



21 SERIES CLASSIC VALVES



PRODUCT CATALOG

Inline Poppet Valves 21 Series – 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 Valve	Normally Closed	
				Normally Open	
			3/2 Valve	Normally Closed	
				Normally Open	
			4/2 Valve		
	Construction Design		Poppet		
	Actuation		Electrical	Solenoid Pilot Controlled	
			Pneumatic	Pressure Controlled	
	Mounting	Type	Inline		
		Orientation	Any, preferably vertical		
Connection		Threaded Port	NPT		
			G		
Manual Override (Solenoid Controlled valves)		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)
		For temperatures below 40° F (4° C) air must be free of water vapor to prevent formation of ice			
		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	
		For temperatures below 40° F (4° C) air must be free of water vapor to prevent formation of ice			
	Flow Media		Filtered air		
	Operating Pressure		30 to 150 psig (2 to 10 bar)		
	Pilot Supply Pressure		Internal	Must meet minimum operating pressure	
			External	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	Viton	
		Low Temperature	Nitrile Rubber	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 d 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 CONFIGURATOR2-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
In-Out

Internal Pilot Supply

External Pilot Supply

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

Normally Closed

Normally Open

Manual Override

Solenoid Pilot

Y-3

1/8" Pilot Exhaust Port

Port 2 (Outlet)

Port 1 (Inlet)

1/2
Electrical Conduit Port

X-1
1/8" External Pilot Supply

4

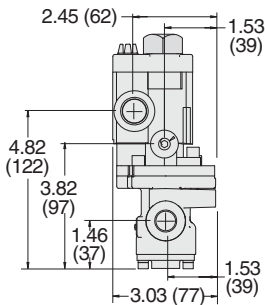
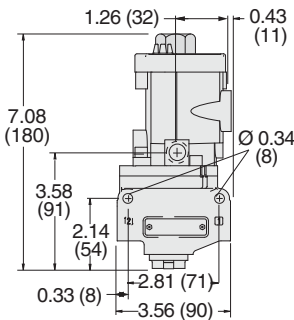
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2/2 Solenoid Pilot Controlled Valves

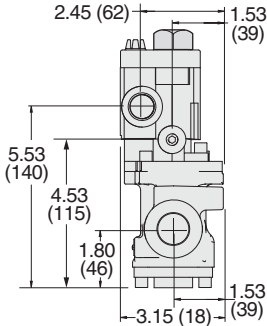
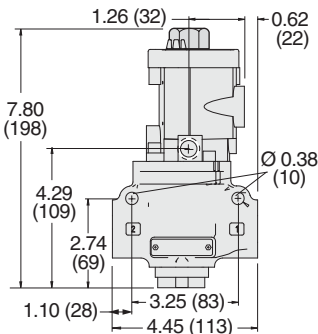
DIMENSIONS

Inches (mm)

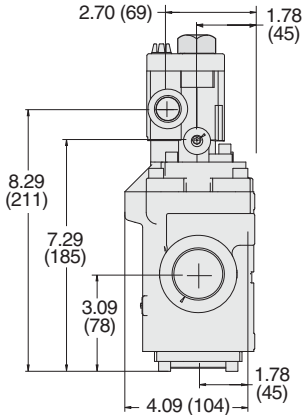
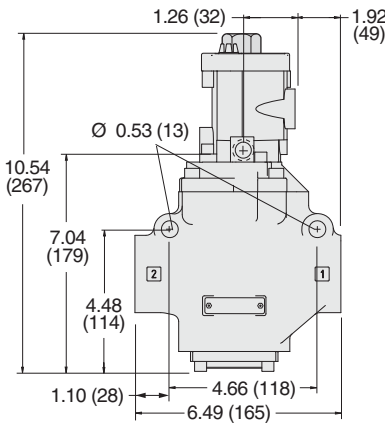
Body Size 3/8



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

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

21

7

3

B

200

1

W

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.

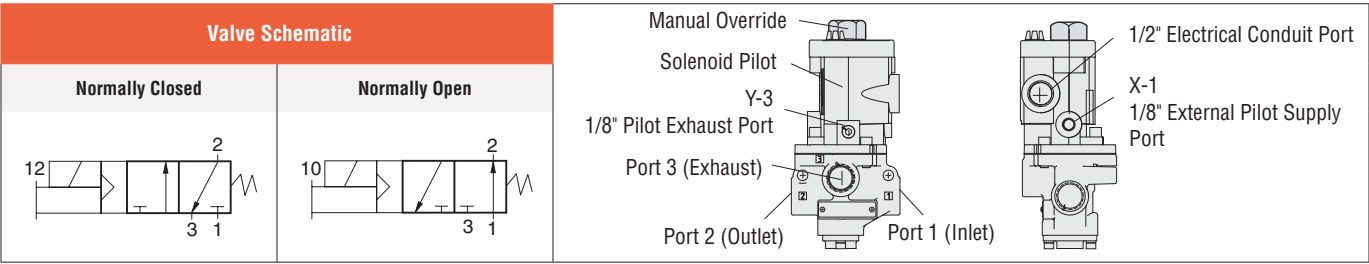
Body Size	Port Size		Internal Pilot Supply	External Pilot Supply
	In-Out	Exhaust		
3/8	1/4	1/2	200	205
	3/8	1/2	300	305
	1/2	1/2	401	406
3/4	1/2	1	400	405
	3/4	1	500	505
	1	1	601	606
1-1/4	1	1-1/2	600	605
	1-1/4	1-1/2	700	705
	1-1/2	1-1/2	801	806

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.

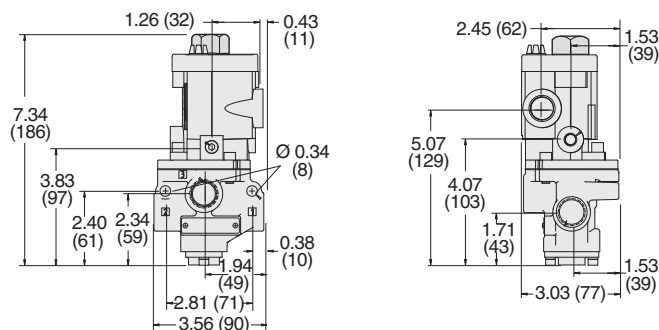


3/2 Solenoid Pilot Controlled Valves

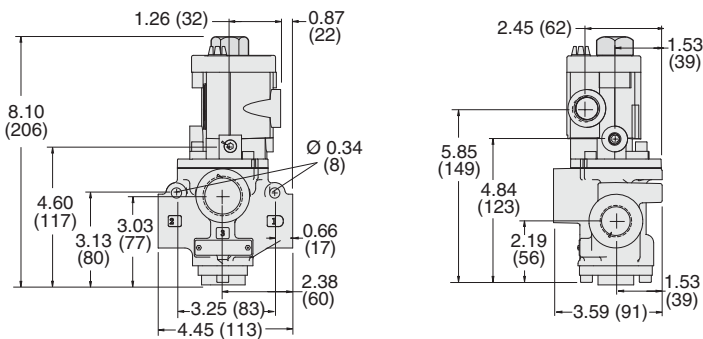
DIMENSIONS

Inches (mm)

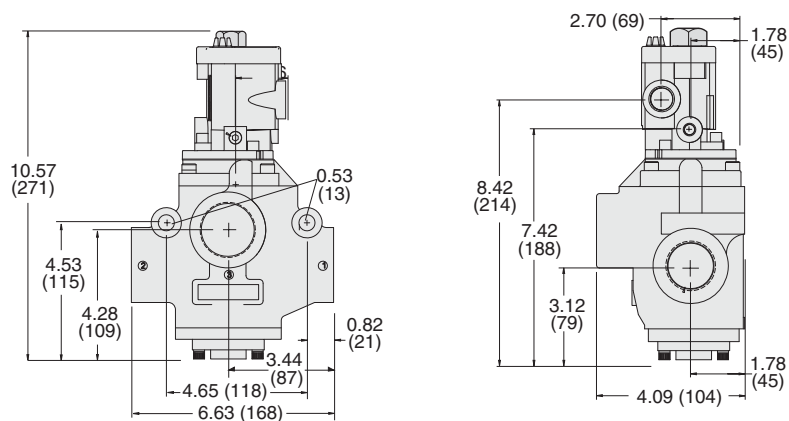
Body Size 3/8



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

Port Thread

NPT

Leave Blank

G

D

Series

21

Actuation

Solenoid Pilot

Valve Function

4/2

Revision Level

7

6

B

200

1

W

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)	1
Fluorocarbon Seals		
Low Temperature	-40° to 120°F (-40° to 50°C)	2
Buna-N Seals		

Model Number examples: 2176B3001W, 2176B3052Z.

Size			Flow C _v (NI/min)				Average Response Constants *			≈ Weight lb (kg)
Body	Port 1, 2, 4	Port 3					M	F		
			1-2	2-3	1-4	4-3		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

Manual Override

Solenoid Pilot

X-1

1/8" External Pilot Supply Port

Port 3 (Exhaust)

1/2" Electrical Conduit Port

Y-3

1/8" Pilot Exhaust Port

Port 4 (Outlet)

Port 2 (Outlet)

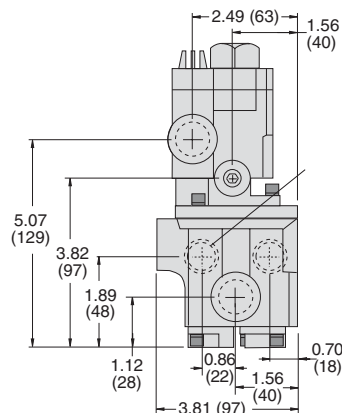
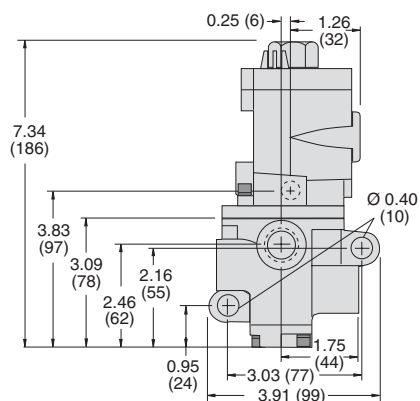
Port 1 (Inlet)

4/2 Solenoid Pilot Controlled Valves

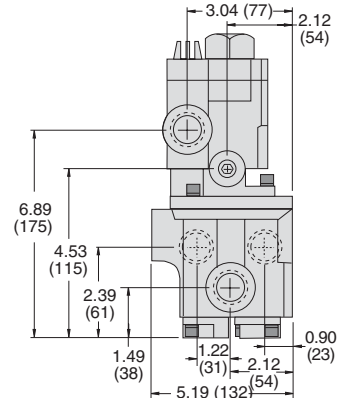
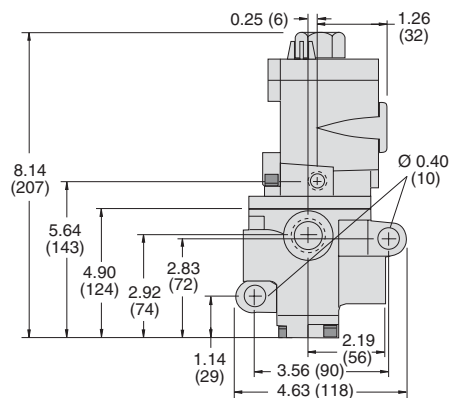
DIMENSIONS

Inches (mm)

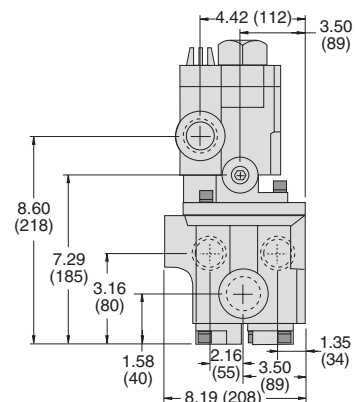
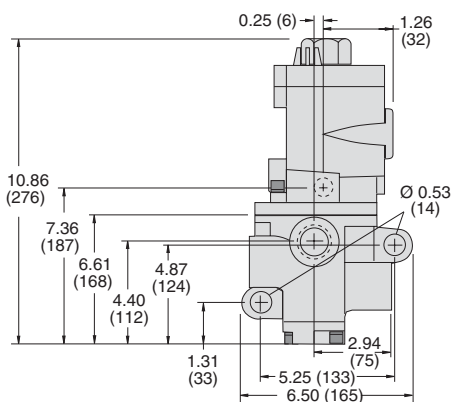
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.

Ordering Information

2/2 Pressure Controlled Valves

MODEL NUMBER CONFIGURATOR2-Way 2-Position Valves

Port Thread

NPT

Leave Blank

G

D

Series

Actuation

Pressure Controlled

Valve Function

2/2 Normally Closed

1

2/2 Normally Open

2

Revision Level

21

5

1

B

200

1

Application

High Temperature

0° to 300°F (-17° to 150°C)

Low Temperature

-40° to 175°F (-40° to 80°C)

Valve Seals

Fluorocarbon

1

Buna-N

2

Body Size

3/8

3/4

1-1/4

Port Size

In-Out

1/4

3/8

1/2

1/2

3/4

1

1

1-1/4

1-1/2

200

300

401

400

500

601

600

700

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

Normally Closed

Normally Open

12

2

1

10

2

1

1/4" Signal Port

Port 2 (Outlet)

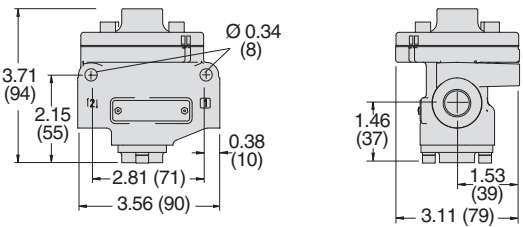
Port 1 (Inlet)

2/2 Pressure Controlled Valves

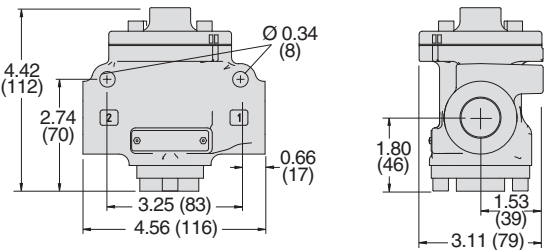
DIMENSIONS

Inches (mm)

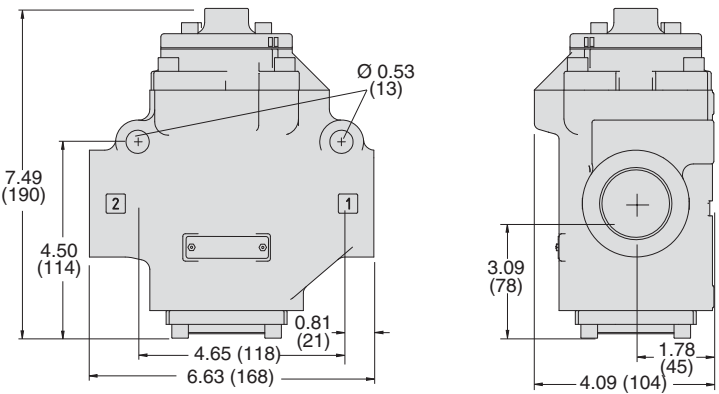
Body Size 3/8



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

Port Thread

NPT

Leave Blank

G

D

Series

21

5

3

B

200

1

Actuation

Pressure Controlled

Valve Function

3/2 Normally Closed

3

3/2 Normally Open

4

Revision Level

Application

High Temperature

0° to 300°F (-17° to 150°C)

Low Temperature

-40° to 175°F (-40° to 80°C)

Valve Seals

Fluorocarbon

Buna-N

1

2

Body Size

3/8

3/4

1-1/4

Port Size

In-Out

Exhaust

1/4

3/8

1/2

1/2

1

3/4

1

1

1

1-1/4

1-1/4

1-1/2

1-1/2

1-1/2

200

300

401

400

500

601

600

700

801

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

1/4" Signal Port

Port 3 (Exhaust)

Port 2 (Outlet)

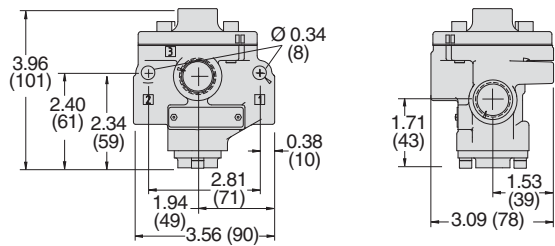
Port 1 (Inlet)

3/2 Pressure Controlled Valves

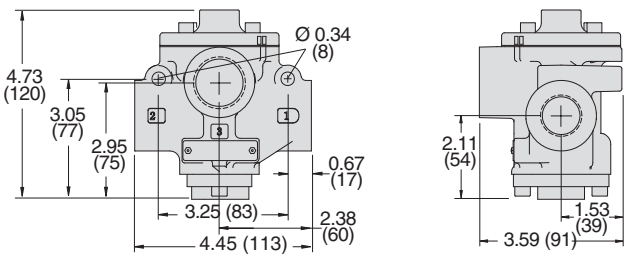
DIMENSIONS

Inches (mm)

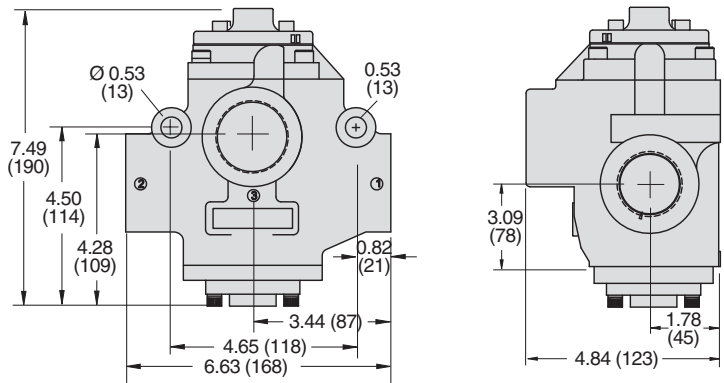
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.



Ordering Information

4/2 Pressure Controlled Valves

MODEL NUMBER CONFIGURATOR4-Way 2-Position Valves

Port Thread

NPT

Leave Blank

G

D

Series

21

Actuation

Pressure Controlled

5

Valve Function

4/2

6

Revision Level

B

Application

High Temperature

0° to 300°F (-17° to 150°C)

Low Temperature

-40° to 175°F (-40° to 80°C)

Valve Seals

Fluorocarbon

Buna-N

1

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 (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	0.18	
	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

1/4" Signal Port

Port 4 (Outlet)

Port 3 (Exhaust)

Port 2 (Outlet)

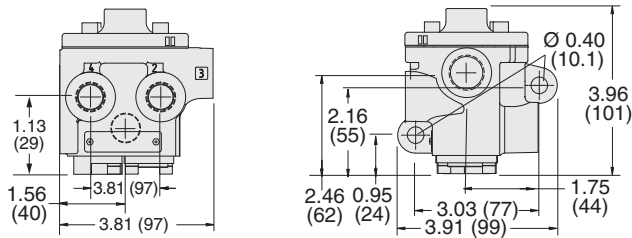
Port 1 (Inlet)

4/2 Pressure Controlled Valves

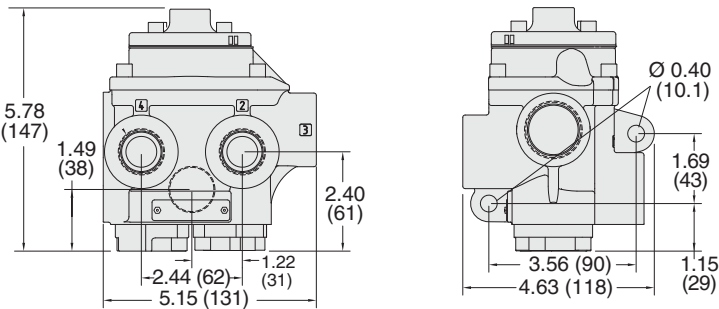
DIMENSIONS

Inches (mm)

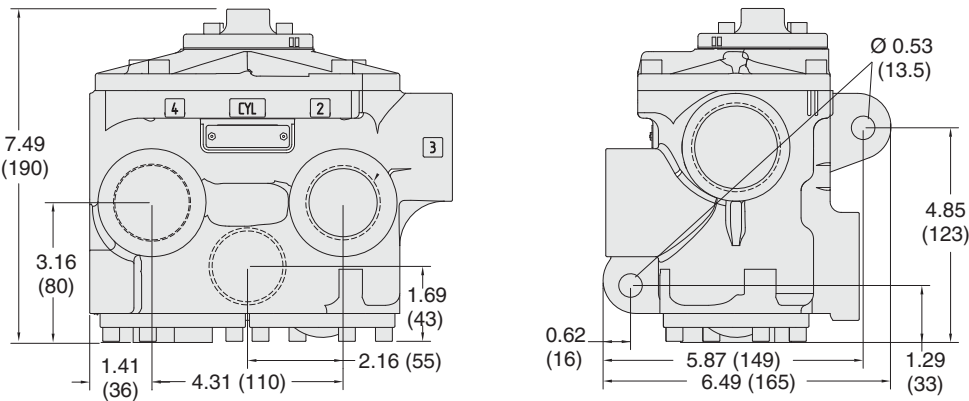
Body Size 3/8



Body Size 3/4



Body Size 1-1/4



Downloadable CAD models available.



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

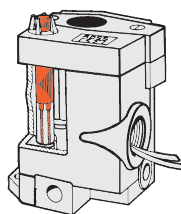


Illustration example.

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
	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.		

SOLENOID PILOT MANUAL OVERRIDE KITS

Flush Button	Extended Button	Extended Button with Palm
		

Illustration examples.

Manual Override Kits	Manual Override Type	Kit Number	
		Locking Type	Non-Locking Type
	Flush Button	792K87	—
	Extended Button	—	791K87
	Extended Button with Palm	—	984H87
	Non-locking metal button 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.		

ROSS OPERATING VALVE, ROSS CONTROLS®, ROSS DECCO®, AUTOMATIC VALVE INDUSTRIAL, and MASTER PNEUMATIC, collectively the “ROSS Global Family”.

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 Global Family 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 Global Family 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 Global Family location.
4. Each ROSS Global Family Product should be used within its specification limits. In addition, use only ROSS ROSS Global Family components to repair ROSS Global Family 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 Global Family recommends a filter with a 5-micron rating for normal applications.
2. All standard ROSS Global Family 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 Global Family are warranted for a one-year period [with the exception of Air Preparation products 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 Global Family's obligation under this warranty is limited to repair, replacement or refund of the purchase price paid for products which the ROSS Global Family 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 Global Family freight prepaid.

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