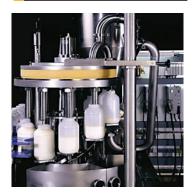


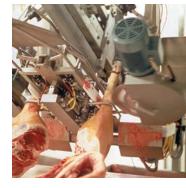


aerospace climate control electromechanical filtration fluid & gas handling hydraulics pneumatics process control sealing & shielding





Origa Valves Catalog 0952





⚠ WARNING

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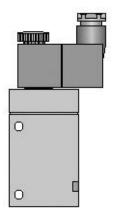
Solenoid Valves		
- 3/2-way 1/8	page	2-3
- 3/2-way 1/4	page	4-5
- 3/2-way 1/2		
- 5/2-way 1/8, 1/4, 1/2	page	8-11
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- 5/2-way 1/8	page	12
- 5/2-way 1/4		
Hand Lever Valves		
- 3/2 & 5/2-way 1/8	page	14-15
- 3/2 & 5/2-way 1/4		
- 3/2 & 5/2-way 1/2		
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Interference Sensing Module		
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- ISO Subbase (1, 2, 3)		
Spare Parts/Accessories		
Safety Guide		
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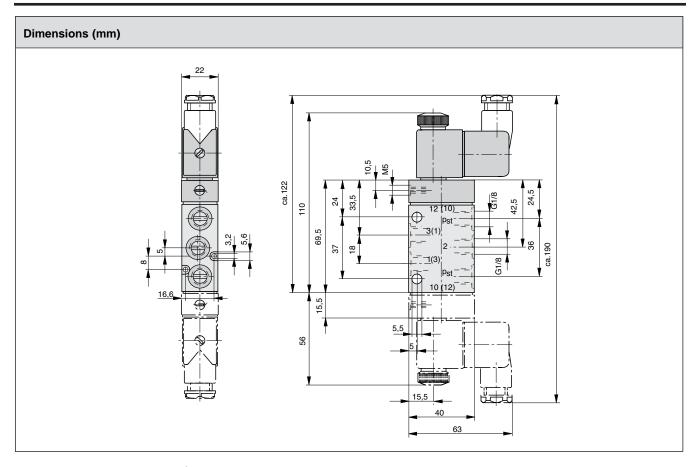
Characteristics to VDI	3290	Pressure	s quoted as	gauge	e pressure	
Characteristics	Symbol	Unit	Description	n		
General Features						
Туре			Spool valv	е		
Mounting			2 screws N	л 6 (М3	3)	
Tube connection			Thread			
Port size		NPT (G)	1/8			
Weight (mass)		lbs. (kg)	.54 (0.247 .84 (0.382		e solenoid le solenoid	
Installation			In any pos	ition		
Ambient temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 140 (+60)		using below freezing	
Medium temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 158 (+70)		it is necessary to It factory.	
Medium			Filtered co	mpres	sed air	
Lubrication			With or without oil mist lubrication1)			
Pneumatic Characteristics						
Nominal pressure	p _n	psi (bar)	87 (6)			
Operating pressure range	p _{min}	psi (bar)	Single solenoid 29 (2) 145 (10)			
	p _{min} p _{max}	psi (bar)	Double so 22 (1.5) 145 (10)	lenoid		
Nominal flow	Q_N	Cv (I/min)	.45 (450)			
Actuation						
Electrical			Pilot opera	ited		
Voltage			AC		DC	
Nominal voltage* Standard version	Un	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	%	Continuou	s Duty		
Electrical protection			IP65 to DI	N 4005	50 (with plug)	
Insulating material			VDE 0580			
Connection			Plug to DII	N 4365	50 form B	

 $^{^{\}rm 1)}$ We recommend the use of mineral oil type VG32 to ISO 3448

3/2-Way Valve 1/8







Version 1/8		Metric	Version	NPT Version		
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number	
3/2 Single Solenoid/Spring Return	12 13 WW	S9 381RF-1/8-NG	PA 1029733	S9 381RF-1/8U-NG	PD 4329533	
3/2 Single Solenoid/Spring Return	10 2 1 1 1 3 W	S9 381RF-1/8-NO	PA 1029833	S9 381RF-1/8U-NO	PD 4545933	
3/2 Double Solenoid	12 2 10	S9 381-1/8	PA 1029933	S9 381-1/8U	PD 4546033	

Voltage	Range		
Nominal	Secondary	Coil Number	Order Code
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



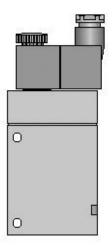
- $\bullet \ \mbox{Other voltages available. Contact factory.}$
- Explosion proof coils available. Contact factory.
 UL/CSA rated coils available. Contact factory.



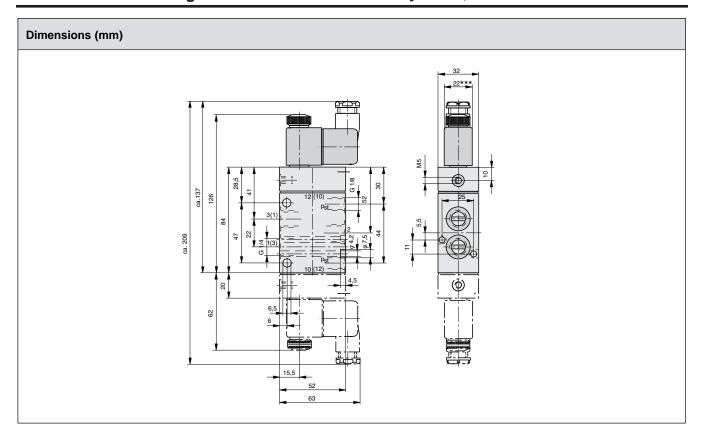
Characteristics to VDI	3290	Pressure	s quoted as	gauge	e pressure	
Characteristics	Symbol	Unit	Description	า		
General Features						
Туре			Spool valv	е		
Mounting			2 screws N	/16 (M4	1)	
Tube connection			Thread			
Port size		NPT (G)	1/4			
Weight (mass)		lbs. (kg)	1.1 (0.5) S 1.32 (0.6)			
Installation			In any pos	ition		
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When	using below freezing	
Medium temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) point it is necessary to consult factory.			
Medium			Filtered compressed air			
Lubrication			With or without oil mist lubrication1)			
Pneumatic Characteristics						
Nominal pressure	p _n	psi (bar)	87 (6)			
Operating pressure range	p _{min}	psi (bar)	Single solenoid 29 (2) 145 (10)			
	p _{min}	psi (bar)	Double solenoid			
Nominal flow	Q_N	Cv (I/min)	1.3 (1300)			
Actuation						
Electrical			Pilot opera	ted		
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	s Duty		
Electrical protection			IP65 to DII	N 4005	50 (with plug)	
Insulating material			VDE 0580			
			Plug to DIN 43650 form B			

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

3/2-Way Valve 1/4







Version 1/4		Metric	Version	NPT Version		
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number	
3/2 Single Solenoid/Spring Return	12 2 10 10 W	S9 381RF-1/4-NG	PA 1271633	S9 381RF-1/4U-NG	PD 4546133	
3/2 Single Solenoid/Spring Return	10 T 1 3 WW	S9 381RF-1/4-NO	PA 1271733	S9 381RF-1/4U-NO	PD 4546233	
3/2 Double Solenoid	12 2 10	S9 381-1/4	PA 1271833	S9 381-1/4U	PD 4546333	

Voltage	Range		
Nominal	Secondary	Coil Number	Order Code
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



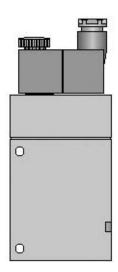
- Other voltages available. Contact factory.Explosion proof coils available. Contact factory.
- UL/CSA rated coils available. Contact factory.



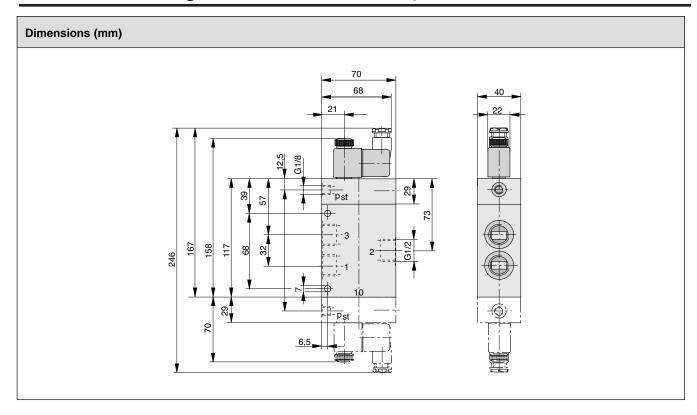
3290	Pressure				
Symbol	Unit	Description			
		•			
		2 screws M6			
		Thread			
	NPT (G)	1/2			
	lbs. (kg)				
		In any position			
$artheta_{min} \ artheta_{max}$	°F (°C)	140 (+60) Whe	n using below freezing		
$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	point it is necessary to consult factory.			
		Filtered compressed air			
		With or without oil mist lubrication1)			
stics					
p _n	psi (bar)	87 (6)			
p _{min} p _{max}	psi (bar)				
p _{min}	psi (bar)	Double solenoid 22 (1.5) 145 (10)	I		
Q_N	Cv (I/min)	3.5 (3500)			
		Pilot operated			
		AC	DC		
			DC		
Un	V	220	24		
U _n	V VA (W)	220			
Un	-		24		
U _n	VA (W)	11	24 4.8 4.8		
	VA (W)	8.5	24 4.8 4.8		
	VA (W)	11 8.5 Continuous Dut	24 4.8 4.8		
	Symbol ϑ_{min} ϑ_{max} ϑ_{min} ϑ_{max} stics p_n p_{min} p_{max}	Symbol Unit NPT (G) Ibs. (kg) the state of the state o	Spool valve 2 screws M6 Thread NPT (G) 1/2 Ibs. (kg) 1.69 (0.77) Sing 1.32 (0.60) Dou In any position		

 $^{^{\}rm 1)}$ We recommend the use of mineral oil type VG32 to ISO 3448

3/2-Way Valve 1/2







Version 1/2		Metric	Version	NPT Version		
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number	
3/2 Single Solenoid/Spring Return	12 T 10 10 10 10 10 10 10 10 10 10 10 10 10	S9 381RF-1/2-NG	PA 1641233	S9 381RF-1/2U-NG	PD 4546433	
3/2 Single Solenoid/Spring Return	10 2 11 12 WW	S9 381RF-1/2-NO	PA 1641333	S9 381RF-1/2U-NO	PD 4546533	
3/2 Double Solenoid	12 10	S9 381-1/2	PA 1641433	S9 381-1/2U	PD 4546633	

Voltage	Range		
Nominal	Secondary	Coil Number	Order Code
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.



Features							
Туре			Spool Valve				
Mounting			2 Screws				
Port connection			Threaded	Threaded			
Port size		G/NPT	1/8 • 1/4 • 1/2	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 u	using below freezing		
Medium temperature range	min max		14°F (-10°C) 158°F (+70°C)	1.	is necessary to factory.		
Medium			Filtered Compres	Filtered Compressed Air			
Lubrication			With or Without (With or Without Oil Mist Lubrication 1)			
Pneumatic Characte	ristics						
Body			5/2 Position		5/3 Position		

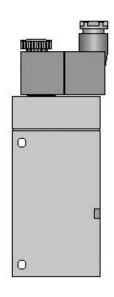
5/3 Position Body 5/2 Position Size Single Double Double 29 (2) 145 (10) 1/8 Minimum Pressure psi (bar) 29 (2) 22 (1.5) Maximum Pressure psi (bar) 145 (10) 145 (10) Flow Cv (I/min) 0.5 (500) $0.5(\hat{5}00)$ 0.6 (600) 0.62 (0.28) Weight lbs. (kg) 0.91 (0.415) 0.94 (0.425) 29 (2) 145 (10) 1/4 Minimum Pressure psi (bar) 22 (1.5) 29 (2) Maximum Pressure psi (bar) 145 (10) 145 (10) Flow Cv (I/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 (I/min) 3.5 (3500) 3.5 (3500) RFE:3.3 (3300) RFG:3.5 (3500) RFB:3.6 (3600) Weight lbs (kg) 22 (1 0) 2 43 (1 1) 2 43 (1 1)

	weight ibs. (kg)	2.2 (1.0)	2.43 (1.1)	2.43 (1.1)
Voltag	Ð		AC	DC
Nomina		V	24, 110, 22	20 12, 24
Voltage)		Others Co	ntact Factory

Power Cor	sumption							
Inrush	•	Size: 1/8 • 1/4	4	Body Size: 1/2				
		(C	DC	Д	DC			
	50 HZ	60 HZ		50 HZ	60 HZ			
12 24 110 220	– 8.5VA 8.5VA 8.5VA	8.5VA 8.5VA 8.5VA	2.8 W 2.5 W 2.7 W 3.5 W	10.4VA 10.4VA 10.4VA 10.4VA	10.4VA 10.4VA 10.4VA 10.4VA	4.5 W 4.5 W 5.5 W 4.9 W		
Holding	Body	Size: 1/8 • 1/4	4		1/2			
	Д	C	DC	AC		DC		
	50 HZ	60 HZ		50 HZ	60 HZ			
12 24 110 220	 6.0VA 6.0VA 6.0VA	 6.0VA 4.9VA 4.9VA	2.8 W 2.5 W 2.7 W 3.5 W	8.5VA 8.5VA 8.2VA 8.5VA	8.5VA 8.5VA 6.6VA 6.9VA	4.5 W 4.5 W 5.5 W 4.9 W		
Duty cycle		ED	%	Continuo	ous Duty			
Electrical p	Electrical protection			IP65 to [OIN 40050 (w	ith plug)		
Installing m	Installing material			VDE 058	30			
Connection				Plug to [OIN 43650 Fo	rm B		

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

5/2-Way Valve 5/3-Way Valve 1/8 • 1/4 • 1/2





Dimensions & Ordering Information

VERSION 1/8		Metric \	/ersion	NPT Vers	sion
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return	14 12 12 12 12 12 12 12 12 12 12 12 12 12	S9 581RF-1/8	PA 1031233	S9 581RF-1/8 U	PD 4066333
5/2 Double Solenoid	14 2 12	S9 581-1/8	PA 1031333	S9 581-1/8 U	PD 4066433
5/3 Double Solenoid/Center Blocked	14.W 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S9 581RFG-1/8	PA 1033333	S9 581RFG-1/8 U	PD 4073633
5/3 Double Solenoid/Center Exhaust	4 2 112 114 114 115 115 115 115 115 115 115 115	S9 581RFE-1/8	PA 1033433	S9 581RFE-1/8 U	PD 4073733
5/3 Double Solenoid/Dual Center	14W 12 12 12 15 13 15 15 15 15 15 15 15 15 15 15 15 15 15	S9 581RFB-1/8	PA 1033533	S9 581RFB-1/8 U	PD 4073833
VERSION 1/4		Metric \	/ersion	NPT Vers	sion
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return	14 2 12 12 12 5 13	S9 581RF-1/4	PA 1267933	S9 581RF-1/4 U	PD 4066533
5/2 Double Solenoid	14 2 12	S9 581-1/4	PA 1268033	S9 581-1/4 U	PD 4066633
5/3 Double Solenoid/Center Blocked	14.M 12 11 1 12 15 13 15 13 15 13 15 13 15 13 15 15 13 15 15 15 15 15 15 15 15 15 15 15 15 15	S9 581RFG-1/4	PA 1270533	S9 581RFG-1/4 U	PD 4073933
5/3 Double Solenoid/Center Exhaust	4 2 112 112 112 112 112 112 112 112 112	S9 581RFE-1/4	PA 1270633	S9 581RFE-1/4 U	PD 4074033
5/3 Double Solenoid/Dual Center	14W 12 14W 12 1513	S9 581RFB-1/4	PA 1270733	S9 581RFB-1/4 U	PD 4074133
	_1	<u>'</u>	*	<u> </u>	*

Voltage	Range		·
Nominal Secondary		Coil Number	Order Code
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 V	ersion	NPT Version		
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number	
5/2 Single Solenoid/Spring Return	14 12 12 12 12 12 12 12 12 12 12 12 12 12	S9 581RF-1/2	PA 1617133	S9 581RF-1/2U	PD 3795033	
5/2 Double Solenoid	14 2 12 12 12 12 12 12 12 12 12 12 12 12 1	S9 581-1/2	PA 1617233	S9 581-1/2U	PD 3795133	
5/3 Double Solenoid/Center Blocked	14.W 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S9 581RFG-1/2	PA 1617633	S9 581RFG-1/2U	PD 3797133	
5/3 Double Solenoid/Center Exhaust	4 2 112 112 112 112 112 112 112 112 112	S9 581RFE-1/2	PA 1617733	S9 581RFE-1/2U	PD 3797233	
5/3 Double Solenoid/Dual Center	14 M 12 T 1 12 T 1 12 T 1 1 1 1 1 1 1 1 1 1	S9 581RFB-1/2	PA 1617833	S9 581RFB-1/2U	PD 3797333	

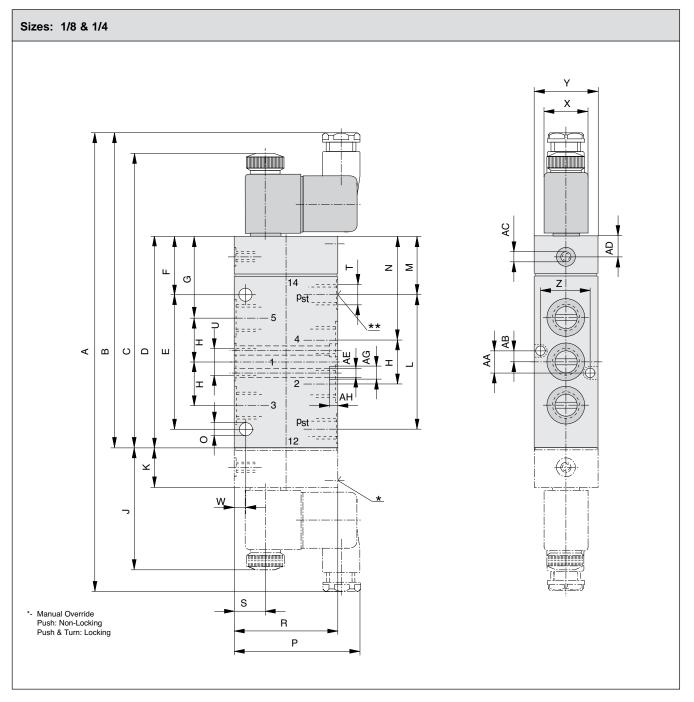
Voltage	Range		
Nominal	Secondary	Coil Number	Order Code
12 vDC		KZ 3518	01
24 vDC	60 50/60Hz	KZ 3519	02
110 50/60Hz	48 vDC	KZ 3521	57
220 50/60Hz	110 vDC	KZ 3522	61

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





Dimensions

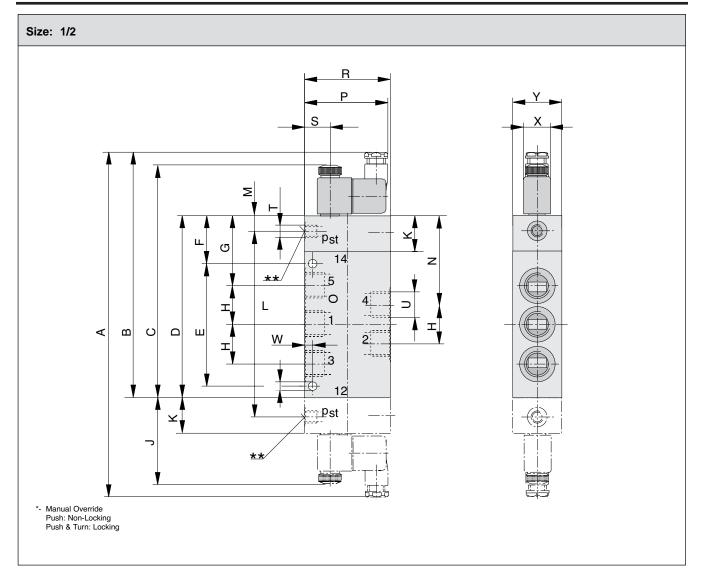


	Α	В	С	D	Е	F	G	Н	J	K	L	М	N	0	Р
1/8	8.19 208	5.51 140	5.04 128	3.44 87.5	2.19 55.5	0.94 24	1.32 33.5	0.71 18	2.20 56	0.61 15.5	2.13 54	0.96 24.5	1.67 42.5	0.22 5.5	2.48 63
1/4	9.09 231	6.26 159	5.83 148	4.17 106	2.64 67	1.16 29.5	1.61 41	0.87 22	2.44 62	0.79 20	2.60 66	1.18 30	2.05 52	0.26 6.5	2.48 63
	R	S	Т	U	W	Х	Υ	Z	AA	AB	AC	AD	AE	AF	AG
1/8	1.57 40	0.61 15.5	1/8 npt G 1/8	1/8 npt G 1/8	0.20 5	 	0.87 22	0.65 16.6	0.31 8	0.20 5	M5 M5	0.41 10.5		0.13 3.2	0.22 5.6
1/4	2.05 52	0.61 15.5	1/8 npt G 1/8	1/4 npt G 1/4	0.24 6	0.87 22	1.26 32	0.98 25	0.43 11	0.22 5.5	M5 M5	0.39 10	 		

Dimensions: BOLD= Inches; STANDARD= mm



Dimensions



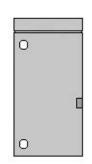
	Α	В	С	D	Е	F	G	Н	J	K	L	М	N	0	Р
1/2	11.14 283	7.93 201.5	7.48 190	5.87 149	3.94 100	1.54 39	2.24 57	1.26 32	2.76 70	1.14 29		0.49 12.5	2.87 73	0.28 7	2.68 68
	R	S	Т	U	W	Х	Υ	Z	AA	AB	AC	AD	AE	AF	AG
1/2	2.76 70	0.83 21	1/8 npt G 1/8	1/2 npt G 1/2	0.26 6.5	0.87 22	1.57 40				 				

 ${\bf Dimensions:\ BOLD=\ Inches;\ STANDARD=\ mm}$



Characteristics to VD	I 3290	Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Descriptio	n			
General Features							
Туре			Spool valv	re			
Mounting			2 screws I	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 pos	sition			
Ambient temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing			
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.			
Medium			Filtered co	ompressed air			
Lubrication			With or wi	thout oil mist lubrication1)			
Pneumatic Character	istics						
Nominal pressure	p _n	psi (bar)	87 (6)				
Operating pressure range	p _{min}	psi (bar)	0 (0) 145 (10)				
Nominal flow	Q_N	Cv (I/min)	.5 (500)				
Actuation							
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			

$^{\rm 1)}$ 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		

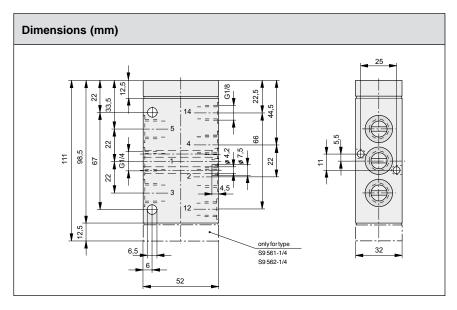
5/2-Way Valve 1/8

Actuation: Air Pilot
- Single Air Pilot
- Double Air Pilot



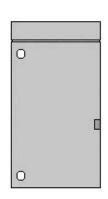
Characteristics to VDI	3290	Pressure	Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description				
General Features							
Туре			Spool valv	re			
Mounting			2 screws l	M5			
Tube connection			Thread				
Port size		NPT (G)	1/8				
Weight (mass)		lbs. (kg)	1.08 (.49) Single Air Pilot 1.12 (.51) Double Air Pilot				
Installation			In any pos	sition			
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing			
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.			
Medium			Filtered co	mpressed air			
Lubrication			With or wi	thout oil mist lubrication1)			
Pneumatic Characteris	stics						
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 (I/min)	1.3 (1300)				
Actuation							
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			

$^{\rm 1)}$ We recommend the use of mineral oil type VG32 to ISO 3448



5/2-Way Valve 1/4 Actuation: Air Pilot

- Single Air Pilot - Double Air Pilot

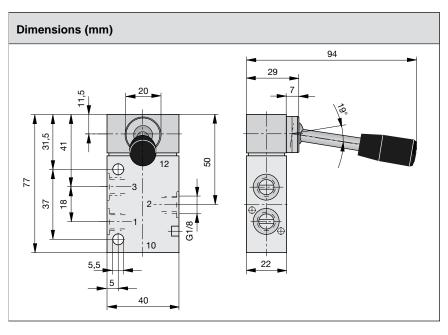


Version 1/4	Metric \	Version	NPT Version		
Actuation	Type Number	Order Number	Type Number	Order Number	
5/2 Single Air Pilot/Spring Return	S9 561RF-1/4	PA 12676	S9 561RF-1/4U	PD 47242	
5/2 Double Air Pilot	S9 561-1/4	PA 12677	S9 561-1/4U	PD 47241	



Characteristics to VD	3290	Pressures quoted as gauge pressure						
Characteristics	Symbol	Unit	Descriptio	n				
General Features								
Туре			Spool valv	re				
Mounting			2 screws l	M5				
Tube connection			Thread					
Port size		NPT (G)	1/8					
Weight (mass)		lbs. (kg)	.356 (.162)				
Installation			In any pos	sition				
Ambient temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 140 (+60)					
Medium temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.				
Medium			Filtered co	ompressed air				
Lubrication			With or wi	thout oil mist lubrication1)				
Pneumatic Characteri	stics							
Nominal pressure	p _n	psi (bar)	131 (6)					
Operating pressure range	p _{min}	psi (bar)	0 (0) 145 (10)					
Nominal flow	Q _N	Cv (I/min)	4.5 (450)					
Actuation								
Manual control			Direct					
Stroke		in (mm)	.177 (4.5)					
Actuation force	F _b	lbf (N)	1.57 (7) de 2.25 (10) s					

 $^{^{\}rm 1)}$ 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	

3/2-Way Valve 1/8

Actuation: Hand lever

- Detent

- Spring Return



Characteristics to VDI 3290 Press		Pressure	res quoted as gauge pressure		
Characteristics	Symbol	Unit	Description		
General Features					
Туре			Spool valv	/e	
Mounting			2 screws I	M5	
Tube connection			Thread		
Port size		NPT (G)	1/8		
Weight (mass)		lbs. (kg)	.429 (.195	5)	
Installation			In any pos	sition	
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)		
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.	
Medium			Filtered co	ompressed air	
Lubrication			With or wi	thout oil mist lubrication1)	
Pneumatic Characteris	stics				
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 (I/min)	.5 (500)		
Actuation					
Manual control			Direct		
Stroke		in (mm)	.177 (4.5)		
Actuation force	F _b	lbf (N)	1.57 (7) de 2.25 (10) s		

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

Dimensions (mm) 94 28 7 14 89 95 12 12 22 40

Version 1/8	Metri	c Version	NPT \	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		

-Parker

5/2-Way Valve 1/8

Actuation: Hand lever

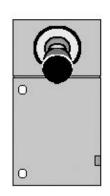
- Detent

- Spring Return

Characteristics to VDI 3290 Pre			s quoted as	s gauge pressure
Characteristics	Symbol	Unit	Description	
General Features				
Туре			Spool valv	re
Mounting			2 screws I	M6
Tube connection			Thread	
Port size		NPT (G)	1/4	
Weight (mass)		lbs. (kg)	.81 (.37)	
Installation			In any pos	sition
Ambient temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.
Medium			Filtered co	ompressed air
Lubrication			With or wi	thout oil mist lubrication1)
Pneumatic Characteris	stics			
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 (I/min)	1.3 (1300)	
Actuation				
Manual control			Direct	
Stroke		in (mm)	.256 (6.5)	
Actuation force	F _b	lbf (N)	2.25 (10) (3.37 (15) s	detent & safety detent spring

 $^{^{\}rm 1)}$ We recommend the use of mineral oil type VG32 to ISO 3448

Dimensions (mm) 120 86



Version 1/4	Metr	ic Version	NPT	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		

3/2-Way Valve 1/4

Actuation: Hand lever

- Detent
- Spring Return Safety Detent

Characteristics to VDI	Pressure	s quoted as	s gauge pressure	
Characteristics	Symbol	Unit	Descriptio	n
General Features				
Туре			Spool valv	re
Mounting			2 screws I	M6
Tube connection			Thread	
Port size		NPT (G)	1/4	
Weight (mass)		lbs. (kg)	1.14 (.52)	
Installation			In any pos	sition
Ambient temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 140 (+60)	
Medium temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.
Medium			Filtered co	ompressed air
Lubrication			With or wi	thout oil mist lubrication1)
Pneumatic Characteri	stics			
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 (I/min)	1.3 (1300)	
Actuation				
Manual control			Direct	
Stroke		in (mm)	.256 (6.5)	
Actuation force	F _b	lbf (N)	2.25 (10) (3.37 (15) s	

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

Dimensions (mm) 120

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Version 1/4	Metr	ic Version	NPT	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		

5/2-Way Valve 1/4

Actuation: Hand lever

- Detent
- Spring Return Safety Detent



Characteristics to VDI	Pressure	s quoted as	s gauge pressure	
Characteristics	Symbol	Unit	Descriptio	n
General Features				
Туре			Spool valv	re
Mounting			2 screws l	M6
Tube connection			Thread	
Port size		NPT (G)	1/2	
Weight (mass)		lbs. (kg)	1.98 (.9)	
Installation			In any pos	sition
Ambient temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.
Medium			Filtered co	ompressed air
Lubrication			With or wi	thout oil mist lubrication1)
Pneumatic Characteris	stics			
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 (I/min)	3.5 (3500)	1
Actuation				
Manual control			Direct	
Stroke		in (mm)	.370 (9.4)	
Actuation force	F _b	lbf (N)	3.37 (15) (8.99 (40) s	

 $^{^{\}rm 1)}$ We recommend the use of mineral oil type VG32 to ISO 3448

Dimensions (mm) 57 6.5 70

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Version 1/2	Metri	c Version	NPT \	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		

3/2-Way Valve 1/2

Actuation: Hand lever

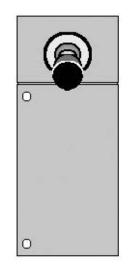
- Detent

- Spring Return



Characteristics to VDI	3290	Pressure	s quoted as	s gauge pressure
Characteristics	Symbol	Unit	Description	
General Features				
Туре			Spool valv	re
Mounting			2 screws I	M6
Tube connection			Thread	
Port size		NPT (G)	1/2	
Weight (mass)		lbs. (kg)	2.64 (1.20)
Installation			In any pos	sition
Ambient temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing
Medium temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.
Medium			Filtered co	ompressed air
Lubrication			With or wi	thout oil mist lubrication1)
Pneumatic Characteri	stics			
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 (I/min)	3.5 (3500)	
Actuation				
Manual control			Direct	
Stroke		in (mm)	.370 (9.4)	
Actuation force	F _b	lbf (N)	3.37 (15) (8.99 (40) s	

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



Version 1/2	Metri	c 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	

5/2-Way Valve 1/2

Actuation: Hand lever

- Detent

- Spring Return



Characteristics to VDI 3290 Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Descriptio	n
General Features				
Туре			Spool valv	/e
Mounting			2 screws l	M5
Tube connection			Thread	
Port size		NPT (G)	1/8	
Weight (mass)		lbs. (kg)	.429 (.195)
Installation			In any pos	sition
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.
Medium			Filtered co	ompressed air
Lubrication			With or wi	thout oil mist lubrication1)
Pneumatic Characteri	stics			
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 (I/min)	.5 (500)	
Actuation				
Manual control			Direct	
Stroke		in (mm)	.177 (4.5)	
Actuating force	F _b	lbf (N)	G,E,B: RFG, RFE	1.57 (7) E, RFB: 2.25 (10)

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

5/3-Way Valve 1/8

Actuation: Hand lever

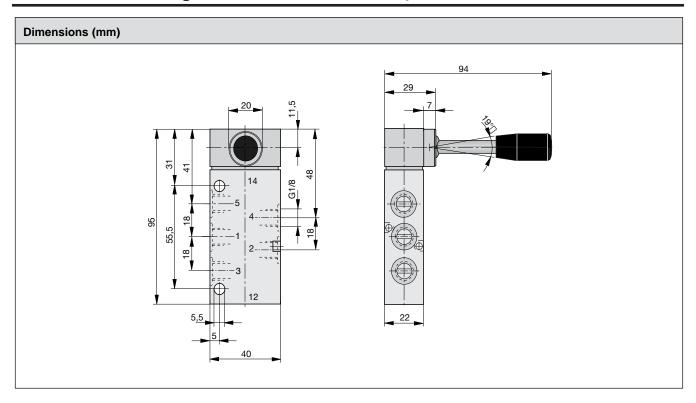
- Detent

- Spring Center





Dimensions & Ordering Information



Version 1/8		Metric	Version	NPT Version	
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/3-way Hand Lever/Detent; Blocked	\$\frac{4}{14} \frac{2}{11} \frac{1}{11} \fra	S9 511G-1/8	PA 10321	S9 511G-1/8U	PD 45471
5/3-way Hand Lever/Detent; Exhausted	513	S9 511E-1/8	PA 10322	S9 511E-1/8U	PD 45472
5/3-way Hand Lever/Detent; Dual	014 14 2 513	S9 511B-1/8	PA 10323	S9 511B-1/8U	PD 45473
5/3-way Hand Lever/Spring; Blocked	14 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S9 511RFG-1/8	PA 10324	S9 511RFG-1/8U	PD 45474
5/3-way Hand Lever/Spring; Exhausted	14 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S9 511RFE-1/8	PA 10325	S9 511RFE-1/8U	PD 45475
5/3-way Hand Lever/Spring; Dual	14 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S9 511RFB-1/8	PA 10326	S9 511RFB-1/8U	PD 45476



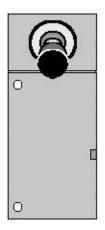
Characteristics to VD	l 3290	Pressure	s quoted as	s gauge pressure	
Characteristics	Symbol	Unit	Description	n	
General Features					
Туре			Spool valv	re	
Mounting			2 screws N	M6	
Tube connection			Thread		
Port size		NPT (G)	1/4		
Weight (mass)		lbs. (kg)	1.14 (.52)		
Installation			In any position		
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing	
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.	
Medium			Filtered compressed air		
Lubrication			With or without oil mist lubrication ¹⁾		
Pneumatic Character	stics				
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 (I/min)	RFG, RFE RFE:	3: 1.3 (1300) 1.0 (1000)	
Actuation					
Manual control			Direct		
Stroke		in (mm)	.256 (6.5)		
Actuating force	F _b	lbf (N)	G,E,B: RFG, RFE	2.25 (10) E, RFB: 3.37 (15)	

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

5/3-Way Valve 1/4

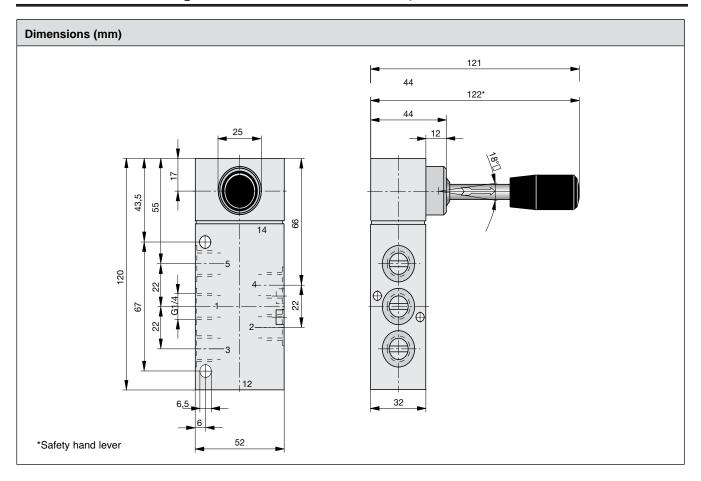
Actuation: Hand lever

- Detent
- Spring Center Safety Detent





Dimensions & Ordering Information



Version 1/4		Metric Version		NPT \	/ersion
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/3-way Hand Lever/Detent; Blocked	\$14 \\ \frac{1}{11} \\ \frac{1} \\ \frac{1}{11} \\ \frac{1}{11	S9 511G-1/4	PA 12687	S9 511G-1/4U	PD 45483
5/3-way Hand Lever/Detent; Exhausted	513	S9 511E-1/4	PA 12688	S9 511E-1/4U	PD 45484
5/3-way Hand Lever/Detent; Dual	513	S9 511B-1/4	PA 12689	S9 511B-1/4U	PD 45485
5/3-way Hand Lever/Spring; Blocked	14 P 2 P 12 P 12 P 12 P 12 P 12 P 12 P 1	S9 511RFG-1/4	PA 12690	S9 511RFG-1/4U	PD 45486
5/3-way Hand Lever/Spring; Exhausted	14 M 12 513 M ¹²	S9 511RFE-1/4	PA 12691	S9 511RFE-1/4U	PD 45487
5/3-way Hand Lever/Spring; Dual	14 P P P P P P P P P P P P P P P P P P P	S9 511RFB-1/4	PA 12692	S9 511RFB-1/4U	PD 45488
5/3-way Hand Lever/Detent; Blocked (safety)	14 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S9 511SG-1/4	PA 12693	S9 511SG-1/4U	PD 45489
5/3-way Hand Lever/Detent; Exhausted (safety)	513	S9 511SE-1/4	PA 12694	S9 511SE-1/4U	PD 45490
5/3-way Hand Lever/Detent; Dual (safety)	14 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S9 511SB-1/4	PA 12695	S9 511SB-1/4U	PD 45491



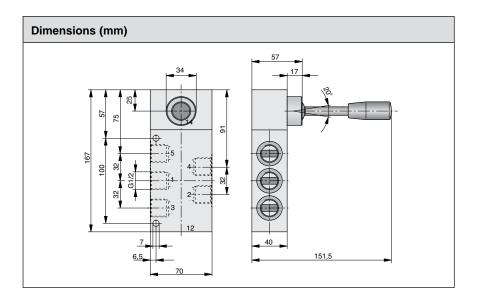
Characteristics to VDI	3290	Pressure	s quoted as	s gauge pressure	
Characteristics	Symbol	Unit	Description		
General Features					
Туре			Spool valv	re	
Mounting			2 screws I	M6	
Tube connection			Thread		
Port size		NPT (G)	1/2		
Weight (mass)		lbs. (kg)	2.64 (1.20)		
Installation			In any position		
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)		Note: When using below freezing	
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.	
Medium			Filtered co	ompressed air	
Lubrication			With or wi	thout oil mist lubrication1)	
Pneumatic Characteris	stics				
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 (I/min)	3.5 (3500)		
Actuation					
Manual control			Direct		
Stroke		in (mm)	.370 (9.4)		
Actuating force	F _b	lbf (N)	3.37 (15)		

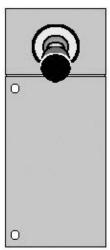
^{5/3-}Way Valve 1/2

Actuation: Hand lever

- Detent

¹⁾ 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	\$14 \\ \frac{4}{11111111111111111111111111111111111	S9 511G-1/2	PA 16369	S9 511G-1/2U	PD 45496



Characteristics & Ordering Information

	Pressures	s quoted as gauge pressure
Characteristics	Unit	Description
General Features		
Туре		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)
Pneumatic Characteristics		
Medium		Air
Nominal pressure	psi (bar)	87 (6)
Operating pressure minimum maximum	psi (bar)	22 (1.5) 116 (8)
Nominal flow	Cv (I/min)	1.3 (1300)
Filtration		40 micron recommended
Lubrication		With or without lubrication1)
Electrical Characteristics		
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

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

Version 1/4 Description Ports Voltage IS0250-0133 5/2-way IS-module G1/4 12vDC IS0250-0233 5/2-way IS-module G1/4 24vDC

5/2-way IS-module

5/2-way IS-module

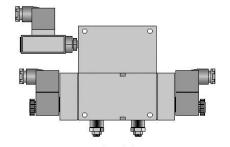


Interference Sensing Module

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





IS0250-5733

IS0250-6133

G1/4

G1/4

110vAC

220vAC

Characteristics to VDI	3290	Pressure	s quoted as	gauge pressure	
Characteristics	Symbol	Unit	Description	ı	
General Features					
Туре			Ceramic s	pool valve	
Mounting			On base p	late, to ISO 5599	
Tube connection			Base plate	;	
Port size			G1/4 (base	e plate)	
Weight (mass)		lbs. (kg)) signal solenoid) double solenoid	
Installation			In any pos	ition	
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing	
Medium temperature range	$artheta_{\sf min} \ artheta_{\sf max}$	°F (°C)	14 (-10) 140 (+60)	point it is necessary to consult factory.	
Medium			Filtered co	mpressed air	
Lubrication			With or wit	thout oil mist lubrication1)	
Pneumatic Characteris	tics				
Nominal pressure	p_n	psi (bar)	87 (6)		
Operating pressure	p_{min}	psi (bar)	29 (2)		
range			-1 (Versior	n S)	
	p_{max}	psi (bar)	174 (12)		
Nominal flow			5/2-way va	alve 5/3-way valve	
	Q_N	Cv (l/min)	1.7 (1680)	1.7 (1680)	
Actuation					
Electrical	C		Pilot opera	ated ated with external pilot air	
Actuation pressure	p _{at min}	psi (bar)	29 (2)		
range	p _{at max}	psi (bar)	145 (10)		
Voltage type			AC	DC	
Nominal Voltage Standard version Low watt. version	$\begin{matrix} U_n \\ U_n \end{matrix}$	V V	220 220 Further vo	24 24 Itages available on request	
Initial Power Consumption Standard version Low watt. version		VA (W) VA (W)	11 7.8	4.8 2.7	
Continuous Power Consumption Standard version Low watt. version		VA (W) VA (W)	8.5 4.9	4.8 2.7	
			Continuous Duty		
Duty cycle	ED	%	Continuou	s Duty	
Duty cycle Electrical protection	ED	%		N 40050 (with plug)	
	ED	%		N 40050 (with plug)	

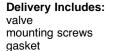
¹⁾ We recommend the use of mineral oil type VG32 to ISO 3448

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

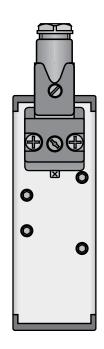
ISO 5599 Size 1

Actuation: Solenoid

- Single Solenoid
- Double Solenoid
- med



solenoid coil(s)





Characteristics to VE	OI 3290	Pressure	s quoted as gauge pressure	5/2-Way Vo 5/3-Way Vo
Characteristics	Symbol	Unit	Description	5/3-Way W
General Features				3/3-Way W
Туре			Ceramic spool valve	ISO 5599
Mounting			On base plate, to ISO 5599	Size 1
Tube connection			Base plate	JIZE I
Port size			G1/4 (base plate)	
Weight (mass)		lbs. (kg)	.70 (0.32)	
Installation			In any position	Actuation: Air Pilot
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) Note: 140 (+60) When using below freezing	- Single Air Pilot - Double Air Pilot
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) point it is necessary to consult factory.	- Spring Center
Medium			Filtered compressed air	
Lubrication			With or without oil mist lubrication ¹⁾	
Pneumatic Character	istics			
Nominal pressure	p _n	psi (bar)	87 (6)	
Operating pressure range	p _{min} p _{max}	psi (bar)	-13 (-0.9) 174 (12)	
Nominal flow			5/2-way valve 5/3-way valve	
	Q_N	Cv (l/min)	1.7 (1680) 1.7 (1680)	
Actuation				
Pneumatic			Direct	
Actuation pressure	p _{st min}	psi (bar)	29 (2)	
range	p _{st max}	psi (bar)	145 (10)	Delivery Includes:

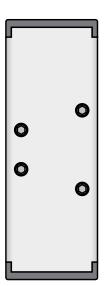
¹⁾ We recommend the use of mineral oil type VG32 to ISO 3448

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

- Single Air Pilot
- Double Air Pilot
- Spring Center



valve mounting screws gasket





Characteristics to VDI 3290 Pressure			es quoted as gauge pressure		
Characteristics	Symbol	Unit	Description	n	
General Features					
Туре			Ceramic s	pool va	alve
Mounting			On base p	late, to	ISO 5599
Tube connection			Base plate)	
Port size			G3/8 (base	e plate)
Weight (mass)		lbs. (kg)	1.54 (0.70) single	e solenoid
			1.83 (0.83) doub	le solenoid
Installation			In any pos	ition	
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)		using below freezing
Medium temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 140 (+60)		it is necessary to lt factory.
Medium	omax		Filtered co	mnres	sed air
Lubrication					il mist lubrication ¹⁾
Pneumatic Characteris	stics		***************************************	inout o	ii mict idolicatori
Nominal pressure	p _n	psi (bar)	87 (6)		
Operating pressure		psi (bar)	29 (2)		
range	p _{min}	por (bar)	-1 (Version	. 5)	-4 H
	n	psi (bar)	174 (12)	10)	
Nominal flow	P _{max}	psi (bai)	5/2-way va	alvo	5/3-way valve
Norminal now	Q _N	Cy (l/min)	4.3 (4320)	$\overline{}$	4.3 (4320)
Actuation	Q _N	OV (MIMI)	4.0 (4320)		4.0 (4020)
Electrical			Pilot opera	ated	
Liectrical					th external pilot air
Actuation pressure	p _{st min}	bar	2		·
range	p _{st max}	bar	12		
Voltage type	O max		AC		DC
Nominal Voltage					
Standard version	U _n	V	220		24
Low watt. version	U _n	V	220 Further vo	ltanas	24 available on request
Initial Power			i uitiiei vo	ilayes	avaliable off fequest
Consumption					
Standard version		VA (W)	11		4.8
					l l
Low watt. version		VA (W)	7.8		2.7
Low watt. version Continuous Power					l l
Low watt. version					l l
Low watt. version Continuous Power Consumption		VA (W)	7.8		2.7
Low watt. version Continuous Power Consumption Standard version	ED	VA (W)	7.8 8.5	s Duty	4.8 2.7
Low watt. version Continuous Power Consumption Standard version Low watt. version	ED	VA (W) VA (W) VA (W)	7.8 8.5 4.9 Continuou		4.8 2.7
Low watt. version Continuous Power Consumption Standard version Low watt. version Duty cycle	ED	VA (W) VA (W) VA (W)	7.8 8.5 4.9 Continuou	N 4005	4.8 2.7 50 (with plug)

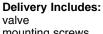
 $^{^{\}rm 1)}$ We recommend the use of mineral oil type VG32 to ISO 3448

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

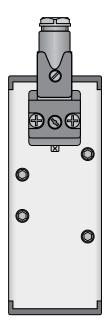
ISO 5599 Size 2

Actuation: Solenoid

- Single Solenoid
- Double Solenoid
- Med



mounting screws gasket solenoid coil(s)



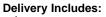


Characteristics to VD	I 3290	Pressure	s quoted as	s gauge pressure	5/2-Way Va 5/3-Way Va
Characteristics	Symbol	Unit	Descriptio	n	5/3-Way Va
General Features					J/3-Way W
Туре			Ceramic s	spool valve	ISO 5599
Mounting			On base p	plate, to ISO 5599	Size 2
Tube connection			Base plate	е	JIZE Z
Port size			G3/8 (bas	e plate)	
Weight (mass)		lbs. (kg)	1.23 (0.56	5)	
Installation			In any pos	sition	Actuation: Air Pilot
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing	- Single Air Pilot - Double Air Pilot
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	point it is necessary to consult factory.	- Spring Center
Medium			Filtered co	ompressed air	
Lubrication			With or wi	thout oil mist lubrication1)	
Pneumatic Characteri	istics				
Nominal pressure	p _n	psi (bar)	87 (6)		
Operating pressure range	p _{min} p _{max}	psi (bar)	-13 (-0.9) 174 (12)		
Nominal flow			5/2-way v	alve 5/3-way valve	
	Q_N	Cv (l/min)	4.3 (4320)	4.3 (4320)	
Actuation					
Pneumatic			Direct		
Actuation pressure	p _{st min}	psi (bar)	29 (2)		
range		psi (bar)	174 (12)		Delivery Includes:

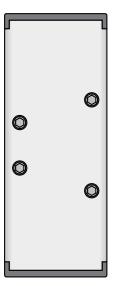
¹⁾ We recommend the use of mineral oil type VG32 to ISO 3448

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

- Single Air Pilot
- Double Air Pilot



valve mounting screws gasket





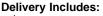
Characteristics to VDI 3290 Pressures quoted as gauge pressure Characteristics Symbol Unit Description **General Features** Type Ceramic spool valve Mounting On base plate, to ISO 5599 Tube connection Base plate Port size G1/2 (base plate) Weight (mass) 2.71 (1.23) single solenoid lbs. (kg) 3.01 (1.37) double solenoid Installation In any position **Ambient** °F (°C) 14 (-10) Note: ϑ_{min} $\vartheta_{\underline{\mathsf{max}}}$ When using below freezing temperature range 140 (+60) point it is necessary to °F (°C) 14 (-10) Medium ϑ_{min} consult factory. 140 (+60) temperature range $\vartheta_{\underline{\text{max}}}$ Filtered compressed air Medium Lubrication With or without oil mist lubrication1) **Pneumatic Characteristics** 87 (6) Nominal pressure psi (bar) p_n Operating pressure psi (bar) 29 (2) p_{min} range -1 (Version S) psi (bar) 174 (12) p_{max} Nominal flow 5/2-way valve 5/3-way valve Q_N Cv (I/min) 6.5 (6540) 6.5 (6540) Actuation Pilot operated Electrical Pilot operated with external pilot air Actuation pressure psi (bar) 29 (2) p_{st min} range psi (bar) 145 (10) Voltage type AC DC Nominal Voltage Standard version $U_n \\ U_n$ 220 24 Low watt. version V 24 220 Further voltages available on request Initial Power Consumption Standard version VA (W) 4.8 11 VA (W) 2.7 Low watt. version 7.8 Continuous Power Consumption Standard version VA (W) 8.5 4.8 Low watt. version VA (W) 2.7 4.9 Duty cycle ED % Continuous Duty Electrical protection IP65 to DIN 40050 (with plug) **VDE 0580** Insulating material Connection Plug to DIN 43650 form B

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

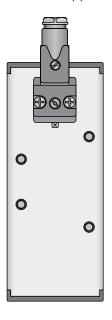
ISO 5599 Size 3

Actuation: Solenoid

- Single Solenoid
- Double Solenoid
- Spring Center



valve mounting screws gasket solenoid coil(s)





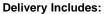
¹⁾ We recommend the use of mineral oil type VG32 to ISO 3448

Characteristics to VD	I 3290	Pressure	es quoted as	s gauge pressure	5/2-Way Va 5/3-Way Va
Characteristics	Symbol	Unit	Description	n	5/3-\May \/a
General Features					3/3-Way VC
Туре			Ceramic s	pool valve	ISO 5599
Mounting			On base p	late, to ISO 5599	Size 3
Tube connection			Base plate)	Size 3
Port size			G1/2 (base	e plate)	
Weight (mass)		lbs. (kg)	2.42 (1.1)		
Installation			In any pos	sition	Actuation: Air Pilot
Ambient temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing	- Single Air Pilot - Double Air Pilot
Medium temperature range	ϑ_{min} ϑ_{max}	°F (°C)	14 (-10) 140 (+60)	point it is necessary to consult factory.	- Spring Center
Medium			Filtered co	mpressed air	
Lubrication			With or wit	thout oil mist lubrication1)	
Pneumatic Character	istics				
Nominal pressure	p _n	psi (bar)	87 (6)	4 4	
Operating pressure range	p _{min}	psi (bar)	-13 (-0.9) 174 (12)		
Nominal flow			5/2-way va	alve 5/3-way valve	
	Q _N	1/min	6.5 (6540)	6.5 (6540)	
Actuation	•				
Pneumatic			Direct		
Actuation pressure	p _{st min}	psi (bar)	29 (2)		
range	p _{st max}	psi (bar)	174 (12)		
					Delivery Includes:

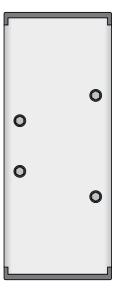
¹⁾ We recommend the use of mineral oil type VG32 to ISO 3448

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

- Single Air Pilot
- Double Air Pilot



valve mounting screws gasket





Ordering Information

ORDER INSTRUCTIONS: 5/2-Way Valves							
Actuation	Symbol	Type Number	Order Number	Size			
5/2 Single Air Pilot	4 2	S20561RF-01	PA 12891	VDMA 01			
Spring Return	- ¹ → -\ / /	S20561RF-1	PA 12869	Size 1			
	513	S20561RF-2	PA 16425	Size 2			
		S20561RF-3	PA 16426	Size 3			
5/2 Single Air Pilot	4 2	S20561R-01	PA 12892	VDMA 01			
Air Spring Return	14 - 12 - 4 -	S20561R-1	PA 12870	Size 1			
		S20561R-2	PA 16428	Size 2			
	513	S20561R-3	PA 16429	Size 3			
5/2 Double Air Pilot		S20561-01	PA 12893	VDMA 01			
	14 12 12	S20561-1	PA 12868	Size 1			
	- 1- 1- 1- 1-4-	S20561-2	PA 16422	Size 2			
	513	S20561-3	PA 16423	Size 3			
5/2 Single Solenoid	4.0	S20581RF-01	PA 1288633	VDMA 01			
Spring Return	14 12 12 12 12	S20581RF-1	PA 1287533	Size 1			
	513	S20581RF-2	PA 1644133	Size 2			
		S20581RF-3	PA 1644233	Size 3			
5/2 Single Solenoid		S20581S-RF-01	PA 1289633	VDMA 01			
Spring Return	14 12 12	S20581S-RF-1	PA 1288233	Size 1			
with external pilot air		S20581S-RF-2	PA 1645633	Size 2			
	psi 515	S20581S-RF-3	PA 1646233	Size 3			
5/2 Single Solenoid	4/2	S20581R-01	PA 1288733	VDMA 01			
Air Spring Return	14 12 -4 -	S20581R-1	PA 1287633	Size 1			
		S20581R-2	PA 1644433	Size 2			
	513	S20581R-3	PA 1644533	Size 3			
5/2 Double Solenoid	4 2	S20581-01	PA 1288833	VDMA 01			
	14 12	S20581-1	PA 1287433	Size 1			
	513	S20581-2	PA 1643833	Size 2			
		S20581-3	PA 1643933	Size 3			
5/2 Double Solenoid	4.0	S20581S-01	PA 1289833	VDMA 01			
with external pilot air	14 12	S20581S-1	PA 1288033	Size 1			
	pst 513 pst	S20581S-2	PA 1645433	Size 2			
		S20581S-3	PA 1646033	Size 3			

Voltage Range				
Nominal	Secondary	Coil Number	Order Code	
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.



Ordering Information

Actuation	Symbol	Type Number	Order Number	Size
5/3 Double Air Pilot		S20561RFG-01	PA 12894	VDMA 01
Closed Center	14W\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	S20561RFG-1	PA 12871	Size 1
	- 	S20561RFG-2	PA 16431	Size 2
	313	S20561RFG-3	PA 16432	Size 3
Dual Center	4 2	S20561RFB-1	PA 12873	Size 1
	14M 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S20561RFB-2	PA 16437	Size 2
Open Center	4.2	S20561RFE-01	PA 12895	VDMA 01
	14 _M \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	S20561RFE-1	PA 12872	Size 1
	- } 	S20561RFE-2	PA 16434	Size 2
		S20561RFE-3	PA 16435	Size 3
5/3 Double Solenoid	4 2	S20581RFG-01	PA 1288933	VDMA 01
Closed Center	14W TTT TTT T	S20581RFG-1	PA 1287733	Size 1
	513	S20581RFG-2	PA 1644733	Size 2
		S20581RFG-3	PA 1644833	Size 3
Dual Center	4 2 14.AAT \	S20581RFB-1	PA 1287933	Size 1
	14W 12 12 15 13 15 13 15 13 15 15 15 15 15 15 15 15 15 15 15 15 15	S20581RFB-2	PA 1645333	Size 2
Open Center		S20581RFE-01	PA 1289033	VDMA 01
	14M \ 1	S20581RFE-1	PA 1287833	Size 1
	513	S20581RFE-2	PA 1645033	Size 2
		S20581RFE-3	PA 1645133	Size 3
5/3 Double Solenoid	4 2	S20581S-RFG-01	PA 1290033	VDMA 01
vith external air pilot		S20581S-RFG-1	PA 1288333	Size 1
Closed Center	pst 513 pst	S20581S-RFG-2	PA 1645733	Size 2
		S20581S-RFG-3	PA 1646333	Size 3
Dual Center	Dual Center 14 AAAA 11 AAAA 12		PA 1288533	Size 1
	pst 513 pst	S20581S-RFB-2	PA 1645933	Size 2
Open Center	4 2	S20581S-RFE-01	PA 1289933	VDMA 01
	1 ⁴ / ₄ / ₄ / ₁ 1 ⁴ / ₄ / ₄ 1 ⁴ / ₄	S20581S-RFE-1	PA 1288433	Size 1
	pst 513 pst	S20581S-RFE-2	PA 1645833	Size 2
		S20581S-RFE-3	PA 1646433	Size 3

	Voltage Range Nominal Secondary			
			Coil Number	Order Code
	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





Characteristics to VD	haracteristics to VDI 3290 Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description			
General Features						
Туре			Spool valve	е		
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		gle solenoid ble solenoid	
Installation			In any position			
Ambient temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing		
Medium temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 158 (+70)		t is necessary to It factory.	
Medium			Filtered compressed air		sed air	
Lubrication			With or without oil mist lubrication ¹⁾		il mist lubrication1)	
Pneumatic Character	istics					
Nominal pressure	p _n	psi (bar)	psi (bar) 87 (6)			
Operating pressure range	p _{min}	psi (bar)	Single sole 29 (2) 145 (10)	enoid		
	p _{min}	psi (bar)	Double sol 22 (1.5) 145 (10)	enoid		
Nominal flow	Q_N	Cv (I/min)	.5 (500)			
Actuation						
Electrical			Pilot operated			
Voltage			AC		DC	
Nominal voltage* Standard version	Un	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		60 form B	

 $^{^{\}rm 1)}$ We recommend the use of mineral oil type VG32 to ISO 3448

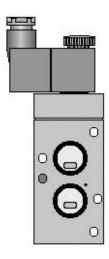
5/2-Way Valve 1/8

with NAMUR connection

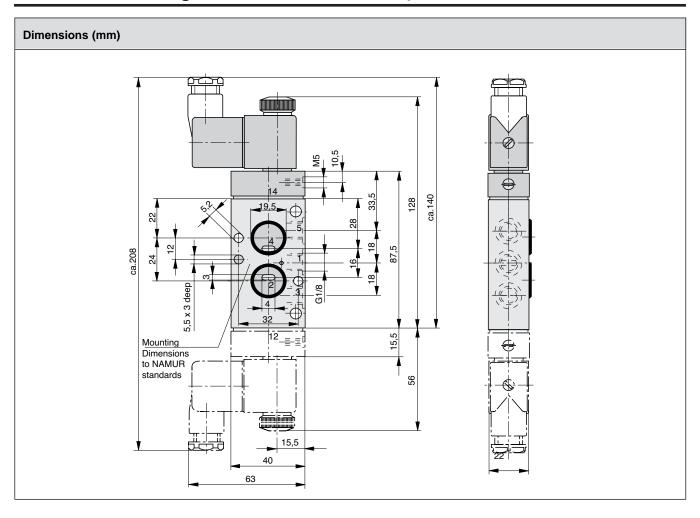
Actuation: Solenoid
- Single Solenoid
- Double Solenoid

Delivery Includes: valve mounting screws coding pin

o-rings







Version 1/8		Metric	Version	NPT	/ersion
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return	14 2 12 12 513	S9 581RF-1/8-SO	PD 3414333	S9 581RF-1/8U-SO	PD 4550233
5/2 Double Solenoid	14 2 12 12 513	S9 581-1/8-SO	PD 3498433	S9 581-1/8U-SO	PD 4550333
		†	<u> </u>	<u> </u>	<u> </u>

Voltage Range Nominal Secondary **Coil Number Order Code** 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

Characteristics to VE	OI 3290	Pressure	s quoted as gaug	e pressure
Characteristics	Symbol	Unit	Description	
General Features				
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 1.54 (0.7) Double	
Installation			In any position	
Ambient temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)		using below freezing
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	point it is necessary to consult factory.	
Medium			Filtered compres	ssed air
Lubrication			With or without of	oil mist lubrication1)
Pneumatic Character	ristics			
Nominal pressure	p _n	psi (bar)	87 (6)	
Operating pressure range	p _{min}	psi (bar)	Single solenoid 29 (2) 145 (10)	
	p _{min}	psi (bar)	Double solenoid 22 (1.5) 145 (10)	
Nominal flow	Q _N	Cv (I/min)	1.3 (1300)	
Actuation				
Electrical			Pilot operated	
Voltage			AC	DC
Nominal voltage* Standard version	Un	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	

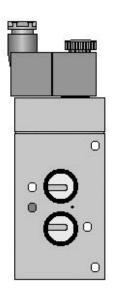
¹⁾ We recommend the use of mineral oil type VG32 to ISO 3448

5/2-Way Valve 1/4

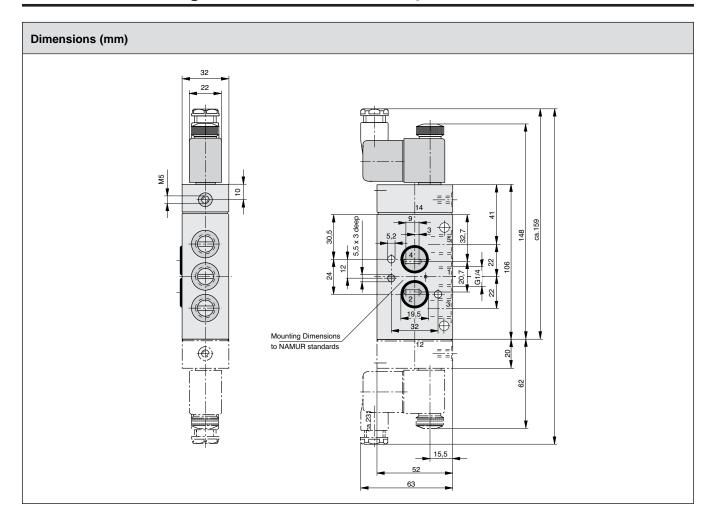
with NAMUR connection

Actuation: Solenoid
- Single Solenoid
- Double Solenoid

Delivery Includes: valve mounting screws coding pin o-rings







Version 1/4		Metric	Version	NPT	Version
Actuation	Symbol	Type Number	Order Number	Type Number	Order Number
5/2 Single Solenoid/Spring Return	14 2 W	S9 581RF-1/4-SO	PD 3498533	S9 581RF-1/4U-SO	PD 4550433
5/2 Double Solenoid	14 2 12 12 513	S9 581-1/4-SO	PD 3498633	S9 581-1/4U-SO	PD 4550533
		^		<u> </u>	^

Voltage Range Nominal Secondary **Coil Number Order Code** 12 vDC KZ 3674 01 60 50/60Hz 24 vDC 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-1/4 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		
General Features					
Туре			Spool valv	re	
Mounting			2 screws l	M5 (M3)	
Tube connection			Thread		
Port size		NPT (G)	1/8		
Weight (mass)		lbs. (kg)	.594 (.27)		
Installation			In any pos	sition	
Ambient temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing	
Medium temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.	
Medium			Filtered co	mpressed air	
Lubrication			With or wi	thout oil mist lubrication1)	
Pneumatic Characteris	stics				
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 (I/min)	.5 (500)		
Actuation					
Pneumatic			Direct		
Actuating pressure range	p _{st min} p _{st max}	psi (bar)	29 (2) 145 (10)		

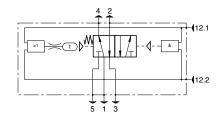
¹⁾ We recommend the use of mineral oil type VG32 to ISO 3448

Dimensions (mm) 45 45 27 81 14 12 12 12 12 12 12 40

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.

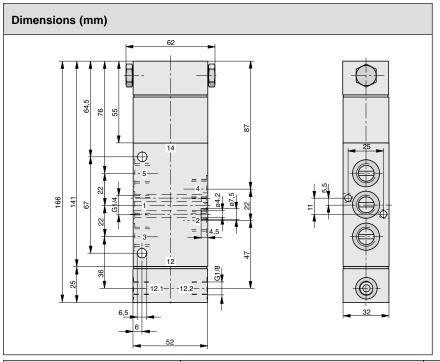


Version 1/8	Metric \	Version	NPT Version		
Description	Type Number	Order Number	Type Number	Order Number	
Two-hand safety valve	S9 563/65RF-1/8-SO	PD 37673	S9 563/65RF-1/8U-SO	PD 45506	



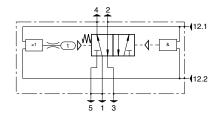
Characteristics to VDI 3290 Pressures quoted as gauge pressure				
Characteristics	Symbol	Unit	Description	n
General Features				
Туре			Spool valv	re
Mounting			2 screws I	M6
Tube connection			Thread	
Port size		NPT (G)	1/4	
Weight (mass)		lbs. (kg)	1.41 (.64)	
Installation			In any pos	sition
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing
Medium temperature range	$artheta_{min}$ $artheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.
Medium			Filtered co	ompressed air
Lubrication			With or wi	thout oil mist lubrication1)
Pneumatic Characteris	stics			
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 (I/min)	1.3 (1300)	
Actuation				
Pneumatic			Directly	
Control pressure range	p _{st min} p _{st max}	psi (bar)	44 (3) 145 (10)	

$^{\rm 1)}$ We recommend the use of mineral oil type VG32 to ISO 3448

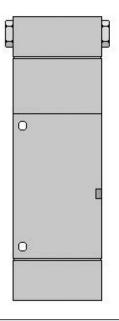


5/2-Way Valve 1/4 for two-hand safety operation

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.



Version 1/4	Metric \	Version	NPT Version		
Description	Type Number Order Number 1		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 & Dimensions

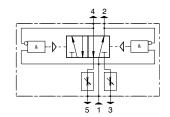
Characteristics to VDI	Pressure	s quoted as	s gauge pressure	
Characteristics	Symbol	Unit	Descriptio	n
General Features				
System			Spool valv	re
Mounting			2 screws I	M6 (M4)
Tube connection			Thread	
Port size		NPT (G)	1/4	
Weight (mass)		lbs. (kg)	1.43 (0.65)
Installation			In any pos	sition
Ambient temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 140 (+60)	Note: When using below freezing
Medium temperature range	$\vartheta_{min} \ \vartheta_{max}$	°F (°C)	14 (-10) 158 (+70)	point it is necessary to consult factory.
Medium			Filtered co	ompressed air
Lubrication			With or wi	thout oil mist lubrication1)
Pneumatic Characteris	stics			
Nominal pressure	p _n	psi (bar)	87 (6)	
Operating pressure range	p _{min} p _{max}	psi (bar)	36 (3) 118 (8)	
Nominal flow	Q_N	Cv (I/min)	1.3 (1300)	
Actuation				
Pneumatic			Direct	
Actuating pressure range	p _{st min} p _{st max}	psi (bar)	36 (3) 118 (8)	

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

5/2-Way Valve 1/4

oscillating valve

Actuation: Pneumatic

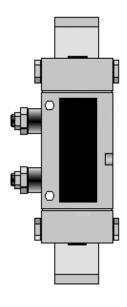


The oscillating valve automatically generates reciprocating movements, for applications such as shaking, feeding, hammering, plunging, scraping, wiping, winding, tensioning, raking, diverting, spraying, cleaning, and dipping.

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



Characteristics & Ordering Information

Characteristics to VDI 3290 Pressures quoted as gauge pressure				
Characteristics	Unit	Description		
General Features				
Туре		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)		
Pneumatic Characteristics				
Medium		Air		
Nominal pressure	psi (bar)	131 (6)		
Operating pressure minimum maximum	psi (bar)	36 (3) 118 (8)		
Nominal flow	Cv (I/min)	1.3 (1300)		
Filtration		40 micron recommended		
Lubrication		With or without lubrication1)		
Electrical Characteristics				
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		
Actuation				
Electric manual override		(Internal) pilot operated yes		

 $^{^{\}rm 1)}$ 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				

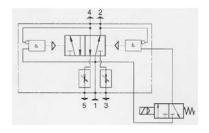
5/2-Way Valve 1/4

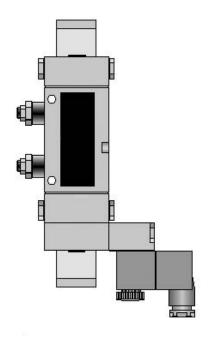
Oscillating Valve

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.







Characteristics

Characteristics to VDI 3290 Pressures quoted as gauge pressure					
Characteristics	Symbol	Unit	Description		
General Features					
System			Poppet va	lve	
Mounting			After remo	ving the rubber footing M8	
Tube connection			Thread		
Port size			G1/4		
Weight (mass)		lbs. (kg)	3.08 (1.5)		
Installation			In any pos	ition	
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 131 (+55)		
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	point it is necessary to consult factory.	
Medium			Filtered co	mpressed air	
Lubrication			Oil mist lub with Buna	orication compatible N	
Pneumatic Characteris	stics				
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 (I/min)	1.4 (1400)		
Actuation					
Manual control			Direct		
Stroke		mm	2		
Actuating force	Fb	lbf (N)	6.74 (30)		

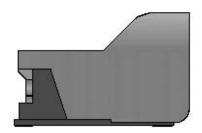
3/2-Way Valve 1/4

Actuation: Foot Pedal

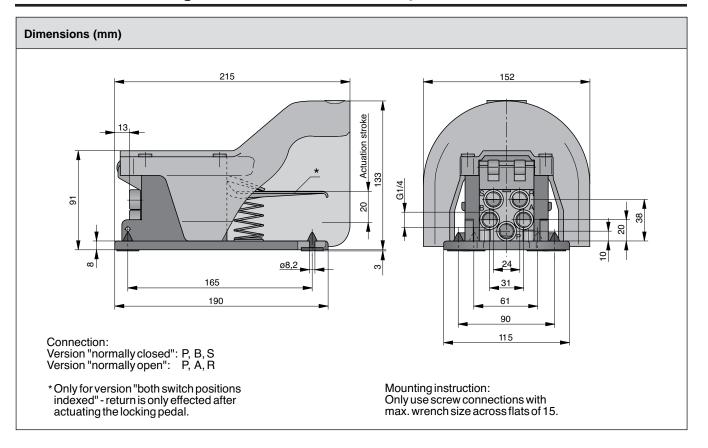
- Detent

- Spring Return

Delivery Includes: valve toe guard







METRIC ONLY

Version G1/4							
Actuation	Return	Symbol	Symbol Type Number Ord				
		a b b b P S	F331RF-08NG*	KZ 4410			
Pedal Spring return		Ta b W	F331RF-08NO*	KZ 4411			
Pedal	Dotont	a b B B P S	F331-08NG*	KZ 4408			
reuai	Detent	a,b A B T P R	F331-08NO*	KZ 4409			

^{*}NG = normally closed, NO = normally open



Characteristics

Characteristics to VD	I 3290	Pressure	s quoted as	gauge pressure		
Characteristics	Symbol	Unit	Description			
General Features						
System			Poppet va	lve		
Mounting			After remo	ving the rubber footing M8		
Tube connection			Thread			
Port size			G1/4			
Weight (mass)		lbs. (kg)	3.08 (1.5)			
Installation			In any pos	ition		
Ambient temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 131 (+55)	Note: When using below freezing		
Medium temperature range	$artheta_{min} \ artheta_{max}$	°F (°C)	14 (-10) 140 (+60)	point it is necessary to consult factory.		
Medium			Filtered co	mpressed air		
Lubrication			Oil mist lubrication compatible with Buna N			
Pneumatic Character	istics					
Nominal pressure	p _n	psi (bar)	87 (6)			
Operating pressure range	p _{min} p _{max}	psi (bar) 10	0 (0) 145 (10)			
Nominal flow	Q_N	Cv (I/min)	1.4 (1400)			
Actuation						
Manual control			Direct			
Stroke		mm	2			
Actuating force	Fb	lbf (N)	6.74 (30)			

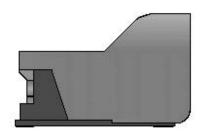
5/2-Way Valve 1/4

Actuation: Foot Pedal

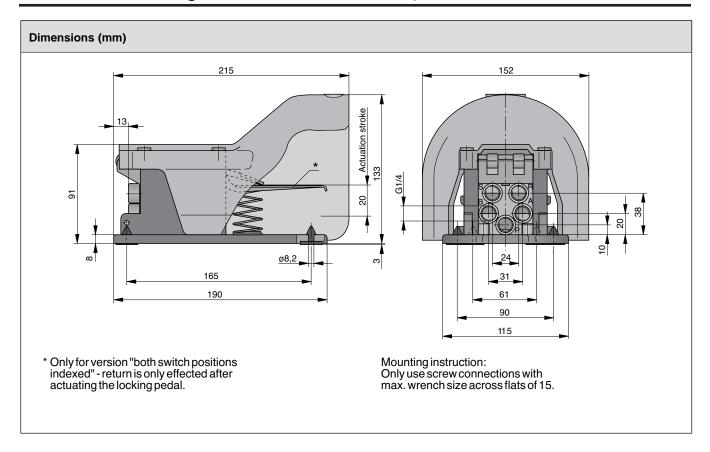
- Detent

- Spring Return

Delivery Includes: valve toe guard



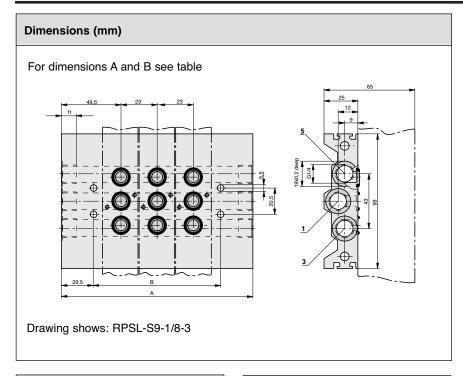




METRIC ONLY

Version G1/4				
Actuation	Return	Symbol	Type Number	Order Number
Pedal	Spring return	a B b b RPS	F531RF-08	KZ 4413
Pedal	Detent	a,b A B RPS	F531-08	KZ 4412





RPS-Supply Manifolds

for directional valves of the S9-1/8 Series

Metric Only

Body Ported Valves

Dimension Table (mm)							
Type #	# of valves	Α	В				
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				

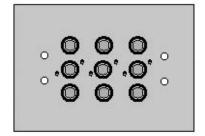
Material	
Description	Material
RPS-supply mani.	AI, anodized
Screws	Galvanized steel
O-ring	Oil-resist. rubber

Accessories	
Description	Order No.
Complete cover strip	PD 32956
Flow divider	PD 42483

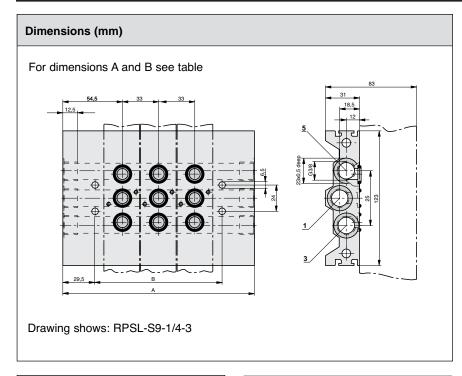
Versions: 5/2-way valves 5/3-way valves

Delivery Includes: RPS-supply manifold mounting screws o-rings

Order Instructions							
			Quantity		Weight		
Type #	Order #	Manifold	Screws	O-rings	(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

Dimension Table (mm)							
Type # # of A B valves							
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				

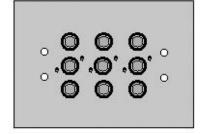
Material	
Description	Material
RPS-supply mani.	Anodized alum.
Screws	Galvanized steel
O-ring	Oil-resist. rubber

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							
			Quantity		Weight		
Type #	Order #	Manifold	Screws	O-rings	(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

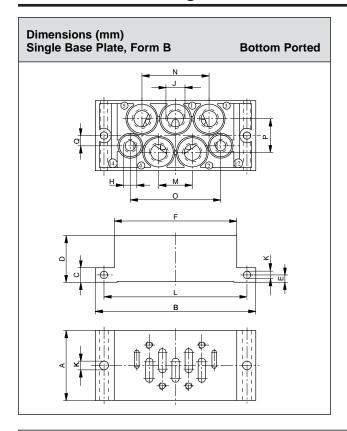
- To VDMA 24345 Form A Side Ported - To VDMA 24345 Form B
- **Bottom Ported**

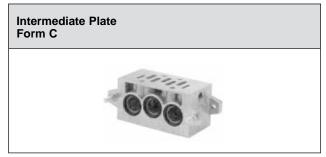
Dimension Table (mm)								
ISO Size	Α	В	С	D	E	F	G	Н
1	84	43	1/4	10.5	21.5	10	32	98
2	95	56	3/8	14	26	13	40	112
3	119	68	1/2	17	17	18	32	136
ISO Size	J	K	L	М	N	0	Р	Q
1	48	5.5	110	10.5	23.5	24	1/8	58
2	57	6.6	124	14	30	30	1/8	74
3	71	6.6	149	17	22	32	1/8	90

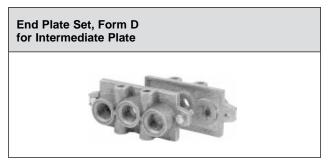
Order Instructions					
		Order N	lumber		
ISO Size	Ports	Metric Version	NPT Version		
1	1/4 3/8	KX 9076	600C01 642K91		
2	3/8 1/2	KX 9433	601C01 643K91		
3	1/2 3/4	KX 9434	602C01 644K91		











Dimensio	Dimension Table (mm)														
ISO Size	Α	В	C	D	Е	F	Н	J	K	L	М	N	0	Р	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 Instruction	ns	
ISO Size	Description	Order Number
1 2 3	manifold subbase, G1/4, Form C manifold subbase, G3/8, Form C manifold subbase, G1/2, Form C	KX 9079 KX 9419 KX 9420
1 2 3	end plate set, G3/8, Form D end plate set, G1/2, Form D end plate set, G1, Form D	KX 9078 KX 9421 KX 9422
	adapter plate to combine size 1 to size 2 adapter plate to combine size 1 to size 3 adapter plate to combine size 2 to size 3	KX 9430 KX 9432 KX 9431
1 2 3	cover strip kit cover strip kit cover strip kit	KX 9082 KX 9423 KX 9424
1 2 3	intermediate plate, with built-in flow control valves intermediate plate, with built-in flow control valves intermediate plate, with built-in flow control valves	701B77 702B77 722K77
1 2 3	intermediate plate, with ONE built-in pressure regulator intermediate plate, with ONE built-in pressure regulator intermediate plate, with ONE built-in pressure regulator	620C91 624C91 628C91
1 2 3	intermediate plate, with TWO built-in pressure regulators intermediate plate, with TWO built-in pressure regulators intermediate plate, with TWO built-in pressure regulators	621C91 625C91 629C91



Ordering Information

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)



Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

! WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- · Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- · Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

- **1.1. Scope:** This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.
- 1.2. Fail-Safe: Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.
- **1.3 Relevant International Standards:** For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power General Rules Relating to Systems. See www.iso.org for ordering information.
- 1.4. Distribution: Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.
- 1.5. User Responsibility: Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:
 - Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
 - Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application
 presents no health or safety hazards.
 - Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
 - · Assuring compliance with all applicable government and industry standards.
- 1.6. Safety Devices: Safety devices should not be removed, or defeated.
- 1.7. Warning Labels: Warning labels should not be removed, painted over or otherwise obscured.
- **1.8. Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

- **2.1. Flow Rate:** The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.
- **2.2. Pressure Rating:** Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.
- 2.3. Temperature Rating: Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.
- 2.4. Environment: Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.
- 2.5. Lubrication and Compressor Carryover: Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.
- 2.6. Polycarbonate Bowls and Sight Glasses: To avoid potential polycarbonate bowl failures:
 - Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
 - Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
 - Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.



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- 2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5
- 2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.
 - Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
 - · Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
 - Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

- **3.1. Component Inspection:** Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.
- **3.2.** Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.
- **3.3.** Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

- **4.1.** Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.
- **4.2. Installation and Service Instructions:** Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.
- **4.3. Lockout / Tagout Procedures:** Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy (Lockout / Tagout)
- **4.4. Visual Inspection:** Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
 - Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
 - Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
 - · Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
 - · Any observed improper system or component function: Immediately shut down the system and correct malfunction.
 - Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:

- · Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.
- **4.6. Functional Test:** Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.
- 4.7. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
 - Previous performance experiences.
 - · Government and / or industrial standards.
 - · When failures could result in unacceptable down time, equipment damage or personal injury risk.
- **4.8. Servicing or Replacing of any Worn or Damaged Parts:** To avoid unpredictable system behavior that can cause death, personal injury and property damage:
 - Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy Lockout / Tagout).
 - Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
 - Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
 - Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how
 pneumatic products are to be applied.
 - After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested
 for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or
 system into use.
 - Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.
- 4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.



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