



DIRECTIONAL CONTROL HEADLINE VALVES 21 SERIES

PRODUCT CATALOG

**HIGH TEMPERATURE AND LOW TEMPERATURE
APPLICATIONS**



21 Series Valves for High Temperature and Low Temperature Applications

Product Overview

Directional Control Function

Directional control valves function is to control the direction of flow in the pneumatic circuit. Directional control valves are able to control the way the air passes. These valves can regulate the airflow being capable to stop fluid flow, allow fluid flow, and change the direction of fluid flow. These three functions usually operate in combination.

Solenoid Pilot Controlled	Pressure Controlled
	

Illustration examples.

VALVE FEATURES

Poppet Design	Poppet construction for high dirt tolerance Valves are designed with metal internals and special seals appropriate for use in more extreme temperatures
Mounting Options	Can be mounted close to actuator, reducing length of pipe to be pressurized/exhausted on each cycle
Pilot Supply	Internal or external
High Velocity	Near zero leakage
Positive Sealing	No sliding action to prevent damage and wear
Reliability	Consistent response times over the life of the valve

Explosion-Proof solenoid pilot valves available, see valves for Hazardous Locations.



PRODUCT CREDENTIALS

Safety Integrity Level Per IEC 2061:2001 	Declaration of Conformity  	Certificate of Compliance 
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Actuation	Available Inlet Port Sizes							Functions			Maximum Flow C _v (NI/min)	Page
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2/2	3/2	4/2		
Solenoid Pilot Controlled	●	●	●	●	●	●	●	●	●	●	33 (32000)	3 – 9
Pressure Controlled	●	●	●	●	●	●	●	●	●	●	33 (32000)	10 – 15
Accessories and Options												16 – 17

STANDARD SPECIFICATIONS

GENERAL	Function		2/2, 3/2, and 4/2 Valve			
	Construction Design		Poppet			
	Actuation		Electrical	Solenoid Pilot Controlled		
			Pneumatic	Pressure Controlled		
	Mounting	Type	Inline			
		Orientation	Any, preferably vertical			
	Connection		Threaded	NPT, G		
Manual Override	Solenoid Pilot Controlled	Non-locking metal button, standard				
OPERATING CONDITIONS	Temperature	Solenoid Pilot Controlled	High Temperature	Ambient	0° to 250°F (-17° to 122°C)	
				Media	0° to 300°F (-17° to 150°C)	
			Low Temperature	Ambient	-40° to 120°F (-40° to 50°C)	
				Media	-40° to 175°F (-40° to 80°C)	
		<i>For temperatures below 40° F (4° C) air must be free of water vapor to prevent formation of ice</i>				
		Pressure Controlled	High Temperature	Ambient	0° to 300°F (-17° to 150°C)	
	Media					
	Low Temperature		Ambient	-40° to 175°F (-40° to 80°C)		
			Media			
	<i>For temperatures below 40° F (4° C) air must be free of water vapor to prevent formation of ice</i>					
Flow Media		Filtered air				
Operating Pressure		30 to 150 psig (2 to 10 bar)				
External Pilot Supply	Solenoid Pilot Controlled	Must be equal to or greater than inlet pressure				
ELECTRICAL DATA FOR SOLENOID PILOT VALVES	Solenoids	Current Flow	Operating Voltage	Power Consumption (each solenoid)		
		DC	24 volts DC	14 watts		
		AC	110-120 volts, 50/60 Hz	87 VA inrush, 30 VA holding		
			230-240 volts, 60 Hz			
	Rated for continuous duty					
CONSTRUCTION MATERIAL	Valve Body		Cast Aluminum			
	Poppet		Aluminum and Stainless Steel			
	Seals	High Temperature	Fluorocarbon			
		Low Temperature	Buna-N			
SAFETY DATA	Safety Integrity Level (SIL)	Certified by TÜV Rheinland in accordance to IEC 61508 and IEC 61511 safety integrity level 2 (SIL 2) and EN ISO 13849-1, PL c (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT≥1, for details see certificate.				

IMPORTANT NOTE: Please read carefully and thoroughly all of the CAUTIONS, WARNINGS on the inside back cover.

Ordering Information

2/2 Solenoid Pilot Controlled Valves

MODEL NUMBER CONFIGURATOR

2-Way 2-Position Valves

21 7 1 B 200 1 W

Port Thread	
NPT	
Leave Blank	
G	D

Series

Actuation
Solenoid Pilot

Valve Function	
2/2 Normally Closed	1
2/2 Normally Open	2

Revision Level

Current	Voltage*	
DC	24 V	W
AC	110-120 V, 50/60 Hz	Z
	230-250 V, 60 Hz	Y

* For other voltages consult ROSS.

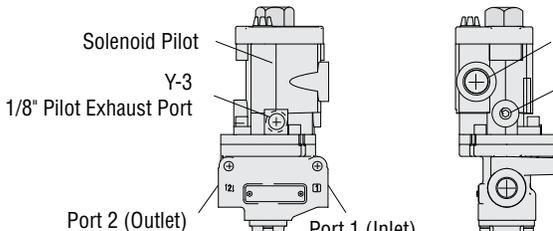
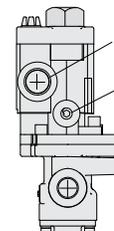
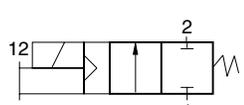
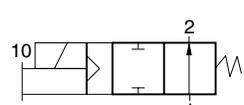
Body Size	Port Size	Internal Pilot Supply	External Pilot Supply
	In-Out		
3/8	1/4	200	205
	3/8	300	305
	1/2	401	406
3/4	1/2	400	405
	3/4	500	505
	1	601	606
1-1/4	1	600	605
	1-1/4	700	705
	1-1/2	801	806

Application	
High Temperature 0° to 250°F (-17° to 122°C) Fluorocarbon Seals	1
Low Temperature -40° to 120°F (-40° to 50°C) Buna-N Seals	2

Model Number examples: 2171B3001W, 2171B2052Z.

Size		Flow Cv (NL/min)		Average Response Constants*			Weight lb (kg)
Body	Port 1, 2	Normally Closed (NC)	Normally Open (NO)	M	F		
		1-2	1-2		NC	NO	
3/8	1/4	1.7 (1700)	1.6 (1600)	10	0.96	0.96	3.0 (1.4)
	3/8	2.2 (2200)	2.5 (2500)	10	0.90	0.93	
	1/2	2.6 (2600)	2.8 (2800)	10	0.82	0.88	
3/4	1/2	6.6 (6500)	6.3 (6200)	14	0.39	0.50	3.3 (1.5)
	3/4	7.7 (7600)	7.4 (7300)	14	0.32	0.37	
	1	8.3 (8200)	7.6 (7500)	14	0.31	0.36	
1-1/4	1	20 (20000)	19 (19000)	26	0.19	0.20	7.5 (3.4)
	1-1/4	29 (29000)	23 (23000)	26	0.14	0.18	
	1-1/2	31 (31000)	23 (23000)	26	0.13	0.17	

Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

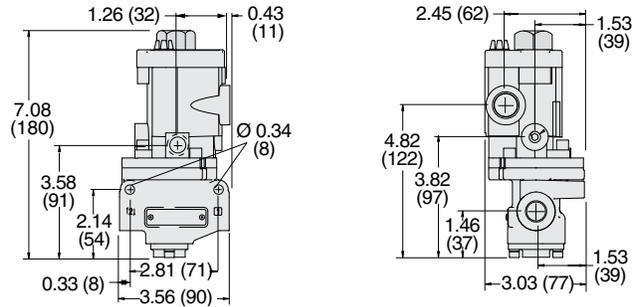
Valve Schematic		 <p>Solenoid Pilot Y-3 1/8" Pilot Exhaust Port Port 2 (Outlet) Port 1 (Inlet)</p>	 <p>1/2 Electrical Conduit Port X-1 1/8" External Pilot Supply</p>
Normally Closed	Normally Open		
			

2/2 Solenoid Pilot Controlled Valves

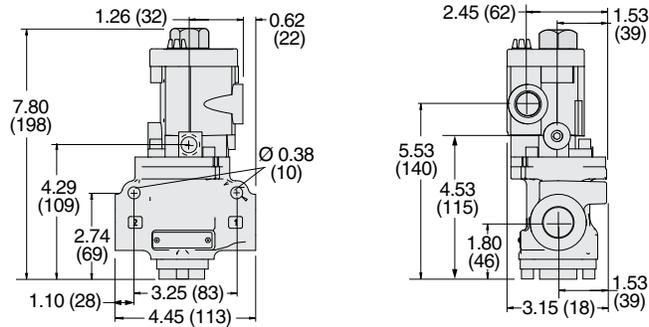
DIMENSIONS

Inches (mm)

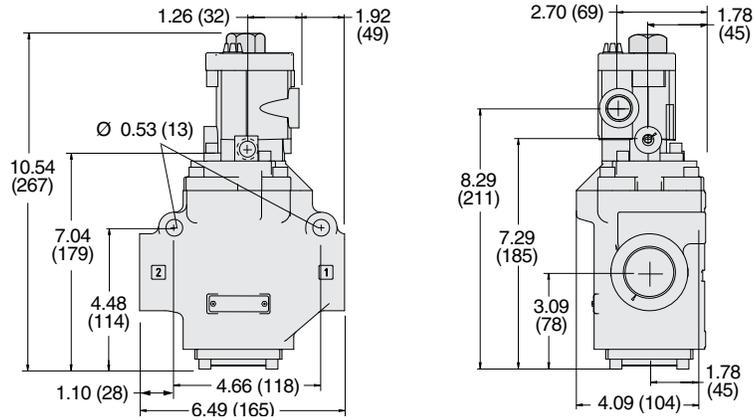
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.

Ordering Information

3/2 Solenoid Pilot Controlled Valves

MODEL NUMBER CONFIGURATOR

3-Way 2-Position Valves

21 7 3 B 200 1 W

Port Thread	
NPT	
Leave Blank	
G	D

Series

Actuation
Solenoid Pilot

Valve Function	
3/2 Normally Closed	3
3/2 Normally Open	4

Revision Level

Current	Voltage*	
DC	24 V	W
AC	110-120 V, 50/60 Hz	Z
	230-250 V, 60 Hz	Y

* For other voltages consult ROSS.

Body Size	Port Size		Internal Pilot Supply	External Pilot Supply
	In-Out	Exhaust		
3/8	1/4	1/2	200	205
	3/8	1/2	300	305
	1/2	1/2	401	406
3/4	1/2	1	400	405
	3/4	1	500	505
	1	1	601	606
1-1/4	1	1-1/2	600	605
	1-1/4	1-1/2	700	705
	1-1/2	1-1/2	801	806

Application	
High Temperature 0° to 250°F (-17° to 122°C) Fluorocarbon Seals	1
Low Temperature -40° to 120°F (-40° to 50°C) Buna-N Seals	2

Model Number examples: 2173B3001W, 2173B4062Z.

Size			Flow C _v (NI/min)				Average Response Constants*				Weight lb (kg)	
Body	Port 1, 2	Port 3	Normally Closed (NC)		Normally Open (NO)		M	F				
								NC		NO		
			1-2	2-3	1-2	2-3		1-2	2-3	1-2		2-3
3/8	1/4	1/2	1.7 (1700)	3.2 (3100)	1.7 (1700)	2.4 (2400)	10	1.76	2.08	1.60	2.30	3.0 (1.4)
	3/8	1/2	2.5 (2500)	4.4 (4300)	2.7 (2700)	2.6 (2600)	10	0.95	1.07	1.03	1.60	
	1/2	1/2	2.6 (2600)	4.6 (4600)	3.0 (3000)	2.8 (2800)	10	0.94	0.98	11.00	2.00	
3/4	1/2	1	6.0 (5900)	8.8 (8700)	5.9 (5800)	7.6 (7500)	11	0.58	0.64	0.50	0.70	3.3 (1.5)
	3/4	1	7.5 (7400)	11 (11000)	7.5 (7400)	8.0 (7900)	11	0.38	0.41	0.43	0.67	
	1	1	7.9 (7800)	12 (12000)	8.3 (8200)	8.4 (8300)	11	0.24	0.36	0.42	0.60	
1-1/4	1	1-1/2	20 (20000)	27 (27000)	19 (19000)	23 (23000)	28	0.16	0.18	0.17	0.20	7.5 (3.4)
	1-1/4	1-1/2	28 (28000)	33 (32000)	22 (22000)	25 (25000)	28	0.12	0.17	0.15	0.19	
	1-1/2	1-1/2	29 (29000)	33 (32000)	22 (22000)	26 (26000)	28	0.12	0.16	0.13	0.18	

Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

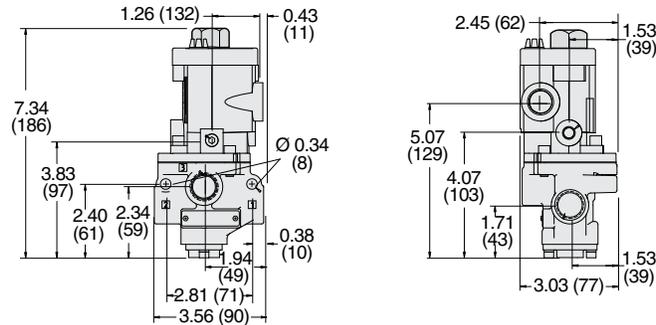
Valve Schematic		Solenoid Pilot	
Normally Closed	Normally Open	Y-3 1/8" Pilot Exhaust Port	1/2" Electrical Conduit Port
		Port 3 (Exhaust)	X-1 1/8" External Pilot Supply Port
		Port 2 (Outlet)	Port 1 (Inlet)

3/2 Solenoid Pilot Controlled Valves

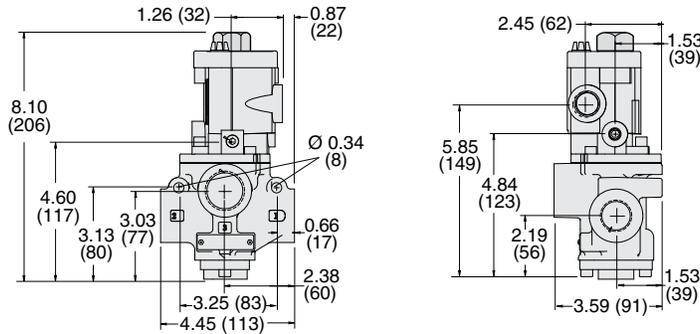
DIMENSIONS

Inches (mm)

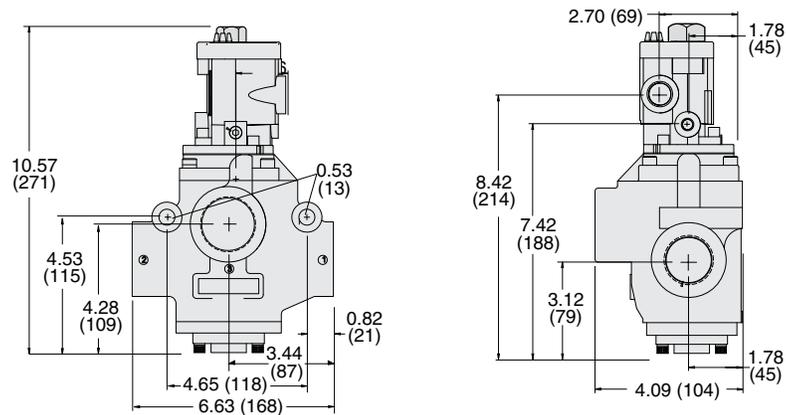
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.

Ordering Information

4/2 Solenoid Pilot Controlled Valves

MODEL NUMBER CONFIGURATOR

4-Way 2-Position Valves

21
7
6
B
200
1
W

Port Thread	
NPT	
Leave Blank	
G	D

Current	Voltage*	
DC	24 V	W
AC	110-120 V, 50/60 Hz	Z
	230-250 V, 60 Hz	Y

* For other voltages consult ROSS.

Body Size	Port Size		Internal Pilot Supply	External Pilot Supply
	In-Out	Exhaust		
3/8	1/4	1/2	200	205
	3/8	1/2	300	305
	1/2	1/2	401	406
3/4	1/2	1	400	405
	3/4	1	500	505
	1	1	601	606
1-1/4	1	1-1/2	600	605
	1-1/4	1-1/2	700	705
	1-1/2	1-1/2	801	806

Application	
High Temperature 0° to 250°F (-17° to 122°C) Fluorocarbon Seals	1
Low Temperature -40° to 120°F (-40° to 50°C) Buna-N Seals	2

Series
Solenoid Pilot

Actuation
Solenoid Pilot

Valve Function
4/2

Revision Level

Model Number examples: 2176B3001W, 2176B3052Z.

Size			Flow C _v (NI/min)				Average Response Constants*			Weight lb (kg)
Body	Port 1, 2, 4	Port 3	1-2	2-3	1-4	4-3	M	F		
								1-2, 1-4	2-3, 4-3	
3/8	1/4	1/2	1.6 (1600)	2.3 (2300)	1.7 (1700)	2.7 (2700)	30	1.70	2.28	3.0 (1.4)
	3/8	1/2	2.6 (2600)	3.1 (3100)	2.8 (2800)	3.6 (3500)	30	1.13	1.33	
	1/2	1/2	3.1 (3100)	3.8 (3700)	2.9 (2900)	4.6 (4500)	30	1.00	1.22	
3/4	1/2	1	5.3 (5200)	6.4 (6300)	4.5 (4400)	6.9 (6800)	46	0.50	0.76	5.8 (2.6)
	3/4	1	7.0 (6900)	7.7 (7600)	6.3 (6200)	10 (9800)	46	0.36	0.55	
	1	1	7.6 (7500)	7.7 (7600)	6.4 (6300)	11 (11000)	46	0.36	0.50	
1-1/4	1	1-1/2	14 (14000)	22 (22000)	18 (18000)	24 (24000)	99	0.19	0.22	12.0 (5.4)
	1-1/4	1-1/2	17 (17000)	24 (24000)	25 (25000)	28 (28000)	99	0.19	0.22	
	1-1/2	1-1/2	19 (19000)	24 (24000)	26 (20000)	28 (28000)	99	0.16	0.22	

Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

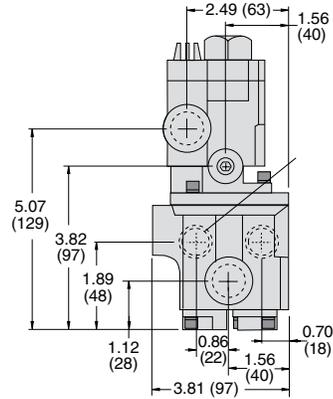
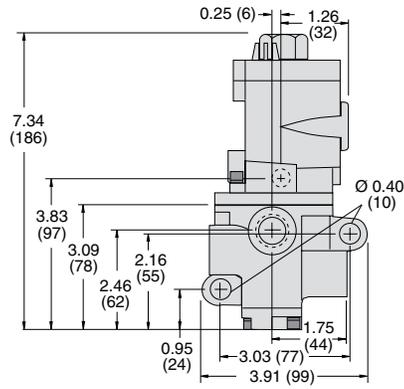
Valve Schematic	Valve Views	

4/2 Solenoid Pilot Controlled Valves

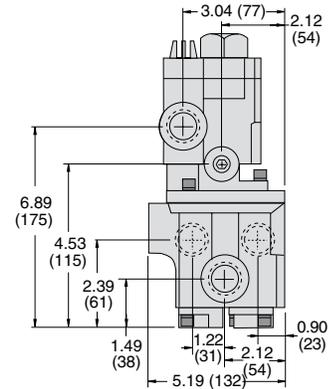
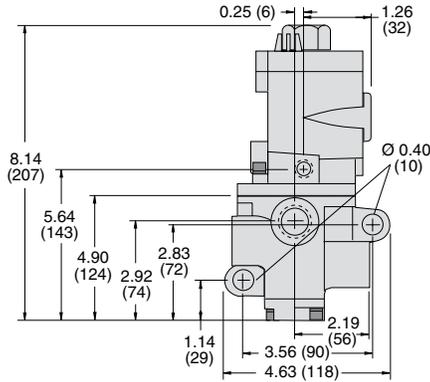
DIMENSIONS – 4/2 VALVES

Inches (mm)

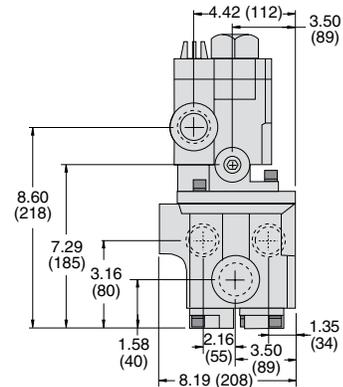
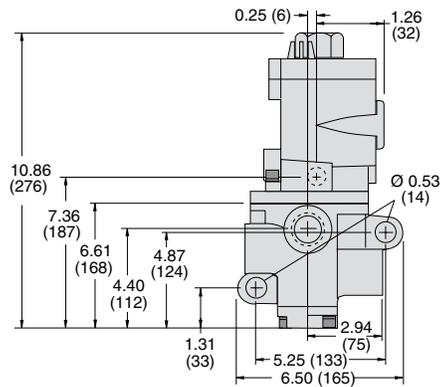
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.

Ordering Information

2/2 Pressure Controlled Valves

MODEL NUMBER CONFIGURATOR

2-Way 2-Position Valves

Port Thread		21	5	1	B	200	1
NPT							
Leave Blank							
G	D						
Series							
Actuation							
Pressure Controlled							
Valve Function							
2/2 Normally Closed	1						
2/2 Normally Open	2						
Revision Level							

Application	Valve Seals	
High Temperature 0° to 300°F (-17° to 150°C)	Fluorocarbon	1
Low Temperature -40° to 175°F (-40° to 80°C)	Buna-N	2

Body Size	Port Size		
	In-Out		
3/8	1/4		200
	3/8		300
	1/2		401
3/4	1/2		400
	3/4		500
	1		601
1-1/4	1		600
	1-1/4		700
	1-1/2		801

Model Number examples: 2151B3001, 2151B2002.

Size		Flow C _v (NI/min)		Average Response Constants*			Weight lb (kg)
Body	Port 1,2	Normally Closed (NC)	Normally Open (NO)	M	F		
		1-2	1-2		NC	NO	
3/8	1/4	1.7 (1700)	1.6 (1600)	10	0.91	0.91	1.8 (0.8)
	3/8	2.2 (2200)	2.5 (2500)	10	0.70	0.76	
	1/2	2.6 (2600)	2.8 (2800)	10	0.64	0.72	
3/4	1/2	6.6 (6500)	6.3 (6200)	16	0.37	0.43	4.2 (2.0)
	3/4	7.7 (7600)	7.4 (7300)	16	0.34	0.39	
	1	8.3 (8200)	7.6 (7500)	16	0.34	0.37	
1-1/4	1	20 (20000)	19 (19000)	27	0.17	0.17	11.0 (5.0)
	1-1/4	29 (29000)	23 (23000)	27	0.19	0.19	
	1-1/2	31 (31000)	23 (23000)	27	0.18	0.18	

Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

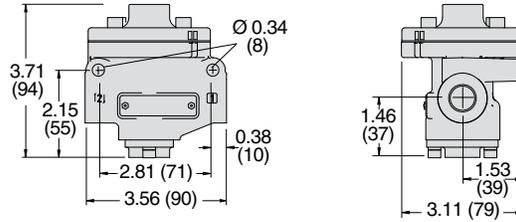
Valve Schematic		1/4" Signal Port
Normally Closed	Normally Open	

2/2 Pressure Controlled Valves

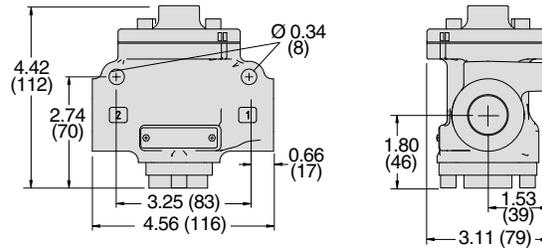
DIMENSIONS

Inches (mm)

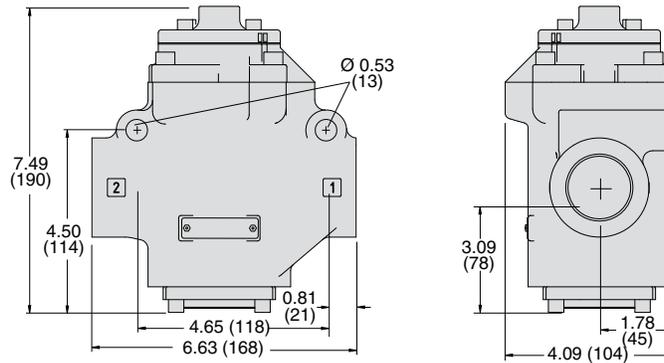
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.

Ordering Information

3/2 Pressure Controlled Valves

MODEL NUMBER CONFIGURATOR

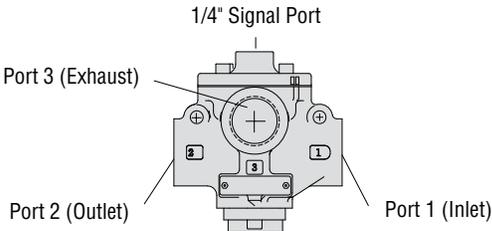
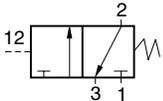
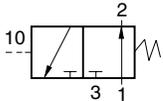
3-Way 2-Position Valves

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">Port Thread</td><td style="width: 50%;"></td></tr> <tr><td>NPT</td><td></td></tr> <tr><td>Leave Blank</td><td></td></tr> <tr><td>G</td><td>D</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Series</td><td>21</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Actuation</td><td>Pressure Controlled</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Valve Function</td><td></td></tr> <tr><td>3/2 Normally Closed</td><td>3</td></tr> <tr><td>3/2 Normally Open</td><td>4</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Revision Level</td><td></td></tr> </table>	Port Thread		NPT		Leave Blank		G	D	Series	21	Actuation	Pressure Controlled	Valve Function		3/2 Normally Closed	3	3/2 Normally Open	4	Revision Level		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Application</td><td>Valve Seals</td><td></td></tr> <tr><td>High Temperature 0° to 300°F (-17° to 150°C)</td><td>Fluorocarbon</td><td>1</td></tr> <tr><td>Low Temperature -40° to 175°F (-40° to 80°C)</td><td>Buna-N</td><td>2</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th rowspan="2">Body Size</th><th colspan="2">Port Size</th><th rowspan="2"></th></tr> <tr><th>In-Out</th><th>Exhaust</th></tr> <tr><td rowspan="3">3/8</td><td>1/4</td><td>1/2</td><td>200</td></tr> <tr><td>3/8</td><td>1/2</td><td>300</td></tr> <tr><td>1/2</td><td>1/2</td><td>401</td></tr> <tr><td rowspan="3">3/4</td><td>1/2</td><td>1</td><td>400</td></tr> <tr><td>3/4</td><td>1</td><td>500</td></tr> <tr><td>1</td><td>1</td><td>601</td></tr> <tr><td rowspan="3">1-1/4</td><td>1</td><td>1-1/2</td><td>600</td></tr> <tr><td>1-1/4</td><td>1-1/2</td><td>700</td></tr> <tr><td>1-1/2</td><td>1-1/2</td><td>801</td></tr> </table>	Application	Valve Seals		High Temperature 0° to 300°F (-17° to 150°C)	Fluorocarbon	1	Low Temperature -40° to 175°F (-40° to 80°C)	Buna-N	2	Body Size	Port Size			In-Out	Exhaust	3/8	1/4	1/2	200	3/8	1/2	300	1/2	1/2	401	3/4	1/2	1	400	3/4	1	500	1	1	601	1-1/4	1	1-1/2	600	1-1/4	1-1/2	700	1-1/2	1-1/2	801
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Model Number examples: 2153B3002, 2153B2001.

Size				Flow C _v (NI/min)				Average Response Constants*				Weight lb (kg)	
Body	Port 1	Port 2	Port 3	Normally Closed (NC)		Normally Open (NO)		M	F				
									NC		NO		
				1-2	2-3	1-2	2-3		1-2	2-3	1-2		2-3
3/8	1/4	1/4	1/2	1.7 (1700)	3.2 (3100)	1.7 (1700)	2.4 (2400)	10	1.76	2.08	1.60	2.30	1.8 (0.8)
	3/8	3/8	1/2	2.5 (2500)	4.4 (4300)	2.7 (2700)	2.6 (2600)	10	0.95	1.07	1.03	1.60	
	1/2	1/2	1/2	2.6 (2600)	4.6 (4600)	3.0 (3000)	2.8 (2800)	10	0.94	0.98	11.00	2.00	
3/4	1/2	1/2	1	6.0 (5900)	8.8 (8700)	5.9 (5800)	7.6 (7500)	11	0.58	0.64	0.50	0.70	4.5 (2.1)
	3/4	3/4	1	7.5 (7400)	11 (11000)	7.5 (7400)	8.0 (7900)	11	0.38	0.41	0.43	0.67	
	1	1	1	7.9 (7800)	12 (12000)	8.3 (8200)	8.4 (8300)	11	0.24	0.36	0.42	0.60	
1-1/4	1	1	1-1/2	20 (20000)	27 (27000)	19 (19000)	23 (23000)	28	0.16	0.18	0.17	0.20	11.0 (5.0)
	1-1/4	1-1/4	1-1/2	28 (28000)	33 (32000)	22 (22000)	25 (25000)	28	0.12	0.17	0.15	0.19	
	1-1/2	1-1/2	1-1/2	29 (29000)	33 (32000)	22 (22000)	26 (26000)	28	0.12	0.16	0.13	0.18	

Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

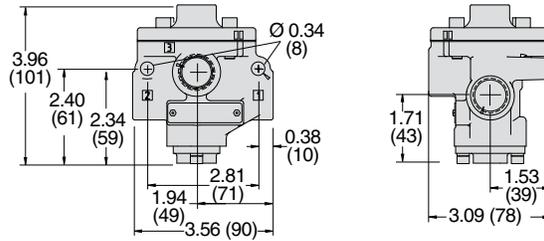
Valve Schematic		
Normally Closed	Normally Open	
		

3/2 Pressure Controlled Valves

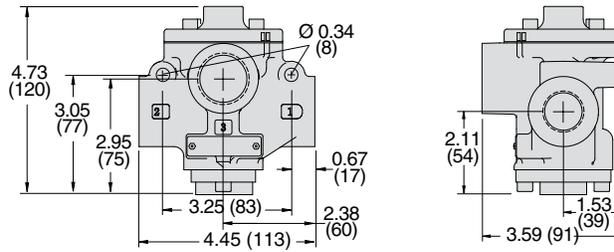
DIMENSIONS

Inches (mm)

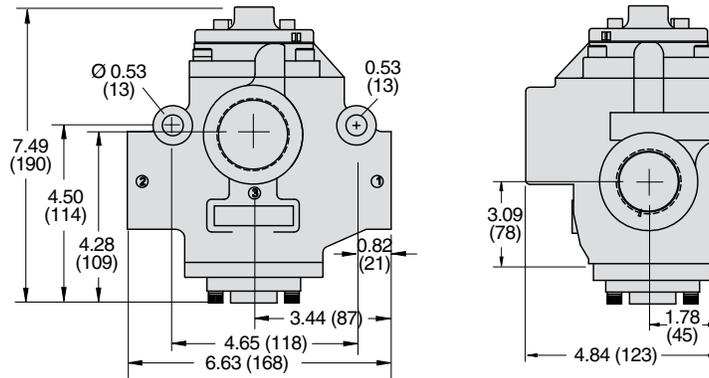
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.

Ordering Information

4/2 Pressure Controlled Valves

MODEL NUMBER CONFIGURATOR

4-Way 2-Position Valves

	21	5	6	B	200	1
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Port Thread	
NPT	
Leave Blank	
G	D

Series

Actuation
Pressure Controlled

Valve Function
4/2

Revision Level

Application	Valve Seals	
High Temperature 0° to 300°F (-17° to 150°C)	Fluorocarbon	1
Low Temperature -40° to 175°F (-40° to 80°C)	Buna-N	2

Body Size	Port Size		
	In-Out	Exhaust	
3/8	1/4	1/2	200
	3/8	1/2	300
	1/2	1/2	401
3/4	1/2	1	400
	3/4	1	500
	1	1	601
1-1/4	1	1-1/2	600
	1-1/4	1-1/2	700
	1-1/2	1-1/2	801

Model Number examples: 2156B3001, 2156B2002.

Size			Flow C _v (NL/min)				Average Response Constants*			Weight lb (kg)
Body	Port 1, 2, 4	Port 3	1-2	2-3	1-4	4-3	M	F		
								1-2, 1-4	2-3, 4-3	
3/8	1/4	1/2	1.6 (1600)	2.3 (2300)	1.7 (1700)	2.7 (2700)	30	1.70	2.28	3.0 (1.4)
	3/8	1/2	2.6 (2600)	3.1 (3100)	2.8 (2800)	3.6 (3500)	30	1.13	1.33	
	1/2	1/2	3.1 (3100)	3.8 (3700)	2.9 (2900)	4.6 (4500)	30	1.00	1.22	
3/4	1/2	1	5.3 (5200)	6.4 (6300)	4.5 (4400)	6.9 (6800)	46	0.50	0.76	5.8 (2.6)
	3/4	1	7.0 (6900)	7.7 (7600)	6.3 (6200)	10 (9800)	46	0.36	0.55	
	1	1	7.6 (7500)	7.7 (7600)	6.4 (6300)	11 (11000)	46	0.36	0.50	
1-1/4	1	1-1/2	14 (14000)	22 (22000)	18 (18000)	24 (24000)	99	0.19	0.22	12.0 (5.4)
	1-1/4	1-1/2	17 (17000)	24 (24000)	25 (25000)	28 (28000)	99	0.19	0.18	
	1-1/2	1-1/2	19 (19000)	24 (24000)	26 (20000)	28 (28000)	99	0.16	0.15	

Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

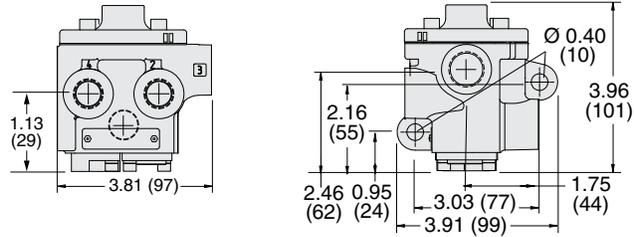
Valve Schematic

4/2 Pressure Controlled Valves

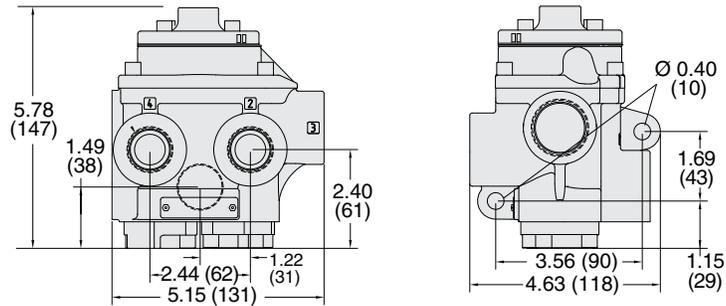
DIMENSIONS

Inches (mm)

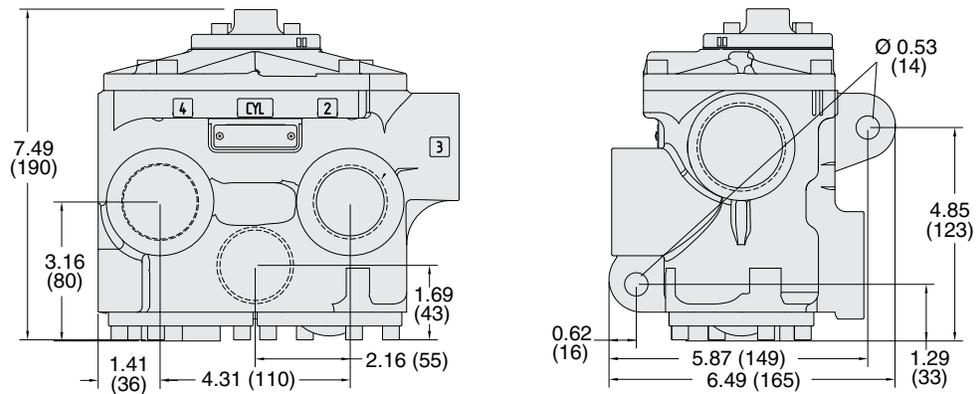
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.

Accessories

EXHAUST SILENCERS



Illustration example.

Silencers	SPECIFICATIONS		Silencer Material		Pressure Range psig (bar)		Schematic	
			Aluminum		0-290 (0-20) maximum			
	Port Size	Thread Type	Flow C _v (NI/min)	Model Number		Dimensions inches (mm)		Weight lb (kg)
NPT Thread				R/Rp Thread	Length	Hex Size (D)		
1/2	Male	6.8 (6700)	5500A4003	D5500A4003	3.6 (9)	1.25 (32)	0.2 (0.1)	
1	Male	18 (18000)	5500A6003	D5500A6003	5.4 (14)	2.0 (51)	0.9 (0.4)	
1-1/2	Female	39 (38000)	5500A8001	D5500A8001	5.7 (14)	2.5 (64)	1.3 (0.6)	

FEMALE SILENCER CONNECTORS

Hex Nipples	Material	Fitting Pipe Size	Thread Type	Model Number		
				NPT Thread	BSPT Thread	
	Steel	1-1/2	Male - Male	488J27	122J39	

SOLENOID PILOT INDICATOR LIGHT KITS

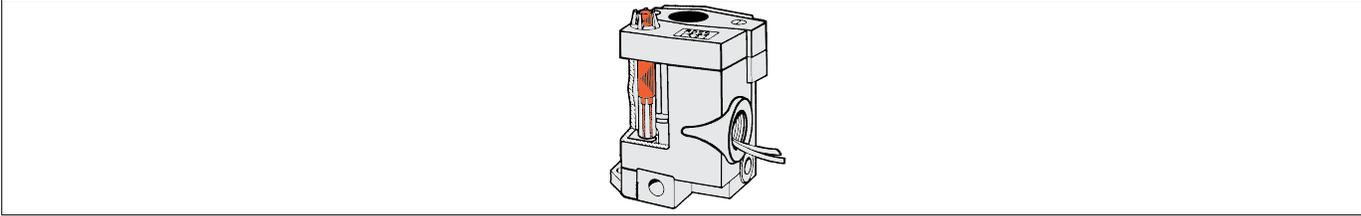


Illustration example.

Indicator Light Kits	Kit Number		
	24 V DC	110-120 V AC, 50-60 Hz	230 V AC, 50-60 Hz
	862K87-W	862K87-Z	862K87-Y
<p>To visually verify valve operation, indicator light kits are available for single solenoid models. Indicator lights are standard on double solenoid valves. The indicator light is illuminated when the solenoid is energized.</p>			

SOLENOID PILOT MANUAL OVERRIDE KITS



Illustration examples.

Manual Override Kits	Manual Override Type	Kit Number	
		Locking Type	Non-Locking Type
	Flush Button	792K87	790K87
	Extended Button	-	791K87
Extended Button with Palm	-	984H87	
<p>Flush rubber button, non-locking manual override is standard on solenoid models. Each of the buttons in the override kits is made of metal and is spring-returned. The locking type button, however, can be kept in the actuated position by turning the slot in the top of the button with a screwdriver.</p>			

CAUTIONS, WARNINGS And STANDARD WARRANTY



ROSS OPERATING VALVE, ROSS CONTROLS®, ROSS DECCO®, and AUTOMATIC VALVE INDUSTRIAL, collectively the “ROSS Group”.

PRE-INSTALLATION or SERVICE

1. Before servicing a valve or other pneumatic component, be sure all sources of energy are turned off, the entire pneumatic system is shut down and exhausted, and all power sources are locked out (ref: OSHA 1910.147, EN 1037).
2. All ROSS Group Products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any product can be tampered with and/or need servicing after installation, persons responsible for the safety of others or the care of equipment must check ROSS Group Products on a regular basis and perform all necessary maintenance to ensure safe operating conditions.
3. All applicable instructions should be read and complied with before using any fluid power system to prevent harm to persons or equipment. In addition, overhauled or serviced valves must be functionally tested prior to installation and use. If you have any questions, call your nearest ROSS Group location.
4. Each ROSS Group Product should be used within its specification limits. In addition, use only ROSS Group components to repair ROSS Group Products.

WARNINGS:

Failure to follow these instructions can result in personal injury and/or property damage.

FILTRATION and LUBRICATION

1. Dirt, scale, moisture, etc., are present in virtually every air system. Although some valves are more tolerant of these contaminants than others, best performance will be realized if a filter is installed to clean the air supply, thus preventing contaminants from interfering with the proper performance of the equipment. The ROSS Group recommends a filter with a 5-micron rating for normal applications.
2. All standard ROSS Group filters and lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Use the metal bowl guard, where provided, to minimize danger from high pressure fragmentation in the event of bowl failure. Do not expose these products to certain fluids, such as alcohol or liquefied petroleum gas, as they can cause bowls to rupture, creating a combustible condition and hazardous leakage. Immediately replace crazed, cracked, or deteriorated bowls.
3. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum base oils with oxidation inhibitors, an aniline point between 180°F (82°C) and 220°F (104°C), and an ISO 32, or lighter, viscosity. Avoid oils with

phosphate type additives which can harm polyurethane components, potentially leading to valve failure which risks personal injury, and/or damage to property.

WARNINGS:

Failure to follow these instructions can result in personal injury and/or property damage.

AVOID INTAKE/EXHAUST RESTRICTION

1. Do not restrict air flow in the supply line. To do so could reduce the pressure of the supply air below minimum requirements for the valve and thereby causing erratic action.
2. Do not restrict a valve's exhaust port as this can adversely affect its operation. Exhaust silencers must be resistant to clogging and must have flow capacities at least as great as the exhaust capacities of the valves. Contamination of the silencer can result in reduced flow and increased back pressure.

WARNINGS: Failure to follow these instructions can result in personal injury and/or property damage.

SAFETY APPLICATIONS

1. Mechanical Power Presses and other potentially hazardous machinery using a pneumatically controlled clutch and brake mechanism must use a press control double valve with a monitoring device. A double valve without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All double valve installations involving hazardous applications should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.
2. Safe Exhaust (dump) valves without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All Safe Exhaust valve installations should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.
3. Per specifications and regulations, the ROSS L-O-X® and L-O-X® with EEZ-ON®, N06 and N16 Series operation products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

WARNINGS:

Failure to follow these instructions can result in personal injury and/or property damage.

STANDARD WARRANTY

All products sold by the ROSS Group are warranted for a one-year period [with the exception of Filters, Regulators and Lubricators (“FRLs”) which are warranted for a period of seven (7) years] from the date of purchase. All products are, during their respective warranty periods, warranted to be free of defects in material and workmanship. The ROSS Group's obligation under this warranty is limited to repair, replacement or refund of the purchase price paid for products which the ROSS Group has determined, in its sole discretion, are defective. All warranties become void if a product has been subject to misuse, misapplication, improper maintenance, modification or tampering. Products for which warranty protection is sought must be returned to the ROSS Group freight prepaid.

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