HOERBIGER

Special Valves

Connection size G1/8 to G2

Contents

A4P026E-October 2006

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Way Valves with NAMUR Connections

Characteristics for Standard Valves

Series S9 – G1/8, G1/4 NAMUR

Characteristics	Symbol	Unit	Series S9	
			G1/8	G1/4
Actuation			Electrically actuated	Electrically actuated
General Features				
Type			Spoolvalve	Spoolvalve
Mounting			2 Screws M5	2 Screws M6
Tube connection			Thread/NAMUR connections	Thread/NAMUR connections
Thread			G1/8 – 7,4 deep	G1/4 – 11 deep
Weight		kg	0.245 permanent signal version	0.600 permanent signal version
		kg	0.340 impulse version	0.700 impulse version
Installation			In any position	In any position
Ambient temperature range (1	$T_{min./max.}$	°C	-10 to +60	-10 to +60
Medium temperature range (1	$T_{min./max.}$	°C	-10 to +60	-10 to +60
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	$p_{min./max.}$	bar	6	
Operating pressure range				
– permanent signal version	$p_{min./max.}$	bar	2–10	
– impulse version	$p_{min./max.}$	bar	1.5–10	
Nominal flow	Q_N	l/min	500	1300 (3
Actuation				
Electrical			Pilot operated	
Voltage type			Alternating current (50/60Hz)	Direct current
Nominal voltage				
– Standard version	Un	V	230 ±10%	24 ±10% other voltages on request
– Low wattage version	Un	V	230 ±10%	24 ±10% other voltages on request
Initial power consumption				
– Standard version		VA (W)	8.5	2.5
– Low wattage version		VA (W)	6.6	2.1
Continuous consumption				
– Standard version		VA (W)	6.0	2.5
– Low wattage version		VA (W)	3.9	2.1
Duty cycle	ED	%	100	
Electrical protection		IP	IP 65 to DIN 40050 (applise only to solenoid with connector)	
Connection			Plug to DIN EN 175301-803 form B – industrial standard (2	

(1 Note :
Please consult us for operating temperatures below 0° C

(2 Low wattage version connector DIN EN 175301-803 form A
(3 Version “middle position vented“ 1000 l/min

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Way Valves with NAMUR Connections

Characteristics for Valves in EX Areas

Series S9 – G1/8, G1/4 NAMUR

Characteristics	Symbol	Unit	Series S9	
			G1/8	G1/4
Actuation			Electrically actuated	Electrically actuated
General Features				
Type			Spool valve	Spool valve
Mounting			2 Screws M5	2 Screws M6
Tube connection			Thread/NAMUR connections	Thread/NAMUR connections
Weight		kg	0.245 permanent signal version	0.600 permanent signal version
			0.340 impulse version	0.700 impulse version
Installation			In any position	In any position
Ambient temperature range ([1]	$T_{min./max.}$	°C	-10 to +60	-10 to +60
Medium temperature range ([1]	$T_{min./max.}$	°C	-10 to +60	-10 to +60
Medium			Filtered, unlibricated compressed air – free from water and dirt to ISO 8573-1 Solids: Class 7 particle < 40µm for gas Water content: pressure dew point +3°C, Class 4, but at least 5 °C below minimum operating temperature	
Pneumatic Characteristics				
Nominal pressure	$p_{min./max.}$	bar	6	
Operating pressure range				
– permanent signal version	$p_{min./max.}$	bar	2–8	
– impulse version	$p_{min./max.}$	bar	1.5–8	
Nominal flow	Q_N	l/min	500	1300 ([3
Actuation				
Electrical			Pilot operated	
Certification			EC Type Test Certificate for single valve: not required for mechanical units EC Type Test Certificate for solenoid coil: PTB-No. 03 Ex IEC 2019X and PTB 03 ATEX 2018X to T5	
Category, type of ignition protection			Single valve: Ⓔx II 2G c T4 T135°C -10°C≤Ta≤+60°C Solenoid/individual use: Ⓔx II 2G EEx m II T5 -20°C≤Ta≤+50°C Solenoid/manifold mounting: Ⓔx II 2G EEx m II T5 -20°C≤Ta≤+40°C	
Voltage type			Alternating current (50/60Hz)	Direct current
Nominal voltage	UN	V	230 ±10% 110 ±10% 24 ±10%	24 ±10% other voltages on request
Max. switching frequency		Hz	1	
Connection			G1/8, G1/4	G1/8, G1/4
Power rating at U_N		VA (W)	3.1 (230V) 3.0 (110V) 2.5 (24V)	3.3 (24V)
Max. power at U_N ([2		VA (W)	2.9 (230V) 2.8 (110V) 2.4 (24V)	3.0 (24V)
Electrical protection		IP	IP65 (applise only to solenoid with cable)	
Connection			Cable – cable lengths see Order Instructions	

([1 Note : Please consult us for operating temperatures below 0° C
([2 Maximum power if warmed up to thermal load limit
([3 Version “middle position vented“ 1000 l/min

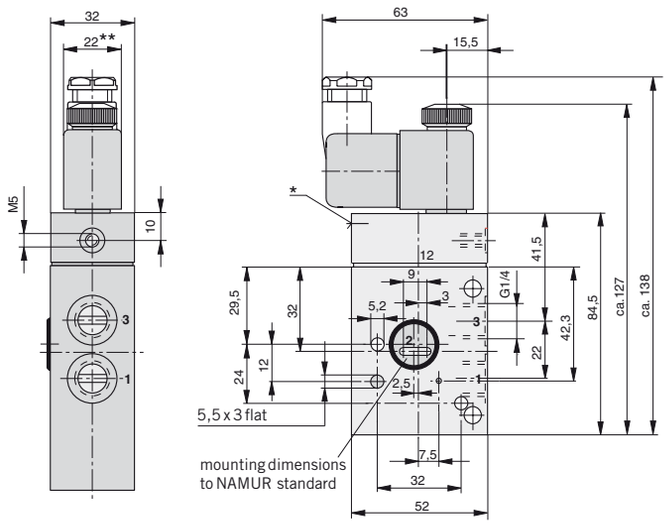
3/2 Way Valves Series S9

G1/4

Actuations:
– Electrical pilot operated

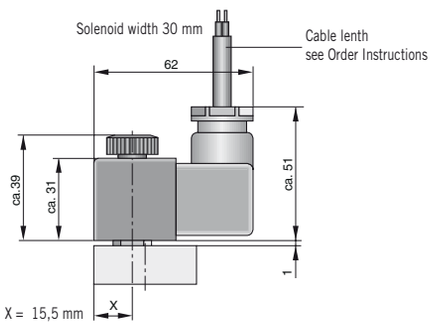
Versions:
– With NAMUR connections
– Version to ATEX Standard

Electrically actuated – Type: S9 381RF-1/4-NC SO



* Manual override
** Solenoid width = 30 mm on low wattage coil version

Solenoid for use in EX areas
Dimensions



The delivery includes:
1 Valve
2 Mounting Screws
1 Coding pin
2 O-Rings

For more information on valves to ATEX standards
see page 46, 47, 107

Overview see page 107

Dimensions in mm

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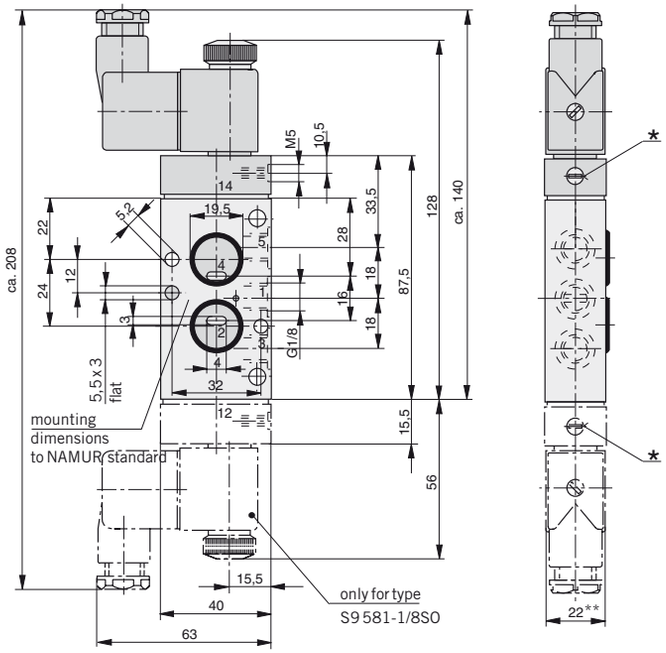
5/2 Way Valves Series S9

G1/8, G1/4

Actuations:
– Electrical pilot operated

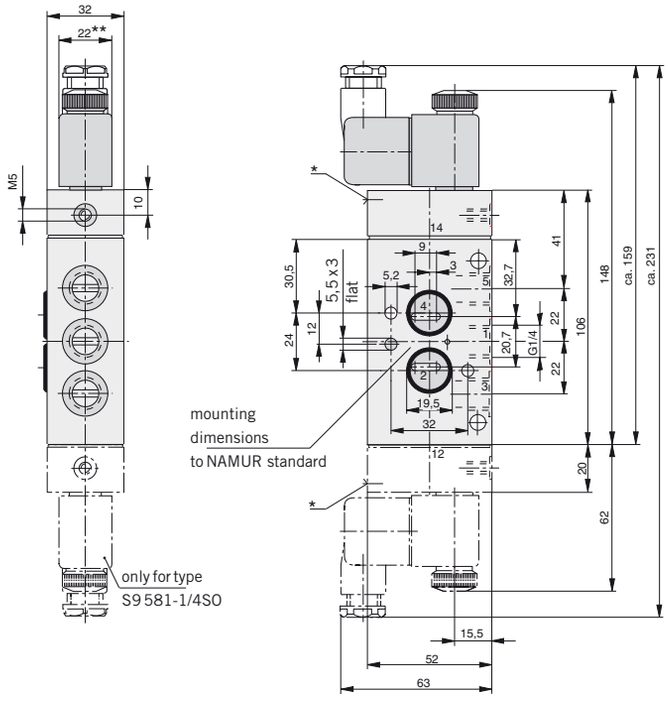
Versions:
– With NAMUR connections
– Version to ATEX standard

Electrically actuated – Type: S9 581..-1/8 SO



* Manual override
** Solenoid width = 30 mm on low wattage coil version

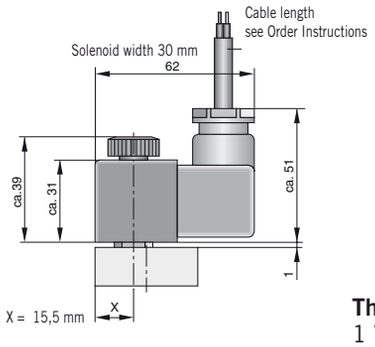
Electrically actuated – Type: S9 581..-1/4 SO



* Manual override
** Solenoid width = 30 mm on low wattage coil version

Solenoid for use in EX areas

Dimensions



For more information on valves to ATEX standards see page 46, 47, 107

The delivery includes:
1 Valve
2 Mounting Screws
1 Coding pin
2 O-Rings

Overview see page 107

Dimensions in mm

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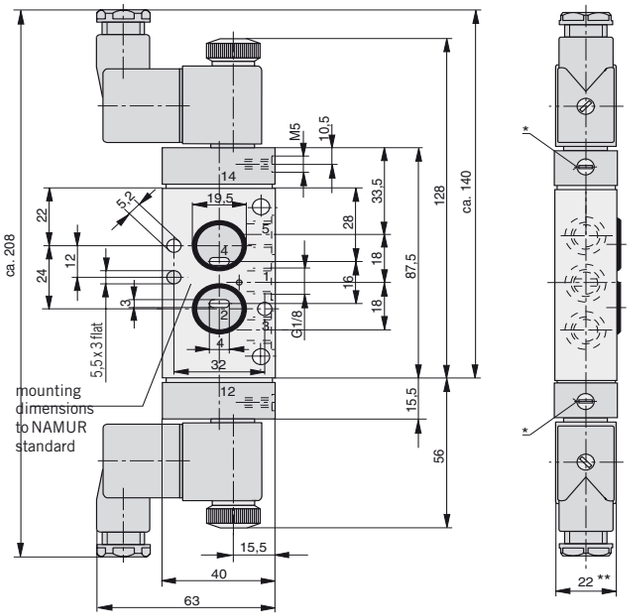
5/3 Way Valves Series S9

G1/8, G1/4

Actuations:
– Electrical pilot operated

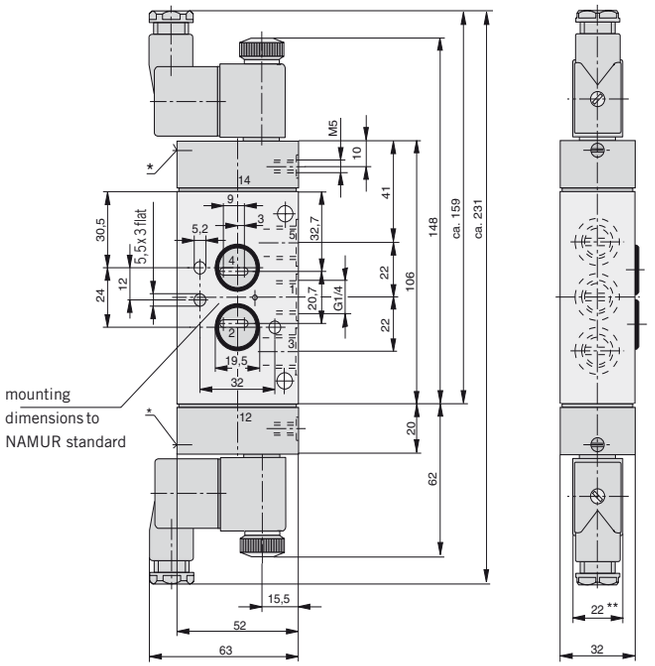
Versions:
– With NAMUR connections
– Version to ATEX Standard

Electrically actuated – Type: S9 581RF.-1/8-NC SO



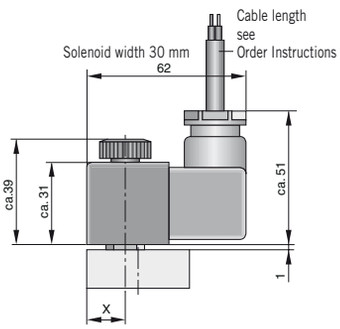
* Manual override
** Solenoid width = 30 mm on low wattage coil version

Electrically actuated – Type: S9 581RF.-1/4-NC SO



Solenoid for use in EX areas

Dimensions



For more information on valves to ATEX standards see page 46, 47, 107

* Manual override
** Solenoid width = 30 mm on low wattage coil version

The delivery includes:
1 Ventil
2 Mounting Screws
1 Coding pin
2 O-Rings

Overview see page 107

Dimensions in mm

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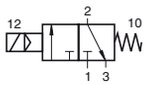
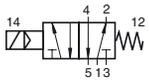
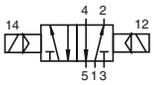
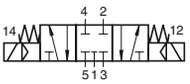
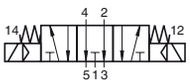
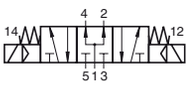
Order Instructions – 3/2, 5/2 and 5/3 Way Valves – with NAMUR connections

Actuation	Symbol	Order Instructions Type	Order No.	Page
Electrical, permanent signal		S9 381RF-1/4NG SO-..	PD 33854-..33	104
Electrical, permanent signal		S9 581RF-1/8 SO-..	PD 34143-..33	105
		S9 581RF-1/4 SO-..	PD 34985-..33	105
Electrical, impulse		S9 581-1/8 SO-..	PD 34984-..33	105
		S9 581-1/4 SO-..	PD 34986-..33	105
Electrical, permanent signal spring return to middle position		S9 581RFG-1/8 SO-..	PD 40813-..33	106
		S9 581RFG-1/4 SO-..	PD 40808-..33	106
		S9 581RFE-1/8 SO-..	PD 40814-..33	106
		S9 581RFE-1/4 SO-..	PD 40618-..33	106
		S9 581RFB-1/8 SO-..	PD 40815-..33	106
		S9 581RFB-1/4 SO-..	PD 40809-..33	106

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

Solenoid version	Nominal voltage	Applicable for	Key code	ATEX Type additon
Solenoid – with cable 1.2 m	24V =		48	ATEX
– 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 581RFG-1/8SO-4633
Order No. PA34143-4633ATEX

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5/2 Way Valve Series S9

G1/8, G1/4

Actuation:
– Pneumatic
for two hand operation

2 hand operated valve for pneumatically controlled machines and equipment.

The 2-handed trip valves PD37173 and PD37673 are classed as category 1 in accordance with
DIN EN 954-1
(only in connection with suitable push button valves) and type IIIA in accordance with DIN EN 574.

ISO 13851:
Safety of machines; two-handed controls.

ISO 13849-1:
Safety of machines; safety-related parts of control systems.

Area of application:
The 2-handed safety valves are intended to be used where persons carry out manual control functions in areas that are subject to accident risks. These comprise primarily equipment with pneumatic cylinders, the operation of which requires that both hands are kept away from the danger zone. The valves can also be used to prevent unintended starts of pneumatic processes.

Characteristics – Pneumatically actuated with 2 hand operation and Time Delay Valve

Characteristics	Symbol	Unit	Description		
Version			Two Hand Operation		Time Delay Valve
Type			S9 563/65RF-1/8-SO	S9 563/65RF-1/4-SO	S9 361RF-1/8-SO
General Features					
Type			Spool valve	Spool valve	Spool valve
Mounting			2 Screws M5	2 Screws M6	2 Screws M5
Tube connection			Thread	Thread	Thread
Port size			G1/8	G1/4 (12.1 and 12.2: G1/8)	G1/8
Weight (mass)		kg	0.27	0.64	0.18
Installation			In any position		
Ambient temperature range	$T_{min/max}$	°C	-10 to +60 **		
Medium temperature range	$T_{min/max}$	°C	-10 to +60 **		
Medium			Filtered compressed air - free from water and dirt to ISO 8573-1 Solids: Class 6 particle <5µm for Gas gaswater content: pressure dew point +3°C, Class 4, but at least 5°C less than min. operating temperature		
Lubrication *			none or oil mist lubrication		
Pneumatic Characteristics					
Nominal pressure	p_n	bar	6		
Operating pressure range	$p_{min/max}$	bar	0 – 10		2-10
Nominal flow	Q_N	l/min	500	1300	450
Actuation					
Pneumatic			Direct		
Actuation pressure range	$p_{st\ min/max}$		2 – 10	3 – 10	2-10

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

Function:
The valve only switches from outlet port 4 to outlet port 2 if both signal inlets are simultaneously actuated or are actuated within 0.5 s.
When the operator releases one or both control buttons, the valve switches back immediately.

In order to resume the switch function, both trip signals have to be cancelled first.

Note:
Not applicable for operating eccentric presses and presses of similar design.

Fitting Instructions:
If due to mechanical stopping and re-opening of the compressed air supply both control buttons are operated or possibly blocked at the same time, the 2-handed trip valve will continue the control function. The 2-handed trip valve is not suited to prevent the switching from port 4 to port 2 upon the compressed air being switched back on after it was shut off and/or permanently operated control buttons.
In order to prevent this process from happening, we advise users that it is necessary to install a time-delay valve in the supply line of one of the control buttons (line 12.1 or 12.2).

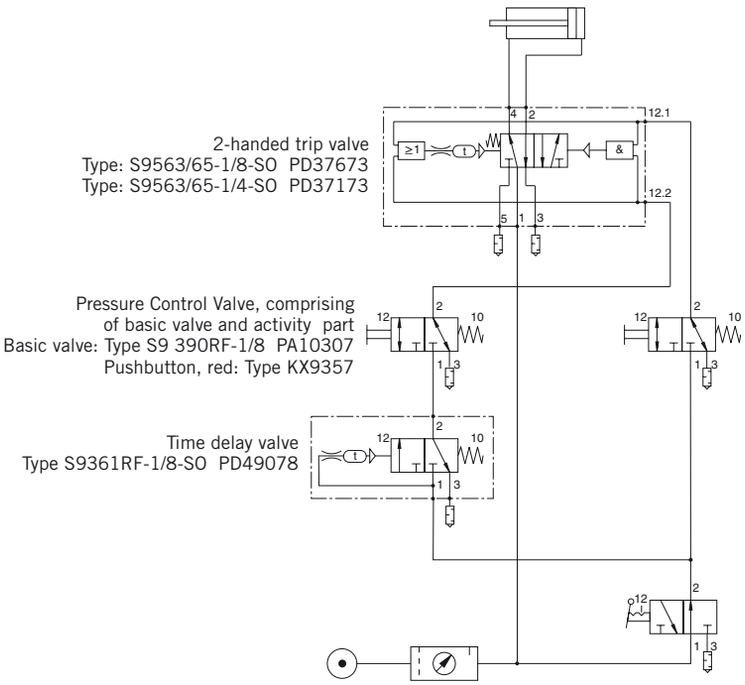
We recommend the following time-delay valve from our range: type PD49078.
As push button valve we recommend the basic valve PA10307 for control panel configuration, in combination with push button KX9357.

Characteristics of time-delay valve see table above.

Dimensions in mm

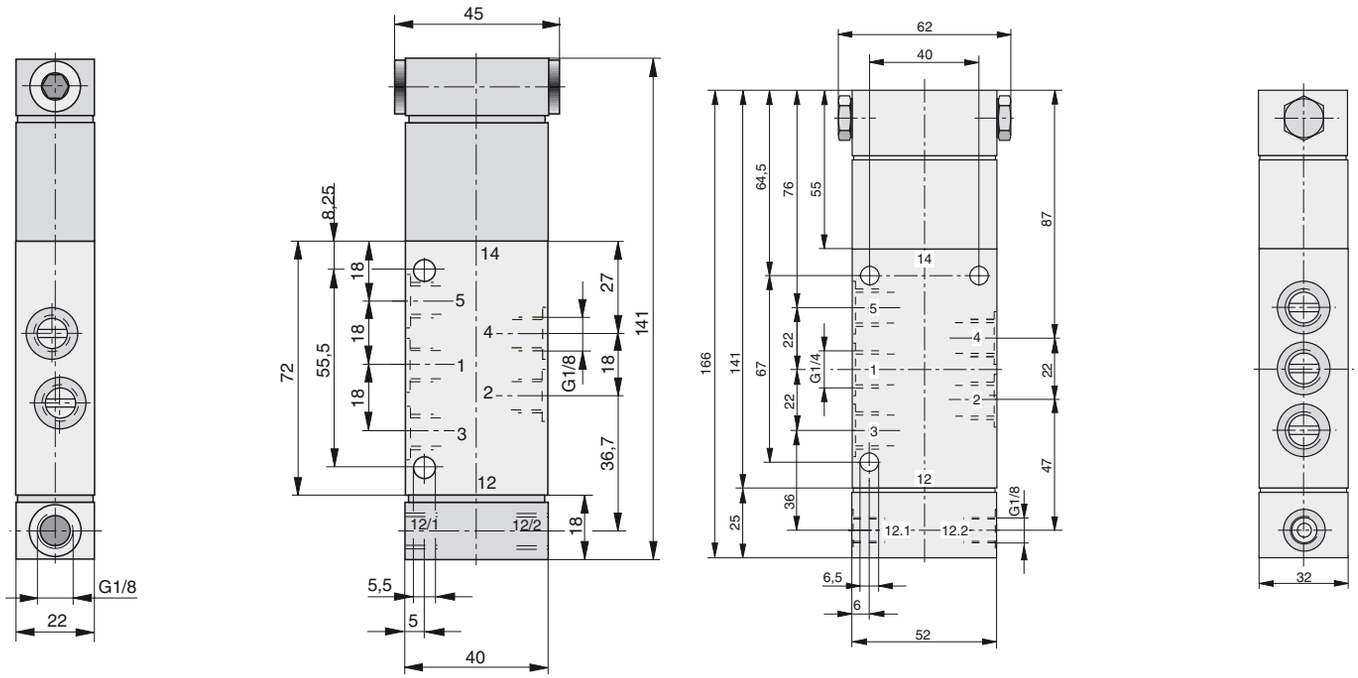
Safety switch diagram (example)
Usage of 2-hand-operation valve with cecessary time delay valve

In order to comply with safety requirements, plant and equipment with certain operating mechanisms require the installation of a time-delay valve in the pneumatic control system, as shown in the example.



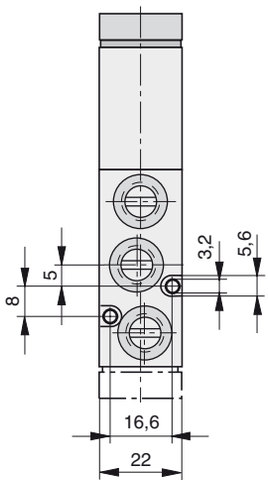
Pneumatically actuated by 2-handed trip valve
Type: S9 563/65RF-1/8-SO

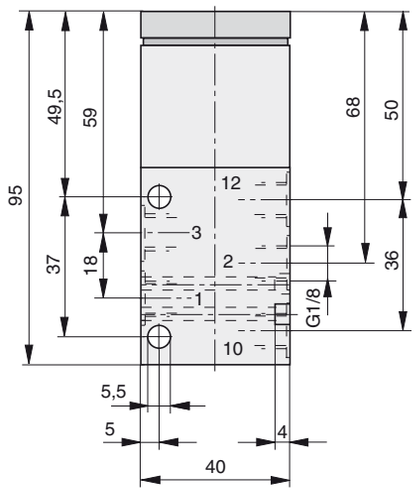
Type: S9 563/65RF-1/4-SO



Dimensions in mm

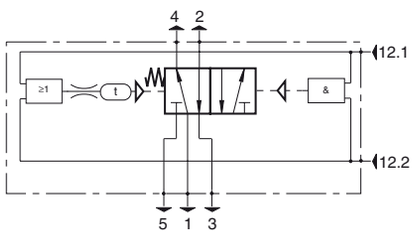
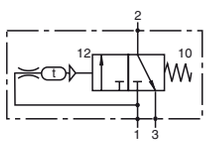
Time-delay valve to 2-handed trip valve
Type: S9 361RF-1/8-SO





Note:
Suitable measures must be taken to protect the valves against ingress of dust and water.

Order Instructions

Actuation	Symbol	Order Instructions	
		Type	Order No.
pneumatic, by 2-hand tripping		S9 563/65RF-1/8-SO	PD37673
		S9 563/65RF-1/4-SO	PD37173
Time Delay Valve for 2-Hand-safety related control		S9 361RF-1/8-SO	PD49078

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5/2-Way Oscillating Valves Series S9

G1/4

Actuation:
– Pneumatic

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

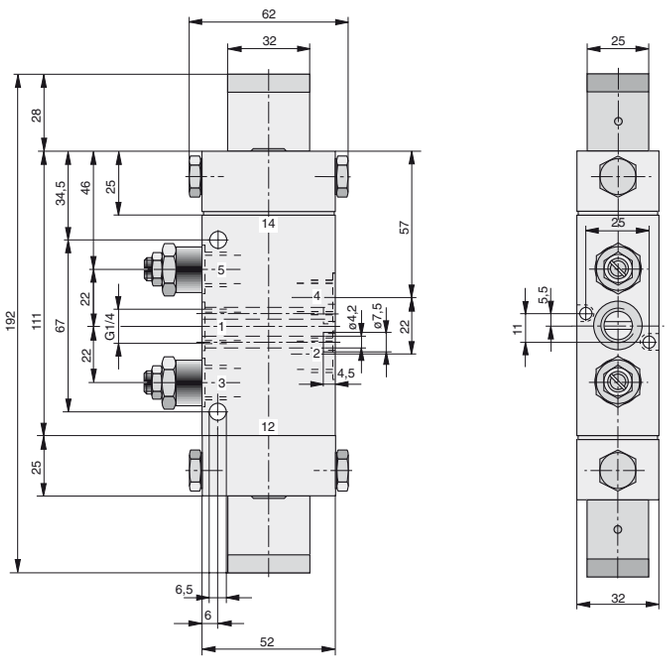
Function:
If compressed air is intro-du-cesed into inlet port 1, the outlet ports 4 and 2 are alternately supplied with compressed air.
The speed of the operated cylinder and also the stroke frequency are adjusted with two exhaust air throttles.

Characteristics

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

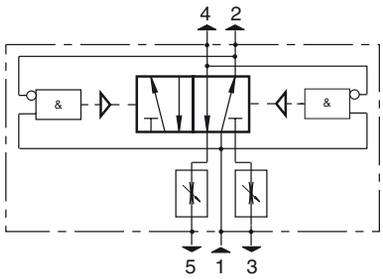
* We recommend the use of mineral oil type VG 32 to ISO 3448
** Note: Please consult us for operating temperatures below 0° C

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



Dimensions in mm

Order Instructions

Actuation	Symbol	Order Instructions	
		Type	Order No.
Pneumatic		S9 568/68-1/4-SO	PD 34796

Dimensions in mm

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3/2 and 5/2 Way Valves Pedal actuated Series F

G1/4

Actuation:
– Pedal

Connections for 3/2 way version:

Version
„Normally closed“: P, B, S
„Normally open“: P, A, R

* Only for version “both switch positions indexed“
– return is only effected after actuating the locking pedal.

Mounting Instruction:
Use only screw connections with max. wrench size across flats of 15.

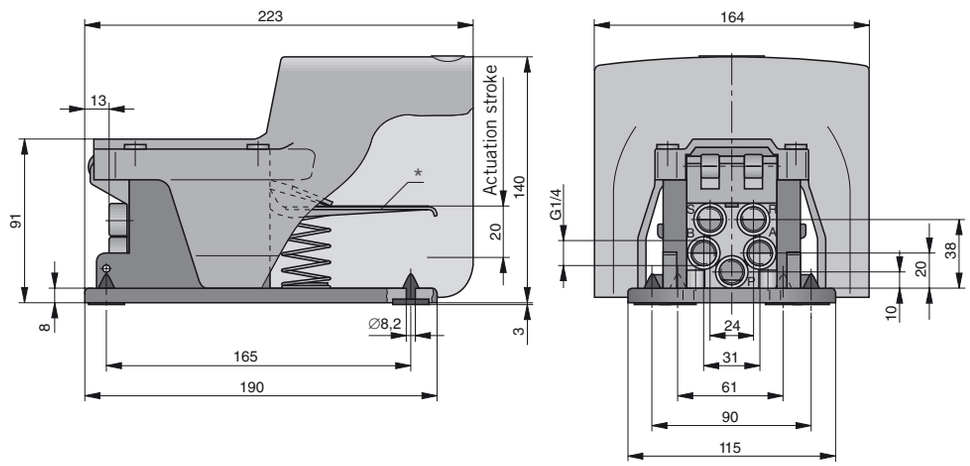
Connection designation:
A = 4 Outlet
B = 2 Outlet
R = 5 Exhaust
P = 1 Air supply
S = 3 Exhaust

Characteristics

Characteristics	Symbol	Unit	Description
General Features			
Type			Poppet Valve
Mounting			4 Screws M8 (1
Tube connection			Thread
Port size			G1/4
Weight (mass)		kg	1.5
Installation			In any position
Ambient temperature range (3	$T_{min/max}$	°C	-10 to +55
Medium temperature range (3	$T_{min/max}$	°C	-10 to +60
Medium			Filtered and oiled or filtered, unoiled compressed air
Lubrication (2			Oil mist lubrication compatible with Buna N
Pneumatic Characteristics			
Nominal pressure	p_n	bar	6
Operating pressure range	$p_{min/max}$	bar	0 – 10
Nominal flow	Q_N	l/min	1400
Actuation			
Manual control			Direct
Stroke		mm	2
Actuation force	Fb	N	ca. 30

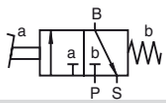
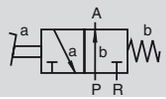
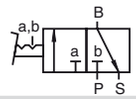
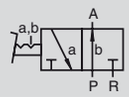
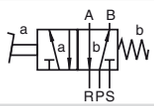
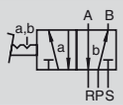
(1 After removing the rubber footing
(2 We recommend the use of mineral oil type VG 32 to ISO 3448
(3 Note: Please consult us for operating temperatures below 0° C

Pedal actuated – Type: F331..-08.., F531..-08



Dimensions in mm

Order Instructions – 3/2 and 5/2 Way Valves

Actuation	Symbol	Order Instructions	
		Type	Order No.
Pedal with spring return		F 331RF-08NG*	KZ 4410
		F 331RF-08NO*	KZ 4411
Pedal without reset		F 331-08NG*	KZ 4408
		F 331-08NO*	KZ 4409
Pedal with spring return		F 531RF-08	KZ 4413
Pedal both switch positions indexed		F 531-08	KZ 4412

* NC – Version normally closed
NO – Version normally open

Dimensions in mm

HOERBIGER

2/2 Way Stop Valves Series ARKV

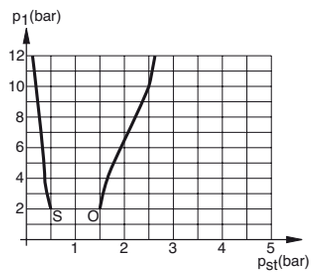
G1/2 to G2

Actuation:
– Pneumatic

Characteristics

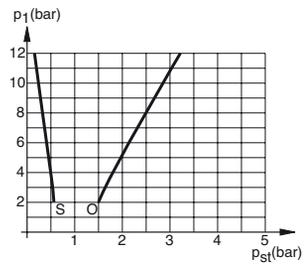
Characteristics	Symbol	Unit	Description				
General Features							
Description			2/2 Way Valve				
Type			Poppet valve normally closed				
Mounting			Direct in piping				
Tube connection			Thread				
Port size			G1/2	G3/4	G1	G1 1/2	G2
Weight (mass)		kg	0.745	1.115	1.365	2.695	4.290
Installation			In any position				
Ambient temperature range	$T_{min/max}$	°C	-20 to +80	Note: Please consult us for operating temperatures below 0° C			
Medium temperature range	$T_{min/max}$	°C	0 to +80				
Medium			Compressed air, neutral gases, presswater (for low flow- und valve closingspeed only)				
Actuating medium			filtered compressed air				
Pneumatic characteristics							
Nominal pressure	p_n	bar	6.3				
Operating pressure range	$p_{min/max}$	bar	0 – 10				
Nominal flow	Q_N	l/min	2200	5000	6900	22000	40000
Actuation							
Pneumatic			Direct				

Actuating Pressure – Type: ARKV-15



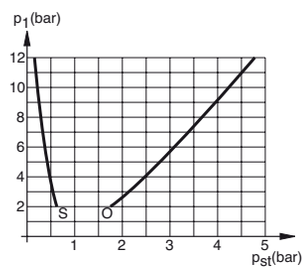
O = $p_{st\ min}$ to open
S = $p_{st\ max}$ to close

Actuating Pressure – Type: ARKV-20



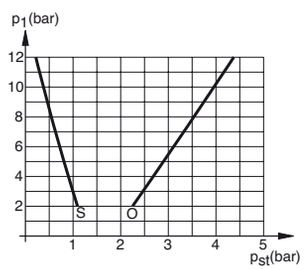
O = $p_{st\ min}$ to open
S = $p_{st\ max}$ to close

Actuating Pressure – Type: ARKV-25



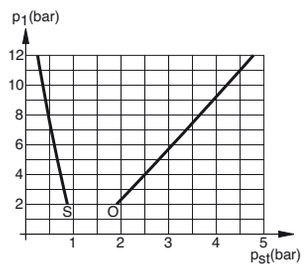
O = $p_{st\ min}$ to open
S = $p_{st\ max}$ to close

Actuating Pressure – Type: ARKV-40



O = $p_{st\ min}$ to open
S = $p_{st\ max}$ to close

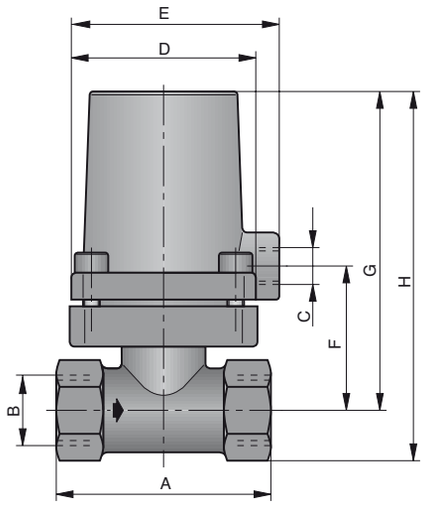
Actuating Pressure – Type: ARKV-50



O = $p_{st\ min}$ to open
S = $p_{st\ max}$ to close

Dimensions in mm

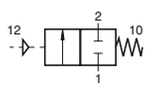
Pneumatically actuated – Type: ARKV-..



Dimension Table

Type	A	B	C	D	E	F	G	H
ARKV-15 NC	65	G1/2	G1/8	55	61	41.5	95	109.5
ARKV-20 NC	76	G3/4	G1/4	65	75	50	112	129
ARKV-25 NC	91	G1	G1/4	65	75	57	119	139
ARKV-40 NC	123	G11/2	G1/4	110	112	67	137	167.5
ARKV-50 NC	150	G2	G1/4	130	134	75	153	190

Order Instructions

Actuation	Symbol	Order data	
		Type	Order No.
Pneumatic		ARKV-15 NC	PD 07334
		ARKV-20 NC	PD 07580
		ARKV-25 NC	PD 07581
		ARKV-40 NC	PD 07757
		ARKV-50 NC	PD 07765

Dimensions in mm