

**AUTOMATION  
TECHNOLOGY**

**VALVES**

**VALVE SERIES S9**

**BODY SIZES: 1/8 • 1/4 • 1/2**

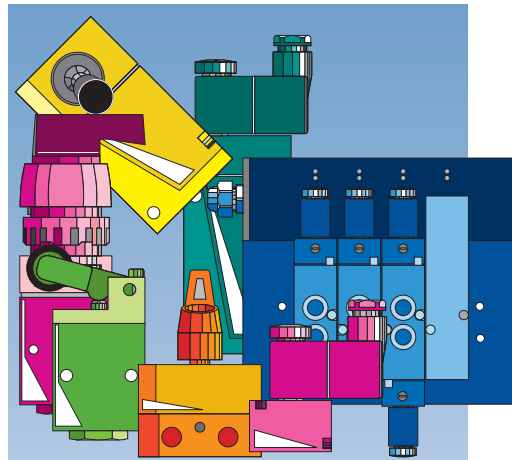
**NPT OR G PORTS**

**SOLENOID, AIR PILOT, HAND LEVER, NAMUR, IS-MODULE  
TWO-HAND SAFETY, OSCILLATING, FOOT PEDAL**

**VALVE SERIES S20**

**ISO SIZES: 1, 2, 3**

**SOLENOID, AIR PILOT**



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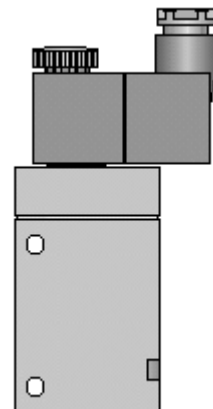
# 3/2-Way Valve 1/8

**Actuation: Solenoid**

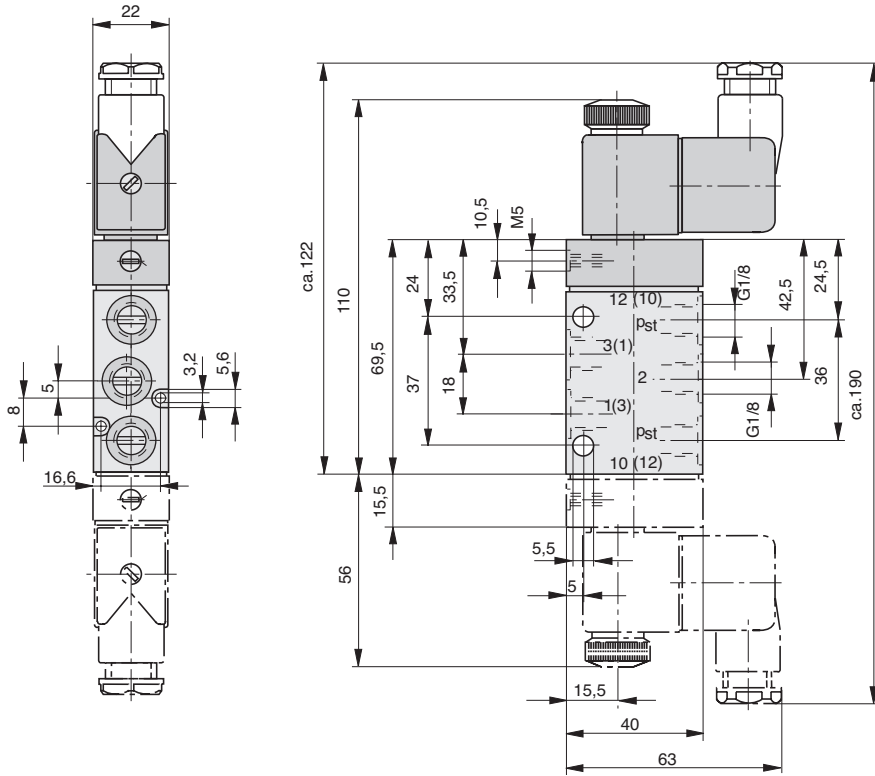
- Single Solenoid
- Double Solenoid

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M6 (M3)		
Tube connection			Thread		
Port size		NPT (G)	1/8		
Weight (mass)		lbs. (kg)	.54 (0.247) Single solenoid .84 (0.382) Double solenoid		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	Single solenoid 29 (2) 145 (10)		
		psi (bar)	Double solenoid 22 (1.5) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	.45 (450)		
<b>Actuation</b>					
Electrical			Pilot operated		
Voltage			AC	DC	
Nominal voltage* Standard version	$U_n$	V	220	24	
Initial power consumption Standard version		VA (W)	8.5	2.5	
Continuous consumption Standard version		VA (W)	6.0	2.5	
Duty cycle	ED	%	Continuous Duty		
Electrical protection			IP65 to DIN 40050 (with plug)		
Insulating material			VDE 0580		
Connection			Plug to DIN 43650 form B		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



**Dimensions (mm)**



Version 1/8		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
3/2 Single Solenoid/Spring Return		S9 381RF-1/8-NG-..	PA 10297-..33	S9 381RF-1/8U-NG-..	PD 43295-..33
3/2 Single Solenoid/Spring Return		S9 381RF-1/8-NO-..	PA 10298-..33	S9 381RF-1/8U-NO-..	PD 45459-..33
3/2 Double Solenoid		S9 381-1/8-..	PA 10299-..33	S9 381-1/8U-..	PD 45460-..33

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3674	<b>01</b>
24 vDC	60 50/60Hz	KZ 3673	<b>02</b>
110 50/60Hz	48 vDC	KZ 3669	<b>57</b>
220 50/60Hz	110 vDC	KZ 3672	<b>61</b>
24 50/60Hz	--	KZ 3675	<b>51</b>



- Other voltages available. Contact factory.
- Explosion proof coils available. Contact factory.
- UL/CSA rated coils available. Contact factory.

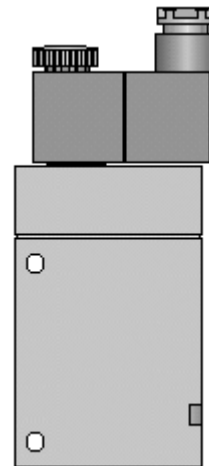
# 3/2-Way Valve 1/4

Actuation: Solenoid

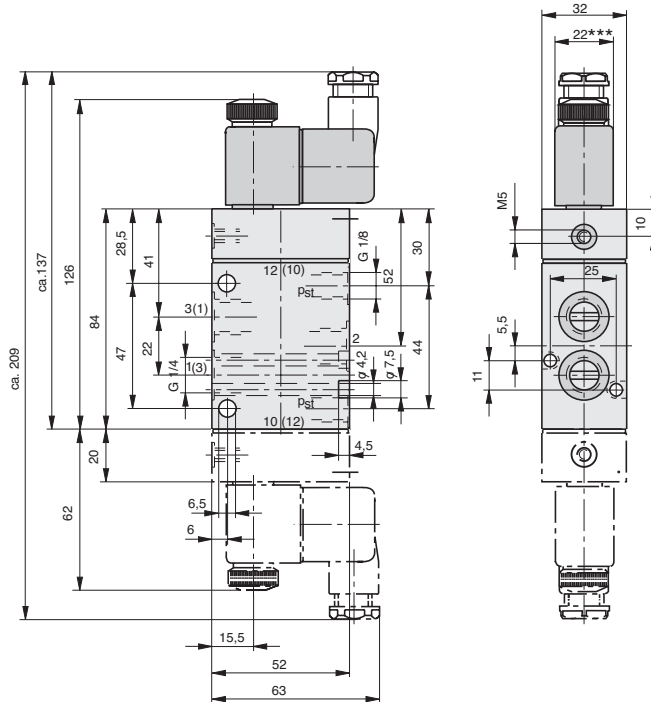
- Single Solenoid
- Double Solenoid

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M6 (M4)		
Tube connection			Thread		
Port size		NPT (G)	1/4		
Weight (mass)		lbs. (kg)	1.1 (0.5) Single solenoid 1.32 (0.6) Double solenoid		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	Single solenoid 29 (2) 145 (10)		
		psi (bar)	Double solenoid 22 (1.5) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	1.3 (1300)		
<b>Actuation</b>					
Electrical			Pilot operated		
Voltage			AC	DC	
Nominal voltage* Standard version	$U_n$	V	220	24	
Initial power consumption Standard version		VA (W)	8.5	2.5	
Continuous consumption Standard version		VA (W)	6.0	2.5	
Duty cycle	ED	%	Continuous Duty		
Electrical protection			IP65 to DIN 40050 (with plug)		
Insulating material			VDE 0580		
Connection			Plug to DIN 43650 form B		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



## Dimensions (mm)



Version 1/4		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
3/2 Single Solenoid/Spring Return		S9 381RF-1/4-NG-..	PA 12716-..33	S9 381RF-1/4U-NG-..	PD 45461-..33
3/2 Single Solenoid/Spring Return		S9 381RF-1/4-NO-..	PA 12717-..33	S9 381RF-1/4U-NO-..	PD 45462-..33
3/2 Double Solenoid		S9 381-1/4-..	PA 12718-..33	S9 381-1/4U-..	PD 45463-..33

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3674	01
24 vDC	60 50/60Hz	KZ 3673	02
110 50/60Hz	48 vDC	KZ 3669	57
220 50/60Hz	110 vDC	KZ 3672	61
24 50/60Hz	--	KZ 3675	51



- Other voltages available. Contact factory.
- Explosion proof coils available. Contact factory.
- UL/CSA rated coils available. Contact factory.

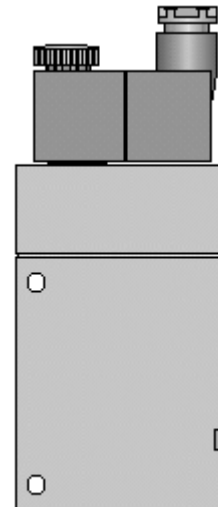
# 3/2-Way Valve 1/2

Actuation: Solenoid

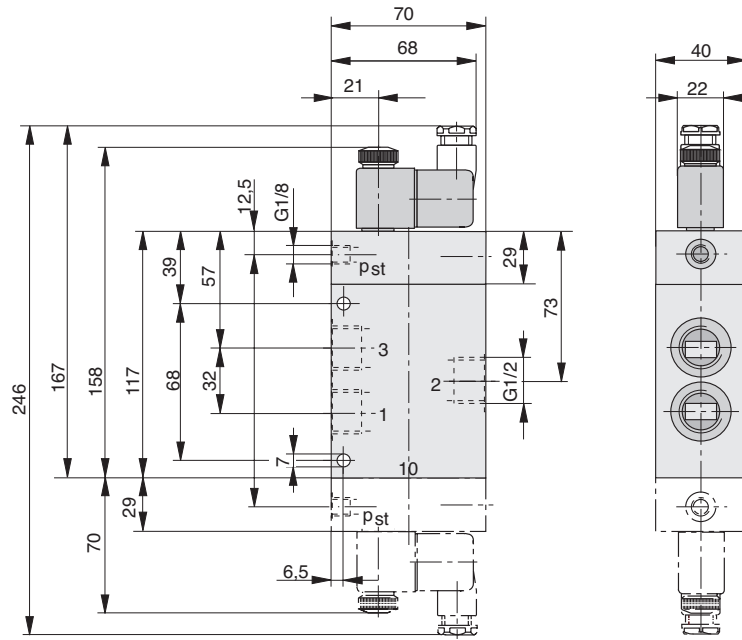
- Single Solenoid
- Double Solenoid

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M6		
Tube connection			Thread		
Port size		NPT (G)	1/2		
Weight (mass)		lbs. (kg)	1.69 (0.77) Single solenoid 1.32 (0.60) Double solenoid		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	Single solenoid 29 (2) 145 (10)		
			Double solenoid 22 (1.5) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	3.5 (3500)		
<b>Actuation</b>					
Electrical			Pilot operated		
Voltage			AC	DC	
Nominal voltage* Standard version	$U_n$	V	220	24	
Initial power consumption Standard version		VA (W)	11	4.8	
Continuous consumption Standard version		VA (W)	8.5	4.8	
Duty cycle	ED	%	Continuous Duty		
Electrical protection			IP65 to DIN 40050 (with plug)		
Insulating material			VDE 0580		
Connection			Plug to DIN 43650 form B		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



**Dimensions (mm)**



Version 1/2		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
3/2 Single Solenoid/Spring Return		S9 381RF-1/2-NG-..	PA 16412-..33	S9 381RF-1/2U-NG-..	PD 45464-..33
3/2 Single Solenoid/Spring Return		S9 381RF-1/2-NO-..	PA 16413-..33	S9 381RF-1/2U-NO-..	PD 45465-..33
3/2 Double Solenoid		S9 381-1/2-..	PA 16414-..33	S9 381-1/2U-..	PD 45466-..33

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3518	01
24 vDC	60 50/60Hz	KZ 3519	02
110 50/60Hz	48 vDC	KZ 3521	57
220 50/60Hz	110 vDC	KZ 3522	61



- Other voltages available. Contact factory.
- Explosion proof coils available. Contact factory.
- UL/CSA rated coils available. Contact factory.

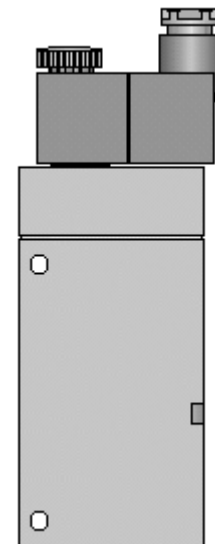


# 5/2-Way Valve 5/3-Way Valve

1/8 • 1/4 • 1/2

**Actuation: Solenoid**  
 - Single Solenoid  
 - Double Solenoid

Features						
Type			Spool Valve			
Mounting			2 Screws			
Port connection			Threaded			
Port size		G/NPT	1/8 • 1/4 • 1/2			
Installation			In Any Position			
Ambient temperature range	min max		14°F (-10°C) 140°F (+60°C)	Note: When using below freezing point it is necessary to consult factory.		
Medium temperature range	min max		14°F (-10°C) 158°F (+70°C)			
Medium			Filtered Compressed Air			
Lubrication			With or Without Oil Mist Lubrication <sup>1)</sup>			
Pneumatic Characteristics						
Body Size			5/2 Position		5/3 Position	
			Single	Double	Double	
1/8	Minimum Pressure psi (bar)		29 (2)	22 (1.5)	29 (2)	
	Maximum Pressure psi (bar)		145 (10)	145 (10)	145 (10)	
	Flow Cv (l/min)		0.5 (500)	0.5 (500)	0.6 (600)	
	Weight lbs. (kg)		0.62 (0.28)	0.91 (0.415)	0.94 (0.425)	
1/4	Minimum Pressure psi (bar)		29 (2)	22 (1.5)	29 (2)	
	Maximum Pressure psi (bar)		145 (10)	145 (10)	145 (10)	
	Flow Cv (l/min)		1.3 (1300)	1.3 (1300)	RFG,RFB:1.3(1300) RFE:1.0 (1000)	
	Weight lbs. (kg)		1.32 (0.6)	1.54 (0.7)	1.54 (0.7)	
1/2	Minimum Pressure psi (bar)		32 (2.2)	22 (1.5)	36 (2.5)	
	Maximum Pressure psi (bar)		145 (10)	145 (10)	145 (10)	
	Flow Cv (l/min)		3.5 (3500)	3.5 (3500)	RFE:3.3 (3300) RFG:3.5 (3500) RFB:3.6 (3600)	
	Weight lbs. (kg)		2.2 (1.0)	2.43 (1.1)	2.43 (1.1)	
Voltage		AC		DC		
Nominal Voltage	Standard Version	V	24, 110, 220	12, 24		
			Others Contact Factory			
Power Consumption						
Inrush	Body Size: 1/8 • 1/4			Body Size: 1/2		
	AC		DC	AC		DC
	50 HZ	60 HZ		50 HZ	60 HZ	
12	—	—	2.8 W	10.4VA	10.4VA	4.5 W
24	8.5VA	8.5VA	2.5 W	10.4VA	10.4VA	4.5 W
110	8.5VA	8.5VA	2.7 W	10.4VA	10.4VA	5.5 W
220	8.5VA	8.5VA	3.5 W	10.4VA	10.4VA	4.9 W
Holding	Body Size: 1/8 • 1/4			Body Size: 1/2		
	AC		DC	AC		DC
	50 HZ	60 HZ		50 HZ	60 HZ	
12	—	—	2.8 W	8.5VA	8.5VA	4.5 W
24	6.0VA	6.0VA	2.5 W	8.5VA	8.5VA	4.5 W
110	6.0VA	4.9VA	2.7 W	8.2VA	6.6VA	5.5 W
220	6.0VA	4.9VA	3.5 W	8.5VA	6.9VA	4.9 W
Duty cycle		ED	%	Continuous Duty		
Electrical protection				IP65 to DIN 40050 (with plug)		
Installing material				VDE 0580		
Connection				Plug to DIN 43650 Form B		



<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

VERSION 1/8		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return		S9 581RF-1/8-..	PA 10312-..33	S9 581RF-1/8 U-..	PD 40663-..33
5/2 Double Solenoid		S9 581-1/8-..	PA 10313-..33	S9 581-1/8 U-..	PD 40664-..33
5/3 Double Solenoid/Center Blocked		S9 581RFG-1/8-..	PA 10333-..33	S9 581RFG-1/8 U-..	PD 40736-..33
5/3 Double Solenoid/Center Exhaust		S9 581RFE-1/8-..	PA 10334-..33	S9 581RFE-1/8 U-..	PD 40737-..33
5/3 Double Solenoid/Dual Center		S9 581RFB-1/8-..	PA 10335-..33	S9 581RFB-1/8 U-..	PD 40738-..33

VERSION 1/4		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return		S9 581RF-1/4-..	PA 12679-..33	S9 581RF-1/4 U-..	PD 40665-..33
5/2 Double Solenoid		S9 581-1/4-..	PA 12680-..33	S9 581-1/4 U-..	PD 40666-..33
5/3 Double Solenoid/Center Blocked		S9 581RFG-1/4-..	PA 12705-..33	S9 581RFG-1/4 U-..	PD 40739-..33
5/3 Double Solenoid/Center Exhaust		S9 581RFE-1/4-..	PA 12706-..33	S9 581RFE-1/4 U-..	PD 40740-..33
5/3 Double Solenoid/Dual Center		S9 581RFB-1/4-..	PA 12707-..33	S9 581RFB-1/4 U-..	PD 40741-..33

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3674	01
24 vDC	60 50/60Hz	KZ 3673	02
110 50/60Hz	48 vDC	KZ 3669	57
220 50/60Hz	110 vDC	KZ 3672	61
24 50/60Hz	--	KZ 3675	51

- Other voltages available. Contact factory.
- Explosion proof coils available. Contact factory.
- UL/CSA rated coils available. Contact factory.



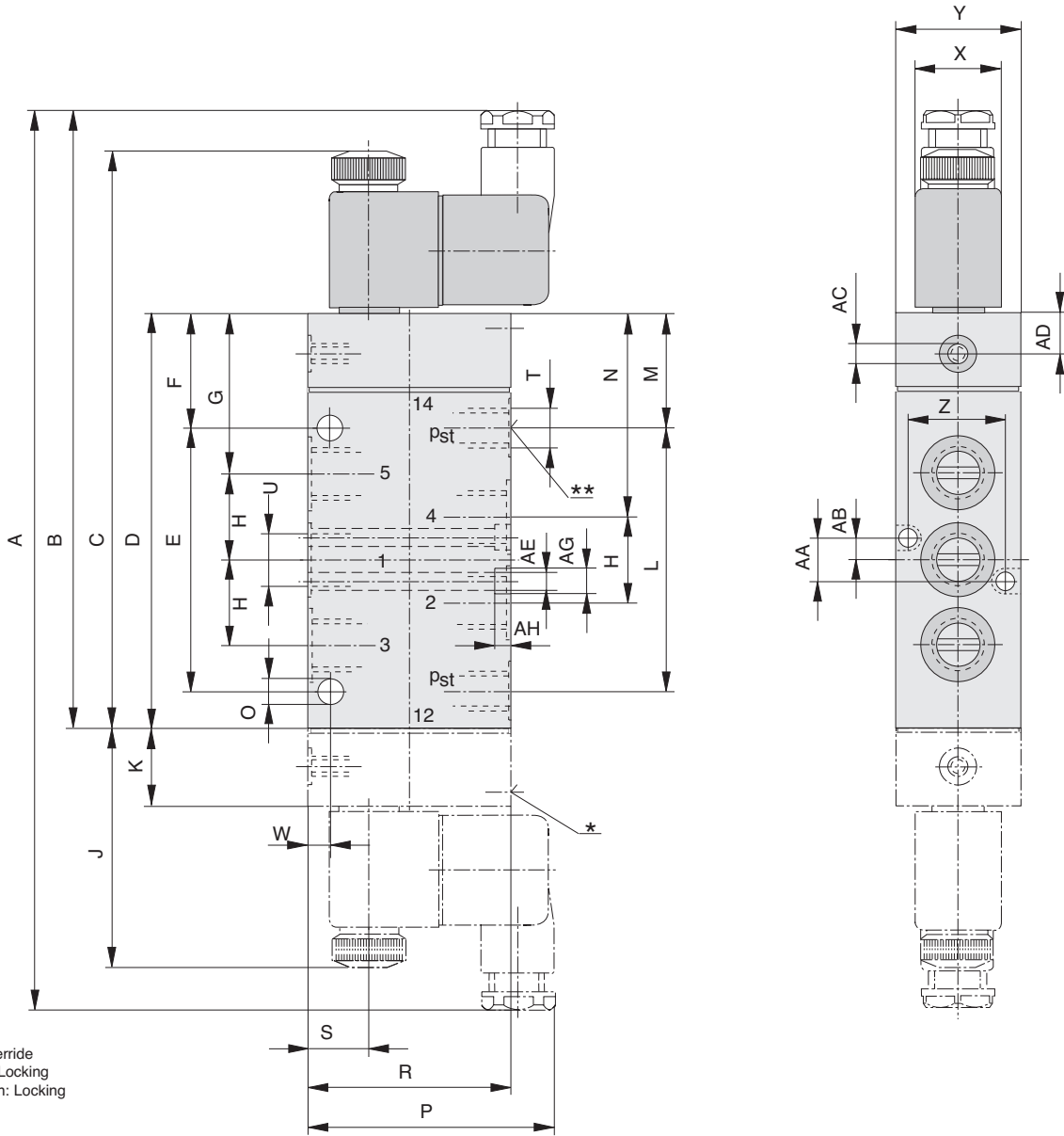
VERSION 1/2		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return		S9 581RF-1/2-..	PA 16171-..33	S9 581RF-1/2U-..	PD 37950-..33
5/2 Double Solenoid		S9 581-1/2-..	PA 16172-..33	S9 581-1/2U-..	PD 37951-..33
5/3 Double Solenoid/Center Blocked		S9 581RFG-1/2-..	PA 16176-..33	S9 581RFG-1/2U-..	PD 37971-..33
5/3 Double Solenoid/Center Exhaust		S9 581RFE-1/2-..	PA 16177-..33	S9 581RFE-1/2U-..	PD 37972-..33
5/3 Double Solenoid/Dual Center		S9 581RFB-1/2-..	PA 16178-..33	S9 581RFB-1/2U-..	PD 37973-..33

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3518	01
24 vDC	60 50/60Hz	KZ 3519	02
110 50/60Hz	48 vDC	KZ 3521	57
220 50/60Hz	110 vDC	KZ 3522	61

- Other voltages available. Contact factory.
- Explosion proof coils available. Contact factory.
- UL/CSA rated coils available. Contact factory.



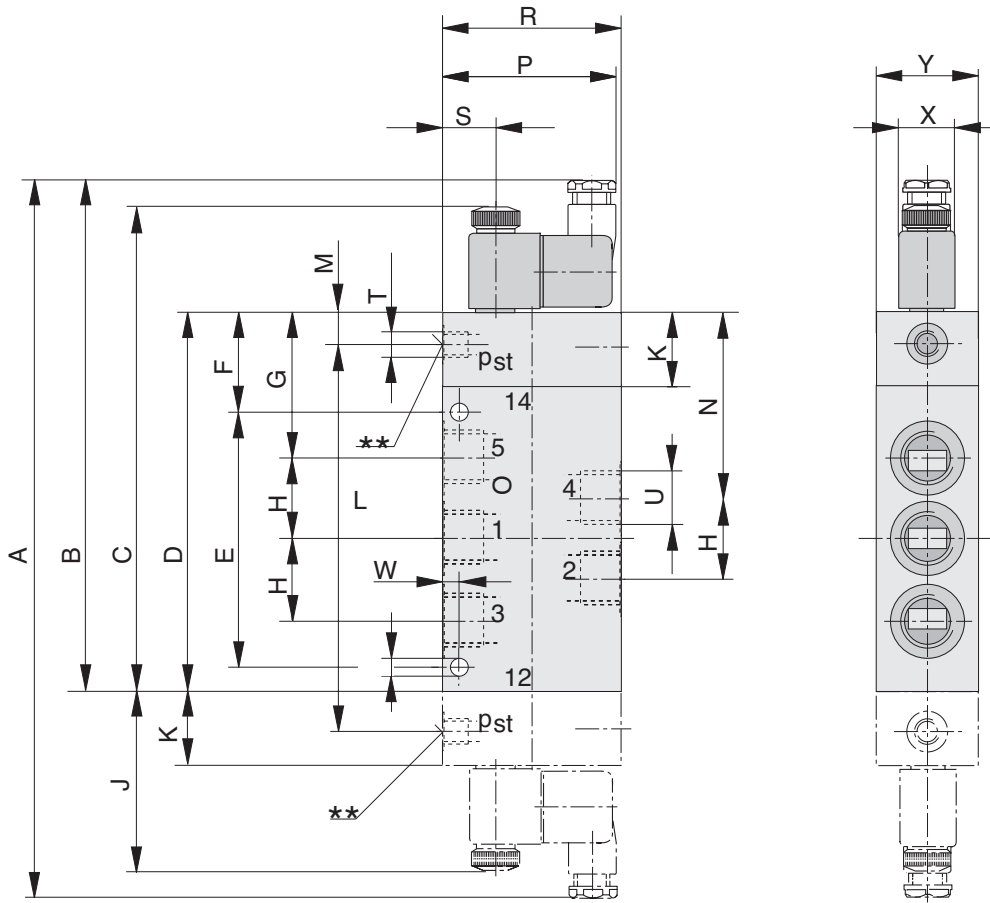
Sizes: 1/8 & 1/4



	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
1/8	<b>8.19</b> 208	<b>5.51</b> 140	<b>5.04</b> 128	<b>3.44</b> 87.5	<b>2.19</b> 55.5	<b>0.94</b> 24	<b>1.32</b> 33.5	<b>0.71</b> 18	<b>2.20</b> 56	<b>0.61</b> 15.5	<b>2.13</b> 54	<b>0.96</b> 24.5	<b>1.67</b> 42.5	<b>0.22</b> 5.5	<b>2.48</b> 63
1/4	<b>9.09</b> 231	<b>6.26</b> 159	<b>5.83</b> 148	<b>4.17</b> 106	<b>2.64</b> 67	<b>1.16</b> 29.5	<b>1.61</b> 41	<b>0.87</b> 22	<b>2.44</b> 62	<b>0.79</b> 20	<b>2.60</b> 66	<b>1.18</b> 30	<b>2.05</b> 52	<b>0.26</b> 6.5	<b>2.48</b> 63
	R	S	T	U	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
1/8	<b>1.57</b> 40	<b>0.61</b> 15.5	<b>1/8 npt</b> G 1/8	<b>1/8 npt</b> G 1/8	<b>0.20</b> 5	-- --	<b>0.87</b> 22	<b>0.65</b> 16.6	<b>0.31</b> 8	<b>0.20</b> 5	<b>M5</b> M5	<b>0.41</b> 10.5	-- --	<b>0.13</b> 3.2	<b>0.22</b> 5.6
1/4	<b>2.05</b> 52	<b>0.61</b> 15.5	<b>1/8 npt</b> G 1/8	<b>1/4 npt</b> G 1/4	<b>0.24</b> 6	<b>0.87</b> 22	<b>1.26</b> 32	<b>0.98</b> 25	<b>0.43</b> 11	<b>0.22</b> 5.5	<b>M5</b> M5	<b>0.39</b> 10	-- --	-- --	-- --

Dimensions: BOLD= Inches; STANDARD= mm

Size: 1/2



\*- Manual Override  
 Push: Non-Locking  
 Push & Turn: Locking

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>	<b>N</b>	<b>O</b>	<b>P</b>
1/2	<b>11.14</b> 283	<b>7.93</b> 201.5	<b>7.48</b> 190	<b>5.87</b> 149	<b>3.94</b> 100	<b>1.54</b> 39	<b>2.24</b> 57	<b>1.26</b> 32	<b>2.76</b> 70	<b>1.14</b> 29	-- --	<b>0.49</b> 12.5	<b>2.87</b> 73	<b>0.28</b> 7	<b>2.68</b> 68
	<b>R</b>	<b>S</b>	<b>T</b>	<b>U</b>	<b>W</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>AA</b>	<b>AB</b>	<b>AC</b>	<b>AD</b>	<b>AE</b>	<b>AF</b>	<b>AG</b>
1/2	<b>2.76</b> 70	<b>0.83</b> 21	<b>1/8 npt</b> G 1/8	<b>1/2 npt</b> G 1/2	<b>0.26</b> 6.5	<b>0.87</b> 22	<b>1.57</b> 40	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --

Dimensions: BOLD= Inches; STANDARD= mm

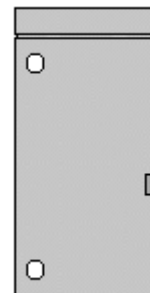
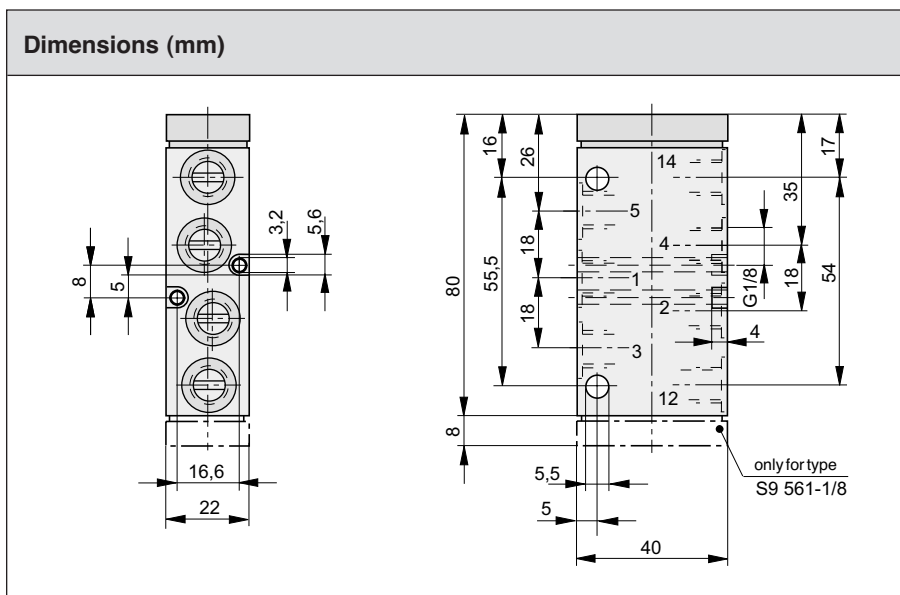
# 5/2-Way Valve 1/8

Actuation: Air Pilot

- Single Air Pilot
- Double Air Pilot

Characteristics to VDI 3290					Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description						
<b>General Features</b>									
Type			Spool valve						
Mounting			2 screws M5						
Tube connection			Thread						
Port size		NPT (G)	1/8						
Weight (mass)		lbs. (kg)	.35 (.160) Single Air Pilot .37 (.170) Double Air Pilot						
Installation			In any position						
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.					
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)						
Medium			Filtered compressed air						
Lubrication			With or without oil mist lubrication <sup>1)</sup>						
<b>Pneumatic Characteristics</b>									
Nominal pressure	$p_n$	psi (bar)	87 (6)						
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)						
Nominal flow	$Q_N$	Cv (l/min)	.5 (500)						
<b>Actuation</b>									
Air Pilot			Direct						
Actuation Pressure Range	$p_{\min}$ $p_{\max}$	psi (bar)	30 (2) 145 (10)		Single Air Pilot				
	$p_{\min}$ $p_{\max}$	psi (bar)	22 (1.5) 145 (10)		Double Air Pilot				

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/8	Metric Version		NPT Version	
Actuation	Type Number	Order Number	Type Number	Order Number
5/2 Single Air Pilot/Spring Return	S9 561RF-1/8	PA 10310	S9 561RF-1/8U	PD 47240
5/2 Double Air Pilot	S9 561-1/8	PA 10311	S9 561-1/8U	PD 47239

# 5/2-Way Valve

## 1/4

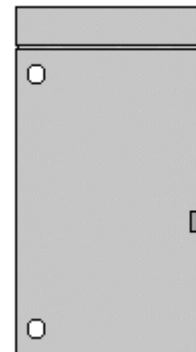
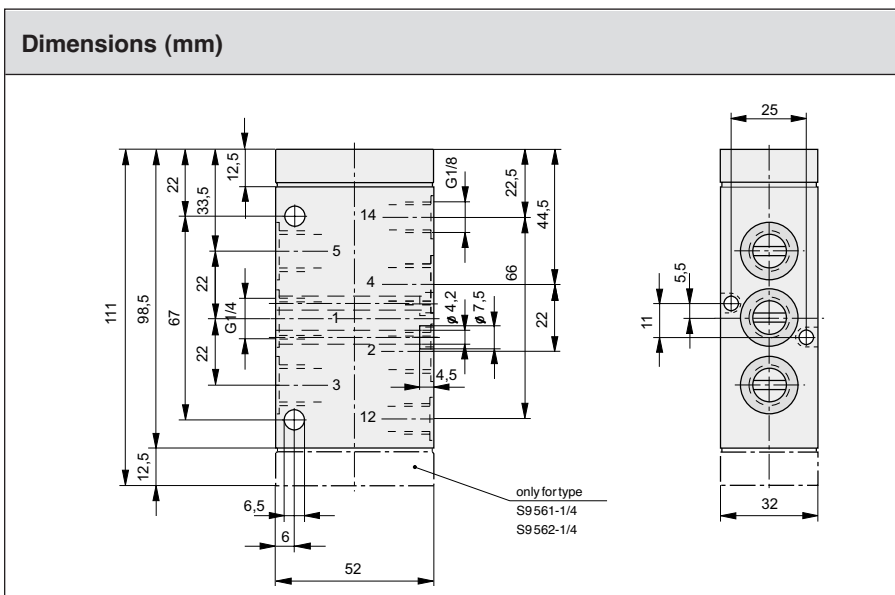
Actuation: Air Pilot

- Single Air Pilot
- Double Air Pilot

Characteristics to VDI 3290		Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Type			Spool valve
Mounting			2 screws M5
Tube connection			Thread
Port size		NPT (G)	1/8
Weight (mass)		lbs. (kg)	1.08 (.49) Single Air Pilot 1.12 (.51) Double Air Pilot
Installation			In any position
Ambient temperature range	$\vartheta_{min}$ $\vartheta_{max}$	°F (°C)	14 (-10) 140 (+60)
Medium temperature range	$\vartheta_{min}$ $\vartheta_{max}$	°F (°C)	14 (-10) 158 (+70)
Medium			Filtered compressed air
Lubrication			With or without oil mist lubrication <sup>1)</sup>
<b>Pneumatic Characteristics</b>			
Nominal pressure	$p_n$	psi (bar)	87 (6)
Operating pressure range	$p_{min}$ $p_{max}$	psi (bar)	0 (0) 145 (10)
Nominal flow	$Q_N$	Cv (l/min)	1.3 (1300)
<b>Actuation</b>			
Air Pilot			Direct
Actuation Pressure Range	$p_{min}$ $p_{max}$	psi (bar)	30 (2) 145 (10)
	$p_{min}$ $p_{max}$	psi (bar)	22 (1.5) 145 (10)

Note:  
When using below freezing point it is necessary to consult factory.

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/4	Metric Version		NPT Version	
	Type Number	Order Number	Type Number	Order Number
5/2 Single Air Pilot/Spring Return	S9 561RF-1/4	PA 12676	S9 561RF-1/4U	PD 47242
5/2 Double Air Pilot	S9 561-1/4	PA 12677	S9 561-1/4U	PD 47241

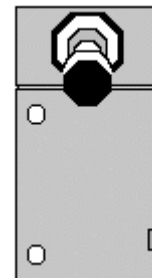
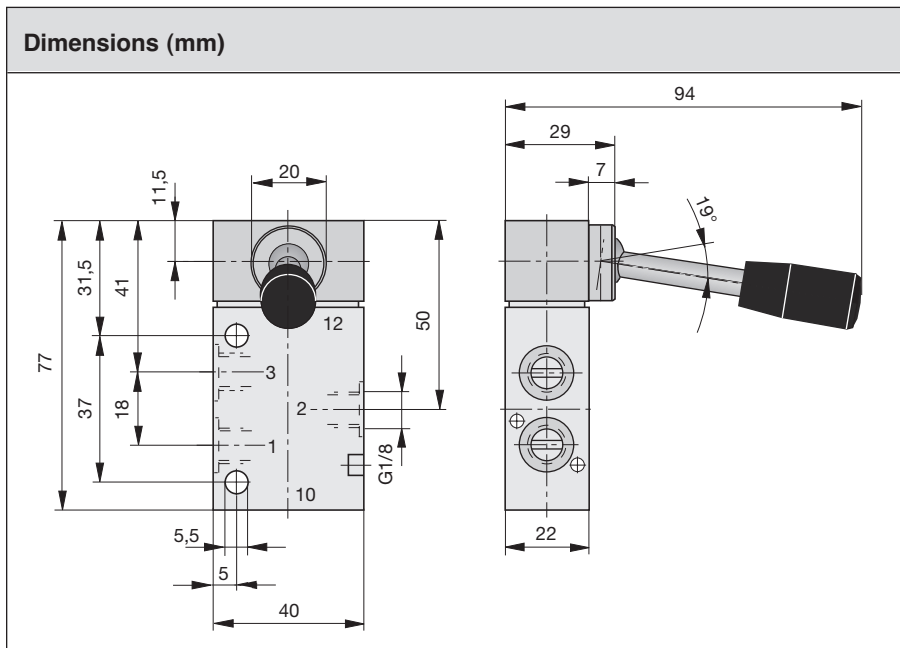
# 3/2-Way Valve 1/8

**Actuation: Hand lever**

- Detent
- Spring Return

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M5		
Tube connection			Thread		
Port size		NPT (G)	1/8		
Weight (mass)		lbs. (kg)	.356 (.162)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	131 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	4.5 (450)		
<b>Actuation</b>					
Manual control			Direct		
Stroke		in (mm)	.177 (4.5)		
Actuation force	$F_b$	lbf (N)	1.57 (7) detent 2.25 (10) spring		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/8	Metric Version		NPT Version	
Actuation	Type Number	Order Number	Type Number	Order Number
3/2 Hand Lever/Detent	S9 311-1/8	PA 10293	S9 311-1/8U	PD 45467
3/2 Hand Lever/Spring Return	S9 311RF-1/8	PA 10294	S9 311RF-1/8U	PD 45468

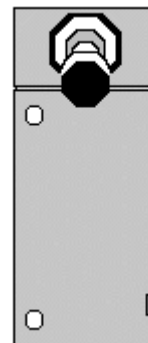
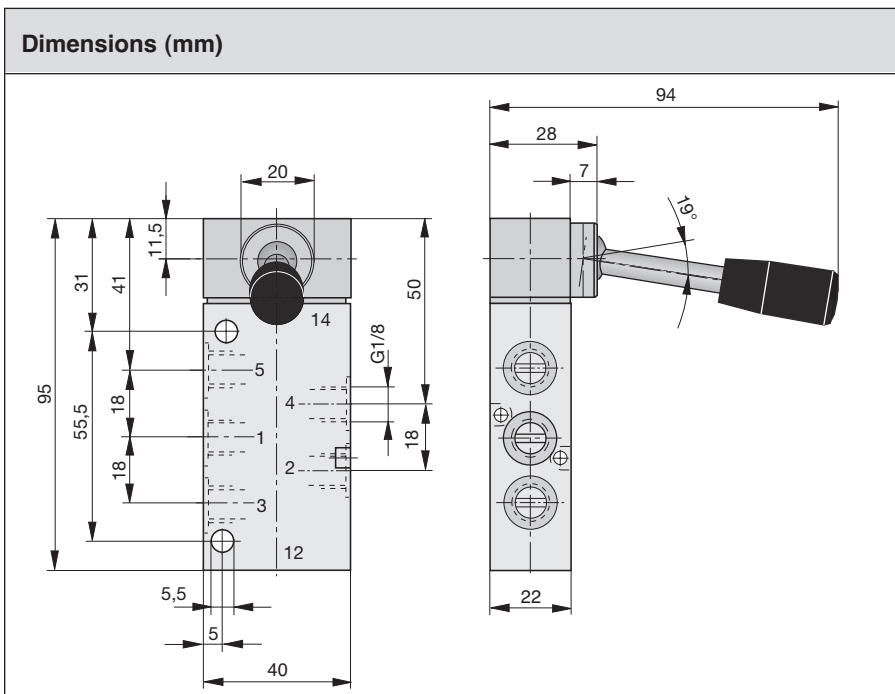
# 5/2-Way Valve 1/8

**Actuation: Hand lever**

- Detent
- Spring Return

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M5		
Tube connection			Thread		
Port size		NPT (G)	1/8		
Weight (mass)		lbs. (kg)	.429 (.195)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	.5 (500)		
<b>Actuation</b>					
Manual control			Direct		
Stroke		in (mm)	.177 (4.5)		
Actuation force	$F_b$	lbf (N)	1.57 (7) detent 2.25 (10) spring		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/8	Metric Version		NPT Version	
Actuation	Type Number	Order Number	Type Number	Order Number
5/2 Hand Lever/Detent	S9 511-1/8	PA 10308	S9 511-1/8U	PD 45469
5/2 Hand Lever/Spring Return	S9 511RF-1/8	PA 10309	S9 511RF-1/8U	PD 45470



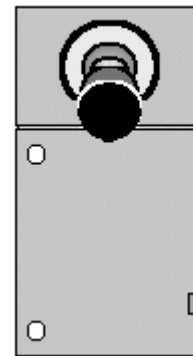
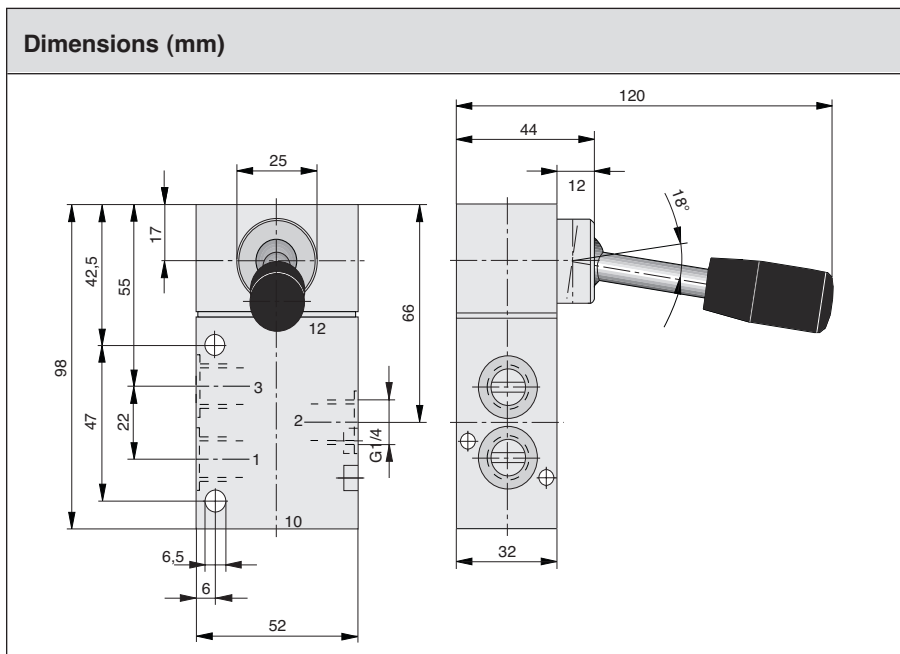
# 3/2-Way Valve 1/4

**Actuation: Hand lever**

- Detent
- Spring Return
- Safety Detent

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M6		
Tube connection			Thread		
Port size		NPT (G)	1/4		
Weight (mass)		lbs. (kg)	.81 (.37)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	1.3 (1300)		
<b>Actuation</b>					
Manual control			Direct		
Stroke		in (mm)	.256 (6.5)		
Actuation force	$F_b$	lbf (N)	2.25 (10) detent & safety detent 3.37 (15) spring		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/4	Metric Version		NPT Version	
Actuation	Type Number	Order Number	Type Number	Order Number
3/2 Hand Lever/Detent	S9 311-1/4	PA 12708	S9 311-1/4U	PD 45477
3/2 Hand Lever/Spring Return	S9 311RF-1/4	PA 12709	S9 311RF-1/4U	PD 45478
3/2 Hand Lever/Detent (safety)	S9 311S-1/4	PA 12710	S9 311RF-1/4U	PD 45479

# 5/2-Way Valve

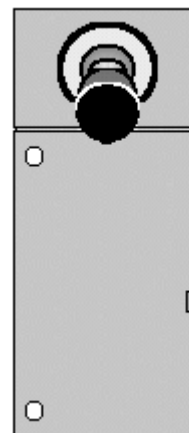
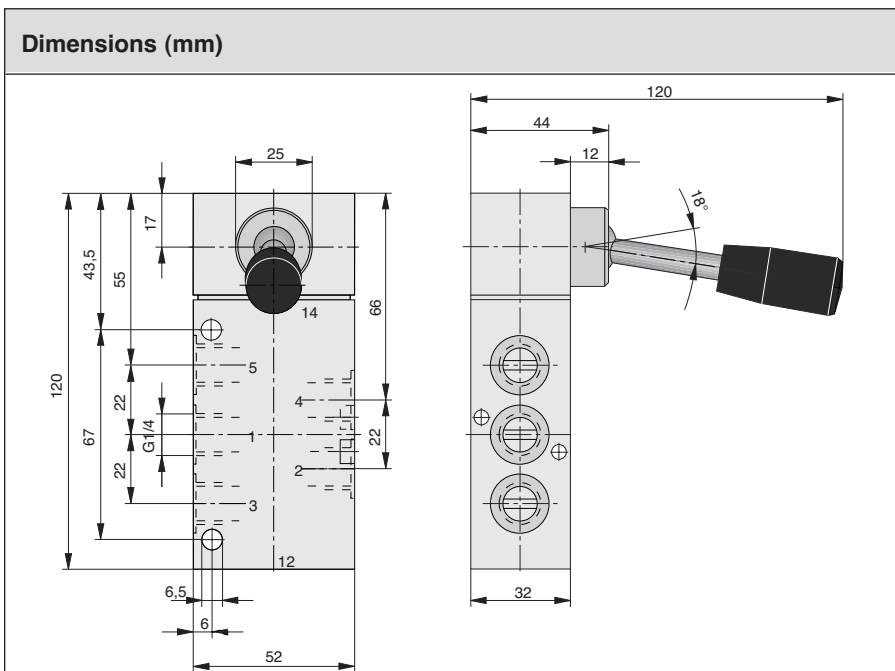
## 1/4

**Actuation: Hand lever**

- Detent
- Spring Return
- Safety Detent

Characteristics to VDI 3290 Pressures quoted as gauge pressure			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Type			Spool valve
Mounting			2 screws M6
Tube connection			Thread
Port size		NPT (G)	1/4
Weight (mass)		lbs. (kg)	1.14 (.52)
Installation			In any position
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)
Medium			Filtered compressed air
Lubrication			With or without oil mist lubrication <sup>1)</sup>
<b>Pneumatic Characteristics</b>			
Nominal pressure	$p_n$	psi (bar)	87 (6)
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)
Nominal flow	$Q_N$	Cv (l/min)	1.3 (1300)
<b>Actuation</b>			
Manual control			Direct
Stroke		in (mm)	.256 (6.5)
Actuation force	$F_b$	lbf (N)	2.25 (10) detent 3.37 (15) spring

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/4	Metric Version		NPT Version	
Actuation	Type Number	Order Number	Type Number	Order Number
5/2 Hand Lever/Detent	S9 511-1/4	PA 12671	S9 511-1/4U	PD 45480
5/2 Hand Lever/Spring Return	S9 511RF-1/4	PA 12672	S9 511RF-1/4U	PD 45481
5/2 Hand Lever/Detent (safety)	S9 511S-1/4	PA 12673	S9 511S-1/4U	PD 45482

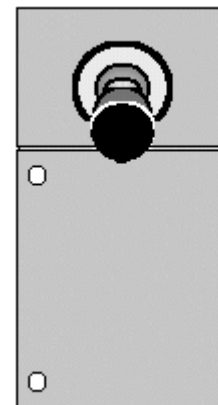
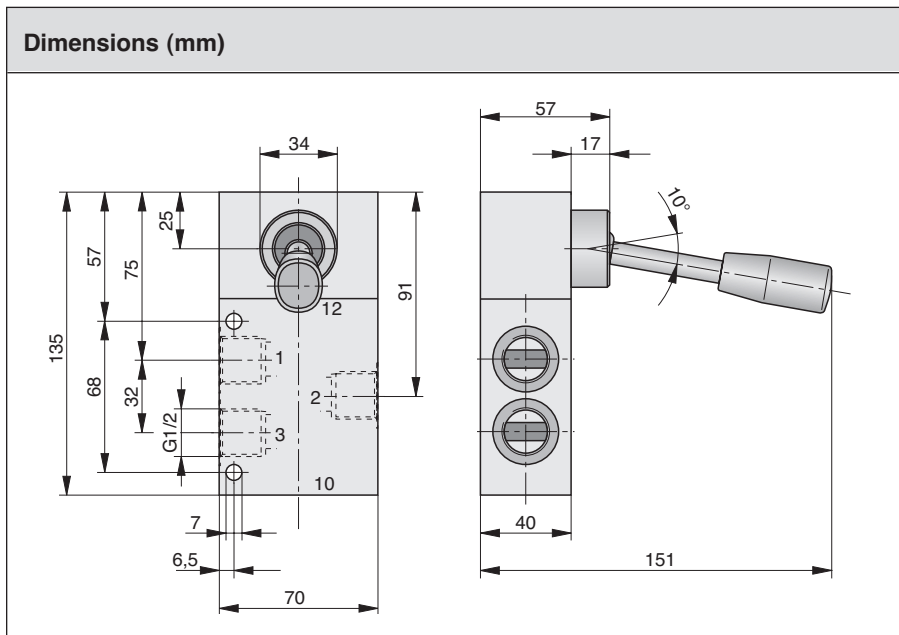
# 3/2-Way Valve 1/2

Actuation: Hand lever

- Detent
- Spring Return

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M6		
Tube connection			Thread		
Port size		NPT (G)	1/2		
Weight (mass)		lbs. (kg)	1.98 (.9)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	3.5 (3500)		
<b>Actuation</b>					
Manual control			Direct		
Stroke		in (mm)	.370 (9.4)		
Actuation force	$F_b$	lbf (N)	3.37 (15) detent 8.99 (40) spring		

1) We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/2	Metric Version		NPT Version	
Actuation	Type Number	Order Number	Type Number	Order Number
3/2 Hand Lever/Detent	S9 311-1/2	PA 16404	S9 311-1/2U	PD 45492
3/2 Hand Lever/Spring Return	S9 311RF-1/2	PA 16405	S9 311RF-1/2U	PD 45493

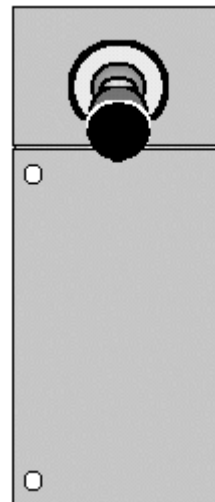
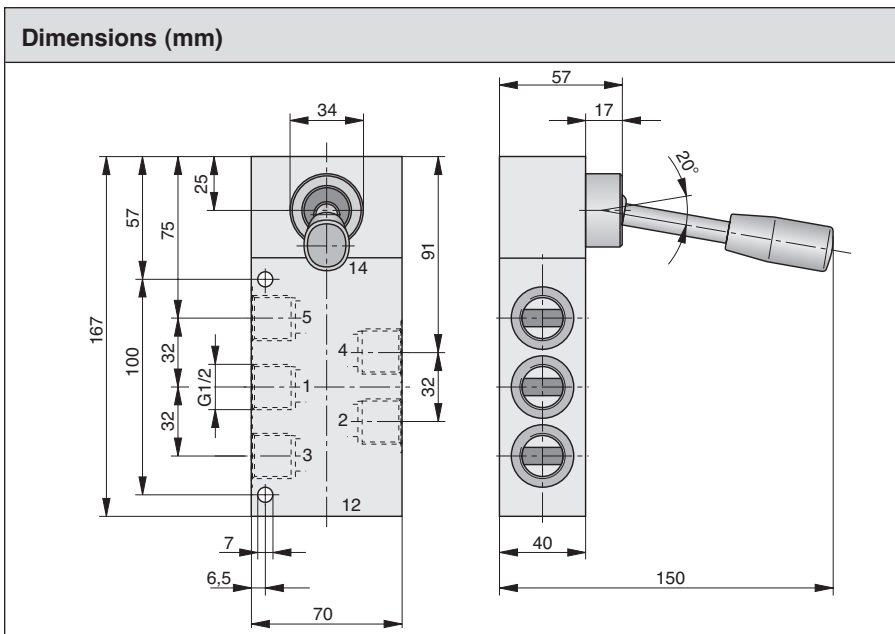
# 5/2-Way Valve 1/2

**Actuation: Hand lever**

- Detent
- Spring Return

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M6		
Tube connection			Thread		
Port size		NPT (G)	1/2		
Weight (mass)		lbs. (kg)	2.64 (1.20)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	3.5 (3500)		
<b>Actuation</b>					
Manual control			Direct		
Stroke		in (mm)	.370 (9.4)		
Actuation force	$F_b$	lbf (N)	3.37 (15) detent 8.99 (40) spring		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/2	Metric Version		NPT Version	
Actuation	Type Number	Order Number	Type Number	Order Number
5/2 Hand Lever/Detent	S9 511-1/2	PA 16367	S9 511-1/2U	PD 45495
5/2 Hand Lever/Spring Return	S9 511RF-1/2	PA 16366	S9 511RF-1/2U	PD 45494

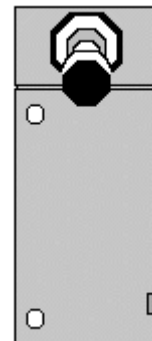
# 5/3-Way Valve 1/8

**Actuation: Hand lever**

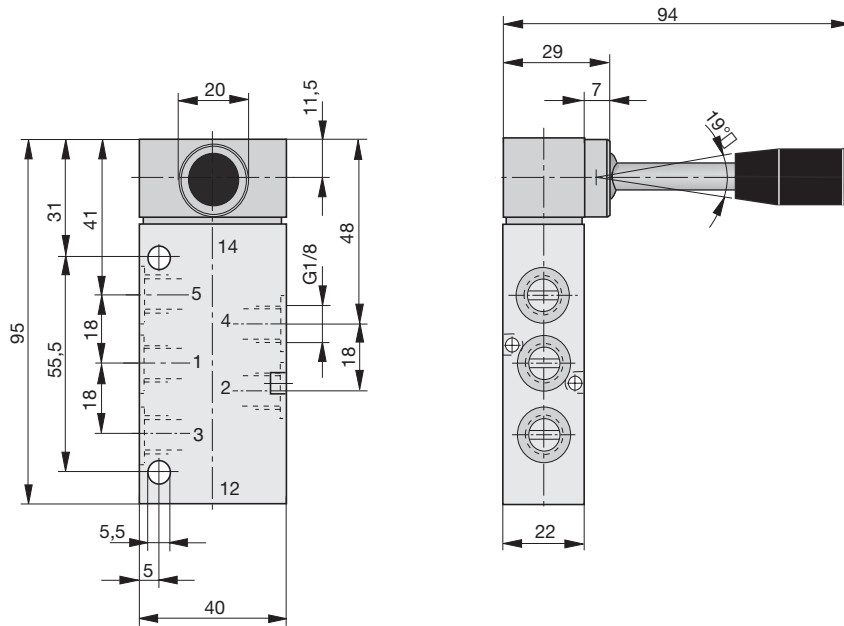
- Detent
- Spring Center

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M5		
Tube connection			Thread		
Port size		NPT (G)	1/8		
Weight (mass)		lbs. (kg)	.429 (.195)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	.5 (500)		
<b>Actuation</b>					
Manual control			Direct		
Stroke		in (mm)	.177 (4.5)		
Actuating force	$F_b$	lbf (N)	G,E,B: 1.57 (7) RFG, RFE, RFB: 2.25 (10)		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



**Dimensions (mm)**



Version 1/8	Symbol	Metric Version		NPT Version	
		Type Number	Order Number	Type Number	Order Number
5/3-way Hand Lever/Detent; Blocked		S9 511G-1/8	PA 10321	S9 511G-1/8U	PD 45471
5/3-way Hand Lever/Detent; Exhausted		S9 511E-1/8	PA 10322	S9 511E-1/8U	PD 45472
5/3-way Hand Lever/Detent; Dual		S9 511B-1/8	PA 10323	S9 511B-1/8U	PD 45473
5/3-way Hand Lever/Spring; Blocked		S9 511RFG-1/8	PA 10324	S9 511RFG-1/8U	PD 45474
5/3-way Hand Lever/Spring; Exhausted		S9 511RFE-1/8	PA 10325	S9 511RFE-1/8U	PD 45475
5/3-way Hand Lever/Spring; Dual		S9 511RFB-1/8	PA 10326	S9 511RFB-1/8U	PD 45476

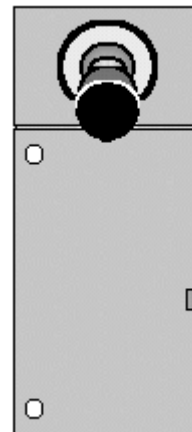
# 5/3-Way Valve 1/4

**Actuation: Hand lever**

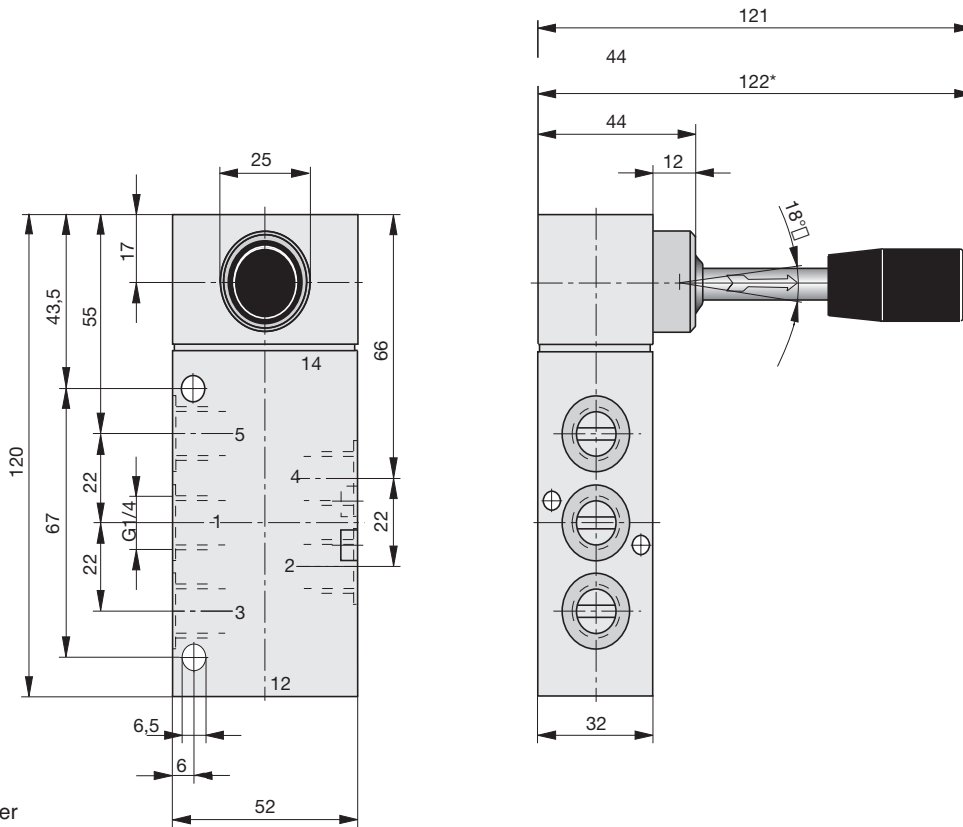
- Detent
- Spring Center
- Safety Detent

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M6		
Tube connection			Thread		
Port size		NPT (G)	1/4		
Weight (mass)		lbs. (kg)	1.14 (.52)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	RFG, RFB: 1.3 (1300) RFE: 1.0 (1000)		
<b>Actuation</b>					
Manual control			Direct		
Stroke		in (mm)	.256 (6.5)		
Actuating force	$F_b$	lbf (N)	G,E,B: 2.25 (10) RFG, RFE, RFB: 3.37 (15)		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



**Dimensions (mm)**



\*Safety hand lever

Version 1/4		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/3-way Hand Lever/Detent; Blocked		S9 511G-1/4	PA 12687	S9 511G-1/4U	PD 45483
5/3-way Hand Lever/Detent; Exhausted		S9 511E-1/4	PA 12688	S9 511E-1/4U	PD 45484
5/3-way Hand Lever/Detent; Dual		S9 511B-1/4	PA 12689	S9 511B-1/4U	PD 45485
5/3-way Hand Lever/Spring; Blocked		S9 511RFG-1/4	PA 12690	S9 511RFG-1/4U	PD 45486
5/3-way Hand Lever/Spring; Exhausted		S9 511RFE-1/4	PA 12691	S9 511RFE-1/4U	PD 45487
5/3-way Hand Lever/Spring; Dual		S9 511RFB-1/4	PA 12692	S9 511RFB-1/4U	PD 45488
5/3-way Hand Lever/Detent; Blocked (safety)		S9 511SG-1/4	PA 12693	S9 511SG-1/4U	PD 45489
5/3-way Hand Lever/Detent; Exhausted (safety)		S9 511SE-1/4	PA 12694	S9 511SE-1/4U	PD 45490
5/3-way Hand Lever/Detent; Dual (safety)		S9 511SB-1/4	PA 12695	S9 511SB-1/4U	PD 45491



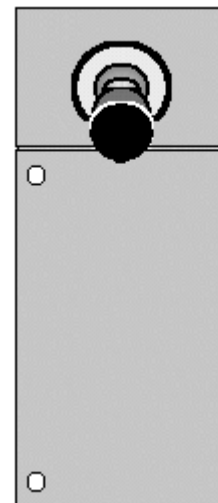
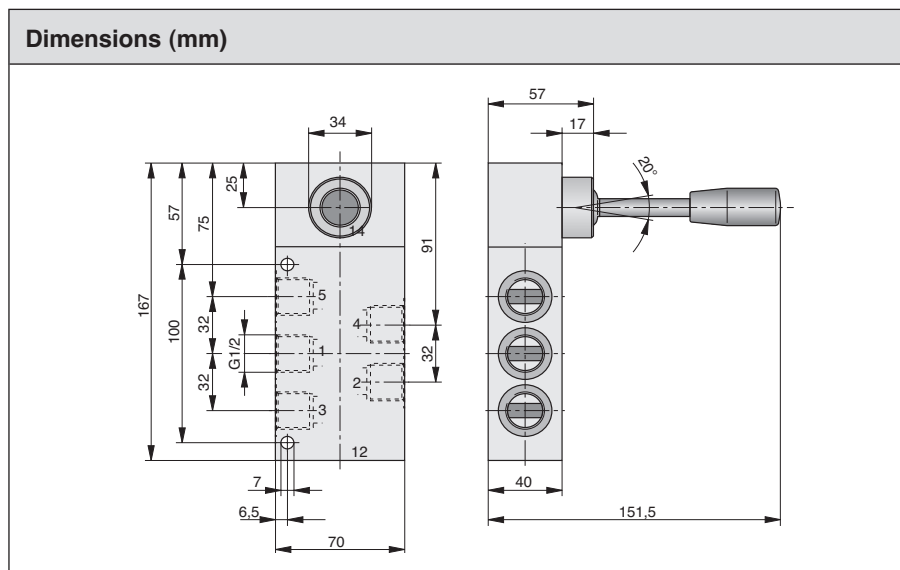
# 5/3-Way Valve 1/2

**Actuation: Hand lever**

**- Detent**

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M6		
Tube connection			Thread		
Port size		NPT (G)	1/2		
Weight (mass)		lbs. (kg)	2.64 (1.20)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	3.5 (3500)		
<b>Actuation</b>					
Manual control			Direct		
Stroke		in (mm)	.370 (9.4)		
Actuating force	$F_b$	lbf (N)	3.37 (15)		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448



Version 1/2		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/3-way Hand Lever/Detent; Blocked		S9 511G-1/2	PA 16369	S9 511G-1/2U	PD 45496

Pressures quoted as gauge pressure		
Characteristics	Unit	Description
<b>General Features</b>		
Type		Body ported valve
Style		Spool valve
Port size	G	1/4
Weight (mass)	lbs. (kg)	1.43 (0.65)
Installation		In any position
Ambient temperature minimum maximum	°F (°C)	14 (-10) 140 (+60)
Medium temperature minimum maximum	°F (°C)	14 (-10) 158 (+70)
<b>Pneumatic Characteristics</b>		
Medium		Air
Nominal pressure	psi (bar)	87 (6)
Operating pressure minimum maximum	psi (bar)	22 (1.5) 116 (8)
Nominal flow	Cv (l/min)	1.3 (1300)
Filtration		40 micron recommended
Lubrication		With or without lubrication <sup>1)</sup>
<b>Electrical Characteristics</b>		
Voltage AC DC	V	110, 220 12, 24
Duty cycle		Continuous duty
Electric protection		IP65 to DIN 40050
Insulating Material		VDE 0580
Connection		Plug to DIN 43650 form B

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

Version 1/4			
Order Number	Description	Ports	Voltage
IS0250-0133	5/2-way IS-module	G1/4	12vDC
IS0250-0233	5/2-way IS-module	G1/4	24vDC
IS0250-5733	5/2-way IS-module	G1/4	110vAC
IS0250-6133	5/2-way IS-module	G1/4	220vAC

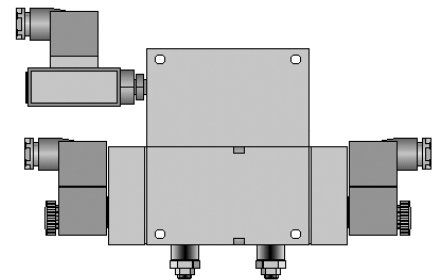
# 5/2-Way Valve 1/4

## Interference Sensing Module

The interference sensing module was designed to automatically reverse the direction of a pneumatic cylinder, when it detects an obstruction. Loss of back pressure, caused by an obstruction, triggers the built-in pressure switch to shift the valve and retract the cylinder.

### Applications:

- Doors
- Machine Guards
- Conveyor Transfer
- Pallet Handling
- Feed Systems
- Elevator Systems
- Variable Height Pick & Place



Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Ceramic spool valve		
Mounting			On base plate, to ISO 5599		
Tube connection			Base plate		
Port size			G1/4 (base plate)		
Weight (mass)		lbs. (kg)	1.01 (0.46) signal solenoid 1.30 (0.59) double solenoid		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$	psi (bar)	29 (2)		
			-1 (Version S)		
	$p_{\max}$	psi (bar)	174 (12)		
Nominal flow	$Q_N$	Cv (l/min)	5/2-way valve	5/3-way valve	
			1.7 (1680)	1.7 (1680)	
<b>Actuation</b>					
Electrical			Pilot operated Pilot operated with external pilot air		
Actuation pressure range	$p_{at \min}$	psi (bar)	29 (2)		
	$p_{at \max}$	psi (bar)	145 (10)		
Voltage type			AC	DC	
Nominal Voltage	$U_n$	V	220	24	
			220	24	
Further voltages available on request					
Initial Power Consumption		VA (W)	11	4.8	
			7.8	2.7	
Continuous Power Consumption		VA (W)	8.5	4.8	
			4.9	2.7	
Duty cycle	ED	%	Continuous Duty		
Electrical protection			IP65 to DIN 40050 (with plug)		
Insulating material			VDE 0580		
Connection			Plug to DIN 43650 form B		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

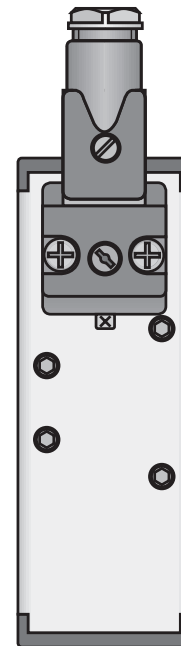
# 5/2-Way Valve 5/3-Way Valve

ISO 5599  
Size 1

**Actuation: Solenoid**

- Single Solenoid
- Double Solenoid
- Spring Center

**Delivery Includes:**  
valve  
mounting screws  
gasket  
solenoid coil(s)



Characteristics to VDI 3290 Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description	
<b>General Features</b>				
Type			Ceramic spool valve	
Mounting			On base plate, to ISO 5599	
Tube connection			Base plate	
Port size			G1/4 (base plate)	
Weight (mass)		lbs. (kg)	.70 (0.32)	
Installation			In any position	
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	
Medium			Filtered compressed air	
Lubrication			With or without oil mist lubrication <sup>1)</sup>	
<b>Pneumatic Characteristics</b>				
Nominal pressure	$p_n$	psi (bar)	87 (6)	
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	-13 (-0.9) 174 (12)	
Nominal flow	$Q_N$	Cv (l/min)	5/2-way valve	5/3-way valve
			1.7 (1680)	1.7 (1680)
<b>Actuation</b>				
Pneumatic			Direct	
Actuation pressure range	$p_{st \min}$	psi (bar)	29 (2)	
	$p_{st \max}$	psi (bar)	145 (10)	

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

# 5/2-Way Valve 5/3-Way Valve

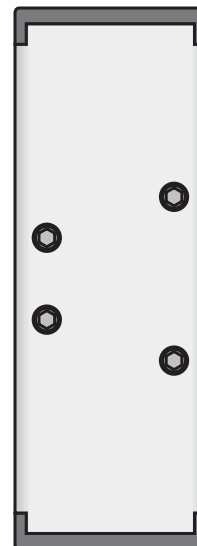
ISO 5599  
Size 1

**Actuation: Air Pilot**

- Single Air Pilot
- Double Air Pilot
- Spring Center

**Delivery Includes:**

- valve
- mounting screws
- gasket



Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Ceramic spool valve		
Mounting			On base plate, to ISO 5599		
Tube connection			Base plate		
Port size			G3/8 (base plate)		
Weight (mass)		lbs. (kg)	1.54 (0.70) single solenoid 1.83 (0.83) double solenoid		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$	psi (bar)	29 (2)		
			-1 (Version S)		
	$p_{\max}$	psi (bar)	174 (12)		
Nominal flow	$Q_N$	Cv (l/min)	5/2-way valve	5/3-way valve	
			4.3 (4320)	4.3 (4320)	
<b>Actuation</b>					
Electrical			Pilot operated Pilot operated with external pilot air		
Actuation pressure range	$p_{st \min}$	bar	2		
	$p_{st \max}$	bar	12		
Voltage type			AC	DC	
Nominal Voltage	$U_n$	V	220	24	
			220	24	
			Further voltages available on request		
Initial Power Consumption		VA (W)	11	4.8	
			7.8	2.7	
Continuous Power Consumption		VA (W)	8.5	4.8	
			4.9	2.7	
Duty cycle	ED	%	Continuous Duty		
Electrical protection			IP65 to DIN 40050 (with plug)		
Insulating material			VDE 0580		
Connection			Plug to DIN 43650 form B		

1) We recommend the use of mineral oil type VG32 to ISO 3448

# 5/2-Way Valve 5/3-Way Valve

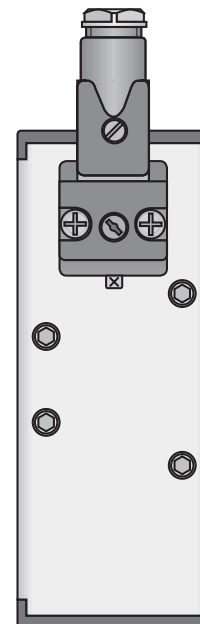
ISO 5599  
Size 2

**Actuation: Solenoid**

- Single Solenoid
- Double Solenoid
- Spring Center

**Delivery Includes:**

- valve
- mounting screws
- gasket
- solenoid coil(s)



Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Ceramic spool valve		
Mounting			On base plate, to ISO 5599		
Tube connection			Base plate		
Port size			G3/8 (base plate)		
Weight (mass)		lbs. (kg)	1.23 (0.56)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	-13 (-0.9) 174 (12)		
Nominal flow	$Q_N$	Cv (l/min)	5/2-way valve	5/3-way valve	
			4.3 (4320)	4.3 (4320)	
<b>Actuation</b>					
Pneumatic			Direct		
Actuation pressure range	$p_{st \min}$	psi (bar)	29 (2)		
	$p_{st \max}$	psi (bar)	174 (12)		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

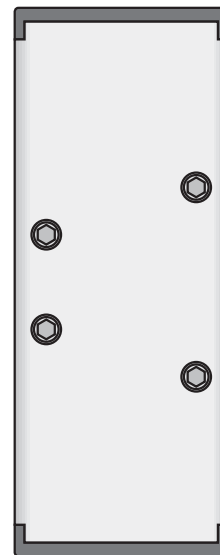
# 5/2-Way Valve 5/3-Way Valve

ISO 5599  
Size 2

**Actuation: Air Pilot**

- Single Air Pilot
- Double Air Pilot
- Spring Center

**Delivery Includes:**  
valve  
mounting screws  
gasket



Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Ceramic spool valve		
Mounting			On base plate, to ISO 5599		
Tube connection			Base plate		
Port size			G1/2 (base plate)		
Weight (mass)		lbs. (kg)	2.71 (1.23) single solenoid 3.01 (1.37) double solenoid		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$	psi (bar)	29 (2)		
			-1 (Version S)		
	$p_{\max}$	psi (bar)	174 (12)		
Nominal flow	$Q_N$	Cv (l/min)	5/2-way valve	5/3-way valve	
			6.5 (6540)	6.5 (6540)	
<b>Actuation</b>					
Electrical			Pilot operated Pilot operated with external pilot air		
Actuation pressure range	$p_{st \min}$	psi (bar)	29 (2)		
	$p_{st \max}$	psi (bar)	145 (10)		
Voltage type			AC	DC	
Nominal Voltage	$U_n$	V	220	24	
			220	24	
			Further voltages available on request		
Initial Power Consumption		VA (W)	11	4.8	
			7.8	2.7	
Continuous Power Consumption		VA (W)	8.5	4.8	
			4.9	2.7	
Duty cycle	ED	%	Continuous Duty		
Electrical protection			IP65 to DIN 40050 (with plug)		
Insulating material			VDE 0580		
Connection			Plug to DIN 43650 form B		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

# 5/2-Way Valve 5/3-Way Valve

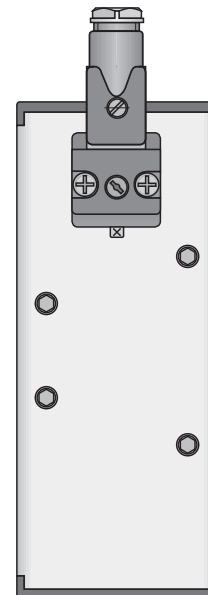
ISO 5599  
Size 3

Actuation: Solenoid

- Single Solenoid
- Double Solenoid
- Spring Center

Delivery Includes:

- valve
- mounting screws
- gasket
- solenoid coil(s)



Characteristics to VDI 3290 Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description	
<b>General Features</b>				
Type			Ceramic spool valve	
Mounting			On base plate, to ISO 5599	
Tube connection			Base plate	
Port size			G1/2 (base plate)	
Weight (mass)		lbs. (kg)	2.42 (1.1)	
Installation			In any position	
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	
Medium			Filtered compressed air	
Lubrication			With or without oil mist lubrication <sup>1)</sup>	
<b>Pneumatic Characteristics</b>				
Nominal pressure	$p_n$	psi (bar)	87 (6)	
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	-13 (-0.9) 174 (12)	
Nominal flow	$Q_N$	1/min	5/2-way valve	5/3-way valve
			6.5 (6540)	6.5 (6540)
<b>Actuation</b>				
Pneumatic			Direct	
Actuation pressure range	$p_{st \min}$	psi (bar)	29 (2)	
	$p_{st \max}$	psi (bar)	174 (12)	

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

# 5/2-Way Valve 5/3-Way Valve

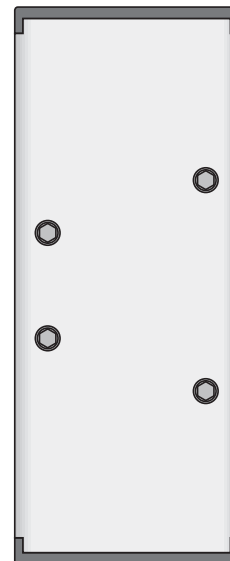
ISO 5599  
Size 3

**Actuation: Air Pilot**

- Single Air Pilot
- Double Air Pilot
- Spring Center

**Delivery Includes:**

- valve
- mounting screws
- gasket





ORDER INSTRUCTIONS: 5/2-Way Valves				
Actuation	Symbol	Type Number	Order Number	Size
5/2 Single Air Pilot Spring Return		S20561RF-01	PA 12891	VDMA 01
		S20561RF-1	PA 12869	Size 1
		S20561RF-2	PA 16425	Size 2
		S20561RF-3	PA 16426	Size 3
5/2 Single Air Pilot Air Spring Return		S20561R-01	PA 12892	VDMA 01
		S20561R-1	PA 12870	Size 1
		S20561R-2	PA 16428	Size 2
		S20561R-3	PA 16429	Size 3
5/2 Double Air Pilot		S20561-01	PA 12893	VDMA 01
		S20561-1	PA 12868	Size 1
		S20561-2	PA 16422	Size 2
		S20561-3	PA 16423	Size 3
5/2 Single Solenoid Spring Return		S20581RF-01-..	PA 12886-..33	VDMA 01
		S20581RF-1-..	PA 12875-..33	Size 1
		S20581RF-2-..	PA 16441-..33	Size 2
		S20581RF-3-..	PA 16442-..33	Size 3
5/2 Single Solenoid Spring Return with external pilot air		S20581S-RF-01-..	PA 12896-..33	VDMA 01
		S20581S-RF-1-..	PA 12882-..33	Size 1
		S20581S-RF-2-..	PA 16456-..33	Size 2
		S20581S-RF-3-..	PA 16462-..33	Size 3
5/2 Single Solenoid Air Spring Return		S20581R-01-..	PA 12887-..33	VDMA 01
		S20581R-1-..	PA 12876-..33	Size 1
		S20581R-2-..	PA 16444-..33	Size 2
		S20581R-3-..	PA 16445-..33	Size 3
5/2 Double Solenoid		S20581-01-..	PA 12888-..33	VDMA 01
		S20581-1-..	PA 12874-..33	Size 1
		S20581-2-..	PA 16438-..33	Size 2
		S20581-3-..	PA 16439-..33	Size 3
5/2 Double Solenoid with external pilot air		S20581S-01-..	PA 12898-..33	VDMA 01
		S20581S-1-..	PA 12880-..33	Size 1
		S20581S-2-..	PA 16454-..33	Size 2
		S20581S-3-..	PA 16460-..33	Size 3

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3518	01
24 vDC	60 50/60Hz	KZ 3519	02
110 50/60Hz	48 vDC	KZ 3521	57
220 50/60Hz	110 vDC	KZ 3522	61



• Other voltages available. Contact factory.

**ORDER INSTRUCTIONS: 5/3-Way Valves**

Actuation	Symbol	Type Number	Order Number	Size
5/3 Double Air Pilot Closed Center		S20561RFG-01	PA 12894	VDMA 01
		S20561RFG-1	PA 12871	Size 1
		S20561RFG-2	PA 16431	Size 2
Dual Center		S20561RFB-1	PA 12873	Size 1
		S20561RFB-2	PA 16437	Size 2
Open Center		S20561RFE-01	PA 12895	VDMA 01
		S20561RFE-1	PA 12872	Size 1
		S20561RFE-2	PA 16434	Size 2
5/3 Double Solenoid Closed Center		S20581RFG-01	PA 12889-..33	VDMA 01
		S20581RFG-1-..	PA 12877-..33	Size 1
		S20581RFG-2-..	PA 16447-..33	Size 2
Dual Center		S20581RFB-1-..	PA 12879-..33	Size 1
		S20581RFB-2-..	PA 16453-..33	Size 2
Open Center		S20581RFE-01	PA 12890-..33	VDMA 01
		S20581RFE-1-..	PA 12878-..33	Size 1
		S20581RFE-2-..	PA 16450-..33	Size 2
5/3 Double Solenoid with external air pilot Closed Center		S20581S-RFG-01-..	PA 12900-..33	VDMA 01
		S20581S-RFG-1-..	PA 12883-..33	Size 1
		S20581S-RFG-2-..	PA 16457-..33	Size 2
Dual Center		S20581S-RFB-1-..	PA 12885-..33	Size 1
		S20581S-RFB-2-..	PA 16459-..33	Size 2
Open Center		S20581S-RFE-01-..	PA 12899-..33	VDMA 01
		S20581S-RFE-1-..	PA 12884-..33	Size 1
		S20581S-RFE-2-..	PA 16458-..33	Size 2
		S20581S-RFE-3-..	PA 16464-..33	Size 3

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3518	01
24 vDC	60 50/60Hz	KZ 3519	02
110 50/60Hz	48 vDC	KZ 3521	57
220 50/60Hz	110 vDC	KZ 3522	61



• Other voltages available. Contact factory.

# 5/2-Way Valve

## 1/8

with NAMUR connection

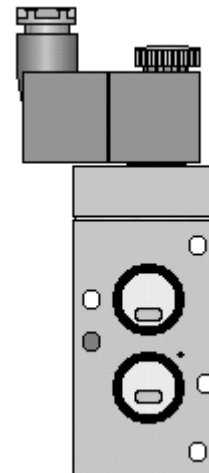
**Actuation: Solenoid**

- Single Solenoid
- Double Solenoid

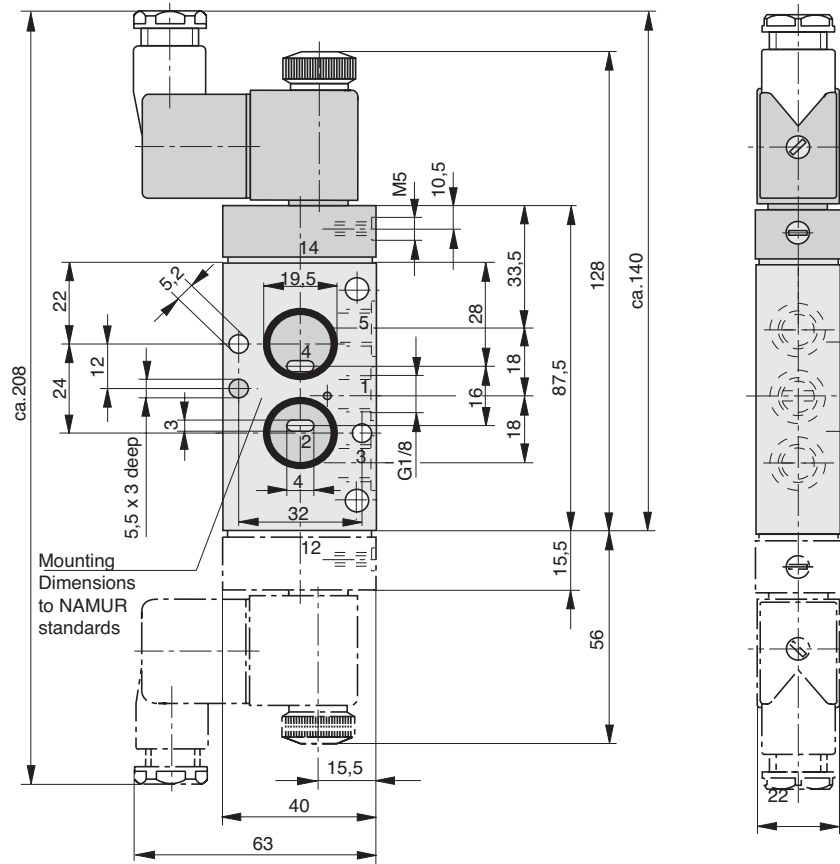
Characteristics to VDI 3290					Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description			
<b>General Features</b>						
Type			Spool valve			
Mounting			2 screws M5			
Tube connection			Thread			
Port size		NPT (G)	1/8			
Weight (mass)		lbs. (kg)	.616 (0.280) Single solenoid .913 (0.415) Double solenoid			
Installation			In any position			
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.		
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)			
Medium			Filtered compressed air			
Lubrication			With or without oil mist lubrication <sup>1)</sup>			
<b>Pneumatic Characteristics</b>						
Nominal pressure	$p_n$	psi (bar)	87 (6)			
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	Single solenoid			
			29 (2) 145 (10)			
	$p_{\min}$ $p_{\max}$	psi (bar)	Double solenoid			
			22 (1.5) 145 (10)			
Nominal flow	$Q_N$	Cv (l/min)	.5 (500)			
<b>Actuation</b>						
Electrical			Pilot operated			
Voltage			AC	DC		
Nominal voltage* Standard version	$U_n$	V	220	24		
Initial power consumption Standard version		VA (W)	8.5	2.5		
Continuous consumption Standard version		VA (W)	6.0	2.5		
Duty cycle	ED	%	Continuous Duty			
Electrical protection			IP65 to DIN 40050 (with plug)			
Insulating material			VDE 0580			
Connection			Plug to DIN 43650 form B			

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

**Delivery Includes:**  
valve  
mounting screws  
coding pin  
o-rings



**Dimensions (mm)**



Version 1/8		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return		S9 581RF-1/8-SO	PD 34143-..33	S9 581RF-1/8U-SO	PD 45502-..33
5/2 Double Solenoid		S9 581-1/8-SO	PD 34984-..33	S9 581-1/8U-SO	PD 45503-..33

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3674	01
24 vDC	60 50/60Hz	KZ 3673	02
110 50/60Hz	48 vDC	KZ 3669	57
220 50/60Hz	110 vDC	KZ 3672	61
24 50/60Hz	--	KZ 3675	51

- Other voltages available. Contact factory.
- Explosion proof coils available. Contact factory.
- UL/CSA rated coils available. Contact factory.



**Accessory:**

Order #	Description
NAMURPLATE-1/8	Converts the 5/2-way valve to a 3/2-way valve

Characteristics to VDI 3290					Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description			
<b>General Features</b>						
Type			Spool valve			
Mounting			2 screws M5			
Tube connection			Thread			
Port size		NPT (G)	1/4			
Weight (mass)		lbs. (kg)	1.32 (0.6) Single solenoid 1.54 (0.7) Double solenoid			
Installation			In any position			
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.		
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)			
Medium			Filtered compressed air			
Lubrication			With or without oil mist lubrication <sup>1)</sup>			
<b>Pneumatic Characteristics</b>						
Nominal pressure	$p_n$	psi (bar)	87 (6)			
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	Single solenoid			
			29 (2) 145 (10)			
	$p_{\min}$ $p_{\max}$	psi (bar)	Double solenoid			
			22 (1.5) 145 (10)			
Nominal flow	$Q_N$	Cv (l/min)	1.3 (1300)			
<b>Actuation</b>						
Electrical			Pilot operated			
Voltage			AC	DC		
Nominal voltage* Standard version	$U_n$	V	220	24		
Initial power consumption Standard version		VA (W)	8.5	2.5		
Continuous consumption Standard version		VA (W)	6.0	2.5		
Duty cycle	ED	%	Continuous Duty			
Electrical protection			IP65 to DIN 40050 (with plug)			
Insulating material			VDE 0580			
Connection			Plug to DIN 43650 form B			

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

# 5/2-Way Valve

## 1/4

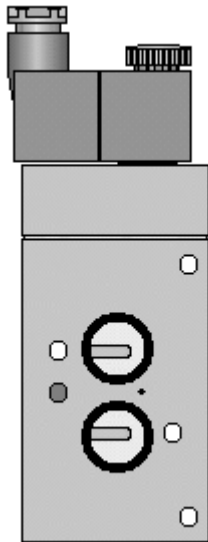
with NAMUR connection

**Actuation: Solenoid**

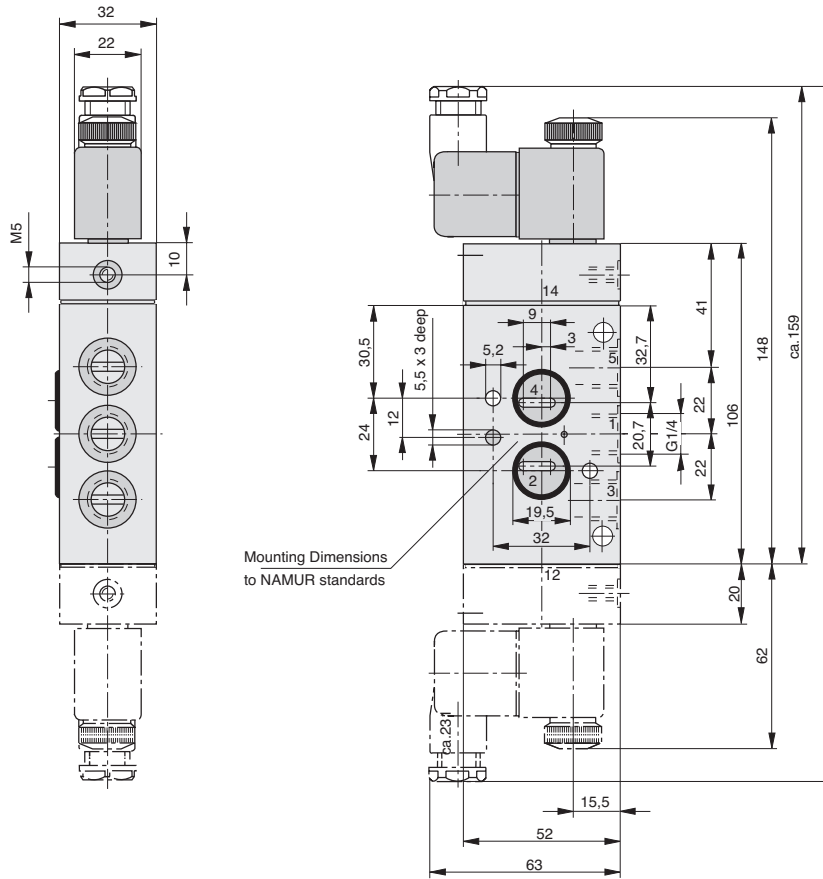
- Single Solenoid
- Double Solenoid

**Delivery Includes:**

- valve
- mounting screws
- coding pin
- o-rings



**Dimensions (mm)**



Version 1/4		Metric Version		NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return		S9 581RF-1/4-SO	PD 34985-..33	S9 581RF-1/4U-SO	PD 45504-..33
5/2 Double Solenoid		S9 581-1/4-SO	PD 34986-..33	S9 581-1/4U-SO	PD 45505-..33

Voltage Range		Coil Number	Order Code
Nominal	Secondary		
12 vDC	--	KZ 3674	01
24 vDC	60 50/60Hz	KZ 3673	02
110 50/60Hz	48 vDC	KZ 3669	57
220 50/60Hz	110 vDC	KZ 3672	61
24 50/60Hz	--	KZ 3675	51

- Other voltages available. Contact factory.
- Explosion proof coils available. Contact factory.
- UL/CSA rated coils available. Contact factory.



**Accessory:**

**Order #**  
NAMURPLATE-1/4

**Description**  
Converts the 5/2-way valve to a 3/2-way valve

Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
Type			Spool valve		
Mounting			2 screws M5 (M3)		
Tube connection			Thread		
Port size		NPT (G)	1/8		
Weight (mass)		lbs. (kg)	.594 (.27)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)		
Nominal flow	$Q_N$	Cv (l/min)	.5 (500)		
<b>Actuation</b>					
Pneumatic			Direct		
Actuating pressure range	$p_{st \min}$ $p_{st \max}$	psi (bar)	29 (2) 145 (10)		

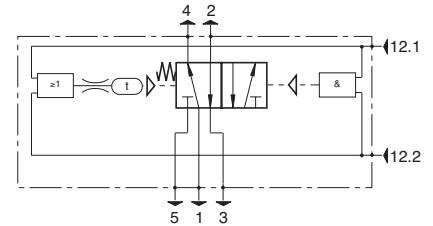
<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

# 5/2-Way Valve

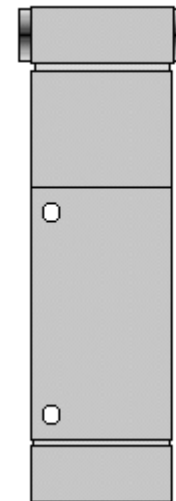
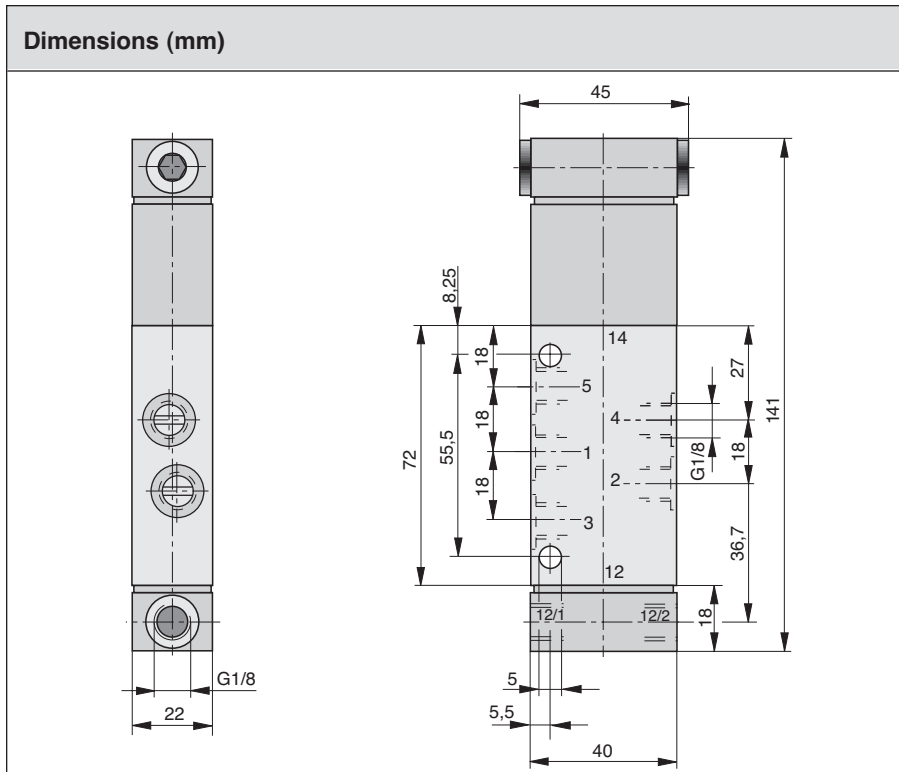
## 1/8

for two-hand safety operation

**Actuation: Pneumatic**



- The valve switches from outlet 4 to outlet 2 only if both signal inputs are actuated simultaneously or within 0.5 seconds.
- The valve will not switch again until both signal inputs are stopped.
- For the safety of operating personnel in manufacturing processes such as pressing, bending, stamping, deburring etc.
- Not suitable for control systems of eccentric or similar presses.



Version 1/8	Metric Version		NPT Version	
	Type Number	Order Number	Type Number	Order Number
Two-hand safety valve	S9 563/65RF-1/8-SO	PD 37673	S9 563/65RF-1/8U-SO	PD 45506

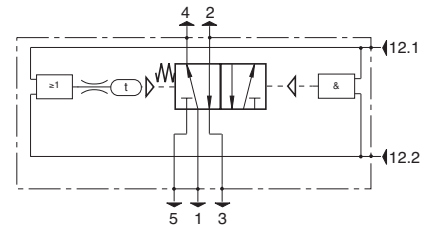
Characteristics to VDI 3290 Pressures quoted as gauge pressure			
Characteristics	Symbol	Unit	Description
<b>General Features</b>			
Type			Spool valve
Mounting			2 screws M6
Tube connection			Thread
Port size		NPT (G)	1/4
Weight (mass)		lbs. (kg)	1.41 (.64)
Installation			In any position
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)
Medium			Filtered compressed air
Lubrication			With or without oil mist lubrication <sup>1)</sup>
<b>Pneumatic Characteristics</b>			
Nominal pressure	$p_n$	psi (bar)	87 (6)
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 145 (10)
Nominal flow	$Q_N$	Cv (l/min)	1.3 (1300)
<b>Actuation</b>			
Pneumatic			Directly
Control pressure range	$p_{st \min}$ $p_{st \max}$	psi (bar)	44 (3) 145 (10)

# 5/2-Way Valve

## 1/4

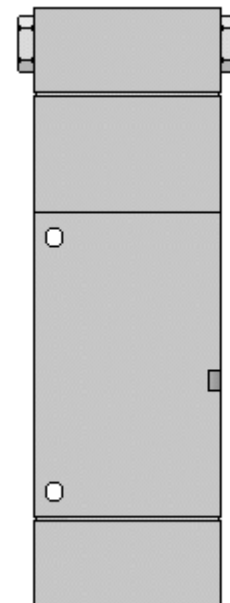
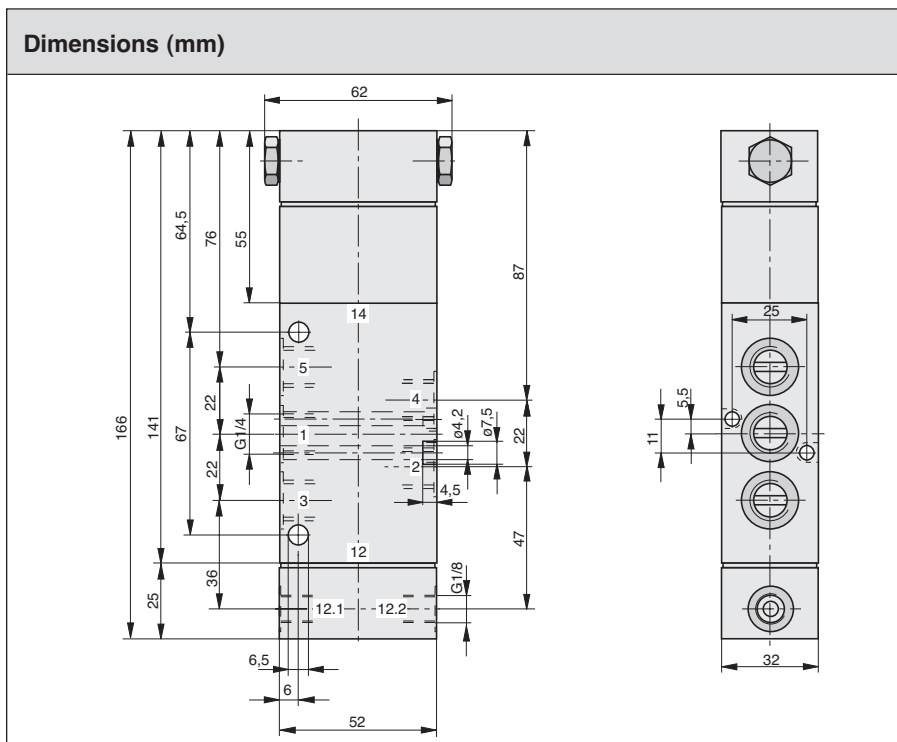
for two-hand safety operation

**Actuation: Pneumatic**



- The valve switches from outlet 4 to outlet 2 only if both signal inputs are actuated simultaneously or within 0.5 seconds.
- The valve will not switch again until both signal inputs are stopped.
- For the safety of operating personnel in manufacturing processes such as pressing, bending, stamping, deburring etc.
- Not suitable for control systems of eccentric or similar presses.

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

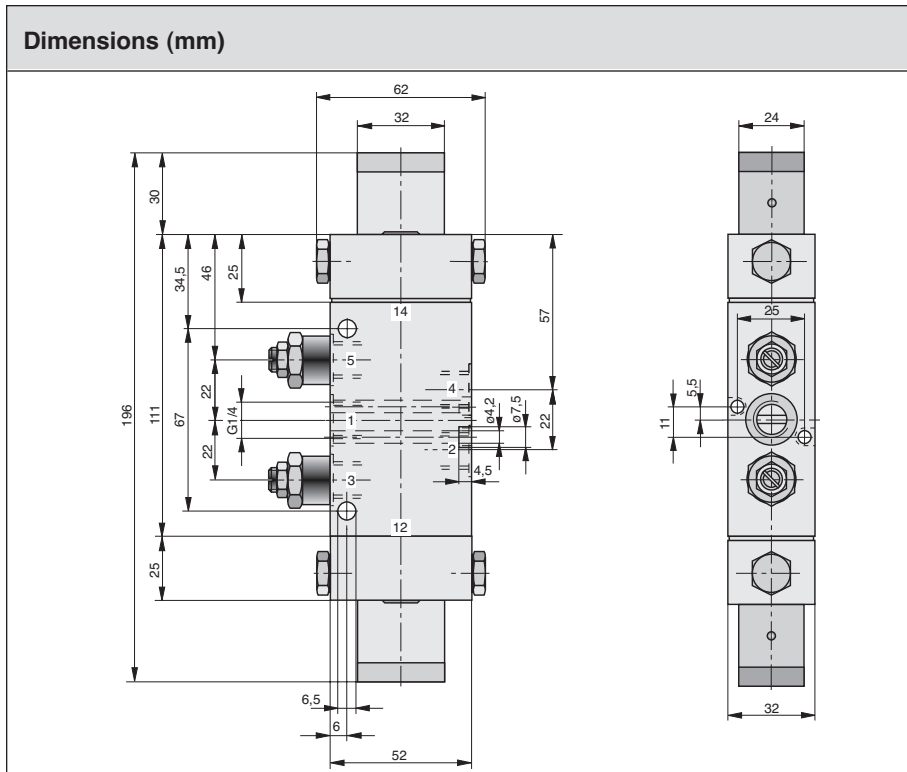


Version 1/4	Metric Version		NPT Version	
Description	Type Number	Order Number	Type Number	Order Number
Two-hand safety valve	S9 563/65RF-1/4-SO	PD 37173	S9 563/65RF-1/4U-SO	PD 45507



Characteristics to VDI 3290				Pressures quoted as gauge pressure	
Characteristics	Symbol	Unit	Description		
<b>General Features</b>					
System			Spool valve		
Mounting			2 screws M6 (M4)		
Tube connection			Thread		
Port size		NPT (G)	1/4		
Weight (mass)		lbs. (kg)	1.43 (0.65)		
Installation			In any position		
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing point it is necessary to consult factory.	
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 158 (+70)		
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication <sup>1)</sup>		
<b>Pneumatic Characteristics</b>					
Nominal pressure	$p_n$	psi (bar)	87 (6)		
Operating pressure range	$p_{\min}$	psi (bar)	36 (3)		
	$p_{\max}$		118 (8)		
Nominal flow	$Q_N$	Cv (l/min)	1.3 (1300)		
<b>Actuation</b>					
Pneumatic			Direct		
Actuating pressure range	$p_{st \min}$	psi (bar)	36 (3)		
	$p_{st \max}$		118 (8)		

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

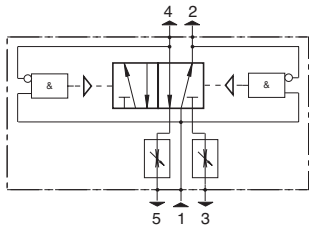


# 5/2-Way Valve

## 1/4

oscillating valve

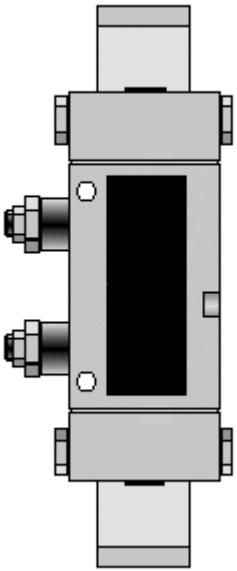
Actuation: Pneumatic



The oscillating valve automatically generates reciprocating movements, for applications such as shaking, feeding, hammering, plunging, scraping, wiping, winding, tensioning, raking, diverting, spraying, cleaning, and dipping.

The oscillating valve is supplied with two built-in flow control valves. This makes it easy to adjust the stroke frequency of the actuator.

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



Version 1/4	Metric Version		NPT Version	
Description	Type Number	Order Number	Type Number	Order Number
Oscillating valve	S9 568/68-1/4-SO	PD 34796	S9 568/68-1/4U-SO	PD 45508

Characteristics to VDI 3290 Pressures quoted as gauge pressure		
Characteristics	Unit	Description
<b>General Features</b>		
Type		Body ported valve
Style		Spool valve
Mounting		2 screws M6 (M4)
Tube connection		Thread
Port size	NPT (G)	1/4
Weight (mass)	lbs. (kg)	1.70 (.77)
Installation		In any position
Ambient temperature minimum maximum	°F (°C)	14 (-10) 140 (+60)
Medium temperature minimum maximum	°F (°C)	14 (-10) 158 (+70)
<b>Pneumatic Characteristics</b>		
Medium		Air
Nominal pressure	psi (bar)	131 (6)
Operating pressure minimum maximum	psi (bar)	36 (3) 118 (8)
Nominal flow	Cv (l/min)	1.3 (1300)
Filtration		40 micron recommended
Lubrication		With or without lubrication <sup>1)</sup>
<b>Electrical Characteristics</b>		
Voltage AC DC	V	110, 220 12, 24
Duty cycle		Continuous Duty
Electric protection		IP65 to DIN 40050
Insulating Material		VDE 0580
Connection		Plug to DIN 43650 form B
<b>Actuation</b>		
Electric manual override		(Internal) pilot operated yes

<sup>1)</sup> We recommend the use of mineral oil type VG32 to ISO 3448

Version 1/4			
Order Number	Description	Ports	Voltage
PD 47166-0133	5/2-way oscillating valve	1/4" NPT	12vDC
PD 47166-0233	5/2-way oscillating valve	1/4" NPT	24vDC
PD 47166-5733	5/2-way oscillating valve	1/4" NPT	110vAC

# 5/2-Way Valve

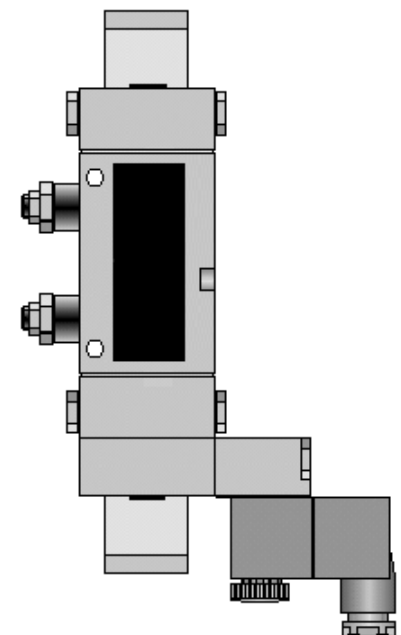
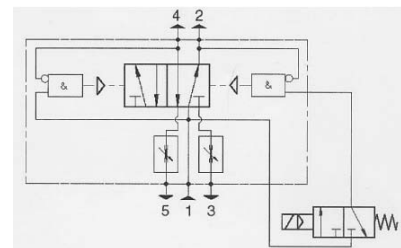
## 1/4

Oscillating Valve

**Actuation: Electric**

**Electric Version:**

Compressed air is introduced into inlet port 1. The outlet ports 4 and 2 are alternately supplied with air, for as long as an electrical signal is present at the solenoid coil.



# 3/2-Way Valve 1/4

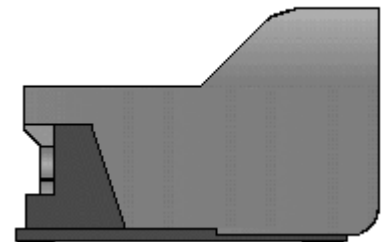
**Actuation: Foot Pedal**

- Detent
- Spring Return

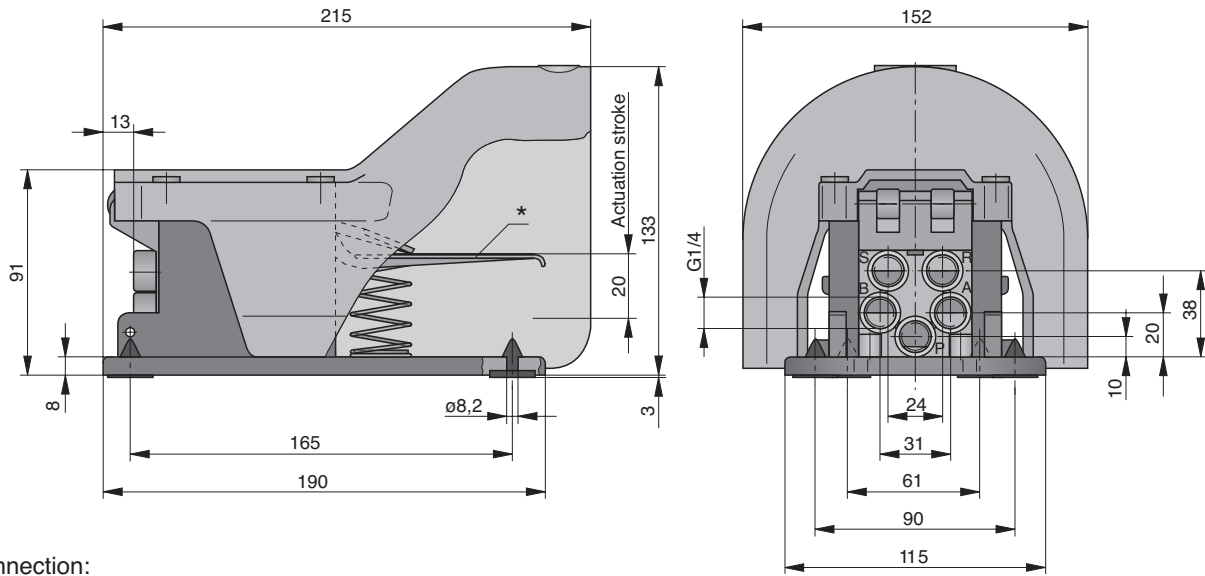
Characteristics to VDI 3290					Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description						
<b>General Features</b>									
System			Poppet valve						
Mounting			After removing the rubber footing 4 screws M8						
Tube connection			Thread						
Port size			G1/4						
Weight (mass)		lbs. (kg)	3.08 (1.5)						
Installation			In any position						
Ambient temperature range	$\vartheta_{min}$ $\vartheta_{max}$	°F (°C)	14 (-10) 131 (+55)	Note: When using below freezing point it is necessary to consult factory.					
Medium temperature range	$\vartheta_{min}$ $\vartheta_{max}$	°F (°C)	14 (-10) 140 (+60)						
Medium			Filtered compressed air						
Lubrication			Oil mist lubrication compatible with Buna N						
<b>Pneumatic Characteristics</b>									
Nominal pressure	$p_n$	psi (bar)	87 (6)						
Operating pressure range	$p_{min}$ $p_{max}$	psi (bar)	0 (0) 145 (10)						
Nominal flow	$Q_N$	Cv (l/min)	1.4 (1400)						
<b>Actuation</b>									
Manual control			Direct						
Stroke		mm	2						
Actuating force	Fb	lbf (N)	6.74 (30)						

**Delivery Includes:**

- valve
- toe guard



**Dimensions (mm)**



Connection:  
 Version "normally closed": P, B, S  
 Version "normally open": P, A, R

\* Only for version "both switch positions indexed" - return is only effected after actuating the locking pedal.

Mounting instruction:  
 Only use screw connections with max. wrench size across flats of 15.

**METRIC ONLY**

Version G1/4				
Actuation	Return	Symbol	Type Number	Order Number
Pedal	Spring return		<b>F331RF-08NG*</b>	<b>KZ 4410</b>
			<b>F331RF-08NO*</b>	<b>KZ 4411</b>
Pedal	Detent		<b>F331-08NG*</b>	<b>KZ 4408</b>
			<b>F331-08NO*</b>	<b>KZ 4409</b>

\*NG = normally closed, NO = normally open

# 5/2-Way Valve 1/4

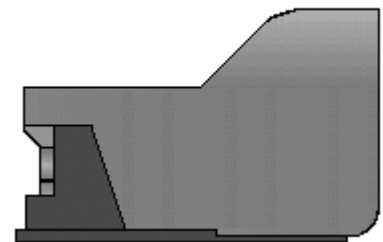
**Actuation: Foot Pedal**

- Detent
- Spring Return

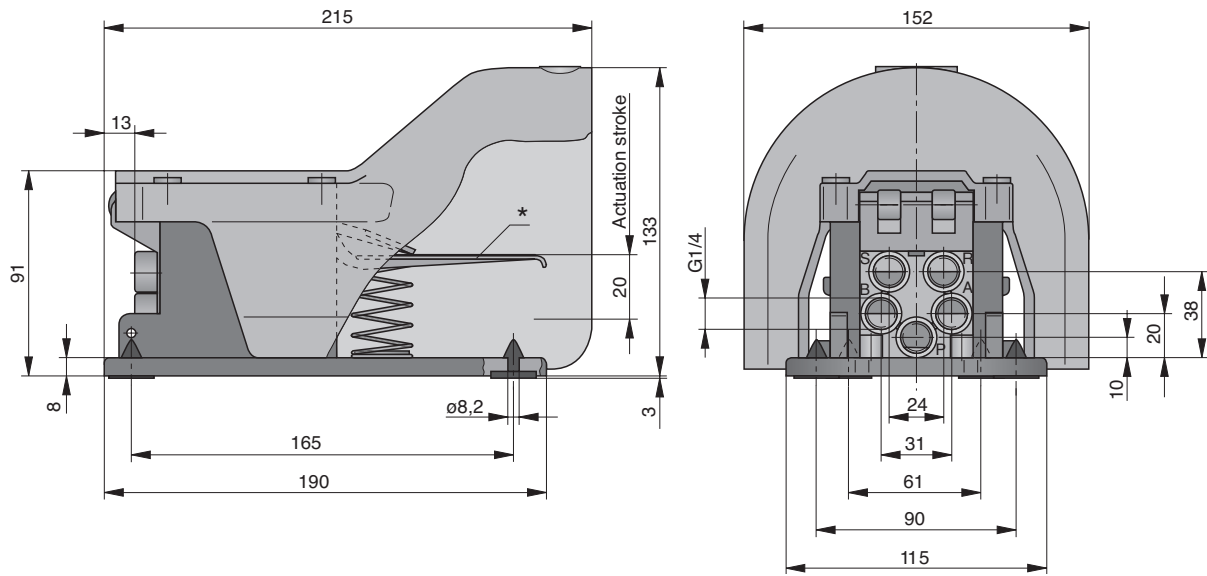
Characteristics to VDI 3290					Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description						
<b>General Features</b>									
System			Poppet valve						
Mounting			After removing the rubber footing 4 screws M8						
Tube connection			Thread						
Port size			G1/4						
Weight (mass)		lbs. (kg)	3.08 (1.5)						
Installation			In any position						
Ambient temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 131 (+55)	Note: When using below freezing point it is necessary to consult factory.					
Medium temperature range	$\vartheta_{\min}$ $\vartheta_{\max}$	°F (°C)	14 (-10) 140 (+60)						
Medium			Filtered compressed air						
Lubrication			Oil mist lubrication compatible with Buna N						
<b>Pneumatic Characteristics</b>									
Nominal pressure	$p_n$	psi (bar)	87 (6)						
Operating pressure range	$p_{\min}$ $p_{\max}$	psi (bar)	0 (0) 10	145 (10)					
Nominal flow	$Q_N$	Cv (l/min)	1.4 (1400)						
<b>Actuation</b>									
Manual control			Direct						
Stroke		mm	2						
Actuating force	Fb	lbf (N)	6.74 (30)						

**Delivery Includes:**

- valve
- toe guard



## Dimensions (mm)



\* Only for version "both switch positions indexed" - return is only effected after actuating the locking pedal.

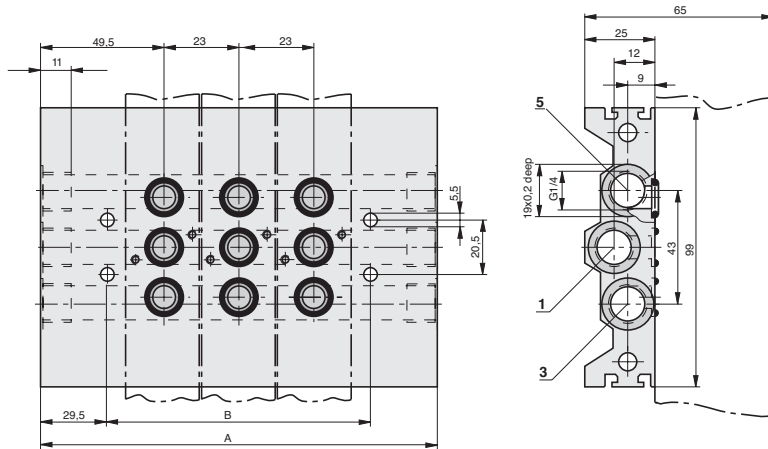
Mounting instruction:  
Only use screw connections with  
max. wrench size across flats of 15.

## METRIC ONLY

Version G1/4				
Actuation	Return	Symbol	Type Number	Order Number
Pedal	Spring return		<b>F531RF-08</b>	<b>KZ 4413</b>
Pedal	Detent		<b>F531-08</b>	<b>KZ 4412</b>

## Dimensions (mm)

For dimensions A and B see table



Drawing shows: RPSL-S9-1/8-3

# RPS-Supply Manifolds

for directional valves of the S9-1/8 Series

## Metric Only

Body Ported Valves

### Dimension Table (mm)

Type #	# of valves	A	B
RPSL-S9-1/8-2	2	74	63
RPSL-S9-1/8-3	3	96	86
RPSL-S9-1/8-4	4	118	109
RPSL-S9-1/8-5	5	140	132
RPSL-S9-1/8-6	6	162	155
RPSL-S9-1/8-7	7	184	178
RPSL-S9-1/8-8	8	206	201
RPSL-S9-1/8-9	9	228	224
RPSL-S9-1/8-10	10	250	247

### Material

Description	Material
RPS-supply mani.	Al, anodized
Screws	Galvanized steel
O-ring	Oil-resist. rubber

### Accessories

Description	Order No.
Complete cover strip	<b>PD 32956</b>
Flow divider	<b>PD 42483</b>

### Versions:

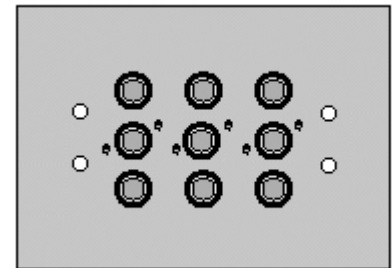
5/2-way valves  
5/3-way valves

### Delivery Includes:

RPS-supply manifold  
mounting screws  
o-rings

### Order Instructions

Type #	Order #	Manifold	Quantity Screws	O-rings	Weight (kg)
RPSL-S9-1/8-2	PD 44813-0002	1	4	6	0.47
RPSL-S9-1/8-3	PD 44813-0003	1	6	9	0.57
RPSL-S9-1/8-4	PD 44813-0004	1	8	12	0.67
RPSL-S9-1/8-5	PD 44813-0005	1	10	15	0.77
RPSL-S9-1/8-6	PD 44813-0006	1	12	18	0.87
RPSL-S9-1/8-7	PD 44813-0007	1	14	21	0.97
RPSL-S9-1/8-8	PD 44813-0008	1	16	24	1.07
RPSL-S9-1/8-9	PD 44813-0009	1	18	27	1.17
RPSL-S9-1/8-10	PD 44813-0010	1	20	30	1.27



# RPS-Supply Manifolds

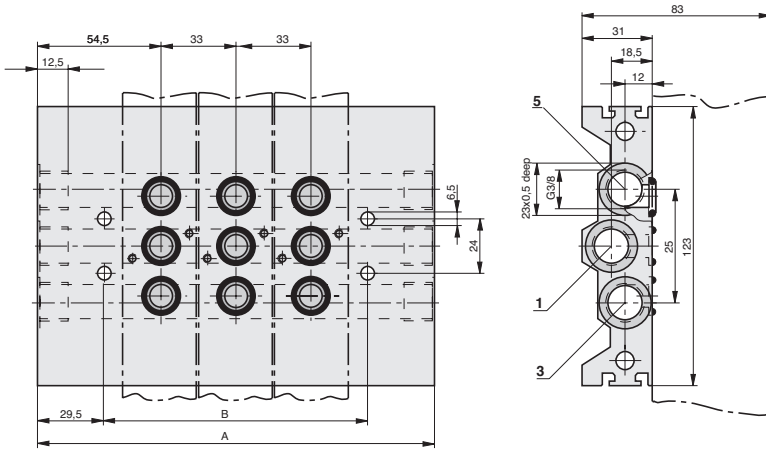
for directional valves of the S9-1/4 Series

## Metric Only

Body Ported Valves

### Dimensions (mm)

For dimensions A and B see table



Drawing shows: RPSL-S9-1/4-3

### Dimension Table (mm)

Type #	# of valves	A	B
RPSL-S9-1/4-2	2	96	83
RPSL-S9-1/4-3	3	129	116
RPSL-S9-1/4-4	4	162	149
RPSL-S9-1/4-5	5	195	182
RPSL-S9-1/4-6	6	228	215
RPSL-S9-1/4-7	7	261	248
RPSL-S9-1/4-8	8	294	281
RPSL-S9-1/4-9	9	327	314
RPSL-S9-1/4-10	10	360	347

### Material

Description	Material
RPS-supply mani.	Anodized alum.
Screws	Galvanized steel
O-ring	Oil-resist. rubber

### Accessories

Description	Order No.
Cover strip kit	PD 32957
Flow divider	PD 42516

### Versions:

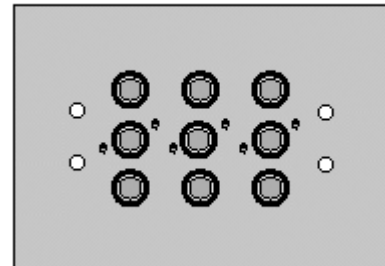
5/2-way valves  
5/3-way valves

### Delivery Includes:

RPS-supply manifold  
mounting screws  
o-rings

### Order Instructions

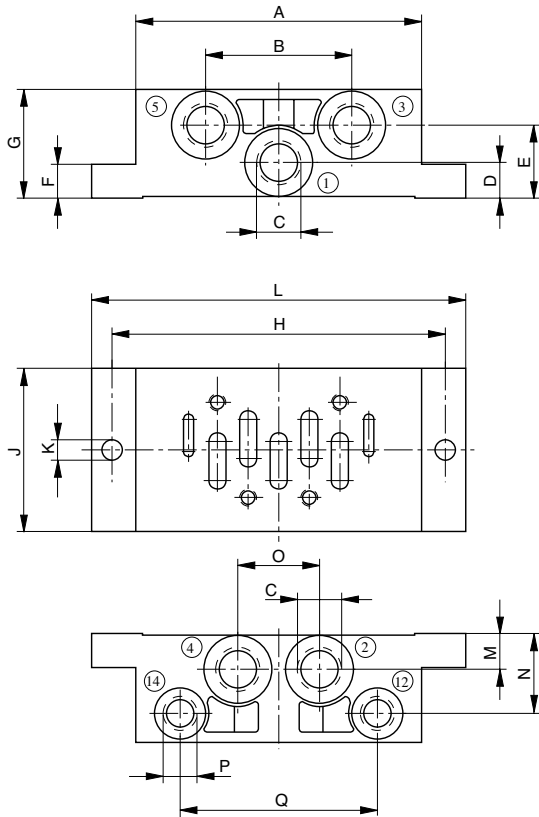
Type #	Order #	Manifold	Quantity Screws	O-rings	Weight (kg)
RPSL-S9-1/4-2	PD 44814-0002	1	4	6	0.845
RPSL-S9-1/4-3	PD 44814-0003	1	6	9	1.045
RPSL-S9-1/4-4	PD 44814-0004	1	8	12	1.245
RPSL-S9-1/4-5	PD 44814-0005	1	10	15	1.445
RPSL-S9-1/4-6	PD 44814-0006	1	12	18	1.645
RPSL-S9-1/4-7	PD 44814-0007	1	14	21	1.845
RPSL-S9-1/4-8	PD 44814-0008	1	16	24	2.045
RPSL-S9-1/4-9	PD 44814-0009	1	18	27	2.245
RPSL-S9-1/4-10	PD 44814-0010	1	20	30	2.445





**Dimensions (mm)  
Single Base Plate, Form A**

**Side Ported**



# Base Plates

**ISO 5599  
Size: 1, 2, 3**

**Single Base Plates**

- To VDMA 24345 Form A  
Side Ported
- To VDMA 24345 Form B  
Bottom Ported

**Dimension Table (mm)**

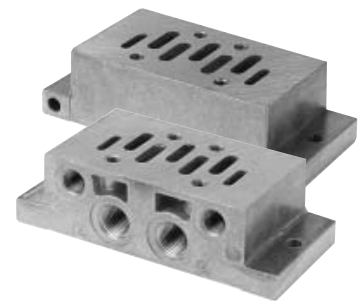
ISO Size	A	B	C	D	E	F	G	H
1	84	43	1/4	10.5	21.5	10	32	98
2	95	56	3/8	14	26	13	40	112
3	119	68	1/2	17	17	18	32	136

ISO Size	J	K	L	M	N	O	P	Q
1	48	5.5	110	10.5	23.5	24	1/8	58
2	57	6.6	124	14	30	30	1/8	74
3	71	6.6	149	17	22	32	1/8	90

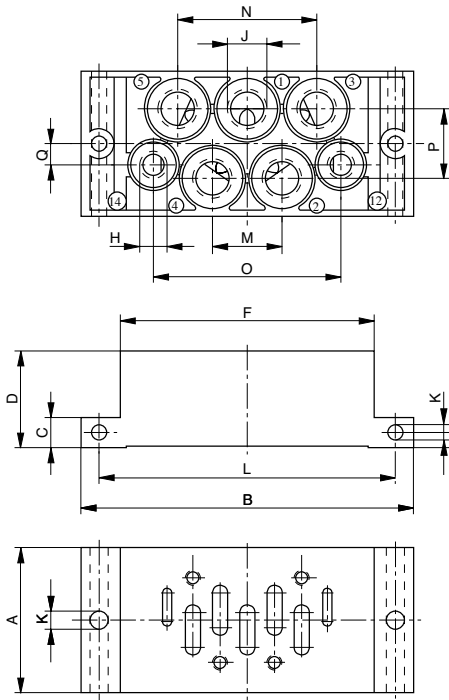
**Order Instructions**

ISO Size	Ports	Order Number	
		Metric Version	NPT Version
1	1/4	KX 9076	600C01
	3/8		642K91
2	3/8	KX 9433	601C01
	1/2		643K91
3	1/2	KX 9434	602C01
	3/4		644K91



**Dimensions (mm)  
Single Base Plate, Form B**

**Bottom Ported**



**Intermediate Plate  
Form C**



**End Plate Set, Form D  
for Intermediate Plate**



**Dimension Table (mm)**

ISO Size	A	B	C	D	E	F	H	J	K	L	M	N	O	P	Q
1	46	110	10	30	5	84	G1/8	G1/4	5.5	98	23	46	62	23	7.5
2	56	124	13	35	6.5	95	G1/8	G3/8	6.6	112	28	56	73	27	7.5
3	71	149	18	32	9	119	G1/8	G1/2	6.6	136	34	68	90	35	10

**Order Instructions**

ISO Size	Ports	Order Number
1	G1/4	KX 9077
2	G3/8	KX 9436
3	G1/2	KX 9437

**Order Instructions**

ISO Size	Description	Order Number
1	manifold subbase, G1/4, Form C	KX 9079
2	manifold subbase, G3/8, Form C	KX 9419
3	manifold subbase, G1/2, Form C	KX 9420
1	end plate set, G3/8, Form D	KX 9078
2	end plate set, G1/2, Form D	KX 9421
3	end plate set, G1, Form D	KX 9422
	adapter plate to combine size 1 to size 2	KX 9430
	adapter plate to combine size 1 to size 3	KX 9432
	adapter plate to combine size 2 to size 3	KX 9431
1	cover strip kit	KX 9082
2	cover strip kit	KX 9423
3	cover strip kit	KX 9424
1	intermediate plate, with built-in flow control valves	701B77
2	intermediate plate, with built-in flow control valves	702B77
3	intermediate plate, with built-in flow control valves	722K77
1	intermediate plate, with ONE built-in pressure regulator	620C91
2	intermediate plate, with ONE built-in pressure regulator	624C91
3	intermediate plate, with ONE built-in pressure regulator	628C91
1	intermediate plate, with TWO built-in pressure regulators	621C91
2	intermediate plate, with TWO built-in pressure regulators	625C91
3	intermediate plate, with TWO built-in pressure regulators	629C91

# Accessories

Exhaust Mufflers	
Order Number	Port Size
KY 2010	G1/8
KY 2011	G1/4
KY 2012	G3/8
KY 2013	G1/2
KY-U2010	1/8" NPT
KY-U2011	1/4" NPT
KY-U2013	1/2" NPT

Exhaust Flow Controls	
Order Number	Port Size
KY 6952	G1/8
KY 6953	G1/4
KY 6954	G1/2
ASP-1SC	1/8" NPT
ASP-2SC	1/4" NPT

Port Plugs	
Order Number	Port Size
0205-1000	G1/8
0205-1300	G1/4
0205-1600	G3/8
0205-2000	G1/2
0205-1100	1/8" NPT
0205-1400	1/4" NPT
0205-1800	3/8" NPT
0205-2200	1/2" NPT

Metric Conversion Fittings	
Order Number	Port Size
2521-1/8-02	G1/8 to 1/8" NPT
2521-1/4-04	G1/4 to 1/4" NPT
2521-3/8-06	G3/8 to 3/8" NPT
2521-1/2-08	G1/2 to 1/2" NPT

# Spare Parts

Replacement Solenoid Coils: 1/8" & 1/4" Body Ported Valves	
Order Number	Voltage
KZ 3674	12vDC
KZ 3673	24vDC
KZ 3669	110vAC
KZ 3672	220vAC
KZ 3675	24vAC

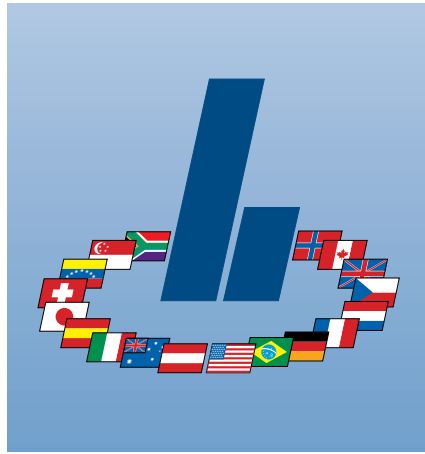
Replacement Solenoid Coils: 1/2" Body Ported Valves & ISO Valves	
Order Number	Voltage
KZ 3518	12vDC
KZ 3519	24vDC
KZ 3521	110vAC
KZ 3522	220vAC
KZ 3518	24vAC

Replacement DIN Connector Plugs	
Order Number	Description
KY 9393	Replacement DIN connector plug
C12213N21	DIN connector plug w/1/2" NPTF conduit entry
PD 34991	Solenoid retaining nut
KW 0766	Lighted wafer seal, for DIN connector plug, 24vDC
KZ 3759	DIN connector plug w/surge suppression, 12 & 24vDC
KX 5368	DIN connector plu w/surge suppression, 110 & 220vAC
KY 3018	DIN connector plug w/surge suppression, LED, 12 & 24vDC
KW 0718	DIN connector plug w/surge suppression, LED, 110 & 220vAC

Seal Kits: S9 Solenoid Valves			
Actuation	1/8"	1/4"	1/2"
5/2 Single	PD 35534	PD 35536	PD 35578
5/2 Double	PD 35520	PD 35526	PD 35577
5/3 Blocked	PD 35525	PD 35531	PD 35579
5/3 Exhaust	PD 35524	PD 35530	PD 35581
5/3 Dual	PD 35523	PD 35529	PD 35580

RPS Supply Manifolds: 1/8 PD 44813-....	
Order Number	Description
88-37H643-75	O-ring (10x2)
ZP 3986	Screws (M3x40)

RPS Supply Manifolds: 1/4 PD 44814-....	
Order Number	Description
88-52H643-75	O-ring (13x2)
ZP 3988	Screws (M4x55)



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