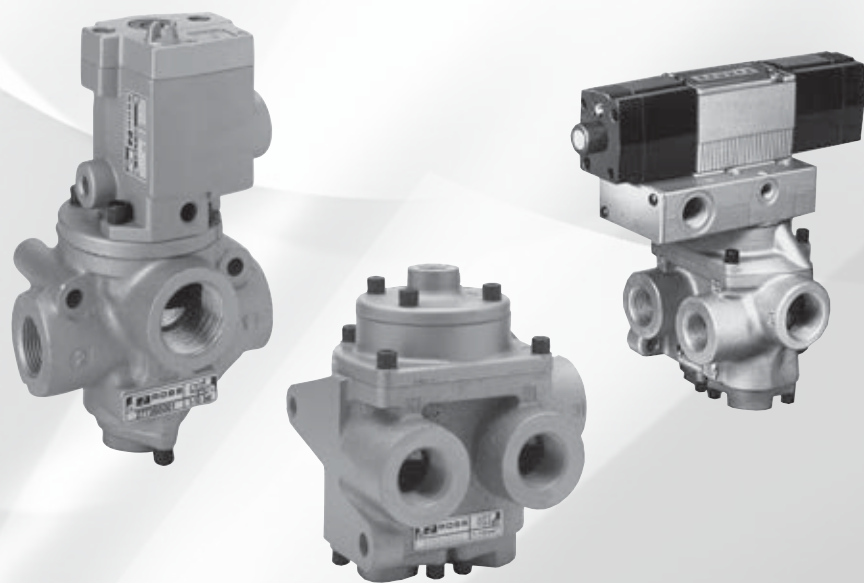


ROSS CONTROLS®



POPPET VALVES 27 SERIES



POPPET 27 SERIES VALVES – KEY FEATURES

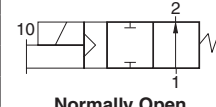
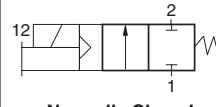
- Low weight; compact size
- Valves available with special control functions:
 - Timed sequence actuation and/or deactuation
 - Momentary control of actuation/deactuation from one pressure source
 - Actuating force multiplier, for use with low signal pressures
- Available with choices of internal components for three different temperature ranges
- Can be mounted close to actuator, reducing length of pipe to be pressurized/exhausted on each cycle
- Easily field-convertible for use with an external pilot supply
- Long life expectancy
- Consistent response times over the life of the valve

Valve models for external pilot supply available, consult ROSS.

Explosion-Proof solenoid pilot valves available, see explosion proof valves.

VALVE TYPE/SERIES	DESCRIPTION		AVAILABLE INLET PORT SIZES														FUNCTIONS					Page					
	Spool & Sleeve	Poppet	1/8	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	2/2	3/2	3/4	4/2	5/2 Single	5/2 Double	5/3 Closed Center	5/3 Open Center	5/3 Pressure Center		Max Flow (Cv)	Solenoid Control	Direct Solenoid Control	Pressure Control	
27																						72				B2.3 - B2.5	
27																						34				B2.10 - B2.11	
27																						72				B2.12 - B2.14	
27 Series with Pressure Booster Adaptor																											
																						32				B2.6	
																						34				B2.15	
27 Series with Air Index Adaptor																											
																						27				B2.7	
																						32				B2.16	
27 Series with Timed Sequence Adaptor																											
																						34				B2.8, B2.17	
27 Series with Timed Sequence & Timed Sequence Extension Adaptors																											
																						34				B2.9	
																						32				B2.18	
27 Series with Timed In/Out Sequence Adaptor																											
																						32				B2.19	
27 Series with Timed-In/Out Sequence & Timed Sequence Extension Adaptors																											
																						34				B2.20	
27 Series Pressure Controlled with Inlet Port Controlled Timed-In Sequence Adaptor																											
																						34				B2.21	
27 Series Pressure Controlled with Inlet Port Controlled Timed-In Sequence & Timed Sequence Extension Adaptors																											
																						32				B2.22	
Options & Accessories																											B2.23

2-Way 2-Position Valves, Spring Return									
Port Size	Body Size	Valve Model Number*		C _v		Average Response Constants#			Weight lb (kg)
		Normally Closed	Normally Open	NC	NO	M	F		
1, 2							NC	NO	
1/4	3/8	2771B2001**	2772B2001**	2.3	2.3	10	0.91	0.91	2.5 (1.2)
3/8	3/8	2771B3001**	2772B3001**	3.8	3.3	10	0.70	0.76	2.5 (1.2)
1/2	3/8	2771B4011**	2772B4011**	4.0	3.5	10	0.64	0.72	2.5 (1.2)
1/2	3/4	2771B4001**	2772B4001**	7.7	6.5	14	0.37	0.43	3.3 (1.5)
3/4	3/4	2771B5001**	2772B5001**	9.0	7.3	14	0.34	0.39	3.3 (1.5)
1	3/4	2771B6011**	2772B6011**	9.0	7.9	14	0.34	0.37	3.3 (1.5)
1	1¼	2771B6001**	2772B6001**	24	21	26	0.17	0.17	7.0 (3.2)
1¼	1¼	2771B7001**	2772B7001**	29	20	26	0.15	0.19	7.0 (3.2)
1½	1¼	2771B8011**	2772B8011**	29	21	26	0.15	0.18	7.0 (3.2)
1½	2	2771B8001**	2772B8001**	49	49	41	0.09	0.09	15.5 (6.9)
2	2	2771B9001**	2772B9001**	57	57	41	0.07	0.07	15.5 (6.9)
2½	2	2771B9011**	2772B9011**	64	72	41	0.07	0.06	15.5 (6.9)



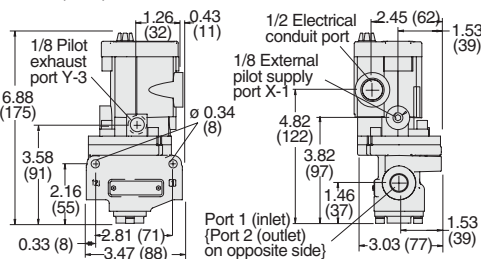
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2771B2001W.

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2771B2001W. For other voltages, consult ROSS.

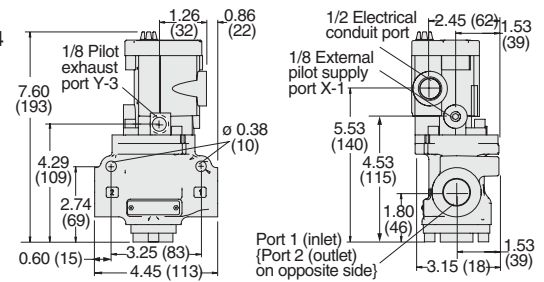
Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

Valve Dimensions – inches (mm)

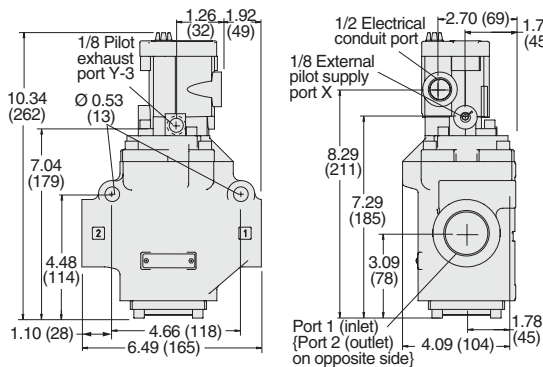
Body Size 3/8



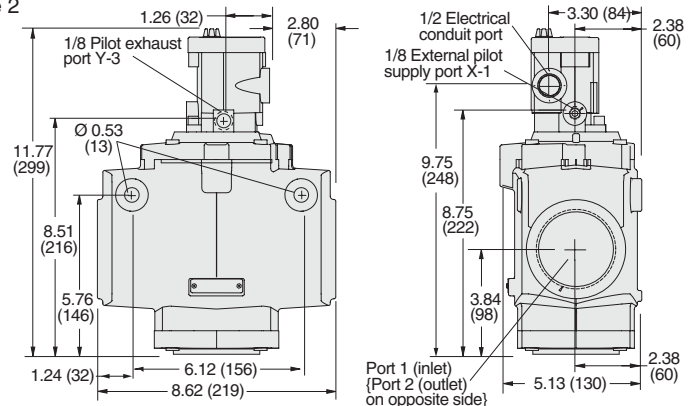
Body Size 3/4



Body Size 1¼



Body Size 2



Options: Indicator Light Kit, Manual Override Kits; refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.

Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: Port Size 1/4 to 1½: 15 to 150 psig (1 to 10 bar).

Inlet Pressure: Port Size 1½ to 2½: 30 to 150 psig (2 to 10 bar).

Pilot Pressure: When external supply is used, pressure must be equal to or greater than inlet pressure.

Manual Override: Flush; rubber, non-locking.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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

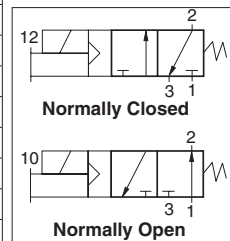


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3-Way 2-Position Valves, Spring Return

Port Size			Body Size	Valve Model Number*		C _v				Average Response Constants#				Weight lb (kg)
1, 2	3	Normally Closed		Normally Open	NC		NO		M	F				
					1-2	2-3	1-2	2-3		1-2	2-3	1-2	2-3	
1/4	1/2	3/8	2773B2001**	2774B2001**	2.5	3.1	2.3	2.7	10	0.90	0.80	0.99	0.88	2.5 (1.2)
3/8	1/2	3/8	2773B3001**	2774B3001**	3.6	5.3	2.8	3.2	10	0.70	0.50	0.90	0.77	2.5 (1.2)
1/2	1/2	3/8	2773B4011**	2774B4011**	3.3	5.3	2.8	3.2	10	0.75	0.50	0.90	0.76	2.5 (1.2)
1/2	1	3/4	2773B4001**	2774B4001**	6.3	9.2	6.3	8.0	11	0.43	0.27	0.46	0.60	3.3 (1.5)
3/4	1	3/4	2773B5001**	2774B5001**	7.7	11	6.9	7.4	11	0.36	0.26	0.45	0.60	3.3 (1.5)
1	1	3/4	2773B6011**	2774B6011**	8	12	6.8	7.5	11	0.34	0.25	0.40	0.59	3.3 (1.5)
1	1 1/2	1 1/4	2773B6001**	2774B6001**	23	34	17	24	28	0.17	0.14	0.20	0.17	7.0 (3.2)
1 1/4	1 1/2	1 1/4	2773B7001**	2774B7001**	30	32	19	24	28	0.15	0.15	0.19	0.17	7.0 (3.2)
1 1/2	1 1/2	1 1/4	2773B8011**	2774B8011**	30	31	19	23	28	0.15	0.15	0.19	0.16	7.0 (3.2)
1 1/2	2 1/2	2	2773B8001**	2774B8001**	68	70	57	59	76	0.05	0.04	0.07	0.04	16.5 (7.4)
2	2 1/2	2	2773B9001**	2774B9001**	70	70	58	61	76	0.05	0.04	0.05	0.04	16.5 (7.4)
2 1/2	2 1/2	2	2773B9011**	2774B9011**	70	71	54	55	76	0.05	0.04	0.50	0.04	16.5 (7.4)



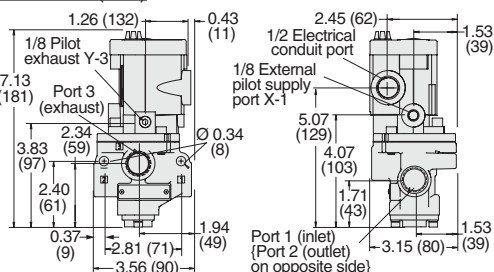
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2773B2001W.

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2773B2001W. For other voltages, consult ROSS.

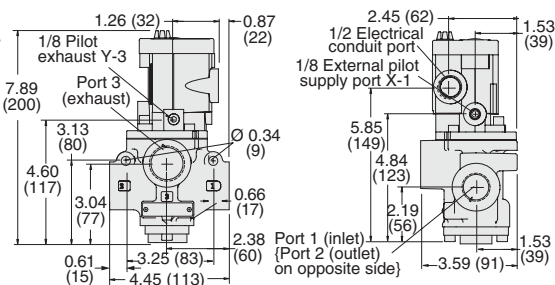
Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

Valve Dimensions – inches (mm)

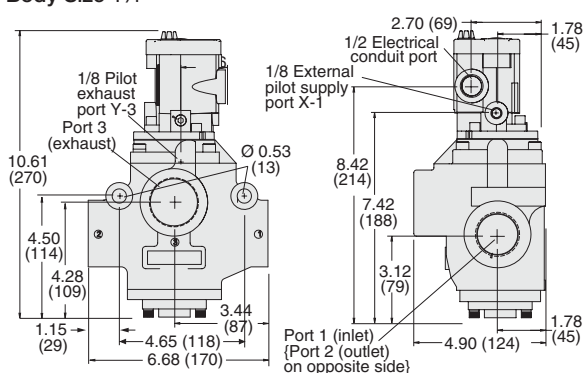
Body Size 3/8



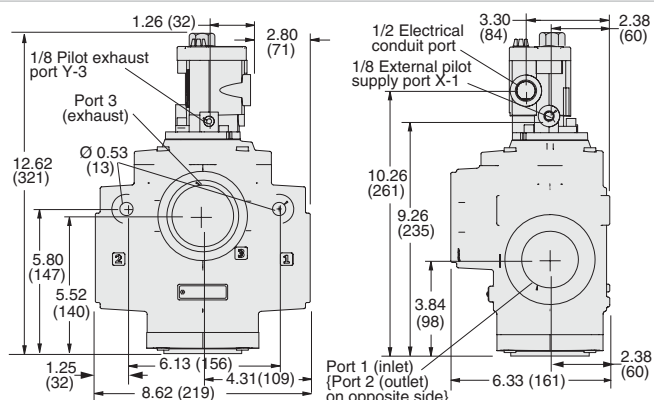
Body Size 3/4



Body Size 1 1/4



Body Size 2



Options: Indicator Light Kit, Manual Override Kits; refer to page B2.23. Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.

Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: Port Size 1/4 to 1 1/2: 15 to 150 psig (1 to 10 bar).

Inlet Pressure: Port Size 1 1/2 to 2 1/2: 30 to 150 psig (2 to 10 bar).

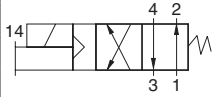
Pilot Pressure: When external supply is used, pressure must be equal to or greater than inlet pressure.

Manual Override: Flush; rubber, non-locking.

Safety Integrity Level (SIL) – Certified by TÜV Rheinland in accordance with IEC 61508 and IEC 61511 safety integrity level 2 (SIL 2) and EN ISO 13849-1, PL c or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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

4-Way 2-Position Valves, Spring Return										
Port Size		Body Size	Valve Model Number*	C _v			Average Response Constants#		Weight lb (kg)	
1, 2, 4	3			1-2, 1-4	4-3, 2-3	M	F			
				1-2, 1-4	4-3, 2-3					
1/4	1/2	3/8	2776B2001**	2.1	2.9	10	0.92	0.92	3.0 (1.4)	
3/8	1/2	3/8	2776B3001**	2.9	4.2	10	0.90	0.90	3.0 (1.4)	
1/2	1/2	3/8	2776B4011**	3.1	7.3	10	0.89	0.73	3.0 (1.4)	
1/2	1	3/4	2776B4001**	5.6	8.1	26	0.50	0.66	5.3 (2.4)	
3/4	1	3/4	2776B5001**	7.0	9.3	26	0.36	0.55	5.3 (2.4)	
1	1	3/4	2776B6011**	7.8	10	26	0.35	0.50	5.3 (2.4)	
1	1½	1¼	2776B6001**	19	26	79	0.17	0.22	11.3 (5.1)	
1¼	1½	1¼	2776B7001**	21	27	79	0.16	0.18	11.3 (5.1)	
1½	1½	1¼	2776B8011**	22	27	79	0.15	0.15	11.3 (5.1)	

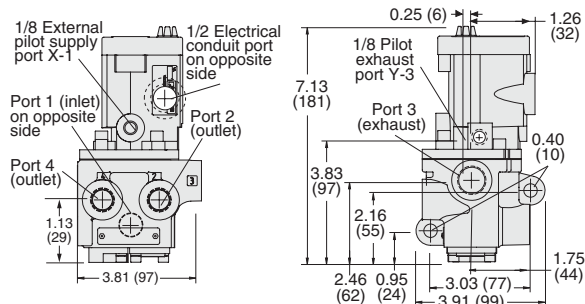
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2776B2001W.

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2776B2001W. For other voltages, consult ROSS.

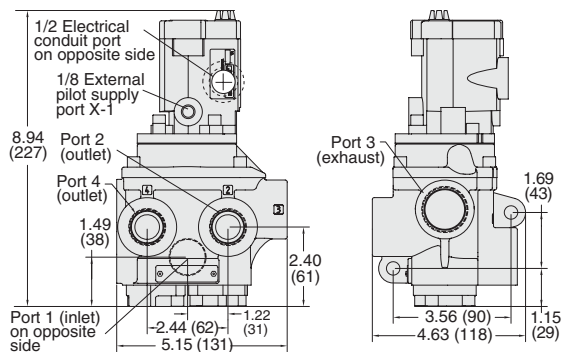
Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

Valve Dimensions – inches (mm)

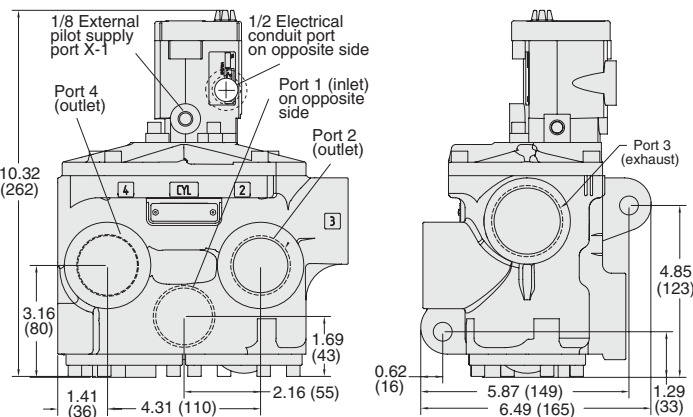
Body Size 3/8



Body Size 3/4



Body Size 1¼



Options: Indicator Light Kit, Manual Override Kits; refer to page B2.23. Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.

Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: Port Size 1/4 to 1½: 15 to 150 psig (1 to 10 bar);

Inlet Pressure: Port Size 1½ to 2½: 30 to 150 psig (2 to 10 bar).

Pilot Pressure: When external supply is used, pressure must be equal to or greater than inlet pressure.

Manual Override: Flush; rubber, non-locking.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



Solenoid Pilot Controlled Valves

With Pressure Booster Adaptor

27 Series

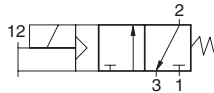
Pressure Booster Adaptor: Increases the actuating force on the valve piston. It should be used when the inlet and pilot pressures are below the minimums specified for the valve. It should also be used when an external pilot supply with a lower pressure than the inlet pressure is used. The valve's pilot pressure is applied to a piston in the pilot booster adaptor that has a larger area than the piston in the valve. The force on the piston in the adaptor is thereby larger than that which could be produced by the piston in the valve. This larger force is applied to the valve's piston directly so that there is then sufficient force to shift the valve properly.



3-Way 2-Position Valves, Spring Return

Port Size		Body Size	Valve Model Number*	C _v		Dimension A inches (mm)	Weight lb (kg)
1, 2	3			1-2	2-3		
1/4	1/2	3/8	2773B2009**	2.5	3.1	0.75 (19)	2.5 (1.2)
3/8	1/2	3/8	2773B3009**	3.6	5.3	0.75 (19)	2.5 (1.2)
1/2	1/2	3/8	2773B4019**	3.3	5.3	0.75 (19)	2.5 (1.2)
1/2	1	3/4	2773B4009**	6.3	9.2	0.75 (19)	3.3 (1.5)
3/4	1	3/4	2773B5009**	7.7	11	0.75 (19)	3.3 (1.5)
1	1	3/4	2773B6019**	8	12	0.75 (19)	3.3 (1.5)
1	1½	1¼	2773B6009**	23	34	1.25 (32)	7.0 (3.2)
1¼	1½	1¼	2773B7009**	30	32	1.25 (32)	7.0 (3.2)
1½	1½	1¼	2773B8019**	30	31	1.25 (32)	7.0 (3.2)

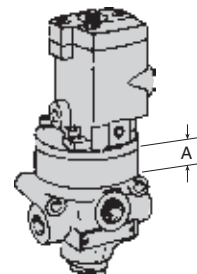
Normally Closed



* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2773B2009W.

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2773B2009W. For other voltages, consult ROSS.

Detailed dimensions, see corresponding valves models pages.



Options: Indicator Light Kit, Manual Override Kits; refer to page B2.23. Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.

Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: When external supply is used, pressure must be equal to or greater than inlet pressure.

Manual Override: Flush; rubber, non-locking.

Safety Integrity Level (SIL) – Certified by TÜV Rheinland in accordance with IEC 61508 and IEC 61511 safety integrity level 2 (SIL 2) and EN ISO 13849-1, PL c or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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

Solenoid Pilot Controlled Valves

With Air Index Adaptor

27 Series

Air Index Adaptor: Allows a valve controlled by a single solenoid pilot to function as an impulse controlled, mechanically detented valve. A momentary electrical signal to the solenoid actuates the valve and holds it in the actuated position. A second momentary signal from the same source returns the valve to its deactuated position.



4-Way 2-Position Valves, Spring Return						
Port Size		Body Size	Valve Model Number*	C _v		Weight lb (kg)
1, 2, 4	3			1-2, 1-4	4-3, 2-3	
1/4	1/2	3/8	2776B2008**	2.1	2.9	3.0 (1.4)
3/8	1/2	3/8	2776B3008**	2.9	4.2	3.0 (1.4)
1/2	1/2	3/8	2776B4018**	3.1	7.3	3.0 (1.4)
1/2	1	3/4	2776B4008**	5.6	8.1	5.3 (2.4)
3/4	1	3/4	2776B5008**	7.0	9.3	5.3 (2.4)
1	1	3/4	2776B6018**	7.8	10	5.3 (2.4)
1	1½	1¼	2776B6008**	19	26	11.3 (5.1)
1¼	1½	1¼	2776B7008**	21	27	11.3 (5.1)
1½	1½	1¼	2776B8018**	22	27	11.3 (5.1)

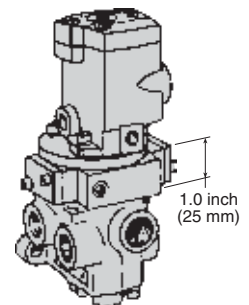
B

B2

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2776B2008W.

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2776B2008W. For other voltages, consult ROSS.

Detailed dimensions, see corresponding valves models pages.



Options: Indicator Light Kit, Manual Override Kits; refer to page B2.23. Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.

Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: When external supply is used, pressure must be equal to or greater than inlet pressure.

Manual Override: Flush; rubber, non-locking.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥1.

Valve models with EN connector available, consult ROSS.

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



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B2.7

Solenoid Pilot Controlled Valves

With Timed Sequence Adaptor

27 Series



B

B2

2-Way 2-Position Valves, Spring Return								
Port Size	Body Size	Valve Model Number*				C _v		Weight lb (kg)
		Normally Closed		Normally Open		NC	NO	
		Timed In	Timed Out	Timed In	Timed Out			
1/4	3/8	2771B2004**	2771B2005**	2772B2004**	2772B2005**	2.3	2.3	3.5 (1.6)
3/8	3/8	2771B3004**	2771B3005**	2772B3004**	2772B3005**	3.8	3.3	3.5 (1.6)
1/2	3/8	2771B4014**	2771B4015**	2772B4014**	2772B4015**	4.0	3.5	3.5 (1.6)
1/2	3/4	2771B4004**	2771B4005**	2772B4004**	2772B4005**	7.7	6.5	4.3 (2.0)
3/4	3/4	2771B5004**	2771B5005**	2772B5004**	2772B5005**	9.0	7.3	4.3 (2.0)
1	3/4	2771B6014**	2771B6015**	2772B6014**	2772B6015**	9.0	7.9	4.3 (2.0)
1	1 1/4	2771B6004**	2771B6005**	2772B6004**	2772B6005**	24	21	9.0 (4.1)
1 1/4	1 1/4	2771B7004**	2771B7005**	2772B7004**	2772B7005**	29	20	9.0 (4.1)
1 1/2	1 1/4	2771B8014**	2771B8015**	2772B8014**	2772B8015**	29	21	9.0 (4.1)

Timed In		Timed In	
Normally Closed		Normally Open	
Timed Out		Timed Out	

Timed Sequence Adaptor: Allows the actuation and/or de-actuation of a valve to be delayed up to 30 seconds for 2/2 valves, and up to 3 seconds for 3/2 and 4/2 valves. The time delay function is controlled by a continuously adjustable tapered needle. Longer time delays can be obtained by using this adaptor in conjunction with the timed sequence extension adaptor, see next page.

OPERATION

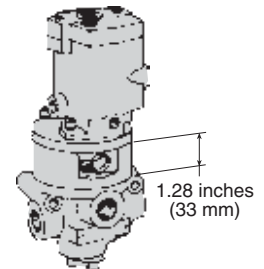
Timed In Adaptor: Solenoid energized; after preset delay valve is actuated. Solenoid de-energized; valve immediately deactivated.

Timed Out Adaptor: Solenoid energized; valve immediately actuated. Solenoid de-energized; after preset delay valve is deactivated.

3-Way 2-Position Valves, Spring Return											
Port Size	Body Size	Valve Model Number*				C _v				Weight lb (kg)	
		Normally Closed		Normally Open		NC		NO			
		Timed In	Timed Out	Timed In	Timed Out	1-2	2-3	1-2	2-3		
1/4	1/2	3/8	2773B2004**	2773B2005**	2774B2004**	2774B2005**	2.5	3.1	2.3	2.7	3.5 (1.6)
3/8	1/2	3/8	2773B3004**	2773B3005**	2774B3004**	2774B3005**	3.6	5.3	2.8	3.2	3.5 (1.6)
1/2	1/2	3/8	2773B4014**	2773B4015**	2774B4014**	2774B4015**	3.3	5.3	2.8	3.2	3.5 (1.6)
1/2	1	3/4	2773B4004**	2773B4005**	2774B4004**	2774B4005**	6.3	9.2	6.3	8.0	4.3 (2.0)
3/4	1	3/4	2773B5004**	2773B5005**	2774B5004**	2774B5005**	7.7	11	6.9	7.4	4.3 (2.0)
1	1	3/4	2773B6014**	2773B6015**	2774B6014**	2774B6015**	8	12	6.8	7.5	4.3 (2.0)
1	1 1/2	1 1/4	2773B6004**	2773B6005**	2774B6004**	2774B6005**	23	34	17	24	9.0 (4.1)
1 1/4	1 1/2	1 1/4	2773B7004**	2773B7005**	2774B7004**	2774B7005**	30	32	19	24	9.0 (4.1)
1 1/2	1 1/2	1 1/4	2773B8014**	2773B8015**	2774B8014**	2774B8015**	30	31	19	23	9.0 (4.1)

Timed In		Timed In	
Normally Closed		Normally Open	
Timed Out		Timed Out	

Detailed dimensions, see corresponding valves models pages.



* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2771B2004W.

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2771B2004W. For other voltages, consult ROSS.

Options: Indicator Light Kit, Manual Override Kits; refer to page B2.23. Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.
Mounting Type: Inline.
Solenoid Pilot: Rated for continuous duty.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.
Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: When external supply is used, pressure must be equal to or greater than inlet pressure.
Manual Override: Flush; rubber, non-locking.
Time Delay Interval: 2/2 Valves: Up to 30 seconds.
 3/2 Valves: Up to 3 seconds.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



Solenoid Pilot Controlled Valves

With Timed Sequence & Timed Sequence Extension Adaptors

27 Series

Timed Sequence & Timed Sequence Extension Adaptors: Used in conjunction can increase the time delay interval up to 60 seconds. It also helps to obtain “snap” action of the valve. By keeping pilot air off the main valve piston until the pressure has built high enough to ensure prompt valve response, the timed sequence extension adaptor prevents the piston from creeping.



B

B2

3-Way 2-Position Valves, Spring Return

Port Size			Valve Model Number*				C _v				Weight lb (kg)
			Normally Closed		Normally Open		NC		NO		
			Timed In	Timed Out	Timed In	Timed Out	1-2	2-3	1-2	2-3	
1/4	1/2	3/8	2773B2006**	2773B2007**	2774B2006**	2774B2007**	2.5	3.1	2.3	2.7	3.5 (1.6)
3/8	1/2	3/8	2773B3006**	2773B3007**	2774B3006**	2774B3007**	3.6	5.3	2.8	3.2	3.5 (1.6)
1/2	1/2	3/8	2773B4016**	2773B4017**	2774B4016**	2774B4017**	3.3	5.3	2.8	3.2	3.5 (1.6)
1/2	1	3/4	2773B4006**	2773B4007**	2774B4006**	2774B4007**	6.3	9.2	6.3	8.0	4.3 (2.0)
3/4	1	3/4	2773B5006**	2773B5007**	2774B5006**	2774B5007**	7.7	11	6.9	7.4	4.3 (2.0)
1	1	3/4	2773B6016**	2773B6017**	2774B6016**	2774B6017**	8	12	6.8	7.5	4.3 (2.0)
1	1½	1¼	2773B6006**	2773B6007**	2774B6006**	2774B6007**	23	34	17	24	9.0 (4.1)
1¼	1½	1¼	2773B7006**	2773B7007**	2774B7006**	2774B7007**	30	32	19	24	9.0 (4.1)
1½	1½	1¼	2773B8016**	2773B8017**	2774B8016**	2774B8017**	30	31	19	23	9.0 (4.1)

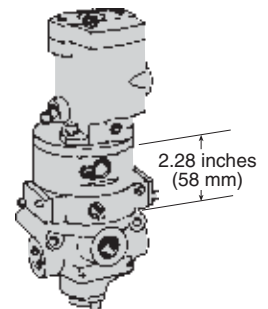
<p>Timed In Normally Closed</p>	<p>Timed In Normally Open</p>
<p>Timed Out</p>	<p>Timed Out</p>

4-Way 2-Position Valves, Spring Return

Port Size		Body Size	Valve Model Number*		C _v		Weight lb (kg)
			Timed In	Timed Out	1-2, 1-4	4-3, 2-3	
1/4	1/2	3/8	2776B2006**	2776B2007**	2.1	2.9	3.0 (1.4)
3/8	1/2	3/8	2776B3006**	2776B3007**	2.9	4.2	3.0 (1.4)
1/2	1/2	3/8	2776B4016**	2776B4017**	3.1	7.3	3.0 (1.4)
1/2	1	3/4	2776B4006**	2776B4007**	5.6	8.1	5.3 (2.4)
3/4	1	3/4	2776B5006**	2776B5007**	7.0	9.3	5.3 (2.4)
1	1	3/4	2776B6016**	2776B6017**	7.8	10	5.3 (2.4)
1	1½	1¼	2776B6006**	2776B6007**	19	26	11.3 (5.1)
1¼	1½	1¼	2776B7006**	2776B7007**	21	27	11.3 (5.1)
1½	1½	1¼	2776B8016**	2776B8017**	22	27	11.3 (5.1)

<p>Timed In</p>	<p>Timed Out</p>
------------------------	-------------------------

Detailed dimensions, see corresponding valves models pages.



* NPT port threads. For BSPP threads add a “D” prefix to the model number e.g., D2773B2006W.

** Insert voltage code: “W” = 24 volts DC; “Z” = 110-120 volts AC, 50/60 Hz; e.g., 2773B2006W. For other voltages, consult ROSS.

Options: Indicator Light Kit, Manual Override Kits; refer to page B2.23. Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.

Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: When external supply is used, pressure must be equal to or greater than inlet pressure.

Manual Override: Flush; rubber, non-locking.

Adjustable Time Delay: Up to 30 seconds.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



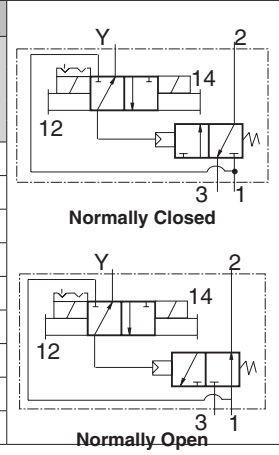
Online Version
Rev. 11/14/16

www.rosscontrols.com

B2.9

3-Way 2-Position Valves, Detented

Port Size			Body Size	Valve Model Number*		C _v				Average Response Constants#				Weight lb (kg)
1, 2	3	Normally Closed		Normally Open	NC		NO		M	F		NO		
					1-2	2-3	1-2	2-3		1-2	2-3	1-2	2-3	
1/4	1/2	3/8	2773B2003**	2774B2003**	2.5	3.1	2.3	2.7	30	0.90	0.80	0.99	0.88	3.5 (1.6)
3/8	1/2	3/8	2773B3003**	2774B3003**	3.6	5.3	2.8	3.2	30	0.70	0.50	0.90	0.77	3.5 (1.6)
1/2	1/2	3/8	2773B4013**	2774B4013**	3.3	5.3	2.8	3.2	30	0.75	0.50	0.90	0.76	3.5 (1.6)
1/2	1	3/4	2773B4003**	2774B4003**	6.3	9.2	6.3	8.0	32	0.43	0.17	0.46	0.60	4.3 (1.9)
3/4	1	3/4	2773B5003**	2774B5003**	7.7	11	6.9	7.4	32	0.36	0.26	0.45	0.60	4.3 (1.9)
1	1	3/4	2773B6013**	2774B6013**	8	12	6.8	7.5	32	0.34	0.25	0.40	0.59	4.3 (1.9)
1	1 1/2	1 1/4	2773B6003**	2774B6003**	23	34	17	24	52	0.17	0.14	0.20	0.17	8.0 (3.6)
1 1/4	1 1/2	1 1/4	2773B7003**	2774B7003**	30	32	19	24	52	0.15	0.15	0.19	0.17	8.0 (3.6)
1 1/2	1 1/2	1 1/4	2773B8013**	2774B8013**	30	31	19	23	52	0.15	0.15	0.19	0.16	8.0 (3.6)



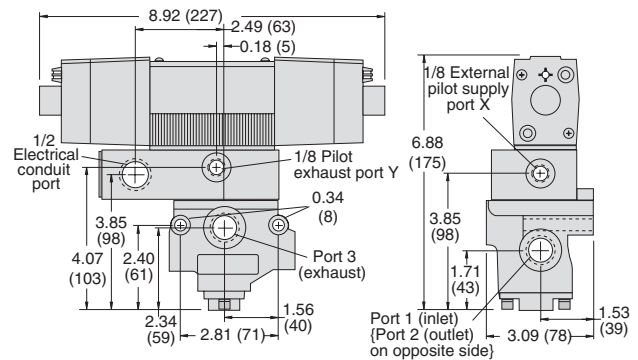
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2773B2003W.

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2773B2003W. For other voltages, consult ROSS.

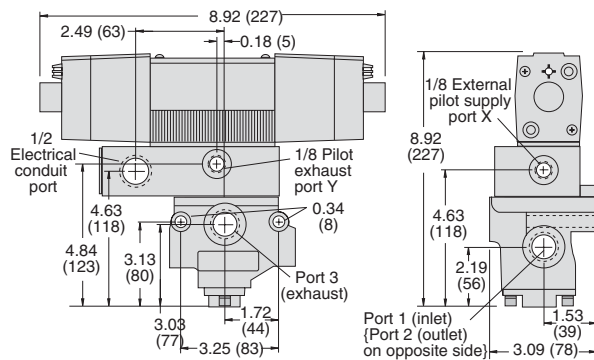
Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

Valve Dimensions – inches (mm)

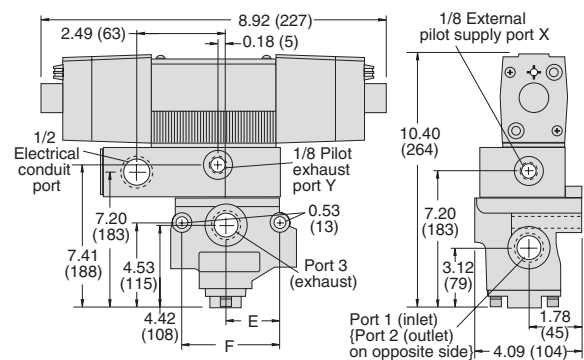
Body Size 3/8



Body Size 3/4



Body Size 1 1/4



Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.
Mounting Type: Inline.
Solenoid Pilot: Rated for continuous duty.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption (each solenoid): 190 VA inrush, 40 VA holding on 50 or 60 Hz; 20 watts on DC.
Indicator Lights: In each solenoid housing.
Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).
Pilot Pressure: If external supply is used, pressure must be equal to or greater than inlet pressure.
Manual Override: Flush; metal, non-locking.

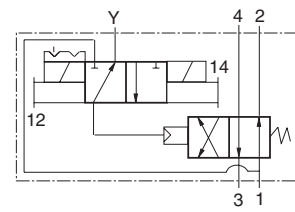
Safety Integrity Level (SIL) – Certified by TÜV Rheinland in accordance to IEC 61508 and IEC 61511 safety integrity level 2 (SIL 2) and EN ISO 13849-1, PL c or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



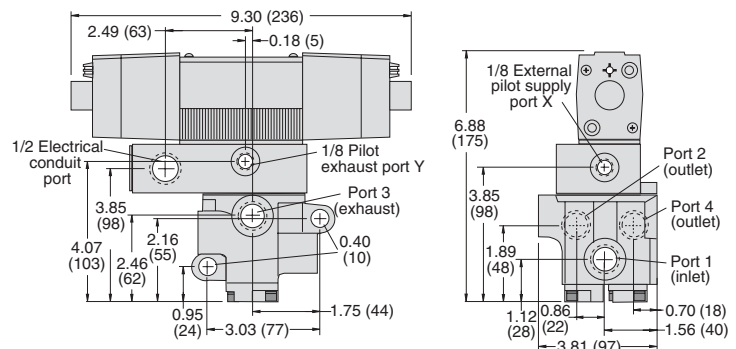
4-Way 2-Position Valves, Detented										
Port Size		Body Size	Valve Model Number*	C _v		Average Response Constants#				Weight lb (kg)
				1-2, 1-4	4-3, 2-3	M	F			
1, 2, 4	3					1-2, 1-4	4-3, 2-3			
1/4	1/2	3/8	2776B2003**	2.1	2.9	30	0.92	0.92		4.0 (1.8)
3/8	1/2	3/8	2776B3003**	2.9	4.2	30	0.90	0.90		4.0 (1.8)
1/2	1/2	3/8	2776B4013**	3.1	4.3	30	0.89	0.73		4.0 (1.8)
1/2	1	3/4	2776B4003**	5.6	8.1	46	0.50	0.66		6.3 (2.8)
3/4	1	3/4	2776B5003**	7.0	9.3	46	0.36	0.55		6.3 (2.8)
1	1	3/4	2776B6013**	7.8	10	46	0.35	0.50		6.3 (2.8)
1	1½	1¼	2776B6003**	19	26	99	0.17	0.22		12.3 (5.5)
1¼	1½	1¼	2776B7003**	21	27	99	0.16	0.18		12.3 (5.5)
1½	1½	1¼	2776B8013**	22	27	99	0.15	0.15		12.3 (5.5)



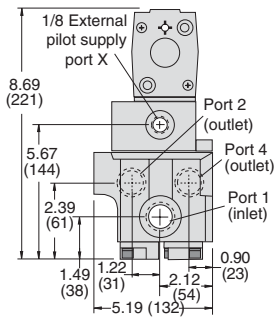
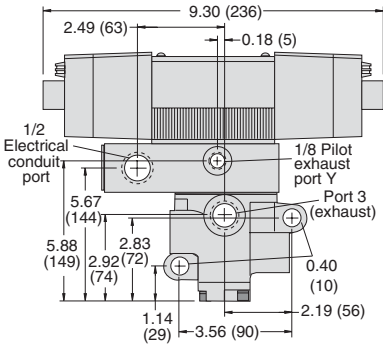
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2776B2003W.
 ** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2776B2003W. For other voltages, consult ROSS.
 # Valve Response Time – Response Time (msec) = M + (F • V). This is the average 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 Dimensions – inches (mm)

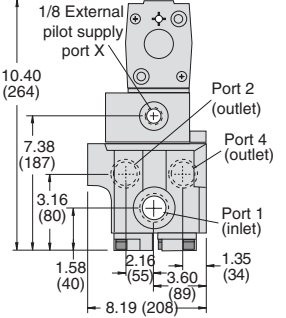
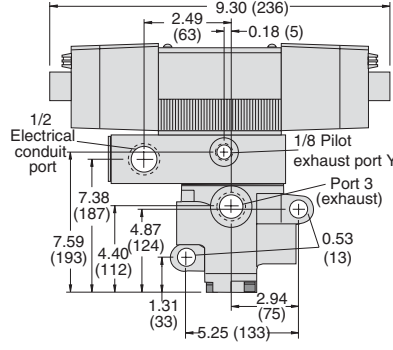
Body Size 3/8



Body Size 3/4



Body Size 1¼



Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.
Mounting Type: Inline.
Solenoid Pilot: Rated for continuous duty.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption (each solenoid): 190 VA inrush, 40 VA holding on 50 or 60 Hz; 20 watts on DC.
Indicator Lights: In each solenoid housing.
Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).
Pilot Pressure: If external supply is used, pressure must be equal to or greater than inlet pressure.
Manual Override: Flush; metal, non-locking.

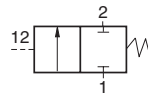
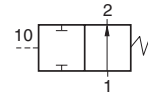
Safety Integrity Level (SIL) – Certified by TÜV Rheinland in accordance to IEC 61508 and IEC 61511 safety integrity level 2 (SIL 2) and EN ISO 13849-1, PL c or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



2-Way 2-Position Valves, Spring Return

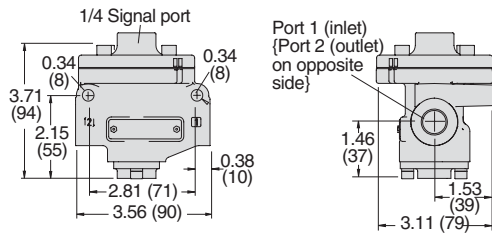
Port Size	Body Size	Valve Model Number*		C _v		Average Response Constants#			Weight lb (kg)	 Normally Closed
		Normally Closed	Normally Open	NC	NO	M	F			
							NC	NO		
1/4	3/8	2751A2001	2752A2001	2.3	2.3	10	0.91	0.91	1.3 (0.6)	 Normally Open
3/8	3/8	2751A3001	2752A3001	3.8	3.3	10	0.70	0.76	1.3 (0.6)	
1/2	3/8	2751A4011	2752A4011	4.0	3.5	10	0.64	0.72	1.3 (0.6)	
1/2	3/4	2751A4001	2752A4001	7.7	6.5	14	0.37	0.43	2.0 (0.9)	
3/4	3/4	2751A5001	2752A5001	9.0	7.3	14	0.34	0.39	2.0 (0.9)	
1	3/4	2751A6011	2752A6011	9.0	7.9	14	0.34	0.37	2.0 (0.9)	
1	1 1/4	2751A6001	2752A6001	24	21	26	0.17	0.17	8.0 (3.6)	
1 1/4	1 1/4	2751A7001	2752A7001	29	20	26	0.15	0.19	8.0 (3.6)	
1 1/2	1 1/4	2751A8011	2752A8011	29	21	26	0.15	0.18	8.0 (3.6)	
1 1/2	2	2751A8001	2752A8001	49	49	41	0.09	0.09	14.3 (6.4)	
2	2	2751A9001	2752A9001	57	57	41	0.07	0.07	14.3 (6.4)	
2 1/2	2	2751A9011	2752A9011	64	72	41	0.07	0.06	14.3 (6.4)	

* NPT port threads. For BSP threads add a "D" prefix to the model number e.g., D2751A2001.

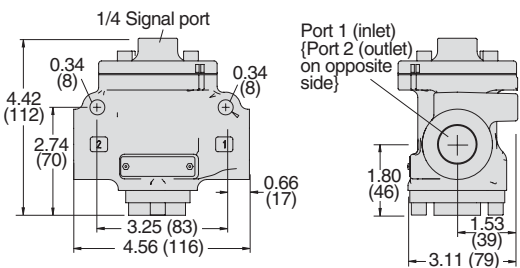
Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

Valve Dimensions – inches (mm)

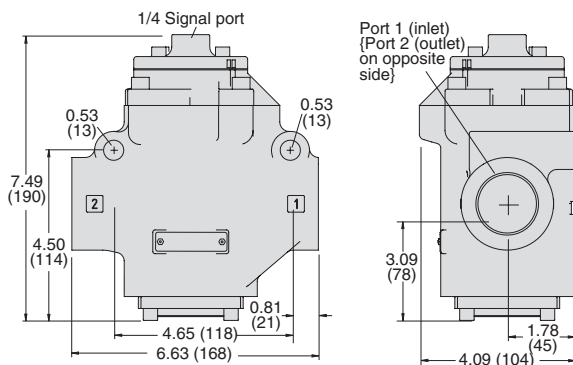
Body Size 3/8



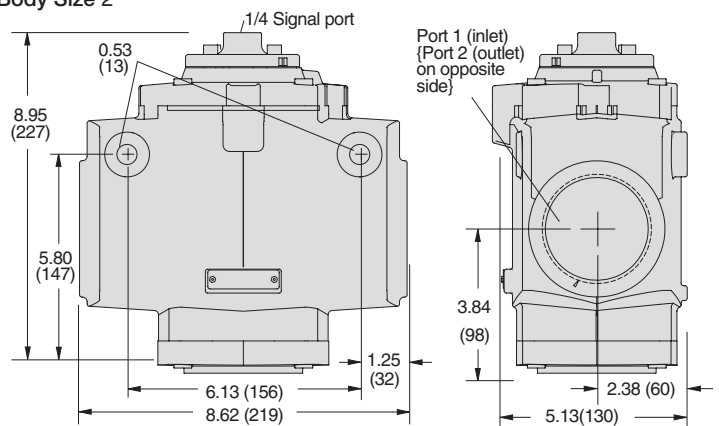
Body Size 3/4



Body Size 1 1/4



Body Size 2



Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

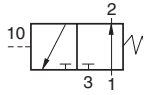
Inlet Pressure: Port Size 1/4 to 1 1/2: 15 to 150 psig (1 to 10 bar).

Port Size 1 1/2 to 2 1/2: 30 to 150 psig (2 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

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

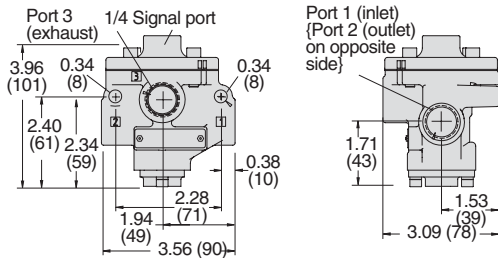
3-Way 2-Position Valves, Spring Return															
Port Size		Body Size	Valve Model Number*		C _v				Average Response Constants#				Weight lb (kg)		
					NC		NO		M	F		NO			
1, 2	3	Normally Closed	Normally Open	1-2	2-3	1-2	2-3	1-2		2-3	1-2		2-3		
1/4	1/2			3/8	2753A2001	2754A2001	2.5		3.1			2.3		2.7	10
3/8	1/2	3/8	2753A3001	2754A3001	3.6	5.3	2.8	3.2	10	0.70	0.50	0.90	0.77	1.3 (0.6)	
1/2	1/2	3/8	2753A4011	2754A4011	3.3	5.3	2.8	3.2	10	0.75	0.50	0.90	0.76	1.3 (0.6)	 Normally Open
1/2	1	3/4	2753A4001	2754A4001	6.3	9.2	6.3	8.0	12	0.43	0.17	0.46	0.60	2.0 (0.9)	
3/4	1	3/4	2753A5001	2754A5001	7.7	11	6.9	7.4	12	0.36	0.26	0.45	0.60	2.0 (0.9)	
1	1	3/4	2753A6011	2754A6011	8	12	6.8	7.5	12	0.34	0.25	0.40	0.59	2.0 (0.9)	
1	1 1/2	1 1/4	2753A6001	2754A6001	23	34	17	24	32	0.17	0.14	0.20	0.17	6.0 (2.7)	
1 1/4	1 1/2	1 1/4	2753A7001	2754A7001	30	32	19	24	32	0.15	0.15	0.19	0.17	6.0 (2.7)	
1 1/2	1 1/2	1 1/4	2753A8011	2754A8011	30	31	19	23	32	0.15	0.15	0.19	0.16	6.0 (2.7)	
1 1/2	2 1/2	2	2753A8001	2754A8001	68	70	57	59	76	0.05	0.04	0.07	0.04	15.3 (6.9)	
2	2 1/2	2	2753A9001	2754A9001	70	70	58	61	76	0.05	0.04	0.05	0.04	15.3 (6.9)	
2 1/2	2 1/2	2	2753A9011	2754A9011	70	71	54	55	76	0.05	0.04	0.05	0.04	15.3 (6.9)	

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2753A2001.

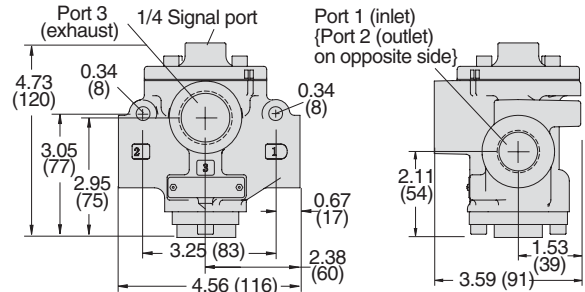
Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

Valve Dimensions – inches (mm)

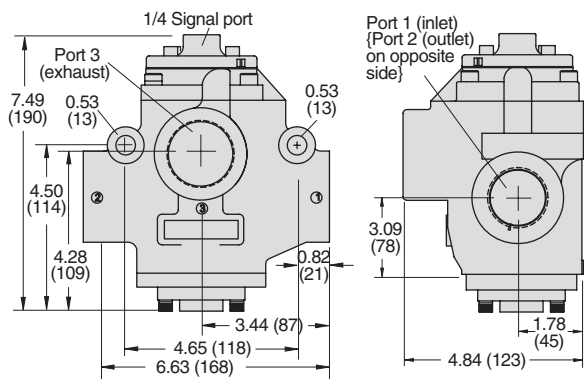
Body Size 3/8



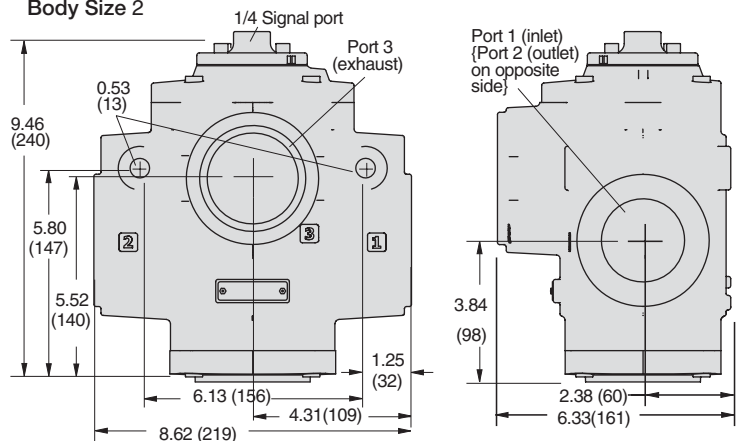
Body Size 3/4



Body Size 1 1/4



Body Size 2



Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: Port Size 1/4 to 1 1/2: 15 to 150 psig (1 to 10 bar).

Port Size 1 1/2 to 2 1/2: 30 to 150 psig (2 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

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

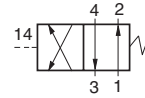


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4-Way 2-Position Valves, Spring Return

Port Size		Body Size	Valve Model Number*	C _v		Average Response Constants#			Weight lb (kg)
1, 2, 4	3			1-2, 1-4	4-3, 2-3	M	1-2, 1-4	4-3, 2-3	
1/4	1/2	3/8	2756A2001	2.1	2.9	10	0.92	0.92	1.8 (0.8)
3/8	1/2	3/8	2756A3001	2.9	4.2	10	0.90	0.90	1.8 (0.8)
1/2	1/2	3/8	2756A4011	3.1	4.3	10	0.89	0.73	1.8 (0.8)
1/2	1	3/4	2756A4001	5.6	8.1	26	0.50	0.66	4.3 (1.9)
3/4	1	3/4	2756A5001	7.0	9.3	26	0.36	0.55	4.3 (1.9)
1	1	3/4	2756A6011	7.8	10	26	0.35	0.50	4.3 (1.9)
1	1½	1¼	2756A6001	19	26	79	0.22	0.22	10.3 (4.6)
1¼	1½	1¼	2756A7001	21	27	79	0.18	0.18	10.3 (4.6)
1½	1½	1¼	2756A8011	22	27	79	0.15	0.15	10.3 (4.6)

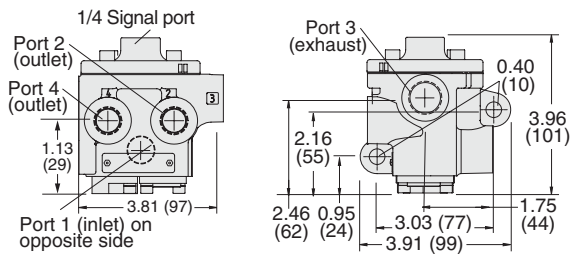


* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2756A2001.

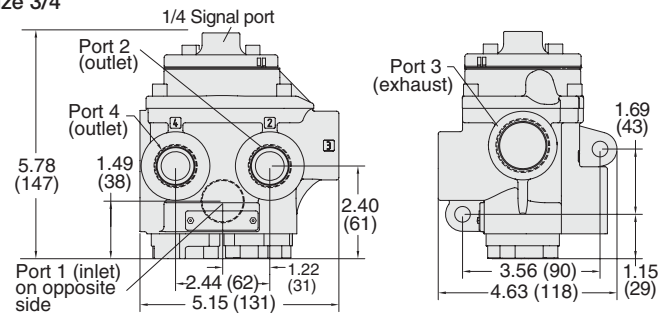
Valve Response Time – Response Time (msec) = M + (F • V). This is the average time required to fill a volume V (cubic inches) to 90% of supply pressure or to exhaust it to 10% of supply pressure. M and F values are shown above.

Valve Dimensions – inches (mm)

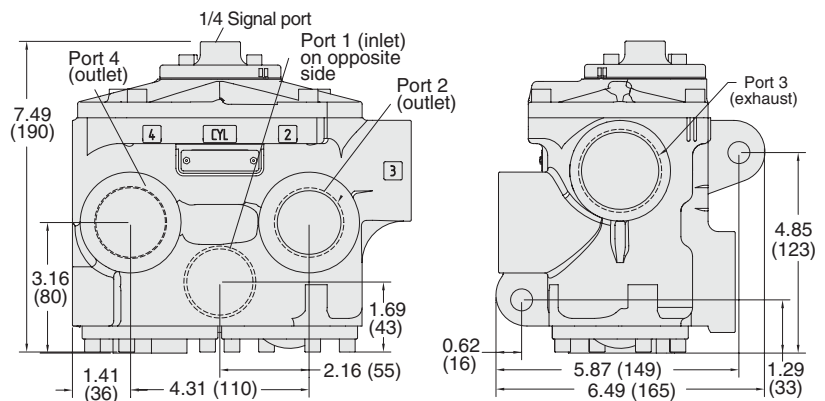
Body Size 3/8



Body Size 3/4



Body Size 1¼



Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: Port Size 1/4 to 1½: 15 to 150 psig (1 to 10 bar).
Port Size 1½ to 2½: 30 to 150 psig (2 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

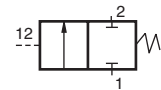
Safety Integrity Level (SIL) – Certified by TÜV Rheinland in accordance to IEC 61508 and IEC 61511 safety integrity level 2 (SIL 2) and EN ISO 13849-1, PL c or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

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

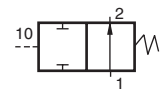
Pressure Booster Adaptor: Increases the actuating force on the valve piston. It should be used when the inlet pressure exceeds the available signal pressure, or when the signal pressure is less than 15 psig (1 bar). The valve's signal pressure is applied to a piston in the pressure booster adaptor that has a larger area than the piston in the valve. The force on the piston in the adaptor is thereby larger than that which could be produced by the piston in the valve. This larger force is applied to the valve's piston directly so that there is then sufficient force to shift the valve properly.

2-Way 2-Position Valves, Spring Return							
Port Size 1, 2	Body Size	Valve Model Number*		C _v		Dimension A inches (mm)	Weight lb (kg)
		Normally Closed	Normally Open	NC	NO		
1/4	3/8	2751A2007	2752A2007	2.3	2.3	0.75 (19)	2.3 (1.1)
3/8	3/8	2751A3007	2752A3007	3.8	3.3	0.75 (19)	2.3 (1.1)
1/2	3/8	2751A4017	2752A4017	4.0	3.5	0.75 (19)	2.3 (1.1)
1/2	3/4	2751A4007	2752A4007	7.7	6.5	0.75 (19)	3.0 (1.4)
3/4	3/4	2751A5007	2752A5007	9.0	7.3	0.75 (19)	3.0 (1.4)
1	3/4	2751A6017	2752A6017	9.0	7.9	0.75 (19)	3.0 (1.4)
1	1 1/4	2751A6007	2752A6007	24	21	1.25 (32)	9.0 (4.1)
1 1/4	1 1/4	2751A7007	2752A7007	29	20	1.25 (32)	9.0 (4.1)
1 1/2	1 1/4	2751A8017	2752A8017	29	21	1.25 (32)	9.0 (4.1)

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2751A2007.



Normally Closed



Normally Open



3-way PB Adaptor



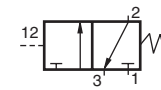
4-way PB Adaptor

B

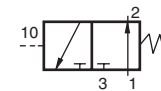
B2

3-Way 2-Position Valves, Spring Return										
Port Size 1, 2, 3		Body Size	Valve Model Number*		C _v				Dimension A inches (mm)	Weight lb (kg)
					Normally Closed		Normally Open			
1/4	1/2	3/8	2753A2007	2754A2007	2.5	3.1	2.3	2.7	0.75 (19)	2.3 (1.1)
3/8	1/2	3/8	2753A3007	2754A3007	3.6	5.3	28	3.2	0.75 (19)	2.3 (1.1)
1/2	1/2	3/8	2753A4017	2754A4017	3.3	5.3	28	3.2	0.75 (19)	2.3 (1.1)
1/2	1	3/4	2753A4007	2754A4007	6.3	9.2	6.3	8.0	0.75 (19)	3.0 (1.4)
3/4	1	3/4	2753A5007	2754A5007	7.7	11	6.9	7.4	0.75 (19)	3.0 (1.4)
1	1	3/4	2753A6017	2754A6017	8	12	6.8	7.5	0.75 (19)	3.0 (1.4)
1	1 1/2	1 1/4	2753A6007	2754A6007	23	34	17	24	1.25 (32)	9.0 (4.1)
1 1/4	1 1/2	1 1/4	2753A7007	2754A7007	30	32	19	24	1.25 (32)	9.0 (4.1)
1 1/2	1 1/2	1 1/4	2753A8017	2754A8017	30	31	19	23	1.25 (32)	9.0 (4.1)

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2753A2007.



Normally Closed



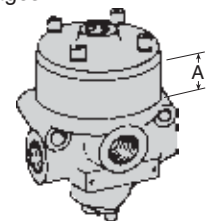
Normally Open

4-Way 2-Position Valves, Spring Return							
Port Size 1, 2, 4, 3		Body Size	Valve Model Number*	C _v		Dimension A inches (mm)	Weight lb (kg)
				1-2, 1-4	4-3, 2-3		
1/4	1/2	3/8	2756A2007	2.1	2.9	0.75 (19)	2.8 (1.3)
3/8	1/2	3/8	2756A3007	2.9	4.2	0.75 (19)	2.8 (1.3)
1/2	1/2	3/8	2756A4017	3.1	4.3	0.75 (19)	2.8 (1.3)
1/2	1	3/4	2756A4007	5.6	8.1	0.75 (19)	5.3 (2.4)
3/4	1	3/4	2756A5007	7.0	9.3	0.75 (19)	5.3 (2.4)
1	1	3/4	2756A6017	7.8	10	0.75 (19)	5.3 (2.4)
1	1 1/2	1 1/4	2756A6007	19	26	1.25 (32)	11.3 (5.2)
1 1/4	1 1/2	1 1/4	2756A7007	21	27	1.25 (32)	11.3 (5.2)
1 1/2	1 1/2	1 1/4	2756A8017	22	27	1.25 (32)	11.3 (5.2)

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2756A2007.



Detailed dimensions, see corresponding valves models pages.



Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



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B2.15

Pressure Controlled Valves

With Air Index Adaptor

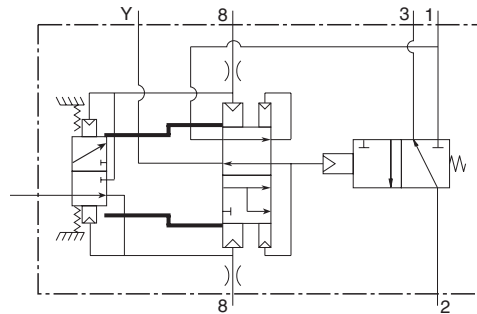
27 Series

Air Index Adaptor: Allows a valve with a single signal source to function as an impulse controlled, mechanically detented valve.
A momentary pressure signal shifts and holds the valve. A second momentary pressure signal from the same source returns the valve to its original position.



3-Way 2-Position Valves, Spring Return

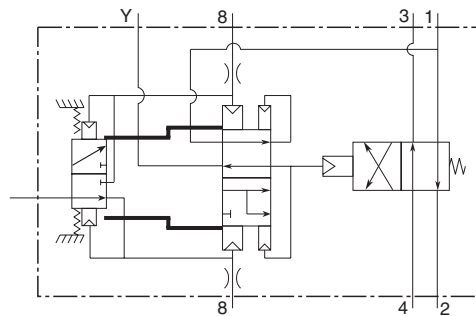
Port Size		Body Size	Valve Model Number*	C _v		Weight lb (kg)
1, 2	3			1-2	2-3	
1/4	1/2	3/8	2783A2001	2.5	3.1	2.3 (1.1)
3/8	1/2	3/8	2783A3001	3.6	5.3	2.3 (1.1)
1/2	1/2	3/8	2783A4011	3.3	5.3	2.3 (1.1)
1/2	1	3/4	2783A4001	6.3	9.2	3.0 (1.4)
3/4	1	3/4	2783A5001	7.7	11	3.0 (1.4)
1	1	3/4	2783A6011	8	12	3.0 (1.4)
1	1½	1¼	2783A6001	23	34	9.0 (4.1)
1¼	1½	1¼	2783A7001	30	32	9.0 (4.1)
1½	1½	1¼	2783A8011	30	31	9.0 (4.1)



* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2783A2001.

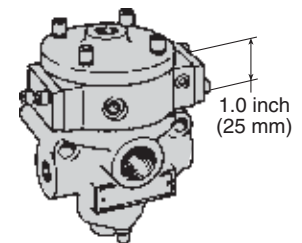
4-Way 2-Position Valves, Spring Return

Port Size		Body Size	Valve Model Number*	C _v		Weight lb (kg)
1, 2, 4	3			1-2, 1-4	4-3, 2-3	
1/4	1/2	3/8	2786A2001	2.1	2.9	2.8 (1.3)
3/8	1/2	3/8	2786A3001	2.9	4.2	2.8 (1.3)
1/2	1/2	3/8	2786A4011	3.1	4.3	2.8 (1.3)
1/2	1	3/4	2786A4001	5.6	8.1	5.3 (2.4)
3/4	1	3/4	2786A5001	7.0	9.3	5.3 (2.4)
1	1	3/4	2786A6011	7.8	10	5.3 (2.4)
1	1½	1¼	2786A6001	19	26	11.3 (5.2)
1¼	1½	1¼	2786A7001	21	27	11.3 (5.2)
1½	1½	1¼	2786A8011	22	27	11.3 (5.2)



* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2783A2001.

Detailed dimensions, see corresponding valves models pages.



Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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

Pressure Controlled Valves

With Timed Sequence Adaptors

27 Series

Timed Sequence Adaptor: Allows the actuation and/or de-actuation of a valve to be delayed up to 30 seconds for 2/2 valves, and up to 3 seconds for 3/2 and 4/2 valves. The time delay function is controlled by a continuously adjustable tapered needle.



Timed-Out Adaptor



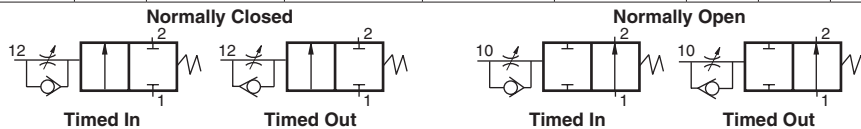
Dual Timed Adaptor

B

B2

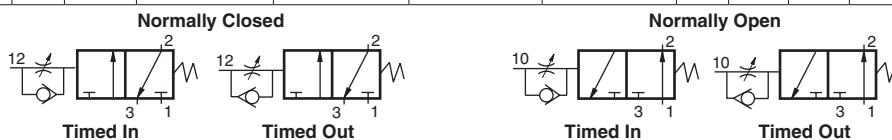
2-Way 2-Position Valves, Spring Return

Port Size	Body Size	Valve Model Number*				C _v		Weight lb (kg)
		Normally Closed		Normally Open		NC	NO	
		Timed In	Timed Out	Timed In	Timed Out			
1/4	3/8	2751A2002	2751A2003	2752A2002	2752A2003	2.3	2.3	2.3 (1.1)
3/8	3/8	2751A3002	2751A3003	2752A3002	2752A3003	3.8	3.3	2.3 (1.1)
1/2	3/8	2751A4012	2751A4013	2752A4012	2752A4013	4.0	3.5	2.3 (1.1)
1/2	3/4	2751A4002	2751A4003	2752A4002	2752A4003	7.7	6.5	3.0 (1.4)
3/4	3/4	2751A5002	2751A5003	2752A5002	2752A5003	9.0	7.3	3.0 (1.4)
1	3/4	2751A6012	2751A6013	2752A6012	2752A6013	9.0	7.9	3.0 (1.4)
1	1 1/4	2751A6002	2751A6003	2752A6002	2752A6003	24	21	9.0 (4.1)
1 1/4	1 1/4	2751A7002	2751A7003	2752A7002	2752A7003	29	20	9.0 (4.1)
1 1/2	1 1/4	2751A8012	2751A8013	2752A8012	2752A8013	29	21	9.0 (4.1)

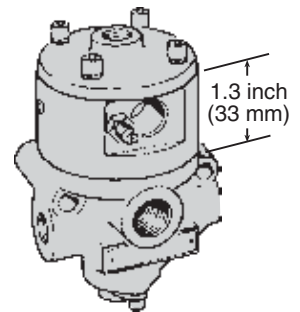


3-Way 2-Position Valves, Spring Return

Port Size		Body Size	Valve Model Number*				C _v				Weight lb (kg)
			Normally Closed		Normally Open		NC		NO		
			Timed In	Timed Out	Timed In	Timed Out	1-2	2-3	1-2	2-3	
1/4	1/2	3/8	2753A2002	2753A2003	2754A2002	2754A2003	2.5	3.1	2.3	2.7	2.3 (1.1)
3/8	1/2	3/8	2753A3002	2753A3003	2754A3002	2754A3003	3.6	5.3	28	3.2	2.3 (1.1)
1/2	1/2	3/8	2753A4012	2753A4013	2754A4012	2754A4013	3.3	5.3	28	3.2	2.3 (1.1)
1/2	1	3/4	2753A4002	2753A4003	2754A4002	2754A4003	6.3	9.2	6.3	8.0	3.0 (1.4)
3/4	1	3/4	2753A5002	2753A5003	2754A5002	2754A5003	7.7	11	6.9	7.4	3.0 (1.4)
1	1	3/4	2753A6012	2753A6013	2754A6012	2754A6013	8	12	6.8	7.5	3.0 (1.4)
1	1 1/2	1 1/4	2753A6002	2753A6003	2754A6002	2754A6003	23	34	17	24	9.0 (4.1)
1 1/4	1 1/2	1 1/4	2753A7002	2753A7003	2754A7002	2754A7003	30	32	19	24	9.0 (4.1)
1 1/2	1 1/2	1 1/4	2753A8012	2753A8013	2754A8012	2754A8013	30	31	19	23	9.0 (4.1)



Detailed dimensions, see corresponding valves models pages.



* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2751A2002.

OPERATION : **Timed In Adaptor:** Air signal applied; after preset time delay valve is actuated. Air signal removed; valve immediately deactivated.
Timed Out Adaptor: Air signal applied; valve immediately actuated. Air signal removed; after preset delay valve is deactivated.

Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

Adjustable Time Delay: Up to 30 seconds.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥1.

Valve models with EN connector available, consult ROSS.

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



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B2.17

Pressure Controlled Valves

With Timed Sequence & Timed Sequence Extension Adaptors

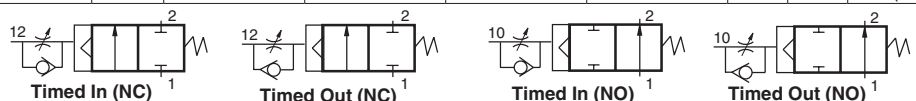
27 Series

B

B2

2-Way 2-Position Valves, Spring Return

Port Size	Body Size	Valve Model Number*				C _v		Weight lb (kg)
		Normally Closed		Normally Open		NC	NO	
		Timed In	Timed Out	Timed In	Timed Out			
1, 2								
1/4	3/8	2781A2002	2781A2003	2782A2002	2782A2003	2.3	2.3	2.3 (1.1)
3/8	3/8	2781A3002	2781A3003	2782A3002	2782A3003	3.8	3.3	2.3 (1.1)
1/2	3/8	2781A4012	2781A4013	2782A4012	2782A4013	4.0	3.5	2.3 (1.1)
1/2	3/4	2781A4002	2781A4003	2782A4002	2782A4003	7.7	6.5	3.0 (1.4)
3/4	3/4	2781A5002	2781A5003	2782A5002	2782A5003	9.0	7.3	3.0 (1.4)
1	3/4	2781A6012	2781A6013	2782A6012	2782A6013	9.0	7.9	3.0 (1.4)
1	1 1/4	2781A6002	2781A6003	2782A6002	2782A6003	24	21	9.0 (4.1)
1 1/4	1 1/4	2781A7002	2781A7003	2782A7002	2782A7003	29	20	9.0 (4.1)
1 1/2	1 1/4	2781A8012	2781A8013	2782A8012	2782A8013	29	21	9.0 (4.1)



Timed-Out Adaptor

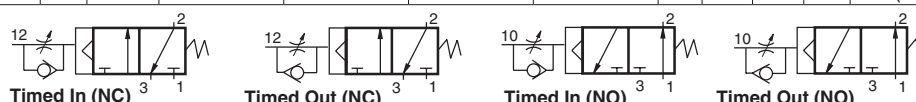


Timed Sequence Adaptor: Allows the actuation and/or de-actuation of a valve to be delayed up to 30 seconds for 2/2 valves, and up to 3 seconds for 3/2 and 4/2 valves. The time delay function is controlled by a continuously adjustable tapered needle. Longer time delays can be obtained by using this adaptor in conjunction with the timed sequence extension adaptor.

Timed Sequence Extension Adaptor: Used in conjunction with the timed sequence adaptor to extend the delay interval up to 60 seconds. It also helps to obtain "snap" action of the valve by keeping pilot or signal air off the main valve piston until the pressure has built high enough to cause prompt valve response. Air line lubrication is required with this adaptor.

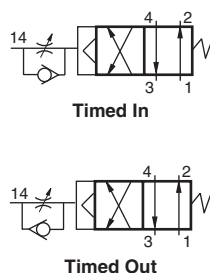
3-Way 2-Position Valves, Spring Return

Port Size	Body Size	Valve Model Number*				C _v				Weight lb (kg)	
		Normally Closed		Normally Open		NC		NO			
		Timed In	Timed Out	Timed In	Timed Out	1-2	2-3	1-2	2-3		
1, 2, 3											
1/4	1/2	3/8	2783A2002	2783A2003	2784A2002	2784A2003	2.5	3.1	2.3	2.7	2.3 (1.1)
3/8	1/2	3/8	2783A3002	2783A3003	2784A3002	2784A3003	3.6	5.3	28	3.2	2.3 (1.1)
1/2	1/2	3/8	2783A4012	2783A4013	2784A4012	2784A4013	3.3	5.3	28	3.2	2.3 (1.1)
1/2	1	3/4	2783A4002	2783A4003	2784A4002	2784A4003	6.3	9.2	6.3	8.0	3.0 (1.4)
3/4	1	3/4	2783A5002	2783A5003	2784A5002	2784A5003	7.7	11	6.9	7.4	3.0 (1.4)
1	1	3/4	2783A6012	2783A6013	2784A6012	2784A6013	8	12	6.8	7.5	3.0 (1.4)
1	1 1/2	1 1/4	2783A6002	2783A6003	2784A6002	2784A6003	23	34	17	24	9.0 (4.1)
1 1/4	1 1/2	1 1/4	2783A7002	2783A7003	2784A7002	2784A7003	30	32	19	24	9.0 (4.1)
1 1/2	1 1/2	1 1/4	2783A8012	2783A8013	2784A8012	2784A8013	30	31	19	23	9.0 (4.1)

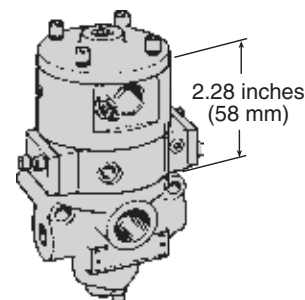


4-Way 2-Position Valves, Spring Return

Port Size	Body Size	Valve Model Number*		C _v		Weight lb (kg)	
		Timed In	Timed Out	1-2, 1-4	4-3, 2-3		
1, 2, 4, 3							
1/4	1/2	3/8	2786A2002	2786A2003	2.1	2.9	2.8 (1.3)
3/8	1/2	3/8	2786A3002	2786A3003	2.9	4.2	2.8 (1.3)
1/2	1/2	3/8	2786A4012	2786A4013	3.1	4.3	2.8 (1.3)
1/2	1	3/4	2786A4002	2786A4003	5.6	8.1	5.3 (2.4)
3/4	1	3/4	2786A5002	2786A5003	7.0	9.3	5.3 (2.4)
1	1	3/4	2786A6012	2786A6013	7.8	10	5.3 (2.4)
1	1 1/2	1 1/4	2786A6002	2786A6003	19	26	11.3 (5.2)
1 1/4	1 1/2	1 1/4	2786A7002	2786A7003	21	27	11.3 (5.2)
1 1/2	1 1/2	1 1/4	2786A8012	2786A8013	22	27	11.3 (5.2)



Detailed dimensions, see corresponding valves models pages.



* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2781B2002.

Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.
Mounting Type: Inline.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 15 to 150 psig (1 to 10 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.

Adjustable Time Delay: Up to 60 seconds.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



Pressure Controlled Valves

With Timed In/Out Sequence Adaptor

27 Series

Timed Sequence Adaptor: Allows the actuation and/or de-actuation of a valve to be delayed up to 30 seconds for 2/2 valves, and up to 3 seconds for 3/2 and 4/2 valves. The time delay function is controlled by a continuously adjustable tapered needle.



2-Way 2-Position Valves, Spring Return

Port Size	Body Size	Valve Model Number*		C _v		Weight lb (kg)
		Normally Closed	Normally Open	NC	NO	
1/4	3/8	2751B2008	2752B2008	2.3	2.3	2.3 (1.1)
3/8	3/8	2751B3008	2752B3008	3.8	3.3	2.3 (1.1)
1/2	3/8	2751B4018	2752B4018	4.0	3.5	2.3 (1.1)
1/2	3/4	2751B4008	2752B4008	7.7	6.5	3.0 (1.4)
3/4	3/4	2751B5008	2752B5008	9.0	7.3	3.0 (1.4)
1	3/4	2751B6018	2752B6018	9.0	7.9	3.0 (1.4)
1	1 1/4	2751B6008	2752B6008	24	21	9.0 (4.1)
1 1/4	1 1/4	2751B7008	2752B7008	29	20	9.0 (4.1)
1 1/2	1 1/4	2751B8018	2752B8018	29	21	9.0 (4.1)

NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2751B2008.



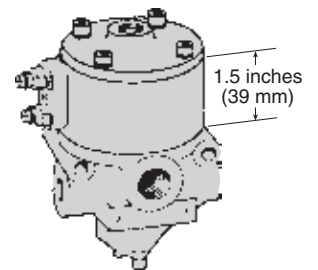
3-Way 2-Position Valves, Spring Return

Port Size		Body Size	Valve Model Number*		C _v				Weight lb (kg)
					NC		NO		
1, 2	3		Normally Closed	Normally Open	1-2	2-3	1-2	2-3	
1/4	1/2	3/8	2753B2008	2754B2008	2.5	3.1	2.3	2.7	2.3 (1.1)
3/8	1/2	3/8	2753B3008	2754B3008	3.6	5.3	28	3.2	2.3 (1.1)
1/2	1/2	3/8	2753B4018	2754B4018	3.3	5.3	28	3.2	2.3 (1.1)
1/2	1	3/4	2753B4008	2754B4008	6.3	9.2	6.3	8.0	3.0 (1.4)
3/4	1	3/4	2753B5008	2754B5008	7.7	11	6.9	7.4	3.0 (1.4)
1	1	3/4	2753B6018	2754A6018	8	12	6.8	7.5	3.0 (1.4)
1	1 1/2	1 1/4	2753B6008	2754B6008	23	34	17	24	9.0 (4.1)
1 1/4	1 1/2	1 1/4	2753B7008	2754B7008	30	32	19	24	9.0 (4.1)
1 1/2	1 1/2	1 1/4	2753B8018	2754B8018	30	31	19	23	9.0 (4.1)

NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2753B2008



Detailed dimensions, see corresponding valves models pages.



OPERATION :

Timed In Adaptor: Air signal applied; after preset time delay valve is actuated. Air signal removed; valve immediately deactivated.

Timed Out Adaptor: Air signal applied; valve immediately actuated. Air signal removed; after preset delay valve is deactivated.

Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

Adjustable Time Delay: Up to 30 seconds.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



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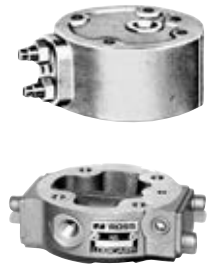
B2.19

Pressure Controlled Valves

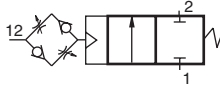
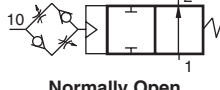
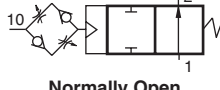
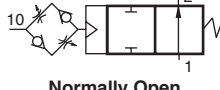
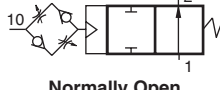
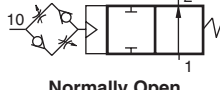
With Timed-In/Out Sequence & Timed Sequence Extension Adaptors

27 Series

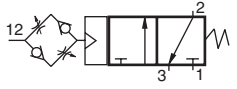
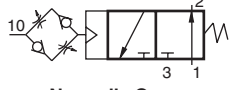
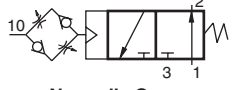
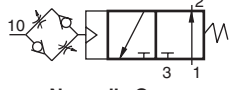
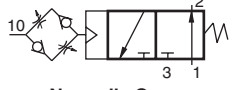
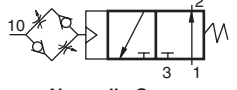
Timed-In/Out Sequence & Timed Sequence Extension Adaptors: Used in conjunction can increase the time delay interval up to 60 seconds. It also helps to obtain “snap” action of the valve. By keeping pilot air off the main valve piston until the pressure has built high enough to ensure prompt valve response, the timed sequence extension adaptor prevents the piston from creeping.



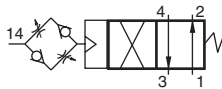
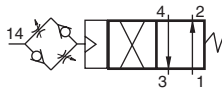
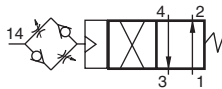
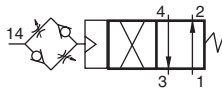
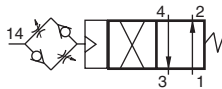
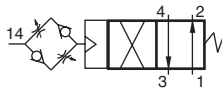
2-Way 2-Position Valves, Spring Return

Port Size 1, 2	Body Size	Valve Model Number*		C _v		Weight lb (kg)	 Normally Closed
		Normally Closed	Normally Open	NC	NO		
1/4	3/8	2781B2005	2782B2005	2.3	2.3	2.3 (1.1)	 Normally Open
3/8	3/8	2781B3005	2782B3005	3.8	3.3	2.3 (1.1)	
1/2	3/8	2781B4015	2782B4015	4.0	3.5	2.3 (1.1)	 Normally Open
1/2	3/4	2781B4005	2782B4005	7.7	6.5	3.0 (1.4)	
3/4	3/4	2781B5005	2782B5005	9.0	7.3	3.0 (1.4)	 Normally Open
1	3/4	2781B6015	2782B6015	9.0	7.9	3.0 (1.4)	
1	1 1/4	2781B6005	2782B6005	24	21	9.0 (4.1)	 Normally Open
1 1/4	1 1/4	2781B7005	2782B7005	29	20	9.0 (4.1)	
1 1/2	1 1/4	2781B8015	2782B8015	29	21	9.0 (4.1)	 Normally Open

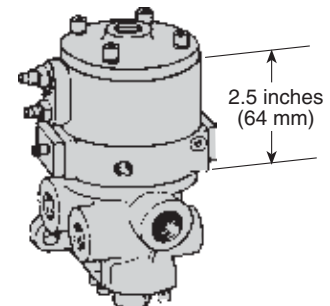
3-Way 2-Position Valves, Spring Return

Port Size 1, 2, 3		Body Size	Valve Model Number*		C _v				Weight lb (kg)	 Normally Closed
					Normally Closed		Normally Open			
1/4	1/2	3/8	2783B2005	2784B2005	2.5	3.1	2.3	2.7	2.3 (1.1)	 Normally Open
3/8	1/2	3/8	2783B3005	2784B3005	3.6	5.3	28	3.2	2.3 (1.1)	
1/2	1/2	3/8	2783B4015	2784B4015	3.3	5.3	28	3.2	2.3 (1.1)	 Normally Open
1/2	1	3/4	2783B4005	2784B4005	6.3	9.2	6.3	8.0	3.0 (1.4)	
3/4	1	3/4	2783B5005	2784B5005	7.7	11	6.9	7.4	3.0 (1.4)	 Normally Open
1	1	3/4	2783B6015	2784B6015	8	12	6.8	7.5	3.0 (1.4)	
1	1 1/2	1 1/4	2783B6005	2784B6005	23	34	17	24	9.0 (4.1)	 Normally Open
1 1/4	1 1/2	1 1/4	2783B7005	2784B7005	30	32	19	24	9.0 (4.1)	
1 1/2	1 1/2	1 1/4	2783B8015	2784B8015	30	31	19	23	9.0 (4.1)	 Normally Open

4-Way 2-Position Valves, Spring Return

Port Size 1, 2, 4, 3		Body Size	Valve Model Number*	C _v		Weight lb (kg)	
				1-2, 1-4	4-3, 2-3		
1/4	1/2	3/8	2786B2005	2.1	2.9	2.8 (1.3)	
3/8	1/2	3/8	2786B3005	2.9	4.2	2.8 (1.3)	
1/2	1/2	3/8	2786B4015	3.1	4.3	2.8 (1.3)	
1/2	1	3/4	2786B4005	5.6	8.1	5.3 (2.4)	
3/4	1	3/4	2786B5005	7.0	9.3	5.3 (2.4)	
1	1	3/4	2786B6015	7.8	10	5.3 (2.4)	
1	1 1/2	1 1/4	2786B6005	19	26	11.3 (5.2)	
1 1/4	1 1/2	1 1/4	2786B7005	21	27	11.3 (5.2)	
1 1/2	1 1/2	1 1/4	2786B8015	22	27	11.3 (5.2)	

Detailed dimensions, see corresponding valves models pages.



* NPT port threads. For BSP threads add a “D” prefix to the model number e.g., D2781B2005.

Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

Adjustable Time Delay: Up to 60 seconds.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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

Pressure Controlled Valves

With Inlet Port Controlled Timed-In Sequence Adaptor

27 Series

Inlet Port Controlled Timed-In Sequence Adaptor: Permits valve actuation and deactuation to be controlled by the pressure at the inlet port. When pressure is applied an internal passage conducts the pressure to the sequence adaptor. After the preset time delay, the valve is actuated. When pressure is removed from the inlet port the valve is deactivated.



2-Way 2-Position Valves, Spring Return

Port Size	Body Size	Valve Model Number*		C _v		Weight lb (kg)	Diagram
		Normally Closed	Normally Open	NC	NO		
1/4	3/8	2751A2004	2752A2004	2.3	2.3	2.3 (1.1)	
3/8	3/8	2751A3004	2752A3004	3.8	3.3	2.3 (1.1)	
1/2	3/8	2751A4014	2752A4014	4.0	3.5	2.3 (1.1)	
1/2	3/4	2751A4004	2752A4004	7.7	6.5	3.0 (1.4)	
3/4	3/4	2751A5004	2752A5004	9.0	7.3	3.0 (1.4)	
1	3/4	2751A6014	2752A6014	9.0	7.9	3.0 (1.4)	
1	1 1/4	2751A6004	2752A6004	24	21	9.0 (4.1)	
1 1/4	1 1/4	2751A7004	2752A7004	29	20	9.0 (4.1)	
1 1/2	1 1/4	2751A8014	2752A8014	29	21	9.0 (4.1)	

B

B2

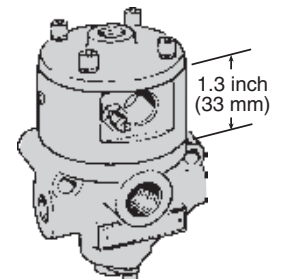
3-Way 2-Position Valves, Spring Return

Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*		C _v				Weight lb (kg)	Diagram
			Normally Closed	Normally Open	NC		NO			
1/4	1/2	3/8	2753A2004	2754A2004	2.5	3.1	2.3	2.7	2.3 (1.1)	
3/8	1/2	3/8	2753A3004	2754A3004	3.6	5.3	28	3.2	2.3 (1.1)	
1/2	1/2	3/8	2753A4014	2754A4014	3.3	5.3	28	3.2	2.3 (1.1)	
1/2	1	3/4	2753A4004	2754A4004	6.3	9.2	6.3	8.0	3.0 (1.4)	
3/4	1	3/4	2753A5004	2754A5004	7.7	11	6.9	7.4	3.0 (1.4)	
1	1	3/4	2753A6014	2754A6014	8	12	6.8	7.5	3.0 (1.4)	
1	1 1/2	1 1/4	2753A6004	2754A6004	23	34	17	24	9.0 (4.1)	
1 1/4	1 1/2	1 1/4	2753A7004	2754A7004	30	32	19	24	9.0 (4.1)	
1 1/2	1 1/2	1 1/4	2753A8014	2754A8014	30	31	19	23	9.0 (4.1)	

4-Way 2-Position Valves, Spring Return

Port Size		Body Size	Valve Model Number*	C _v		Weight lb (kg)	Diagram
1, 2, 4	3			1-2, 1-4	4-3, 2-3		
1/4	1/2	3/8	2756A2004	2.1	2.9	2.8 (1.3)	
3/8	1/2	3/8	2756A3004	2.9	4.2	2.8 (1.3)	
1/2	1/2	3/8	2756A4014	3.1	4.3	2.8 (1.3)	
1/2	1	3/4	2756A4004	5.6	8.1	5.3 (2.4)	
3/4	1	3/4	2756A5004	7.0	9.3	5.3 (2.4)	
1	1	3/4	2756A6014	7.8	10	5.3 (2.4)	
1	1 1/2	1 1/4	2756A6004	19	26	11.3 (5.2)	
1 1/4	1 1/2	1 1/4	2756A7004	21	27	11.3 (5.2)	
1 1/2	1 1/2	1 1/4	2756A8014	22	27	11.3 (5.2)	

Detailed dimensions, see corresponding valves models pages.



* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2751A2004.

Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

Adjustable Time Delay: 2/2 Valves: Up to 30 seconds.

3/2, 4/2 Valves: Up to 3 seconds.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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



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B2.21

Pressure Controlled Valves

With Inlet Port Controlled Timed-In Sequence Adaptor & Timed Sequence Extension Adaptors

27 Series

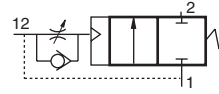
Inlet Port Controlled Timed-In Sequence Adaptor: Permits valve actuation and deactuation to be controlled by the pressure at the inlet port. When pressure is applied an internal passage conducts the pressure to the sequence adaptor. After the preset time delay, the valve is actuated. When pressure is removed from the inlet port the valve is deactuated.

Timed Sequence Extension Adaptor: Increases the maximum time delay interval to 60 seconds. It also helps to obtain “snap” action of the valve. By keeping pressure off the main valve piston until it is high enough to ensure prompt valve response, the timed sequence extension adaptor prevents the piston from creeping.

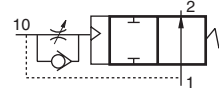


2-Way 2-Position Valves, Spring Return

Port Size 1, 2	Body Size	Valve Model Number*		C _v		Weight lb (kg)
		Normally Closed	Normally Open	NC	NO	
1/4	3/8	2781A2004	2782A2004	2.3	2.3	2.3 (1.1)
3/8	3/8	2781A3004	2782A3004	3.8	3.3	2.3 (1.1)
1/2	3/8	2781A4014	2782A4014	4.0	3.5	2.3 (1.1)
1/2	3/4	2781A4004	2782A4004	7.7	6.5	3.0 (1.4)
3/4	3/4	2781A5004	2782A5004	9.0	7.3	3.0 (1.4)
1	3/4	2781A6014	2782A6014	9.0	7.9	3.0 (1.4)
1	1 1/4	2781A6004	2782A6004	24	21	9.0 (4.1)
1 1/4	1 1/4	2781A7004	2782A7004	29	20	9.0 (4.1)
1 1/2	1 1/4	2781A8014	2782A8014	29	21	9.0 (4.1)



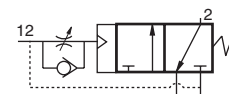
Normally Closed



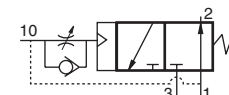
Normally Open

3-Way 2-Position Valves, Spring Return

Port Size 1, 2, 3	Body Size	Valve Model Number*		C _v				Weight lb (kg)	
		Normally Closed	Normally Open	NC		NO			
1/4	1/2	3/8	2783A2004	2784A2004	2.5	3.1	2.3	2.7	2.3 (1.1)
3/8	1/2	3/8	2783A3004	2784A3004	3.6	5.3	28	3.2	2.3 (1.1)
1/2	1/2	3/8	2783A4014	2784A4014	3.3	5.3	28	3.2	2.3 (1.1)
1/2	1	3/4	2783A4004	2784A4004	6.3	9.2	6.3	8.0	3.0 (1.4)
3/4	1	3/4	2783A5004	2784A5004	7.7	11	6.9	7.4	3.0 (1.4)
1	1	3/4	2783A6014	2784A6014	8	12	6.8	7.5	3.0 (1.4)
1	1 1/2	1 1/4	2783A6004	2784A6004	23	34	17	24	9.0 (4.1)
1 1/4	1 1/2	1 1/4	2783A7004	2784A7004	30	32	19	24	9.0 (4.1)
1 1/2	1 1/2	1 1/4	2783A8014	2784A8014	30	31	19	23	9.0 (4.1)



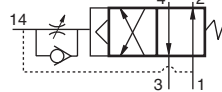
Normally Closed



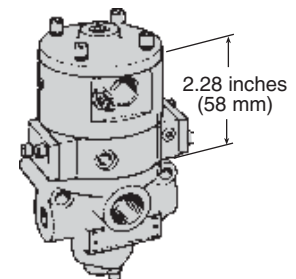
Normally Open

4-Way 2-Position Valves, Spring Return

Port Size 1, 2, 4, 3	Body Size	Valve Model Number*	C _v		Weight lb (kg)	
			1-2, 1-4	4-3, 2-3		
1/4	1/2	3/8	2786A2004	2.1	2.9	2.8 (1.3)
3/8	1/2	3/8	2786A3004	2.9	4.2	2.8 (1.3)
1/2	1/2	3/8	2786A4014	3.1	4.3	2.8 (1.3)
1/2	1	3/4	2786A4004	5.6	8.1	5.3 (2.4)
3/4	1	3/4	2786A5004	7.0	9.3	5.3 (2.4)
1	1	3/4	2786A6014	7.8	10	5.3 (2.4)
1	1 1/2	1 1/4	2786A6004	19	26	11.3 (5.2)
1 1/4	1 1/2	1 1/4	2786A7004	21	27	11.3 (5.2)
1 1/2	1 1/2	1 1/4	2786A8014	22	27	11.3 (5.2)



Detailed dimensions, see corresponding valves models pages.



* NPT port threads. For BSPP threads add a “D” prefix to the model number e.g., D2781A2004.

Silencers ordered separately, refer to page B2.23.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: Inline.

Ambient/Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air.

Inlet Pressure: 15 to 150 psig (1 to 10 bar).

Pilot Pressure: Must be equal to or greater than inlet pressure.

Adjustable Time Delay: Up to 60 seconds.

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 or PL d (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT ≥ 1.

Valve models with EN connector available, consult ROSS.

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

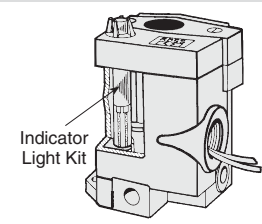
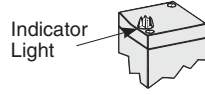
B

B2

Indicator Light Kit

To visually verify valve operation indicator lights are available in kit form. The indicator light extends through the solenoid or pilot cover and is illuminated when the solenoid is energized. Such lights are standard on double solenoid valves. Indicator light kit is available for single solenoid models.

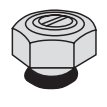
Kit Number		
24 volts DC	110-120 volts AC 50-60 Hz	220 volts 50-60 Hz
862K87-W	862K87-Z	862K87-Y



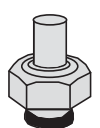
Manual Override Kits

Flush flexible manual overrides are standard on single solenoid models. Double solenoid models have flush metal-button overrides. Both types are non-locking. Each of the buttons in the override kits below 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.

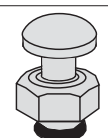
FLUSH BUTTON	
Locking Type	Kit Number
Non-Locking	790K87
Locking	792K87



EXTENDED BUTTON	
Locking Type	Kit Number
Non-Locking	791K87



EXTENDED BUTTON with PALM	
Locking Type	Kit Number
Non-Locking	984H87



Electrical Connector

Valves available with installed prewired connectors, consult ROSS.

System 8 Solenoid Pilot

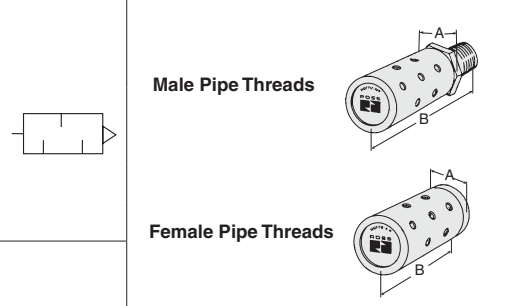
Models available with preinstalled System 8 solenoid pilot, consult ROSS.

Silencers



Port Size	Thread Type	Model Number		Avg. C _v	Dimensions inches (mm)		Weight lb (kg)
		NPT Treads	BSPT Threads		A	B	
1/2	Male	5500A4003	D5500A4003	4.7	1.3 (32)	3.6 (91)	0.2 (0.1)
1	Male	5500A6003	D5500A6003	14.6	2.0 (51)	5.4 (138)	0.6 (0.3)
1½	Female	5500A8001	D5500A8001	29.9	2.5 (64)	5.7 (144)	1.0 (0.5)
2½	Female	5500A9002	D5500A9002	103.7	4.0 (102)	5.7 (145)	2.9 (1.4)

Pressure Range: 0 to 150 psig (0 to 10.3 bar) maximum.
Flow Media: Filtered air.



General Information

Standard Specifications

The standard specifications for the products on each page of this catalog are given on the same page or referenced. For solenoid pilot valves, models with internal pilot supply are listed. Most models are also available for use with external pilot supply or have a built-in pilot supply selector valve.

The products in this catalog are intended for use in industrial pneumatic systems. Most products are adaptable to other uses and conditions not covered by the standard specifications given in this catalog. Weights shown are approximate and are subject to change. Dimensions given, unless otherwise noted, are envelope dimensions (not for mounting). Consult ROSS for further information.

Port Threads

Ports of valves and bases described in this catalog have NPT (ANSI B2.1) threads. Other thread types can be specified by putting an appropriate prefix letter on the model or part number when ordering.

Thread Types by Model Prefix Letter

Pneumatic Port Threads	Prefix Letter	Threaded Electrical Opening
NPT (ANSI B2.1)	None	NPT
ISO 228 - DIN 259 Parallel, BSPP [#]	C*	—
ISO 228 - DIN 259 Parallel, BSPP [#]	D	G
ISO 228 - JIS B0203 Tapered [#]	J	ISO
SAE 1926- ISO 11926	S	NPT

* Used only for filters, regulators, lubricators.

[#] ISO 228 threads supersedes BSPP, G and JIS thread types.

Flow Ratings

Flow ratings are expressed as C_v where $C_v = 1$ corresponds to a steady state air flow of approximately 32 scfm under the following conditions:

Inlet pressure = 100 psig (6.7 bar)
Pressure drop = 10 psi (0.69 bar)
Air temperature = 68°F (20°C)
Relative humidity = 36%

Note: Because widely differing test standards are used to measure C_v values, the figures given in this catalog should not be used to compare ROSS valves with those of other makers. The C_v ratings given here are intended only for use with performance charts published by ROSS. The C_v ratings are averages for the various flow paths through the valve and are for steady flow conditions.

Approvals and Certifications

ROSS products are designed to meet a number of industrial standards, including the Canadian Standards Association (C.S.A.) guidelines. For more information on specific product approvals, contact your local distributor or ROSS.

Solenoids

All ROSS standard solenoids are rated for continuous duty (unless noted otherwise) and will operate the valve within the air pressure range specified in this catalog.

Explosion-Proof Solenoid Pilot available, for more information consult ROSS.

Voltage & Hertz

When ordering a solenoid valve, also specify the desired solenoid voltage and hertz.

Voltage Types by Model Suffix Letter

Voltage	Suffix Letter
120 volts AC	Z
220 volts AC	Y
12 volts DC	H
24 volts DC	W
48 volts DC	M
90 volts DC	K
110 volts DC	P
125 volts DC	C

Recommended Solenoid Voltages: 100-110 volts AC, 50 Hz; 100-120 volts AC, 60 Hz; 24 volts DC; 110 volts DC.

In addition, the following voltages are available:

200, 220 volts AC, 50 Hz
200, 240, 480 volts AC, 60 Hz
24, 48, 220 volts AC, 50 Hz
240 volts AC, 60 Hz
200, 220 volts AC, 50 Hz
200, 240 volts AC, 60 Hz.

For example: Model 2773B5001, 120 volts AC, 60 Hz.
Model W6076B2401, 220 volts AC, 50 Hz.

Please note that not all configurations are available for all models.

For additional information or help with voltage configuration, please contact your local distributor or ROSS.

Port Identification

Valve symbols in this catalog conform to the ISO 1219-1:1991 standard of the International Organization for Standardization (ISO) and the SAE J2051 standard of the Society of Automotive Engineers (SAE) respectively.

Information or Technical Assistance

For additional information or application assistance concerning ROSS products, consult ROSS or your local ROSS distributor (see contact information on the back cover).

Order Placement

For order placement, consult ROSS or your local ROSS distributor.

For a current list of countries and local distributors, visit ROSS' website at www.rosscontrols.com.

CAUTIONS, WARNINGS and STANDARD WARRANTY

PRE-INSTALLATION or SERVICE

1. Before servicing a valve or other pneumatic component, be sure that all sources of energy are turned off, the entire pneumatic system is shut off and exhausted, and all power sources are locked out (ref: OSHA 1910.147, EN 1037).
2. All ROSS products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any installation can be tampered with or need servicing after installation, persons responsible for the safety of others or the care of equipment must check every installation on a regular basis and perform all necessary maintenance.
3. All applicable instructions should be read and complied with before using any fluid power system in order 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 location listed on the cover of this document.
4. Each ROSS product should be used within its specification limits. In addition, use only ROSS parts to repair ROSS products.

WARNING: Failure to follow these directions can adversely affect the performance of the product or result in the potential for human injury or damage to property.

FILTRATION and LUBRICATION

5. 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. ROSS recommends a filter with a 5-micron rating for normal applications.
6. All standard ROSS filters and lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Do *not* fail to 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, hazardous leakage, and the potential for human injury or damage to property. Immediately replace a crazed, cracked, or deteriorated bowl. When bowl gets dirty, replace it or wipe it with a clean dry cloth.

7. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum based 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 human injury, and/or damage to property.

AVOID INTAKE/EXHAUST RESTRICTION

8. Do not restrict the air flow in the supply line. To do so could reduce the pressure of the supply air below the minimum requirements for the valve and thereby cause erratic action.
9. 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.

WARNING: ROSS expressly disclaims all warranties and responsibility for any unsatisfactory performance or injuries caused by the use of the wrong type, wrong size, or an inadequately maintained silencer installed with a ROSS product.

POWER PRESSES

10. 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.

ENERGY ISOLATION/EMERGENCY STOP

11. Per specifications and regulations, ROSS L-O-X® and L-O-X® with EEZ-ON® operation products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

STANDARD WARRANTY

limited to repair or replacement of the product or refund of the purchase price paid solely at the discretion of ROSS and provided such product is returned to ROSS freight prepaid and upon examination by ROSS is found to be defective. This warranty becomes void in the event that product has been subject to misuse, misapplication, improper maintenance, modification or tampering.

THE WARRANTY EXPRESSED ABOVE IS IN LIEU OF AND EXCLUSIVE OF ALL OTHER WARRANTIES AND ROSS EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES EITHER EXPRESSED OR IMPLIED WITH RESPECT TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ROSS MAKES NO WARRANTY WITH RESPECT TO ITS PRODUCTS MEETING THE PROVISIONS OF ANY GOVERNMENTAL OCCUPATIONAL SAFETY AND/OR HEALTH LAWS OR REGULATIONS. IN NO EVENT IS ROSS LIABLE TO PURCHASER, USER, THEIR EMPLOYEES OR OTHERS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM A BREACH OF THE WARRANTY DESCRIBED ABOVE OR THE USE OR MISUSE OF THE PRODUCTS. NO STATEMENT OF ANY REPRESENTATIVE OR EMPLOYEE OF ROSS MAY EXTEND THE LIABILITY OF ROSS AS SET FORTH HEREIN.

All products sold by ROSS CONTROLS are warranted for a one-year period [with the exception of all Filters, Regulators and Lubricators ("FRLs") which are warranted for a period of seven years] from the date of purchase to be free of defects in material and workmanship. ROSS' obligation under this warranty is

