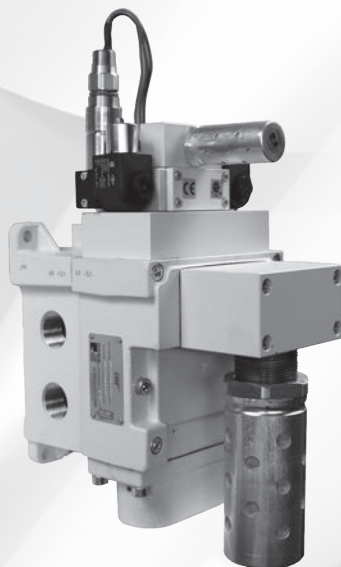




ROSS CONTROLS®

EXPLOSION PROOF VALVES
27 & 21 SERIES, DM²® SERIES C
ISO VALVES W60 & W64 SERIES



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POPPET 27 & 21 SERIES EXPLOSION PROOF VALVES – KEY FEATURES

- 27 Series - Construction - Acetal internals
- 21 Series - Construction - Metal, Aluminum
- Poppet construction for near zero leakage and high dirt tolerance
- Pilot can rotate, giving the ability to change orientation
- Self-cleaning
- Wear compensating
- Repeatability throughout the life of the valve

VALVE TYPE/ SERIES	DESCRIPTION		AVAILABLE INLET PORT SIZES										FUNCTIONS									Explosion Proof Certifications		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	Max Flow (Cv)	Solenoid Control	Normally Closed	Normally Open	CSA/UL		ATEX#
27 SERIES Poppet Valves																									
27																			72						F6.3
27																			71						F6.4
27																			25						F6.5
21 SERIES for Low Temperature																									
21																			29						F6.6
21																			31						F6.7
21																			25						F6.8
Accessories																									F6.9

For ATEX Certified valves order placement, consult ROSS.

CONTROL RELIABLE DOUBLE VALVES DM²⁰ SERIES – KEY FEATURES

- Rapid response time to minimize stopping time
- Status Indicator switch for valve condition (ready to run) feedback
- Highly contaminant tolerant poppet construction

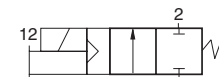
VALVE TYPE/ SERIES	Category	Available Port Sizes						MAX. FLOW Cv						Reset			Explosion Proof Certifications		Page
		1/4	3/8	1/2	3/4	1	1½	Port Size						Integrated Soft Start	Remote	Solenoid	CSA/UL	ATEX	
								1/4	3/8	1/2	3/4	1	1½						
Control Reliable Explosion Proof Double Valves																			
DM ²⁰ C	4									10		20	64						F6.10 -F6.12

Solenoid Pilot Controlled Explosion-Proof Valves

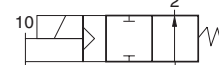
27 Series

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	2771B2002**	2772B2002**	2.3	2.3	3.0 (1.4)
3/8	3/8	2771B3002**	2772B3002**	3.8	3.3	3.0 (1.4)
1/2	3/8	2771B4012**	2772B4012**	4.0	3.5	3.0 (1.4)
1/2	3/4	2771B4002**	2772B4002**	7.7	6.5	3.6 (1.6)
3/4	3/4	2771B5002**	2772B5002**	9.0	7.3	3.6 (1.6)
1	3/4	2771B6012**	2772B6012**	9.0	7.9	3.6 (1.6)
1	1 1/4	2771B6002**	2772B6002**	24	21	7.5 (3.4)
1 1/4	1 1/4	2771B7002**	2772B7002**	29	20	7.5 (3.4)
1 1/2	1 1/4	2771B8012**	2772B8012**	29	21	7.5 (3.4)
1 1/2	2	2771B8002**	2772B8002**	49	49	16.0 (7.3)
2	2	2771B9002**	2772B9002**	57	57	16.0 (7.3)
2 1/2	2	2771B9012**	2772B9012**	64	72	16.0 (7.3)

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2772B2002.
 ** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2771B2002W. For other voltages, consult ROSS.



Normally Closed (NC)

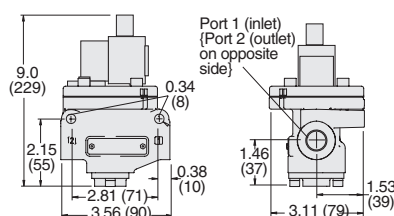


Normally Open (NO)

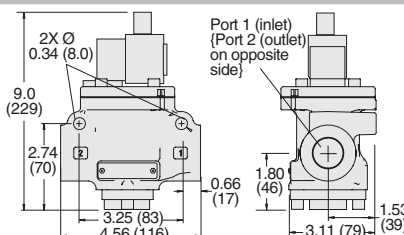


Valve Dimensions – inches (mm)

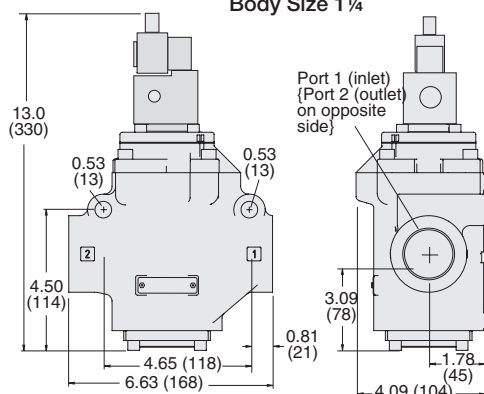
Body Size 3/8



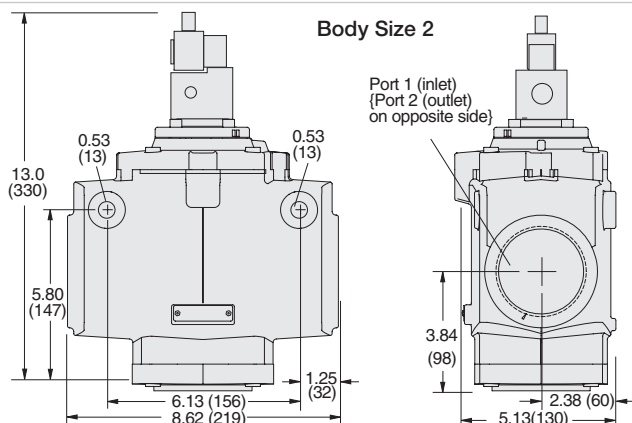
Body Size 3/4



Body Size 1 1/4



Body Size 2



Applicable Requirements: C22.2 No. 0-10 - General Requirements - Canadian Electrical Code, Part II; CSA C22.2 No. 25-1966 - Enclosures for use in Class II Groups E, F and G Hazardous Locations; CSA C22.2 No. 142-M1987 - Process Control Equipment; C22.2 No. 213-M1987 - Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations; CAN/CSA E79-0-95 - Electrical apparatus for explosive atmospheres, Part 0: General requirements; CAN/CSA E79-18-95 - Electrical apparatus for explosive atmospheres, Part 18: Encapsulation "m".

APPROVED for use in the following Hazardous Locations – Ex m II T4 and Division 1 –

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations; **FM CLASS 3600, 3611, 3615, 3810** – hazardous (classified) location electrical equipment

For ATEX Certified valves order placement, consult ROSS.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: In-Line.

Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.

Ambient Temperature: 40° to 140°F (4° to 60°C).

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

Flow Media: Filtered air.

Inlet Pressure: Body Size 3/8, 3/4, 1 1/2: 15 to 150 psig (1 to 10 bar).
Body Size 2: 30 to 150 psig (2 to 10 bar).

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





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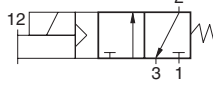
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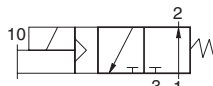
F6.3

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	2773B2002**	2774B2002**	2.5	3.1	2.3	2.7	2.5 (1.2)	
3/8	1/2	3/8	2773B3002**	2774B3002**	3.6	5.3	2.8	3.2	2.5 (1.2)	
1/2	1/2	3/8	2773B4012**	2774B4012**	3.3	5.3	2.8	3.2	2.5 (1.2)	
1/2	1	3/4	2773B4002**	2774B4002**	6.3	9.2	6.3	8.0	3.3 (1.5)	
3/4	1	3/4	2773B5002**	2774B5002**	7.7	11	6.9	7.4	3.3 (1.5)	
1	1	3/4	2773B6012**	2774B6012**	8	12	6.8	7.5	3.3 (1.5)	
1	1½	1¼	2773B6002**	2774B6002**	23	34	17	24	7.0 (3.2)	
1¼	1½	1¼	2773B7002**	2774B7002**	30	32	19	24	7.0 (3.2)	
1½	1½	1¼	2773B8012**	2774B8012**	30	31	19	23	7.0 (3.2)	
1½	2½	2	2773B8002**	2774B8002**	68	70	57	59	16.5 (7.4)	
2	2½	2	2773B9002**	2774B9002**	70	70	58	61	16.5 (7.4)	
2½	2½	2	2773B9012**	2774B9012**	70	71	54	55	16.5 (7.4)	





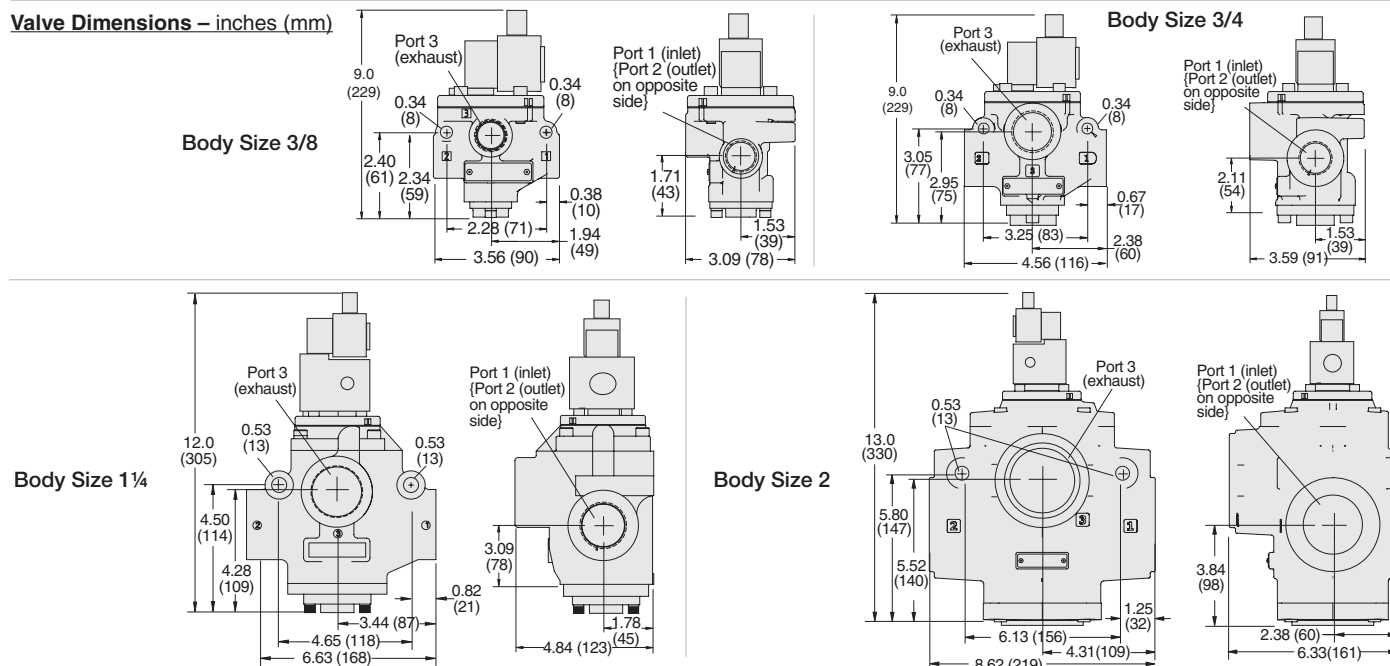




* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2773B2002.

** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2773B2002W. For other voltages, consult ROSS.

Valve Dimensions – inches (mm)



Applicable Requirements: C22.2 No. 0-10 - General Requirements - Canadian Electrical Code, Part II; CSA C22.2 No. 25-1966 - Enclosures for use in Class II Groups E, F and G Hazardous Locations; CSA C22.2 No. 142-M1987 - Process Control Equipment; C22.2 No. 213-M1987 - Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations; CAN/CSA E79-0-95 - Electrical apparatus for explosive atmospheres, Part 0: General requirements; CAN/CSA E79-18-95 - Electrical apparatus for explosive atmospheres, Part 18: Encapsulation "m".

APPROVED for use in the following Hazardous Locations – Ex m II T4 and Division 1 –

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations; **FM CLASS 3600, 3611, 3615, 3810** – hazardous (classified) location electrical equipment

For ATEX Certified valves order placement, consult ROSS.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: In-Line.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.

Ambient Temperature: 40° to 140°F (4° to 60°C).

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

Flow Media: Filtered air.

Inlet Pressure: Body Size 3/8, 3/4, 1½: 15 to 150 psig (1 to 10 bar).
Body Size 2: 30 to 150 psig (2 to 10 bar).

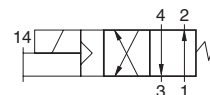
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Solenoid Pilot Controlled Explosion-Proof Valves

27 Series

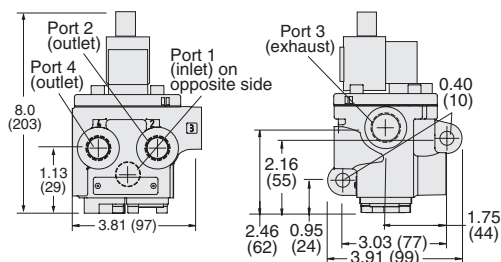
4-Way 2-Position Valves, Spring Return						
Port Size		Body Size	Valve Model Number*	C _v		Weight lb (kg)
1, 2, 4	3			1-2, 1-4	4-3, 2-3	
1/4	1/2	3/8	2776B2002**	2.1	2.9	1.9 (0.9)
3/8	1/2	3/8	2776B3002**	2.9	4.2	1.9 (0.9)
1/2	1/2	3/8	2776B4012**	3.1	4.3	1.9 (0.9)
1/2	1	3/4	2776B4002**	5.6	8.1	4.2 (1.9)
3/4	1	3/4	2776B5002**	7.0	9.3	4.2 (1.9)
1	1	3/4	2776B6012**	7.8	10	4.2 (1.9)
1	1½	1¼	2776B6002**	19	26	11.0 (5.0)
1¼	1½	1¼	2776B7002**	21	27	11.0 (5.0)
1½	1½	1¼	2776B8012**	22	27	11.0 (5.0)

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2776B2002.
 ** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2776B2002W. For other voltages, consult ROSS.



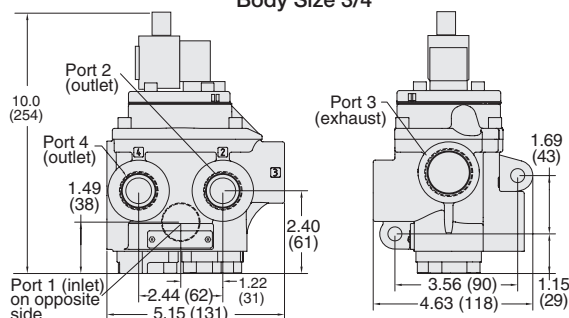
Port Sizes 1 to 1½

Body Size 3/8

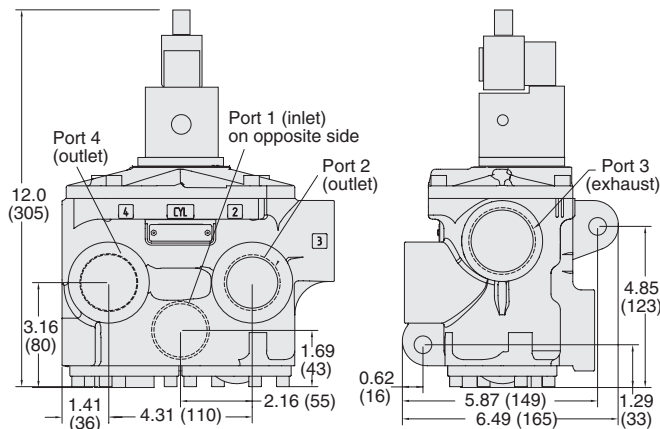


Valve Dimensions – inches (mm)

Body Size 3/4



Body Size 1¼



Applicable Requirements: C22.2 No. 0-10 - General Requirements - Canadian Electrical Code, Part II; CSA C22.2 No. 25-1966 - Enclosures for use in Class II Groups E, F and G Hazardous Locations; CSA C22.2 No. 142-M1987 - Process Control Equipment; C22.2 No. 213-M1987 - Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations; CAN/CSA E79-0-95 - Electrical apparatus for explosive atmospheres, Part 0: General requirements; CAN/CSA E79-18-95 - Electrical apparatus for explosive atmospheres, Part 18: Encapsulation "m".

APPROVED for use in the following Hazardous Locations – Ex m II T4 and Division 1 –

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations; **FM CLASS 3600, 3611, 3615, 3810** – hazardous (classified) location electrical equipment

For ATEX Certified valves order placement, consult ROSS.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Acetal.

Mounting Type: In-Line.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.

Ambient Temperature: 40° to 140°F (4° to 60°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).

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



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F6.5

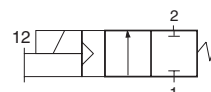
Solenoid Pilot Controlled Explosion-Proof Valves

For Low Temperature Applications

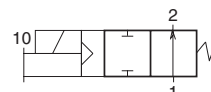
21 Series

2-Way 2-Position Valves, Spring Return						
Port Size 1,2	Body Size	Valve Model Number*		Avg. C _v		Weight lb (kg)
		Normally Closed	Normally Open	NC	NO	
1/4	3/8	2171B2005**	2172B2005**	2.3	2.3	3.0 (1.4)
3/8	3/8	2171B3005**	2172B3005**	3.8	3.3	3.0 (1.4)
1/2	3/8	2171B4015**	2172B4015**	4.0	3.5	3.0 (1.4)
1/2	3/4	2171B4005**	2172B4005**	7.7	6.5	3.3 (1.5)
3/4	3/4	2171B5005**	2172B5005**	9.0	7.3	3.3 (1.5)
1	3/4	2171B6015**	2172B6015**	9.0	7.9	3.3 (1.5)
1	1 1/4	2171B6005**	2172B6005**	24	21	7.5 (3.4)
1 1/4	1 1/4	2171B7005**	2172B7005**	29	20	7.5 (3.4)
1 1/2	1 1/4	2171B8015**	2172B8015**	29	21	7.5 (3.4)

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2171B2004.
 ** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2171B2004W. For other voltages, consult ROSS.



Normally Closed (NC)

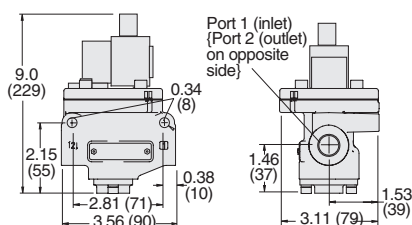


Normally Open (NO)

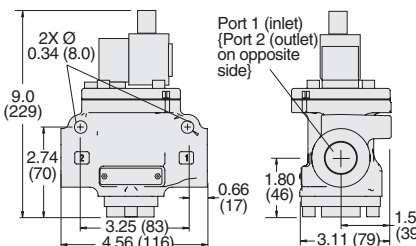


Valve Dimensions – inches (mm)

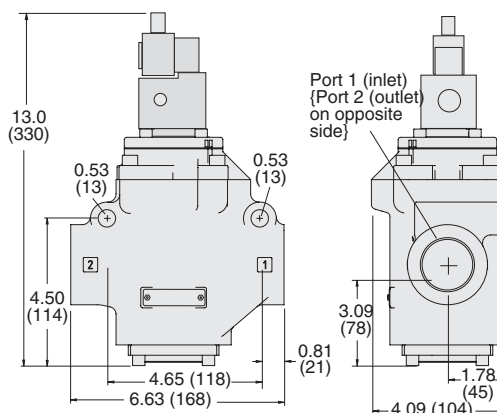
Body Size 3/8



Body Size 3/4



Body Size 1 1/4



Applicable Requirements: C22.2 No. 0-10 - General Requirements - Canadian Electrical Code, Part II; CSA C22.2 No. 25-1966 - Enclosures for use in Class II Groups E, F and G Hazardous Locations; CSA C22.2 No. 142-M1987 - Process Control Equipment; C22.2 No. 213-M1987 - Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations; CAN/CSA E79-0-95 - Electrical apparatus for explosive atmospheres, Part 0: General requirements; CAN/CSA E79-18-95 - Electrical apparatus for explosive atmospheres, Part 18: Encapsulation "m".

APPROVED for use in the following Hazardous Locations – Ex m II T4 and Division 1 –

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations; **FM CLASS 3600, 3611, 3615, 3810** – hazardous (classified) location electrical equipment

For ATEX Certified valves order placement, consult ROSS.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Metal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.

Ambient Temperature: -4° to 140°F (-20° to 60°C).

Media Temperature: -4° to 175°F (-20° to 80°C).

For temperatures below 40°F (4°C) air must be free of water vapor to prevent formation of ice.

Flow Media: Filtered air.

Inlet Pressure: 30 to 150 psig (2 to 10 bar).



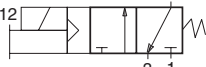
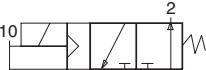
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.



Solenoid Pilot Controlled Explosion-Proof Valves

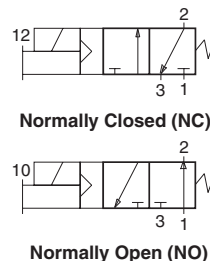
For Low Temperature Applications

21 Series

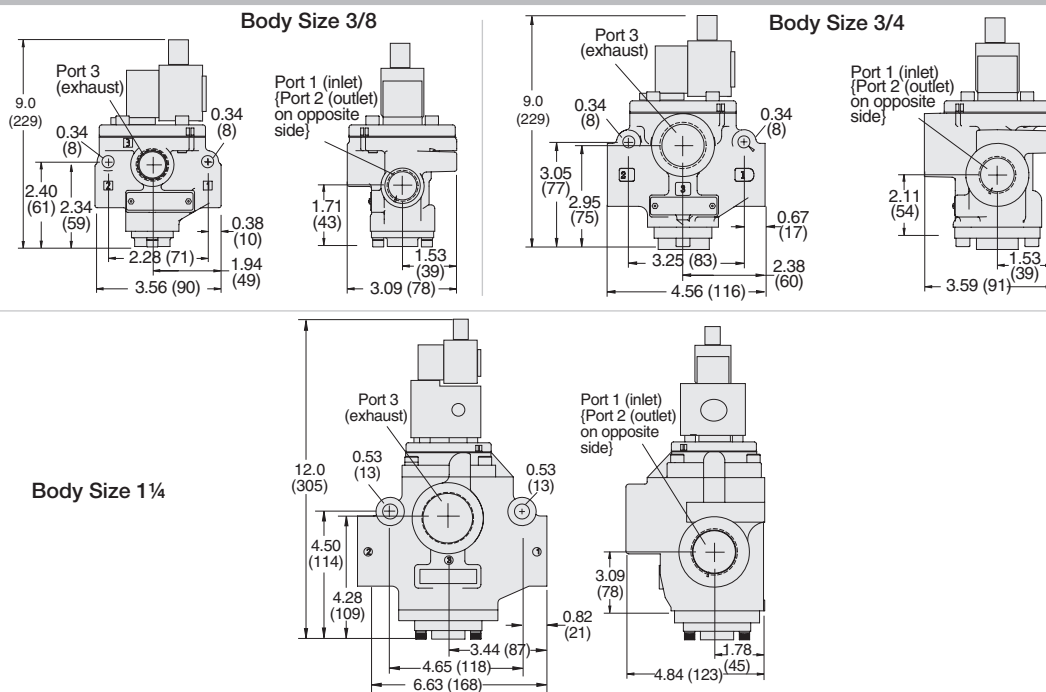
3-Way 2-Position Valves, Spring Return											
Port Size		Body Size	Valve Model Number*		C _v				Weight lb (kg)		
			Low Temperature		NC		NO				
			Normally Closed	Normally Open	1-2	2-3	1-2	2-3			
1, 2	3										
1/4	1/2	3/8	2173B2005**	2174B2005**	2.4	3.4	2.0	2.1	3.0 (1.4)		
3/8	1/2	3/8	2173B3005**	2174B3005**	3.0	5.8	2.3	2.4	3.0 (1.4)		
1/2	1/2	3/8	2173B4015**	2174B4015**	3.0	5.2	2.9	2.8	3.0 (1.4)		
1/2	1	3/4	2173B4005**	2174B4005**	6.6	12	6.5	7.0	3.3 (1.5)		
3/4	1	3/4	2173B5005**	2174B5005**	7.8	13	7.5	7.5	3.3 (1.5)		
1	1	3/4	2173B6015**	2174B6015**	7.5	12	7.7	7.6	3.3 (1.5)		
1	1½	1¼	2173B6005**	2174B6005**	24	40	15	17	7.5 (3.4)		
1¼	1½	1¼	2173B7005**	2174B7005**	29	39	21	23	7.5 (3.4)		
1½	1½	1¼	2173B8015**	2174B8015**	30	38	22	23	7.5 (3.4)		

* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2171B2004.

** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2173B2004W. For other voltages, consult ROSS.



Valve Dimensions – inches (mm)



Applicable Requirements: C22.2 No. 0-10 - General Requirements - Canadian Electrical Code, Part II; CSA C22.2 No. 25-1966 - Enclosures for use in Class II Groups E, F and G Hazardous Locations; CSA C22.2 No. 142-M1987 - Process Control Equipment; C22.2 No. 213-M1987 - Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations; CAN/CSA E79-0-95 - Electrical apparatus for explosive atmospheres, Part 0: General requirements; CAN/CSA E79-18-95 - Electrical apparatus for explosive atmospheres, Part 18: Encapsulation "m".

APPROVED for use in the following Hazardous Locations – Ex m II T4 and Division 1 –

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations; **FM CLASS 3600, 3611, 3615, 3810** – hazardous (classified) location electrical equipment

For ATEX Certified valves order placement, consult ROSS.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Metal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.

Ambient Temperature: -4° to 140°F (-20° to 60°C).

Media Temperature: -4° to 175°F (-20° to 80°C).

For temperatures below 40°F (4°C) air must be free of water vapor to prevent formation of ice.

Flow Media: Filtered air.

Inlet Pressure: 30 to 150 psig (2 to 10 bar).

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



Online Version
Rev. 05/16

www.rosscontrols.com

F6.7

Solenoid Pilot Controlled Explosion-Proof Valves

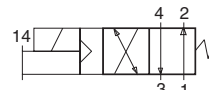
For Low Temperature Applications

21 Series

4-Way 2-Position Valves, Spring Return							
Port Size		Body Size	Valve Model Number*		C _v		Weight lb (kg)
1, 2, 4	3		Low Temperature		1-2, 1-4	4-3, 2-3	
1/4	1/2	3/8	2176B2005**		2.1	2.2	3.0 (1.4)
3/8	1/2	3/8	2176B3005**		2.5	3.1	3.0 (1.4)
1/2	1/2	3/8	2176B4015**		2.9	3.8	3.0 (1.4)
1/2	1	3/4	2176B4005**		5.7	6.5	5.8 (2.6)
3/4	1	3/4	2176B5005**		7.1	8.7	5.8 (2.6)
1	1	3/4	2176B6015**		7.7	10	5.8 (2.6)
1	1½	1¼	2176B6005**		18	23	12.0 (5.4)
1¼	1½	1¼	2176B7005**		20	28	12.0 (5.4)
1½	1½	1¼	2176B8015**		21	29	12.0 (5.4)

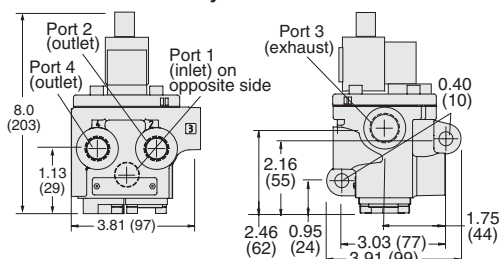
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2176B2004.

** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2176B2004W. For other voltages, consult ROSS.



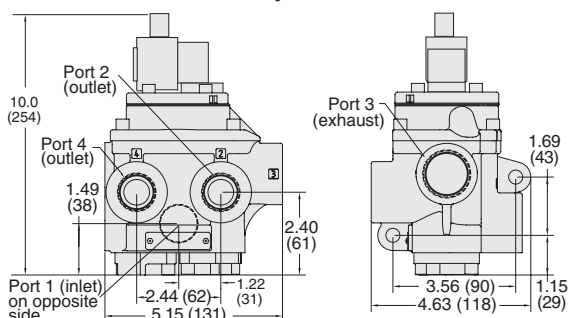
Port Sizes 1 to 1½

Body Size 3/8

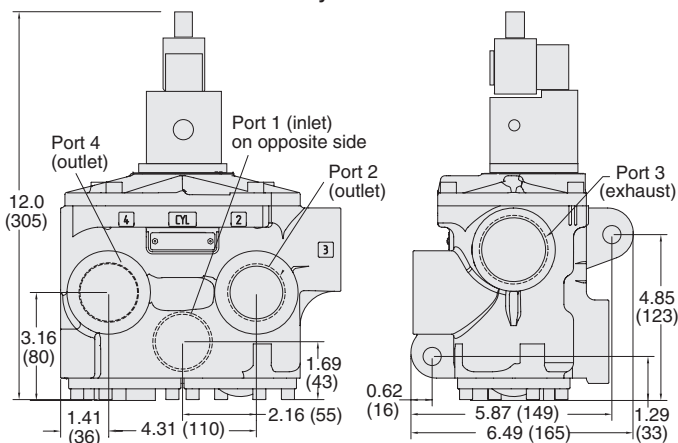


Valve Dimensions – inches (mm)

Body Size 3/4



Body Size 1¼



Applicable Requirements: C22.2 No. 0-10 - General Requirements - Canadian Electrical Code, Part II; CSA C22.2 No. 25-1966 - Enclosures for use in Class II Groups E, F and G Hazardous Locations; CSA C22.2 No. 142-M1987 - Process Control Equipment; C22.2 No. 213-M1987 - Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations; CAN/CSA E79-0-95 - Electrical apparatus for explosive atmospheres, Part 0: General requirements; CAN/CSA E79-18-95 - Electrical apparatus for explosive atmospheres, Part 18: Encapsulation "m".

APPROVED for use in the following Hazardous Locations – Ex m II T4 and Division 1 –

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations; **FM CLASS 3600, 3611, 3615, 3810** – hazardous (classified) location electrical equipment

For ATEX Certified valves order placement, consult ROSS.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet; Metal.

Mounting Type: Inline.

Solenoid Pilot: Rated for continuous duty.

Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.

Ambient Temperature: -4° to 140°F (-20° to 60°C).

Media Temperature: -4° to 175°F (-20° to 80°C).

For temperatures below 40°F (4°C) air must be free of water vapor to prevent formation of ice.

Flow Media: Filtered air.

Inlet Pressure: 30 to 150 psig (2 to 10 bar).

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






Silencers



Port size 1/8 thru 2



Port size 2 1/2

Port Size	Thread Type	Model Number*		Avg. C _v	Dimensions inches (mm)		Weight lb (kg)		 Male Pipe Threads	 Female Pipe Threads
		NPT Threads	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.										

Conversion Kits

ROSS Controls standard poppet solenoid pilot controlled valves for line mounting can be easily field-converted into an explosion-proof solenoid pilot poppet valve. Listed below are the conversion kit numbers to replace the obsolete ROSS explosion proof pilot, or to convert a standard in-line valve to an explosion-proof valve.

Valve Basic Size	Kit Number
1/4" - 1" (Cv up to 10)	2370K77W
1" (Cv up to 29) - 2½"	2371K77W

Control Reliable Explosion Proof Double Valves with Dynamic Monitoring & Memory

DM²® Series C Air Dump / Release

Basic Size 4, 12 and 30

Dynamic Monitoring With Complete Memory: Memory, monitoring, and air flow control functions are simply integrated into two identical valve elements. Valves lock-out due to asynchronous movement of valve elements during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply.

An Action is Required for Reset – cannot be reset by removing and re-applying supply pressure. Reset can only be accomplished by the optional integrated electrical (solenoid) reset.

Basic 3/2 Normally Closed Valve Function: Dirt tolerant, wear compensating poppet design for quick response and high flow capacity. PTFE back-up rings on pistons to enhance valve endurance – operates with or without inline lubrication.

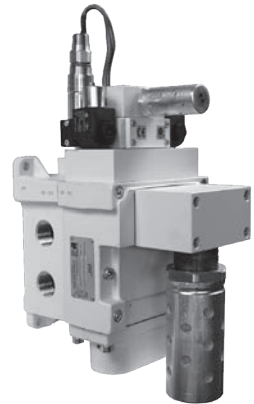
Status Indicator: Includes a pressure switch with both normally open (NO) and normally closed (NC) contacts to provide status feedback to the control system indicating whether the valve is in the lockout or ready-to-run condition.

Silencers: All models include high flow, clog resistant silencers.

Mounting: Base mounted – with BSPP or NPT pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included). Captive valve-to-base mounting screws.

Basic Size 12 and 30

Intermediate Pilots: Increases pilot air flow for fast valve response, making it possible to use the same size solenoids as valve sizes 4, thereby reducing electrical power requirements for these larger valves.



ISO 13849-1:2006
Category 4 PL e
applications

HOW TO ORDER

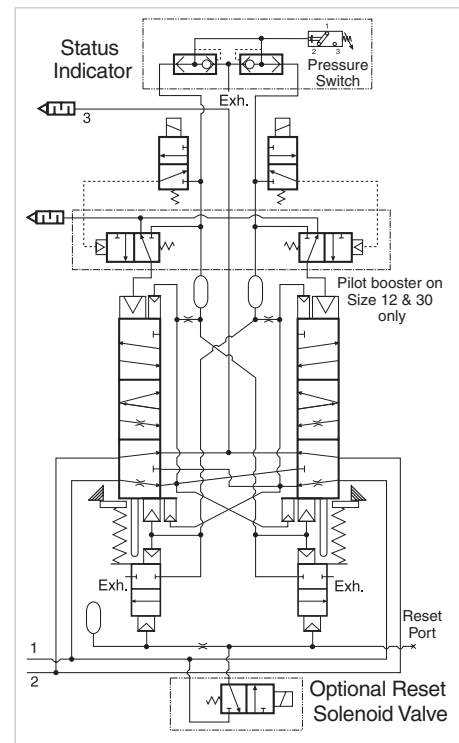
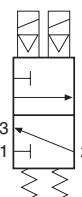
(Choose your options (in red) to configure your valve model number.)

DM2C	N	A	4	2	A	2	1	019
Thread		Basic Size		Reset Type		Pilot Type		
BSPP D		4 4		Solenoid 2		Explosion Proof 019		
NPT N		12 6						
Revision Level		30 8						
All Sizes A								
Base Port Size				Voltage*				
4 1/2 inlet – 1/2 outlet 2				24 volts DC A				
12 1 inlet – 1 outlet 6				120 volts AC, 60 Hz B				
30 1½ inlet – 2 outlet 8				* For other voltages consult ROSS.				
				Status Indicator				
				Yes 1				
				No X				

Schematic -
Valve de-actuated

Valve Basic Size	Cv		Weight lb (Kg)
	1-2	2-3	
4	4.4	13	5.9 (2.6)
12	8.5	20	15.3 (3.7)
30	22	64	34.7 (15.1)

Simplified
Schematic



Applicable Requirements: C22.2 No. 0-10 - General Requirements - Canadian Electrical Code, Part II; CSA C22.2 No. 25-1966 - Enclosures for use in Class II Groups E, F and G Hazardous Locations; CSA C22.2 No. 142-M1987 - Process Control Equipment; C22.2 No. 213-M1987 - Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations; CAN/CSA E79-0-95 - Electrical apparatus for explosive atmospheres, Part 0: General requirements; CAN/CSA E79-18-95 - Electrical apparatus for explosive atmospheres, Part 18: Encapsulation "m".

APPROVED for use in the following Hazardous Locations – Ex m II T4 and Division 1

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations

FM CLASS 3600, 3611, 3615, 3810 – hazardous (classified) location electrical equipment

This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM2® Series D for mechanical power press applications.

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

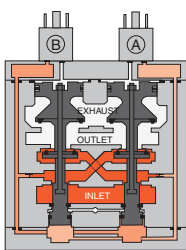


DM²® Series C Valve Technical Data

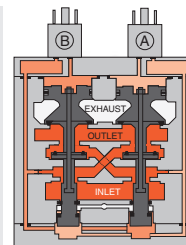
Control Reliable Explosion Proof Double Valves with Dynamic Monitoring & Memory

DM²® Series C Valve Operation & Options

Valve de-actuated (ready-to-run): The flow of inlet air pressure into the crossover passages from the inlet chamber is restricted by orifices that allow air pressure to bypass the lower inlet poppets. Flow is sufficient to quickly pressurize the pilot supply/timing chambers on both sides A and B. The upper inlet poppets prevent air flow from the crossover passages into the outlet chamber. Air pressure acting on the inlet poppets and return pistons securely hold the valve elements in the de-actuated position. (Internal air passages shown out of the valve body for clarity.)



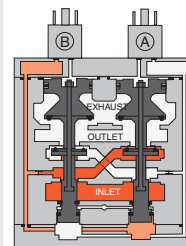
Valve actuated: Energizing the pilot solenoids simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated position, where inlet air flow to outlet is open and both exhaust poppets are closed. The outlet is then quickly pressurized, and pressure in the inlet, crossovers, outlet, and timing chambers are quickly equalized. De-energizing the main solenoids causes the valve elements to return to the ready-to-run (de-actuated) position.



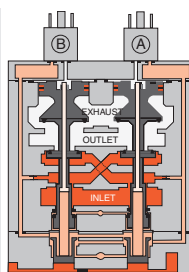
Asynchronous Operation: If the valve elements operate in a sufficiently asynchronous manner on ACTUATION, the valve will shift into a position where one crossover and its related timing chambers will be exhausted, and the other crossover and its related timing chambers will be pressurized.

In the illustration, side B is in the de-actuated position, but has no pilot air available to actuate with and has full pressure on its upper and lower inlet poppets and return piston to hold it in place.

Inlet air flow on side B into its crossover is restricted and flows through the open upper inlet poppet on side A, through the outlet into the exhaust port, and from the exhaust port to atmosphere. Residual pressure in the outlet is less than 1% of inlet pressure. Once the main solenoids are de-energized, actuating pressure is removed from the top of the main pistons and then the lower inlet poppet return spring along with inlet air pressure acting on the side A return piston will push side A back into the de-actuated position. Inlet air pressurizes the crossovers and volume chambers. Pressure in the crossovers helps hold the upper inlet poppets on seat. The valve will then be in the ready-to-run position. On the next attempt to actuate normally, if side B is still unable to actuate synchronously with side A, the same sequence of events described above will occur again.

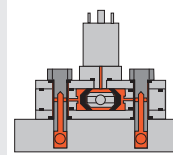


WARNING: If asynchronous operation occurs while DE-ACTUATING, the pilot supply/timing chambers on one side will still be exhausted as described above. However, this could be a temporary situation because the cause of the asynchronous operation may be able to correct itself allowing the stuck or slow acting side of the valve to eventually move back into the de-actuated position. Once the slow or stuck side has de-actuated, the pilot supply/timing chambers that were exhausted will then repressurize. If an external monitoring system is only checking the status indicator periodically this fault signal could be missed. The machine's safety system must be designed to ensure that this does not cause a hazardous situation.



Status Indicator:

The status indicator pressure switch will actuate when the main valve is operating normally, and will de-actuate when the main valve operation is sufficiently asynchronous or inlet pressure is removed. This device is not part of the valve lockout function, but, rather, only reports the status of the main valve.



Status indicator
in normal
ready-to-run
position

ACCESSORIES & OPTIONS

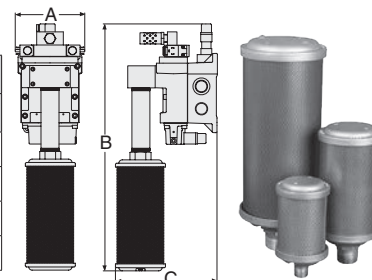
F

High-Flow, High Reduction Silencer KITS

Designed to improve equipment performance and reduce the Exponentially Perceived Noise (EPNdB) in the 35–40 dB range.

Basic Size	Kit Number*		Avg. C _v	Dimensions inches (mm)			
	NPT threads	BSPT threads		A	B (NPT)	B (BSPT)	C
4	2324H77	2329H77	800 (378)	4.34 (110.2)	20.68 (525.3)	23.02 (584.7)	7.27 (184.7)
12	2326H77	2330H77	2080 (982)	6.74 (117.2)	29.3 (744.2)	31.65 (803.91)	10.66 (270.8)
30	2327H77	2331H77	7200 (3398)	9.85 (250.2)	42.69 (1084.3)	42.69 (1084.3)	13.47 (342.1)

* Kits include all plumbing required for installation. **Pressure Range:** 125 psig (8.6 bar) maximum.



F6

Status Indicator

The Status Indicator pressure switch actuates when the valve is in a ready-to-run condition and de-actuates when the valve is in a lockout condition or when the inlet air pressure has been removed. Although, the valves can be purchased with this option already installed, the Status Indicator can be purchased separately.

Model Number

Y739B94

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



VALVE TYPE	Series	DESCRIPTION			AVAILABLE PORT SIZES								FUNCTIONS									Explosion Proof Certifications		Page	
		ISO Size	Spool & Sleeve	Poppet	1/8	1/4	3/8	1/2	3/4	1	1¼	1½	3/2 Single	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	CSA/ UL		ATEX
ISO																									
ISO 5599/I	W60 & W64	1																0.8							A2.3 - A2.7
	W60 & W64	2																1.9							A2.3 - A2.7
	W60 & W64	3																3.8							A2.3 - A2.7

For Explosion-proof ISO Valves order placement, consult ROSS.

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 percent

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, 50 Hz; 100-120 volts, 60 Hz; 24 volts DC; 110 volts DC.

In addition, the following voltages are available:

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

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

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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





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Other literature is available for engineering, maintenance, and service requirements. If you need products or specifications not shown here, please contact ROSS or your ROSS distributor. They will be happy to assist you in selecting the best product for your application.

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