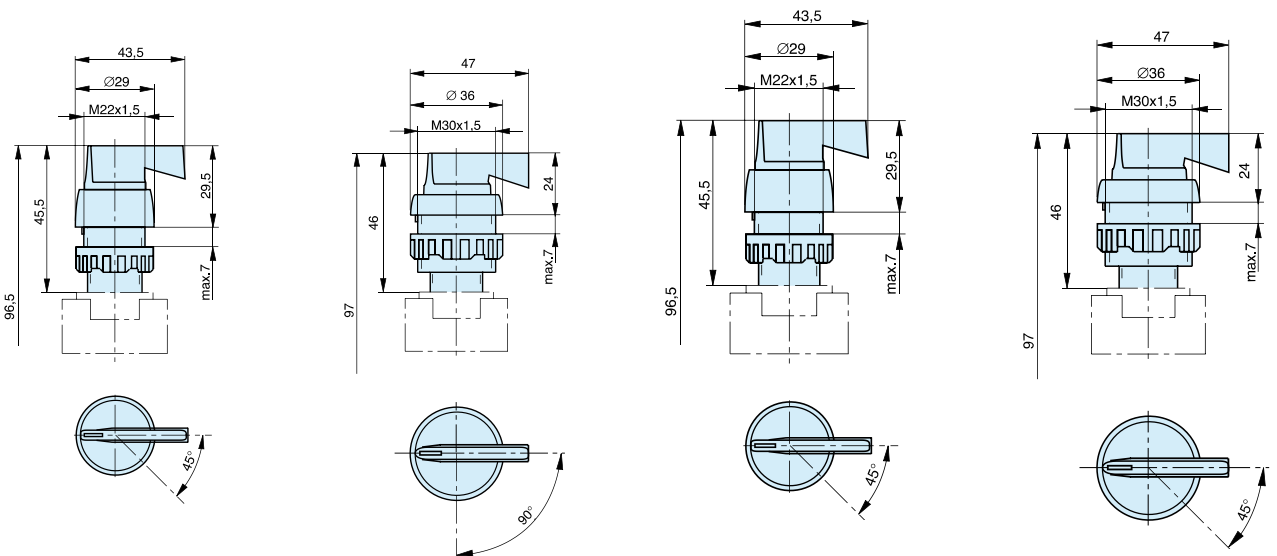
**Rotary Lever with spring return
 Type: 12T-RF-22, 12T-RF-30**

Mounting diameter Ø22 mm

Mounting diameter Ø30 mm

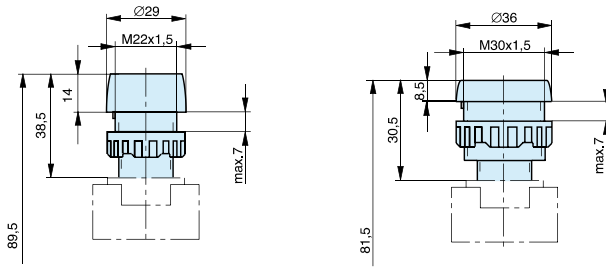
Mounting diameter Ø22 mm

Mounting diameter Ø30 mm



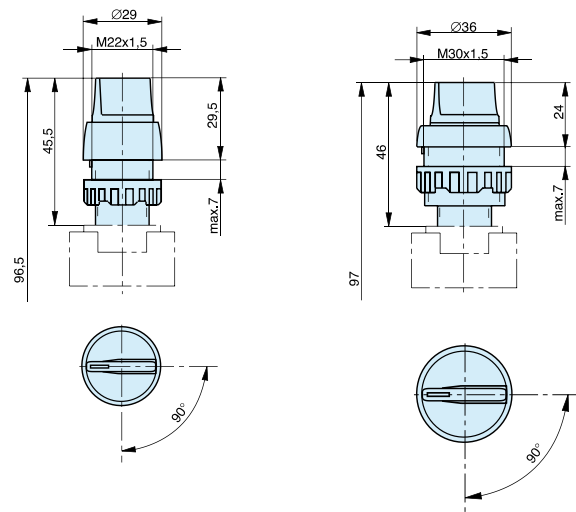
Pushbutton
 Type: 13T-RF-22, 13T-RF-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm



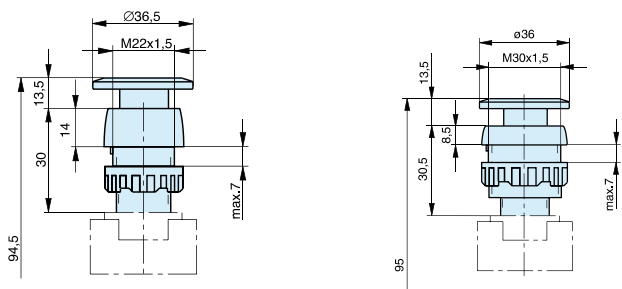
Rotary Switch
 Type: 17T-22, 17T-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm



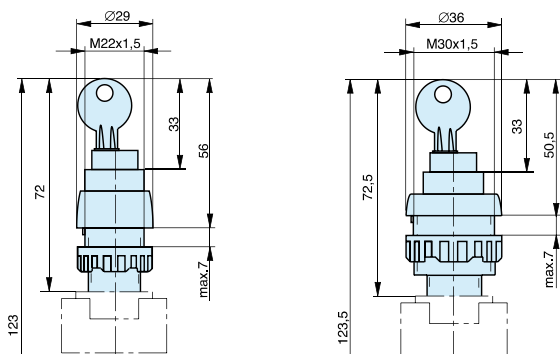
Mushroom Pushbutton
 Type: 15T-RF-22, 15T-RF-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm



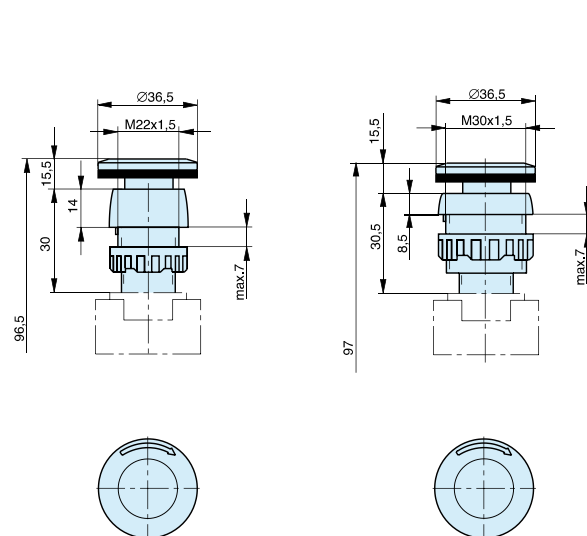
Locking Switch
 Type: 16T-22, 16T-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm



Mushroom Switch (Emergency Shutdown)
 Type: 18T-22, 18T-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm



S9 Series Directional Control Valves

Actuation:

- Hand lever
- Pneumatic
- Electrical pilot operated
- Electrical pilot operated with external pilot air
- Panel mounting actuators for mounting diameter to DIN 43696

Versions:

- Normally closed
- Normally open
- With external pilot air
- With biased position
- Version to ATEX Standard



Note: The “normally open” valve S9 381S-RF-1/8 cannot be used on a P-supply manifold.

3/2 Way Valves – Standard versions

Actuation System	Symbol	Mounting Ø (mm)	Order Instructions Type	Order No.
Hand lever, indexed			S9 311-1/8	PA 10293
			S9 311-1/4	PA 12708
			S9 311-1/2	PA 16404
Hand lever, spring return			S9 311RF-1/8	PA 10294
			S9 311RF-1/4	PA 12709
			S9 311RF-1/2	PA 16405
Hand lever secured in 2 switching positions			S9 311S-1/4	PA 12710
			S9 311S-1/2	PA 16406
Rotary lever, indexed			S9 312-1/4	PA 12711
			S9 312-1/2	PA 16407
Rotary lever, spring return			S9 312RF-1/4	PA 12712
			S9 312RF-1/2	PA 16408
Pneumatic, by permanent signal			S9 361RF-1/8	PA 10295
			S9 361RF-1/4	PA 12713
			S9 361RF-1/2	PA 16409
Pneumatic, by impulse			S9 361-1/8	PA 10296
			S9 361-1/4	PA 12714
			S9 361-1/2	PA 16410
Pneumatic, by impulse, with biased position			S9 362-1/4	PA 12715
			S9 362-1/2	PA 16411
Basic valve for panel mounting			S9 390RF-1/8	PA 10307

3/2 Way Valves – Standard versions

Actuation System	Symbol	Mounting Ø (mm)	Order Instructions Type	Order No.
Rotary lever, indexed		22	12T-22	KX 9355
		30	12T-30	KX 9314
Rotary lever, spring return		22	12T-RF-22	KX 9356
		30	12T-RF-30	KX 9315
Pushbutton		22	13T-RF-22	KX 9357
		30	13T-RF-30	KX 9316
Mushroom pushbutton		22	15T-RF-22	KX 9358
		30	15T-RF-30	KX 9317
Locking switch		22	16T-22	KX 9359
		30	16T-30	KX 9318
Rotary switch		22	17T-22	KX 9360
		30	17T-30	KX 9319
Mushroom pushbutton emergency-Off		22	18T-22	KX 9361
		30	18T-30	KX 9320
Electrical by permanent signal			S9 381RF-1/8-NC-..	PA 10297-..33
			S9 381RF-1/4-NC-..	PA 12716-..33
			S9 381RF-1/2-NC-..	PA 16412-..33
			S9 381RF-1/8-NO-..	PA 10298-..33
			S9 381RF-1/4-NO-..	PA 12717-..33
			S9 381RF-1/2-NO-..	PA 16413-..33
with external pilot air			S9 381S-RF-1/8-..	PA 10300-..33
			S9 381S-RF-1/4-..	PA 12719-..33
			S9 381S-RF-1/2-..	PA 16415-..33
Electrical by impulse			S9 381-1/8-..	PA 10299-..33
			S9 381-1/4-..	PA 12718-..33
			S9 381-1/2-..	PA 16414-..33
Electrical, by impulse, with external pilot air			S9 381S-1/8-..	PA 10301-..33
			S9 381S-1/4-..	PA 12720-..33
			S9 381S-1/2-..	PA 16417-..33
Electrical by impulse, with biased position			S9 382-1/4-..	PA 12721-..33
			S9 382-1/2-..	PA 16418-..33
with external pilot air			S9 382S-1/4-..	PA 12722-..33
			S9 382S-1/2-..	PA 16419-..33
Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Standard version	230V 50/60Hz	110 V =	61	-
	24V =	60V 50/60Hz	02	-
Low wattage version	24V =		13	-
	230V 50/60Hz		69	-

EX Area versions to ATEX Standard Category, type of ignition protection

Single valve: Ⓢ II 2G c T4 T135°C -10°C≤Ta≤+60°C

Solenoid/individual use: Ⓢ II 2G EEx m II T5 -20°C≤Ta≤+50°C

Solenoid/manifold mounting: Ⓢ II 2G EEx m II T5 -20°C≤Ta≤+40°C

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Solenoid	24V =		48	ATEX
- with cable 1.2 m				
- with cable 3 m	24V =		45	ATEX
- with cable 5 m	24V =		46	ATEX
- with cable 10 m	24V =		47	ATEX
- with cable 1.2 m	24V 50/60Hz		99	ATEX
- with cable 1.2 m	110V 50/60Hz		97	ATEX
- with cable 1.2 m	230V 50/60Hz		98	ATEX

Example for valves in ATEX-Version:

- for valves Series S9-G1/8, S9-G1/4, S9-G1/2

Please add behind the Standard Order No. "ATEX"



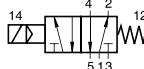
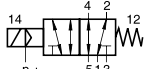
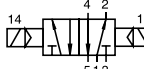
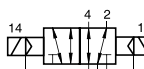
Type: S9 381RF-1/8-NC-4633

Order No. PA10297-4633ATEX

Order Instructions – 5/2 Way Valves – Standard versions

Actuation System	Symbol	Mounting Ø (mm)	Order Instructions Type	Order No.
Hand lever, indexed			S9 511-1/8	PA 10308
			S9 511-1/4	PA 12671
			S9 511-1/2	PA 16367
Hand lever, spring return			S9 511RF-1/8	PA 10309
			S9 511RF-1/4	PA 12672
			S9 511RF-1/2	PA 16366
Hand lever secured in 2 switching positions			S9 511S-1/8	PA 10368
			S9 511S-1/4	PA 12673
			S9 511S-1/2	PA 16368
Rotary lever, indexed			S9 512-1/4	PA 12674
			S9 512-1/2	PA 16378
Rotary lever, spring return			S9 512RF-1/4	PA 12675
			S9 512RF-1/2	PA 16379
Pneumatic, by permanent signal			S9 561RF-1/8	PA 10310
			S9 561RF-1/4	PA 12676
			S9 561RF-1/2	PA 16165
Pneumatic, by impulse			S9 561-1/8	PA 10311
			S9 561-1/4	PA 12677
			S9 561-1/2	PA 16166
Pneumatic, by impulse, with biased position			S9 562-1/4	PA 12678
			S9 562-1/2	PA 16167
Basic valve for panel mounting			S9 590RF-1/8	PA 10320
Rotary lever, indexed		22	12T-22	KX 9355
		30	12T-30	KX 9314
Rotary lever, spring return		22	12T-RF-22	KX 9356
		30	12T-RF-30	KX 9315
Pushbutton		22	13T-RF-22	KX 9357
		30	13T-RF-30	KX 9316
Mushroom pushbutton		22	15T-RF-22	KX 9358
		30	15T-RF-30	KX 9317
Locking switch		22	16T-22	KX 9359
		30	16T-30	KX 9318

Order Instructions - 5/2 Way Valves - Standard Versions

Actuation System	Symbol	Mounting Ø (mm)	Order Instructions Type	Order No.
Rotary switch		22	17T-22	KX 9360
		30	17T-30	KX 9319
Mushroom pushbutton Emergency-Off		22	18T-22	KX 9361
		30	18T-30	KX 9320
Electrical, by permanent signal			S9 581RF-1/8-..	PA 10312-..33
			S9 581RF-1/4-..	PA 12679-..33
			S9 581RF-1/2-..	PA 16171-..33
with external pilot air			S9 581S-RF-1/8-..	PA 10314-..33
			S9 581S-RF-1/4-..	PA 12681-..33
			S9 581S-RF-1/2-..	PA 16174-..33
Electrical, by impulse			S9 581-1/8-..	PA 10313-..33
			S9 581-1/4-..	PA 12680-..33
			S9 581-1/2-..	PA 16172-..33
with external pilot air			S9 581S-1/8-..	PA 10315-..33
			S9 581S-1/4-..	PA 12682-..33
			S9 581S-1/2-..	PA 16175-..33

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Standard version	230V 50/60Hz	110 V =	61	-
	24V =	60V 50/60Hz	02	-
Low wattage version	24V =		13	-
	230V 50/60Hz		69	-

EX Area versions to ATEX Standard

Category, type of ignition protection

Single valve: Ⓜ II 2G c T4 T135°C -10°C≤Ta≤+60°C

Solenoid/individual use: Ⓜ II 2G EEx m II T5 -20°C≤Ta≤+50°C

Solenoid/manifold mounting: Ⓜ II 2G EEx m II T5 -20°C≤Ta≤+40°C

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Solenoid	24V =		48	ATEX
- with cable 1.2 m				
- with cable 3 m	24V =		45	ATEX
- with cable 5 m	24V =		46	ATEX
- with cable 10 m	24V =		47	ATEX
- with cable 1.2 m	24V 50/60Hz		99	ATEX
- with cable 1.2 m	110V 50/60Hz		97	ATEX
- with cable 1.2 m	230V 50/60Hz		98	ATEX

Example for valves in ATEX-Version:

- for valves Series S9-G1/8, S9-G1/4, S9-G1/2

Please add behind the Standard Order No. "ATEX"

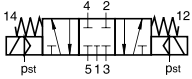

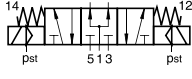
Type: S9 381RF-1/8-NC-4633

Order No. PA10297-4633ATEX

Order Instructions – 5/3 Way Valves – Standard versions

Actuation System	Symbol	Order Instructions Type	Order No.
Hand lever, secured in 3 operating positions		S9 511G-1/8	PA 10321
		S9 511G-1/4	PA 12687
		S9 511G-1/2	PA 16369
		S9 511E-1/8	PA 10322
		S9 511E-1/4	PA 12688
		S9 511E-1/2	PA 16370
		S9 511B-1/8	PA 10323
		S9 511B-1/4	PA 12689
		S9 511B-1/2	PA 16371
Hand lever, spring return to middle position		S9 511RFG-1/8	PA 10324
		S9 511RFG-1/4	PA 12690
		S9 511RFG-1/2	PA 16372
		S9 511RFE-1/8	PA 10325
		S9 511RFE-1/4	PA 12691
		S9 511RFE-1/2	PA 16373
		S9 511RFB-1/8	PA 10326
		S9 511RFB-1/4	PA 12692
		S9 511RFB-1/2	PA 16374
Hand lever, secured in 3 operating positions		S9 511SG-1/8	PA 10327
		S9 511SG-1/4	PA 12693
		S9 511SG-1/2	PA 16375
		S9 511SE-1/8	PA 10328
		S9 511SE-1/4	PA 12694
		S9 511SE-1/2	PA 16376
		S9 511SB-1/8	PA 10329
		S9 511SB-1/4	PA 12695
		S9 511SB-1/2	PA 16377
Rotary lever, indexed in 3 operating positions		S9 512G-1/4	PA 12696
		S9 512G-1/2	PA 16380
		S9 512E-1/4	PA 12697
		S9 512E-1/2	PA 16381
		S9 512B-1/4	PA 12698
		S9 512B-1/2	PA 16382

Actuation System	Symbol	Order Instructions Type	Order No.	
Rotary lever, spring return to middle position		S9 512RFG-1/4	PA 12699	
		S9 512RFG-1/2	PA 16383	
		S9 512RFE-1/4	PA 12700	
		S9 512RFE-1/2	PA 16384	
		S9 512RFB-1/4	PA 12701	
		S9 512RFB-1/2	PA 16385	
Pneumatic, by permanent signal		S9 561RFG-1/8	PA 10330	
		S9 561RFG-1/4	PA 12702	
		S9 561RFG-1/2	PA 16168	
	spring return to middle position		S9 561RFE-1/8	PA 10331
			S9 561RFE-1/4	PA 12703
			S9 561RFE-1/2	PA 16169
	S9 561RFB-1/8	PA 10332		
	S9 561RFB-1/4	PA 12704		
S9 561RFB-1/2	PA 16170			
Electrical by permanent signal		S9 581RFG-1/8-..	PA 10333-...33	
		S9 581RFG-1/4-..	PA 12705-...33	
		S9 581RFG-1/2-..	PA 16176-...33	
	spring return to middle position		S9 581RFE-1/8-..	PA 10334-...33
			S9 581RFE-1/4-..	PA 12706-...33
			S9 581RFE-1/2-..	PA 16177-...33
	S9 581RFB-1/8-..	PA 10335-...33		
	S9 581RFB-1/4-..	PA 12707-...33		
S9 581RFB-1/2-..	PA 16178-...33			

Actuation System	Symbol	Order Instructions Type	Order No.
Electrical by permanent signal		S9 581S-RFG-1/8-..	PA 10377-..33
		S9 581S-RFG-1/4-..	PA 12925-..33
spring return to middle position		S9 581S-RFE-1/8-..	PA 10379-..33
		S9 581S-RFE-1/4-..	PA 12923-..33
with external pilot air		S9 581S-RFB-1/8-..	PA 10378-..33
		S9 581S-RFB-1/4-..	PA 12924-..33

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Standard version	230V 50/60Hz	110 V =	61	-
	24V =	60V 50/60Hz	02	-
Low wattage version	24V =		13	-
	230V 50/60Hz		69	-

Single valve: ☉ II 2G c T4 T135°C -10°C ≤ Ta ≤ +60°C
 Solenoid/individual use: ☉ II 2G EEx m II T5 -20°C ≤ Ta ≤ +50°C
 Solenoid/manifold mounting: ☉ II 2G EEx m II T5 -20°C ≤ Ta ≤ +40°C

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Solenoid	24V =		48	ATEX
- with cable 1.2 m				
- with cable 3 m	24V =		45	ATEX
- with cable 5 m	24V =		46	ATEX
- with cable 10 m	24V =		47	ATEX
- with cable 1.2 m	24V 50/60Hz		99	ATEX
- with cable 1.2 m	110V 50/60Hz		97	ATEX
- with cable 1.2 m	230V 50/60Hz		98	ATEX

Example for valves in ATEX-Version:
 - for valves Series S9-G1/8, S9-G1/4, S9-G1/2
 Please add behind the Standard Order No. "ATEX"
 Type: S9 381RF-1/8-NC-4633
 Order No. PA10297-4633ATEX

3/2, 5/2 and 5/3 Directional Control Valves Series S9-G1/8 / G1/4 / G1/2

Characteristics	Series S9 G1/8			Series S9 G1/4			Series S9 G1/2		
Actuation	Manual control	pneumatic	electrical	Manual control	pneumatic	electrical	Manual control	pneumatic	electrical
General Features									
Type	Spool valve			Spool valve			Spool valve		
Mounting	2 Screws M5			2 Screws M6			2 Screws M6		
Tube connection	Thread			Thread			Thread		
Thread	G1/8 – 7.4 deep			G1/4 – 11 deep			G1/2 – 16 deep		
Installation	In any position			In any position			In any position		
Ambient temperature range (1)	-10 °C to +60 °C *			-10 °C to +60 °C*			-10 °C to +60 °C*		
Medium temperature range (1)	-10 °C to +60 °C *			-10 °C to +60 °C*			-10 °C to +60 °C*		
Medium	Filtered compressed air								
Lubrication	With or without oil mist lubrication (We recommend the use of mineral oil type VG 32 to ISO 3448)								
Pneumatic Characteristics									
Nominal pressure (bar)	6			6			6		
Operating pressure range (bar)	0–10 (10)	–	–	0–10	–	–	0–10	–	–
– permanent signal version (bar)	–	0–10	2–10	–	0–10	2–10	–	0–10	2.2–10
– impulse version (bar)	–	0–10	2–10	–	0–10	2–10	–	0–10	2.2–10
– with external pilot air (bar)	–	–	0–10	–	–	0–10	–	–	0–10
Nominal flow	500 l/min (450 bei 3/2 Way Valve)			1300 l/min(7)			3500 l/min(8)		
Actuation									
Manual control	Direct			Direct			Direct		
Stroke	4.5 mm			6.5 mm			9.4 mm		
Actuation force (N)	7 (2) 10 (3)			10 (2) 15 (3)			15 (2) 40 (3)		
Pneumatic	Direct			Direct			Direct		
Actuation pressure range									
– permanent signal version (bar)	–	2–10	2–10	2–10	2–10	2–10	–	2.2–10(9)	2.2–10
– impulse version (bar)	–	1.5–10	1.5–10	1.5–10	1.5–10(4)	1.5–10(4)	–	1.5–10(5)	1.5–10(4)
Electrical	Electrical pilot operated								
Voltage type	Alternating current (50/60Hz)			Direct current			Alternating current (50/60Hz)		
Nominal voltage									
– Standard version	230 V ±10%			24 V ±10%			Other voltages on request		
– Low wattage version	230 V ±10%			24 V ±10%			230 V ±10%		
Initial power consumption	G1/8	G1/4	G1/2	G1/8	G1/4	G1/2	G1/8	G1/4	G1/2
– Standard version (VA)	8.5	8.5	11.0	2.5	2.5	4.8	8.5	8.5	11.0
– Low wattage version (VA)	6.6	6.6	7.8	2.1	2.1	2.7	6.6	6.6	7.8
Continuous consumption	G1/8	G1/4	G1/2	G1/8	G1/4	G1/2	G1/8	G1/4	G1/2
– Standard version (VA)	6.0	6.0	8.5	2.5	2.5	4.8	6.0	6.0	8.5
– Low wattage version (VA)	3.9	4.9	4.9	2.1	2.1	2.7	3.9	4.9	4.9
Duty cycle	100%			100%			100%		
Electrical protection	IP65 to DIN 40050 (applies only to solenoid with plug)								
Connection	Plug to DIN EN 175301-803 form B – industrial standard (6)								

* Valve Manifold Assemblies with electrically actuated valves -10 to +50°C

(1) Note: For use below freezing point please contact us

(2) Actuation force for valves without spring return, actuation with rotary lever: 5N

(3) Actuation force for valves with spring return, Actuation with rotary lever: 15N

(4) Only for version with biased position 2 – 10 bar, pneumatically actuated

2 – 10 bar, electrically actuated 2.5 – 10 bar

(5) Version with biased position 2.5 – 10 bar

(6) Low wattage version: Plug to DIN EN 175301-803 form A

(7) Version "middle position vented" 1000 l/min

(8) Version "middle position vented" 3300 l/min Version "middle position

pressured" 3600 l/min

(9) 5/3 Way Valve 2.5 – 10 bar

(10) Valves with panel mounting actuators 2 – 10 bar

3/2, 5/2 and 5/3 Way Valves for use in EX areas

Series S9-G1/8 / G1/4 / G1/2

Characteristics	Series S9 G1/8	Series S9 G1/4	Series S9 G1/2
Actuation	Manual Control pneumatic electrical	Manual Control pneumatic electrical	Manual Control pneumatic electrical
General Features			
Type	Spool valve	Spool valve	Spool valve
Mounting	2 screws M5	2 Screws M6	2 Screws M6
Tube connection	Thread	Thread	Thread
Thread	G1/8 – 7.4 deep	G1/4 – 11 deep	G1/2 – 16 deep
Installation	In any position	In any position	In any position
Ambient temperature range (1)	-10 °C to +60 °C *	-10 °C to +60 °C *	-10 °C to +60 °C *
Medium temperature range (1)	-10 °C to +60 °C *	-10 °C to +60 °C *	-10 °C to +60 °C *
Medium	Filtered, unlubricated compressed air – free from water and dirt to ISO8573-1	Solids: Class 7 particle size <40 µm for gas Water content: pressure dew point + 3°C, Class 4, but at least 5°C below minimum operating temperature	Solids: Class 7 particle size <40 µm for gas Water content: pressure dew point + 3°C, Class 4, but at least 5°C below minimum operating temperature
Pneumatic Characteristics			
Nominal pressure (bar)	6	6	6
Operating pressure range (bar)	0–8 (10) – –	0–8 – –	0–8 – –
– permanent signal version (bar)	– 0–8 2–8	– 0–8 2–8	– 0–8 2.2–8
– impulse version (bar)	– 0–8 1.5–8(4)	– 0–8 1.5–8(4)	– 0–8 1.5–8(4)
– with external pilot air (bar)	– – 0–8	– – 0–8	– – 0–8
Nominal flow	500 l/min (450 bei 3/2 Way Valve)	1300 l/min (7)	3500 l/min (8)
Actuation			
Manual control	Direct	Direct	Direct
Stroke	4.5 mm	6.5 mm	9.4 mm
Actuation force (N)	7 (2) 10 (3)	10 (2) 15 (3)	15 (2) 40 (3)
Pneumatic	Direct	Direct	Direct
Actuation pressure range			
– permanent signal version (bar)	– 2–8 2–8	2–8 2–8 2–8	– 2.2–8(9) 2.2–8
– impulse version (bar)	– 1.5–8 1.5–8(4)	1.5–8 1.5–8(4) 1.5–8(4)	– 1.5–8(5) 1.5–8(4)
Electrical	Electrical pilot operated		
Certification	EC Type Test Certificate for single valve: not required for mechanical units in II 2G	EC Type Test Certificate for solenoid: PTB-No. 03 Ex IEC 2019X and PTB 03 ATEX 2018X toT5	EC Type Test Certificate for solenoid: PTB-No. 03 Ex IEC 2019X and PTB 03 ATEX 2018X toT5
Category, type of ignition protection	Single valve II 2G c T4T135°C-10°C≤Ta≤+60°C	Solenoid/individual use: II 2G EEx m II T5 -20°C≤Ta≤+50°C Solenoid/manifold mounting: II 2G EEx m II T5 -20°C≤Ta≤+40°C	Solenoid/individual use: II 2G EEx m II T5 -20°C≤Ta≤+50°C Solenoid/manifold mounting: II 2G EEx m II T5 -20°C≤Ta≤+40°C
Voltage type	Alternating current (50/60Hz)	Direct current	
Nominal voltage	230 V ±10% 110 V ±10% 24 V ±10%	24 V ±10%	Other voltages on request
Power rating at Un	G1/8, G1/4, G1/2 3.1 VA (230V) 3.0 VA (110V) 2.5 VA (24V)	G1/8, G1/4, G1/2 3.3 VA (24V)	
Max. power at Un (6)	G1/8, G1/4, G1/2 2.9 VA (230V) 2.8 VA (110V) 2.4 VA (24V)	G1/8, G1/4, G1/2 3.0 VA (24V)	
Electrical protection	IP65 (applies only to solenoid with cable)		
Connection	Cable – cable lengths see Order Instructions		

* Valve Manifold Assemblies with electrically actuated valves -10 to +50°C

(1) Note: For use below freezing point please contact us

(2) Actuation force for valves without spring return, Actuation with rotary lever: 5N

(3) Actuation force for valves with spring return, actuation with rotary lever: 15N

(4) Only for version with biased position pneumatically actuated 2 – 8 bar,

electrically actuated 2.5 – 8 bar

(5) Version with biased position 2.5 – 8 bar

(6) Maximum power if warmed up to terminal load limit

(7) Version "middle position vented" 1000 l/min

(8) Version "middle position vented" 3300 l/min, Version "middle position
pressured" 3600 l/min

(9) 5/3 Way Valve 2.5 – 8 bar

(10) Valves with panel mounting actuators 2 – 8 bar

Valve Combinations with Logic Elements 3/2, 5/2 and 5/3 Way Valves

Actuation Systems:

- Pneumatic
- AND
- OR
- TIMER
- Electrical pilot operated

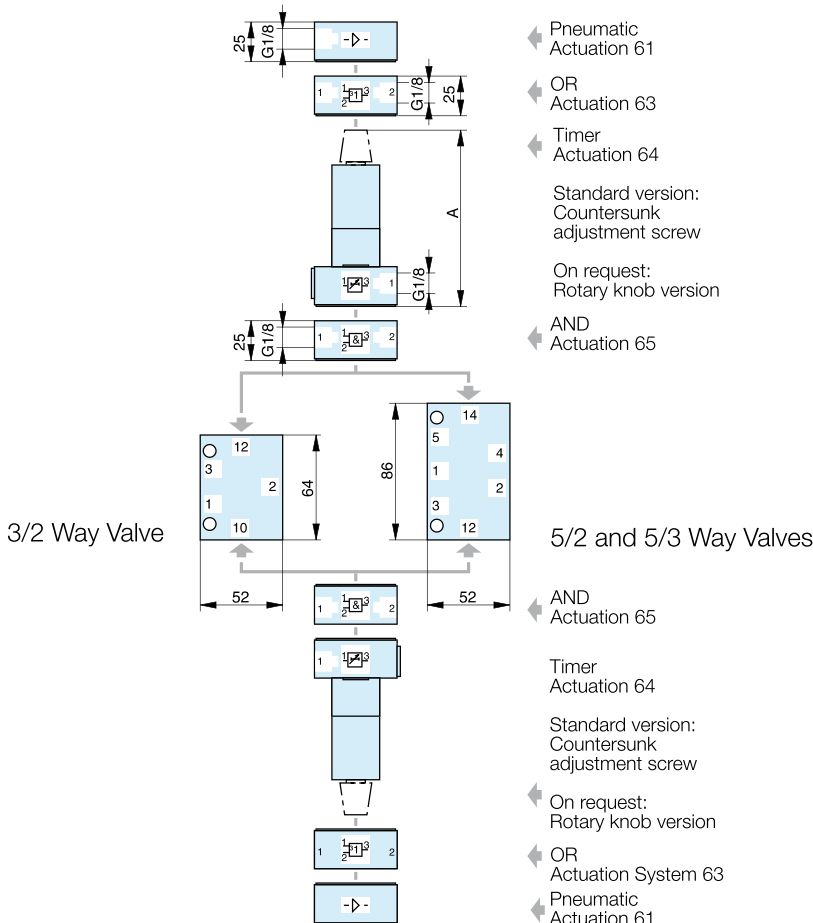
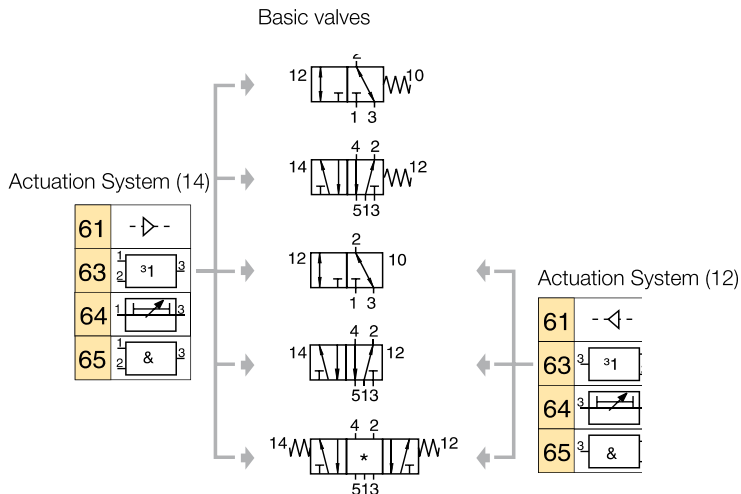
Versions:

- Freely selectable types
- See Order information
- All Timer-Versions on request



Possible combinations:

- * RFG = middle position closed
- RFE = middle position exhausted
- RFB = middle position pressurized



Dimension Table and adjustment ranges	
Adjustment range [s]	Dimension A [mm]
0.1 to 15	103 (133*)
0.1 to 30	117 (147*)
0.1 to 60	150 (180*)

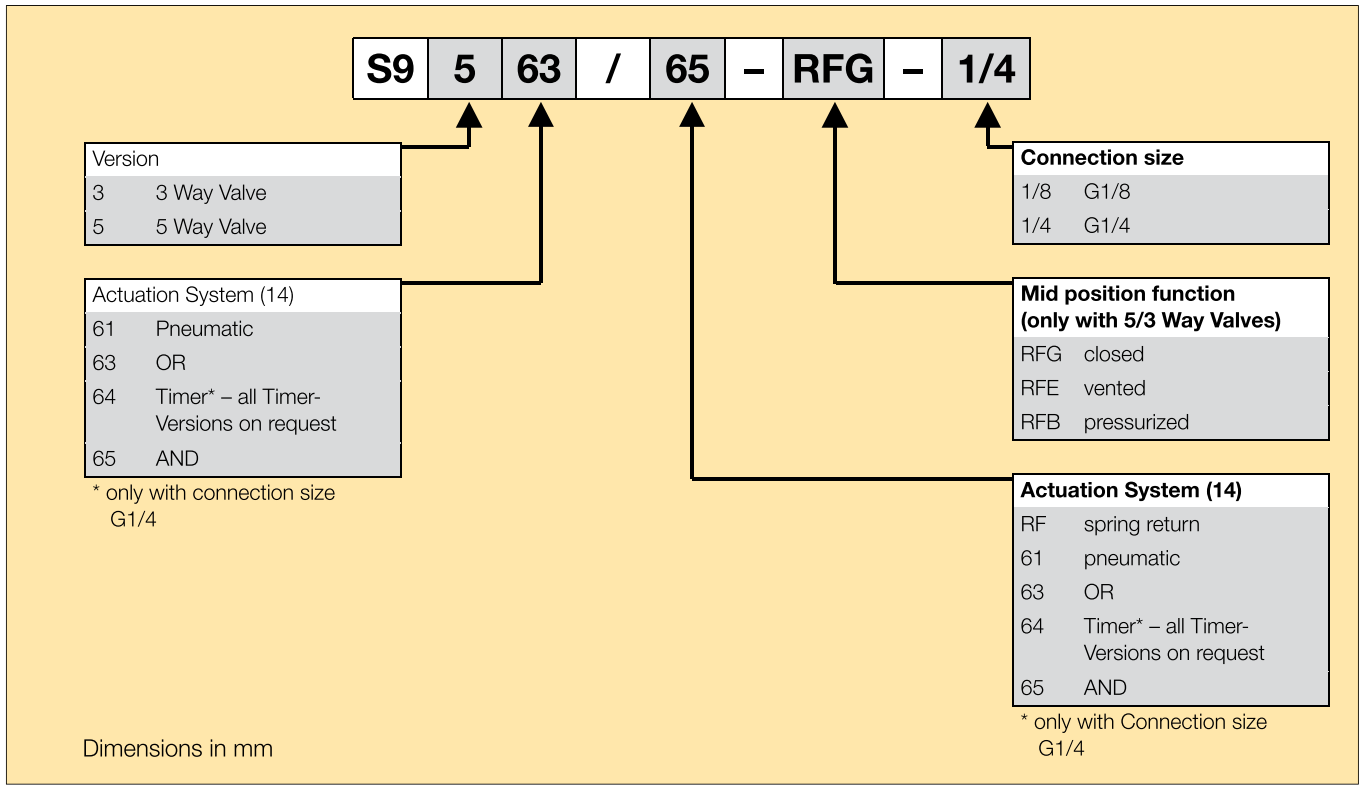
* Version with rotary knob (optional)

Dimension Table and adjustment ranges	
Adjustment range [s]	Dimension A [mm]
0.1 to 15	103 (133*)
0.1 to 30	117 (147*)
0.1 to 60	150 (180*)

* Version with rotary knob (optional)

Valve Combinations with Logic Elements 3/2, 5/2 and 5/3 Way Valves

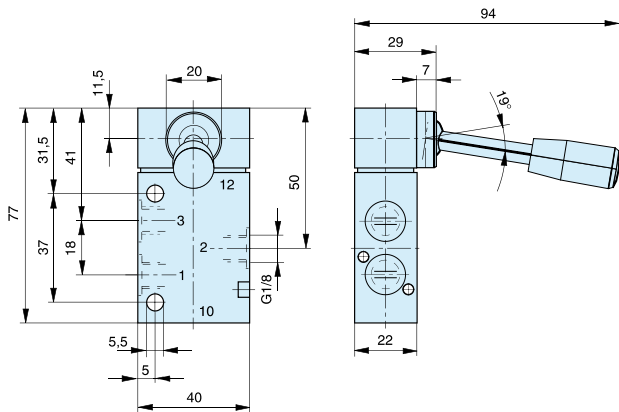
Order Instructions



3/2 Way Lever Operated Valves

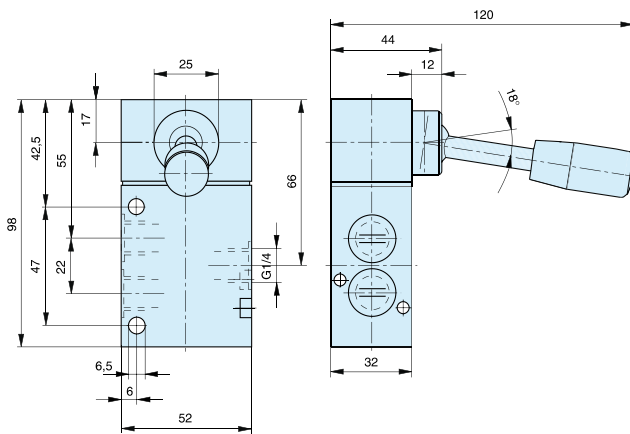
G1/8 Hand lever actuated

Type: S9 311-1/8, S9 311RF-1/8



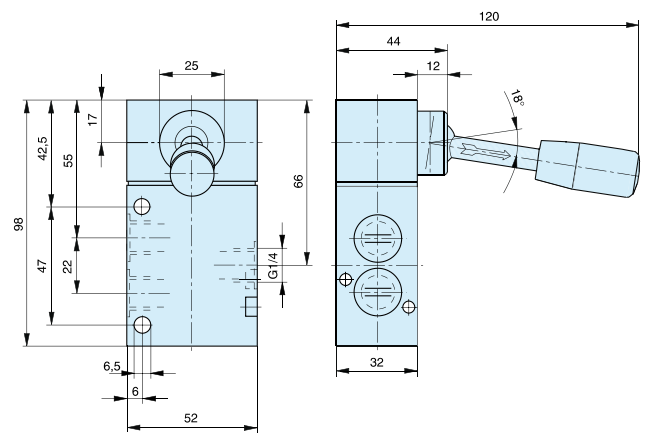
G1/4 Hand lever actuated

Type: S9 311-1/4, S9 311RF-1/4



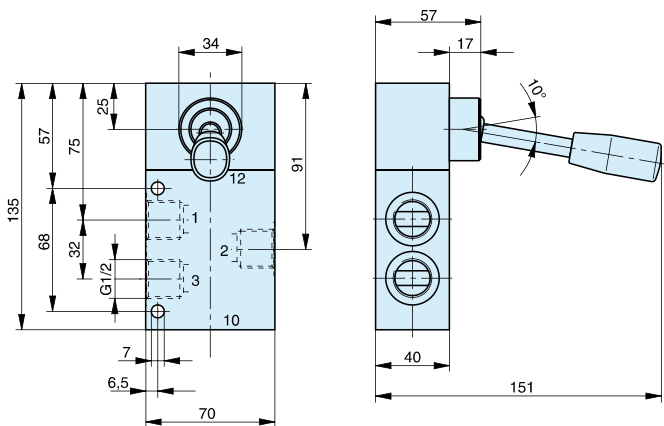
G1/4 Safety hand lever actuated

Type: S9 311S-1/4



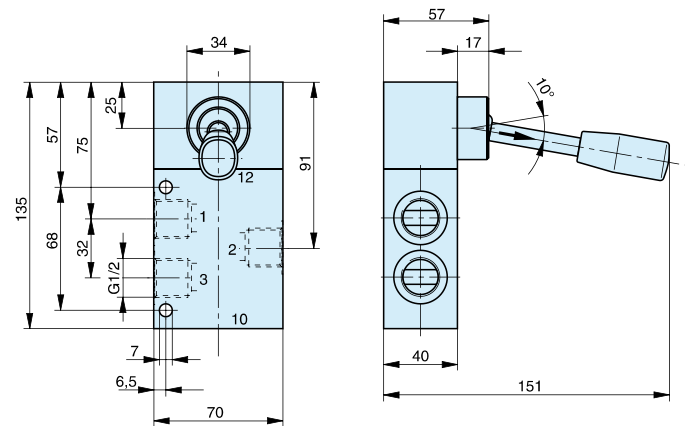
G1/2 Hand lever actuated

Type: S9 311-1/2, S9 311RF-1/2



G1/2 Safety hand lever actuated

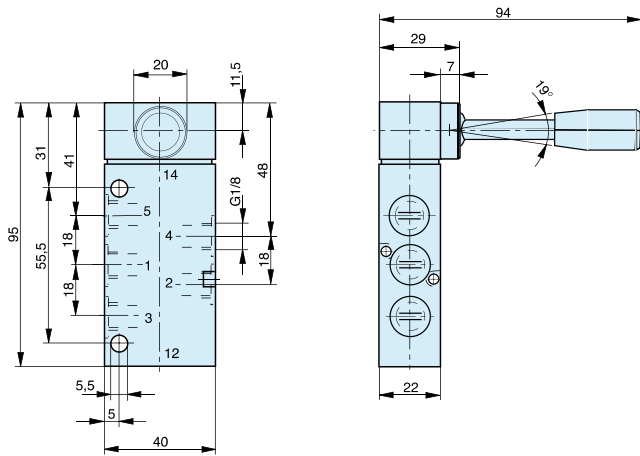
Type: S9 311S-1/2



5/3 Way Lever Operated Valves

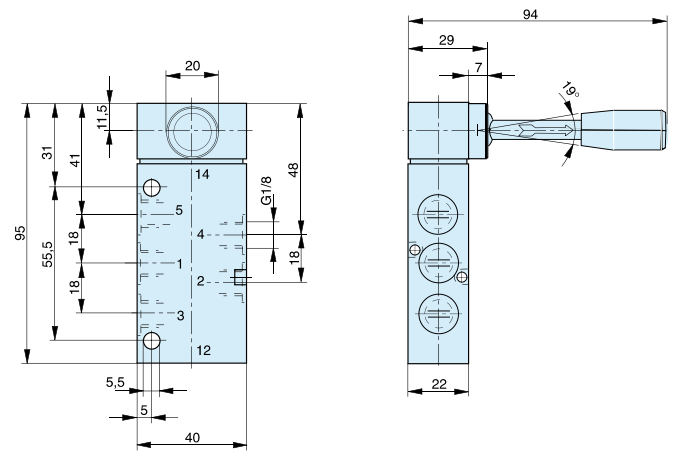
G1/8 Hand lever actuated

Type: S9 511.-1/8, S9 511RF.-1/8



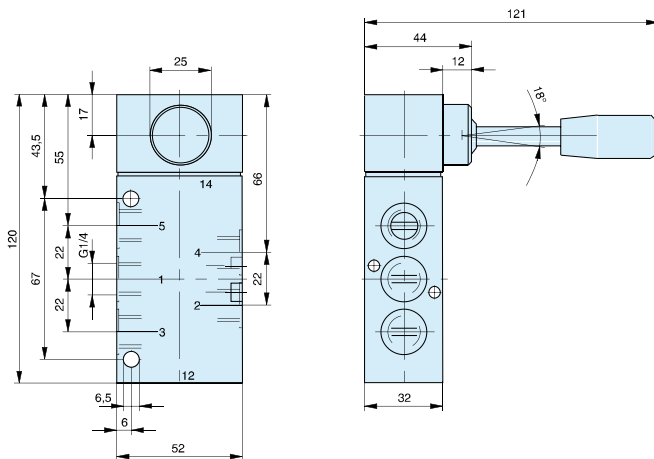
G1/8 Safety Hand lever actuated

Type: S9 511S.-1/8



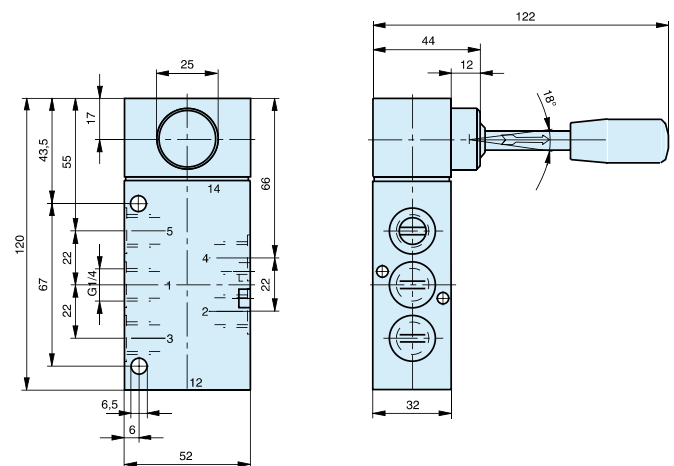
G1/4 Hand lever actuated

Type: S9 511.-1/4, S9 511RF.-1/4



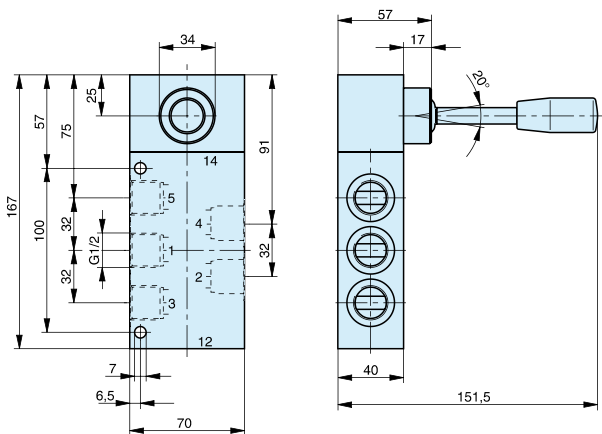
G1/4 Safety hand lever actuated

Type: S9 511S.-1/4



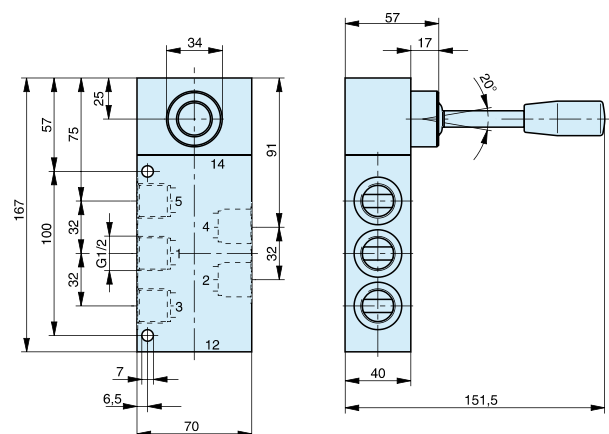
G1/2 Hand lever actuated

Type: S9 511.-1/2, S9 511RF.-1/2



G1/2 Safety hand lever actuated

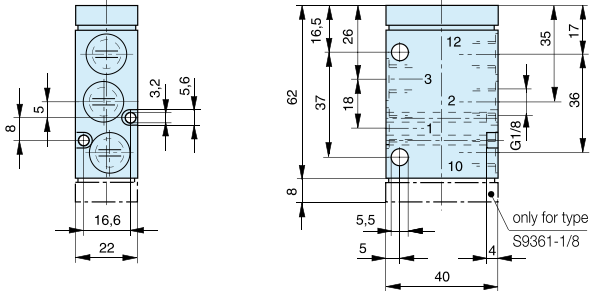
Type: S9 511S.-1/2



G1/8 - 3/2 Way Valves

Pneumatically actuated

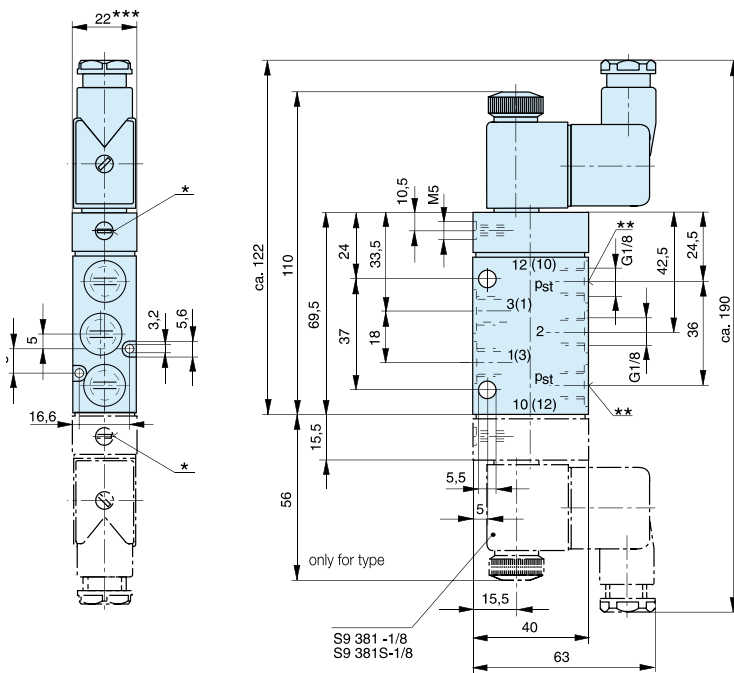
Type: S9 361-1/8, S9 361RF-1/8



Electrically actuated

Type: S9 381(S)-1/8, S9 381(S)RF-1/8

Solenoid for use in EX areas – Dimensions

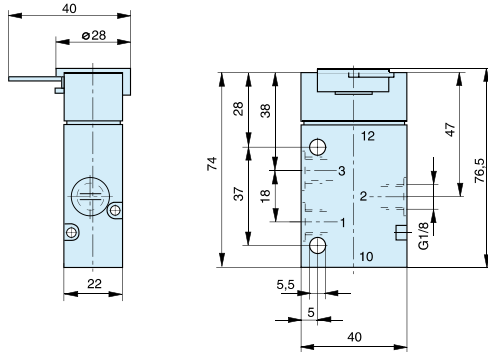


- * Manual override
- ** Operating pressure supply p_{st} only for type S9 381S
- *** Solenoid width = 30 mm on low wattage coil version

Dimensions in mm

G1/8 - 3/2 Way Valves

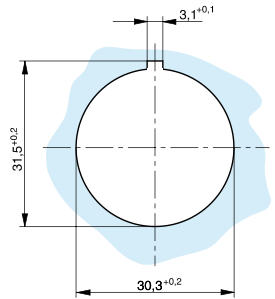
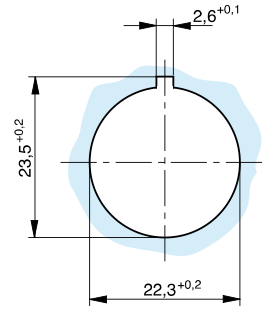
Basic valve for panel mounting actuators
 Type: S9 390RF-1/8



Mounting diameter

Mounting diameter Ø22 mm

Mounting diameter Ø30 mm



The actuators for these valves are interchangeable and can be mounted with 180° displacement on the basic valve. The actuators are not mounted upon delivery.

Rotary lever, indexed – Type: 12T-22, 12T-30,

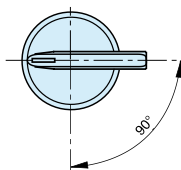
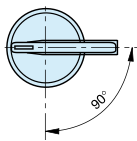
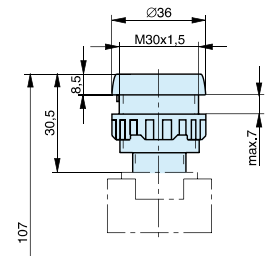
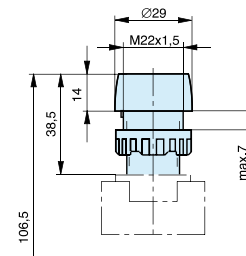
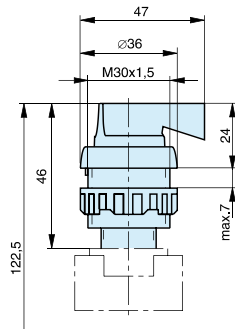
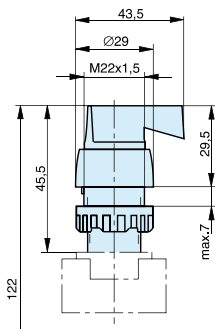
Pushbutton – Type: 13T-RF-22, 13T-RF-30

Mounting diameter Ø22 mm

Mounting diameter Ø30 mm

Mounting diameter Ø22 mm

Mounting diameter Ø30 mm



Dimensions in mm

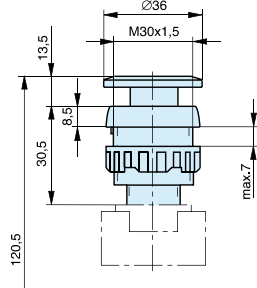
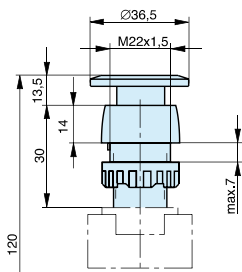
G1/8 - 3/2 Way Valves

Mushroom pushbutton

Type: 15T-RF-22, 15T-RF-30

Mounting diameter Ø22 mm

Mounting diameter Ø30 mm

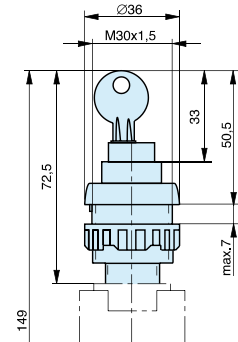
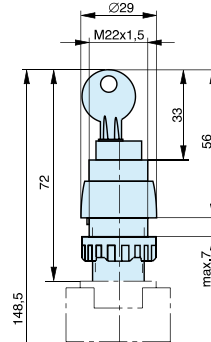


Locking switch

Type: 16T-22, 16T-30

Mounting diameter Ø22 mm

Mounting diameter Ø30 mm

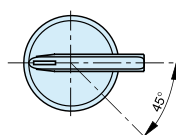
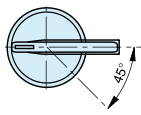
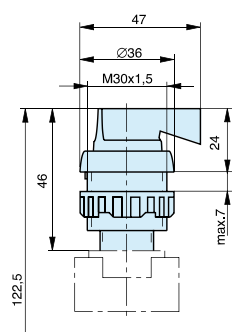
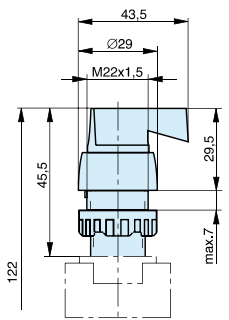


Rotary lever with spring return

Type: 12T-RF-22, 12T-RF-30

Mounting diameter Ø22 mm

Mounting diameter Ø30 mm

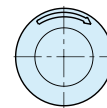
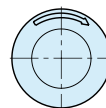
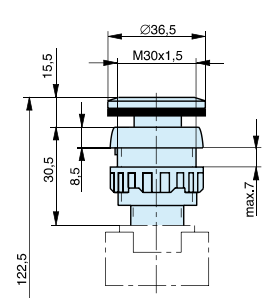
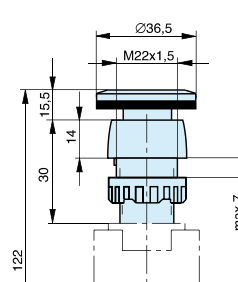


Mushroom pushbutton emergency-Off

Type: 18T-22, 18T-30

Mounting diameter Ø22 mm

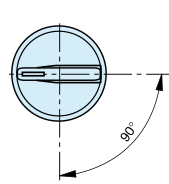
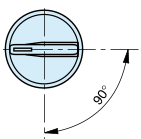
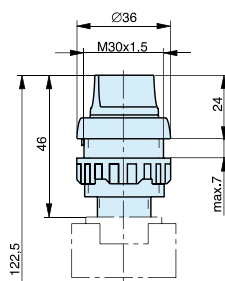
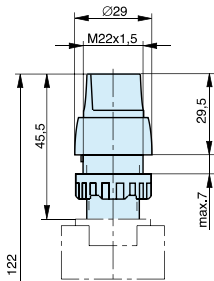
Mounting diameter Ø30 mm



Rotary switch – Type: 17T-22, 17T-30

Mounting diameter Ø22 mm

Mounting diameter Ø30 mm

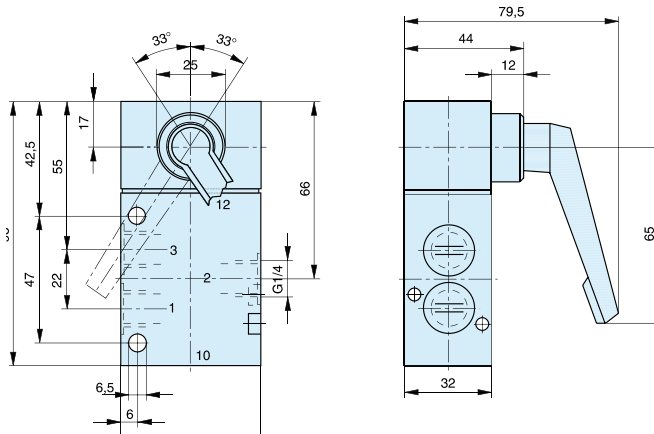


Dimensions in mm

G1/4 - 3/2 Way Valves

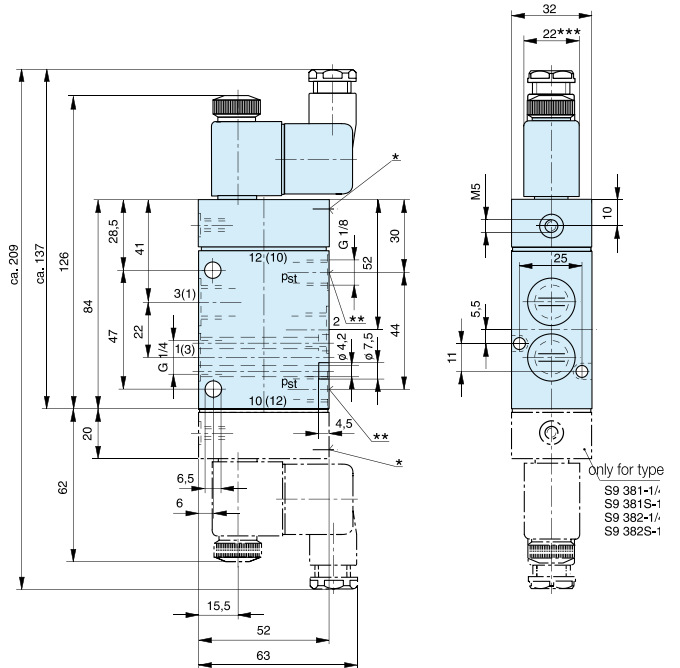
Rotary lever actuated

Type: S9 312-1/4, S9 312RF-1/4



Electrically actuated

- Type: S9 381(S)-1/4, S9 382(S)-1/4, S9 381(S)RF-1/4



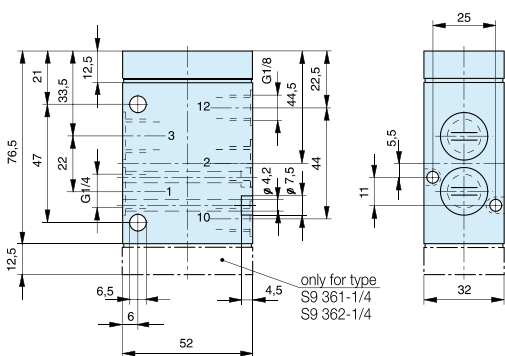
- * Manual override
- ** Operating pressure supply p_{st} only for type S9 381S
- *** Solenoid width = 30 mm on low wattage coil version

Note:

The "normally open" valve S9 381S-RF-1/4 cannot be used on a P-supply manifold.

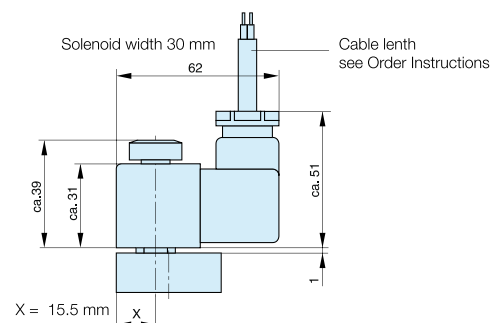
Pneumatically actuated

Type: S9 361-1/4, S9 362-1/4, S9 361RF-1/4



Solenoid for use in EX areas

Dimensions

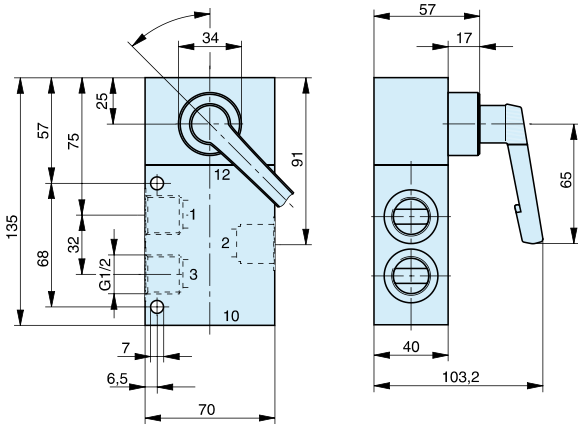


Dimensions in mm

G1/2 - 3/2 Way Valves

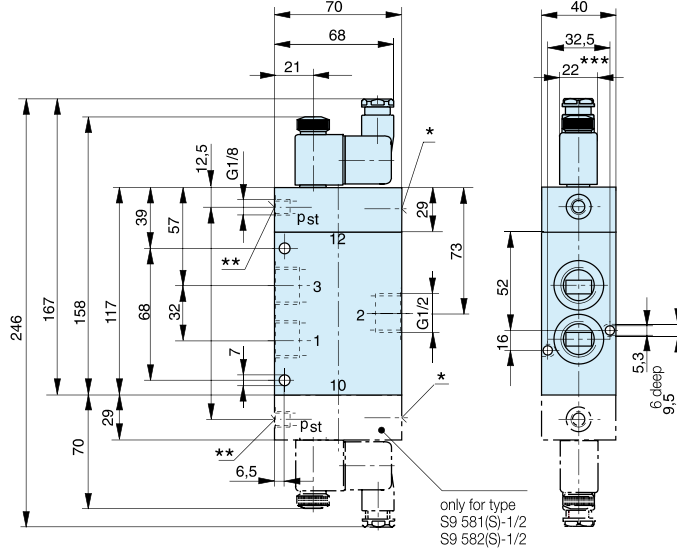
Rotary lever actuated

Type: S9 312-1/2, S9 312RF-1/2



Electrically actuated

Type: S9 381(S)-1/2, S9 382(S)-1/2, S9 381(S)RF-1/2



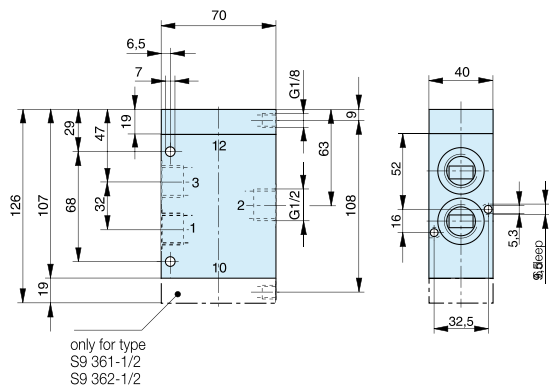
- * Manual override
- ** Operating pressure supply p_{st} only for type S9 381S
- *** Solenoid width = 30 mm on low wattage coil version

Note:

The "normally open" valve S9 381S-RF-1/2 cannot be used on a P-supply manifold.

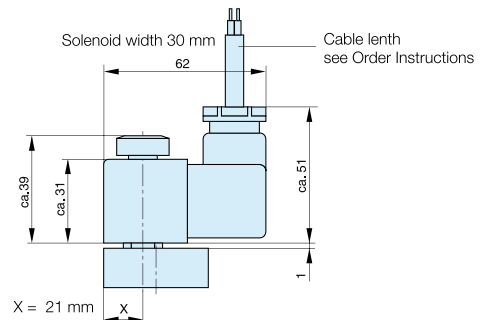
Pneumatically actuated

Type: S9 361-1/2, S9 361RF-1/2



Solenoid for use in EX areas

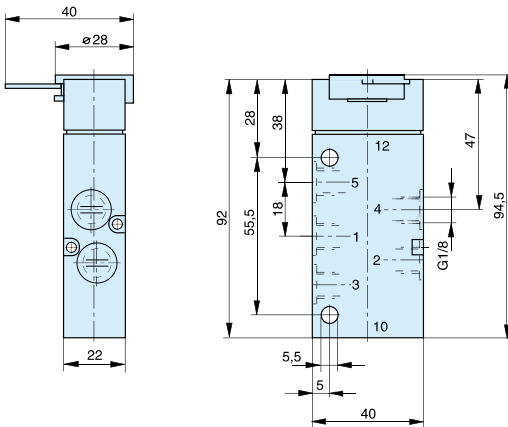
Dimensions



Dimensions in mm

G1/8 - 5/2 Way Valves

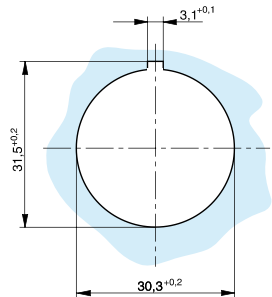
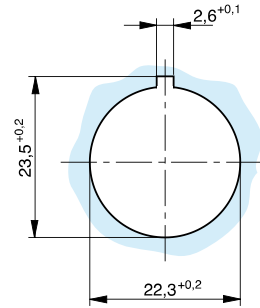
Basic valve for panel mounting actuators
 Type: S9 590RF-1/8



Mounting diameter

Mounting diameter $\varnothing 22$ mm

Mounting diameter $\varnothing 30$ mm

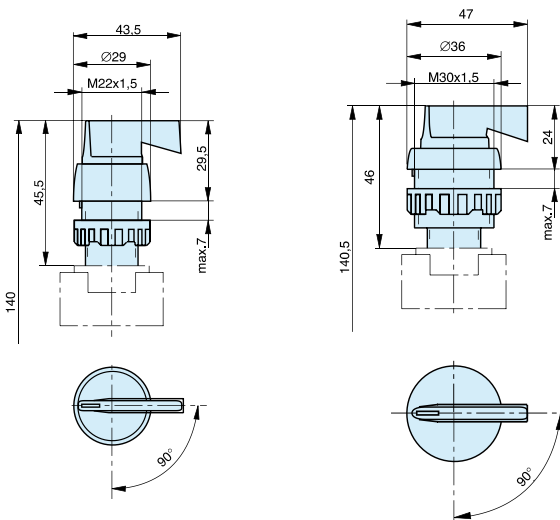


The actuators for these valves are interchangeable and can be mounted with 180° displacement on the basic valve. The actuators are not mounted upon delivery.

Rotary lever, indexed
 Type: 12T-22, 12T-30

Mounting diameter $\varnothing 22$ mm

Mounting diameter $\varnothing 30$ mm

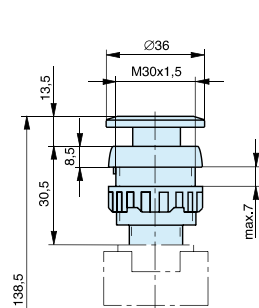
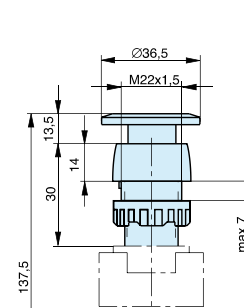


Mushroom pushbutton

Type: 15T-RF-22, 15T-RF-30

Mounting diameter $\varnothing 22$ mm

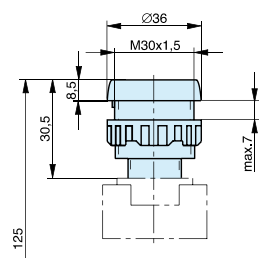
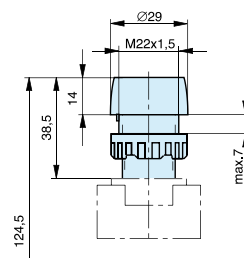
Mounting diameter $\varnothing 30$ mm



Pushbutton - Type: 13T-RF-22, 13T-RF-30

Mounting diameter $\varnothing 22$ mm

Mounting diameter $\varnothing 30$ mm

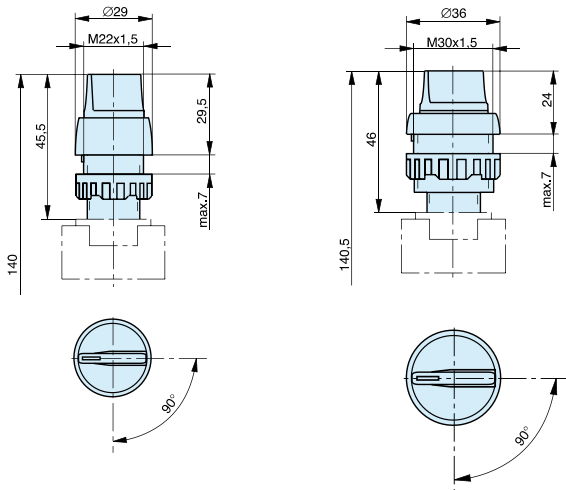


Dimensions in mm

G1/8 - 5/2 Way Valves

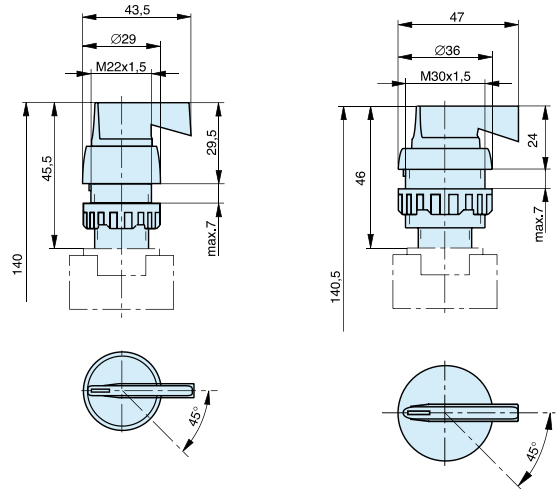
Rotary switch
 Type: 17T-22, 17T-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm



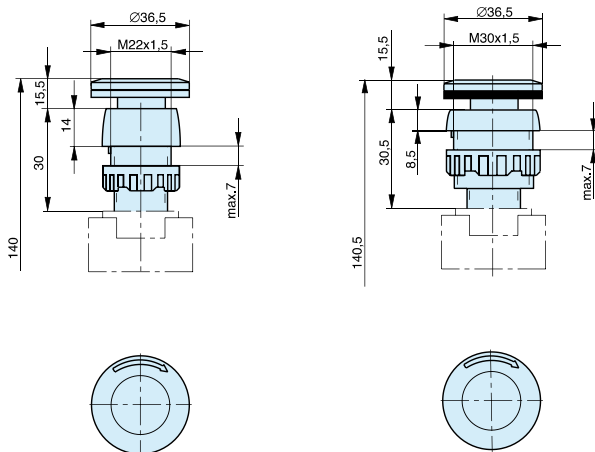
Rotary lever with spring return
 Type: 12T-RF-22, 12T-RF-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm



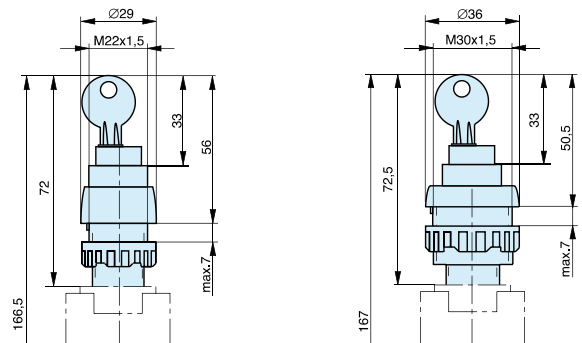
Mushroom pushbutton emergency-Off
 Type: 18T-22, 18T-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm



Locking switch
 Type: 16T-22, 16T-30

Mounting diameter Ø22 mm Mounting diameter Ø30 mm

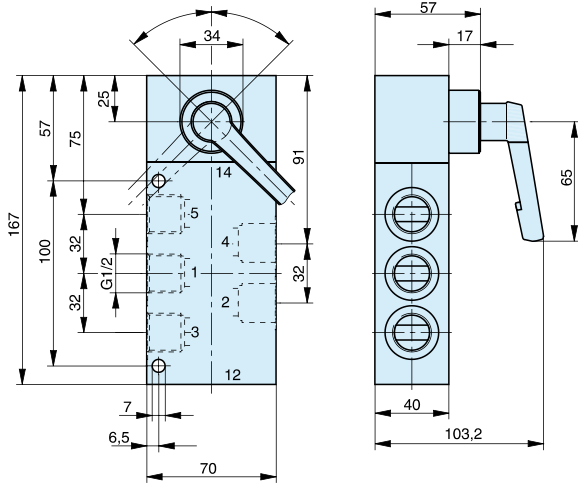


Dimensions in mm

G1/2 - 5/2 Way Valves

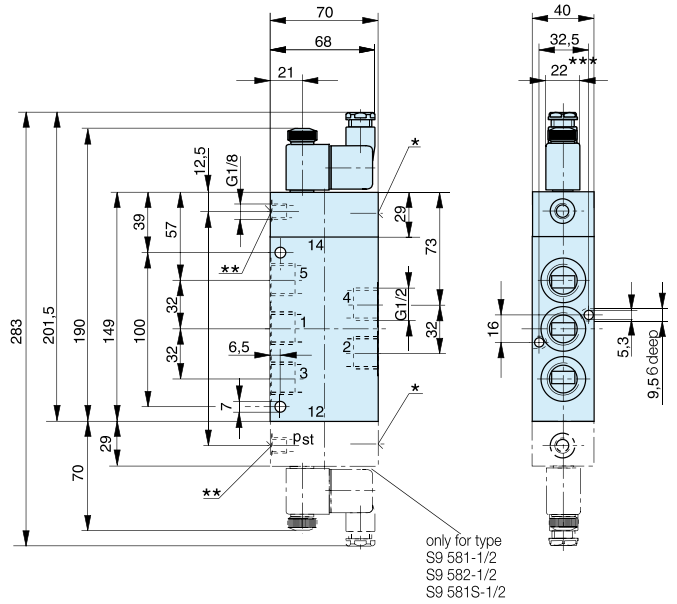
Rotary lever actuated

Type: S9 512-1/2, S9 512RF-1/2



Electrically actuated

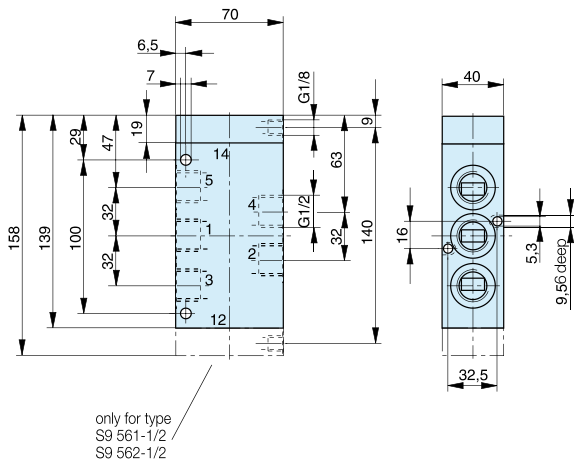
Type: S9 581(S)-1/2, S9 582-1/2, S9 581(S)RF-1/2



- * Manual override
- ** Operating pressure supply p_{st} only for type S9 581S
- *** Solenoid width is 30 mm on low wattage coil version

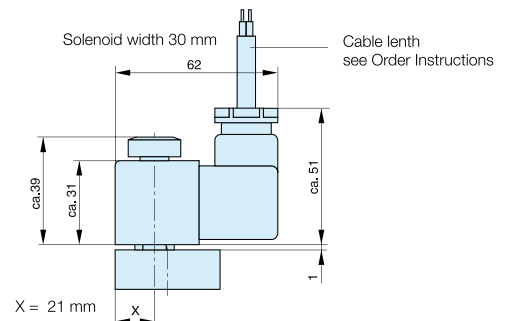
Pneumatically actuated

Type: S9 561-1/2, S9 561RF-1/2, S9 562-1/2



Solenoid for use in EX areas

Dimensions

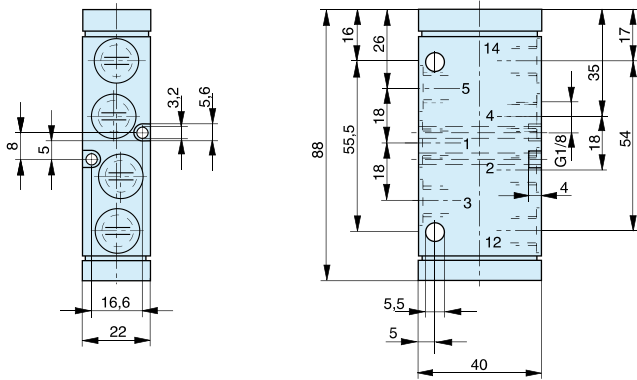


Dimensions in mm

G1/8 - 5/3 Way Valves

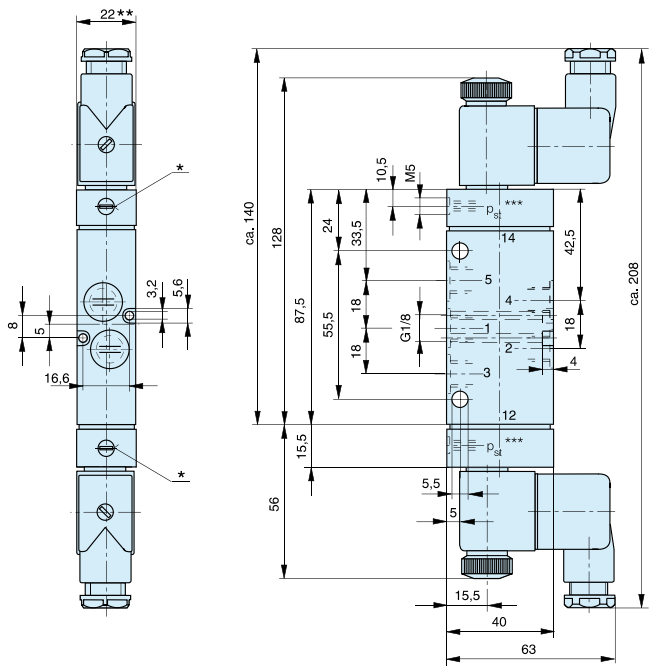
Pneumatically actuated

Type: S9 561RF.-1/8



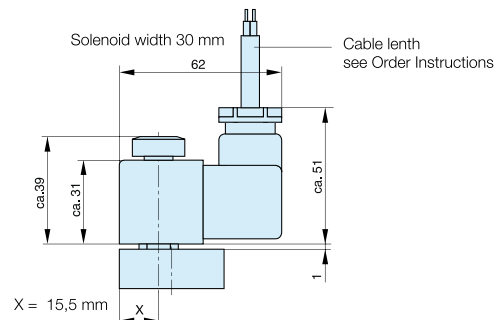
Electrically actuated

Type: S9 581(S)-RF.-1/8



Solenoid for use in EX areas

Dimensions



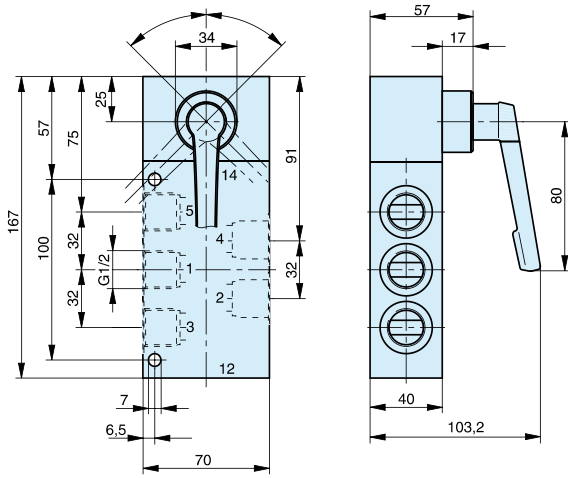
- * Manual override
- ** Solenoid width = 30 mm on low wattage coil version
- *** Operating pressure supply p_{st} only for type S9 581S

Dimensions in mm

G1/2 - 5/3 Way Valves

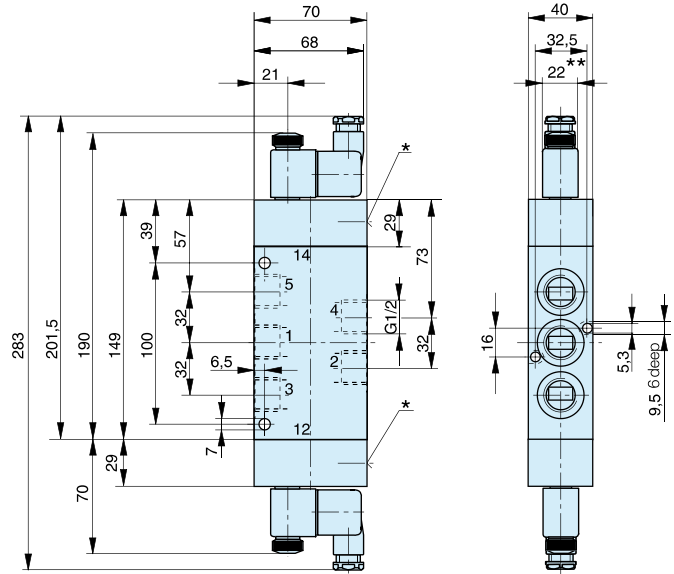
Rotary lever actuated

Type: S9 512.-1/2, S9 512RF.-1/2



Electrically actuated

Type: S9 581RF.-1/2

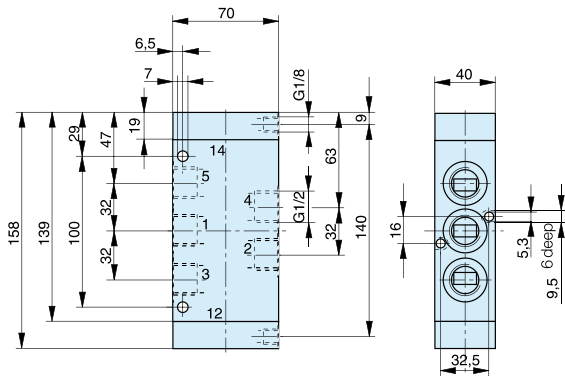


* Manual override

** Solenoid width is 30 mm on low wattage coil version

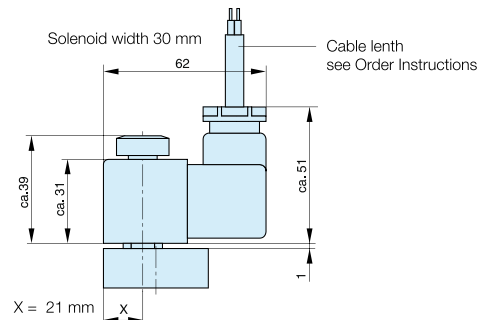
Pneumatically actuated

Type: S9 561RF.-1/2



Solenoid for use in EX areas

Dimensions



Dimensions in mm

5/2-Way Oscillating Valves

The oscillating valve generates oscillating movements such as e.g. shaking, hammering, plunging, feed motions etc.

Function:

If compressed air is introduced into inlet port 1, the outlet ports 4 and 2 are alternately supplied with compressed air.

The speed of the operated cylinder and also the stroke frequency are adjusted with two exhaust air throttles.



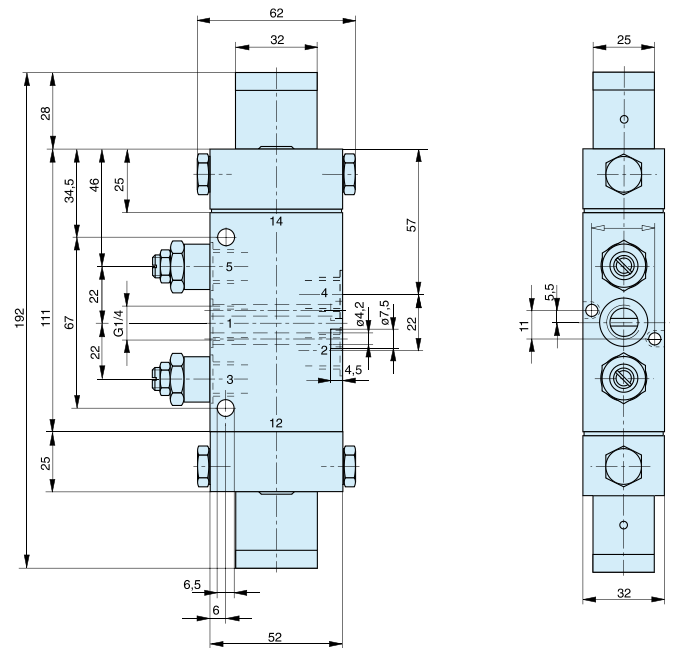
Operating information

Type	Spool valve	Lubrication *	None or oil mist lubrication
Mounting	2 Screws M6 (M4)	Pneumatic Characteristics	
Tube connection	Thread	Nominal pressure	6 bar
Connection size	G1/4, 11 deep	Operating pressure range	3–8 bar
Weight (mass)	0.65 kg	Nominal flow	1300 l/min
Installation	In any position	Actuation	
Ambient temperature range **	-10 °C to +60 °C	Pneumatic	Direct
Medium temperature range **	-10 °C to +60 °C	Actuation pressure range	3–8 bar
Medium	Filtered and oiled or filtered, unoled compressed air		

* We recommend the use of mineral oil type VG 32 to ISO 3448
 ** Note: Please consult us for operating temperatures below 0° C

Symbol	Type	Order Code
	S9 568/68-1/4-SO	PD 34796

Pneumatic oscillating – Type: S9 568/68-1/4-SO



Dimensions in mm

3/2-Way Screw-In Valve Series EV



Operating information

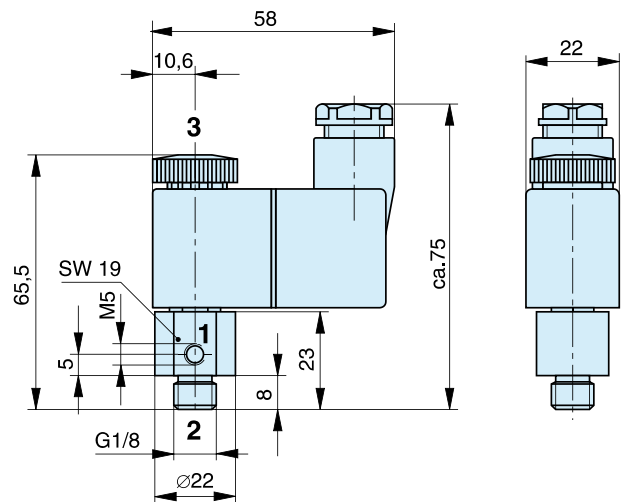
Actuation	Electrical directly operated	Actuation		
Type	Poppet valve, normally closed	Electrical	Direct	
Mounting	Screws into thread G1/8	Voltage type	Alternating current (50/60Hz)	Direct current
Tube connection	Thread	Nominal voltage ⁽¹⁾		
Port size	Port 1: M5, port 2: G1/8	- Standard version **	230 ±10%	24 ±10%
Weight	0.1 kg	- Low wattage version	230 ±10%	24 ±10%
Nominal diameter	1 mm	Initial power consumption		
Installation	in any position	- Standard version (VA)	11	4.8
Ambient temperature range	-10 °C to +60 °C	- Low wattage version (VA)	7.8	2.7
Medium temperature range	-10 °C to +60 °C	Continuous consumption		
Medium	Filtered compressed air (30µ)	- Standard version (VA)	8.5	4.8
Lubrication	With or without oil mist lubrication (We recommend the use of mineral oil type VG 32 to ISO 3448)	- Low wattage version (VA)	4.9	2.7
Pneumatic Characteristics		Duty cycle	100%	
Nominal pressure	6 bar	Electrical protection	IP 65 to DIN 40050 (applies only to solenoid with plug)	
Operating pressure range	0 – 10 bar	Connection	Plug to DIN EN 175301-803 form B – industrial standard, Low wattage version form A	
Nominal flow	30 l/min			

(¹ see Order Instructions
** other voltages on request

Order Instructions – 3/2 Way Screw-In Valve – Series EV

Actuation	Symbol	Order Instructions
		Type Order code
Electrical, by permanent signal		EV 381RF-M5-.. PD25076-..33
Solenoid version	Nominal voltage	Key code
Cast	24V =	02
encapsulated housing	230V 50/60Hz	61
	Other voltages on request	

3/2 Way Valve – Type: EV 381RF-M5



Dimensions in mm

3/2-Way Valve Series V9

NW 1.3 and 2.5

Actuation System:

- Electrically actuated, directly actuated

Versions:

Threaded version

- Normally closed
- Normally open
- With manual override

**Operating information**

Type	Poppet valve		
Mounting	2 Screws M3 (NW 2.5: 2 x M4)		
Tube connection	Thread		
Thread	G1/8 – 8 deep		
Weight	NW 1.3: 0.140 kg NW 2.5: 0.320 kg		
Installation	In any position		
Ambient temperature range (1)	-10 °C to +60 °C	Note :	Please consult us for operating temperatures below 0° C
Medium temperature range (1)	-10 °C to +70 °C		
Medium	Filtered compressed air		
Lubrication	With or without oil mist lubrication (We recommend the use of mineral oil type VG 32 to ISO 3448)		

Pneumatic Characteristics

Nominal pressure	6 bar
Operating pressure range	NW 1.3: 0–10 bar NW 2.5: 0-7 bar
Nominal flow	NW 1.3: 37 l/min NW 2.5: 150 l/min

Actuation

Electrical	Direct	
Voltage type	Alternating current (50/60Hz)	Direct current

Nominal voltage

– Standard version	230 V ±10%	24 V ±10%	other voltages on request
– Low wattage version	230 V ±10% (not for V9-NW 2.5)	24 V ±10% (not for V9-NW 2.5)	

Initial power consumption

– Standard version	NW 1.3: 11 VA NW 2.5: 11.5 VA	NW 1.3: 4.8 VA NW 2.5: 10 VA
– Low wattage version	7.8 VA	2.7 VA

Continuous consumption

– Standard version	NW 1.3: 8.5 VA NW 2.5: 7.5 VA	NW 1.3: 4.8 VA NW 2.5: 7.5 VA
– Low wattage version	4.9 VA	2.7 VA

Duty cycle

100%

Electrical protection

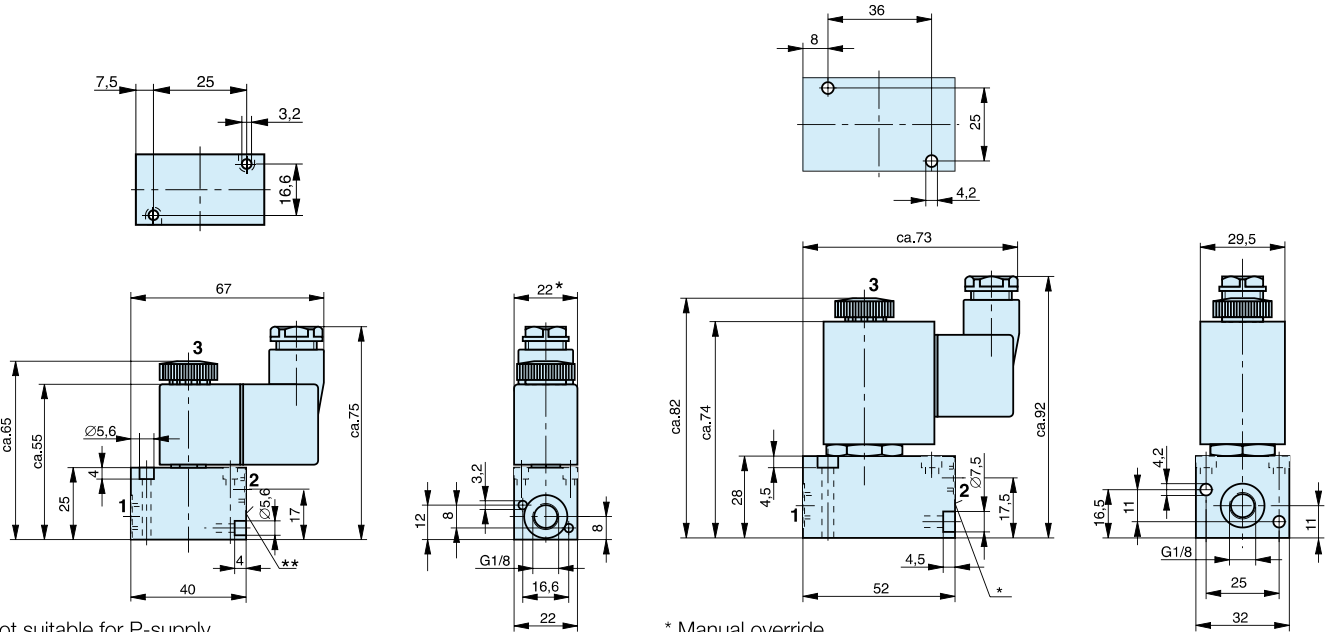
IP 65 to DIN 40050 (applies only to solenoid with connector)

Connection

NW 1.3: connector to DIN EN 175301-803 form B – industrial standard
NW 2.5: connector to DIN EN 175301-803 form A – industrial standard

Type: V9 381RF-1/8NG (NO^(†))– NW 1.3
 Type: V9 381H-RF-1/8NG (NO^(†))– NW 1.3

Type: V9 381RF-1/8NG – NW 2.5
 Type: V9 381H-RF-1/8NG – NW 2.5



^(†) not suitable for P-supply manifold mounting

* Manual override
 Dimensions in mm

Order Instructions – 3/2 Way Valves – Series V9

Actuation System	Symbol	Nominal Size (mm)	Order Instructions Type	Order code
Electrical, by permanent signal		NW 1.3	V9 381RF-1/8-NC-..	PA 10362-..33
		NW 2.5	V9 381RF-1/8-NC-..	PA 10369-..33
		NW 1.3	V9 381H-RF-1/8-NC-..	PA 10363-..33
		NW 2.5	V9 381H-RF-1/8-NC-..	PA 10370-..33
		NW 1.3	V9 381H-RF-1/8-NO-..	PA 10367-..33

Solenoid version	Nominal voltage	Applicable for	Key code
Standard version	230V 50/60Hz	110 V =	61
	24V =	48V 50/60Hz	02
Low wattage version	24V =		13
	230V 50/60Hz		69

Other voltages on request

Order Instructions – Accessories for P-Supply Manifold Mounting

Description	for NW	Order No.
P-Manifold PL-1/8-..	1.3	PD32763-....*
P-Manifold PLK-1/8-..	1.3	PD37174-....*
P-Manifold PL-1/4-..	2.5	PD32765-....*
P-Manifold PLK-1/4-..	2.5	PD32175-....*

* Complete order no. with no. of valve

The delivery includes:
 P-Manifold complete incl. mounting kit

