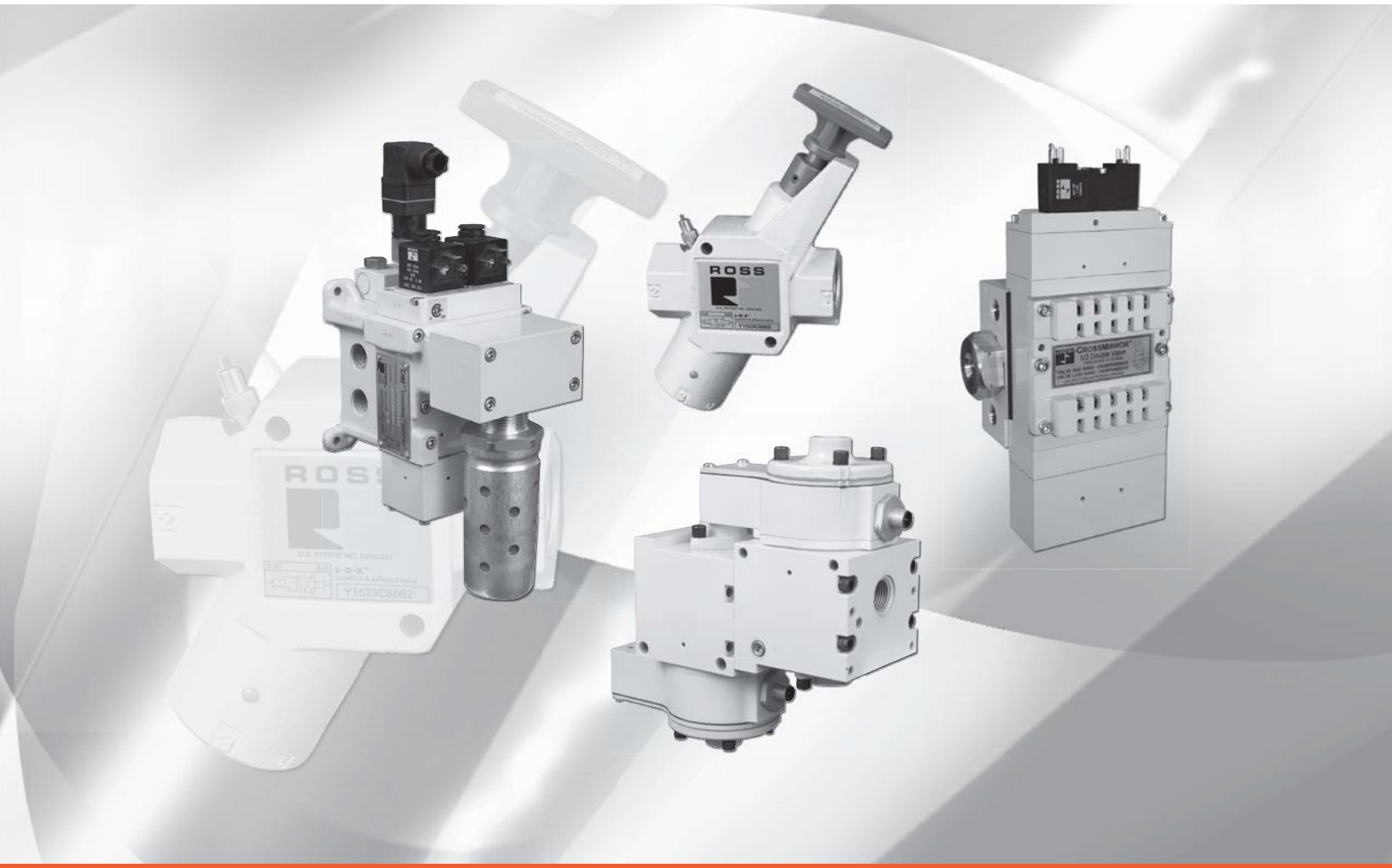
ROSS CONTROLS®

ROSS SAFETY-RELATED PRODUCTS

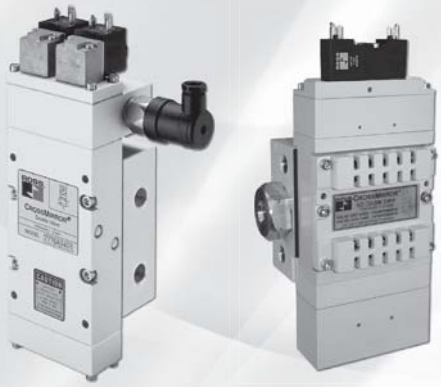


Lockout & Exhaust and Soft-Start Valves

Sensing Valves

Double Valves for Control Reliable Energy Isolation

Pilot Operated Check Valves



Double Valves for Cylinder Return to Home Position

Explosion Proof Valves

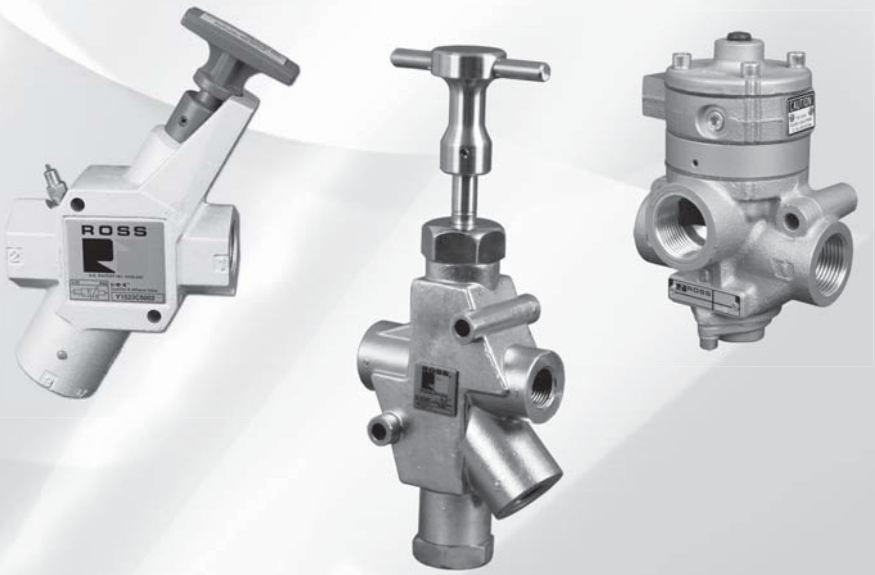
F

Contents

F

ROSS CONTROLS®

Lockout & Exhaust L-O-X® Valves and Soft-Start EEZ-ON® Valves 15 and 27 Series



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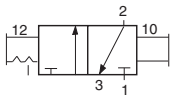
MANUAL LOCKOUT & EXHAUST L-O-X® VALVES – KEY FEATURES

- Fluorocarbon slipper seals for easy shifting, even after long periods of inactivity
- Easily identified by yellow body with red handle
- Integrated sensing port for pressure verification
- Lockable only in the OFF position
- Has a full size exhaust port (equal to or larger than supply)
- Simple push/pull of the large handle provides positive direct manual operation

MANUAL LOCKOUT L-O-X® VALVES WITH SOFT-START EEZ-ON® – KEY FEATURES

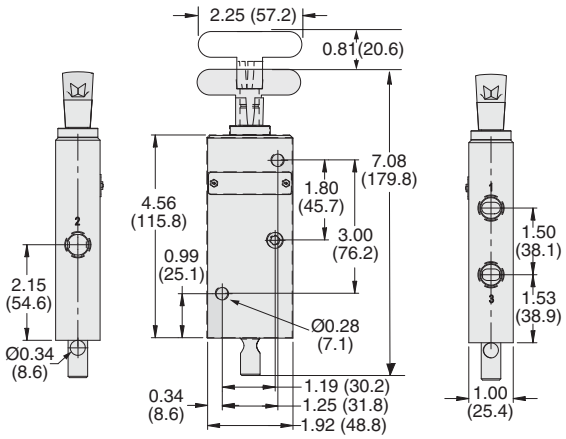
- Easily identified by blue handle
- Gradual re-application of pneumatic pressure prevents rapid equipment movement at startup
- Lockable only in the OFF position
- Has a full size exhaust port (equal to or larger than supply)
- Positive action (2 positions only)
- Simple push/pull of the large blue handle provides positive direct manual operation
- Integrated sensing port for pressure verification

VALVE TYPE	VALVE SERIES	AVAILABLE PORT SIZES										FUNCTIONS					Page
		1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	2/2	3/2	Max Flow (Cv)	Solenoid Control	Pressure Control	
Manual Lockout & Exhaust L-O-X® Valves																	
Slim-Line	15	■	■										■	2.67			F1.3
Modular	15	■	■	■	■								■	5.6			F1.4
Classic	15		■	■	■	■	■						■	19.25			F1.5
High-Capacity	L-O-X®							■	■				■	40.38			F1.6
Stainless Steel	15	■	■	■	■	■	■	■	■				■	39			F1.7
Stainless Steel with Integrated Filter/Regulator	RCO	■		■	■	■							■	9			F1.8 - F1.10
Piloted Valves with Manual Lockout L-O-X® Control																	
		■	■	■	■	■	■	■	■	■	■		■	70	■		F1.11 - F1.12
						■	■	■	■	■	■		■	70		■	F1.13
											■		■	140	■		F1.14
											■		■	140		■	F1.15
Soft-Start EEZ-ON® Valves																	
Right-Angle	19	■	■									■		1.8			F1.16
	27	■	■	■	■	■	■	■					■	30	■		F1.17 - F1.18
	27	■	■	■	■	■	■	■				■		29		■	F1.19
	27	■	■	■	■	■	■	■					■			■	F1.20
Manual Lockout L-O-X® Valves with Soft-Start EEZ-ON® Operation																	
Modular	15	■	■	■	■								■	5.6			F1.21
Classic	15		■	■	■	■	■						■	16.2			F1.22
Piloted Valves with Manual Lockout L-O-X® & Soft-Start EEZ-ON® Operation																	
Manual Pilot Controlled	27	■	■	■	■	■	■	■					■	30	■		F1.23 - F1.24
Solenoid Pilot Controlled	27	■	■	■	■	■	■	■					■	30		■	F1.25

3-Way 2-Position Valve						
Port Size		Valve Model Number*	C_v		Weight lb (kg)	
1, 2	3		1-2	2-3		
1/4	3/8	Y1523D2002	1.84	1.79	0.9 (0.4)	
3/8	3/8	Y1523D3012	2.67	2.64	0.9 (0.4)	

* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD1523D2002.

Valve Dimensions – inches (mm)



Accessories & Options

Silencers

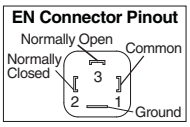
Port Size	Thread Type	Model Number	Avg. C_v
3/8	Male - NPT	5500A3013	2.7
	Male - BSPT	D5500A3013	2.7

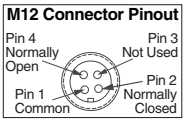
Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator	Model Number**	988A30
	** 1/8 NPT port threads.	

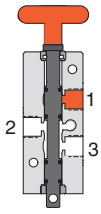
Multiple Lockout Device	Model Number	356A30

F

VALVE OPERATION

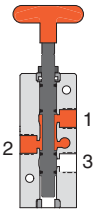
Valved Closed

When the red handle is pushed inward, the flow of supply air is blocked and downstream air is exhausted via the exhaust port. While servicing or maintaining machinery, the L-O-X® valve should be padlocked in this position to prevent the handle from being pulled outward inadvertently where potential for human injury exists.



Valve Open

When the red handle is pulled outward supply air flows freely from inlet to outlet and flow to exhaust is blocked. A detent keeps the handle in the open position.



If a system requires gradual buildup of downstream pressure, see manual L-O-X® valves with EEZ-ON® operation.

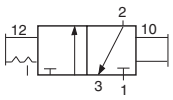
STANDARD SPECIFICATIONS (for valves on this page):

Construction: Spool.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 0 to 145 psig (0 to 10 bar).
Lock Hole Diameter: 0.27 inch (7.0 mm).
Length of Hole: 0.43 inch (10.9 mm).

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

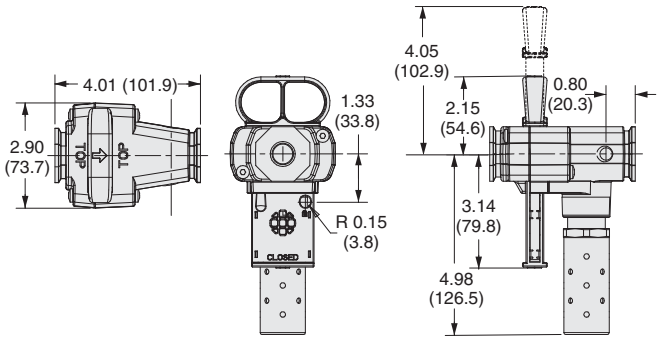
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

F1

3-Way 2-Position Valve,						
Port Size		Valve Model Number*	C_v		Weight lb (kg)	
1, 2	3		1-2	2-3		
1/4	3/4	Y1523A2003	3.7	7.8	1.7 (0.8)	
3/8	3/4	Y1523A3003	5.1	8.3	1.7 (0.8)	
1/2	3/4	Y1523A4003	5.5	8.6	1.8 (0.8)	
3/4	3/4	Y1523A5013	5.6	8.1	1.8 (0.8)	

* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD1523A2003.

Valve Dimensions – inches (mm)



Accessories & Options

Silencers

Port Size	Thread Type	Model Number	Avg. C_v
3/4	Male - NPT	5500A5003	11.5
	Male - BSPT	D5500A5003	11.5

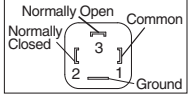
Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

Pressure Switches

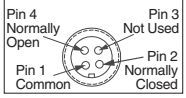
Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).

EN Connector Pinout



M12 Connector Pinout



Pop-Up Indicator

Model Number**	988A30
** 1/8 NPT port threads.	

Multiple Lockout Device

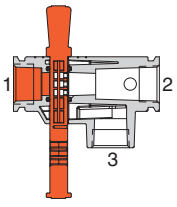
Model Number	356A30

F

VALVE OPERATION

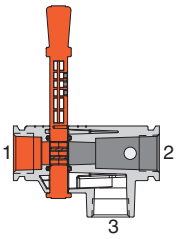
Valved Closed

When the red handle is pushed inward, the flow of supply air is blocked and downstream air is exhausted via the exhaust port. While servicing or maintaining machinery, the L-O-X® valve should be padlocked in this position to prevent the handle from being pulled outward inadvertently where potential for human injury exists.



Valve Open

When the red handle is pulled outward supply air flows freely from inlet to outlet and flow to exhaust is blocked. A detent keeps the handle in the open position.



If a system requires gradual buildup of downstream pressure, see manual L-O-X® valves with EEZ-ON® operation.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Spool.
Mounting Type: Modular, In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 0 to 200 psig (0 to 14 bar).
Lock Hole Diameter: 0.27 inch (7.0 mm).
Length of Hole: 0.43 inch (10.9 mm).

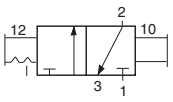
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

F1

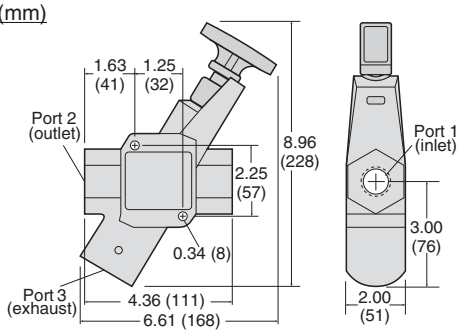
3-Way 2-Position Valve						
Port Size		Body Size	Valve Model Number*	C_v		Weight lb (kg)
1, 2	3			1-2	2-3	
3/8	3/4	1/2	Y1523C3002	4.74	3.57	1.5 (0.7)
1/2	3/4	1/2	Y1523C4002	7.10	4	1.5 (0.7)
3/4	3/4	1/2	Y1523C5012	8.26	4.10	1.5 (0.7
3/4	1¼	1	Y1523C5002	13.12	8.98	2.5 (1.1)
1	1¼	1	Y1523C6002	16.56	9.52	2.5 (1.1)
1¼	1¼	1	Y1523C7012	19.25	9.74	2.5 (1.1)

*NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD1523D3002.

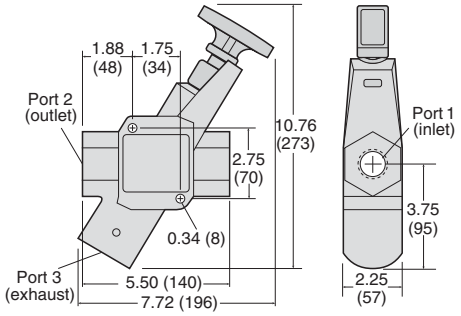


Valve Dimensions – inches (mm)

Body Size 1/2



Body Size 1



Accessories & Options

Silencers

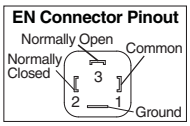
Port Size	Thread Type	Model Number*	Avg. C_v
3/4	Male - NPT	5500A5003	11.5
	Male - BSPT	D5500A5003	11.5
1¼	Male - NPT	5500A7013	16.4
	Male - BSPT	D5500A7013	16.4

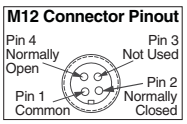
Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator	Model Number**	988A30
	** 1/8 NPT port threads.	

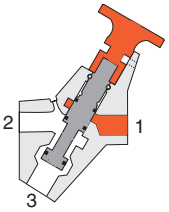
Multiple Lockout Device	Model Number	356A30

F

VALVE OPERATION

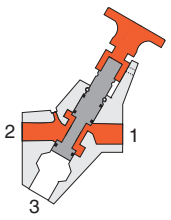
Valved Closed

With a short push of the red handle inward, the flow of supply air is blocked and downstream air is exhausted via the exhaust port at the bottom of the valve. The L-O-X® valve should be padlocked in this position to prevent the handle from being pulled outward inadvertently where potential for human injury exists or while servicing machinery.



Valve Open

When the red handle is pulled out, supply air flows freely from inlet to outlet and flow to exhaust is blocked. A detent keeps the handle in the open position. The handle is not designed to be locked in this position, thereby providing for ready shut-off when necessary.



If a system requires gradual buildup of downstream pressure, see manual L-O-X® valves with EEZ-ON® operation.

STANDARD SPECIFICATIONS (for valves on this page):

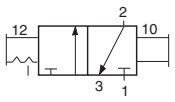
Construction: Spool.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 0 to 300 psig (0 to 20.7 bar).

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

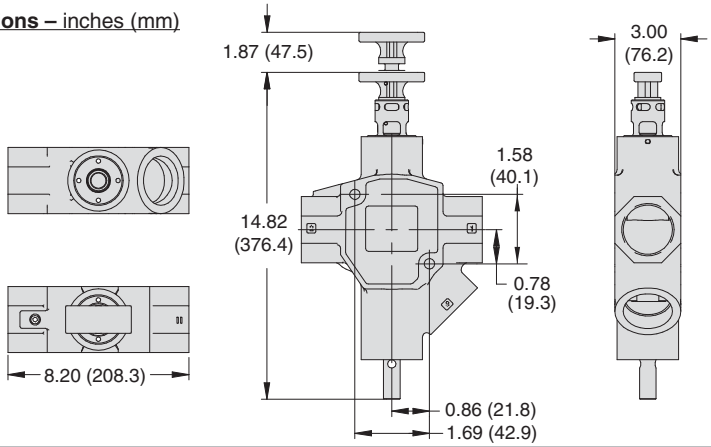
Manual Lockout & Exhaust L-O-X® Valves
High-Capacity

15 Series

3-Way 2-Position Valve						
Port Size		Valve Model Number*	C_v		Weight lb (kg)	
1, 2	3		1-2	2-3		
1½	2	Y1523C8002	35.53	50.98	8.3 (3.7)	
2	2	Y1523C9012	40.38	52.23	8.3 (3.7)	

* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD1523C8002.

Valve Dimensions – inches (mm)



Valves can be padlocked in two locations, at the handle or at the end of the spool.

Accessories & Options

Silencers

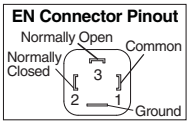
Port Size	Thread Type	Model Number	Avg. C_v
2	Female - NPT	5500B9001	34.2
	Female - BSPT	D5500B9001	34.2

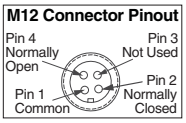
Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator

Model Number**	988A30

** 1/8 NPT port threads.

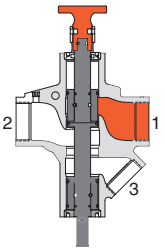
Multiple Lockout Device

Model Number	356A30

VALVE OPERATION

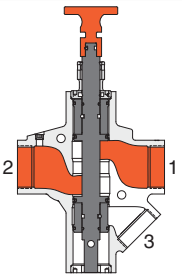
Valved Closed

With a short push of the red handle inward, the flow of supply air is blocked and downstream air is exhausted via the exhaust port while servicing or maintaining machinery. Padlock the L-O-X® valve in this position to prevent the handle from being pulled outward inadvertently to avoid potential for human injury while servicing machinery.



Valve Open

When the red handle is pulled out, supply air flows freely from inlet to outlet and flow to exhaust is blocked. A detent keeps the handle in the open position. The handle is not designed to be locked in this position, thereby providing for ready shut-off when necessary.



If a system requires gradual buildup of downstream pressure, see manual L-O-X® valves with EEZ-ON® operation.

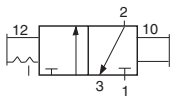
STANDARD SPECIFICATIONS (for valves on this page):

Construction: Spool.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 0 to 300 psig (0 to 20.7 bar).
Lock Hole Diameter: 0.27 inch (7.0 mm).
Length of Hole: 0.43 inch (10.9 mm).

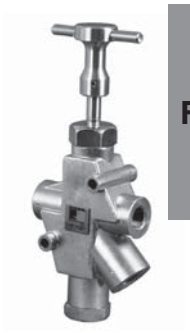
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

Online Version
Rev. 07/21/17

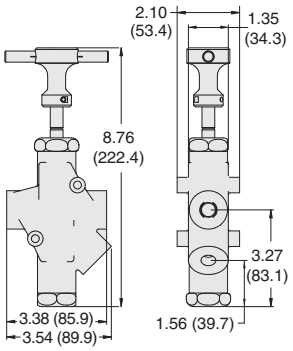
3-Way 2-Position Valve						
Port Size		Valve Model Number*	C_v		Weight lb (kg)	
1, 2	3		1-2	2-3		
1/4	1/4	1523B2004	2.14	2.08	3.75 (1.70)	
3/8	1/2	1523B3004	5.79	6.24	6.0 (2.72)	
1/2	1/2	1523B4004	5.79	6.24	6.0 (2.72)	
3/4	1	1523B5004	14.30	17	13.0 (5.89	
1	1	1523B6004	14.30	17	13.0 (5.89)	
1½	2	1523B8004	39	45	35.0 (15.87)	
2	2	1523B9004	39	45	35.0 (15.87)	

* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g., D1523B2004.

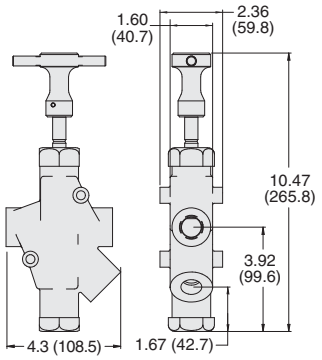


Valve Dimensions – inches (mm)

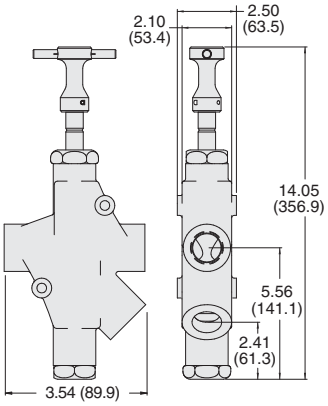
Port Size 1/4



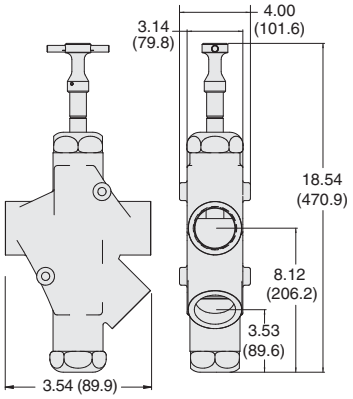
Port Sizes 3/8 & 1/2



Port Sizes 3/4 & 1



Port Sizes 1½ & 2

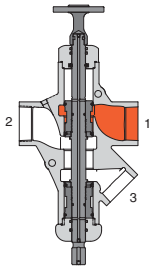


F

VALVE OPERATION

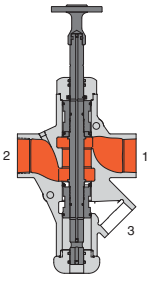
Valve Closed

With a push of the handle inward, the flow of supply air is blocked and downstream air is exhausted via the exhaust port while servicing or maintaining machinery. Padlock the L-O-X® valve in this position to prevent the handle from being pulled outward inadvertently to avoid potential for human injury while servicing machinery.



Valve Open

When the handle is pulled out, supply air flows freely from inlet to outlet and flow to exhaust is blocked. A detent keeps the handle in the open position. The handle is not designed to be locked in this position, thereby providing for ready shut-off when necessary.



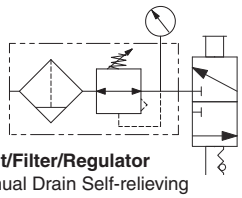
STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Spool, 316 Stainless Steel.
Mounting Type: In-Line.
Ambient/Media Temperature: 30° to 175°F (-1° to 80°C).
Note: For lower temperature ratings, consult ROSS.
Flow Media: Filtered air.
Inlet Pressure: 0 to 300 psig (0 to 20.7 bar).
Lock Hole Diameter: *Port sizes 1/4 thru 2:* 0.34 inch (8.64 mm).
Length of Hole: *Port size 1/4:* 0.44 in (11.17 mm).
Port size 1/2: 0.47 in (11.93 mm)
Port size 1 and 2: 0.55 inch (13.97 mm).

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

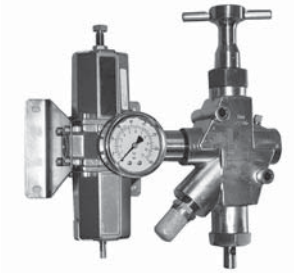
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Port Size		Model Number*	C_v	
1, 2	3		1-2	2-3
1/4	1/4	RC010-13	2.14	2.08
1/2	1/2	RC011-13	4.4	6.24
3/4	1	RC012-13	5	17
1	1	RC013-13	8	17



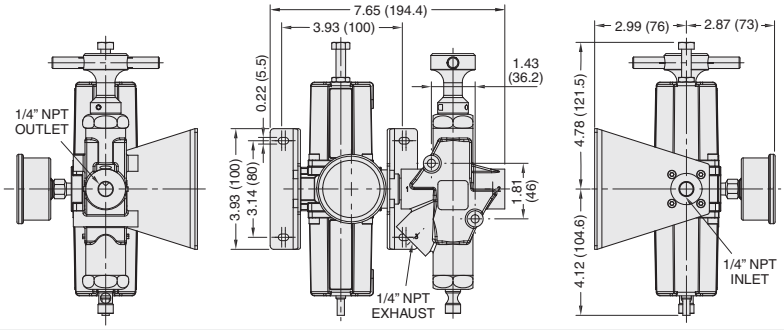
Lockout/Filter/Regulator
Lockout Manual Drain Self-relieving

* NPT port threads. For BSPP threads, consult ROSS.

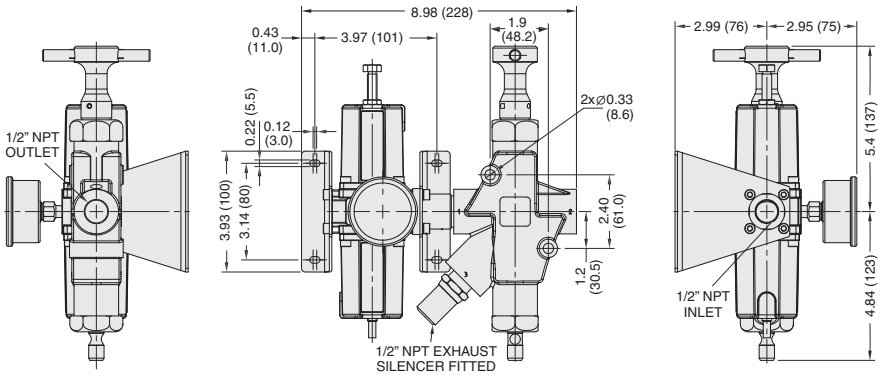


Dimensions – inches (mm)

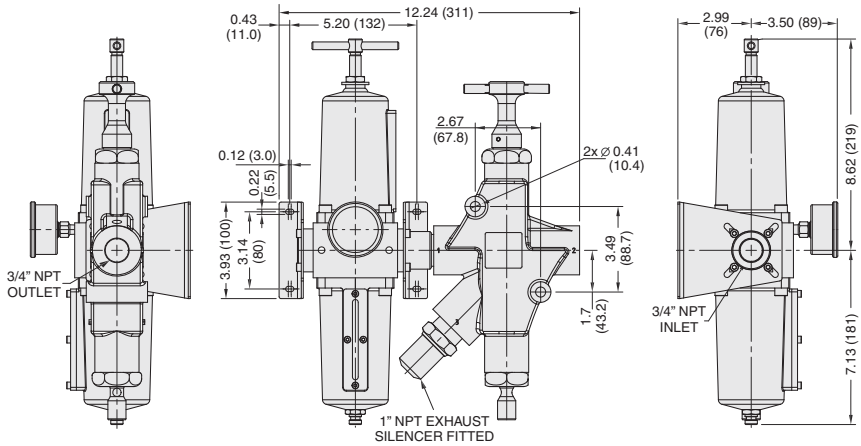
Port Size 1/4



Port Size 1/2



Port Size 3/4



F

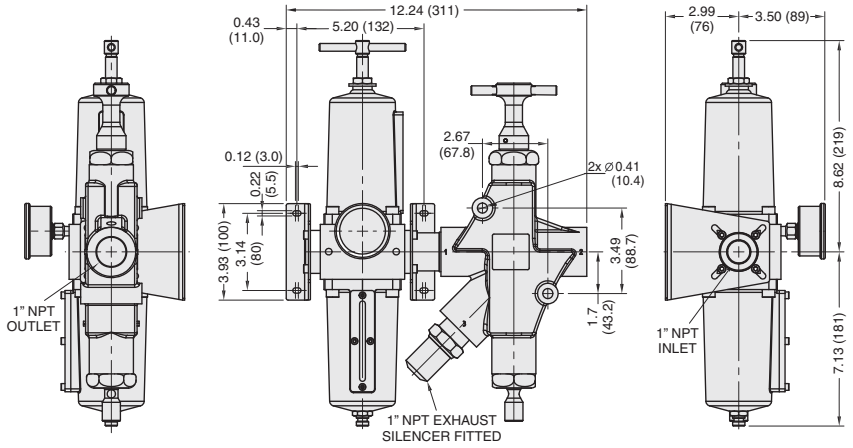
STANDARD SPECIFICATIONS (for valves on this page):

Construction: Spool, 316 Stainless Steel.
Mounting Type: In-Line.
Ambient/Media Temperature: 30° to 175°F (-1° to 80°C).
Note: For lower temperature ratings, consult ROSS.
Flow Media: Filtered air.
Inlet Pressure: 0 to 300 psig (0 to 20.7 bar).
Secondary Pressure: 7 to 174 psig (0.5 to 12 bar).
Seals: Fluorocarbon (Viton).
Lock Hole Diameter: *Port sizes 1/4 thru 2:* 0.34 inch (8.64 mm).
Length of Hole: *Port size 1/4:* 0.44 in (11.17 mm).
Port size 1/2: 0.47 in (11.93 mm)
Port size 1 and 2: 0.55 inch (13.97 mm).

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

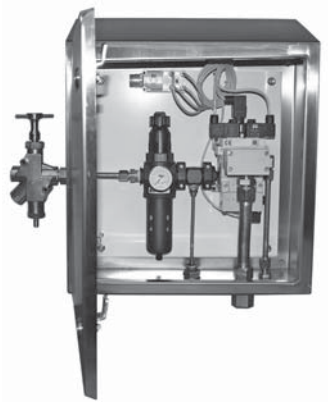
Port Size 1



Stainless Steel Cabinet for Wash-Down Applications

- Stainless steel control cabinet includes filter/regulator and Category 4 DM2® Series valve for Air Entry Control
- Stainless steel construction, designed for wash-down areas
- Control cabinet is built with slanted top to avoid pooling
- Control Reliable Energy Isolation

CONTROL CATEGORY 2
CONTROL CATEGORY 3
CONTROL CATEGORY 4



APPLICATIONS:

• Chemical Processing • Forestry • Mining • Pharmaceutical
• Pulp and Paper • Oil and Gas • Off-shore Industries

Will build to your specifications!

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

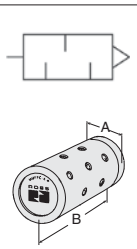
F1

Stainless Steel Silencers

- Port sizes 1/4 thru 1 NPT have all stainless steel construction
- Port sizes 2 NPT and all BSPT have standard construction consisting of nickel plated cold rolled steel
- Supplied with a standard pipe thread fitting for attaching directly to the exhaust ports of air-operated equipment

Port Size	Thread Type	Model Number		Avg. C_v	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	BSPT Threads		A	B	
1/4	Male	5500B2004	D5500B2004	1.44	0.56 (14.2)	1.75 (44.5)	0.05 (0.23)
1/2	Male	5500B4004	D5500B4004	3.01	0.87 (22.1)	2.75 (69.7)	0.25 (0.11)
1	Male	5500B6004	D5500B6004	10.41	1.31 (33.3)	3.87 (98.3)	0.45 (0.20)
2	Male	5500A9004	D5500A9004	28.11	2.37 (60.2)	5.50 (139.7)	1.5 (0.68)

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum.
Flow Media: Filtered air.

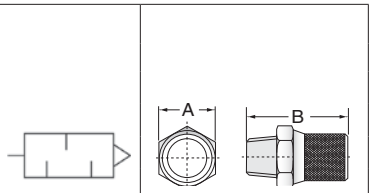


Silencers for Stainless Steel L-O-X® Air Entry Combinations

- 316 Stainless Steel sintered element silencers used to protect ports open to the atmosphere.

Port Size	Thread Type	Model Number		Avg. C_v	Dimensions inches (mm)	
		NPT Threads	BSP Threads		A	B
1/4	Male	5500A2005	D5500A2005	1.5	0.67 (17)	1.50 (38)
1/2	Male	5500A4005	D5500A4005	3.5	0.94 (24)	2.17 (55
1	Male	5500A6005	D5500A6005	5.7	1.41 (36)	2.95 (75)

Pressure Range: 0 to 174 psig (0 to 12 bar) maximum.
Flow Media: Filtered air.
Seals: Nitrile.



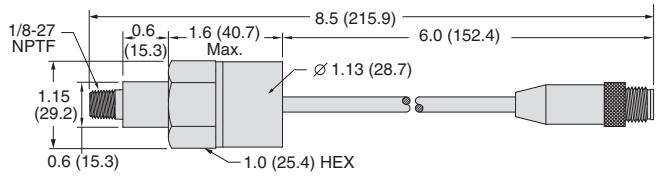
Stainless Steel Pressure Switch

- 316 Stainless Steel Body
- Nitrile Seals
- DPDT (Double-Pole Double-Throw Switch
- Factory preset 5 psi (falling)

F

Inlet Port Size	Model Number	Weight lb (kg)
1/8	1162A30	0.23 (.01)

NPT port threads.

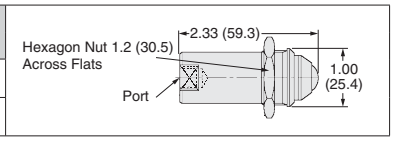


Stainless Steel Visual Indicator

- 316 Stainless Steel Body, internals and Springs
- Nitrile Seals
- Visual Indicator piston, Acetal
- Visual Indicator assembly, Acetal with acrylic lens

Inlet Port Size	Model Number	Dimensions inches (mm)		Weight lb (kg)
		A	B	
1/8	1155H30	2.33 (59.3)	1.00 (25.4)	0.22 (0.1)

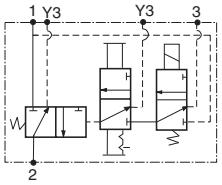
NPT port threads.



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

3-Way 2-Position Valve, Solenoid Pilot Controlled

Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1/4	1/2	3/8	Y2773A2072**	2.5	3.1	3.5 (1.6)
3/8	1/2	3/8	Y2773A3072**	3.6	5.3	3.5 (1.6)
1/2	1/2	3/8	Y2773A4082**	3.3	5.3	3.5 (1.6)
1/2	1	3/4	Y2773A4072**	6.3	9.2	4.3 (1.9)
3/4	1	3/4	Y2773A5072**	7.7	11	4.3 (1.9)
1	1	3/4	Y2773A6082**	8	12	4.3 (1.9)
1	1½	1¼	Y2773A6072**	23	34	8.0 (3.6)
1¼	1½	1¼	Y2773A7072**	30	32	8.0 (3.6)
1½	1½	1¼	Y2773A8082**	30	31	8.0 (3.6)
1½	2½	2	Y2773A8072**	68	70	17.5 (7.9)
2	2½	2	Y2773A9072**	70	70	17.5 (7.9)
2½	2½	2	Y2773A9082**	70	71	17.5 (7.9)



* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD2773A2072W.

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., Y2773A2072W. For other voltages, consult ROSS.

Accessories & Options

Silencers

Port Size	Thread Type	Model Number NPT Threads	Model Number BSPT Threads	Avg. C_v
1/2	Male	5500A4003	D5500A4003	4.7
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9
2½	Female	5500A9002	D5500A9002	103.7

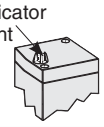
Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum.
Flow Media: Filtered air.


Port size 1/2 thru 2


Port size 2½

Indicator Light Kits

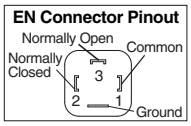
Kit Number 24 volts DC	Kit Number 110-120 volts AC 50-60 Hz
862K87-W	862K87-Z

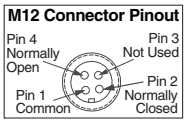


Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator

Model Number**	988A30

** 1/8 NPT port threads.

Multiple Lockout Device

Model Number	356A30

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
Solenoids: AC or DC power. 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 sizes 1/4 to 1½:* 15 to 150 psig (1 to 10 bar).
Port sizes 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.

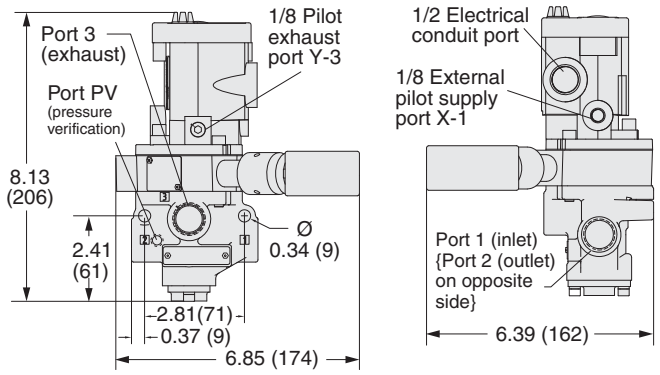
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

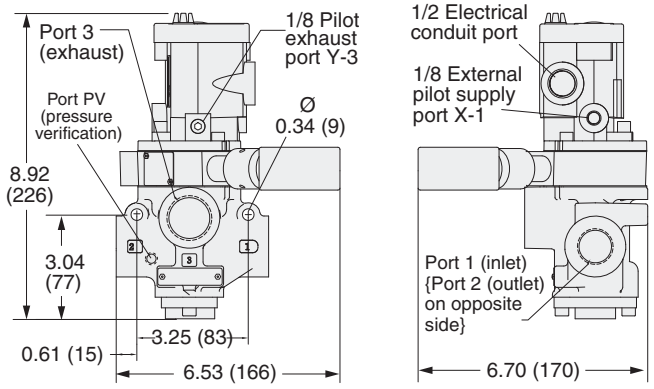
F1

Valve Dimensions – inches (mm)

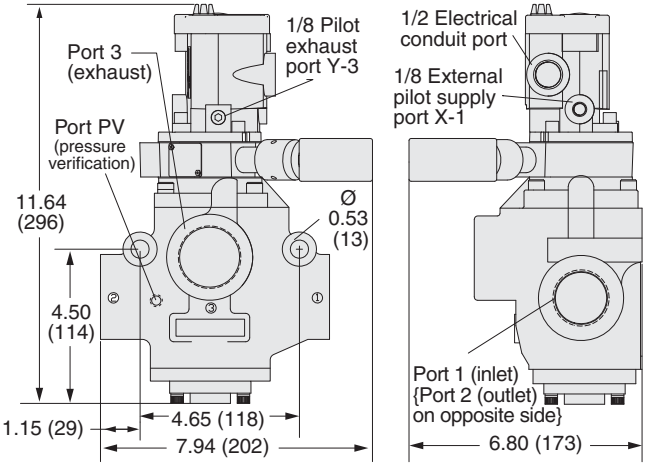
Body Size 3/8



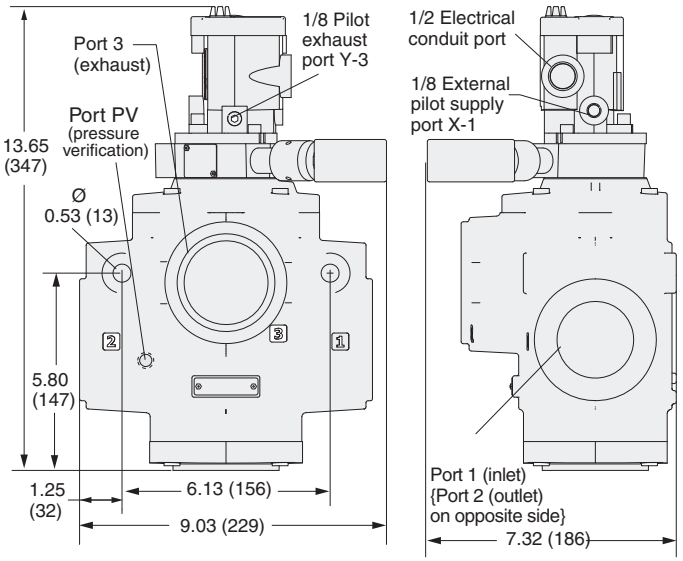
Body Size 3/4



Body Size 1¼



Body Size 2

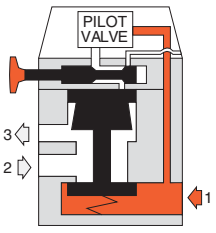


F

VALVE OPERATION

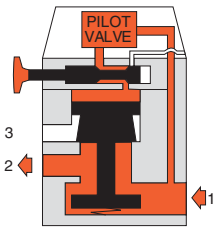
Pilot De-energized

With the solenoid pilot de-energized (regardless of the position of the L-O-X® handle) the inlet poppet remains closed. The outlet port is connected to the exhaust port so that pressure in the downstream lines is vented to atmosphere.



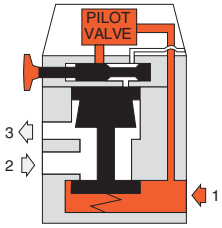
Pilot Energized

With the solenoid pilot energized and the L-O-X® control in the open position, air can flow from inlet to outlet port. The exhaust port is closed.



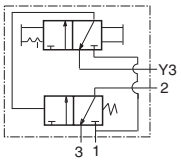
L-O-X® Valve Closed

With the handle pushed inward, the L-O-X® control is closed, and air to the valve piston is cut off. This allows the inlet poppet to be closed by its spring and the pressure of the inlet air. The outlet is connected to exhaust so downstream pressure is vented.

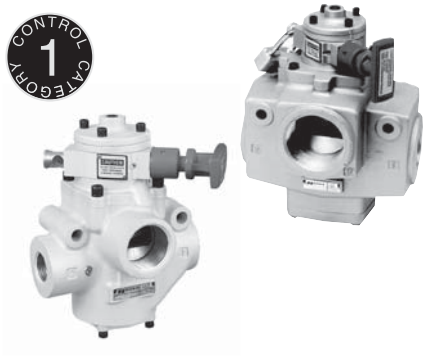


3-Way 2-Position Valve, Internal Pressure Controlled

Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1	1½	1¼	Y2783A6006	23	34	7.0 (3.2)
1¼	1½	1¼	Y2783A7006	30	32	7.0 (3.2)
1½	1½	1¼	Y2783A8016	30	31	7.0 (3.2)
1½	2½	2	Y2783A8006	68	70	15.3 (6.9
2	2½	2	Y2783A9006	70	70	15.3 (6.9
2½	2½	2	Y2783A9016	70	71	15.3 (6.9)

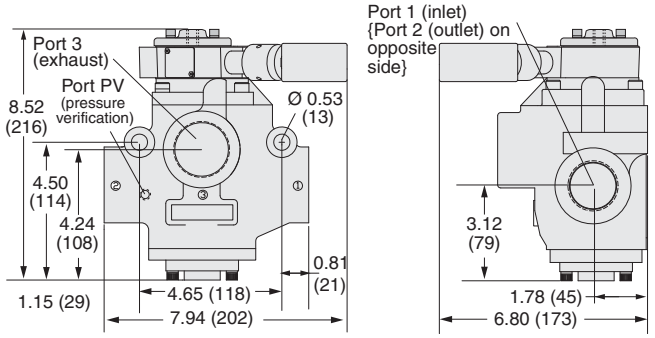


* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD2783A6006.

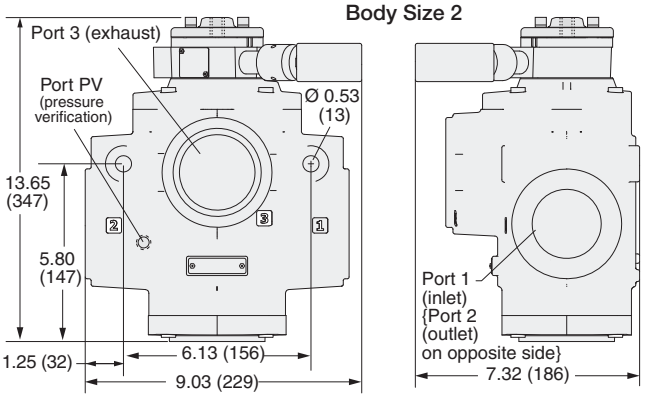


Valve Dimensions – inches (mm)

Body Size 1¼



Body Size 2



Accessories & Options

Silencers

Port Size	Thread Type	Model Number NPT Threads	Model Number BSPT Threads	Avg. C_v
1½	Female	5500A8001	D5500A8001	29.9
2½	Female	5500A9002	D5500A9002	103.7

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum.
Flow Media: Filtered air.

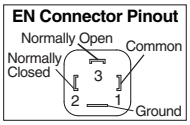
Port size 1½ thru 2

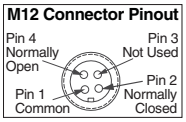
Port size 2½

Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator

Model Number**	988A30

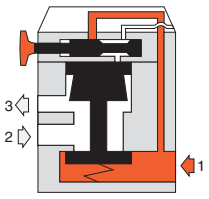
** 1/8 NPT port threads.

Multiple Lockout Device

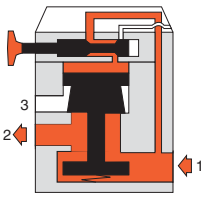
Model Number	356A30

VALVE OPERATION

Valve Closed With a short push of the red handle inward the flow of supply air is blocked and downstream air is exhausted via the exhaust port. Air pressure on the inlet and exhaust poppets produces a large closing force. The L-O-X® valve should be padlocked in this position to prevent the handle from being pulled outward inadvertently when potential for human injury exists or servicing machinery.



Valve Open With the red handle pulled out, pilot air flows to the top of the actuating piston, causing it to open the inlet poppet. Supply air then flows freely from inlet to outlet, and the exhaust port is blocked. A detent keeps the L-O-X® handle in the open position. The handle is designed not to be locked in the open position, thereby allowing for quick shut-off when necessary.



STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: *Basic Size 1¼:* 15 to 150 psig (1 to 10 bar).
Basic Size 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.

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

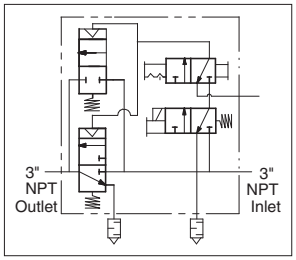
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

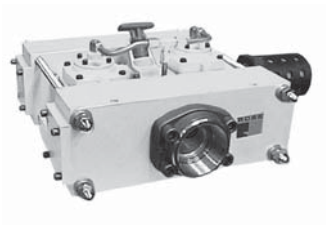
F1

3 Inch L-O-X® Valve for Lockout

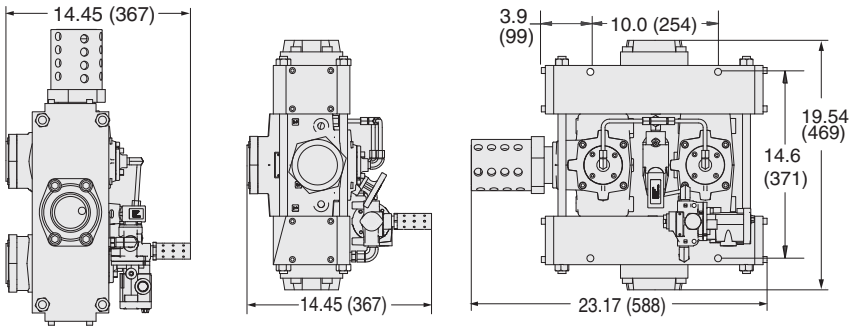
3-Way 2-Position Valve, Solenoid Pilot Controlled					
Port Size		Valve Model Number	C_v		Weight lb (kg)
1, 2	3		1-2	2-3	
3	2½	Y3900A0896**	140	71	115 (53.0)

** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., Y3900A0896W. For other voltages, consult ROSS.





Valve Dimensions – inches (mm)



OPTIONS

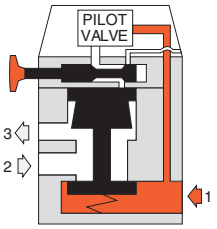
Multiple Lockout Device	Model Number	356A30

VALVE OPERATION

F

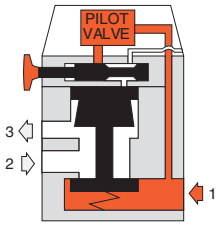
Pilot De-energized

With the solenoid pilot de-energized (regardless of the position of the L-O-X® handle) the inlet poppet remains closed. The outlet port is connected to the exhaust port so that pressure in the downstream lines is vented to atmosphere.



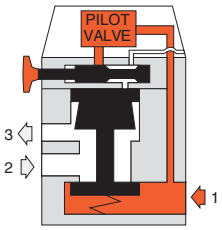
Pilot Energized

With the solenoid pilot energized and the L-O-X® control in the open position, air can flow from inlet to outlet port. The exhaust port is closed.



L-O-X® Valve Closed

With the handle pushed inward, the L-O-X® control is closed, and air to the valve piston is cut off. This allows the inlet poppet to be closed by its spring and the pressure of the inlet air. The outlet is connected to exhaust so downstream pressure is vented.



STANDARD SPECIFICATIONS (for valves on this page):

Construction: Spool.
Mounting Type: In-Line.
Solenoids: AC or DC power. Rated for continuous duty.
Power Consumption:
87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

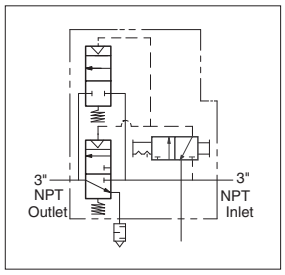
Ambient Temperature: 40 to 120°F (4 to 50°C).
Media Temperature: 40 to 175°F (4 to 80°C).
Flow Media: Filtered air; 5 micron filter recommended.
Inlet Pressure: 30 to 150 psig (2 to 10 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.
Port Threads: NPT.

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

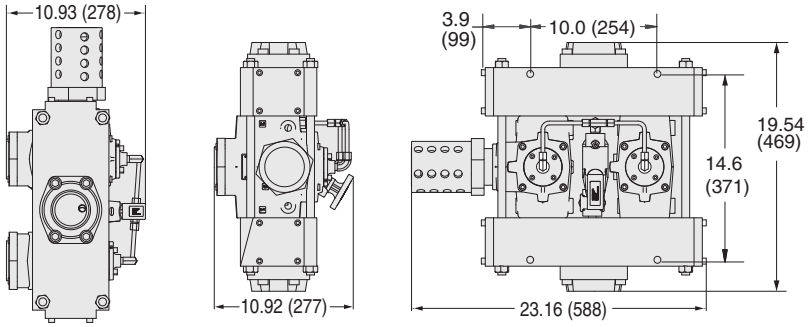
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

3 Inch L-O-X® Valve for Lockout

3-Way 2-Position Valve, Pressure Controlled					
Port Size		Valve Model Number	C_v		Weight lb (kg)
1, 2	3		1-2	2-3	
3	2½	Y3900A0829	140	71	110 (49.9)



Valve Dimensions – inches (mm)



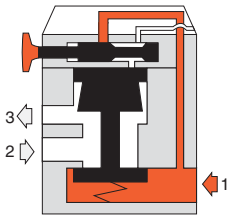
OPTIONS

Multiple Lockout Device	Model Number	356A30

VALVE OPERATION

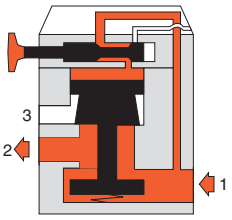
Valve Closed

With a short push of the red handle inward the flow of supply air is blocked and downstream air is exhausted via the exhaust port. Air pressure on the inlet and exhaust poppets produces a large closing force. The L-O-X® valve should be padlocked in this position to prevent the handle from being pulled outward inadvertently when potential for human injury exists or servicing machinery.



Valve Open

With the red handle pulled out, pilot air flows to the top of the actuating piston, causing it to open the inlet poppet. Supply air then flows freely from inlet to outlet, and the exhaust port is blocked. A detent keeps the L-O-X® handle in the open position. The handle is designed not to be locked in the open position, thereby allowing for quick shut-off when necessary.



STANDARD SPECIFICATIONS (for valves on this page):

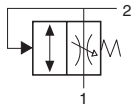
Construction: Spool.
Mounting Type: In-Line.
Ambient/Media Temperature: 40 to 175° F (4 to 80°C).
Flow Media: Filtered air; 5 micron filter recommended.
Inlet Pressure: 30 to 150 psig (2 to 10 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.
Port Threads: NPT.

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

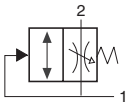
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

F1

Models with Threaded Banjo				
2-Way Normally Closed EEZ-ON®				
Port Size		Valve Model Number	Avg. C_v	Weight lb (kg)
Port 1 (female threads)	Port 2 (male threads)			
1/4	1/4	1969B2010	1.2	0.38 (0.15)
3/8	3/8	1969B3010	1.7	0.38 (0.15)
G1/4	G1/4	D1969B2010	1.2	0.38 (0.15)
G3/8	G3/8	D1969B3010	1.7	0.38 (0.15)

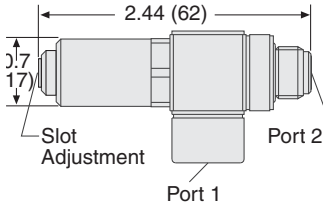


Primary Pressure at Port 1



Primary Pressure at Port 2

Valve Dimensions – inches (mm)



F

- Gradual re-application of pneumatic pressure prevents rapid equipment movement at startup
- Right-Angle style mounts directly in cylinder ports
- Available with threaded ports
- Point of use Soft-Start

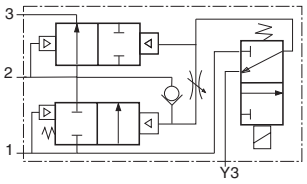
STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Spool.
Mounting Type: Port Mounted.
Ambient/Media Temperature: 15° to 160°F (-10° to 70°C).
Flow Media: Filtered air.
Operating Pressure: 45 to 150 psig (3 to 10.3 bar).

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

3-Way 2-Position Valve, Solenoid Pilot Controlled

Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1/4	1/2	3/8	2773B2037**	2.5	3.1	4.5 (2.0)
3/8	1/2	3/8	2773B3037**	3.6	5.3	4.5 (2.0)
1/2	1/2	3/8	2773B4047**	3.3	5.3	4.5 (2.0)
1/2	1	3/4	2773B4037**	10	13	5.0 (2.3)
3/4	1	3/4	2773B5037**	12	15	5.0 (2.3)
1	1	3/4	2773B6047**	12	16	5.0 (2.3)
1	1½	1¼	2773A6037**	23	34	8.8 (4.0)
1¼	1½	1¼	2773A7037**	30	32	8.8 (4.0)
1½	1½	1¼	2773A8047**	30	31	8.8 (4.0)



* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g., D2773B2037.
**Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., 2773B2037W.
For other voltages, consult ROSS.

CONTROL CATEGORY 1

1/4 thru 1 Exhaust Port Size

1 thru 1½ Exhaust Port Size

Accessories & Options

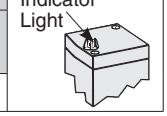
Silencers

Port Size	Thread Type	Model Number* NPT Threads	Model Number* BSPT Threads	Avg. C_v
1/2	Male	5500A4003	D5500A4003	4.7
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

Indicator Light Kits

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



Manual Overrides

Flush Button Locking Type	Flush Button Kit Number
Non-Locking	790K87
Locking	792K87

Extended Button Locking Type	Extended Button Kit Number
Non-Locking	791K87

Extended Button with Palm Locking Type	Extended Button with Palm Kit Number
Non-Locking	984H87

NOTE: ***The 3/2 EEZ-ON® valve is also available with a L-O-X® adapter so that both L-O-X® and EEZ-ON® functions are consolidated in a single valve.***

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
Solenoid Pilot: AC or DC power. 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 10.3 bar).

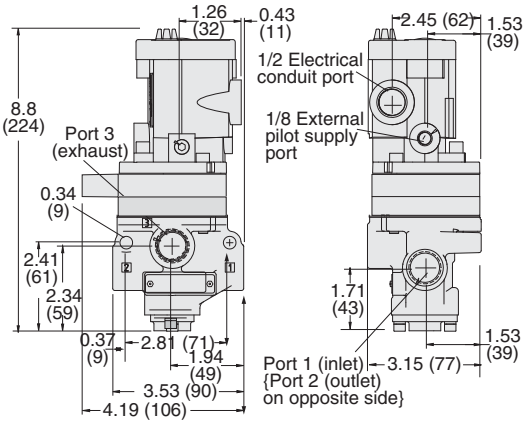
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

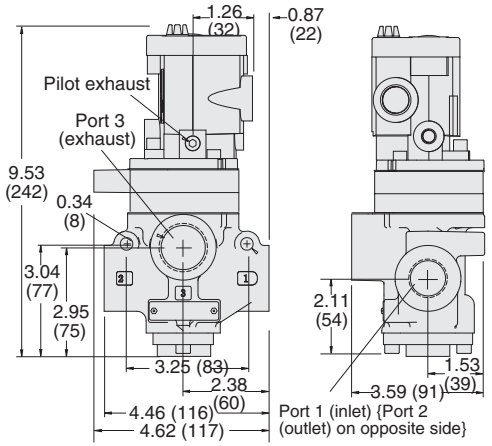
F1

Valve Dimensions – inches (mm)

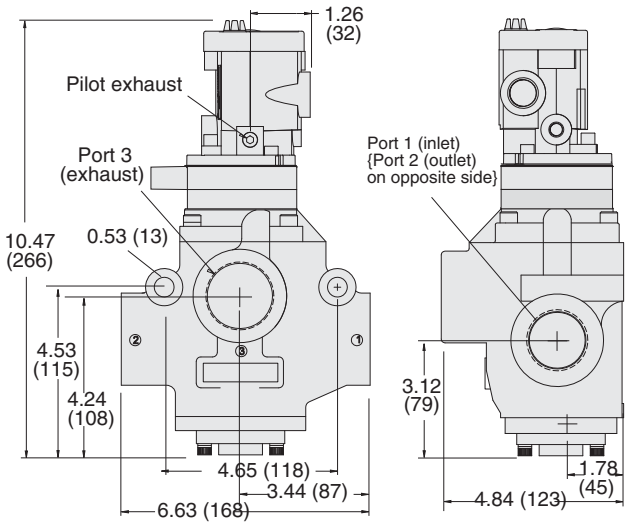
Body Size 3/8



Body Size 3/4



Body Size 1¼

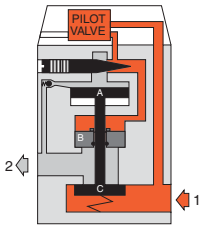


F

VALVE OPERATION

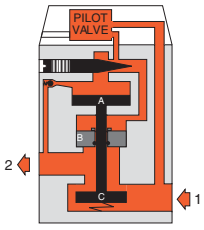
Pilot Not Energized

Pilot air is blocked by the pilot. Any down-stream pressure forces piston B (which slides on the valve stem) upward. This opens the exhaust port and vents the downstream line.



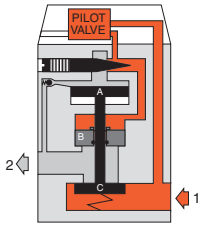
Full Pressure

When the pressure on piston A reaches approximately 50 percent of inlet pressure, it is forced downward and opens inlet poppet C. Full inlet pressure now flows freely to the outlet port.



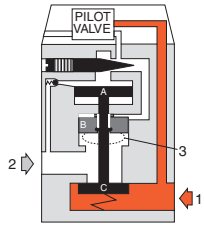
Pilot Energized

Pilot air forces piston B downward to close the exhaust port. Pilot air also flows past the adjusting needle, opens the ball check and begins slowly to pressurize the outlet line. At the same time, pressure is building up on piston A.

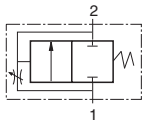


Pilot De-energized

Air above pistons A and B is exhausted through the exhaust port of the pilot valve. Air above poppet C forces sliding piston B upward so that the main exhaust port is opened and the pressurized air is exhausted.



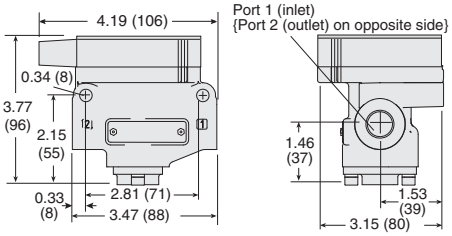
2-Way 2-Position Valves, Pressure Controlled					
Port Size 1, 2	Body Size	Valve Model Number*	C_v	Weight lb (kg)	
1/4	3/8	2781A2007	2.3	1.5 (0.7)	
3/8	3/8	2781A3007	3.8	1.5 (0.7)	
1/2	3/8	2781A4017	4	1.5 (0.7)	
1/2	3/4	2781A4007	13	2.3 (1.0)	
3/4	3/4	2781A5007	15	2.3 (1.0)	
1	3/4	2781A6017	16	2.3 (1.0)	
1	1¼	2781A6007	24	6.0 (2.7)	
1¼	1¼	2781A7007	29	6.0 (2.7)	
1½	1¼	2781A8017	29	6.0 (2.7)	



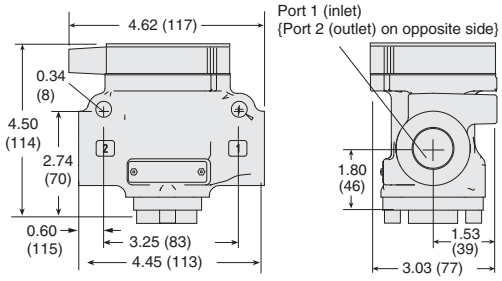
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g., D2781A2007.

Valve Dimensions – inches (mm)

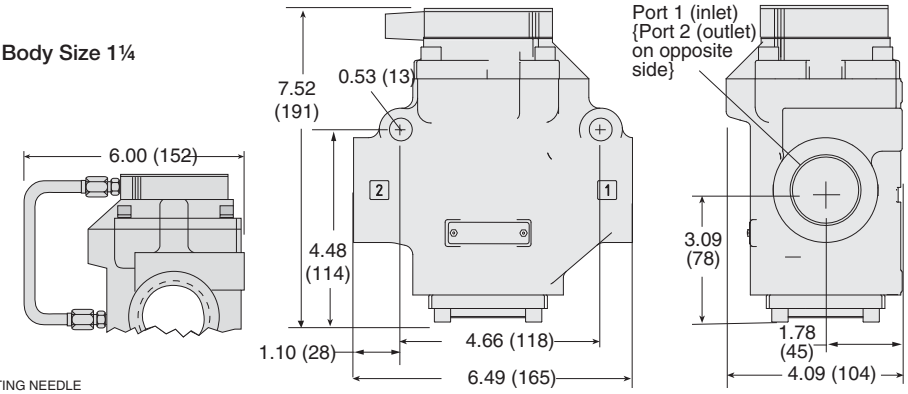
Body Size 3/8



Body Size 3/4



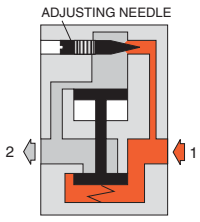
Body Size 1¼



VALVE OPERATION

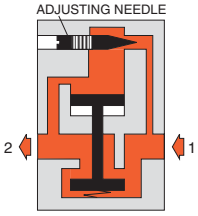
Air Pressure to Inlet

When air pressure is first applied to the inlet, air flow to the piston is restricted by the adjustable needle in the delay orifice. Downstream air pressure gradually builds up at a rate determined by the setting of the adjustable needle.



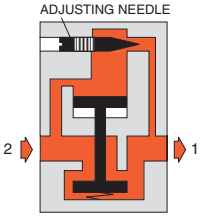
Valve Opens to Full Flow

When downstream air pressure reaches approximately 40 to 60 percent of inlet pressure, the valve element shifts to the full open position and there is full air flow to the downstream components. This condition continues as long as inlet air pressure is present.



Inlet Pressure Removed

When inlet pressure is removed, the exhausting downstream air pressure keeps the inlet poppet open until the downstream pressure drops by approximately 90 percent. The remaining pressure is exhausted via the delay orifice.



STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).

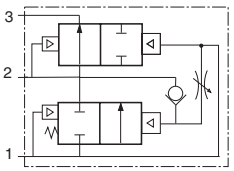
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

F1

3-Way 2-Position Valve, Pressure Controlled

Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1/4	1/2	3/8	2783C2037	2.5	3.1	4.5 (2.0)
3/8	1/2	3/8	2783C3037	3.6	5.3	4.5 (2.0)
1/2	1/2	3/8	2783C4047	3.3	5.3	4.5 (2.0)
1/2	1	3/4	2783C4037	10	13	5.0 (2.3)
3/4	1	3/4	2783C5037	12	15	5.0 (2.3)
1	1	3/4	2783C6047	12	16	5.0 (2.3)
1	1½	1¼	2783C6037	23	34	8.8 (4.0)
1¼	1½	1¼	2783B7037	30	32	8.8 (4.0
1½	1½	1¼	2783B8047	30	31	8.8 (4.0)



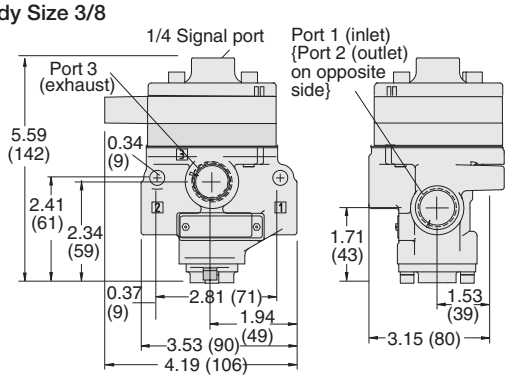
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g., D2783C2037.

1/4 thru 1 Exhaust Port Size

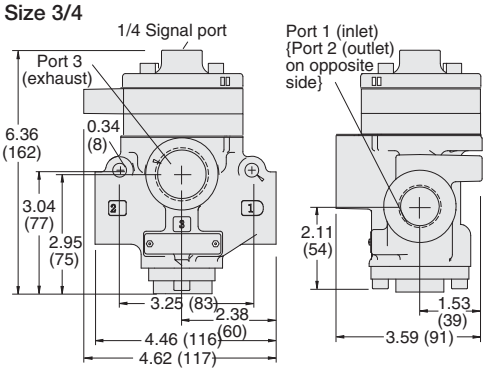
1 thru 1½ Exhaust Port Size

Valve Dimensions – inches (mm)

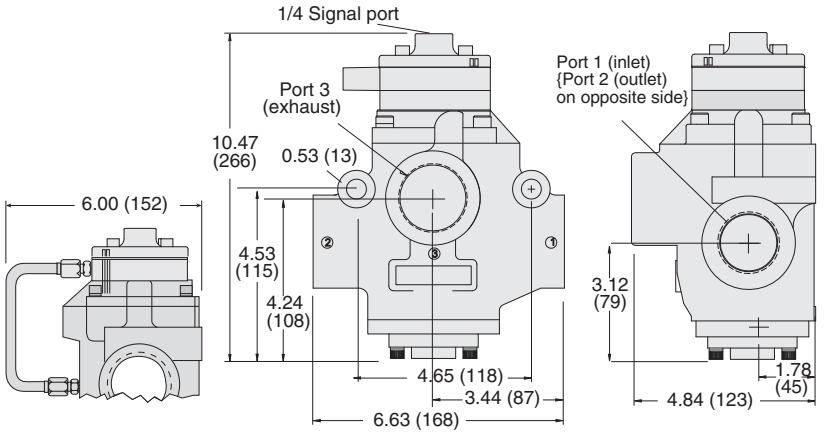
Body Size 3/8



Body Size 3/4



Body Size 1¼



Accessories & Options

Silencers

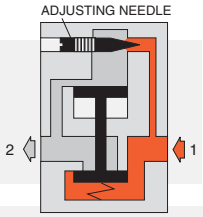
Port Size	Thread Type	Model Number* NPT Threads	Model Number* BSPT Threads	Avg. C_v
1/2	Male	5500A4003	D5500A4003	4.7
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum.
Flow Media: Filtered air.

VALVE OPERATION

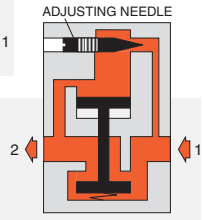
Air Pressure to Inlet

When air pressure is first applied to the inlet, air flow to the piston is restricted by the adjustable needle in the delay orifice. Downstream air pressure gradually builds up at a rate determined by the setting of the adjustable needle.



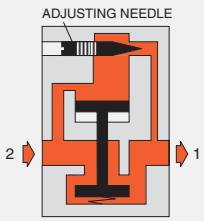
Valve Opens to Full Flow

When downstream air pressure reaches approximately 40 to 60 percent of inlet pressure, the valve element shifts to the full open position and there is full air flow to the downstream components. This condition continues as long as inlet air pressure is present.



Inlet Pressure Removed

When inlet pressure is removed, the exhausting downstream air pressure keeps the inlet poppet open until the downstream pressure drops by approximately 90 percent. The remaining pressure is exhausted via the delay orifice.



STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).

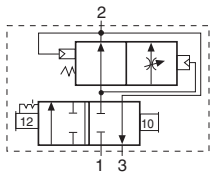
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

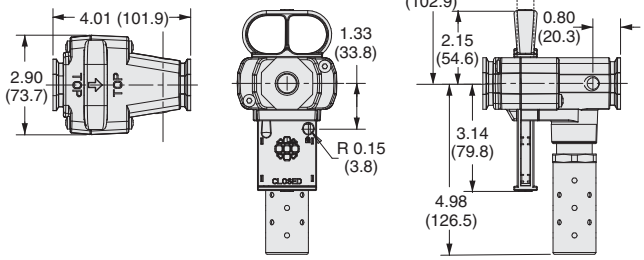
Online Version Rev. 07/21/17

3-Way 2-Position Valve, Modular						
Port Size		Valve Model Number*	C_v		Weight lb (kg)	
1, 2	3		1-2	2-3		
1/4	3/4	Y1523A2103	3.7	7.8	1.7 (0.8)	
3/8	3/4	Y1523A3103	5.1	8.3	1.7 (0.8)	
1/2	3/4	Y1523A4103	5.5	8.6	1.8 (0.8)	
3/4	3/4	Y1523A5113	5.6	8.1	1.8 (0.8)	

* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD1523A2103.



Valve Dimensions – inches (mm)



Accessories & Options

Silencers

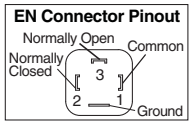
Port Size	Thread Type	Model Number	Avg. C_v
3/4	Male - NPT	5500A5003	11.5
	Male - BSPT	D5500A5003	11.5

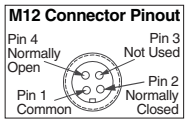
Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator

Model Number**	988A30

** 1/8 NPT port threads.

Multiple Lockout Device

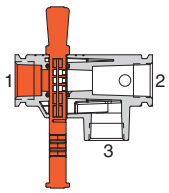
Model Number	356A30

F

VALVE OPERATION

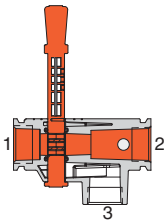
Valved Closed

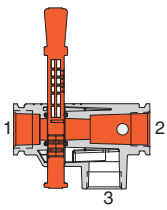
With a short push of the blue handle inward, the flow of supply is blocked and downstream air is exhausted via the exhaust port at the bottom of the valve. It is required by OSHA that the L-O-X® valves with EEZ-ON® operation be padlocked in this position to prevent the handle from being pulled outward inadvertently when potential for human injury exists or servicing machinery.



EEZ-ON® Function

The blue handle will only shift part way due to a mechanical stop button allowing only partial flow from inlet to downstream causing the pressure to increase at a slower rate.





Valve Open

Pressing the mechanical stop button allows the blue handle to be shifted completely open allowing full flow from inlet to downstream.

STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Spool.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 0 to 200 psig (0 to 14 bar).
Lock Hole Diameter: 0.27 inch (7.0 mm).
Length of Hole: 0.43 inch (10.9 mm).

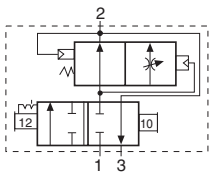
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

Manual Lockout & Exhaust L-O-X® Valves with Soft-Start EEZ-ON®

3-Way 2-Position Valve, Classic

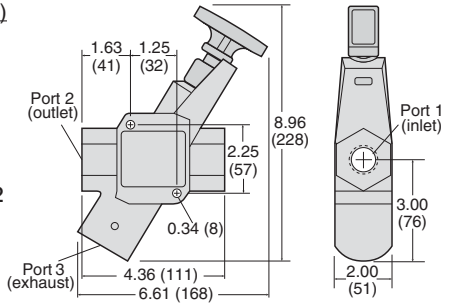
Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
3/8	3/4	1/2	Y1523B3102	3.64	2.81	1.5 (0.7)
1/2	3/4	1/2	Y1523B4102	4.86	3.51	1.5 (0.7)
3/4	3/4	1/2	Y1523B5112	5.09	2.91	1.5 (0.7)
3/4	1¼	1	Y1523B5102	10.08	8.56	3.2 (1.5)
1	1¼	1	Y1523B6102	11.07	8.45	3.2 (1.5)
1¼	1¼	1	Y1523B7112	11.86	8.46	3.2 (1.5)



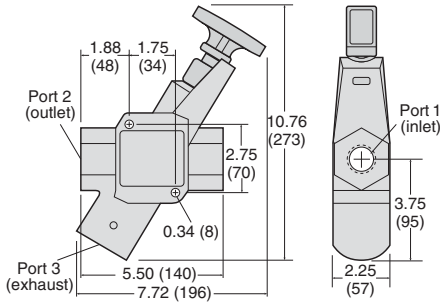
* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD1523B3102.

Valve Dimensions – inches (mm)

Body Size 1/2



Body Size 1



Accessories & Options

Silencers

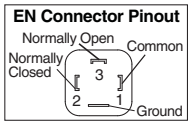
Port Size	Thread Type	Model Number*	Avg. C_v
3/4	Male - NPT	5500A5003	11.5
	Male - BSPT	D5500A5003	11.5
1¼	Male - NPT	5500A7013	16.4
	Male - BSPT	D5500A7013	16.4

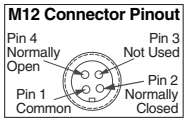
Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator

Model Number**	988A30

** 1/8 NPT port threads.

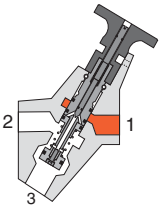
Multiple Lockout Device

Model Number	356A30

VALVE OPERATION

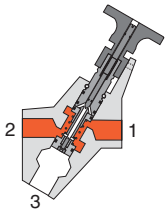
Valved Closed

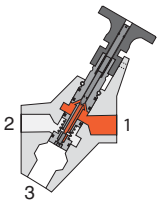
With a short push of the blue handle inward, the flow of supply is blocked and downstream air is exhausted via the exhaust port at the bottom of the valve. It is required by OSHA that the L-O-X® valves with EEZ-ON® operation be padlocked in this position to prevent the handle from being pulled outward inadvertently when potential for human injury exists or servicing machinery.



EEZ-ON® Function

With the blue handle pulled out, the adjustable needle valve (accessed through top of handle) setting determines the rate of pressure buildup.





Valve Open

After the blue handle is pulled out and pressure downstream has gradually increased, the valve automatically changes to a fully open state, allowing full flow from inlet to downstream. Full flow is achieved at approximately 50% of inlet pressure.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Spool.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 0 to 150 psig (0 to 10 bar).

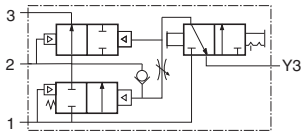
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

F1

3-Way 2-Position Valve, Manual Lockout Controlled

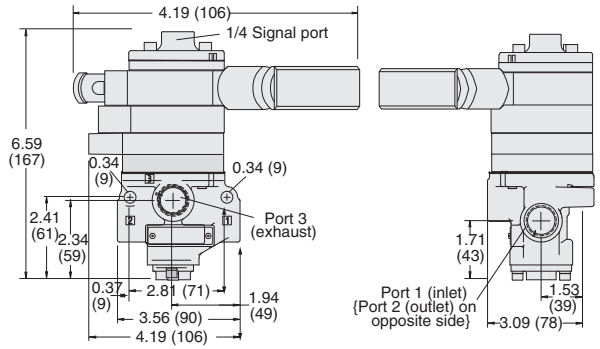
Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1/4	1/2	3/8	Y2783B2055	2.5	3.1	4.3 (2.0)
3/8	1/2	3/8	Y2783B3055	3.6	5.3	4.3 (2.0)
1/2	1/2	3/8	Y2783B4065	3.3	5.3	4.3 (2.0)
1/2	1	3/4	Y2783B4055	10	13	4.8 (2.2)
3/4	1	3/4	Y2783B5055	12	15	4.8 (2.2)
1	1	3/4	Y2783B6065	12	16	4.8 (2.2)
1	1½	1¼	Y2783A6055	23	34	7.9 (3.6)
1½	1½	1¼	Y2783A7055	30	32	7.9 (3.6)
1½	1½	1¼	Y2783A8065	30	31	7.9 (3.6)



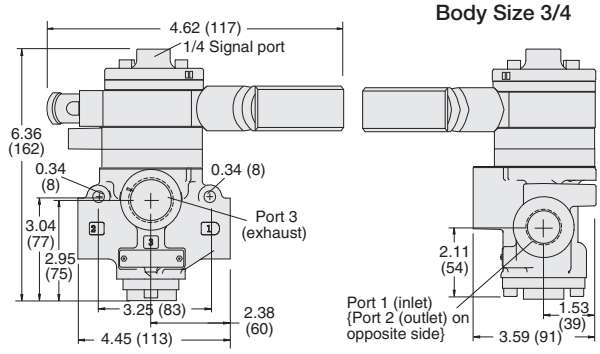
* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD2783B2055.

Valve Dimensions – inches (mm)

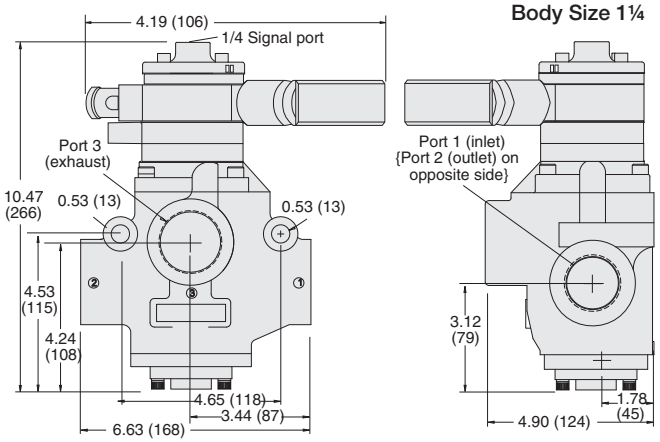
Body Size 3/8



Body Size 3/4



Body Size 1¼



Accessories & Options

Silencers

Port Size	Thread Type	Model Number* NPT Threads	Model Number* BSPT Threads	Avg. C_v
1/2	Male	5500A4003	D5500A4003	4.7
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

F

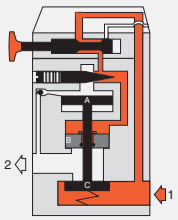
Multiple Lockout Device

Model Number 356A30

VALVE OPERATION

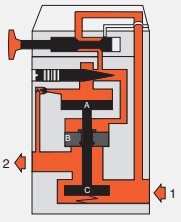
L-O-X® Valve (Handle) Open

Pilot air forces piston B downward to close the exhaust port. Pilot air flows past the adjusting needle, opens the ball check and begins slowly to pressurize the outlet line. At the same time, pressure is building up on piston A.



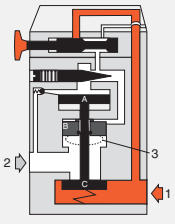
Full Pressure

With a short push of the red handle inward the flow of supply air is blocked and downstream air is exhausted via the exhaust port. Air pressure on the inlet and exhaust poppets produces a large closing force. The L-O-X® valve should be padlocked in this position to prevent the handle from being pulled outward inadvertently when potential for human injury exists or servicing machinery.



L-O-X® Valve (Handle) Closed

Pilot air forces piston B downward to close the exhaust port. Pilot air flows past the adjusting needle, opens the ball check and begins slowly to pressurize the outlet line. At the same time, pressure is building up on piston A.



STANDARD SPECIFICATIONS (for valves on this page):

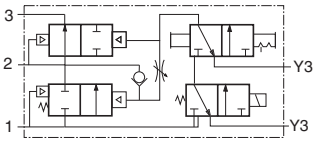
Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 40 to 150 psig (2.8 to 10.3 bar).

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

3-Way 2-Position Valve, Solenoid Pilot Controlled

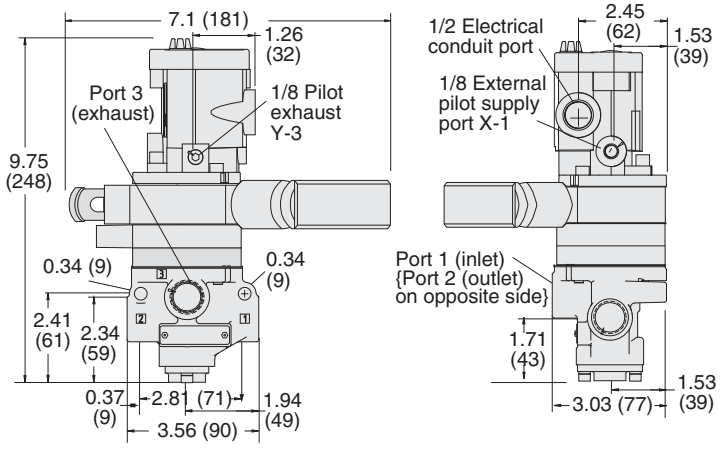
Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1/4	1/2	3/8	Y2773B2075**	2.5	3.1	5.3 (2.4)
3/8	1/2	3/8	Y2773B3075**	3.6	5.3	5.3 (2.4)
1/2	1/2	3/8	Y2773B4085**	3.3	5.3	5.3 (2.4)
1/2	1	3/4	Y2773B4075**	10	13	6.0 (2.7)
3/4	1	3/4	Y2773B5075**	12	15	6.0 (2.7)
1	1	3/4	Y2773B6085**	12	16	6.0 (2.7)
1	1½	1¼	Y2773B6075**	23	34	9.5 (4.3)
1¼	1½	1¼	Y2773B7075**	30	32	9.5 (4.3)
1½	1½	1¼	Y2773B8085**	30	31	9.5 (4.3)



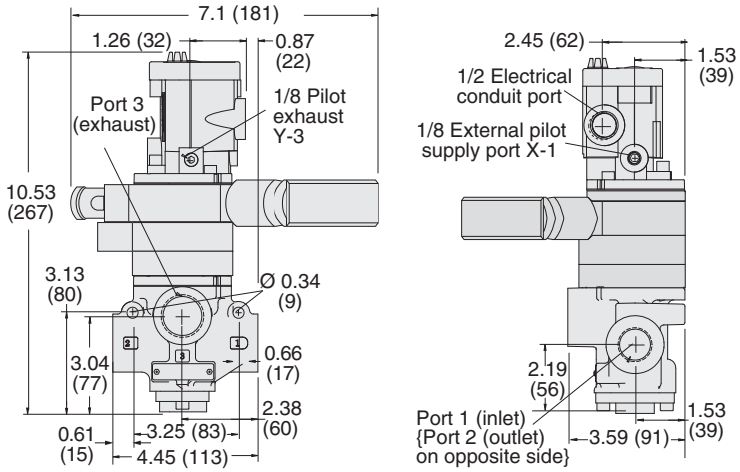
* NPT port threads. For BSPP threads, insert a "D" after "Y" to the model number, e.g., YD2773B2075.
**Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g.,Y2773B2075W.
For other voltages, consult ROSS.

Valve Dimensions – inches (mm)

Body Size 3/8



Body Size 3/4



STANDARD SPECIFICATIONS (for valves on this page):

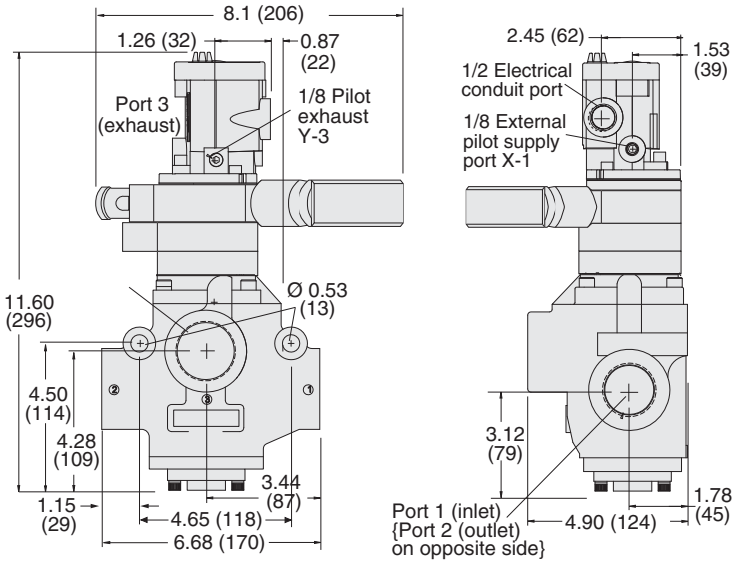
Construction: Poppet.
Mounting Type: In-Line.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.
Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 40 to 150 psig (2.8 to 10.3 bar).

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

Valve Dimensions – inches (mm)

Body Size 1¼



Accessories & Options

Silencers

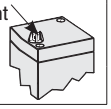
Port Size	Thread Type	Model Number* NPT Threads	Model Number* BSPT Threads	Avg. C_v
1/2	Male	5500A4003	D5500A4003	4.7
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum.
Flow Media: Filtered air.

Indicator Light Kits

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

Indicator Light



Multiple Lockout Device

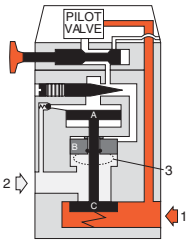
Model Number	356A30

F

VALVE OPERATION

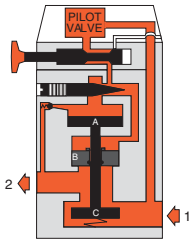
L-O-X® Handle Open and Pilot Not Energized

Pilot air is blocked by the pilot. Any downstream pressure forces piston B (which slides on the valve stem) upward. This opens the exhaust port and vents the downstream line.



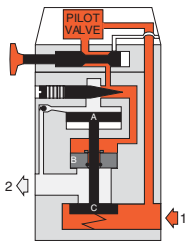
Full Pressure

When the pressure on piston A reaches approximately 50 percent of inlet pressure, it is forced downward and opens inlet poppet C. Full inlet pressure now flows freely to the outlet port.



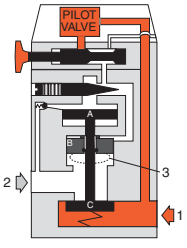
L-O-X® Handle Open and Pilot Energized

Pilot air forces piston B downward to close the exhaust port. Pilot air also flows past the adjusting needle, opens the ball check and begins slowly to pressurize the outlet line. At the same time, pressure is building up on piston A.



L-O-X® Handle Closed

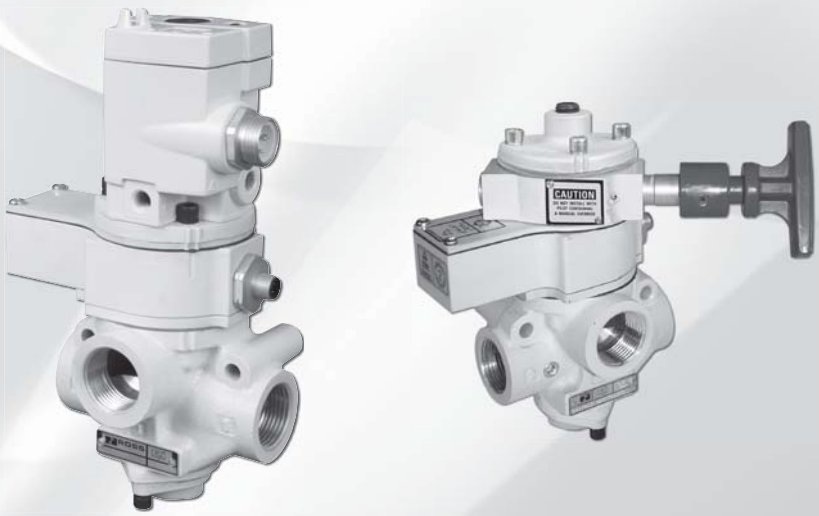
At any time the L-O-X® handle can be pushed inward, thereby closing off the flow of pilot air. Pilot air above pistons A and B is then vented to atmosphere. Piston A moves upward and closes inlet poppet C. Sliding piston B also moves upward to open the exhaust port and vents the downstream line.



F

ROSS CONTROLS®

SENSING VALVES SV27 SERIES



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SENSING VALVES – KEY FEATURES

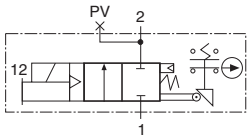
- Senses internal position & state
- Electrical feedback via DPST switch (Double-Pole Single-Throw)
- Directly operated safety-rated force-guided positive-break status switch (DPST)
- Poppet construction for near zero leakage & dirt tolerance
- A diagnostic coverage (DC) of 90% can be obtained by monitoring the safety switch status
- *Explosion proof solenoid pilot available, for more information consult ROSS*

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	Pressure Controlled	
SV27 Series		■				■	■	■	■	■			■									29	■	■	F2.3 - F2.6
SV27 Series		■				■	■	■	■	■	■	■		■								71	■	■	F2.4 - F2.7
SV27 Series with Lockout Valve		■				■	■	■	■	■				■								32	■	■	F2.8 - F2.9
Air Entry Packages																									F2.10

CONTROL CATEGORY 2

2-Way 2-Position Valves, Solenoid Pilot Controlled

Port Size 1, 2	Body Size	Valve Model Number*	C_v 1-2	Weight lb (kg)
1/2	3/4	SV27NC105407PSAA**	7.7	4.6 (2.1)
3/4	3/4	SV27NC105507PSAA**	9	4.6 (2.1)
1	3/4	SV27NC105607PSAA**	9	4.6 (2.1)
1	1¼	SV27NC107607PSAA**	24	8.1 (3.7)
1¼	1¼	SV27NC107707PSAA**	29	8.1 (3.7)
1½	1¼	SV27NC107807PSAA**	29	8.1 (3.7)

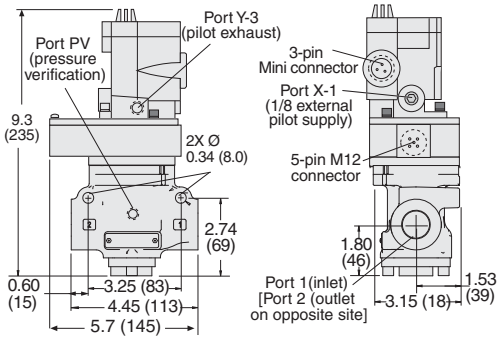


* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC105407PSAA1A.
** Insert voltage code: "1A"=110-120 volts, 50/60 Hz; "1D"= 24 volts DC; .e.g., SV27NC105407PSAA1A. For other voltages, consult ROSS.

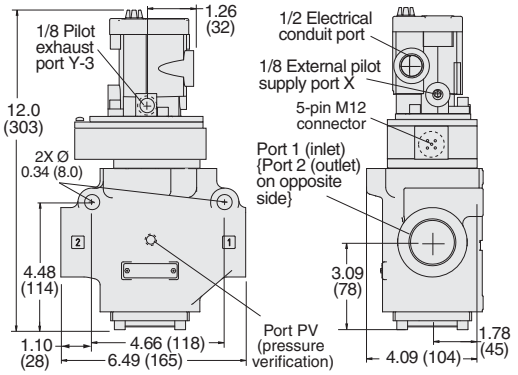
F2

Valve Dimensions – inches (mm)

Body Size 3/4



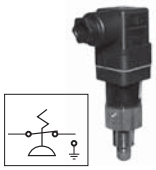
Body Size 1¼



Accessories & Options

Pressure Switches	Connection Type	Model Number*	Port Threads
	EN 175301-803 Form A	586A86	1/8 NPT
	M12	1153A30	1/8 NPT

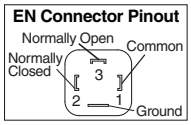
*Pressure switch closes on falling pressure of 5 psig (0.34 bar).



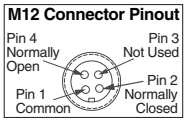
Pop-Up Indicator	Model Number**	988A30
	** 1/8 NPT port threads.	

Manual Override Kits		
BUTTON Type	Locking Type	Model Number*
FLUSH	Non-Locking	790K87
	Locking	792K87
EXTENDED	Non-Locking	791K87
EXTENDED with PALM	Non-Locking	984H87

EN Connector Pinout



M12 Connector Pinout



Indicator Light Kits	
Kit Number	
24 volts DC	110-120 volts AC 50-60 Hz
862K87-W	862K87-Z

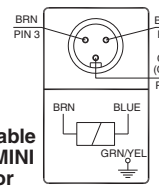
F

Preassembled Wiring Kits

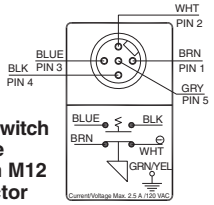
Kit Number*	Length meters (feet)
2239H77	4 (13.1)
2240H77	10 (32.8)

* Cable has one connector.

These kits include two cables with a cord grip on each cable. One cable has a 3-pin MINI connector for the solenoid, and one has a 5-pin M12 (Micro) connector for the sensing switch.



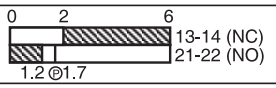
Solenoid Cable with 3-pin MINI Connector



Sensing Switch Cable with 5-pin M12 Connector

Integrated Double-Pole Single-Throw Switch (DPST) Switch States

Contact conditions during switch travel (0 to 6 mm).



For valves basic size 3/4 & 1-1/4, **the DPST switch is actuated whenever the valve is not in the normal home position.**

STANDARD SPECIFICATIONS (for valves on this page):

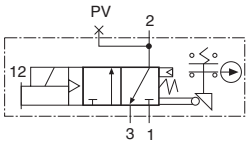
Construction: Poppet.
Mounting Type: In-Line.
Solenoid Pilot: AC or DC power. Rated for continuous duty.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption: 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.
Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.

Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.
NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

Functional Safety Data:
Category 2 PL d; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: $2.35x10^{-7}$; MTTFD: 98.15 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 90%; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

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

3-Way 2-Position Valve, Solenoid Pilot Controlled						
Port Size		Body Size	Valve Model Number*	C_v		Weight lb (kg)
1, 2	3			1-2	2-3	
1/2	1	3/4	SV27NC305407PSAA**	6.3	9.2	4.5 (2.0)
3/4	1	3/4	SV27NC305507PSAA**	7.7	11	4.5 (2.0)
1	1	3/4	SV27NC305607PSAA**	8	12	4.5 (2.0)
1	1½	1¼	SV27NC307607PSAA**	23	34	7.8 (3.5)
1¼	1½	1¼	SV27NC307707PSAA**	30	32	7.8 (3.5)
1½	1½	1¼	SV27NC307807PSAA**	30	31	7.8 (3.5)
1½	2½	2	SV27NC309807PSAA**	68	70	18.1 (8.2)
2	2½	2	SV27NC309907PSAA**	70	70	18.1 (8.2)
2½	2½	2	SV27NC309957PSAA**	70	71	18.1 (8.2)

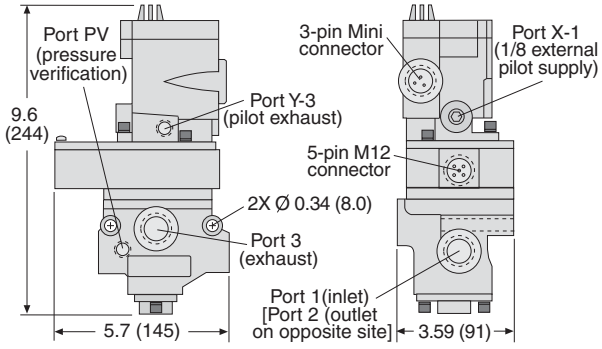


* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC305407PSAA1A.

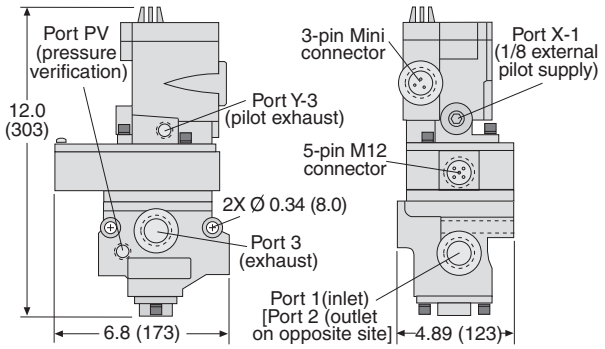
** Insert voltage code: "1A"=110-120 volts, 50/60 Hz; "1D"= 24 volts DC; .e.g., SV27NC305407PSAA1A. For other voltages, consult ROSS.

Valve Dimensions – inches (mm)

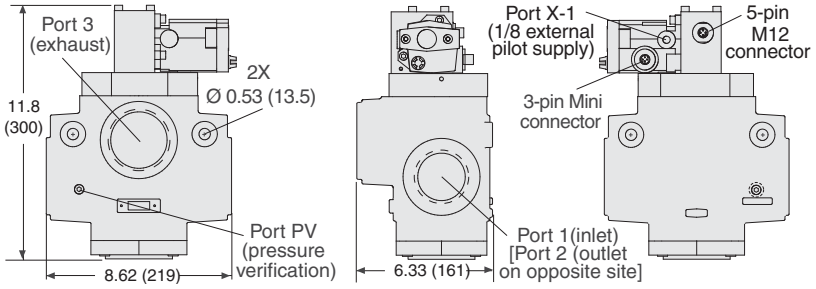
Body Size 3/4



Body Size 1¼



Body Size 2



STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Solenoid Pilot: AC or DC power. 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: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.

Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.
NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

Functional Safety Data:
Category 2 PL d; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: $2.35x10^{-7}$; MTTFD: 98.15 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 99%, ; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

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

Silencers

Port Size	Thread Type	Model Number*		Avg. C_v
		NPT Threads	BSPT Threads	
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9
2½	Female	5500A9002	D5500A9002	103.7

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum.
Flow Media: Filtered air.

Port size 1 thru 1½

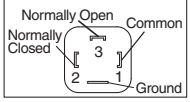
Port size 2½

Pressure Switches

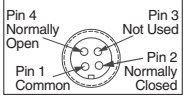
Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

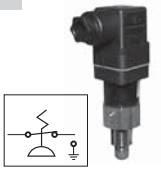
*Pressure switch closes on falling pressure of 5 psig (0.34 bar).

EN Connector Pinout



M12 Connector Pinout





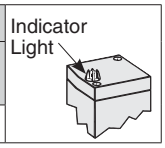
Pop-Up Indicator

Model Number**	988A30

** 1/8 NPT port threads.

Indicator Light Kits

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



Manual Overrides

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

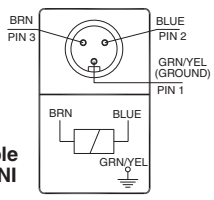
Preassembled Wiring Kits

These kits include two cables with a cord grip on each cable. One cable has a 3-pin MINI connector for the solenoid, and one has a 5-pin M12 (Micro) connector for the sensing switch.

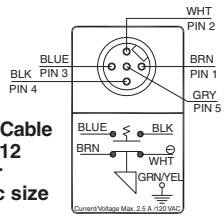
Kit Number*	Length meters (feet)
2239H77	4 (13.1)
2240H77	10 (32.8)

* Cable has one connector.

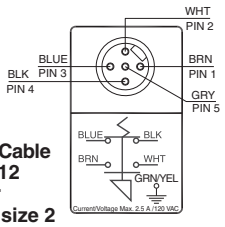
Solenoid Cable with 3-pin MINI Connector



Sensing Switch Cable with 5-pin M12 Connector for valves basic size 3/4 &1¼

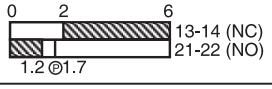


Sensing Switch Cable with 5-pin M12 Connector for valves basic size 2

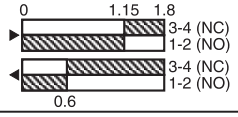


Integrated Double-Pole Single-Throw Switch (DPST) Switch States
Contact conditions during switch travel (0 to 6 mm).

For basic size 3/4 & 1-1/4



For basic size 2

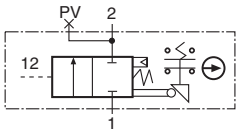


For valves basic size 3/4 & 1-1/4, the DPST switch is actuated whenever the valve is not in the normal home position.
For valves basic size 2, the DPST switch is only actuated whenever the valve is in the normal home position.

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

2-Way 2-Position Valves, Pressure Controlled

Port Size 1, 2	Body Size	Valve Model Number*	C_v 1-2	Weight lb (kg)
1/2	3/4	SV27NC105405ASAA	7.7	3.4 (1.6)
3/4	3/4	SV27NC105505ASAA	9	3.4 (1.6)
1	3/4	SV27NC105605ASAA	9	3.4 (1.6)
1	1¼	SV27NC107605ASAA	24	6.7 (3.0)
1¼	1¼	SV27NC107705ASAA	29	6.7 (3.0)
1½	1¼	SV27NC107805ASAA	29	6.7 (3.0)



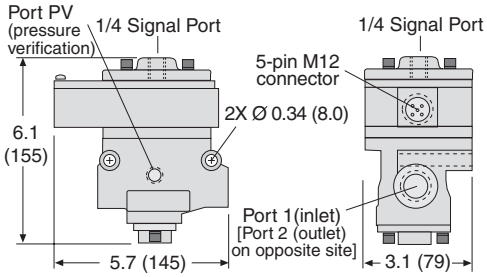
CONTROL CATEGORY 2

F2

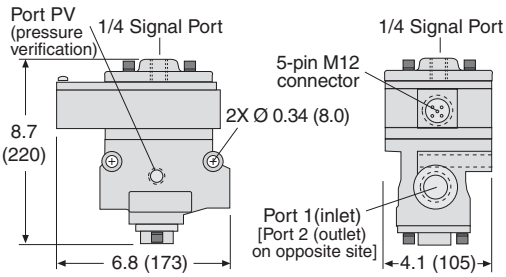
* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27ND105405ASAA.

Valve Dimensions – inches (mm)

Body Size 3/4



Body Size 1¼

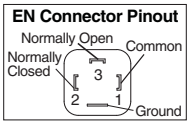


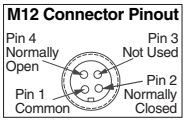
Not intended as a pressure trapping device; Please see Pilot Operated Check Sensing Valves, pages F4.13-F4.16.

Accessories & Options

Pressure Switches	Connection Type	Model Number*	Port Threads
	EN 175301-803 Form A	586A86	1/8 NPT
	M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator	Model Number**	988A30
	** 1/8 NPT port threads.	

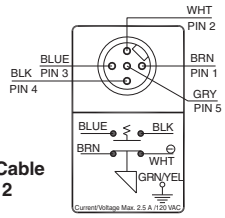
F

Preassembled Wiring Kits

Kit Number*	Length meters (feet)
2241H77	4 (13.1)
2242H77	10 (32.8)

* Cable has one connector.

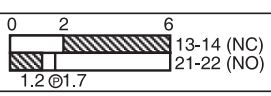
These kits include one cable with a cord grip. Cable has a 5-pin M12 (Micro) connector for the sensing switch.



Sensing Switch Cable with 5-pin M12 Connector

Integrated Double-Pole Single-Throw Switch (DPST) Switch States

Contact conditions during switch travel (0 to 6 mm).



For valves basic size 3/4 & 1-1/4, **the DPST switch is actuated whenever the valve is not in the normal home position.**

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
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: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.
Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.

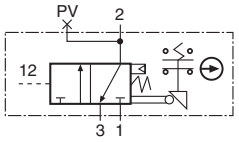
NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

Functional Safety Data: Category 2 PL d; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: $2.35x10^{-7}$; MTTFD: 98.15 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 90%; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

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

3-Way 2-Position Valve, Pressure Controlled

Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1/2	1	3/4	SV27NC305405ASAA	6.3	9.2	3.3 (1.5)
3/4	1	3/4	SV27NC305505ASAA	7.7	11	3.3 (1.5)
1	1	3/4	SV27NC305605ASAA	8	12	3.3 (1.5)
1	1½	1¼	SV27NC307605ASAA	23	34	6.4 (2.9)
1¼	1½	1¼	SV27NC307705ASAA	30	32	6.4 (2.9)
1½	1½	1¼	SV27NC307805ASAA	30	31	6.4 (2.9)
1½	2½	2	SV27NC309805ASAA	68	70	17.2 (7.8)
2	2½	2	SV27NC309905ASAA	70	70	17.2 (7.8)
2½	2½	2	SV27NC309955ASAA	70	71	17.2 (7.8)



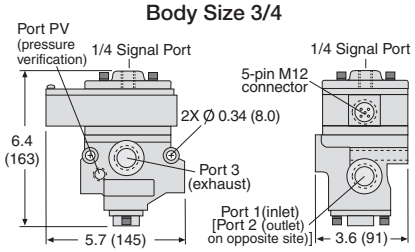
CONTROL CATEGORY 2

F2

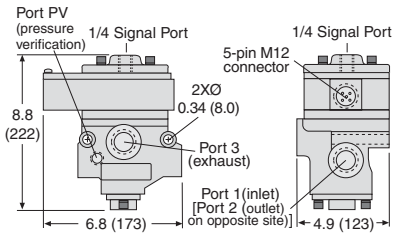
* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC305405ASAA.

Valve Dimensions – inches (mm)

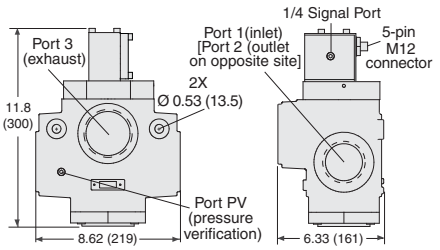
Body Size 3/4



Body Size 1¼



Body Size 2



Accessories & Options

Silencers

Port Size	Thread Type	Model Number* NPT Threads	Model Number* BSPT Threads	Avg. C_v
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9
2½	Female	5500A9002	D5500A9002	103.7

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

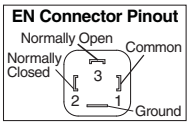
Port size 1 & 1½

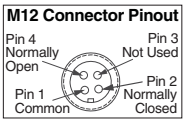
Port size 2½

Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Pop-Up Indicator

Model Number**	988A30
** 1/8 NPT port threads.	

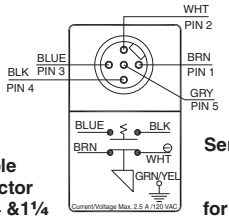
F

Preassembled Wiring Kits

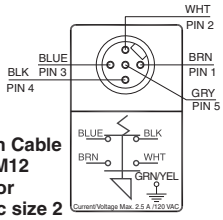
Kit Number*	Length meters (feet)
2241H77	4 (13.1)
2242H77	10 (32.8)

* Cable has one connector.

These kits include one cable with a cord grip. Cable has a 5-pin M12 (Micro) connector for the sensing switch.

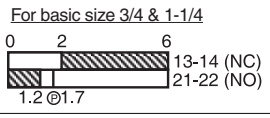


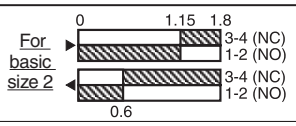
Sensing Switch Cable with 5-pin M12 Connector for valves basic size 3/4 &1¼



Sensing Switch Cable with 5-pin M12 Connector for valves basic size 2

Integrated Double-Pole Single-Throw Switch (DPST) Switch States
Contact conditions during switch travel (0 to 6 mm).





For valves basic size 3/4 & 1-1/4, the DPST switch is actuated whenever the valve is not in the normal home position.
For valves basic size 2, the DPST switch is only actuated whenever the valve is in the normal home position.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
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: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.
Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.

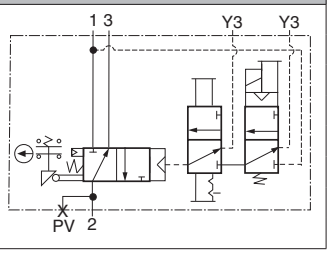
NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

Functional Safety Data:
Category 2 PL d; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: $2.35x10^{-7}$; MTTFD: 98.15 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 99% ; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

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

3-Way 2-Position Valve, Solenoid Pilot Controlled

Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1/2	1	3/4	SV27NC3L5407PSAA**	6.3	9.2	5.5 (2.5)
3/4	1	3/4	SV27NC3L5507PSAA**	7.7	11	5.5 (2.5)
1	1	3/4	SV27NC3L5607PSAA**	8	12	5.5 (2.5)
1	1½	1¼	SV27NC3L7607PSAA**	23	34	9.0 (4.0)
1¼	1½	1¼	SV27NC3L7707PSAA**	30	32	9.0 (4.0)
1½	1½	1¼	SV27NC3L7807PSAA**	30	32	9.0 (4.0)



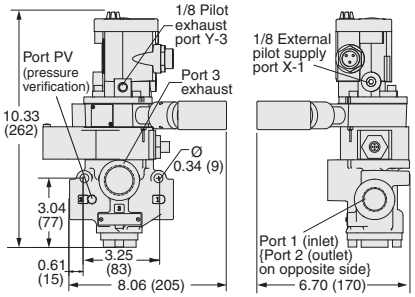
CONTROL CATEGORY 2

* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC3L5407PSAA1A.
**Insert voltage code: "1A"=110-120 volts AC, 50/60 Hz; "1D" for 24 volts DC; e.g., SV27NC3L5407PSAA1A. For other voltages, consult ROSS.

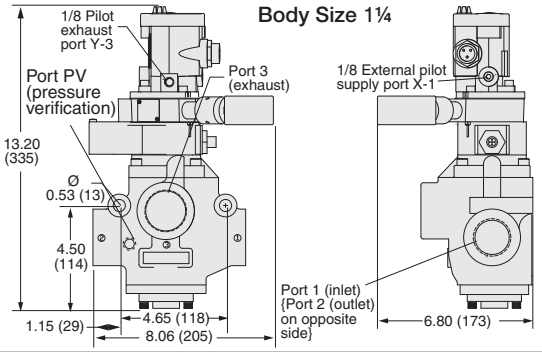
F2

Valve Dimensions – inches (mm)

Body Size 3/4



Body Size 1¼



Accessories & Options

Silencers

Port size 1 & 1½

Port size 2½

Port Size	Thread Type	Model Number* NPT Threads	Model Number* BSPT Threads	Avg. C_v
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9
2½	Female	5500A9002	D5500A9002	103.7

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

Indicator Light Kits

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

Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

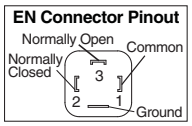
*Pressure switch closes on falling pressure of 5 psig (0.34 bar).

Pop-Up Indicator

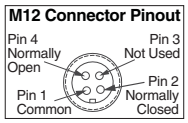
Model Number**	988A30

** 1/8 NPT port threads.

EN Connector Pinout



M12 Connector Pinout



F

Multiple Lockout Device

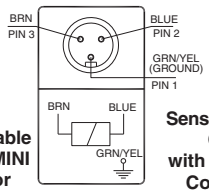
Model Number	356A30

Preassembled Wiring Kits

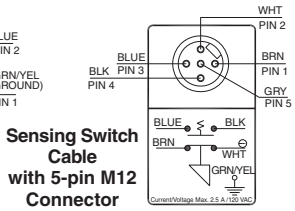
These kits include two cables with a cord grip on each cable. One cable has a 3-pin MINI connector for the solenoid, and one has a 5-pin M12 (Micro) connector for the sensing switch.

Kit Number*	Length meters (feet)
2239H77	4 (13.1)
2240H77	10 (32.8)

* Cable has one connector.



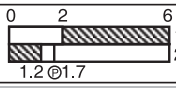
Solenoid Cable with 3-pin MINI Connector



Sensing Switch Cable with 5-pin M12 Connector

Integrated Double-Pole Single-Throw Switch (DPST) Switch States

Contact conditions during switch travel (0 to 6 mm).



For valves basic size 3/4 & 1-1/4, the DPST switch is actuated whenever the valve is not in the normal home position.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
Solenoid Pilot: AC or DC power. 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: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.

Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.
Manual Override: Flush; rubber, non-locking.
NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

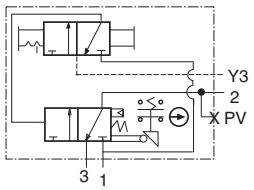
Functional Safety Data:
Category 2 PL d; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: 2.35×10^{-7} ; MTTFD: 98.15 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 99% ; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

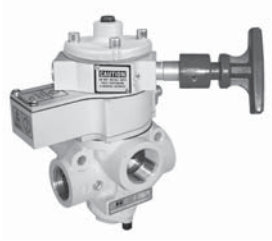
3-Way 2-Position Valve, Pressure Controlled

Port Size 1, 2	Port Size 3	Body Size	Valve Model Number*	C_v 1-2	C_v 2-3	Weight lb (kg)
1/2	1	3/4	SV27NC3L5405ASAA	6.3	9.2	4.3 (2.0)
3/4	1	3/4	SV27NC3L5505ASAA	7.7	11	4.3 (2.0)
1	1	3/4	SV27NC3L5605ASAA	8	12	4.3 (2.0)
1	1½	1¼	SV27NC3L7605ASAA	23	34	7.4 (3.4)
1¼	1½	1¼	SV27NC3L7705ASAA	30	32	7.4 (3.4)
1½	1½	1¼	SV27NC3L7805ASAA	30	32	7.4 (3.4)



* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC3L5405ASAA.

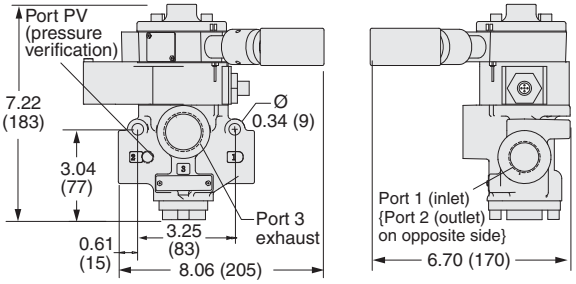
CONTROL CATEGORY 2



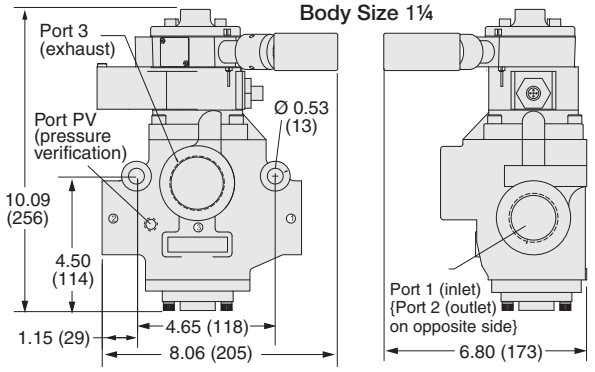
F2

Valve Dimensions – inches (mm)

Body Size 3/4



Body Size 1¼



Accessories & Options

Silencers

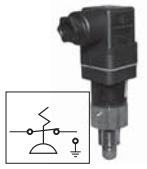
Port Size	Thread Type	Model Number* NPT Threads	Model Number* BSPP Threads	Avg. C_v
1	Male	5500A6003	D5500A6003	14.6
1½	Female	5500A8001	D5500A8001	29.9

Pressure Range: 0 to 300 psig (0 to 20.7 bar) maximum. **Flow Media:** Filtered air.

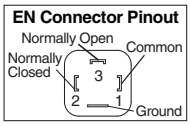
Pressure Switches

Connection Type	Model Number*	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

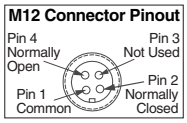
*Pressure switch closes on falling pressure of 5 psig (0.34 bar).



EN Connector Pinout



M12 Connector Pinout



Multiple Lockout Device

Model Number	356A30

Pop-Up Indicator

Model Number**	988A30

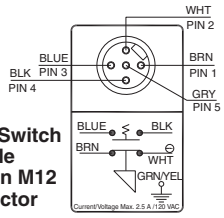
** 1/8 NPT port threads.

Preassembled Wiring Kits

Kit Number*	Length meters (feet)
2241H77	4 (13.1)
2242H77	10 (32.8)

* Cable has one connector.

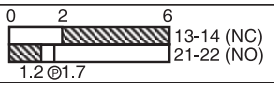
These kits include one cable with a cord grip. Cable has a 5-pin M12 (Micro) connector for the sensing switch.



Sensing Switch Cable with 5-pin M12 Connector

Integrated Double-Pole Single-Throw Switch (DPST) Switch States

Contact conditions during switch travel (0 to 6 mm).



For valves basic size 3/4 & 1-1/4, **the DPST switch is actuated whenever the valve is not in the normal home position.**

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
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: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.
Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.

NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

Functional Safety Data:
Category 2 PL d; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: 2.35×10^{-7} ; MTTFD: 98.15 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 99% ; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

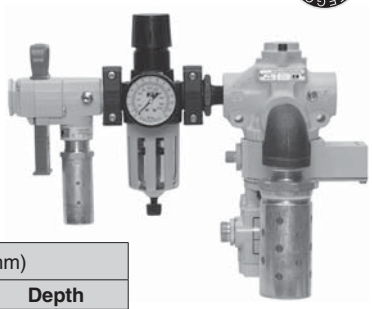
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

F2

SV27 Sensing Valves, Manual Lockout L-O-X® Valves with Integrated Filter/Regulator

CONTROL CATEGORY 2

Pre-engineered panel-mounted design with air entry via filter and regulator "FR", or filter, regulator, and lubricator "FRL".
Includes 3/2 Normally Closed Sensing Valve which senses poppet position and state.
Electrical feedback via DPST switch (Double-Pole Single-Throw).
Applications include Air Dump and Trapped-Pressure Release.
Mounting plate included.



Air Entry Combination	Port Size		Model Number*	Air Entry Type	C_v		Dimensions inches (mm)		
	1, 2	3			1-2	2-3	Length	Width	Depth
Cat-2 with SV27	1/2	1	RC208-09**	FR	6.3	9.2	14.80 (374.9)	11.00 (279.0)	6.60 (167.7)
	1/2	1	RC208L-09**	FRL	6.3	9.2	14.80 (374.9)	11.00 (279.0)	6.60 (167.7)

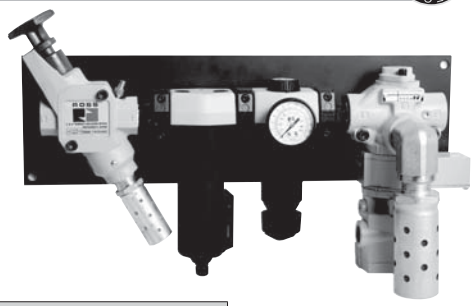
* NPT pressure port threads.
** Specify voltage when ordering. Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., RC208-09W.
M12 connectors available, consult ROSS.
Standard Air Entry Packages supplied with metal bowl and manual drain. For automatic drain insert an "A" before the dash (-) in the model number, e.g., RC208A-09.

Custom designs available, consult ROSS.
Explosion proof solenoid pilot available, for more information consult ROSS.

SV27 Sensing Valves, Manual Lockout L-O-X® Valves with Filter and Regulator

CONTROL CATEGORY 2

Pre-engineered panel-mounted design with air entry via filter and regulator "FR", or filter, regulator, and lubricator "FRL"
Includes 3/2 Normally Closed Sensing Valve .
Applications include Air Dump and Trapped-Pressure Release.
Mounting plate included.



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Air Entry Combination	Port Size		Model Number*	Air Entry Type	C_v		Dimensions inches (mm)		
	1, 2	3			1-2	2-3	Length	Width	Depth
Cat-2 with SV27	1/2	1/2	RC208-06**	FR	6.3	9.2	23.0 (585)	12.8 (326)	6.7 (171)
	1/2	1/2	RC208L-06**	FRL	7.7	11	23.0 (585)	12.8 (326)	6.7 (171)
	3/4	3/4	RC212-06**	FR	8.0	12	28.0 (712)	17.0 (432)	9.5 (242)
	3/4	3/4	RC212L-06**	FR	6.3	9.2	23.0 (585)	12.8 (326)	6.7 (171)
	1	1	RC216-06**	FRL	7.7	11	23.0 (585)	12.8 (326)	6.7 (171)
	1	1	RC216L-06**	FRL	8.0	12	31.8 (808)	17.0 (432)	9.5 (242)

* NPT pressure port threads.
** Specify voltage when ordering. Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., RC208-06W.
M12 connectors available, consult ROSS.
Standard Air Entry Packages supplied with metal bowl and manual drain. For automatic drain insert an "A" before the dash (-) in the model number, e.g., RC208A-06.

Custom designs available, consult ROSS.
Explosion proof solenoid pilot available, for more information consult ROSS.

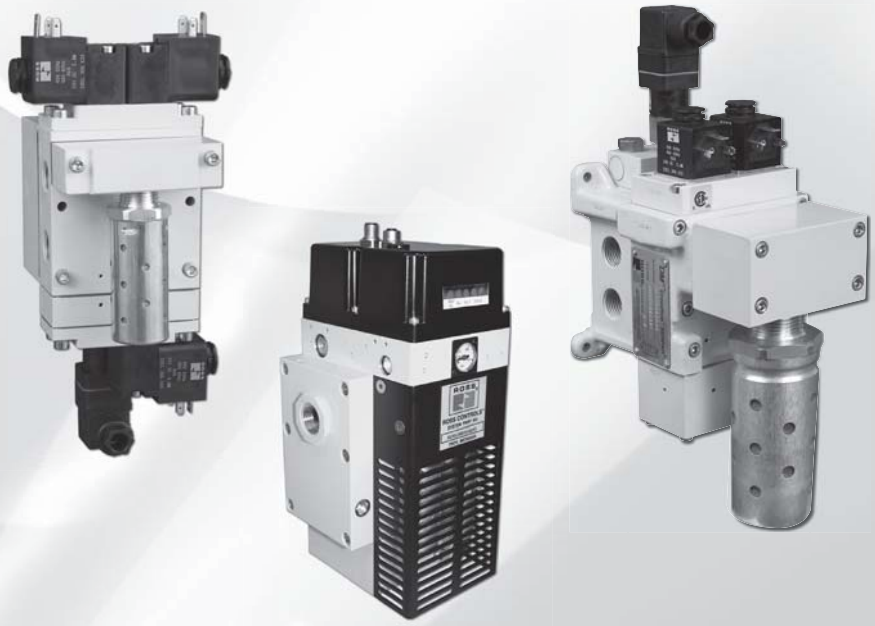
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

F

ROSS CONTROLS®

Double Valves for Control Reliable Energy Isolation DM¹ and DM²® Series



www.rosscontrols.com

CONTROL RELIABLE DOUBLE VALVES DM 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
- Explosion proof solenoid pilot available, for more information consult ROSS

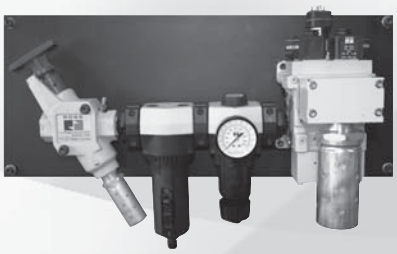
This valves are not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM2® series D valves for mechanical power press applications.

Control Reliable Double Valves with Dynamic Monitoring

Control Reliable Double Valves With Dynamic Monitoring & Memory

Control Reliable Modular Double Valves with Integrated Soft-Start

Air Entry Packages Control Reliable Energy Isolation Lockout L-O-X® Valves with Integrated Filter/Regulator



VALVE TYPE/SERIES	Category	AVAILABLE PORT SIZES						MAX. FLOW Cv							RESET		Page
								Port Size						Integrated Soft-Start	Automatic	Solenoid	
		1/4	3/8	1/2	3/4	1	1½	1/4	3/8	1/2	3/4	1	1½				
DM[1] E	4	■	■					2.4	2.4						■		F3.3 - F3.4
DM[1] C	4	■	■	■	■	■		2.6	2.6	10	13	13			■		F3.5 - F3.7
DM[1] Series E & C Preassembled Wiring Kits																	F3.8
DM2® E	4	■	■					2.4	2.4							■	F3.9 - F3.10
DM2® Series C Preassembled Wiring Kits																	F3.11
DM2® C	4	■	■	■	■	■	■			10	13	20	64			■	F3.12 - F3.14
DM2® Series C Preassembled Wiring Kits																	F3.15
M DM2®	4				■						8.4			■		■	F3.16 - F3.18
Air Entry Packages																	F3.19 - F3.20

Control Reliable Double Valves with Dynamic Monitoring

DM[1] Series E Air Dump/Release

Dynamic Monitoring: Monitoring and air flow control functions are integrated into two identical valve elements for CAT 4 applications. The valve exhausts downstream air if asynchronous movement of valve elements occurs during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply. If the abnormality clears itself, the valve will return to the ready-to-run state; there is no memory of the abnormal behavior, as in the ROSS DM[2®] Series E and DM[2®] Series C products that require an intentional reset following lockout.

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.

Ready-to-run: If an abnormality clears itself upon the removal of electricity to both solenoids, it will be ready-to-run again. It does not remember the abnormality and stay in a locked-out state until intentionally reset. Therefore, cumulative abnormalities may go undetected.

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 "ready-to-run" condition or has experienced abnormal function. This indicator only reports status, it is not part of a lockout function.

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

Mounting: Inline mounted with BSPP or NPT pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included).

ISO 13849-1:2006
Category 4
PL e applications

HOW TO ORDER

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

DM1E	N	A	2	0	A	3	1	

Thread

BSPP	D
NPT	N

Revision Level

Basic Size

Basic Size	Port Size Inlet	Port Size Outlet	
2	1/4	1/4	0
	3/8	3/8	1

Exhaust port size 1/2"

Voltage*

24 volts DC	A
110 volts AC, 50 Hz 120 volts AC, 50/60 Hz	B

* For other voltages consult ROSS.

Automatic Reset Type

Status Indicator

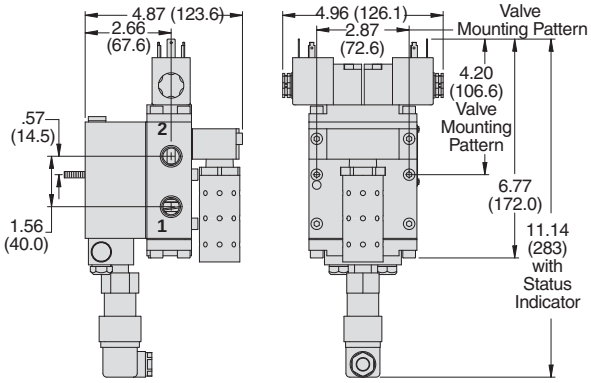
Yes	1
No	X

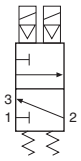
Connection Type

EN 175301-803 Form A* (connector not included)	Leave Blank
M12 (connector included)	005

*See options for connectors or wiring kits.

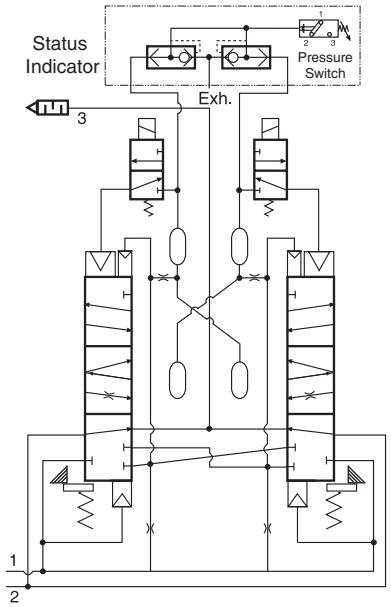
Valve Dimensions – inches (mm)





Simplified Schematic

Inlet Port Size	Cv 1-2	Cv 2-3	Weight lb (Kg)
1/4	1.3	2.4	5.0 (2.27)
3/8	2.2	2.4	5.0 (2.27)



Schematic - Valve de-actuated

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Dual poppet.
Mounting Type: Line mounted.
Pilot Solenoid: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Three solenoids, rated for continuous duty.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid):
24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz.
5.8 watts nominal on AC and DC; 6.5 watts maximum on AC and DC.
Enclosure Rating: IP65, IEC 60529.
Electrical Connection: EN 175301-803 Form A, or M12.
Ambient Temperature: 15° to 122°F (-10° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered, lubricated or unlubricated air (mineral oils according to DIN 51519, viscosity classes 32-46).

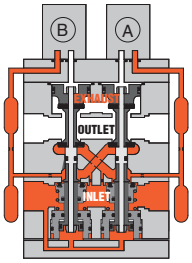
Inlet Pressure: 30 to 120 psig (2 to 8.3 bar).
Pressure Switch (Status Indicator) Rating:
Contacts - 5 amps at 250 volts AC, or 5 amps at 30 volts DC.
Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement.
Mounting Orientation: Preferably horizontally (valve on top of base) or vertically with pilot solenoids on top.

Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 4.29×10^{-8} ; MTTFD: 100 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test, CSA/UL, TSSA for appropriately tested valves.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

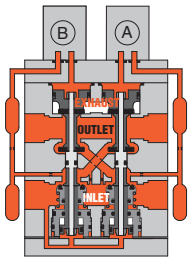
This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM2® series D for mechanical power press applications.

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

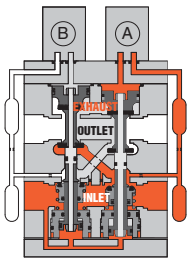
Valve de-actuated (ready-to-run): The flow of inlet air pressure into the crossover passages from the inlet chamber is restricted by orifices that allow air pressure to bypass the lower inlet poppets. Flow is sufficient to quickly pressurize the pilot supply/timing chambers on both sides A and B. The 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.



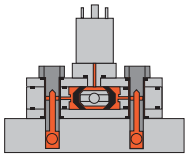
Asynchronous Operation: If the valve elements operate in a sufficiently asynchronous manner on ACTUATION, the valve will shift into a position where one crossover and its related timing chambers will be exhausted, and the other crossover and its related timing chambers will be pressurized.
In the illustration,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



Valve in restricted outlet to exhaust state

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

Options

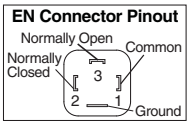
Electrical Connectors	Electrical Connector Form	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Electrical Connector Model Number		
					Without Light	Lighted Connector	
						24 Volts DC	120 Volts AC
	EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z
		Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W	383K77-Z
		Connector for threaded conduit (1/2 inch electrical conduit fittings)	–	–	723K77	724K77-W	724K77-Z
		Connector Only	–	–	937K87	936K87-W	936K87-Z

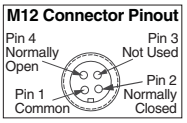
CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

Downstream Pressure Monitoring

Pressure Switches		
Connection Type	Model Number	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).





Redundant Downstream Feedback Switch	Model Number	Port Threads
	RC026-13	3/8 NPT

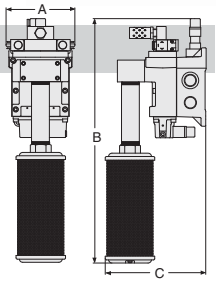
- May be installed downstream on all double valves
- Provides a redundant means to verify the release of downstream pressure to next obstruction
- Factory preset, 5 psi (0.3 bar) - falling

High-Flow, High Reduction Silencer Kits

Basic Size	Kit Number*		Avg. C_V	Dimensions inches (mm)			
	NPT Threads	BSPP Threads		A	B (NPT)	B (BSPP)	C
2	2323H77	2328H77	256 (121)	4.96 (126.1)	14.24 (361.7)	16.05 (407.7)	5.68 (144.3)

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

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



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

Dynamic Monitoring: Monitoring and air flow control functions are integrated into two identical valve elements for CAT 4 applications. The valve exhausts downstream air if asynchronous movement of valve elements occurs during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply. If the abnormality clears itself, the valve will return to the ready-to-run state; there is no memory of the abnormal behavior, as in the ROSS DM[2®] Series E and DM[2®] Series C products that require an intentional reset following lockout.

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.

Ready-to-run: If an abnormality clears itself upon the removal of electricity to both solenoids, it will be ready-to-run again. It does not remember the abnormality and stay in a locked-out state until intentionally reset. Therefore, cumulative abnormalities may go undetected.

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 "ready-to-run" condition or has experienced abnormal function. MUST be integrated into machine controls in order to prevent run signal until fault is cleared in valve. This indicator only reports status, it is not part of a lockout function.

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.

ISO 13849-1:2006 Category 4 PL e applications

F3

HOW TO ORDER

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

DM1C	N	A	4	2	A	3	1	

Thread

BSPP	D
NPT	N

Revision Level

Size 4, 8, 12, 30	A
Size 2	B

Basic Size

2	2
4	4
8	5

Basic Size	Port Size Inlet	Port Size Outlet	
2	1/4 3/8	1/4 3/8	0 1
4	1/2	1/2	2
8	3/4 1	3/4 1	4 5

Automatic Reset Type

Voltage*

24 volts DC	A
110 volts AC, 50 Hz 120 volts AC, 50/60 Hz	B

* For other voltages consult ROSS.

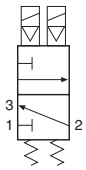
Status Indicator

Yes	1
No	X

Other OPTIONS

EN 175301-803 Form A* (connector not included)	Leave Blank
M12 (connector included)	005
Silicone Free with EN 175301-803 Form A (connector not included)	030
Silicone Free with M12 (connector included)	035

*See options for connectors or wiring kits.



Simplified Schematic

Basic Size	Inlet Port Size	Cv 1-2	Cv 2-3	Weight lb (Kg)
2	1/4	1.67	2.61	5.3 (2.4)
	3/8	2.17	2.61	5.3 (2.4)
4	1/2	3	10	5.9 (2.6)
8	3/4	4.2	13	8.4 (3.7)
	1	4.4	13	8.4 (3.7)

Valve and base assembly with status indicator.

F

Explosion proof solenoid pilot available for basic size 2 & 4 valves, for more information consult ROSS.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Dual poppet.
Mounting Type: Base mounted.
Pilot Solenoids: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Three solenoids, rated for continuous duty.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid):
Basic Size 2 & 4:
24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz.
5.8 watts nominal on AC and DC; 6.5 watts maximum on AC and DC.
Basic Size 8:
15 watts on DC; 36 VA inrush and 24.6 VA holding on AC.
Enclosure Rating: IP65, IEC 60529.
Electrical Connection: EN 175301-803 Form A, or M12.
Ambient Temperature: 15° to 122°F (-10° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).

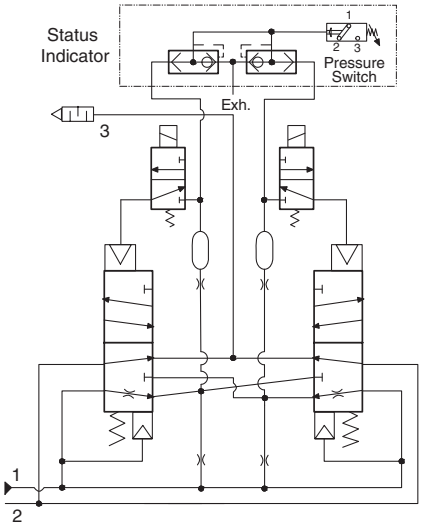
Flow Media: Filtered, lubricated or unlubricated (mineral oils according to DIN 51519, viscosity classes 32-46).
Inlet Pressure: *Basic Size 2:* 45 to 150 psig (3.1 to 10.3 bar).
Basic Size 4, 8, 12, 30: 30 to 120 psig (2.1 to 8.3 bar).
Pressure Switch (Status Indicator) Rating: Contacts - 5 amps at 250 volts AC, or 5 amps at 30 volts DC.
Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement.
Mounting Orientation: Preferably horizontally (valve on top of base) or vertically with pilot solenoids on top.

Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 4.29×10^{-8} ; MTTFD: 100 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test, CSA/UL, TSSA for appropriately tested valves.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

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.

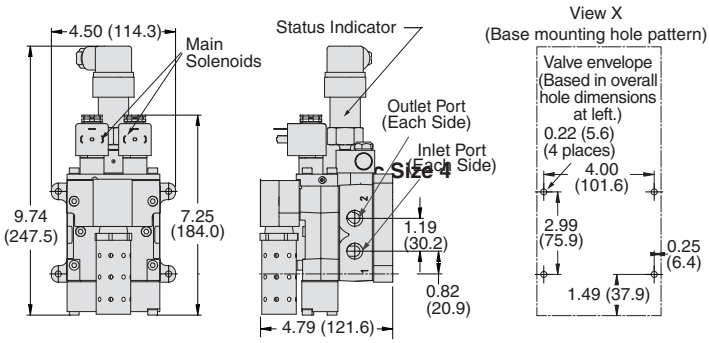
Schematic - Valve de-actuated



F3

Valve Dimensions – inches (mm)

Basic Size 2



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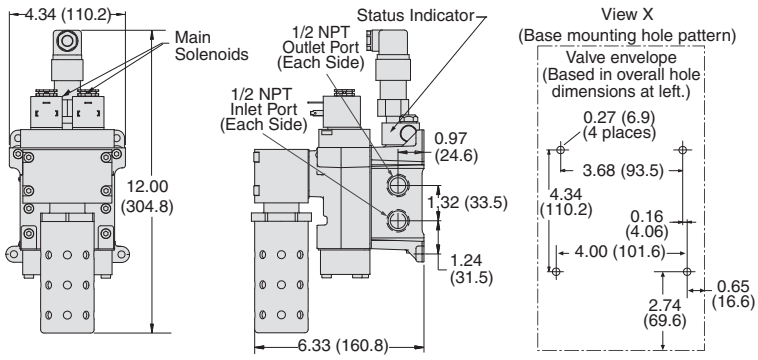
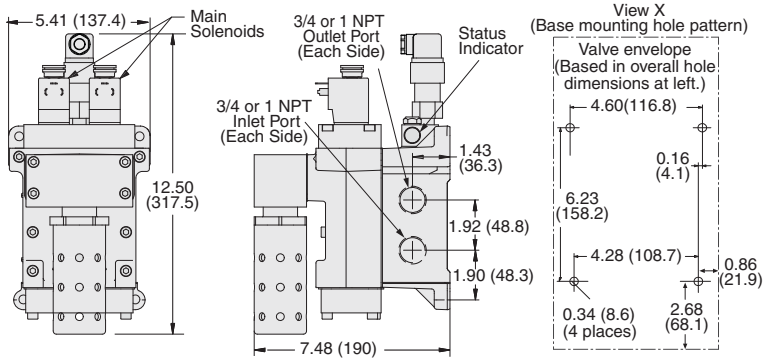
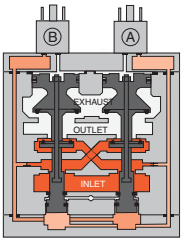
Basic Size 4



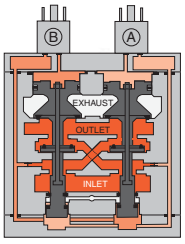
Basic Size 8



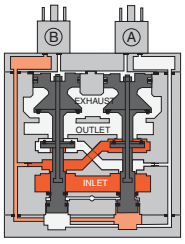
Valve de-actuated (ready-to-run): The flow of inlet air pressure into the crossover passages from the inlet chamber is restricted by orifices that allow air pressure to bypass the lower inlet poppets. Flow is sufficient to quickly pressurize the pilot supply/timing chambers on both sides A and B. The 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.)



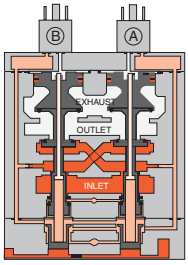
Valve actuated: Energizing the pilot solenoids simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated position, where inlet air flow to outlet is open and both exhaust poppets are closed. The outlet is then quickly pressurized, and pressure in the inlet, 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.



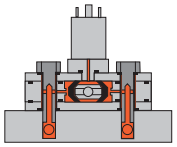
Asynchronous Operation: If the valve elements operate in a sufficiently asynchronous manner on ACTUATION, the valve will shift into a position where one crossover and its related timing chambers will be exhausted, and the other crossover and its related timing chambers will be pressurized.
In the illustration,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

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Options

Electrical Connectors	Electrical Connector Form	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Electrical Connector Model Number		
					Without Light	Lighted Connector	
						24 Volts DC	120 Volts AC
	EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z
		Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W	383K77-Z
		Connector for threaded conduit (1/2 inch electrical conduit fittings)	–	–	723K77	724K77-W	724K77-Z
		Connector Only	–	–	937K87	936K87-W	936K87-Z

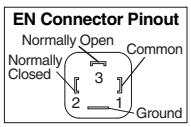
CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

F

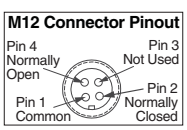
Downstream Pressure Monitoring

Pressure Switches		
Connection Type	**Model Number**	**Port Threads**
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT
*Pressure switch closes on falling pressure of 5 psig (0.34 bar).		

EN Connector Pinout



M12 Connector Pinout



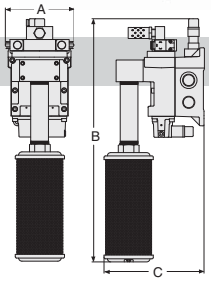
Redundant Downstream Feedback Switch	Model Number	Port Threads
	RC026-13	3/8 NPT

- May be installed downstream on all double valves
- Provides a redundant means to verify the release of downstream pressure to next obstruction
- Factory preset, 5 psi (0.3 bar) - falling

High-Flow, High Reduction Silencer Kits

Basic Size	Kit Number*		Flow scfm	Dimensions inches (mm)			
	NPT threads	BSPP threads		A	B (NPT)	B (BSPP)	C
2, 4	2324H77	2329H77	800 (378)	4.34 (110.2)	19.06 (484.1)	21.40 (543.6)	7.27 (184.7)
8	2325H77	2339H77	800 (378)	5.41 (137.4)	21.18 (538.0)	23.52 (597.4)	8.41 (213.6)

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

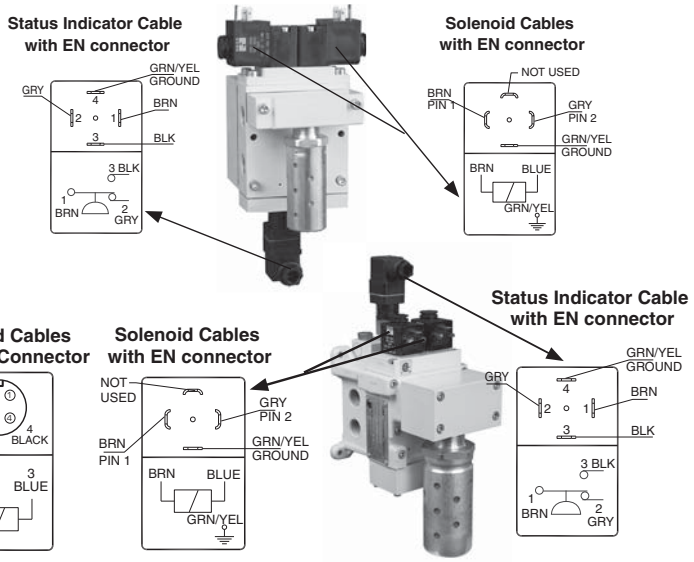


Designed to improve equipment performance and reduce the Exponentially Perceived Noise (EPNdB) in the 35–40 dB range.

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

These kits include 2 cables with either EN or M12 connectors for the solenoids. All cables include cord grips.

Kit Number	Solenoid Connector Type	Length meters (feet)
2243H77	EN 175301-803 Form A	5 (16.4)
2244H77	EN 175301-803 Form A	10 (32.8)
2245H77	M12	5 (16.4)
2246H77	M12	10 (32.8)



Status Indicator kit ordered separately.

Status Indicator Kits	Kit Number	Length meters (feet)
	2247H77	5 (16.4)
	2248H77	10 (32.8)

Status Indicator kits include one cable with EN connector and a cord grip.

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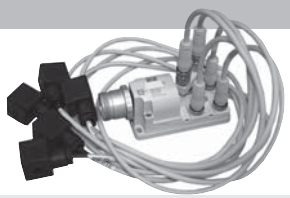
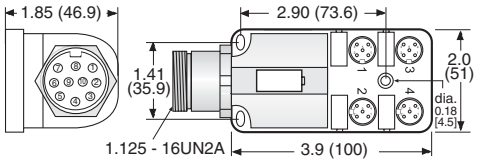
Wiring Kits with J-Box

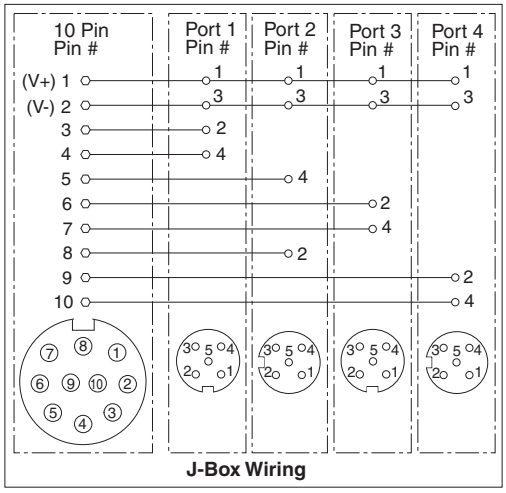
Kit Number*	Connector Type	Length meters (feet)
2249H77	M12 - DIN	1 (3.3)
2250H77	M12 - M12	1 (3.3)

*24 volts DC only.



A J-Box is a junction box with a 10-pin MINI connector for connecting to the user's control system and (4) 5-pin M12 ports for connecting to the 3 solenoids and the status indicator on the DM²® Series valve. The J-Box kits include the J-Box as described above and (4) 1-meter cables for connecting to the valve. These cables have a connector on each end. The status indicator cable and the (3) solenoid cables have an M12 connector on one end and a EN connector on the other end (M12-DIN).
Standard valves come with DIN type solenoid connections, but could be bought with M12 type connections as well. Therefore we also offer a kit that provides solenoid cables with an M12 connector on each end (M12-M12).





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10 PIN MINI Cable

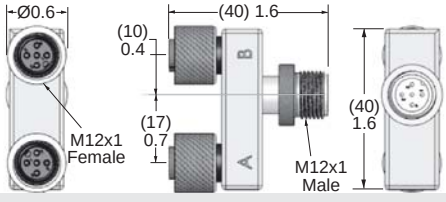
Kit Number	Length meters (feet)
2253H77	3.66 (12)
2254H77	6.1 (20)
2255H77	9.1 (30)
2256H77	15.2 (50)

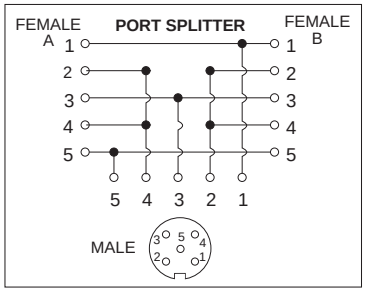
These cables have a 10-pin MINI connector for connecting the J-Box kits above to the user's control system. Kits include one cable with connector and cord grip. Cable conductors are 18-gauge wire.

PIN #		PIN #		Wire Colors:	Wire Colors:
1	+24 volts DC	6	-	Orange	Orange w/Black
2	Common volts DC	7	Remote Reset	Blue	Red
3	-	8	-	White w/Black	Green/Yellow
4	Solenoid A	9	Remote Valve Fault Light	Red w/Black	Black
5	Solenoid B	10	Remote System OK Light	Green w/Black	White

Outlet Port Pressure Monitoring Wiring Kit

Kit Number	Length meters (feet)
2251H77	1 (3.3)





Some customers prefer to monitor downstream pressure in addition to using the DM²® or DM¹ Series valve. A convenient way to do this is to install a pressure switch in the extra outlet port that is provided on the valve. The Outlet Port Pressure Monitoring kit can be used with one of the J-Box kits above to split one of the M12 ports on the J-Box so that a pressure switch can be wired in as well. These kits consist of one port splitter (a Tee with three M12 connectors) and one M12-DIN cable (1 meter).

Pressure switch available separately, see valve options.

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

Dynamic Monitoring with Memory: Memory, monitoring, and air flow control functions are integrated into two identical valve elements for CAT 4 applications, except control of the clutch/brake mechanism on mechanical power press. Valves lock-out if asynchronous movement of valve elements occurs 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 or electrical power. Reset can only be accomplished by the 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: Inline mounted with BSPP or NPT pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included).

ISO 13849-1:2006
Category 4 PL e applications

HOW TO ORDER

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

DM2E	N	A	2	0	A	2	1	

Thread
BSPP D
NPT N

Revision Level

Basic Size

Basic Size	Port Size Inlet	Port Size Outlet	
2	1/4	1/4	0
	3/8	3/8	1

Exhaust port size 1/2"

Voltage*

24 volts DC	A
110 volts AC, 50 Hz 120 volts AC, 50/60 Hz	B

* For other voltages consult ROSS.

Solenoid Reset Type

Status Indicator

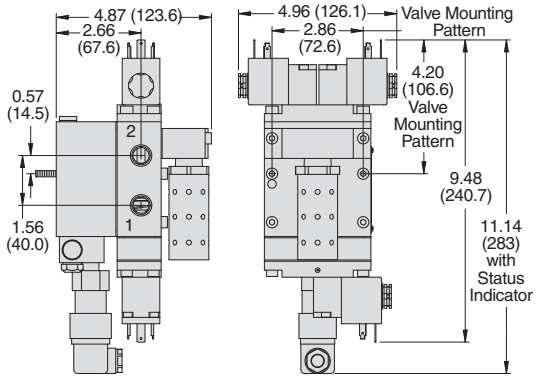
Yes	1
No	X

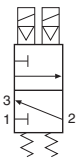
Connection Type

EN 175301-803 Form A* (connector not included)	Leave Blank
M12 (connector included)	005

*See options for connectors or wiring kits.

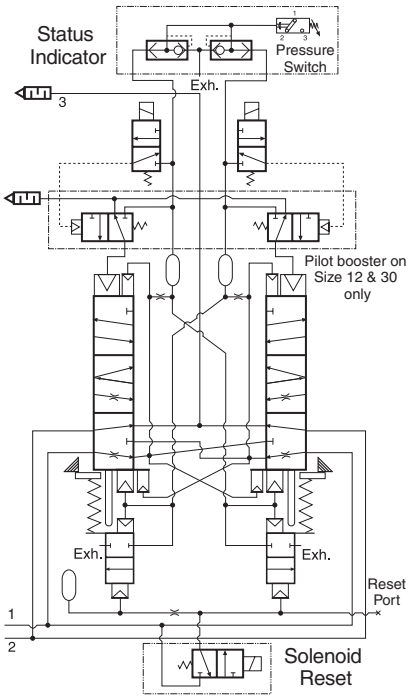
Valve Dimensions – inches (mm)





Simplified Schematic

Inlet Port Size	Cv 1-2	Cv 2-3	Weight lb (Kg)
1/4	1.3	2.4	5.6 (2.43)
3/8	2.2	2.4	5.6 (2.43)



Schematic - Valve de-actuated

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Dual poppet.
Mounting Type: Line mounted.
Pilot Solenoid: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Three solenoids, rated for continuous duty.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz. 5.8 watts nominal on AC and DC; 6.5 watts maximum on AC and DC.
Enclosure Rating: IP65, IEC 60529.
Electrical Connection: EN 175301-803 Form A, or M12.
Ambient Temperature: 15° to 122°F (-10° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered, lubricated or unlubricated air (mineral oils according to DIN 51519, viscosity classes 32-46).
Inlet Pressure: 30 to 120 psig (2 to 8.3 bar).

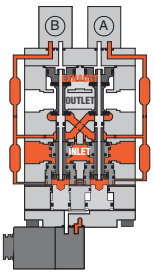
Pressure Switch (Status Indicator) Rating: Contacts - 5 amps at 250 volts AC, or 5 amps at 30 volts DC.
Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.
Mounting Orientation: Preferably horizontally (valve on top of base) or vertically with pilot solenoids on top.

Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 7.71×10^{-9} ; MTTFD: 301.9 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test, CSA/UL, TSSA for appropriately tested valves.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

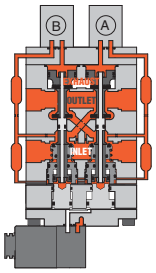
This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM2® series D for mechanical power press applications.

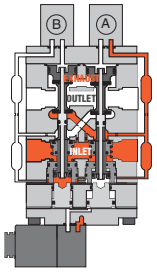
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

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. (Air passages shown out of position 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.



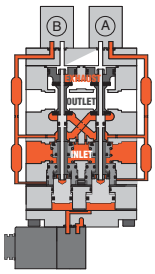


Asynchronous Operation: Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will shift into a locked-out position. In the locked-out position, one crossover and its related timing chambers will be exhausted, and the other crossover and its related timing chambers will be pressurized. The valve element (side A) that is partially actuated has pilot air available to actuate it, but there is no air pressure on the return piston to de-actuate that valve element. Air pressure in the crossover acts on the differential of side A stem diameters creating a latching force.
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. Also, the return springs can only return the valve elements to the intermediate (locked-out) position. Therefore, the valve will remain in the locked-out position even if the inlet air supply is removed and re-applied. A reset signal must be applied intentionally in order to reset the valve.

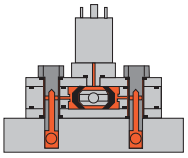
F3

Resetting the valve: Reset is accomplished by momentarily energizing the reset solenoid. Actuation of the reset solenoid provides inlet air pressure to the reset pistons which physically push the main valve elements to their de-actuated position. Inlet air pressurizes the crossovers and volume chambers, thereby applying air to the return pistons which then hold the upper inlet poppets on seat. De-actuation of the reset solenoid removes pressure from the lower side of the reset pistons, thus allowing them to return to their de-actuated position.

Reset anti-tie-down feature: Attempting to energize the valve's main solenoids while the reset solenoid is energized will cause side B to shift (overcoming the pressure on the small reset piston), but side A will not move due to the pressure on the larger reset piston on that side. This will cause the valve to go into and remain in the locked-out position until a reset signal is applied while the main solenoids are de-energized.



Status Indicator: The status indicator pressure switch will actuate when the main valve is operating normally, and will de-actuate when the main valve is in the locked-out position or when inlet pressure is removed. This device is not part of the valve lockout function, but, rather, only reports the status of the main valve.



Options

F

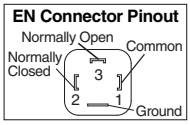
Electrical Connectors	Electrical Connector Form	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Electrical Connector Model Number		
					Without Light	Lighted Connector	
						24 Volts DC	120 Volts AC
	EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z
		Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W	383K77-Z
		Connector for threaded conduit (1/2 inch electrical conduit fittings)	–	–	723K77	724K77-W	724K77-Z
		Connector Only	–	–	937K87	936K87-W	936K87-Z

CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

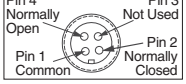
Downstream Pressure Monitoring

Pressure Switches		
Connection Type	**Model Number**	**Port Threads**
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT
*Pressure switch closes on falling pressure of 5 psig (0.34 bar).		

EN Connector Pinout



M12 Connector Pinout



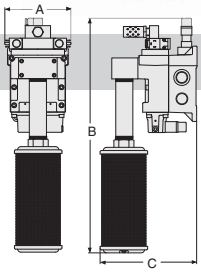
Redundant Downstream Feedback Switch	Model Number	Port Threads
	RC026-13	3/8 NPT

- May be installed downstream on all double valves
- Provides a redundant means to verify the release of downstream pressure to next obstruction
- Factory preset, 5 psi (0.3 bar) - falling

High-Flow, High Reduction Silencer Kits

Basic Size	Kit Number*		Avg. C_v	Dimensions inches (mm)			
	NPT threads	BSPT threads		A	B (NPT)	B (BSPT)	C
2	2323H77	2328H77	256 (121)	4.96 (126.1)	14.24 (361.7)	16.05 (407.7)	5.68 (144.3)

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



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

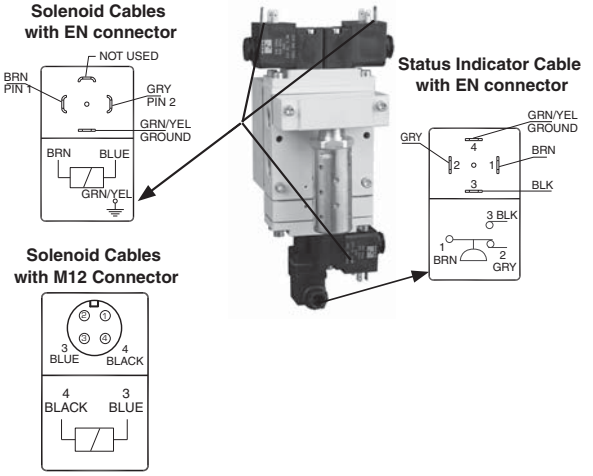
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Preassembled Wiring Kits

These kits include 1 cable for the status indicator, and 3 cables with connector plus a cord grip for each.

Kit Number*			Solenoid Connector Type	Length meters (feet)
Connector without Light	Lighted Connector			
	24 Volts DC	120 Volts AC		
2283H77	2532H77-W	2532H77-Z	EN 175301-803 Form A	5 (16.4)
2284H77	2533H77-W	2533H77-Z	EN 175301-803 Form A	10 (32.8)
2288H77	–	–	M12	5 (16.4)
2289H77	–	–	M12	10 (32.8)

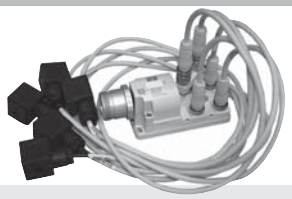
* Each cable has one connector. .



Wiring Kits with J-Box

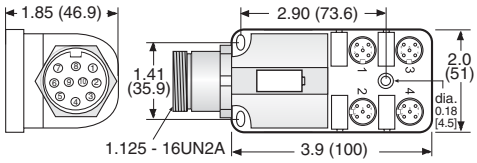
Kit Number*	Connector Types	Length meters (feet)
2249H77	M12 - DIN	1 (3.3)
2250H77	M12 - M12	1 (3.3)

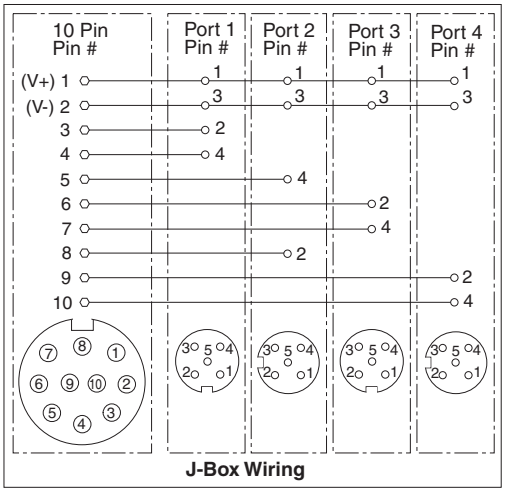
*24 volts DC only.



A J-Box is a junction box with a 10-pin MINI connector for connecting to the user's control system and (4) 5-pin M12 ports for connecting to the 3 solenoids and the status indicator on the DM2® Series valve. The J-Box kits include the J-Box as described above and (4) 1-meter cables for connecting to the valve. These cables have a connector on each end. The status indicator cable and the (3) solenoid cables have an M12 connector on one end and a EN connector on the other end (M12-DIN).

Standard valves come with DIN type solenoid connections, but could be bought with M12 type connections as well. Therefore we also offer a kit that provides solenoid cables with an M12 connector on each end (M12-M12).





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10 PIN MINI Cable

Kit Number	Length meters (feet)
2253H77	3.66 (12)
2254H77	6.1 (20)
2255H77	9.1 (30)
2256H77	15.2 (50)

These cables have a 10-pin MINI connector for connecting the J-Box kits above to the user's control system. Kits include one cable with connector and cord grip. Cable conductors are 18-gauge wire.

PIN #		PIN #		Wire Colors:	Wire Colors:
1	+24 volts DC	6	-	Orange	Orange w/Black
2	Common volts DC	7	Remote Reset	Blue	Red
3	-	8	-	White w/Black	Green/Yellow
4	Solenoid A	9	Remote Valve Fault Light	Red w/Black	Black
5	Solenoid B	10	Remote System OK Light	Green w/Black	White

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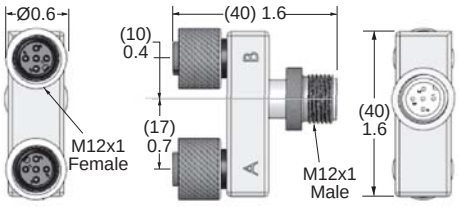
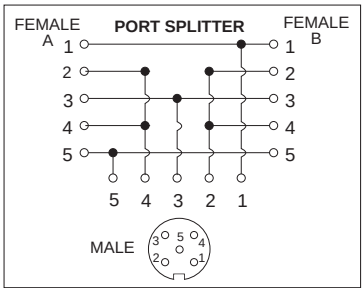
Outlet Port Pressure Monitoring Wiring Kit

Kit Number	Length meters (feet)
2251H77	1 (3.3)



Some customers prefer to monitor downstream pressure in addition to using the DM2® or DM1 Series valve. A convenient way to do this is to install a pressure switch in the extra outlet port that is provided on the valve. The Outlet Port Pressure Monitoring kit can be used with one of the J-Box kits above to split one of the M12 ports on the J-Box so that a pressure switch can be wired in as well. These kits consist of one port splitter (a Tee with three M12 connectors) and one M12-DIN cable (1 meter).



Pressure switch available separately, see valve options.

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

Basic Size 2, 4, 8, 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 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 2, 4 & 8, thereby reducing electrical power requirements for these larger valves.

ISO 13849-1:2006 Category 4 PL e applications

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HOW TO ORDER

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

DM2C	N	A	2	1	A	2	1	

Thread

BSPP	D
NPT	N

Revision Level

Size 4, 8, 12, 30	A
Size 2	B

Basic Size

2	2
4	4
8	5
12	6
30	8

Basic Size	Port Size Inlet	Port Size Outlet	
2	1/4 3/8	1/4 3/8	0 1
4	1/2	1/2	2
8	3/4 1	3/4 1	4 5
12	1	1	6
30	1½	2	8

Voltage*

24 volts DC	A
110 volts AC, 50 Hz 120 volts AC, 50/60 Hz	B

* For other voltages consult ROSS.

Solenoid Reset Type

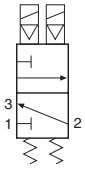
Status Indicator

Yes	1
No	X

Other OPTIONS

EN 175301-803 Form A* (connector not included)	Leave Blank
M12 (connector included)	005
Silicone Free with EN 175301-803 Form A (connector not included)	030
Silicone Free with M12 (connector included)	035

*See options for connectors or wiring kits.



Simplified Schematic

Basic Size	Inlet Port Size	Cv 1-2	Cv 2-3	Weight lb (Kg)
2	1/4	1.67	2.61	5.3 (2.4)
	3/8	2.17	2.61	5.3 (2.4)
4	1/2	3	10	5.9 (2.6)
8	3/4	4.2	13	8.4 (3.7)
	1	4.4	13	8.4 (3.7)
12	1	8.5	20	15.3 (3.7)
30	1½	22	64	34.7 (15.1)

Valve and base assembly with status indicator.

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Explosion proof valves available, see explosion proof valves.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Dual poppet.
Mounting Type: Base mounted.
Pilot Solenoids: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Three solenoids, rated for continuous duty.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid):
Basic Size 2, 4, 12 & 30:
Primary and reset solenoids:
24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz.
5.8 watts nominal on AC and DC; 6.5 watts maximum on AC and DC.
Basic Size 8:
Primary solenoids: 15 watts on DC; 36 VA inrush and 24.6 VA holding on AC.
Reset solenoid: 6.0 watts on DC; 15.8 VA inrush and 10.4 VA holding on AC.
Enclosure Rating: IP65, IEC 60529.
Electrical Connection: EN 175301-803 Form A, or M12.
Ambient Temperature: 15° to 122°F (-10° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered, lubricated or unlubricated (mineral oils according to DIN 51519, viscosity classes 32-46).
Inlet Pressure: *Basic Size 2:* 45 to 150 psig (3.1 to 10.3 bar).
Basic Size 4, 8, 12, 30: 30 to 120 psig (2.1 to 8.3 bar).
Pressure Switch (Status Indicator) Rating: Contacts - 5 amps at 250 volts AC, or 5 amps at 30 volts DC.
Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.
Mounting Orientation: Preferably horizontally (valve on top of base) or vertically with pilot solenoids on top.

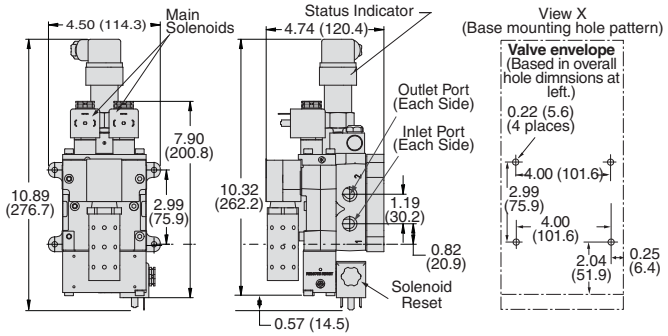
Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 7.71×10^{-9} ; MTTFD: 301.9 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test, CSA/UL, TSSA for appropriately tested valves.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

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

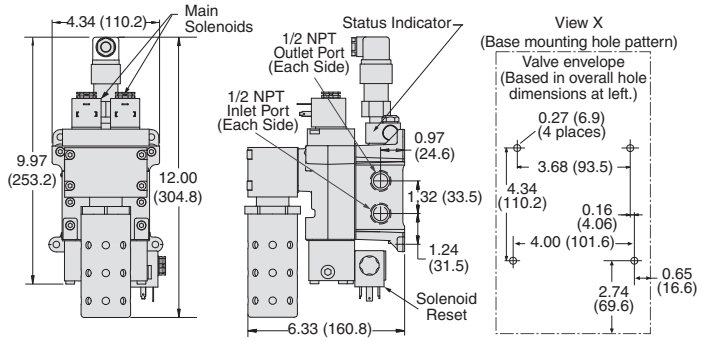
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Valve Dimensions – inches (mm)

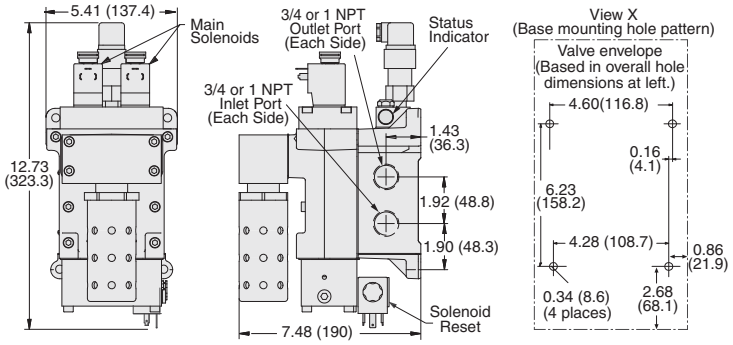
Basic Size 2



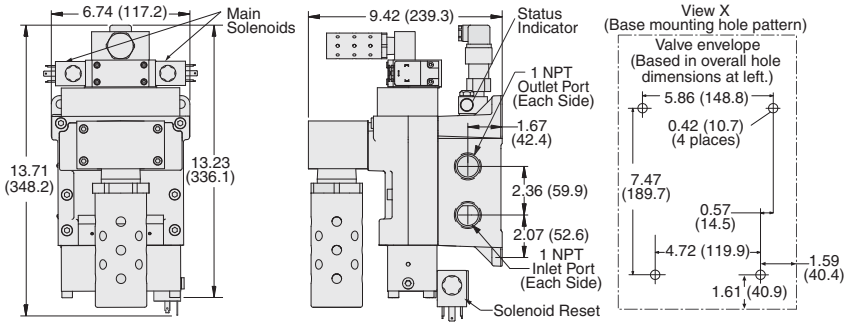
Basic Size 4



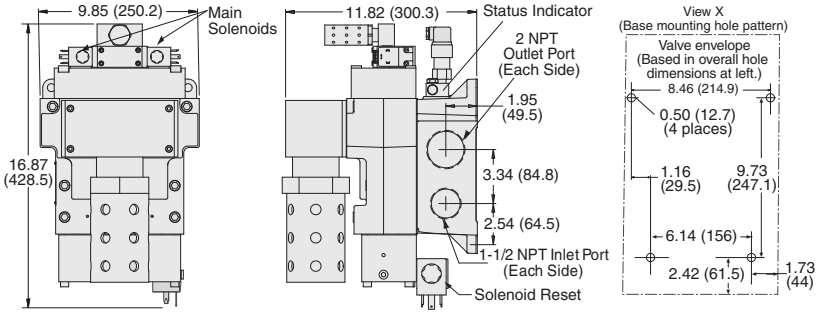
Basic Size 8

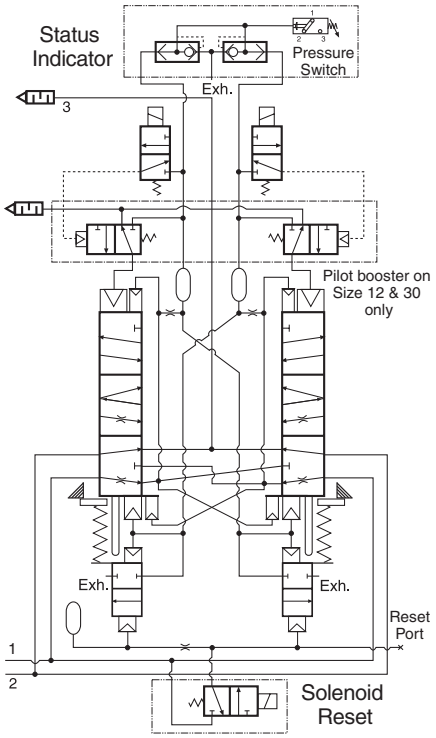


Basic Size 12



Basic Size 30





Schematic - Valve de-actuated

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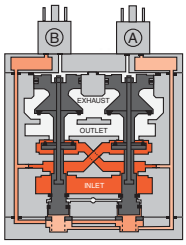
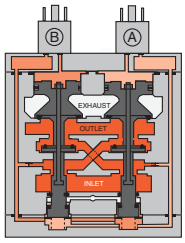
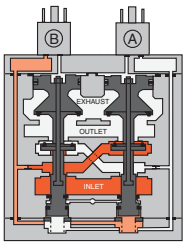
Valve de-actuated (ready-to-run): The flow of inlet air pressure into the crossover passages is restricted by the size of the passage between the stem and the valve body opening. Flow is sufficient to quickly pressurize pilot supply/timing chambers A and B. The inlet poppets prevent air flow from crossover passages into the outlet chamber. Air pressure acting on the inlet poppets and return pistons securely hold the valve elements in the closed position. (Air passages shown out of position and reset adapter omitted for clarity.)



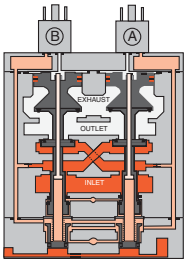
Valve actuated: Energizing the pilot valves simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated (open) position, where inlet air flow to crossover passages is fully open, inlet poppets are fully open and exhaust poppets are fully closed. The outlet is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



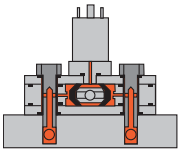
Valve locked-out: Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will move to a locked-out position. In the locked-out position, one crossover and its related timing chamber will be exhausted, and the other crossover and its related timing chamber will be fully pressurized.
The valve element (side B) that is partially actuated has pilot air available to fully actuate it, but no air pressure on the return piston to fully de-actuate the valve element. Air pressure in the crossover acts on the differential of side B stem diameters creating a latching force. Side A is in a fully closed position, and has no pilot air available to actuate, but has full pressure on the inlet poppet and return piston to hold the element in the fully closed position. Inlet air flow on side A into its crossover is restricted, and flows through the open inlet poppet on side B, 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. The return springs are limited in travel, and can only return the valve elements to the intermediate (locked-out) position. Sufficient air pressure acting on the return pistons is needed to return the valve elements to a fully closed position.



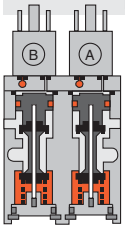
Resetting the valve: The valve will remain in the locked-out position, even if the inlet air supply is removed and re-applied. A remote reset signal must be applied to reset the valve. Reset is accomplished by momentarily pressurizing the reset port. Actuation of the reset piston physically pushes the main valve elements to their closed position. Inlet air fully pressurizes the crossovers and holds the inlet poppets on seat. Actuation of the reset piston opens the reset poppet, thereby, immediately exhausting pilot supply air, thus, preventing valve operation during reset (Reset adapter added to illustration.). De-actuation of reset pistons causes the reset poppets to close and pilot supply to fully pressurize. Reset pressure can be applied by a remote 3/2 normally closed valve, or from an optional 3/2 normally closed solenoid mounted on the reset adapter. De-actuation of reset pistons causes the reset poppets to close and pilot supply to fully pressurize. Reset air pressure can be applied by a remote 3/2 normally closed valve, or from an optional 3/2 normally closed solenoid, or a manual push button mounted on the reset adapter.



Status Indicator: The status indicator pressure switch will actuate when the main valve is operating normally, and will de-actuate when the main valve is in the locked-out position 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.



Basic Size 12 and 30 valves require relatively large pilots to actuate and de-actuate the main valve elements. In order to achieve extremely quick valve response for such large pilots, a 2-stage solenoid pilot system is incorporated into the design. This keeps the required electrical current to operate the pilots to a minimum.

Basic Size 12 & 30 pilots

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Accessories & Options

Electrical Connectors	Electrical Connector Form	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Electrical Connector Model Number		
					Without Light	Lighted Connector	
						24 Volts DC	120 Volts AC
	EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z
		Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W	383K77-Z
		Connector for threaded conduit (1/2 inch electrical conduit fittings)	–	–	723K77	724K77-W	724K77-Z
		Connector Only	–	–	937K87	936K87-W	936K87-Z

CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

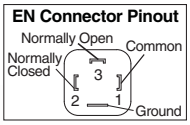
Downstream Pressure Monitoring

Pressure Switches

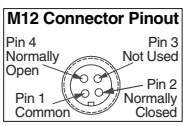
Connection Type	Model Number	Port Threads
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).

EN Connector Pinout



M12 Connector Pinout



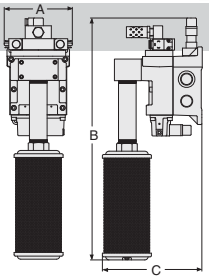
Redundant Downstream Feedback Switch	Model Number	Port Threads
	RC026-13	3/8 NPT

- May be installed downstream on all double valves
- Provides a redundant means to verify the release of downstream pressure to next obstruction
- Factory preset, 5 psi (0.3 bar) - falling

High-Flow, High Reduction Silencer Kits

Port Size	Kit Number*		Flow scfm	Dimensions inches (mm)			
	NPT threads	BSPT threads		A	B (NPT)	B (BSPT)	C
4	2324H77	2329H77	800 (378)	4.34 (110.2)	19.06 (484.1)	21.40 (543.6)	7.27 (184.7)
8	2325H77	2329H77	800 (378)	5.41 (137.4)	21.18 (538.0)	23.52 (597.4)	8.41 (213.6)
12	2326H77	2330H77	2080 (982)	6.74 (117.2)	25.85 (656.6)	28.20 (716.3)	10.66 (270.8)
30	2327H77	2331H77	7200 (3398)	9.85 (250.2)	41.55 (1055.4)	41.55 (1055.4)	13.47 (342.1)

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



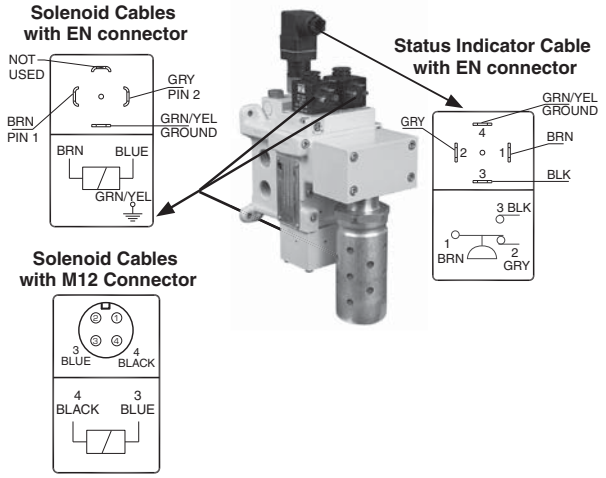
Designed to improve equipment performance and reduce the Exponentially Perceived Noise (EPNdB) in the 35–40 dB range.

Preassembled Wiring Kits

These kits include 1 cable for the status indicator, and 3 cables with connector plus a cord grip for each.

Kit Number*			Solenoid Connector Type	Length meters (feet)
Connector without Light	Lighted Connector			
	24 Volts DC	120 Volts AC		
2283H77	2532H77-W	2532H77-Z	EN 175301-803 Form A	5 (16.4)
2284H77	2533H77-W	2533H77-Z	EN 175301-803 Form A	10 (32.8)
2288H77	–	–	M12	5 (16.4)
2289H77	–	–	M12	10 (32.8)

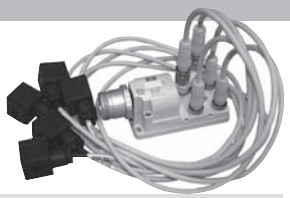
* Each cable has one connector.



Wiring Kits with J-Box

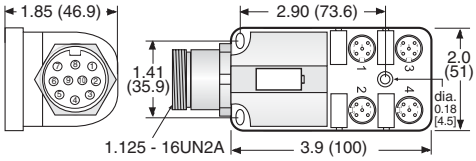
Kit Number*	Connector Types	Length meters (feet)
2249H77	M12 - DIN	1 (3.3)
2250H77	M12 - M12	1 (3.3)

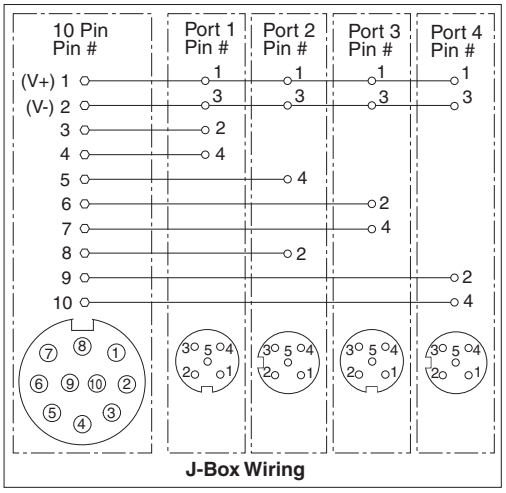
*24 volts DC only.



A J-Box is a junction box with a 10-pin MINI connector for connecting to the user's control system and (4) 5-pin M12 ports for connecting to the 3 solenoids and the status indicator on the DM2® Series valve. The J-Box kits include the J-Box as described above and (4) 1-meter cables for connecting to the valve. These cables have a connector on each end. The status indicator cable and the (3) solenoid cables have an M12 connector on one end and a EN connector on the other end (M12-DIN).

Standard valves come with DIN type solenoid connections, but could be bought with M12 type connections as well. Therefore we also offer a kit that provides solenoid cables with an M12 connector on each end (M12-M12).





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10 PIN MINI Cable

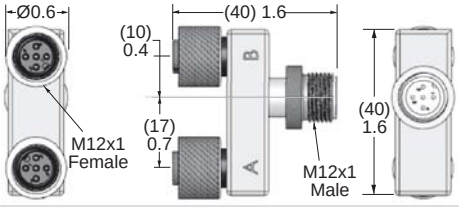
Kit Number	Length meters (feet)
2253H77	3.66 (12)
2254H77	6.1 (20)
2255H77	9.1 (30)
2256H77	15.2 (50)

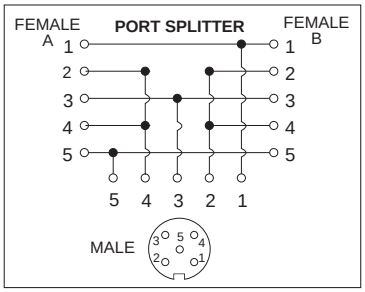
These cables have a 10-pin MINI connector for connecting the J-Box kits above to the user's control system. Kits include one cable with connector and cord grip. Cable conductors are 18-gauge wire.

PIN #		PIN #		Wire Colors:	Wire Colors:
1	+24 volts DC	6	-	Orange	Orange w/Black
2	Common volts DC	7	Remote Reset	Blue	Red
3	-	8	-	White w/Black	Green/Yellow
4	Solenoid A	9	Remote Valve Fault Light	Red w/Black	Black
5	Solenoid B	10	Remote System OK Light	Green w/Black	White

Outlet Port Pressure Monitoring Wiring Kit

Kit Number	Length meters (feet)
2251H77	1 (3.3)





Some customers prefer to monitor downstream pressure in addition to using the DM2® or DM1 Series valve. A convenient way to do this is to install a pressure switch in the extra outlet port that is provided on the valve. The Outlet Port Pressure Monitoring kit can be used with one of the J-Box kits above to split one of the M12 ports on the J-Box so that a pressure switch can be wired in as well. These kits consist of one port splitter (a Tee with three M12 connectors) and one M12-DIN cable (1 meter).

Pressure switch available separately, see valve options.

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

Double Valves with Dynamic Monitoring & Memory

Dynamic Monitoring With Memory: Memory, monitoring, and air flow control functions are integrated into two identical valve elements. Valves lock-out if asynchronous movement of valve elements occurs 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 be accomplished by the integrated electrical (solenoid) reset or by the manual reset button.
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.
LED Indication: Light-emitting diode (LED) indicators of main solenoid operation, reset solenoid operation, and status indicator condition.
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.
Transducer (optional): For monitoring of downstream pressure in the system.
Silencers: All models include high flow, clog resistant silencers.

ISO 13849-1:2006 Category 4 PL e applications

U.S. Patent No. 6840258, 6840259 (Worldwide Patents Pending)

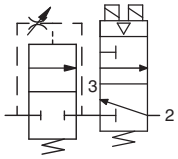
HOW TO ORDER

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

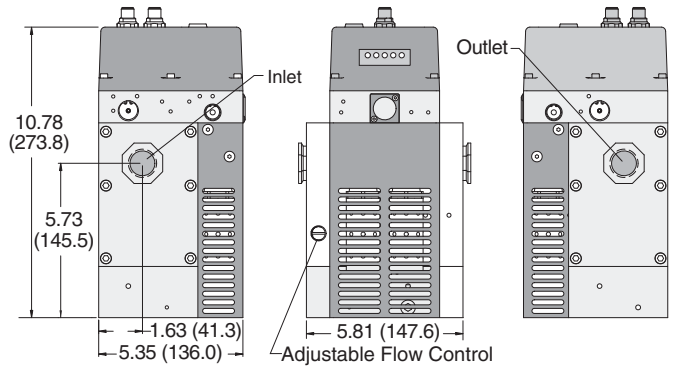
MDM2C	N	A	5	5	A	2	1

- **Thread**: BSPP D; NPT N
- **Revision Level**
- **Basic Size**
- **Basic Size / Port Size (Inlet / Outlet)**: 8 — 3/4 — 3/4 — 5
- **Voltage***: 24 volts DC A
- **Solenoid Reset Type**
- **Transducer**: Yes 3; No 1

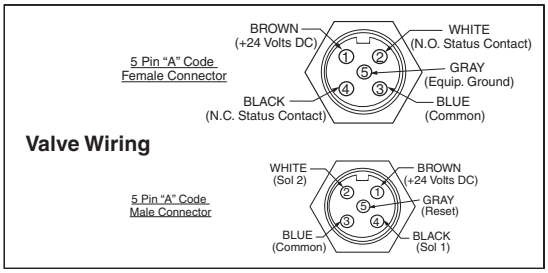
Simplified Schematic



Valve Dimensions – inches (mm)



Basic Size	Port Size	Transducer	C_V 1-2	C_V 2-3	Weight lb (Kg)
8	3/4	WIth	3.7	8.5	16.3 (7.4)
	3/4	Without	3.7	8.5	16.1 (7.3)



F

Mounting brackets are required to install valve in the system, see M DM²® Series C accessories for ordering information page F3.18.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Dual Poppet.
Mounting Type: Base mounted.
Pilot Solenoids: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Three solenoids, rated for continuous duty.
Standard Voltages: 24 volts DC.
Pilot Solenoids Power Consumption (each solenoid)**:**
Primary and reset solenoids: 1.2 watts on DC.
Enclosure Rating: IP65, IEC 60529.
Solenoid & Status Indicator Connection:
M12, 5-pin Male Receptacle, A-Coded.
Ambient Temperature: 15° to 122°F (-10° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered, lubricated or unlubricated (mineral oils according to DIN 51519, viscosity classes 32-46); 5-micron recommended.

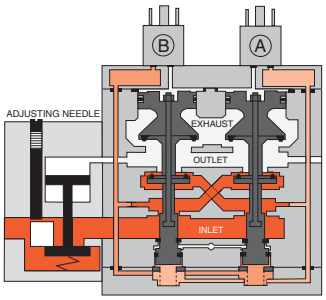
Inlet Pressure: 30 to 150 psig (2 to 10 bar). Under certain circumstances, such as maximum restriction of the adjustable flow control or a very large downstream system volume, the minimum inlet pressure may need to be set up to 60 psig (4 bar) to prevent nuisance valve faults.
Pressure Switch (Status Indicator) Rating: 5 amps at 30 volts DC.
Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.
Mounting Orientation: Vertically with pilot solenoids on top.

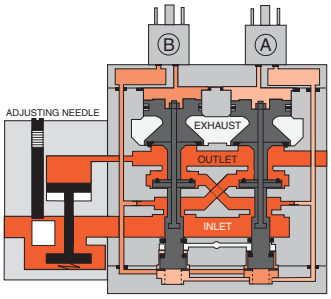
Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 7.71×10^{-9} ; MTTFD: 301.9 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, CSA/UL.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

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.

Valve de-actuated (ready-to-run): The flow of inlet air pressure to the inlet chamber of the main valve internals is restricted by a fixed orifice and an adjustable flow control as well as an air piloted 2-way normally closed poppet valve. The flow of inlet air pressure into the crossover passages is restricted by the size of the passage between the stem and the valve body opening. Flow is sufficient to quickly pressurize pilot supply/timing chambers A and B. The inlet poppets prevent air flow from crossover passages into the outlet chamber. Air pressure acting on the inlet poppets and return pistons securely hold the valve elements in the closed position. (Reset adapter omitted for clarity.)



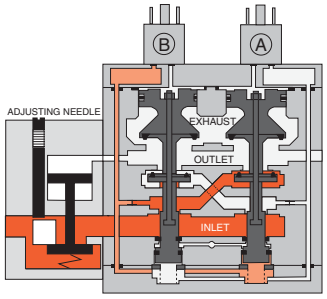


Valve actuated: Energizing the pilot valves simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated (open) position, where inlet air flow to crossover passages is fully open, inlet poppets are fully open and exhaust poppets are fully closed. The outlet is then pressurized at a rate allowed by the fixed orifice and the adjusted flow control. Once the air pressure in the outlet chamber reaches approximately 60% of inlet pressure, the air piloted 2-way normally closed poppet valve opens fully and the pressure in the inlet, crossovers, outlet, and timing chambers are quickly equalized. The adjustable flow control will control the time it takes for the outlet air pressure to reach approximately 60% of inlet pressure. Green "SOL. 1" and SOL. 2" LEDs will be displayed when the main solenoids are energized.

De-energizing the pilots quickly causes the valve elements to return to the ready-to-run position.

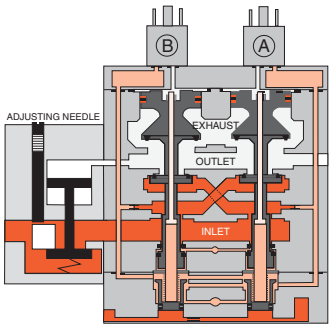
Valve locked-out: Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will move to a locked-out position. In the locked-out position, one crossover and its related timing chamber will be exhausted, and the other crossover and its related timing chamber will be fully pressurized. The valve element (side B) that is partially actuated has pilot air available to fully actuate it, but no air pressure on the return piston to fully de-actuate the valve element.

Air pressure in the crossover acts on the differential of side B stem diameters creating a latching force. Side A is in a fully closed position, and has no pilot air available to actuate, but has full pressure on the inlet poppet and return piston to hold the element in the fully closed position. Inlet air flow on side A into its crossover is restricted, and flows through the open inlet poppet on side B, 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. The return springs are limited in travel, and can only return the valve elements to the intermediate (locked-out) position. Sufficient air pressure acting on the return pistons is needed to return the valve elements to a fully closed position.



Resetting the valve: The valve will remain in the locked-out position, even if the inlet air supply is removed and re-applied.

A remote reset signal must be applied to reset the valve. A momentary, remote electrical signal must be applied to the reset solenoid to apply pressure to the reset pistons in the valve. Actuation of the reset piston physically pushes the main valve elements to their closed position. Inlet air fully pressurizes the crossovers and holds the inlet poppets on seat. Actuation of the reset piston opens the reset poppet, thereby, immediately exhausting pilot supply air, thus, preventing valve operation during reset (Reset adapter added to illustration.). De-actuation of reset pistons causes the reset poppets to close and pilot supply to fully pressurize. Reset air pressure is applied by a 3/2 normally closed solenoid, or a manual push button mounted on the reset adapter in the top valve cover. A green "RESET SOL." LED will be displayed when the reset solenoid is energized.

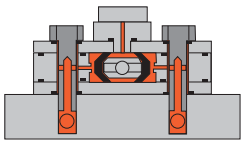


The reset procedure is as follows:

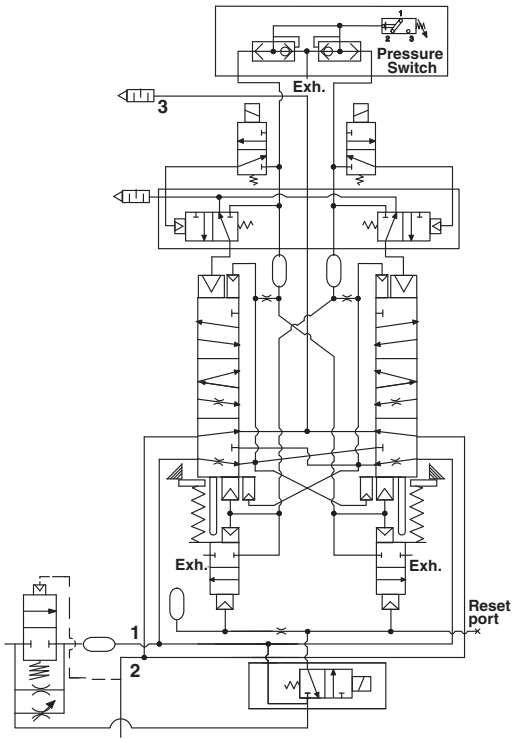
- *Remove the electrical signals to the main coils*
- *Ensure there is air supplied to the valve*
- *Energize the reset solenoid for a minimum of 200 ms*
- *Allow a 200 ms delay after de-energizing the reset solenoid and re-energizing the main solenoids*

Status Indicator:

The status indicator pressure switch will actuate when the main valve is operating normally, and will de-actuate when the main valve is in the locked-out position 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. If the valve is in a ready-to-run condition, a green "STATUS" LED will be displayed. If the valve is faulted or there is no air pressure at the inlet, a red "STATUS" LED will be displayed.



Status indicator in normal ready-to-run position



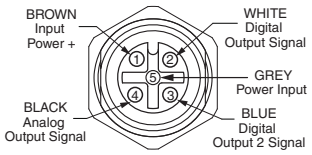
Schematic - Valve de-actuated

F3

F

Digital Pressure Transducer

Model Number
2447H77



Precision digital pressure transducer with 5 pin female connection

- Two PNP digital outputs which may be set individually, 4-20 mA analog output
- Three operation modes: Easy, Window and Hysteresis
- Selectable response times to eliminate output chattering
- Powered by 12-24 vots DC
- 6 pressure unit conversions
- Lockable keypad
- Fast zero reset

Wiring Kits

Kit Number	Length
2431H77	Wiring Kit - 5 meters (16.4 feet). Includes two cords, and the cord grips.
2432H77	Wiring Kit with Transducer - 5 meters (16.4 feet). Includes three cords, and the cord grips.

Mounting Accessories

At least two mounting brackets should be used.
This can consist of two clamp mounting brackets or one clamp mounting bracket and one mounting bracket Kit Number 2433H77.

F3

Clamp for Module Connections

Specially designed clamps provide a quick and easy assembly or disassembly of MD3™ modules. Two allen-head bolts quickly tighten or loosen the clamp using a 5/32 or 4mm hex key. The clamp contains a plate carrying two O-rings to provide positive sealing between modules.

Order clamp by model number **R-A118-105**.

Combined clamp and bracket (below) can be ordered by model number **R-A118-105M**.

Mounting Brackets

Two brackets are normally used to mount an FRL to a vertical surface. The mounting bracket attaches to the module connecting clamp (see above) with a single screw. Each bracket then employs two bolts (1/4" or 6mm) to connect the assembly to the mounting surface.

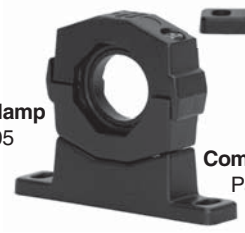
Order bracket and screw by model number **R-A118-103**.

Combined bracket and clamp (above) can be ordered by model number **R-A118-105M**.

F

Module Connecting Clamp
Part No. R-A118-105

Mounting Bracket
Part No. R-A118-103



Combined Clamp & Bracket
Part No. R-A118-105M

Male and Female End Ports

Either male or female end ports can be attached to threaded inlet and outlet lines. This allows all modules of an FRL assembly to be removed easily and quickly without having to unthread the end modules. The end ports are attached to the modules with clamps (see at left). End ports can be included in an assembled FRL or ordered separately by the following model numbers:

Port Size	Male Part Number*
1/4	R-118-109-2F
3/8	R-118-109-3F
1/2	R-118-109-4F
3/4	R-118-109-6F

Port Size	Female Part Number*
1/4	R-118-100-2
3/8	R-118-100-3
1/2	R-118-100-4
3/4	R-118-100-6

* For BSPP threads, add a "W" suffix to the model number, e.g., R-118-109-2FW.

Extra Port Blocks

An extra port block can be placed between modules to provide two auxiliary 1/4 NPTF ports. Its mounting position can be rotated to obtain the most convenient operating orientation. If only one auxiliary port is to be used, the unused port must be closed with a pipe plug. (The inlet and outlet are not threaded.)

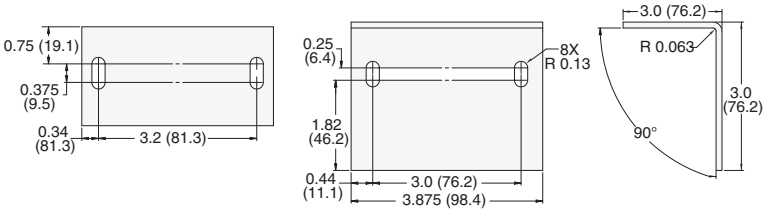
Port Size	Model Number*
1/4	R-118-106-2
3/8	R-118-106-3
1/2	R-118-106-4

* For BSPP threads, add a "W" suffix to the model number, e.g., R-118-106-2W.

Mounting Bracket Kit

Mounting Bracket Kit includes bracket and bolts to mount to the valve end plate.

Kit Number	2433H77



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

DM[1] Series E Double Valves, Manual Lockout L-O-X® Valves with Integrated Filter/Regulator

CONTROL CATEGORY 4

Pre-engineered panel-mounted design with air entry via a filter and regulator "FR", or filter, regulator and lubricator "FRL".
Includes DM[1] Series E Double Valve with Monitoring:
a) Self-contained dynamic monitoring system requires no further valve monitoring controls,
b) Ready-to-run: If an abnormality clears itself upon the removal of electricity to both solenoids, it will be ready-to-run again. It does not remember the abnormality & stay in a locked-out state until intentionally reset. Therefore, cumulative abnormalities may go undetected,
c) Status indicator switch for valve condition (ready-to-run) feedback.
Mounting plate included.


Pressure Switch not shown

Air Entry Combination	Port Size		Model Number*	Air Entry Type	C_v		Dimensions inches (mm)		
	1, 2	3			1-2	2-3	Length	Width	Depth
Cat-4 with DM1 Series E	1/4	1/2	RC304-09**	FR	1.3	2.4	13.00 (330.0)	11.00 (279.0)	5.40 (134.7)
Cat-4 with DM1 Series E	3/8	1/2	RC306-09**	FR	2.2	2.4	13.00 (330.0)	11.00 (279.0)	5.40 (134.7)
Cat-4 with DM1 Series E	1/4	1/2	RC304L-09**	FRL	1.3	2.4	13.00 (330.0)	11.00 (279.0)	5.40 (134.7)
Cat-4 with DM1 Series E	3/8	1/2	RC306L-09**	FRL	2.2	2.4	13.00 (330.0)	11.00 (279.0)	5.40 (134.7)

* NPT pressure port threads.
** Specify voltage when ordering. Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., RC304-09W. M12 connectors available, consult ROSS.
Standard Air Entry Packages supplied with metal bowl and manual drain. For automatic drain insert an "A" before the dash (-) in the model number, e.g., RC304A-09.

Custom designs available, consult ROSS.

DM[2]® Series E Double Valves, Manual Lockout L-O-X® Valves with Integrated Filter/Regulator

CONTROL CATEGORY 4

Pre-engineered panel-mounted design with air entry via a filter and regulator "FR", or filter, regulator and lubricator "FRL".
Includes DM[2]® Series E Double Valve with Monitoring & Memory:
a) Self-contained dynamic monitoring system requires no further valve monitoring controls,
b) Dynamic memory of abnormal function prevents unintentional reset with removal of air or electricity.
All necessary features for safety applications are included:
a) Electrical reset valve,
b) Status indicator switch for valve condition (ready-to-run) feedback.
Mounting plate included.

Air Entry Combination	Port Size		Model Number*	Air Entry Type	C_v		Dimensions inches (mm)		
	1, 2	3			1-2	2-3	Length	Width	Depth
Cat-4 with DM2® Series E	1/4	1/2	RC404-09**	FR	1.3	2.4	13.00 (330.0)	11.00 (279.0)	5.40 (134.7)
Cat-4 with DM2® Series E	3/8	1/2	RC406-09**	FR	2.2	2.4	13.00 (330.0)	11.00 (279.0)	5.40 (134.7)
Cat-4 with DM2® Series E	1/4	1/2	RC404L-09**	FRL	1.3	2.4	13.00 (330.0)	11.00 (279.0)	5.40 (134.7)
Cat-4 with DM2® Series E	3/8	1/2	RC406L-09**	FRL	2.2	2.4	13.00 (330.0)	11.00 (279.0)	5.40 (134.7)

* NPT pressure port threads.
** Specify voltage when ordering. Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., RC404-09W. M12 connectors available, consult ROSS.
Standard Air Entry Packages supplied with metal bowl and manual drain. For automatic drain insert an "A" before the dash (-) in the model number, e.g., RC404A-09.

Custom designs available, consult ROSS.

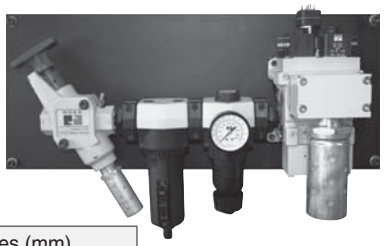
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

DM²® Series C Double Valves, Manual Lockout L-O-X® Valves with Filter and Regulator

CONTROL CATEGORY 4

Pre-engineered panel-mounted design with air entry via a filter and regulator "FR", or filter, regulator and lubricator "FRL"
Includes DM²® Series C Double Valve with Monitoring & Memory:
a) Self-contained dynamic monitoring system requires no further valve monitoring controls,
b) Dynamic memory of abnormal function prevents unintentional reset with removal of air or electricity
All necessary features for safety applications are included:
a) Electrical reset valve,
b) Status indicator switch for valve condition (ready to run) feedback



Air Entry Combination	Port Size		Model Number*	Air Entry Type	C_v		Dimensions inches (mm)		
	1, 2	3			1-2	2-3	Length	Width	Depth
Cat-4 with DM2® Series C	1/2	1/2	RC408-06**	FR	3	10	24.0 (610)	14.5 (369)	7.4 (187)
Cat-4 with DM2® Series C	1/2	1/2	RC408L-06**	FRL	4.4	13	24.0 (610)	15.7 (399)	8.3 (211)
Cat-4 with DM2® Series C	3/4	3/4	RC412-06**	FR	4.4	13	27.0 (686)	19.0 (483)	9.0 (229)
Cat-4 with DM2® Series C	3/4	3/4	RC412L-06**	FR	3	10	24.0 (610)	14.5 (369)	7.4 (187)
Cat-4 with DM2® Series C	1	1	RC416-06**	FRL	4.4	13	24.0 (610)	15.7 (399)	8.3 (211)
Cat-4 with DM2® Series C	1	1	RC416L-06**	FRL	4.4	13	31.0 (788)	19.0 (483)	9.0 (229)

* NPT pressure port threads.
** Specify voltage when ordering. Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., RC408-06W. M12 connectors available, consult ROSS.
Standard Air Entry Packages supplied with metal bowl and manual drain. For automatic drain insert an "A" before the dash (-) in the model number, e.g., RC408A-06.

Custom designs available, consult ROSS.
Explosion proof solenoid pilot available, for more information consult ROSS.

M DM²® Series C Double Valves with Integrated Soft-Start, Manual Lockout L-O-X® Valves with Integrated Filter/Regulators

CONTROL CATEGORY 4

Pre-engineered panel mountable design with air entry via a filter and regulator "FR", or filter, regulator and lubricator "FRL"
Includes M DM²® Series C Double Valve with Monitoring & Memory:
a) Self-contained dynamic monitoring system requires no further valve monitoring controls,
b) Dynamic memory of abnormal function prevents unintentional reset with removal of air or electricity
All necessary features for safety applications are included:
a) Electrical reset valve,
b) Status indicator switch for valve condition (ready to run) feedback

HOW TO ORDER

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

M	5	1	1	X	A	2	1	2	1	1

PIPE SIZE

1/2 NPTF	4
3/4 NPTF	5
1/2 BSPP	D
3/4 BSPP	E

LOCKOUT VALVE TYPE

Modular L-O-X®	**1**
L-O-X®	2
No L-O-X®	X

LUBRICATOR FILL TYPE

Fill Port	2
No lubricator	X

CABLE OPTIONS

Yes	1
No	X

DOWNSTREAM PRESSURE SWITCH (includes 1/4" Extra Port)

586A86	1
None	X

FILTER-REGULATOR (0-125 psi with 0-200 gauge)

5 Micron, Manual Drain, Metal Bowl	**1**
5 Micron, Auto Drain, Metal Bow	2
None	X

EXTRA PORTS (Prior to M DM2® Exhaust Valve)

1/4	**2**
3/8	3
1/2	4
None	X

M DM2® VALVE

Without Transducer	1
With Transducer	3

EXTRA PORTS (Downstream of M DM2®)

1/4	**2**
3/8	3
1/2	4
None	X

Custom designs available, consult ROSS.

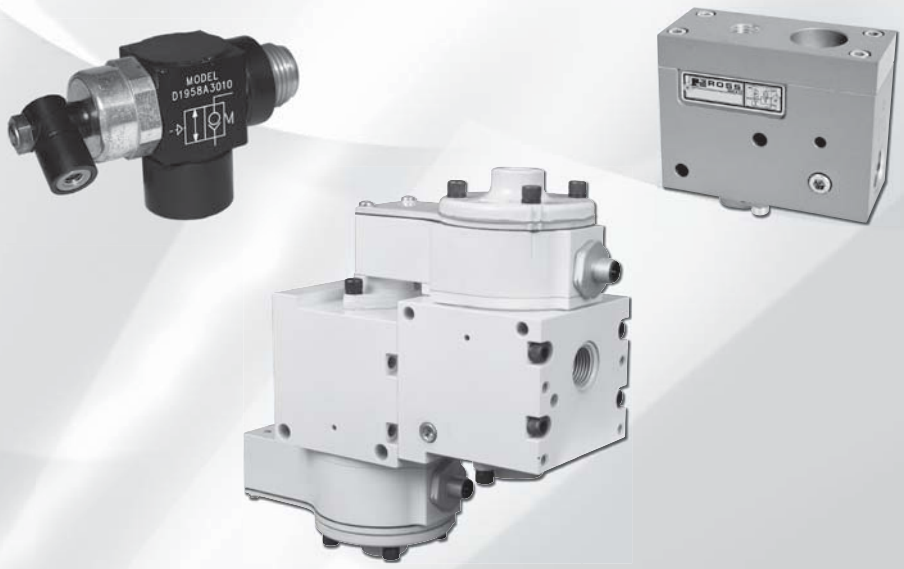
NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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

F

ROSS CONTROLS®

Pilot Operated Check Valves
19, 27 and SV27 Series



www.rosscontrols.com

PILOT OPERATED CHECK VALVES RIGHT-ANGLE – KEY FEATURES

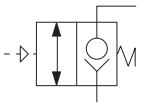
- Right-angle design for easy positioning of pipe or tubing
- Threaded outlet ports available with NPT or G threads
- Inlet ports available with NPTF threaded or push-to-connect fittings
- Quick and easy installation
- Galvanized zinc plated brass body construction
- Lube or non-lube operation

PILOT OPERATED CHECK VALVES – KEY FEATURES

- Available with automatic or manual trapped pressure release when pressure is removed from the Blowdown Signal Port (BP)
- Poppet construction for near zero leakage
- Applications include Air Holding and Cylinder Load Holding

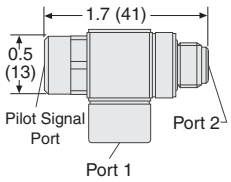
VALVE SERIES	Category	OPERATION				AVAILABLE PORT SIZES								MAX. FLOW (Cv)								Integrated Trapped Pressure Relief	Page
														Port Size									
		Air Pilot	Solenoid	Single	Dual	1/8	1/4	3/8	1/2	3/4	1	1¼	1½	1/8	1/4	3/8	1/2	3/4	1	1¼	1½		
19	1	■		■		■	■	■						0.4	0.8	1.2						Optional	F4.4
27	1	■		■			■	■	■						2.2	2.9	3.2						F4.5
27	1	■		■			■	■	■	■	■	■	■	2.3	3.8	4	7.7	9	24	29	29		F4.6
27	1	■		■			■	■	■						2.2	2.9	3.2					Remote	F4.7
27	1	■		■			■	■	■							2.6	2.8	9.2				Remote	F4.7
27	1	■		■				■	■	■						2.6	2.8	9.2				Manual	F4.8
27	1	■			■			■	■	■	■					2.9	3.2	8.5	8.5				F4.9
27	1	■			■			■	■	■	■					2.9	3.2	8.5	8.5			Remote	F4.10
27	1	■			■			■	■	■	■					2.9	3.2	8.5	8.5			Manual	F4.11
27	1	■			■			■	■	■	■					2.9	3.2	8.5	8.5			Solenoid	F4.12
SV27	2	■	■	■				■	■	■	■	■				4.5	8.3	20	29	33			F4.13
SV27	3	■	■	■				■	■	■	■	■				4.5	8.3	20	29	33			F4.14
SV27	2	■		■				■	■	■	■	■				4.5	8.3	20	29	33			F4.15
SV27	3	■		■				■	■	■	■	■				4.5	8.3	20	29	33			F4.16

Models with Threaded Banjo						
Port Size		Valve Model Number	Port 12	C_v		Tightening Torque Max. Ft-lb (Nm)
Port 1 (female threads)	Port 2 (male threads)			1-2	2-1	
1/8	1/8	1958A1010	10-32 UNF	0.4	0.4	22.13 (30)
1/4	1/4	1958A2010	10-32 UNF	0.8	0.7	14.75 (20)
3/8	3/8	1958A3010	10-32 UNF	1.2	1.3	22.13 (30)
1/2	1/2	1958A4010	10-32 UNF	2.3	2.2	29.50 (40)
G1/8	G1/4	D1958A1010*	M5	0.4	0.4	7.38 (10)
G1/4	G1/4	D1958A2010*	M5	0.8	0.7	8.85 (12)
G3/8	G3/8	D1958A3010*	M5	1.2	1.3	14.75 (20)
G1/2	G1/2	D1958A4010*	M5	2.3	2.2	22.13 (30)
* BSPP port threads.						

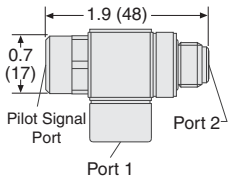


Valve Dimensions – inches (mm)

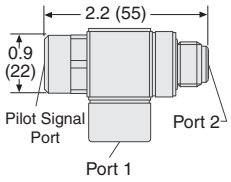
Port Size 1/8



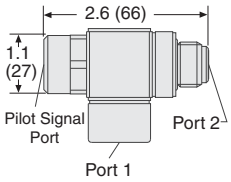
Port Size 1/4



Port Size 3/8

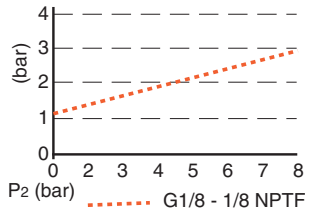


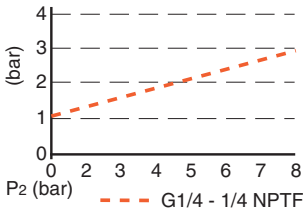
Port Size 1/2

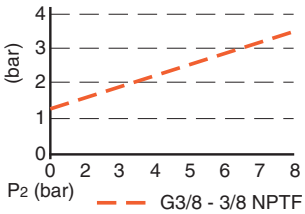


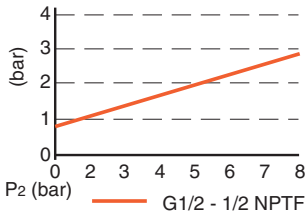
F4

Signal Pressure: The charts below show the minimum signal pilot port pressure to open the valve versus port 2 pressure (P_2) when there is no pressure at port 1 (P_1 = 0 bar).









F

Accessories & Options

Manual Override	Manual Trapped Pressure Relief Adapter			
	Port 1	Port 2	Port Threads	Model Number*
	5/32	10-32 Manual Operated Check	NPT	1998A1015
	M5	M5 Manual Operated Check	BSPP	D1998A1010
	* Adapter threads into the signal port.			

Valve Illustrated with Optional Manual Trapped Pressure Relief Adapter

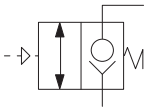
STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 15° to 160°F (-10° to 70°C).
Flow Media: Filtered air.
Operating 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.

Models with Push-to-Connect Fitting						
Port Size		Valve Model Number	Port 12	C_V		Tightening Torque Max. Ft-lb (Nm)
Port 1# (tube fittings)	Port 2 (male threads)			1-2	2-1	
5/32”	1/8	1958A1115	10-32 UNF	0.4	0.4	11.06 (15)
1/4”	1/8	1958A1120	10-32 UNF	0.4	0.4	11.06 (15)
1/4”	1/4	1958A2120	10-32 UNF	0.8	0.7	14.75 (20)
3/8”	1/4	1958A2130	10-32 UNF	0.8	0.7	14.75 (20)
3/8”	3/8	1958A3130	10-32 UNF	1.2	1.3	22.13 (30)
4 mm	G1/8	D1958A1140*	M5	0.4	0.4	7.38 (10)
6 mm	G1/8	D1958A1160*	M5	0.4	0.4	7.38 (10)
8 mm	G1/8	D1958A1180*	M5	0.4	0.4	7.38 (10)
6 mm	G1/4	D1958A2160*	M5	0.8	0.7	8.85 (12
8 mm	G1/4	D1958A2180*	M5	0.8	0.7	8.85 (12)
10 mm	G1/4	D1958A2110*	M5	0.8	0.7	8.85 (12)
8 mm	G3/8	D1958A3180*	M5	1.2	1.3	14.75 (20)
10 mm	G3/8	D1958A3110*	M5	1.2	1.3	14.75 (20

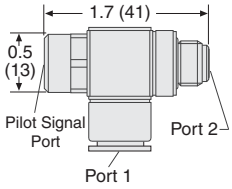
Port 1 tubing size in inches (”) or millimeters (mm).
* BSPP port threads.



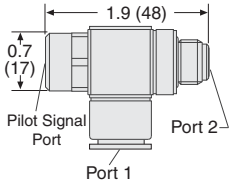
Valve Dimensions – inches (mm)

F4

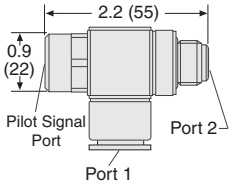
Port Size 1/8



Port Size 1/4

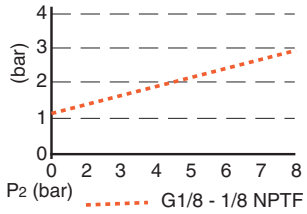


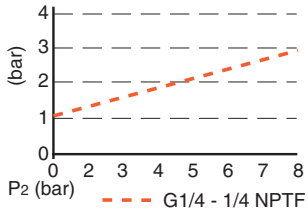
Port Size 3/8

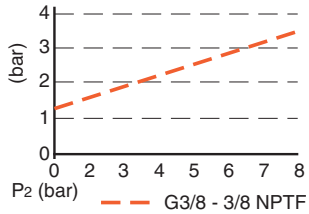


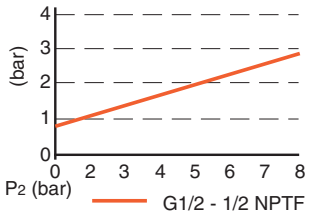
Signal Pressure: The charts below show the minimum signal pilot port pressure to open the valve versus port 2 pressure (P_2) when there is no pressure at port 1 (P_1 = 0 bar).

F









OPTIONS

Manual Override	Manual Trapped Pressure Relief Adapter			
	Port 1	Port 2	Port Threads	Model Number*
	5/32	10-32 Manual Operated Check	NPT	1998A1015
	M5	M5 Manual Operated Check	BSPP	D1998A1010
	* Adapter threads into the signal port.			

Valve Illustrated with Optional Manual Trapped Pressure Relief Adapter

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 15° to 160°F (-10° to 70°C).
Flow Media: Filtered air.
Operating Pressure: 15 to 150 psig (1 to 10.3 bar).

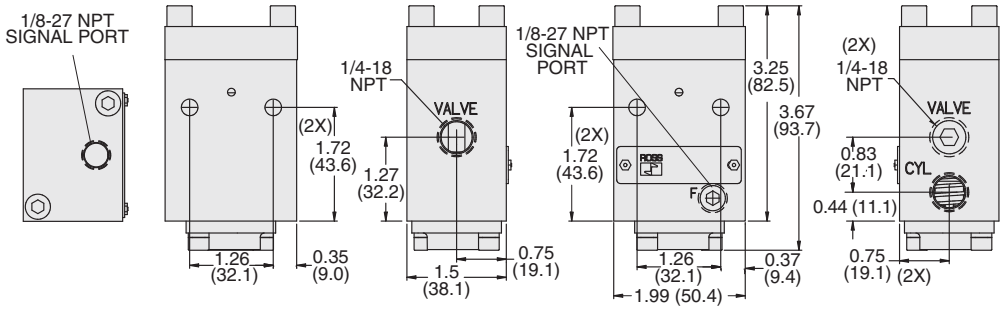
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

2-Way 2-Position, Pressure Controlled				
Ports Size	**Valve Model Number***	**Signal Port**	**C_v**	**Weight** lb (kg)
1/4	2751A2908	1/8-27 NPT	2.2	2.3 (1.0)
3/8	2751A3908	1/8-27 NPT	2.9	2.3 (1.0)
1/2	2751A4915	1/8-27 NPT	3.2	2.3 (1.0)

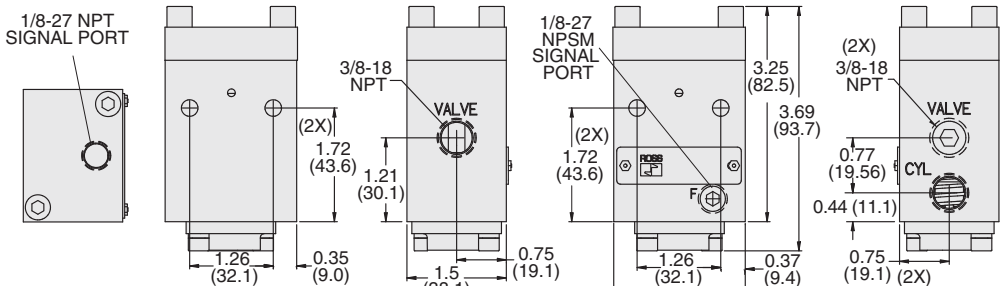
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g.,D2751A2908.

Valve Dimensions – inches (mm)

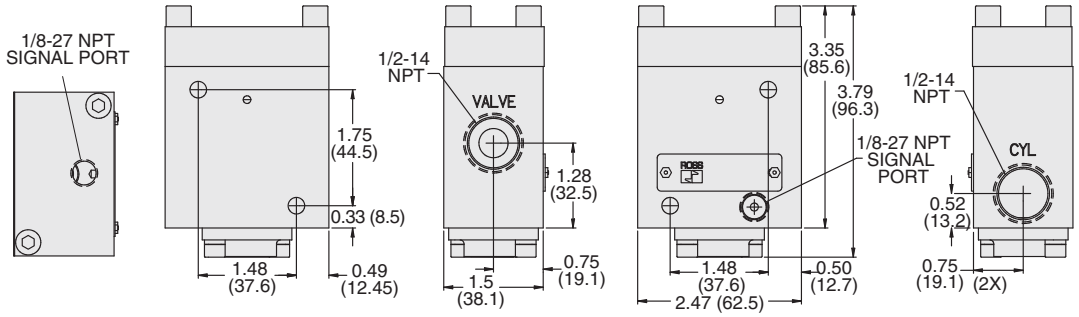
Port Size 1/4



Port Size 3/8



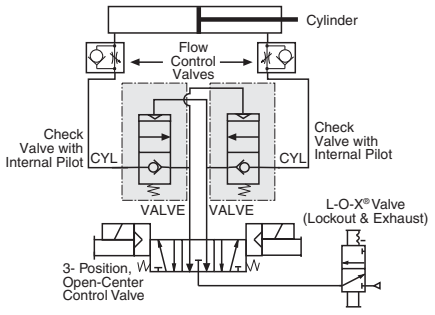
Port Size 1/2



Single Pilot Operated Check Valve Application

CIRCUIT FEATURES:

- Cylinder moves as long as the control valve solenoid is energized. Use for continuous motion or jogging.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.

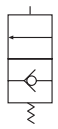


STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).
Flow Media: Filtered air.
Signal Pressure: Must be equal to or greater than inlet pressure.

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

2-Way 2-Position, Pressure Controlled					
Ports Size	**Body Size**	**Valve Model Number***	**Signal Port**	**C_v**	**Weight** lb (kg)
1/4	3/8	2751A2903	1/4	2.3	1.3 (0.6)
3/8	3/8	2751A3901	1/4	3.8	1.3 (0.6)
1/2	3/8	2751A4902	1/4	4	1.3 (0.6)
1/2	3/4	2751A4905	1/4	7.7	2.3 (1.0)
3/4	3/4	2751A5903	1/4	9	2.3 (1.0)
1	3/4	2751A6901	1/4	9	2.3 (1.0)
1	1¼	2751B6904	1/4	24	6.0 (2.7)
1¼	1¼	2751B7901	1/4	29	6.0 (2.7)
1½	1¼	2751B8902	1/4	29	6.0 (2.7)

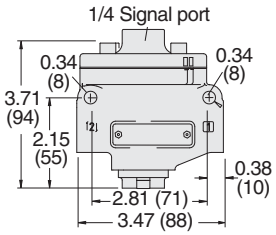


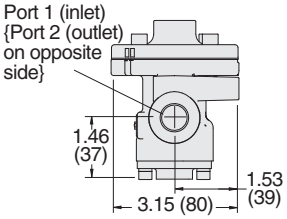
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g.,D2751A2903.

CONTROL CATEGORY 1

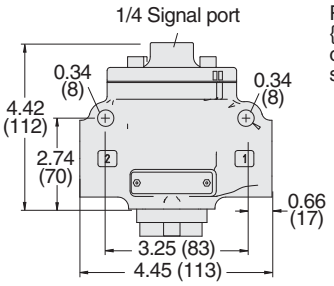
Valve Dimensions – inches (mm)

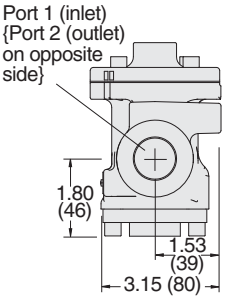
Body Size 3/8



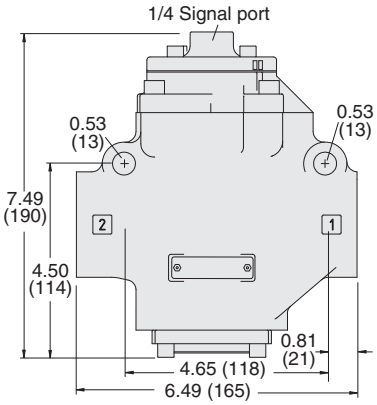


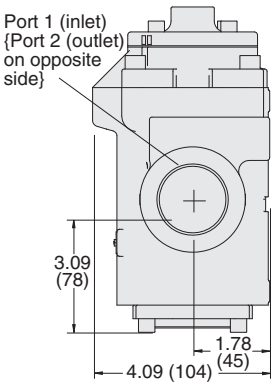
Body Size 3/4





Body Size 1½

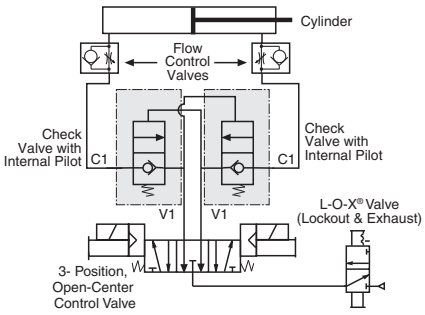




Single Pilot Operated Check Valve Application

CIRCUIT FEATURES:

- Cylinder moves as long as the control valve solenoid is energized. Use for continuous motion or jogging.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.



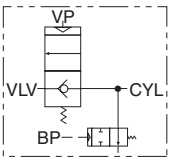
STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).
Flow Media: Filtered air.
Signal Pressure: Must be equal to or greater than inlet pressure.

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

2-Way 2-Position, Pressure Controlled				
Ports Size	**Valve Model Number***	**Signal Port**	**C_v**	**Weight** lb (kg)
3/8	2751A3922	1/8-27 NPT	2.6	1.8 (0.8)
1/2	2751A4922	1/8-27 NPT	2.8	1.8 (0.8)
3/4	2751A5917	1/8-27 NPT	9.2	2.9 (3.1)

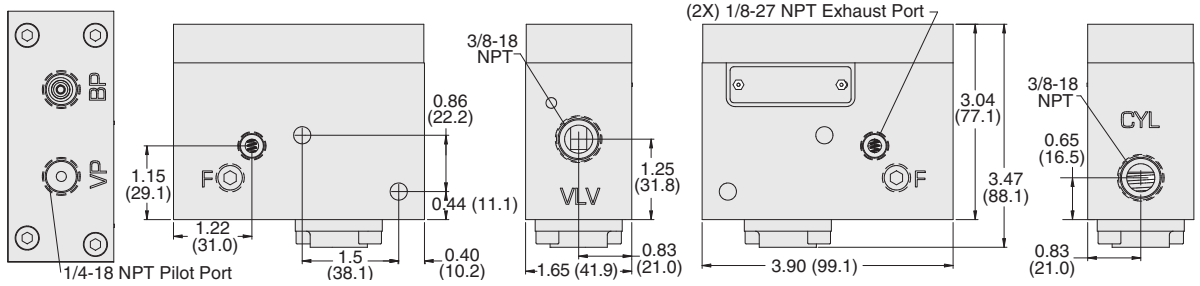
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g.,D2751A3922.



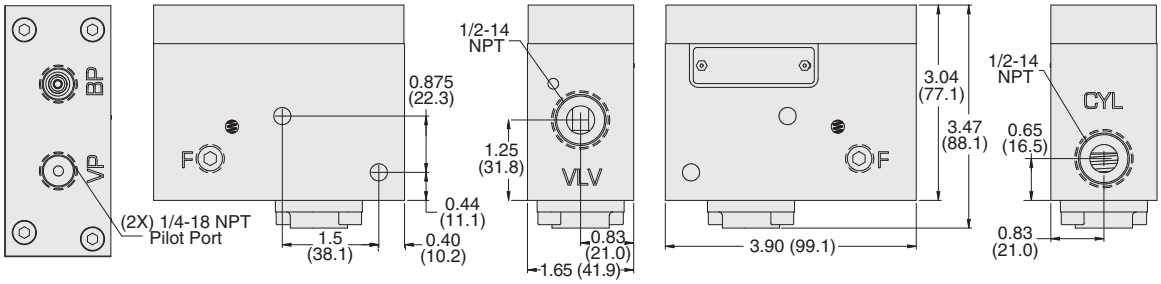
CONTROL CATEGORY 1

Valve Dimensions – inches (mm)

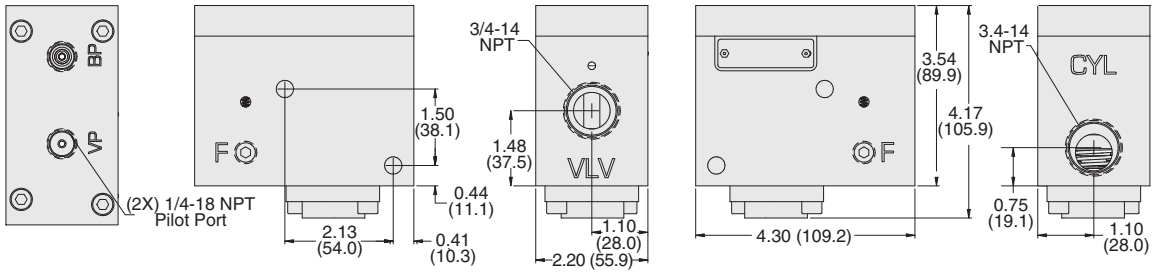
Port Size 3/8



Port Size 1/2



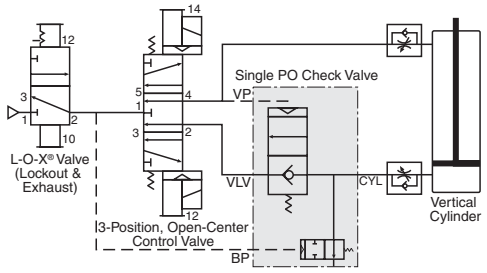
Port Size 3/4



Single Pilot Operated Check Valve with Trapped Pressure Relief Application

CIRCUIT FEATURES:

- Trapped pressure between check valve and cylinder is exhausted when the air supply at the Blowdown Signal Port (BP) is lost or locked-out.
- Cylinder moves as long as the control valve solenoid is energized. Use for continuous motion or jogging.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.

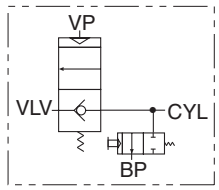


STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).
Flow Media: Filtered air.
Signal Pressure: Must be equal to or greater than inlet pressure.

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

2-Way 2-Position, Pressure Controlled			
Ports Size	**Valve Model Number***	**C_v**	**Weight** lb (kg)
3/8	2751A3920	2.6	1.8 (0.8)
1/2	2751A4920	2.8	1.8 (0.8)
3/4	2751A5919	9.2	2.9 (3.1)

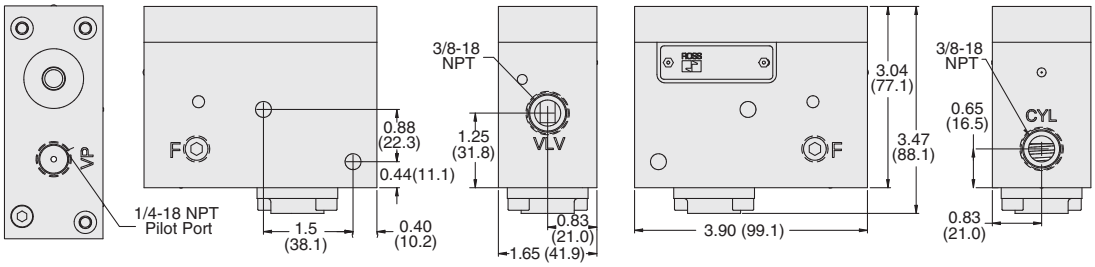


* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g.,D2751A3920.

CONTROL CATEGORY 1

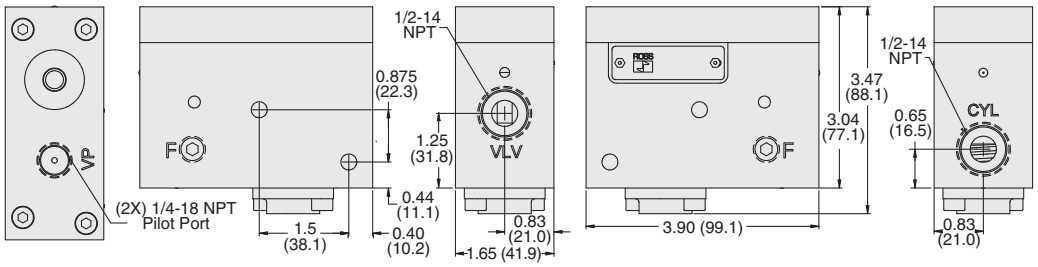
Valve Dimensions – inches (mm)

Port Size 3/8



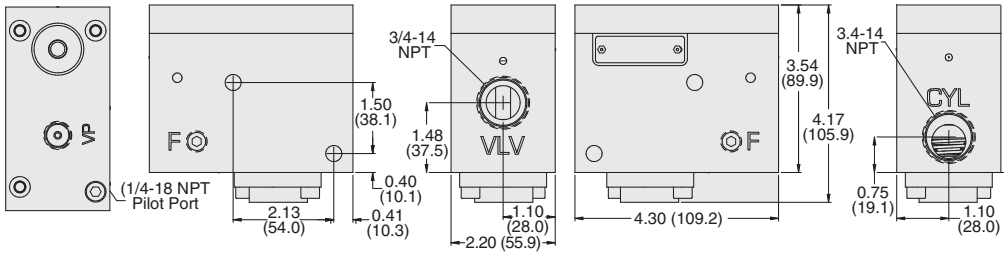
F4

Port Size 1/2



F

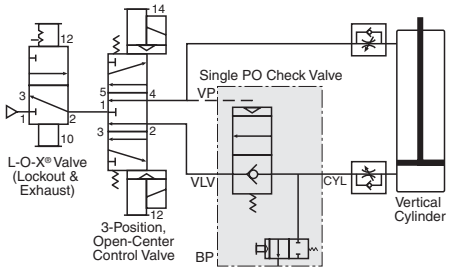
Port Size 3/4



Single Pilot Operated Check Valve with Manual Trapped Pressure Relief Application

CIRCUIT FEATURES:

- Trapped pressure between check valve and cylinder is exhausted when the manual relief button is pressed.
- Cylinder moves as long as the control valve solenoid is energized. Use for continuous motion or jogging.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.



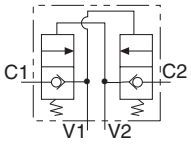
STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).
Flow Media: Filtered air.
Signal Pressure: Must be equal to or greater than inlet pressure.

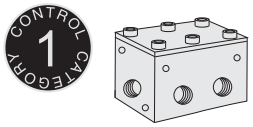
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Online Version
Rev. 07/21/17

2-Way 2-Position, Pressure Controlled				
Ports Size	**Valve Model Number***	**Signal Port**	**C_v**	**Weight** lb (kg)
3/8	2768C3900	1/8-27 NPT	2.9	2.0 (0.9)
1/2	2768C4900	1/8-27 NPT	3.2	2.4 (1.1)
3/4	2768C5900	1/8-27 NPT	8.5 #	3.8 (1.7)
1	2768A6900	1/8-27 NPT	8.5 #	6.8 (3.1)

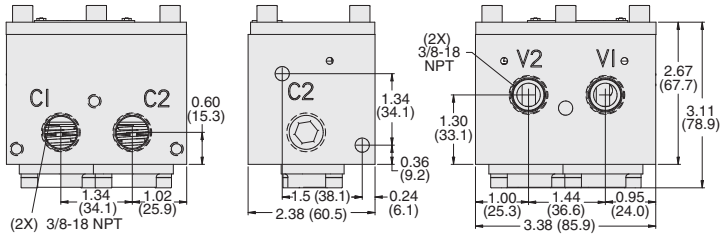


* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g.,D2768C3900.
# Effective C_v varies with load and pressure drop. Consult ROSS for specifics on your system.

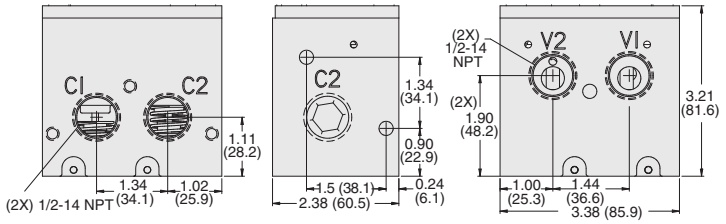


Valve Dimensions – inches (mm)

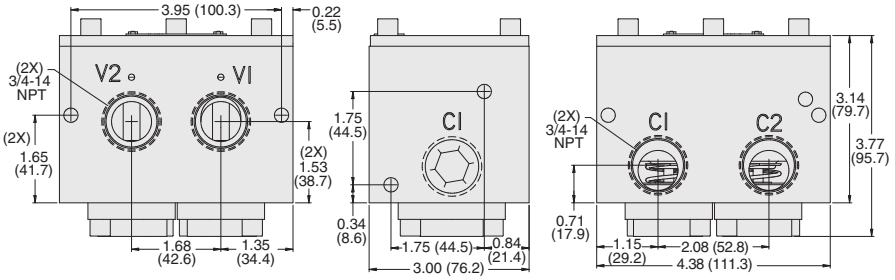
Port Size 3/8



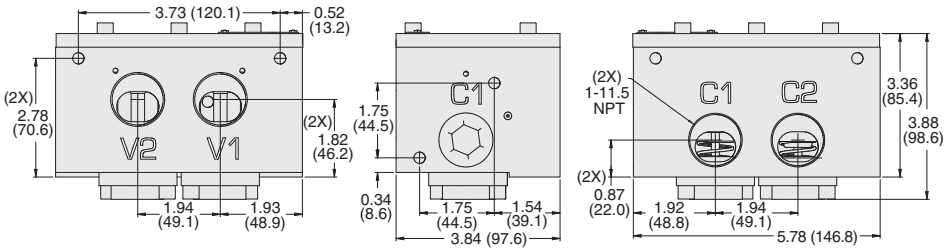
Port Size 1/2



Port Size 3/4



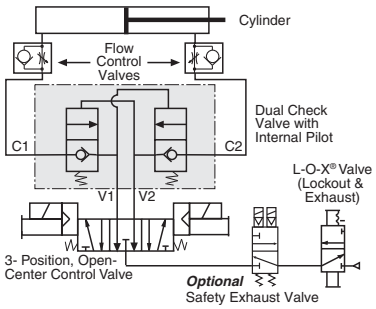
Port Size 1



Dual Pilot Operated Check Valve Application

CIRCUIT FEATURES:

- Cylinder moves as long as the control valve solenoid is energized. Use for continuous motion or jogging.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.

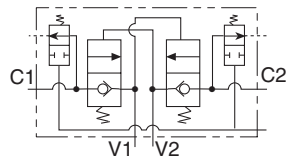


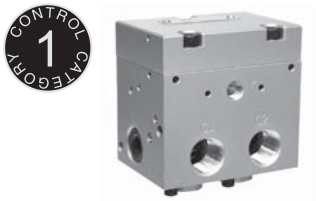
STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).
Flow Media: Filtered air.
Signal Pressure: Must be equal to or greater than inlet pressure.

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

2-Way 2-Position, Pressure Controlled				
Ports Size	**Valve Model Number***	**Signal Port**	**C_v**	**Weight** lb (kg)
3/8	2768D3901	1/8-27 NPT	2.9	2.3 (1.1)
1/2	2768D4901	1/8-27 NPT	3.2	2.3 (1.1)
3/4	2768D5901	1/8-27 NPT	8.5 #	3.8 (1.7)
1	2768D6901	1/8-27 NPT	8.5 #	7.4 (3.4)

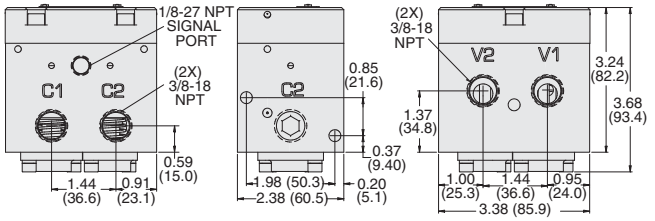




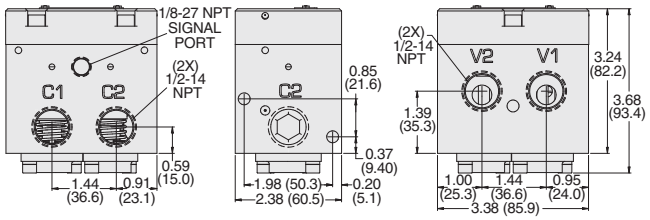
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g.,D2768D3901.
# Effective C_v varies with load and pressure drop. Consult ROSS for specifics on your system.

Valve Dimensions – inches (mm)

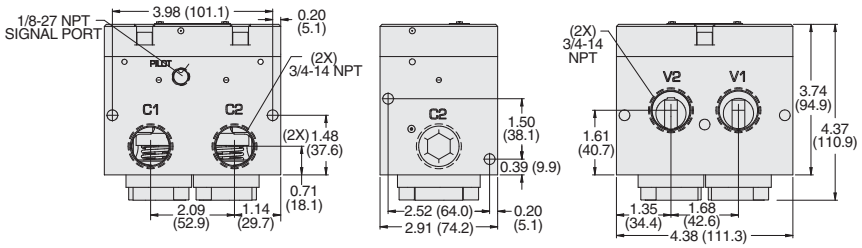
Port Size 3/8



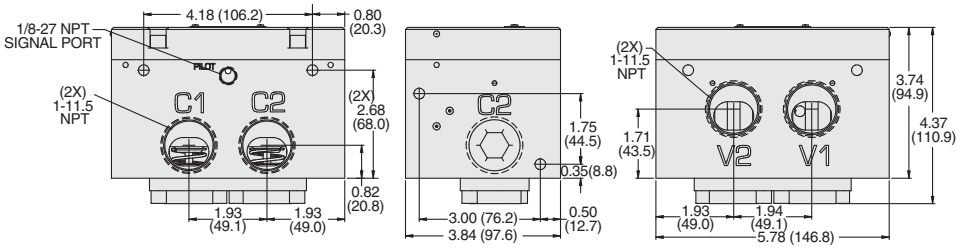
Port Size 1/2



Port Size 3/4



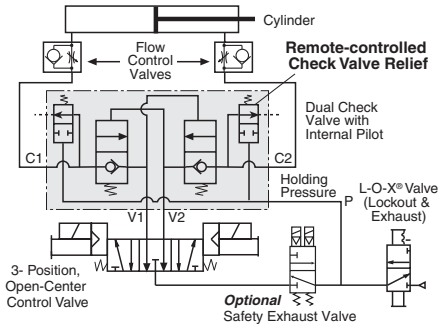
Port Size 1



Dual Pilot Operated Check Valve Remote Trapped Pressure Relief Application

CIRCUIT FEATURES:

- Trapped pressure between check valve and cylinder is exhausted when the air supply at the port "P" is lost or locked-out.
- Cylinder moves as long as the control valve solenoid is energized. Use for continuous motion or jogging.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.

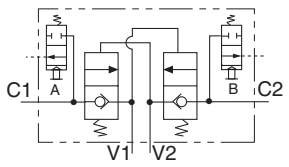


STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).
Flow Media: Filtered air.
Signal Pressure: Must be equal to or greater than inlet pressure.

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

2-Way 2-Position, Pressure Controlled			
Ports Size	**Valve Model Number**	**C_v**	**Weight** lb (kg)
3/8	2768D3904	2.9	2.3 (1.1)
1/2	2768D4904	3.2	2.3 (1.1)
3/4	2768D5904	8.5 #	3.8 (1.7)
1	2768D6904	8.5 #	6.58 (3.0)

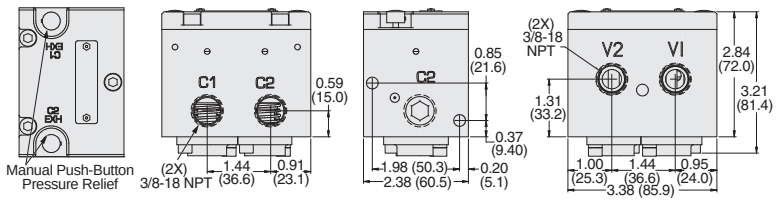


* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g.,D2768D3904.
# Effective C_v varies with load and pressure drop. Consult ROSS for specifics on your system.

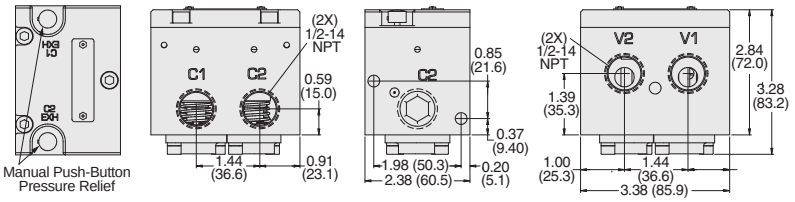
CONTROL CATEGORY 1

Valve Dimensions – inches (mm)

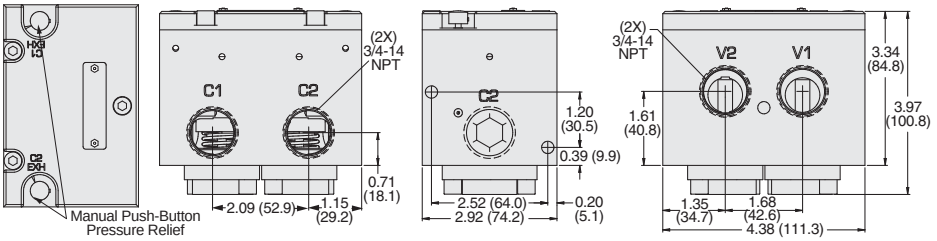
Port Size 3/8



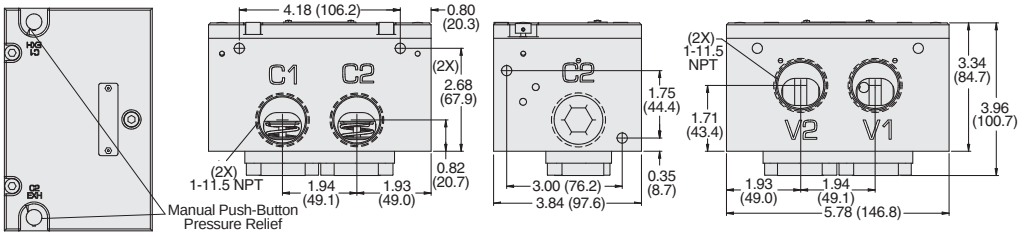
Port Size 1/2



Port Size 3/4



Port Size 1



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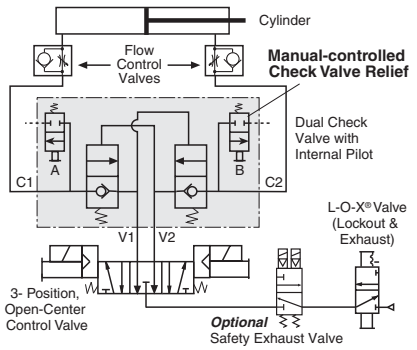
Dual Pilot Operated Check Valve Manual Trapped Pressure Relief Application

CIRCUIT FEATURES:

- Trapped pressure between check valve and cylinder is exhausted when push buttons A and B are pressed.
- Cylinder moves as long as the control valve solenoid is energized. Use for continuous motion or jogging.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.



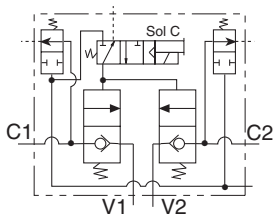
STANDARD SPECIFICATIONS (for valves on this page)**:**

Construction: Poppet.
Mounting Type: In-Line.
Ambient/Media Temperature: 40° to 175°F (4° to 80°C).
Inlet Pressure: 15 to 150 psig (1 to 10.3 bar).
Flow Media: Filtered air.
Signal Pressure: Must be equal to or greater than inlet pressure.

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

2-Way 2-Position, Solenoid Pilot Controlled

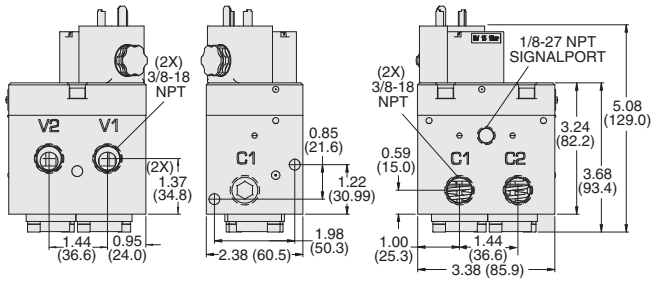
Ports Size	Valve Model Number* DIN Connector	3-Pin Mini Connector	24 Volts DC 3-Pin Mini	24 Volts DC 4-Pin Micro	Signal Port	C_v
3/8	2778D3900**	2778D3901**	2778D3902	2778D3904	1/8-27 NPT	2.9
1/2	2778D4900**	2778D4901**	2778D4902	2778D4904	1/8-27 NPT	3.2
3/4	2778D5900**	2778D5901**	2778D5902	2778D5904	1/8-27 NPT	8.5 #
1	2778D6900**	2778D6901**	2778D6902	2778D6904	1/8-27 NPT	8.5 #



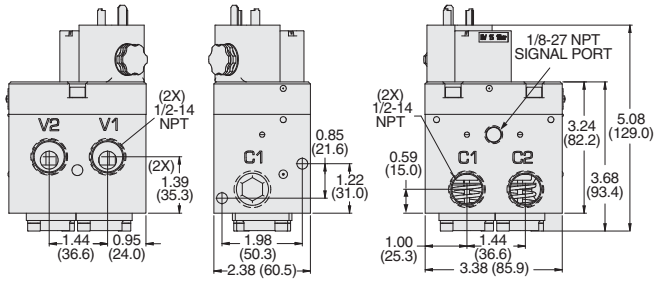
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g.,D2778D3900W.
**Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g.,D2778D3900W. For other voltages, consult ROSS.
Effective C_V varies with load and pressure drop. Consult ROSS for specifics on your system.

Valve Dimensions – inches (mm)

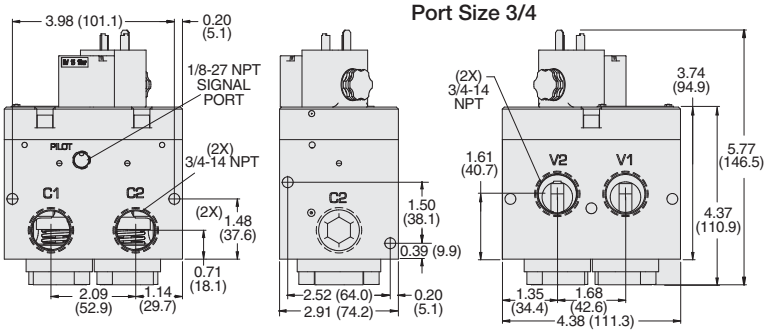
Port Size 3/8



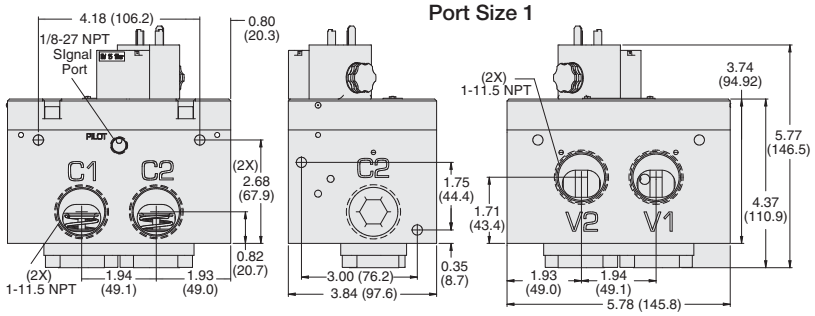
Port Size 1/2



Port Size 3/4



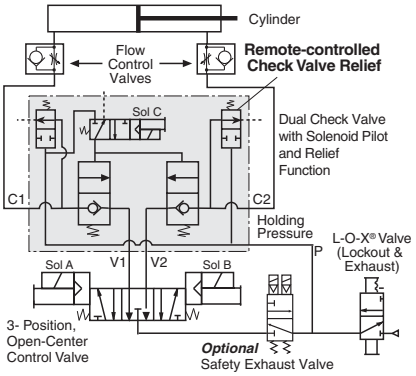
Port Size 1



Dual Pilot Operated Check Valve Solenoid Pilot Controlled Application

CIRCUIT FEATURES:

- To operate cylinder, simultaneously energize solenoids A and C *or* B and C.
- Pilot supply and exhaust are independent of control valve.
- Response time is not affected by exhaust restrictions of the control valve.
- Cylinder remains stationary if neither control valve solenoid is energized, or if electrical signal is lost.
- Pressure in cylinder is exhausted when the air supply at "P" port is lost or locked-out.
- L-O-X® valve provides lockable shut-off of air supply, and exhausting of trapped downstream air.



Connector Wiring

STANDARD SPECIFICATIONS (for valves on this page):

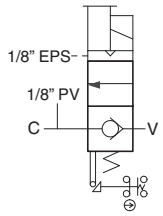
Construction: Poppet.
Mounting Type: In-Line.
Solenoids: AC or DC power.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption: 8 VA inrush, 6 VA holding on AC; on DC 4.5 watts with 4-pin Micro connector, 60 watts with 3-pin connector.

Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Inlet Pressure: 30 to 150 psig (2 to 10 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.

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

2-Way 2-Position Valves, Solenoid Pilot Controlled

Port Size 1, 2	Body Size	Valve Model Number*	C_v 1-2	Weight lb (kg)
1/2	3/4	SV27NC115408CSAA**	4.5	5.0 (2.3)
3/4	3/4	SV27NC115508CSAA**	8.3	5.0 (2.3)
1	3/4	SV27NC115608CSAA**	10.3	5.0 (2.3)
1	1¼	SV27NC117608CSAA**	20	12.5 (5.6)
1¼	1¼	SV27NC117708CSAA**	29	12.5 (5.6)
1½	1¼	SV27NC117808CSAA**	33	12.5 (5.6)

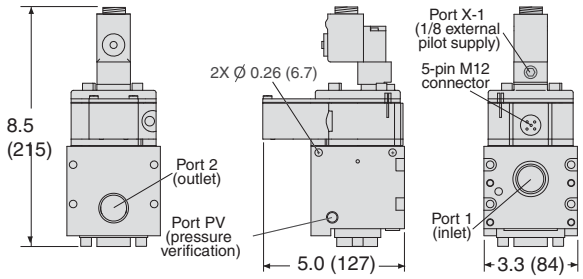


* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC115408CSAA1A.

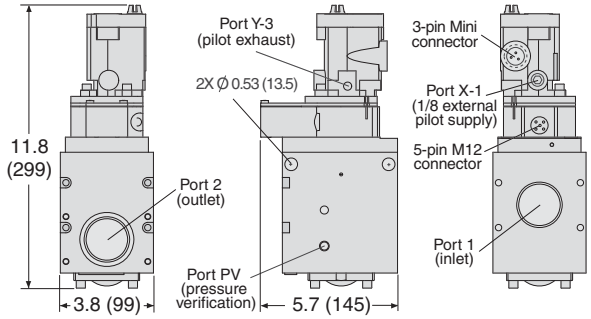
** Insert voltage code: "1A"=110-120 volts AC, 50/60 Hz; "1D"= 24 volts DC; .e.g., SV27NC115408CSAA1A. For other voltages, consult ROSS.

Valve Dimensions – inches (mm)

Body Size 3/4 (CNOMO Style Pilot)



Body Size 1¼ (Pacer Style Pilot)



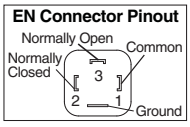
F4

Accessories & Options

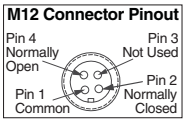
Pressure Switches	Connection Type	Model Number*	Port Threads
	EN 175301-803 Form A	586A86	1/8 NPT
	M12	1153A30	1/8 NPT

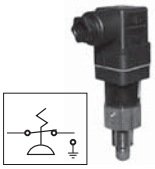
*Pressure switch closes on falling pressure of 5 psig (0.34 bar).

EN Connector Pinout



M12 Connector Pinout





Indicator Light Kits for Pacer Style Pilot

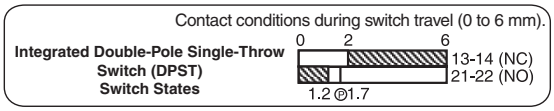
Kit Number	
24 volts DC	110-120 volts AC 50-60 Hz
862K87-W	862K87-Z

F

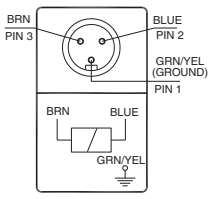
Preassembled Wiring Kits

Kit Number*	Length meters (feet)	Number of Cables
2239H77	4 (13.1)	2
2240H77	10 (32.8)	2

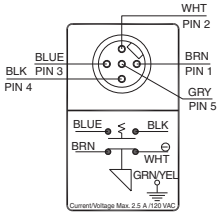
* Each cable has one connector.



The wiring kits come with a cord grip on each cable. One cable has a 3-pin MINI connector for the solenoid and one has a 5-pin M12 (Micro) connector for the sensing switch.



Solenoid Cable with 3-pin MINI Connector



Sensing Switch Cable with 5-pin M12 Connector

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
Solenoid: AC or DC power. Rated for continuous duty.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption:
CNOMO Style: 11 VA inrush, 8.5 VA holding on 50 or 60 Hz; 6 watts on DC.
Pacer Style: 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: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.

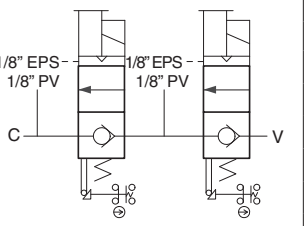
Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.
NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

Functional Safety Data:
Category 2 PL d; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: 2.35×10^{-7} ; MTTFD: 98.15 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 90%; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

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

2-Way 2-Position Redundant Valves, Solenoid Pilot Controlled

Port Size 1, 2	Body Size	Valve Model Number*	C_v 1-2	Weight lb (kg)
1/2	3/4	SV27NC555408CSAA**	3.8	10.0 (4.5)
3/4	3/4	SV27NC555508CSAA**	5.6	10.0 (4.5)
1	3/4	SV27NC555608CSAA**	8	10.0 (4.5)
1	1¼	SV27NC557608CSAA**	12	25.0 (11.3)
1¼	1¼	SV27NC557708CSAA**	19	25.0 (11.3)
1½	1¼	SV27NC557808CSAA**	22	25.0 (11.3)



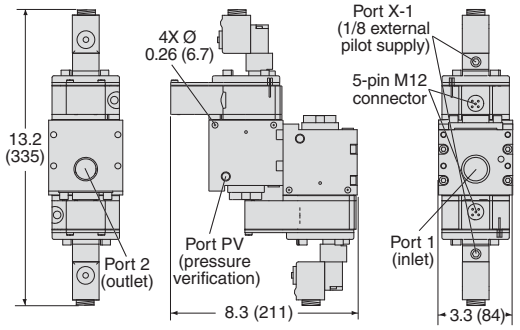
CONTROL CATEGORY 3

* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC555408CSAA1A.

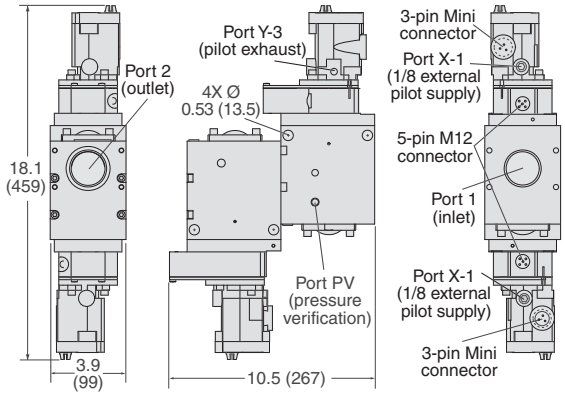
** Insert voltage code: "1A"=110-120 volts AC, 50/60 Hz; "1D"= 24 volts DC; .e.g., SV27NC555408CSAA1A. For other voltages, consult ROSS.

Valve Dimensions – inches (mm)

Body Size 3/4 (CNOMO Style Pilot)



Body Size 1¼ (Pacer Style Pilot)

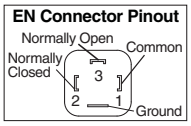


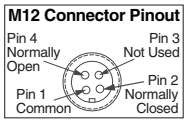
F4

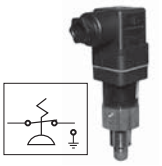
Accessories & Options

Pressure Switches	Connection Type	Model Number*	Port Threads
	EN 175301-803 Form A	586A86	1/8 NPT
	M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).







Indicator Light Kits for Pacer Style Pilot

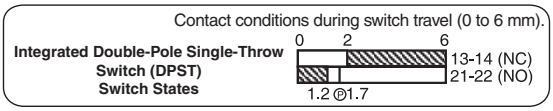
Kit Number	
24 volts DC	110-120 volts AC 50-60 Hz
862K87-W	862K87-Z

F

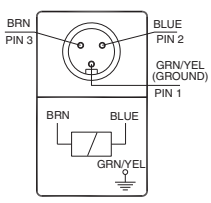
Preassembled Wiring Kits

Kit Number*	Length meters (feet)	Number of Cables
2239H77	4 (13.1)	2
2240H77	10 (32.8)	2

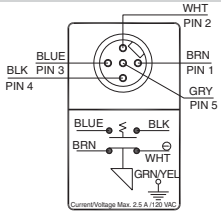
* Each cable has one connector.



The wiring kits come with a cord grip on each cable. One cable has a 3-pin MINI connector for the solenoid and one has a 5-pin M12 (Micro) connector for the sensing switch.



Solenoid Cable with 3-pin MINI Connector



Sensing Switch Cable with 5-pin M12 Connector

STANDARD SPECIFICATIONS (for valves on this page):

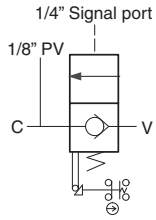
Construction: Poppet.
Mounting Type: In-Line.
Solenoid: AC or DC power. Rated for continuous duty.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption:
CNOMO Style: 11 VA inrush, 8.5 VA holding on 50 or 60 Hz; 6 watts on DC.
Pacer Style: 87 VA inrush, 30 VA holding on 50 or 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: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.

Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.
NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

Functional Safety Data:
Category 3 PL e; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: 2.47×10^{-8} ; MTTFD: 100 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 90%; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

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

2-Way 2-Position Valves, Pressure Controlled					
Port Size 1, 2	**Body Size**	**Valve Model Number***	**C_v** 1-2	**Weight** lb (kg)	
1/2	3/4	SV27NC115405ASAA	4.5	4.0 (1.8)	
3/4	3/4	SV27NC115505ASAA	8.3	4.0 (1.8)	
1	3/4	SV27NC115605ASAA	10.3	4.0 (1.8)	
1	1¼	SV27NC117605ASAA	20	11.0 (5.0)	
1¼	1¼	SV27NC117705ASAA	29	11.0 (5.0)	
1½	1¼	SV27NC117805ASAA	33	11.0 (5.0)	

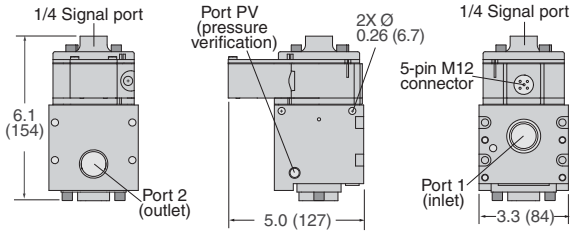


CONTROL CATEGORY 2

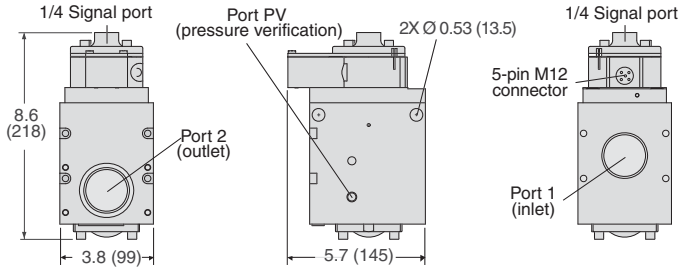
* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC115405ASAA.

Valve Dimensions – inches (mm)

Body Size 3/4



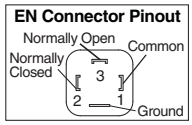
Body Size 1¼

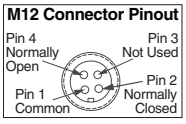


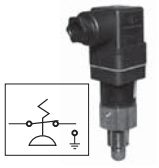
F4

Accessories & Options

Pressure Switches	Connection Type	Model Number*	Port Threads
	EN 175301-803 Form A	586A86	1/8 NPT
	M12	1153A30	1/8 NPT
*Pressure switch closes on falling pressure of 5 psig (0.34 bar).			



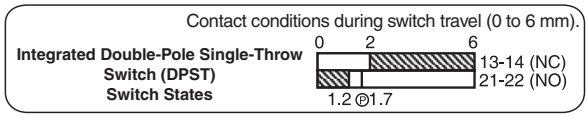




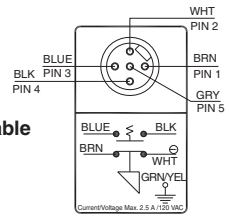
F

Preassembled Wiring Kits

Kit Number*	Length meters (feet)	Number of Cables
2241H77	4 (13.1)	1
2242H77	10 (32.8)	1
* Each cable has one connector.		



The wiring kits include one cable with a 5-pin M12 connector for the sensing switch, and a cord grip.



Sensing Switch Cable with 5-pin M12 Connector

STANDARD SPECIFICATIONS (for valves on this page):

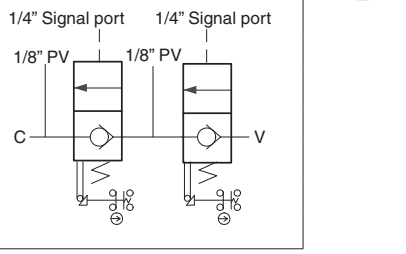
Construction: Poppet.
Mounting Type: In-Line.
Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.
Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.

NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

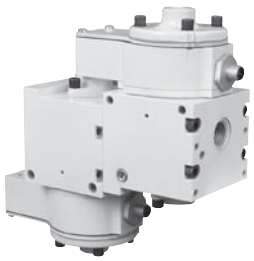
Functional Safety Data:
Category 2 PL d; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: $2.35x10^{-7}$; MTTFD: 98.15 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 90%; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

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

2-Way 2-Position Valves, Pressure Controlled				
Port Size 1, 2	**Body Size**	**Valve Model Number***	**C_v** 1-2	**Weight** lb (kg)
1/2	3/4	SV27NC555405ASAA	3.8	9.0 (4.1)
3/4	3/4	SV27NC555505ASAA	5.6	9.0 (4.1)
1	3/4	SV27NC555605ASAA	8	9.0 (4.1)
1	1¼	SV27NC557605ASAA	12	22.0 (10.0)
1¼	1¼	SV27NC557705ASAA	19	22.0 (10.0)
1½	1¼	SV27NC557805ASAA	22	22.0 (10.0)



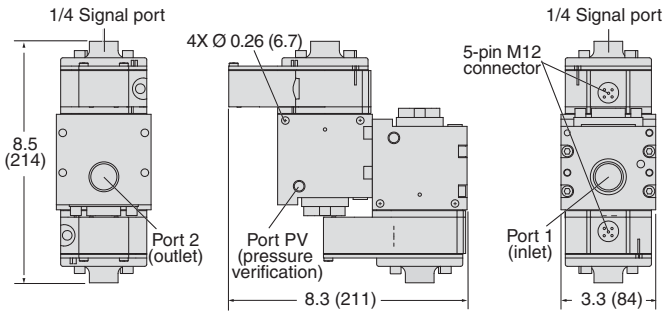
CONTROL CATEGORY 3



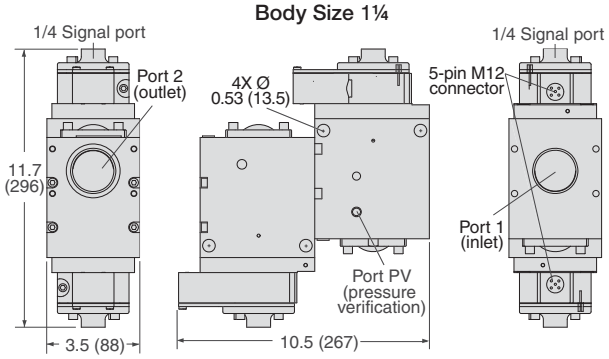
* NPT port threads. For BSPP threads, replace "N" in the model number with a "D", e.g., SV27DC555405ASAA.

Valve Dimensions – inches (mm)

Body Size 3/4



Body Size 1¼

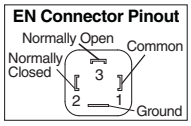


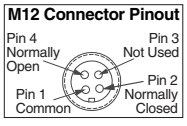
F4

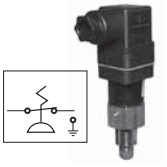
Accessories & Options

Pressure Switches	Connection Type	Model Number*	Port Threads
	EN 175301-803 Form A	586A86	1/8 NPT
	M12	1153A30	1/8 NPT

*Pressure switch closes on falling pressure of 5 psig (0.34 bar).







F

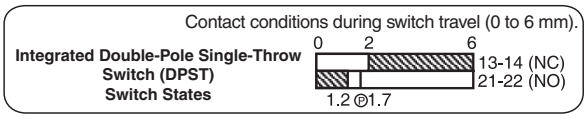
Preassembled Wiring Kits

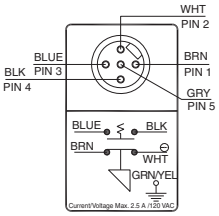
SV27 Redundant PO Check valves (CAT 3), requires 2 kits.

Kit Number*	Length meters (feet)	Number of Cables
2241H77	4 (13.1)	1
2242H77	10 (32.8)	1

* Each cable has one connector.

The wiring kits include one cable with a 5-pin M12 connector for the sensing switch, and with a cord grip.





Sensing Switch Cable with 5-pin M12 Connector

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Poppet.
Mounting Type: In-Line.
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: 40 to 150 psig (2.8 to 10.3 bar).
Pilot Pressure: Must be equal to or greater than inlet pressure.
Switch Current/Voltage Max.: 2.5 A/120 volts AC.
Switch Current/Voltage Min.: 50 mA/24 volts DC.

NOTE: Electrical life of switch varies with conditions and voltage; rated in excess of 15 million cycles.

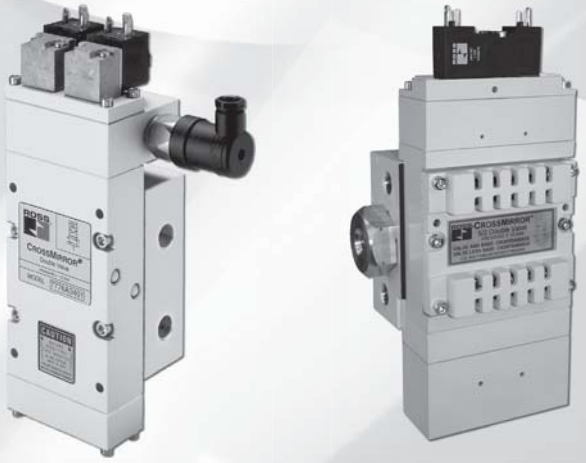
Functional Safety Data:
Category 3 PL e; B10D: Valve - 20,000,000, Switch – 2,000,000; PFHD: 2.47×10^{-8} ; MTTFD: 100 (n_{op}: 7360); DC (obtained by monitoring safety switch status): 90%; ROSS recommends testing the switch function and sealing for load holding valves every 8 hours.
Vibration/Impact Resistance: Calculated to BS EN 60068-2-27.

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

F

ROSS CONTROLS®

Double Valves for Cylinder Return to Home Position CrossMirror® 77 and CM Series



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5/2 PRESSURE RETURN – KEY FEATURES

- Can be used as 3/2 Normally Closed or 3/2 Normally Open valve function by plugging the unused outlet port
- Self-contained dynamic monitoring system; no additional monitoring required
- Valve fault results in a lockout condition and prevents unintentional reset with removal of air or electricity
- Reset can be electrical solenoid or remote pneumatic signal
- Status indication switch (ready-to-run) to inform machine controller of valve condition
- Base mounted, stainless steel spool valve construction
- Manifoldable for multi valve applications
- Includes non-clogging safety mufflers; for applications requiring ported exhaust, consult ROSS

VALVE TYPE	VALVE SERIES	AVAILABLE PORT SIZES				MAX. FLOW Cv				RESET		Page
						Port Size						
		1/4	3/8	1/2	3/4	1/4	3/8	1/2	3/4	REMOTE	SOLENOID	
SOLENOID PILOT CONTROLLED												
with Pressure Switch	**77**		■	■	■		2.8	7.2	7.2	■	■	F5.3 - F5.4
without Pressure Switch	**77**		■	■	■		2.8	7.2	7.2	■	■	F5.3 - F5.4
PRESSURE CONTROLLED												
with Pressure Switch	**77**		■	■	■		2.8	7.2	7.2	■		F5.5 - F5.6
without Pressure Switch	**77**		■	■	■		2.8	7.2	7.2	■		F5.5 - F5.6
SOLENOID PILOT CONTROLLED												
with Pressure Switch	**CM**	■	■	■		1.1	1.1	3.9		■	■	F5.7 - F5.10
without Pressure Switch	**CM**	■	■	■		1.1	1.1	3.9		■	■	F5.7 - F5.10
COMPONENTS FOR MANIFOLD ASSEMBLIES - SOLENOID PILOT CONTROLLED												
Valves, Manifold Bases and End Stations for Manifold Assemblies												F5.7
PRESSURE CONTROLLED												
with Pressure Switch	**CM**	■	■	■		1.1	1.1	3.9		■		F5.11 - F5.13
without Pressure Switch	**CM**	■	■	■		1.1	1.1	3.9		■		F5.11 - F5.13
COMPONENTS FOR MANIFOLD ASSEMBLIES - PRESSURE CONTROLLED												
Valves, Manifold Bases and End Stations for Manifold Assemblies												F5.11

5 Ports, 4-Way 2-Position Valve, Solenoid Pilot Controlled

Port Sizes 1	Port Sizes 2, 4	Basic Size	Pressure Switch#	Model Number (valve and base)	C_v 1-2	C_v 1-4	C_v 2-3	C_v 4-5	Weight lb (kg)	Model Number (valve only)	Model Number (base only)
1/2	3/8	2*	With	Y7776A3411**	2	1.6	1.6	2.8	8.4 (3.8)	Y7776A3400**	996C91
			Without	Y7776A3410**	2	1.6	1.6	2.8	7.6 (3.4)	Y7776A3401**	996C91
3/4	1/2	4*	With	Y7776A4421**	3.2	3.4	2.7	7.2	11.2 (5.1)	Y7776A4400**	1049C91
			Without	Y7776A4420**	3.2	3.4	2.7	7.2	10.2 (4.6)	Y7776A4401**	1049C91
3/4	3/4	4*	With	Y7776A5411**	3.2	3.4	2.7	7.2	11.2 (5.1)	Y7776A4400**	1153C91
			Without	Y7776A5410**	3.2	3.4	2.7	7.2	10.2 (4.6)	Y7776A4401**	1153C91
SAE 12		4	With	SY7776A4H10**	3.2	3.4	2.7	7.2	11.2 (5.1)	Y7776A4400**	1159G91
			Without	SY7776A4H11**	3.2	3.4	2.7	7.2	10.2 (4.6)	Y7776A4401**	1159G91

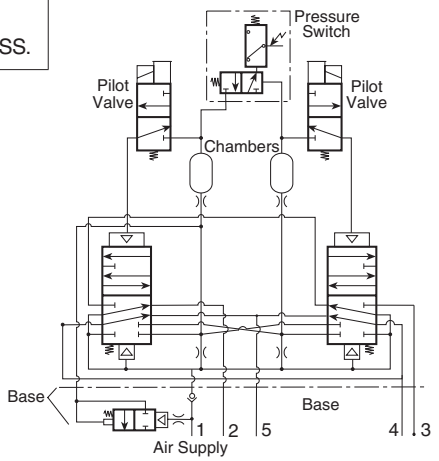
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g., YD7776A3411W.
** Insert voltage code: "W" = 24 volts DC; "Z" = 110 volts AC, 120 volts AC ; e.g., Y7776A3411W.
For other voltages consult ROSS.
#Pressure switches with DIN type connection, for pressure switches with M12 type connection consult ROSS.

ISO 13849-1:2006 Category 4 PL e applications

5/2 CrossMirror® double valve with pressure switch

This valve is constructed with precision, stainless steel spools as the main valve elements, and is designed to offer added safety to the operation of many pneumatically controlled machines.

The Pressure switch provides a signal when valve is in a faulted position.



Accessories & Options

Pressure Switches & Pressure Switch Connectors	Pressure Switch Model Number		Pressure Switch Connector
	24 Volts DC	120 Volts AC	Model Number
	798E30	518E30	522E30

Electrical Connectors

Electrical Connector Form	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Electrical Connector Model Number: Without Light	Lighted Connector: 24 Volts DC	Lighted Connector: 120 Volts AC
EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z
	Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W	383K77-Z
	Connector for threaded conduit (1/2 inch electrical conduit fittings)	–	–	723K77	724K77-W	724K77-Z
	Connector Only	–	–	937K87	936K87-W	936K87-Z

CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

Explosion proof solenoid pilot available, for more information consult ROSS.

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Double spool and sleeve.
Mounting Type: Base mounted.
Pilot Solenoid: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Three (with pressure switch) or two solenoids (without pressure switch), rated for continuous duty.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption (each solenoid)**:** 6 watts on DC; 18 VA inrush, 14 VA holding on 50 or 60 Hz.
Enclosure Rating: IP65, IEC 60529.
Electrical Connection: EN 175301-803 Form A. Uses cord-grip connectors at solenoids.

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: 40 to 150 psig (2.5 to 10.3 bar).

Functional Safety Data:
Category 4 PL e; B10D: 20,000,000; PFHD: 7.71×10^{-9} ; MTTFD: 301.9 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

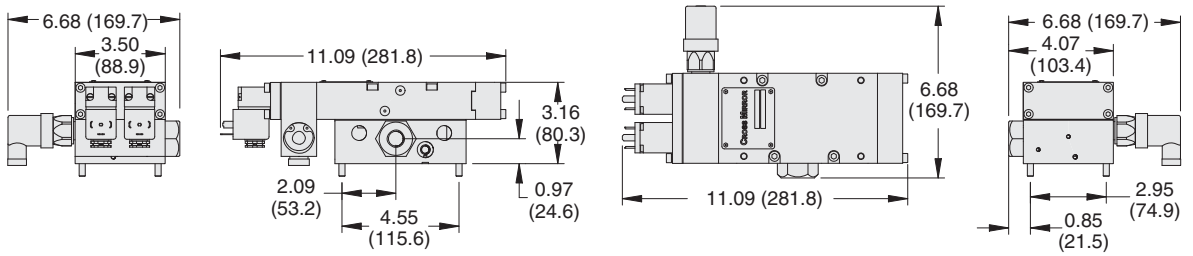
Meets Standards EN13736 and ANSI B11.2, Safety requirements for Pneumatic Cylinder Presses and other hazardous pneumatic cylinder applications.

This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses.

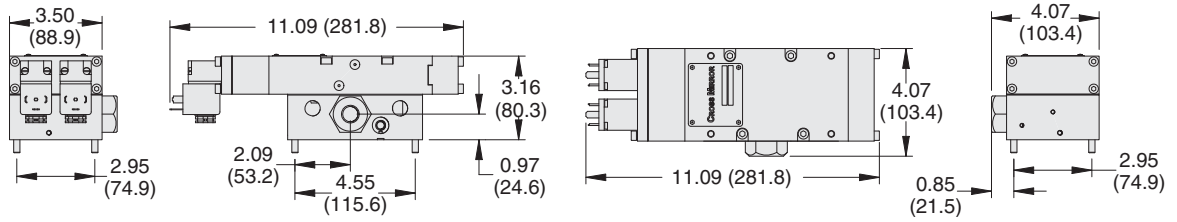
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Valve Dimensions – inches (mm)

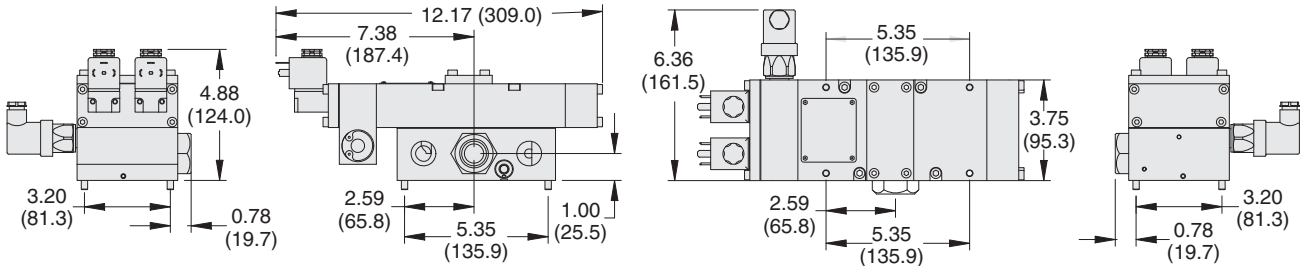
Basic Size 2 – Valve and base assembly, with remote reset and pressure switch.



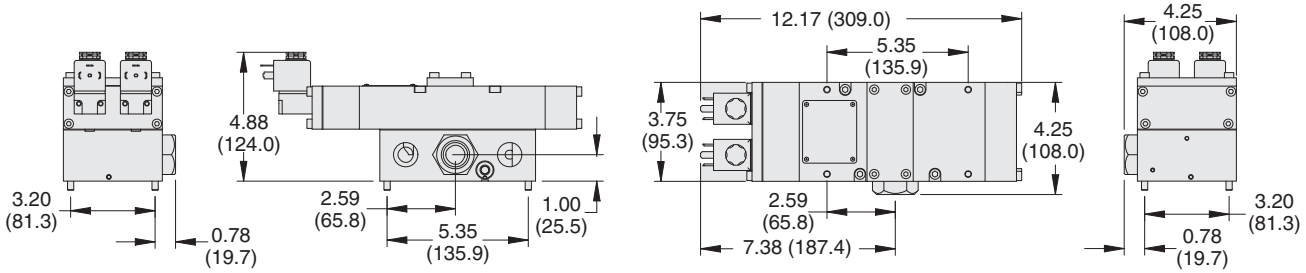
Basic Size 2 – Valve and base assembly, with remote reset and without pressure switch.



Basic Size 4 – Valve and base assembly, with remote reset and pressure switch.



Basic Size 4 – Valve and base assembly, with remote reset and without pressure switch.



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Valve Operation

Normal Operation:

After installation the valve is operated by energizing both solenoid pilots (S1 and S2) simultaneously. This causes both main valve elements to be actuated so that air from inlet port 1 flows to outlet port 4. Air downstream of port 2 is exhausted through port 3.

When the solenoid pilots are de-energizing, both valve elements are de-actuated, and air then flows from inlet port 1 to outlet port 2. Air downstream of port 4 is exhausted through port 5.

Pressure Switch:

Valves with model numbers ending in the number 1 have a pressure switch to provide user feedback when movement of the main valve elements was asynchronous.

Safety Function:

If the two main valve elements are not actuated or de-actuated synchronously, within 500 ms, the valve defaults so that outlet port 2 receives full inlet pressure, and outlet port 4 is exhausted through port 5. If this abnormal operation is the result of a temporary circumstance, the valve will be ready to resume normal operation as soon as both pilot signal ports have been de-energized and both main valve elements have returned to their normal ready-to-run position. Applying the electrical signal to both solenoids simultaneously will resume normal operation.

If the cause of the abnormal operation is still present, the valve will either remain in the default position (pressure on port 2 and not port 4) or will again go into this position on the next actuation attempt. The source of the abnormality must be investigated and corrected before further operation.

5 Ports, 4-Way 2-Position Valve											
Port Sizes		Basic Size	Pressure Switch#	Model Number (valve and base)	C_v				Weight lb (kg)	Model Number (valve only)	Model Number (base only)
1	2, 4				1-2	1-4	2-3	4-5			
1/2	3/8	2*	With	Y7786A3411**	2	1.6	1.6	2.8	8.4 (3.8)	Y7786A3400	996C91
			Without	Y7786A3410	2	1.6	1.6	2.8	7.6 (3.4)	Y7786A3401**	996C91
3/4	1/2	4*	With	Y7786A4421**	3.2	3.4	2.7	7.2	11.6 (5.3)	Y7786A4400	1049C91
			Without	Y7786A4420	3.2	3.4	2.7	7.2	10.6 (4.8)	Y7786A4401**	1049C91
3/4	3/4	4*	With	Y7786A5411**	3.2	3.4	2.7	7.2	11.6 (5.3)	Y7786A3400	1153C91
			Without	Y7786A5410	3.2	3.4	2.7	7.2	10.6 (4.8)	Y7786A3401**	1153C91
SAE 12		4	With	SY7786A4H11**	3.2	3.4	2.7	7.2	11.6 (5.3)	Y7786A4400	1159G91
			Without	SY7786A4H10	3.2	3.4	2.7	7.2	10.6 (4.8)	Y7786A4401**	1159G91

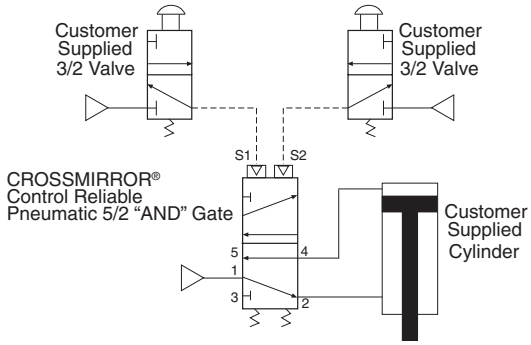
* NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g., YD7786A3411W.
** Insert voltage code: "W" = 24 volts DC; "Z" = 110-120 volts AC, 50/60 Hz; e.g., Y7786A3411W.
For other voltages consult ROSS.
#Pressure switches with DIN type connection, for pressure switches with M12 type connection consult ROSS.

ISO 13849-1:2006
Category 4 PL e
applications

This 77 Series 5/2 CrossMirror® valve is a control reliable, two hand pressure controlled 4-way double valve that is controlled by two separate pneumatic signals essentially providing "AND" gate control for the output ports. Both pilot signals must be provided within approximately 500 milliseconds of each other to actuate the valve.
Proper actuation shifts output pressure to port 4. If the valve is not actuated, not provided appropriate pneumatic signals within the discordance window or if the valve actuates abnormally, inlet pressure will only be passed to port 2 - cylinder retracted.

This valve is constructed with precision, stainless steel spools as the main valve elements, and is designed to offer added safety to the operation of many pneumatically controlled machines.

Typical 2-Hand-Anti-Tie-Down Application

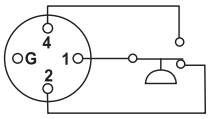


Accessories & Options

Pressure Switches & Pressure Switch Connectors	Pressure Switch Model Number		Pressure Switch Connector
	24 Volts DC	120 Volts AC	Model Number
	798E30	518E30	522E30

Status Indicator (pressure switch)

Terminals 1 and 4 are connected when air pressure is present and the valve is "Ready-to-Run". If an abnormal operation has occured or pressure is removed from the valve inlet, terminals 1 and 2 are connected.
Note: DC voltage pressure switches do not have a ground terminal.



Pin 1: Common
Pin 2: Normally Closed
Pin G: Not used
Pin 4 : Normally Open

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Double spool and sleeve.
Mounting Type: Base mounted.
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: 40 to 100 psig (2.7 to 7 bar).
Pilot Pressure: Must be equal or greater than inlet pressure, but should not exceed maximum inlet pressure.

Pressure Switch Rating: *Max Current 4A, Max 250 volts AC.*
Max Current 50 mA, Max 24 volts DC.
Pressure Switch: *Pressure Switch signal indicates when the input signals or parts movement is asynchronous.*

Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 7.71×10^{-9} ; MTTFD: 301.9 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

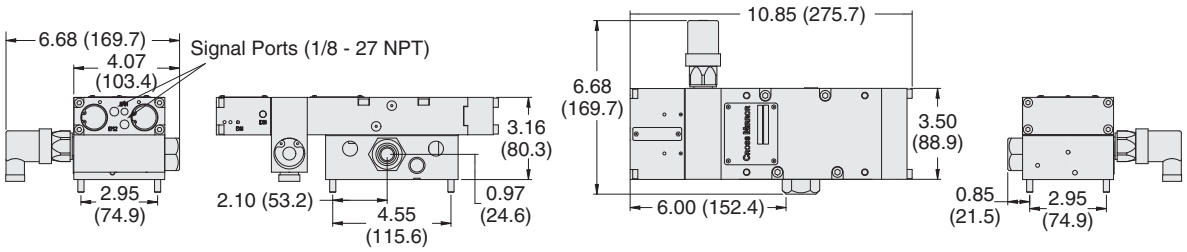
Meets Standards EN13736 and ANSI B11.2, Safety requirements for Pneumatic Cylinder Presses and other hazardous pneumatic cylinder applications.

This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses.

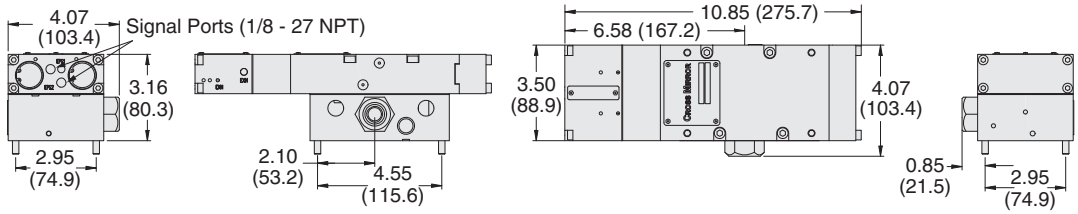
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Basic Size 2 – Valve and base assembly, with remote reset and pressure switch.

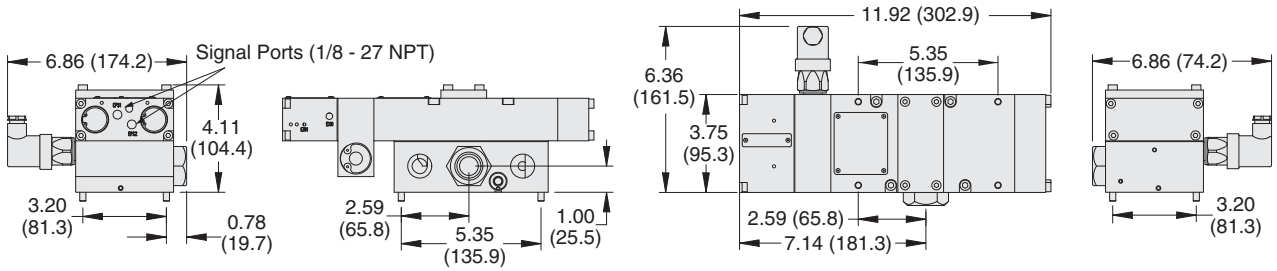
Valve Dimensions – inches (mm)



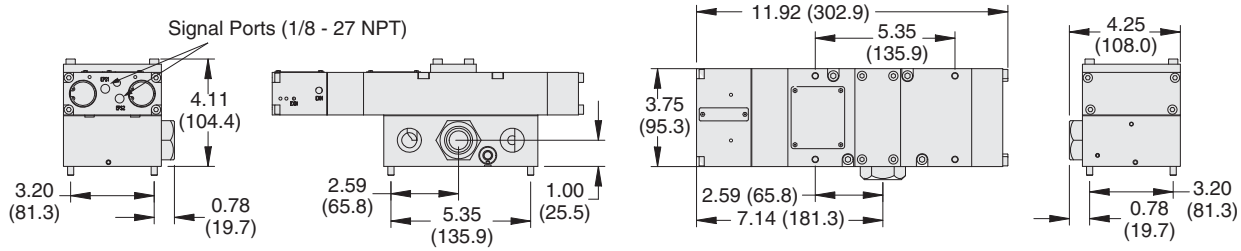
Basic Size 2 – Valve and base assembly, with remote reset and without pressure switch.



Basic Size 4 – Valve and base assembly, with remote reset and pressure switch.



Basic Size 4 – Valve and base assembly, with remote reset and without pressure switch.



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Valve Operation

Normal Operation: After installation the valve is operated by pressurizing both pilot supply ports (S1 and S2) simultaneously. This causes both main valve elements to be actuated so that air from inlet port 1 flows to outlet port 4. Air downstream of port 2 is exhausted through port 3.

When the pilot supply ports are de-pressurized, both valve elements are de-actuated, and air then flows from inlet port 1 to outlet port 2. Air downstream of port 4 is exhausted through port 5.

Pressure Switch: Valves with model numbers ending in the number 1 have a pressure switch to provide user feedback when movement of the main valve elements was asynchronous.

Safety Function: If the two main valve elements are not actuated or de-actuated synchronously, within 500 ms, the valve defaults so that outlet port 2 receives full inlet pressure, and outlet port 4 is exhausted through port 5. If this abnormal operation is the result of a temporary circumstance, the valve will be ready to resume normal operation as soon as both pilot signal ports have been de-pressurized and both main valve elements have returned to their normal ready-to-run position. Applying pressure to both signal ports simultaneously will resume normal operation.

If the cause of the abnormal operation is still present, the valve will either remain in the default position (pressure on port 2 and not port 4) or will again go into this position on the next actuation attempt. The source of the abnormality must be investigated and corrected before further operation.

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

Valve and Base Assembly

5 Ports, 4-Way 2-Position Valve, Pressure Return

Port Sizes		Basic Size	Pressure Switch	Model Number*		C_v				Weight lb (kg)
1	2, 4			With Remote Reset	With Solenoid Reset	1-2	1-4	2-3	4-5	
1/4	1/4	0	With#	CM26PNA00**11	CM26PNA00**21	0.8	0.6	0.5	1.1	5.85 (2.7)
			Without	CM26PNA00**1X	CM26PNA00**2X	0.8	0.6	0.5	1.1	5.30 (2.4)
3/8	3/8	0	With#	CM26PNA01**11	CM26PNA01**21	0.8	0.6	0.5	1.1	5.75 (2.6)
			Without	CM26PNA01**1X	CM26PNA01**2X	0.8	0.6	0.5	1.1	5.20 (2.4)
1/2	1/2	2	With#	CM26PNA22**11	CM26PNA22**21	3	2.5	2	3.9	14.45 (6.56)
			Without	CM26PNA22**1X	CM26PNA22**2X	3	2.5	2	3.9	13.80 (6.26)

* Includes base supplied with NPT port threads. For BSPP threads, replace "N" with a "D" in the model number, e.g., CM26PDA00A1X.** Insert voltage code: "A" = 24 volts DC; "B" = 110 volts AC, 120 volts AC; e.g., CM26PNA00A1X.
# Valve include pressure switches with DIN type connection, for pressure switches with M12 type connection consult ROSS.

CONTROL CATEGORY 4

DGUV Test HSM 15026 Sicherheit geprüft tested safety

CE

ISO 13849-1:2006 Category 4 PL e

Valves, Manifold Bases, and End Stations for Manifold Assemblies

In addition to the manifold, an end station kit with a check valve must be ordered for each assembly. The number of manifolds with a single supply inlet will be limited to the pressure and flow rate of the system. Too many manifolds may result in too large of an internal pressure drop resulting in valve faults. The manifold end station kit with dual inlet check will allow the manifold to be supplied with air from both ends of the assembly.

Port Size		Basic Size	Valve without Sub-Base			Manifold Base Model Number#	Manifold End Station w/ Check Valve Kit Number##	Dual Supply Manifold End Station w/ Check Valves Kit Number##
1	2, 4		Pressure Switch	Model Number				
				With Remote Reset	With Solenoid Reset			
1/4	1/4	0	With*	CM26PXA0X**11	CM26PXA0X**21	Y1951D91	699K86	701K86
			Without	CM26PXA0X**1X	CM26PXA0X**2X	Y1951D91	699K86	701K86
3/8	3/8	0	With*	CM26PXA0X**11	CM26PXA0X**21	Y1949D91	698K86	700K86
			Without	CM26PXA0X**1X	CM26PXA0X**2X	Y1949D91	698K86	700K86
1/2	1/2	2	With*	CM26PXA2X**11	CM26PXA2X**21	Y1955D91	702K86	704K86
			Without	CM26PXA2X**1X	CM26PXA2X**2X	Y1955D91	702K86	704K86

* Valve include pressure switches with DIN type connection, for pressure switches with M12 type connection consult ROSS. ** Insert voltage code: "A" = 24 volts DC; "B" = 110 volts AC, 120 volts AC; e.g., CM26PXA0XA1X.
#NPT port threads. For BSPP threads, insert a "D" after "Y" in the model number, e.g., YD1951D91.
##NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g., D699K86, D701K86.

End Station

End Station with Check Valve

Manifold Base

For other voltages consult ROSS.

Explosion proof solenoid pilot available, for more information consult ROSS.

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STANDARD SPECIFICATIONS (for valves on this page):

Construction: Double spool and sleeve.
Mounting Type: Base mounted.
Pilot Solenoid: According to VDE 0580. Two solenoids, rated for continuous duty.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid)**:**
Size 0: 24 volts DC: 1.2 watts on DC. 110 volts AC, 50 Hz: 5.4 VA; 120 volts AC, 60 Hz: 5.0 VA.
Size 2: 24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz. 5.8 watts nominal on AC and DC, 6.5 watts maximum on AC and DC.
Enclosure Rating: DIN 400 50 IP 65.
Electrical Connection:
Size 0: Connector socket according to EN 175301-803 Form C.
Size 2: Connector socket according to EN 175301-803 Form A.
Ambient Temperature: 15° to 122°F (-10° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 40 to 150 psig (3 to 10 bar).

Pressure Switch (Status Indicator) Rating: 5 amps at 250 volts AC, or 5 amps at 30 volts DC.
Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.
Solenoid Reset: Units with solenoid reset include a 3/2 solenoid valve. Energize this solenoid momentarily to reset valve after lock-out condition occurs.
Remote Reset: Remote signal to be supplied by customer's 3/2 valve (connect remote signal line to remote RESET port in valve). Apply signal momentarily to reset valve after fault condition occurs.
NOTE: *Main solenoids must be off when performing reset procedure.*

Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 7.71×10^{-9} ; MTTFD: 301.9 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

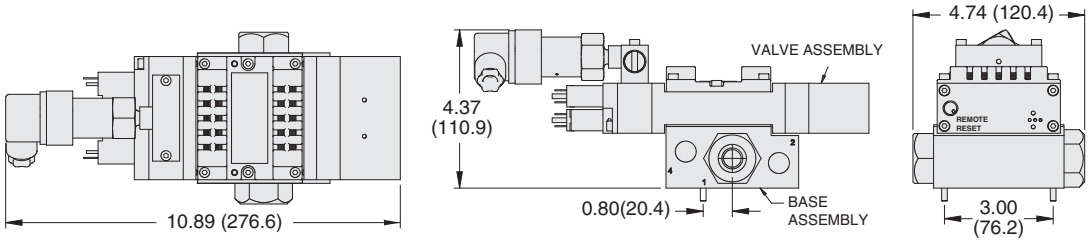
Meets Standards EN13736 and ANSI B11.2, Safety requirements for Pneumatic Cylinder Presses and other hazardous pneumatic cylinder applications.

This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses.

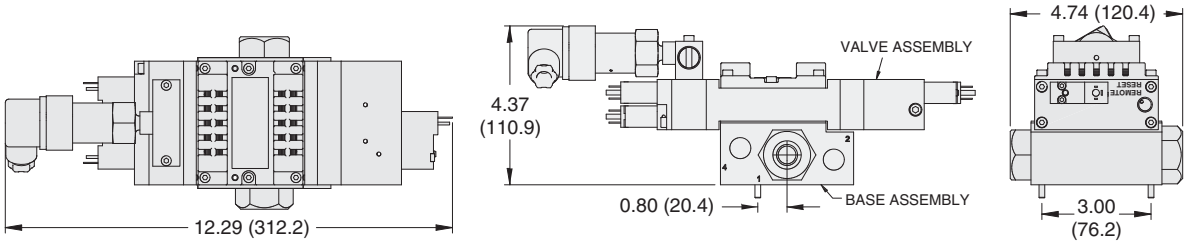
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Valve Dimensions – inches (mm)

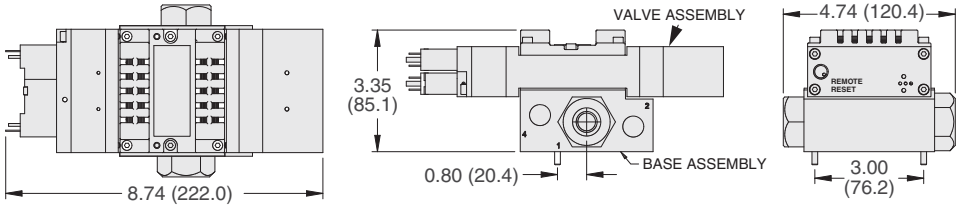
Basic Size 0 - Valve and base assembly, with remote reset and with pressure switch.



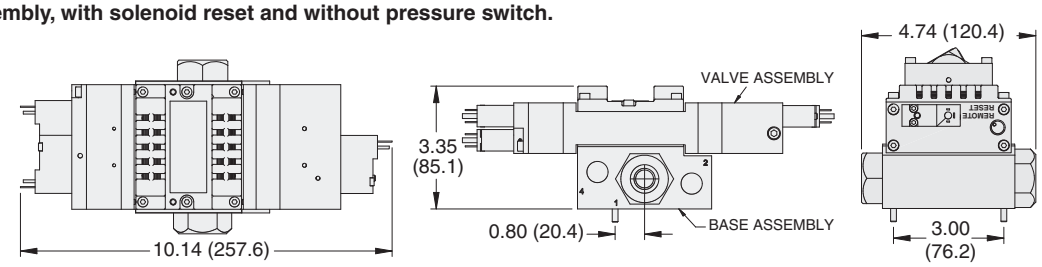
Basic Size 0 - Valve and base assembly, with solenoid reset and with pressure switch.



Basic Size 0 - Valve and base assembly, with remote reset and without pressure switch.

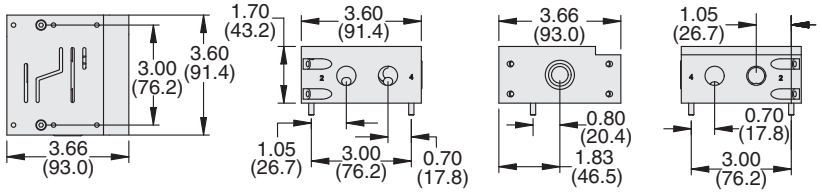


Basic Size 0 - Valve and base assembly, with solenoid reset and without pressure switch.

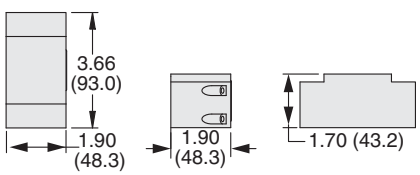


Dimensions – inches (mm)

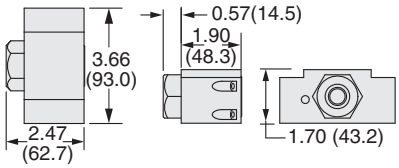
Manifold Base for Basic Size 0



End Station for Basic Size 0



End Station with Check Valve for Basic Size 0



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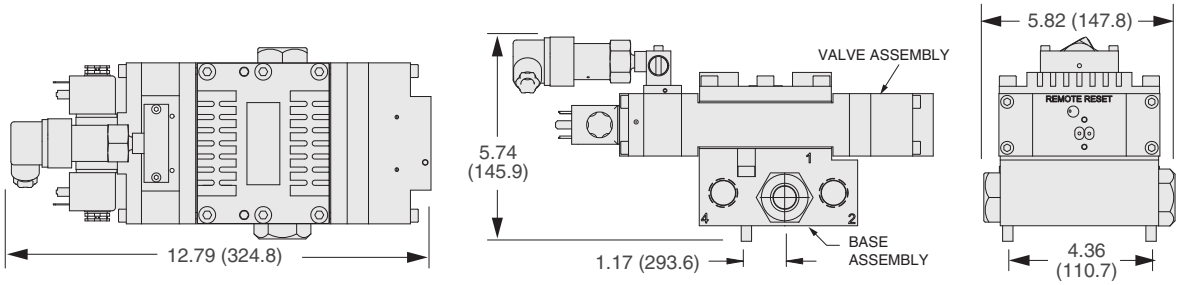
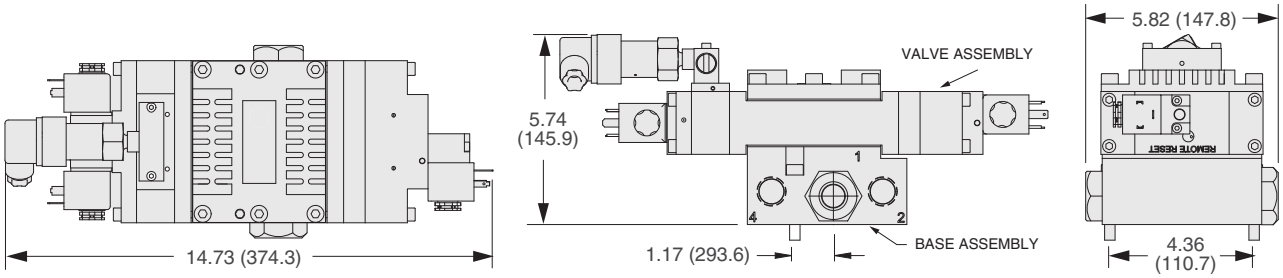
Valve Dimensions – inches (mm)

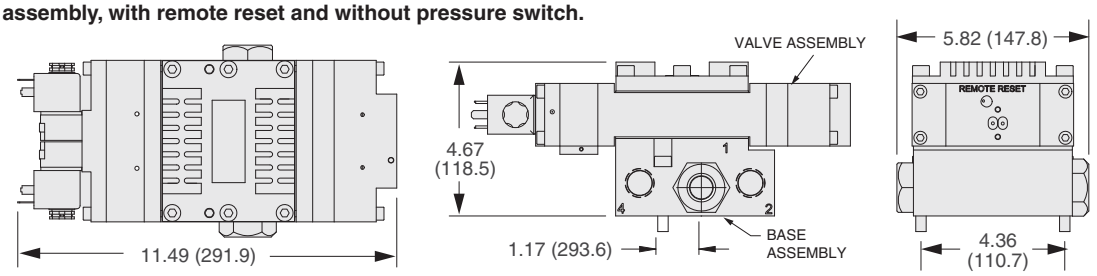
Basic Size 2 - Valve and base assembly, with remote reset and with pressure switch.



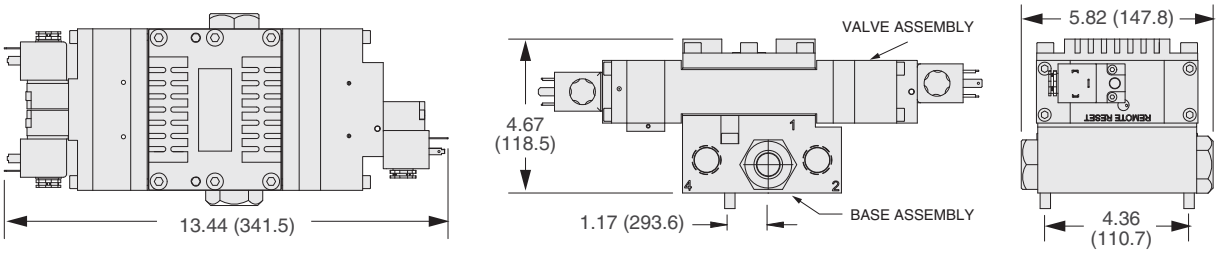
Basic Size 2 - Valve and base assembly, with solenoid reset and with pressure switch.



Basic Size 2 - Valve and base assembly, with remote reset and without pressure switch.

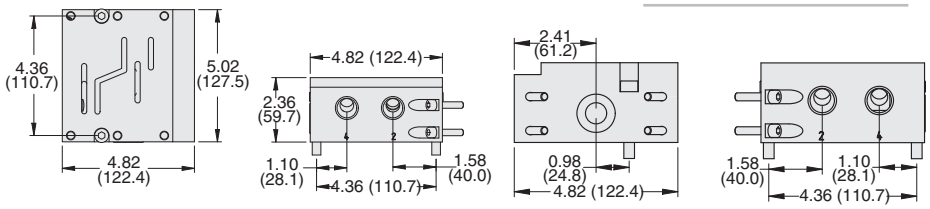


Basic Size 2 - Valve and base assembly, with solenoid reset and without pressure switch.

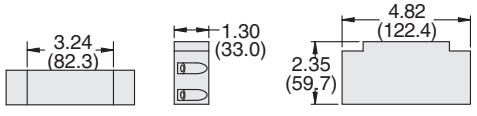


Dimensions – inches (mm)

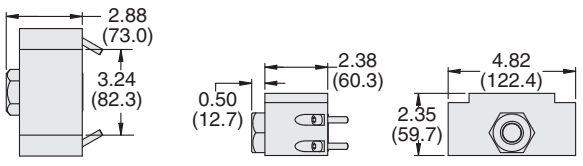
Manifold Base for Basic Size 2



End Station for Basic Size 2



End Station with Check Valve for Basic Size 2



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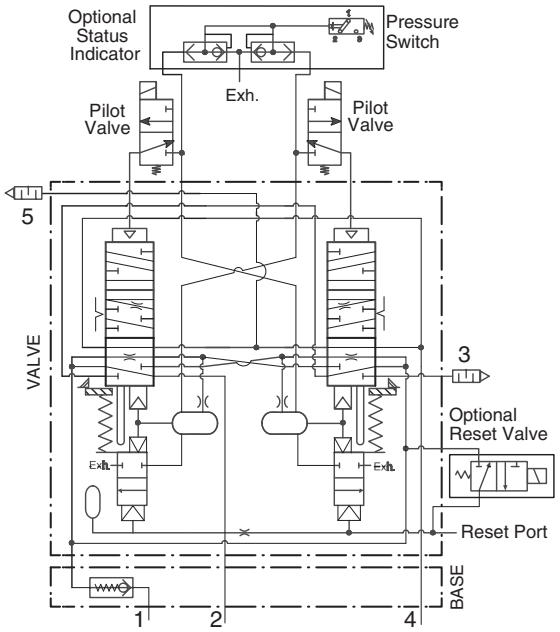
Normal Operation: The valve is operated by energizing both pilot solenoids simultaneously. This causes both main valve elements to be actuated so that air from inlet port 1 flows to outlet port 4, but not to port 2. Air downstream of port 2 is exhausted through port 3.
When the solenoids are de-energized, both valve elements are de-actuated, and air then flows from inlet port 1 to outlet port 2, but no longer to outlet port 4. Air downstream of port 4 is exhausted through port 5. On first operation, or after repair, the pilot valve supply circuit and inherent monitoring elements may need to be reset.

Valve Locked-out: Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will move to a locked-out position. In the locked-out position, one crossover and its related timing chamber will be exhausted, and the other crossover and its related timing chamber will be fully pressurized.
The valve element (side B) that is partially actuated has pilot air available to fully actuate it, but no air pressure on the return piston to fully de-actuate the valve element.
The return springs are limited in travel, and can only return the valve elements to the intermediate (locked-out) position. Sufficient air pressure acting on the return pistons is needed to return the valve elements to a fully home position.

Detecting a Malfunction: If the main valve elements are not both actuated or de-actuated synchronously, the valve defaults to the locked-out position so that outlet port 2 receives full inlet pressure, and outlet port 4 is exhausted through port 5. The valve must now be "reset" to resume normal operation.

Resetting the Valve: The valve will remain in the locked-out position, even if the inlet air supply is removed and re-applied.
A remote reset signal must be applied to reset the valve. Reset is accomplished by momentarily pressurizing the reset port. Actuation of the reset piston physically pushes the main valve elements to their home position. Actuation of the reset piston also opens the reset poppet, thereby, immediately exhausting pilot supply air, thus, preventing valve operation during reset. De-actuation of reset pistons causes the reset poppets to close and pilot supply timing chambers to fully pressurize. Reset pressure can be applied by a remote 3/2 normally closed valve, or from an optional 3/2 normally closed solenoid (which includes an integral manual reset button) mounted on the reset adapter.



Valve Schematic

Status Indicator: The optional status indicator pressure switch will actuate when the main valve is operating normally, and will de-actuate when the main valve is in the locked-out position 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.

Electrical Connectors

Basic Valve Size	Electrical Connector Form	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Electrical Connector Model Number		
					Without Light	Lighted Connector	
						24 Volts DC	120 Volts AC
0	EN 175301-803 Form C	Prewired Connector	3 (10)	8-mm	2449K77	2450K77-W	2450K77-Z
		Connector Only	–	–	2452K77	2453K77-W	2453K77-Z
2	EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z
		Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W	383K77-Z
		Connector for threaded conduit (1/2 inch electrical conduit fittings)	–	–	723K77	724K77-W	724K77-Z
		Connector Only	–	–	937K87	936K87-W	936K87-Z

CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

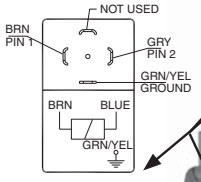
Preassembled Wiring Kits

Basic Valve Size	Kit Number			Solenoid Connector Type	Length meters (feet)
	Connector without Light	Lighted Connector			
		24 Volts DC	120 Volts AC		
0*	2526H77	2529H77-W	2529H77-Z	EN 175301-803 Form A and Form C	5 (16.4)
	2527H77	2530H77-W	2530H77-Z		10 (32.8)
2#	2283H77	2532H77-W	2532H77-Z	EN 175301-803 Form A	5 (16.4)
	2284H77	2533H77-W	2533H77-Z	EN 175301-803 Form A	10 (32.8)
	2288H77	–	–	M12	5 (16.4)
	2289H77	–	–	M12	10 (32.8)

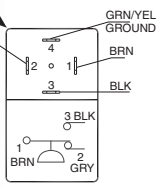
* Each cable has one connector. Kits include 1 cable for the status indicator (EN 175301-803 Form A), and 3 cables (EN 175301-803 Form C) with connector plus a cord grip for each.

Each cable has one connector.
Kits include 1 cable for the status indicator, and 3 cables with connector plus a cord grip for each.

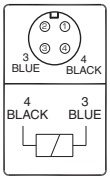
Solenoid Cables with EN connector



Status Indicator Cable with EN connector



Solenoid Cables with M12 Connector



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

Valve and Base Assembly

5 Ports, 4-Way 2-Position Valve, Pressure Return

Port Sizes		Basic Size	Pressure Switch	Valve Model Number*	C_v				Weight lb (kg)
1	2, 4				1-2	1-4	2-3	4-5	
1/4	1/4	0	With#	CM26PNA00P11	0.8	0.6	0.5	1.1	6.15 (2.79)
			Without	CM26PNA00P1X	0.8	0.6	0.5	1.1	5.60 (2.54)
3/8	3/8	0	With#	CM26PNA01P11	0.8	0.6	0.5	1.1	6.05 (2.74)
			Without	CM26PNA01P1X	0.8	0.6	0.5	1.1	5.50 (2.49)
1/2	1/2	2	With#	CM26PNA22P1X	3	2.5	2	3.9	14.45 (6.56)
			Without	CM26PNA22P11	3	2.5	2	3.9	13.80 (6.26)

* Model number includes base supplied with NPT port threads. For BSPP threads, replace "N" with a "D" in the model number, e.g., CM26PDA00P11.
* Valve include pressure switches with DIN type connection, for pressure switches with M12 type connection consult ROSS.

CONTROL CATEGORY 4

DGUV Test HSM 15026 Sicherheit geprüft tested safety

CE

ISO 13849-1:2006 Category 4 PL e

Valves, Manifold Bases, and End Stations for Manifold Assemblies

In addition to the manifold, an end station kit with a check valve must be ordered for each assembly. The number of manifolds with a single supply inlet will be limited to the pressure and flow rate of the system. Too many manifolds may result in too large of an internal pressure drop resulting in valve faults. The manifold end station kit with dual inlet check will allow the manifold to be supplied with air from both ends of the assembly.

Port Size		Basic Size	Valve without Sub-Base		Manifold Base Model Number#	Manifold End Station w/ Check Valve Kit Number##	Dual Supply Manifold End Station w/ Check Valves Kit Number##
1	2, 4		Pressure Switch	Valve Model Number			
1/4	1/4	0	With*	CM26PNA0XP11	Y1951D91	699K86	701K86
			Without	CM26PNA0XP1X	Y1951D91	699K86	701K86
3/8	3/8	0	With*	CM26PNA0XP11	Y1949D91	698K86	700K86
			Without	CM26PNA0XP1X	Y1949D91	698K86	700K86
1/2	1/2	2	With*	CM26PNA22P11	Y1955D91	702K86	704K86
			Without	CM26PNA22P1X	Y1955D91	702K86	704K86

* Valve include pressure switches with DIN type connection, for pressure switches with M12 type connection consult ROSS.
#NPT port threads. For BSPP threads, insert a "D" after "Y" in the model number, e.g., YD1951D91.
##NPT port threads. For BSPP threads, add a "D" prefix to the model number, e.g., D699K86, D701K86.

End Station

End Station with Check Valve

Manifold Base

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STANDARD SPECIFICATIONS (for valves on this page):

Construction: Double spool and sleeve.
Mounting Type: Base mounted.
Ambient Temperature: 15° to 122°F (-10° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: 40 to 150 psig (3 to 10 bar).
Pilot Pressure: Must be equal or greater than inlet pressure, but should not exceed maximum inlet pressure.
Pressure Switch Rating: *Max Current 4A, Max 250 volts AC.*
Max Current 50 mA, Max 24 volts DC.

Pressure Switch: *Pressure Switch signal indicates when the input signals or parts movement is asynchronous.*
Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.

Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 7.71×10^{-9} ; MTTFD: 301.9 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

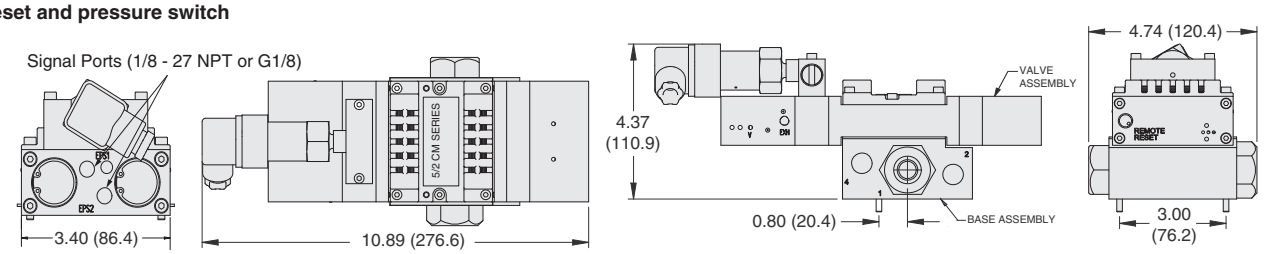
Meets Standards EN13736 and ANSI B11.2, Safety requirements for Pneumatic Cylinder Presses and other hazardous pneumatic cylinder applications.

This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses.

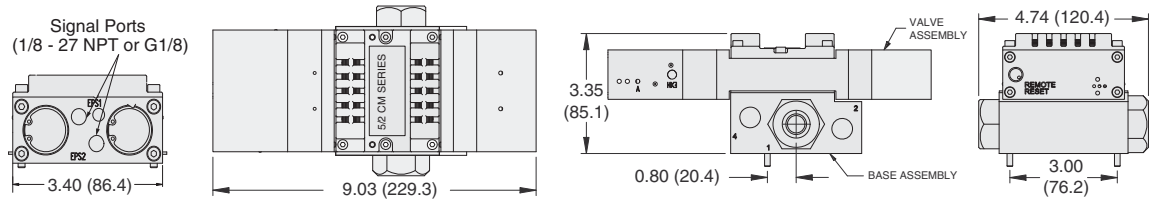
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Size 0 – Valve and base assembly, with remote reset and pressure switch

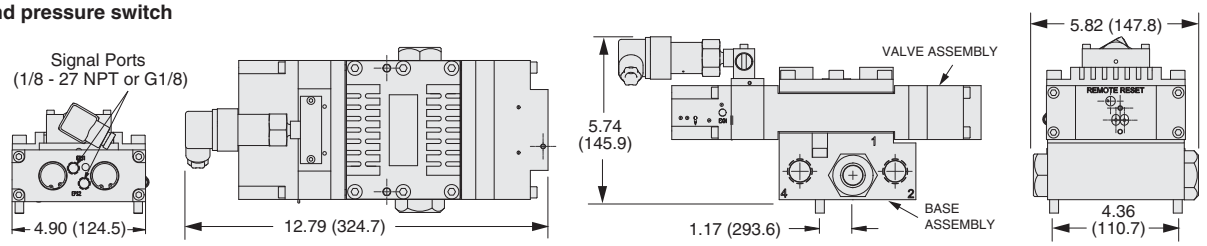
Valve Dimensions – inches (mm)



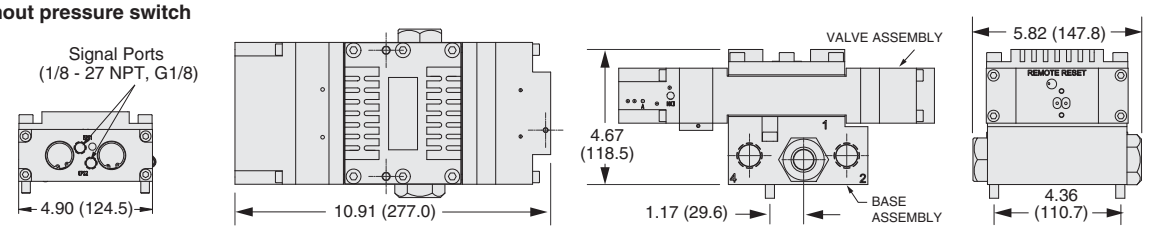
Size 0 – Valve and base assembly, with remote reset and without pressure switch



Size 2 – Valve and base assembly, with remote reset and pressure switch



Size 2 – Valve and base assembly, with remote reset and without pressure switch



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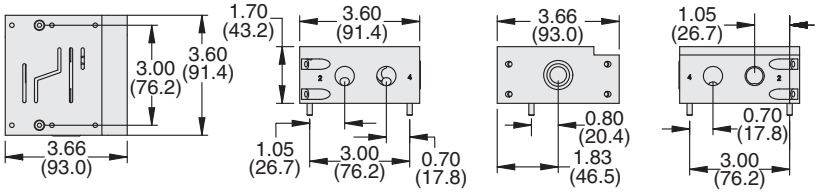
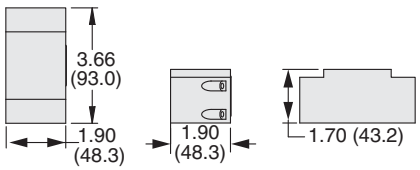
Dimensions – inches (mm)

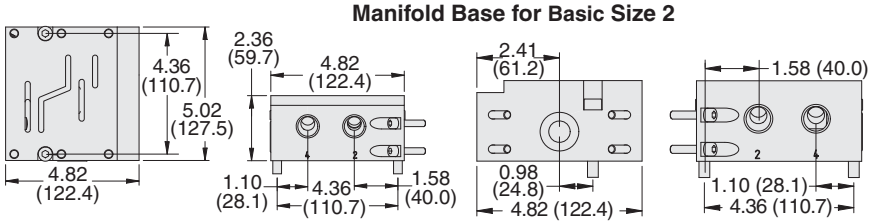
Manifold Base for Basic Size 0



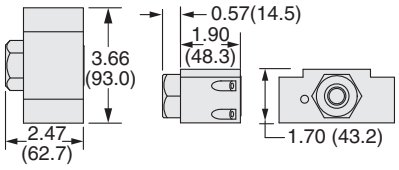
End Station for Basic Size 0



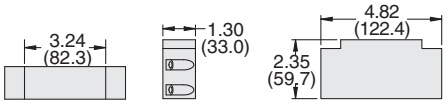
Manifold Base for Basic Size 2



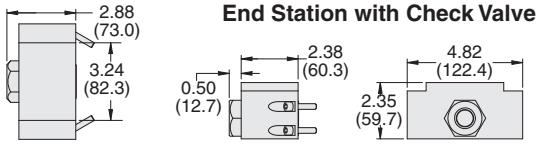
End Station with Check Valve for BasicSize 0



End Station for Basic Size 2



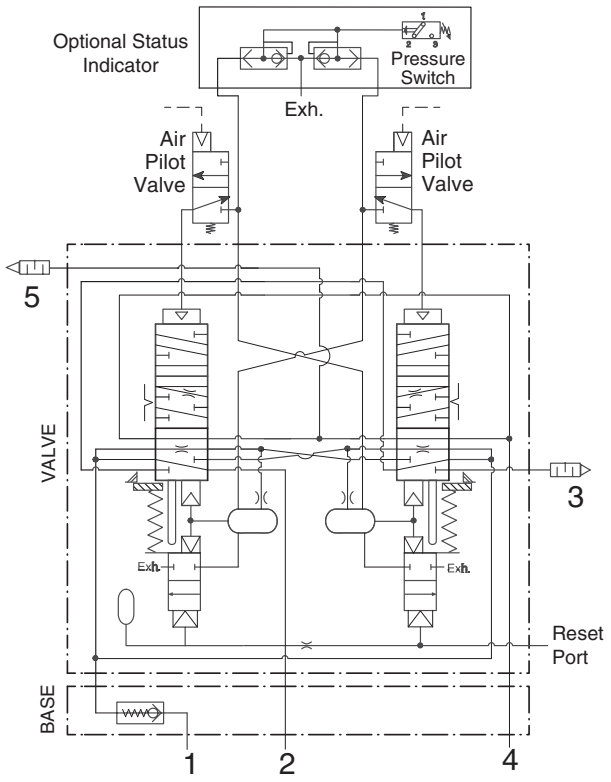
End Station with Check Valve for Basic Size 2



Normal Operation: The valve is operated by pressurizing both pilot supply ports simultaneously. This causes both main valve elements to be actuated so that air from inlet port 1 flows to outlet port 4, but not to port 2. Air downstream of port 2 is exhausted through port 3.
When the pilot supply ports are de-pressurized, both valve elements are de-actuated, and air then flows from inlet port 1 to outlet port 2, but no longer to outlet port 4. Air downstream of port 4 is exhausted through port 5. On first operation, or after repair, the pilot valve supply circuit and inherent monitoring elements may need to be reset.

Valve Locked-out: Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will move to a locked-out position. In the locked-out position, one crossover and its related timing chamber will be exhausted, and the other crossover and its related timing chamber will be fully pressurized.
The valve element (side B) that is partially actuated has pilot air available to fully actuate it, but no air pressure on the return piston to fully de-actuate the valve element.
The return springs are limited in travel, and can only return the valve elements to the intermediate (locked-out) position. Sufficient air pressure acting on the return pistons is needed to return the valve elements to a fully home position.

Detecting a Malfunction: If the main valve elements are not both actuated or de-actuated synchronously, the valve defaults to the locked-out position so that outlet port 2 receives full inlet pressure, and outlet port 4 is exhausted through port 5. The valve must now be "reset" to resume normal operation.



Valve Schematic

Resetting the Valve: The valve will remain in the locked-out position, even if the inlet air supply is removed and re-applied.
A remote reset signal must be applied to reset the valve. Reset is accomplished by momentarily pressurizing the reset port. Actuation of the reset piston physically pushes the main valve elements to their home position. Actuation of the reset piston also opens the reset poppet, thereby, immediately exhausting pilot supply air, thus, preventing valve operation during reset. De-actuation of reset pistons causes the reset poppets to close and pilot supply timing chambers to fully pressurize. Reset pressure can be applied by a remote 3/2 normally closed valve.

Status Indicator: The optional status indicator pressure switch will actuate when the main valve is operating normally, and will de-actuate when the main valve is in the locked-out position 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.

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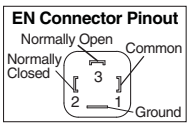
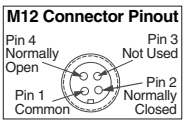
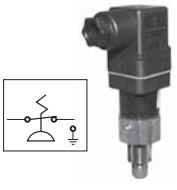
OPTIONS

PRESSURE SWITCHES For Verification Of Downstream Pressure Release

Pressure Switches		
Connection Type	**Model Number**	**Port Threads**
EN 175301-803 Form A	586A86	1/8 NPT
M12	1153A30	1/8 NPT

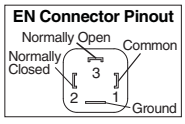






- May be installed downstream on all double valves
- Provides means to verify the release of downstream pressure to next obstruction
- Factory preset, 5 psi (0.3 bar) - falling

Redundant Pressure Switch		
Connection Types	**Model Number**	**Port Threads**
EN 175301-803 Form A	RC026-13	3/8 NPT



- May be installed downstream on all double valves
- Provides a redundant means to verify the release of downstream pressure to next obstruction
- Factory preset, 5 psi (0.3 bar) - falling

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

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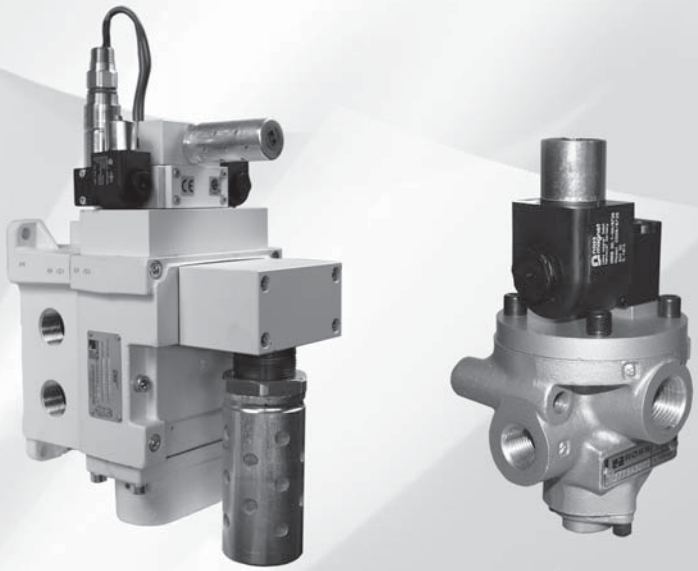
ROSS CONTROLS®

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



www.rosscontrols.com

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.

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F6

CONTROL RELIABLE DOUBLE VALVES DM²® SERIES – KEY FEATURES

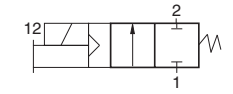
- Rapid response time to minimize stopping time
- Status Indicator switch for valve condition (ready to run) feedback
- Highly contaminant tolerant poppet construction

VALVE TYPE/ SERIES	Category	Available Port Sizes						MAX. FLOW Cv						Reset			Explosion Proof Certifications		Page
								Port Size											
		1/4	3/8	1/2	3/4	1	1½	1/4	3/8	1/2	3/4	1	1½	Integrated Soft-Start	Remote	Solenoid	CSA/UL	ATEX	
Control Reliable Explosion Proof Double Valves																			
DM²® C	4		■	■		■	■		2.61	10		20	64		■	■	■		F6.10 -F6.12

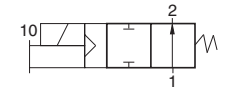
2-Way 2-Position Valves, Spring Return

Port Size 1, 2	Body Size	Valve Model Number* Normally Closed	Valve Model Number* Normally Open	C_v NC	C_v NO	Weight lb (kg)
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	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	7.3	3.6 (1.6)
1	3/4	2771B6012**	2772B6012**	9	7.9	3.6 (1.6)
1	1¼	2771B6002**	2772B6002**	24	21	7.5 (3.4)
1¼	1¼	2771B7002**	2772B7002**	29	20	7.5 (3.4)
1½	1¼	2771B8012**	2772B8012**	29	21	7.5 (3.4)
1½	2	2771B8002**	2772B8002**	49	49	16.0 (7.3)
2	2	2771B9002**	2772B9002**	57	57	16.0 (7.3)
2½	2	2771B9012**	2772B9012**	64	72	16.0 (7.3)

FM APPROVED



Normally Closed (NC)

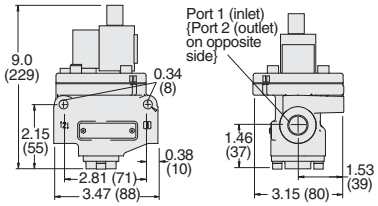


Normally Open (NO)

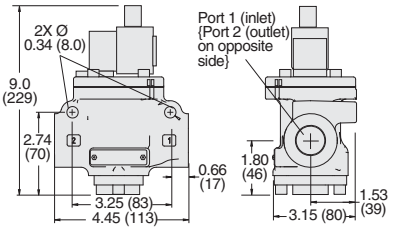
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2772B2002.
** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2771B2002W. For other voltages, consult ROSS.

Valve Dimensions – inches (mm)

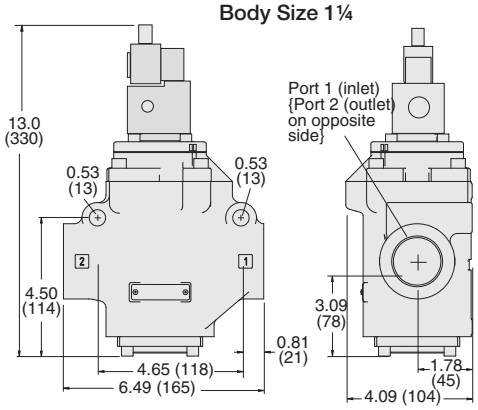
Body Size 3/8



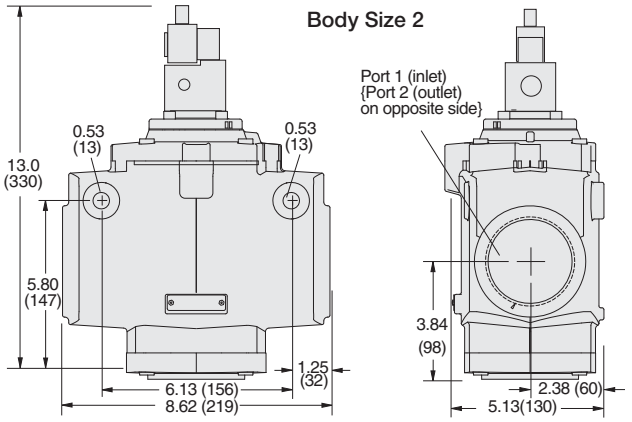
Body Size 3/4



Body Size 1¼



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):

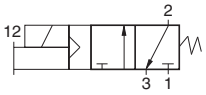
Construction: Poppet; Acetal.
Mounting Type: In-Line.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.

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, 1½:* 15 to 150 psig (1 to 10 bar).
Body Size 2: 30 to 150 psig (2 to 10 bar).

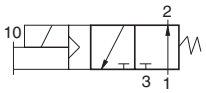
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

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	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)



Normally Closed (NC)

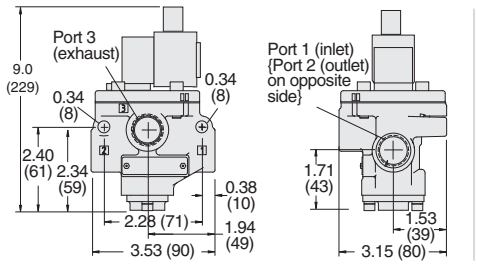


Normally Open (NO)

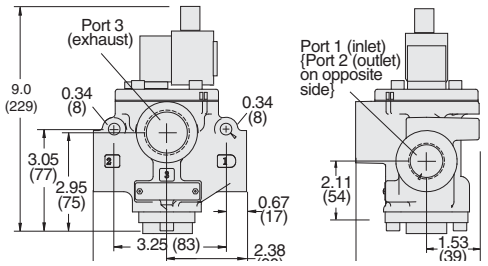
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2773B2002.
** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2773B2002W. For other voltages, consult ROSS.

Valve Dimensions
– inches (mm)

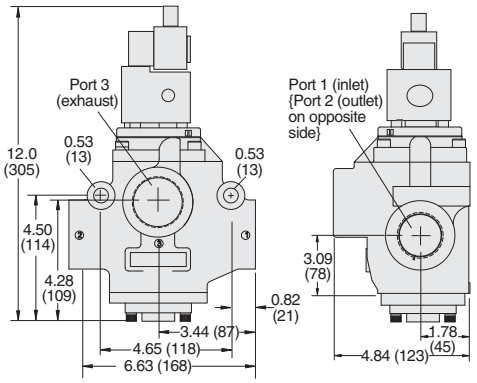
Body Size 3/8



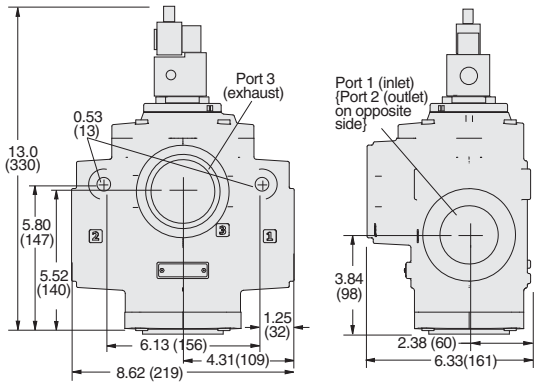
Body Size 3/4



Body Size 1¼



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.
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.

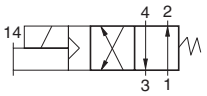
Ambient Temperature: 40° to 140°F (4° to 60°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: *Body Size 3/8, 3/4, 1½:* 15 to 150 psig (1 to 10 bar).
Body Size 2: 30 to 150 psig (2 to 10 bar).

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

4-Way 2-Position Valves, Spring Return

Port Size 1, 2, 4	Port Size 3	Body Size	Valve Model Number*	C_v 1-2, 1-4	C_v 4-3, 2-3	Weight lb (kg)
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	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)

FM APPROVED

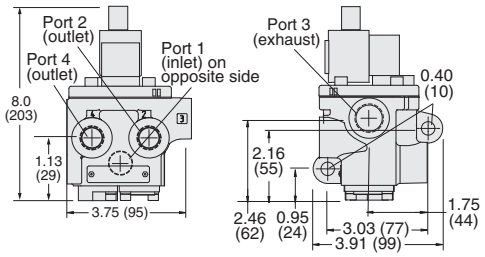


Port Sizes 1 to 1½

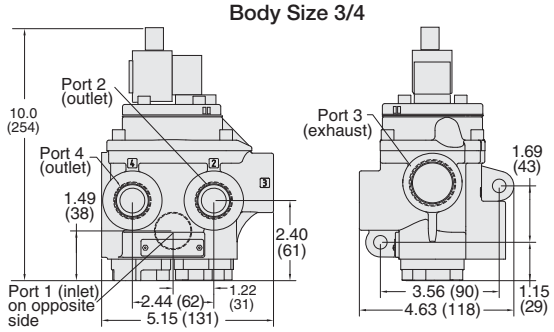
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2776B2002.
** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2776B2002W. For other voltages, consult ROSS.

Valve Dimensions – inches (mm)

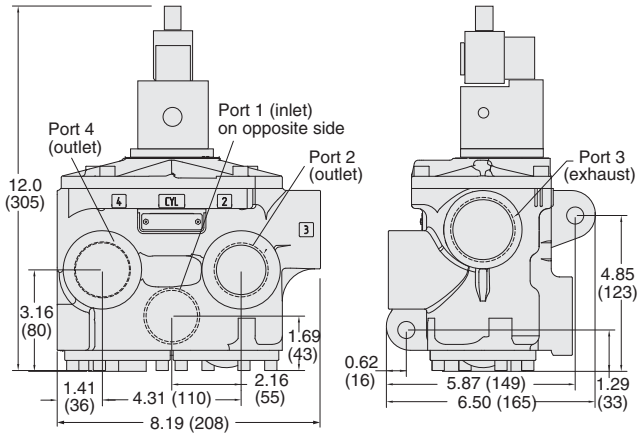
Body Size 3/8



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):

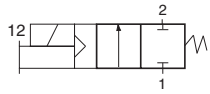
Construction: Poppet; Acetal.
Mounting Type: In-Line.
Solenoid Pilot: Rated for continuous duty.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.
Ambient Temperature: 40° to 140°F (4° to 60°C).
Media Temperature: 40° to 175°F (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.

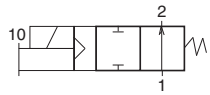
2-Way 2-Position Valves, Spring Return						
Port Size 1,2	Body Size	Valve Model Number*		Avg. C_v		Weight lb (kg)
		Normally Closed	Normally Open	NC	NO	
1/4	3/8	2171B2005**	2172B2005**	2.3	2.3	3.0 (1.4)
3/8	3/8	2171B3005**	2172B3005**	3.8	3.3	3.0 (1.4)
1/2	3/8	2171B4015**	2172B4015**	4	3.5	3.0 (1.4)
1/2	3/4	2171B4005**	2172B4005**	7.7	6.5	3.3 (1.5)
3/4	3/4	2171B5005**	2172B5005**	9	7.3	3.3 (1.5)
1	3/4	2171B6015**	2172B6015**	9	7.9	3.3 (1.5)
1	1¼	2171B6005**	2172B6005**	24	21	7.5 (3.4)
1¼	1¼	2171B7005**	2172B7005**	29	20	7.5 (3.4)
1½	1¼	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.

FM APPROVED



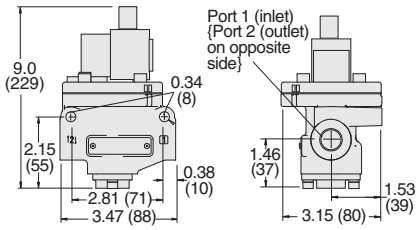
Normally Closed (NC)



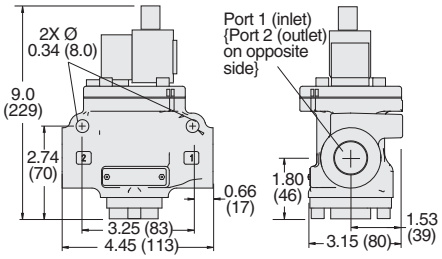
Normally Open (NO)

Valve Dimensions – inches (mm)

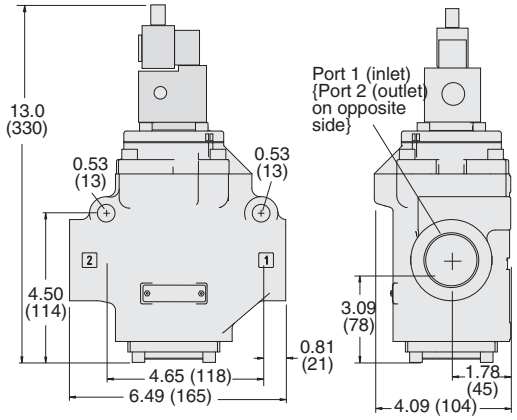
Body Size 3/8



Body Size 3/4



Body Size 1¼



F

F6

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)**:**

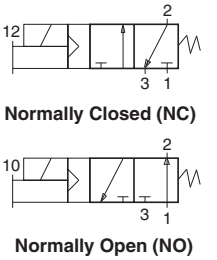
Construction: Poppet; Metal.
Mounting Type: Inline.
Solenoid Pilot: Rated for continuous duty.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid): 24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.

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.

3-Way 2-Position Valves, Spring Return

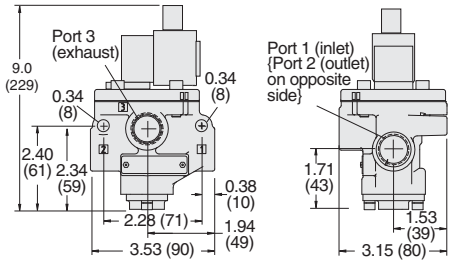
Port Size		Body Size	Valve Model Number*		C_v				Weight lb (kg)
			Low Temperature		NC		NO		
1, 2	3		Normally Closed	Normally Open	1-2	2-3	1-2	2-3	
1/4	1/2	3/8	2173B2005**	2174B2005**	2.4	3.4	2	2.1	3.0 (1.4)
3/8	1/2	3/8	2173B3005**	2174B3005**	3	5.8	2.3	2.4	3.0 (1.4)
1/2	1/2	3/8	2173B4015**	2174B4015**	3	5.2	2.9	2.8	3.0 (1.4)
1/2	1	3/4	2173B4005**	2174B4005**	6.6	12	6.5	7	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)



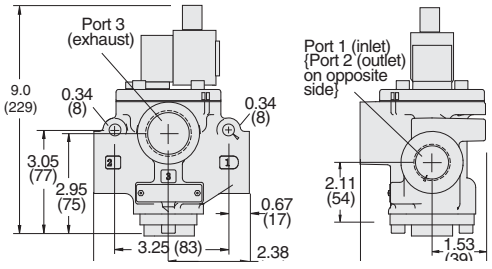
* NPT port threads. For BSPP threads add a "D" prefix to the model number e.g., D2171B2004.
** Insert voltage code: "W" = 24 volts DC; "Z" = 120 volts AC, 60 Hz; e.g., 2173B2004W. For other voltages, consult ROSS.

Valve Dimensions – inches (mm)

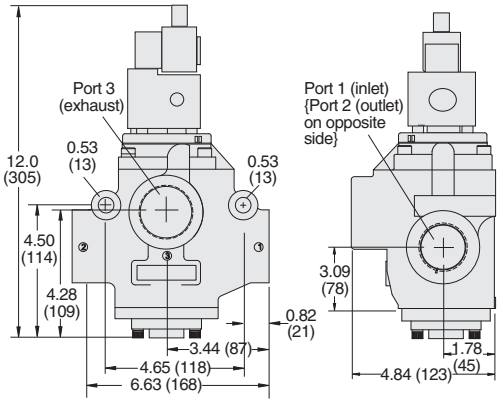
Body Size 3/8



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.

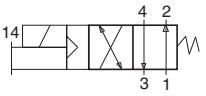
Ambient Temperature: -4° to 140°F (-20° to 60°C).
Media Temperature: -4° to 175°F (-20° to 80°C).
For temperatures below 40°F (4°C) air must be free of water vapor to prevent formation of ice.
Flow Media: Filtered air.
Inlet Pressure: 30 to 150 psig (2 to 10 bar).

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

4-Way 2-Position Valves, Spring Return						
Port Size		Body Size	Valve Model Number*	C_v		Weight
1, 2, 4	3		Low Temperature	1-2, 1-4	4-3, 2-3	lb (kg)
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.

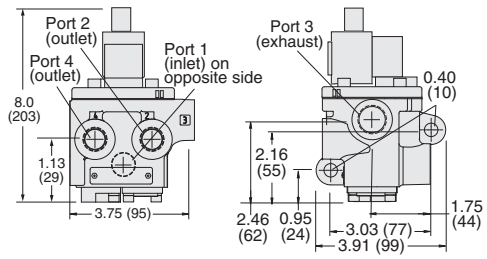
FM APPROVED



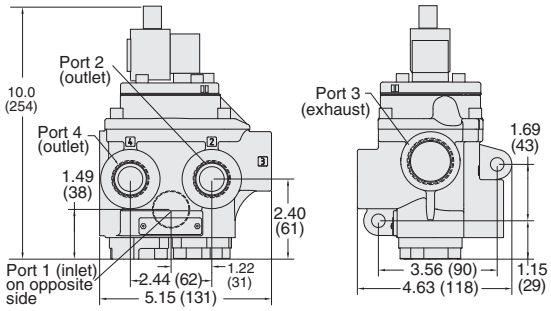
Port Sizes 1 to 1½

Valve Dimensions – inches (mm)

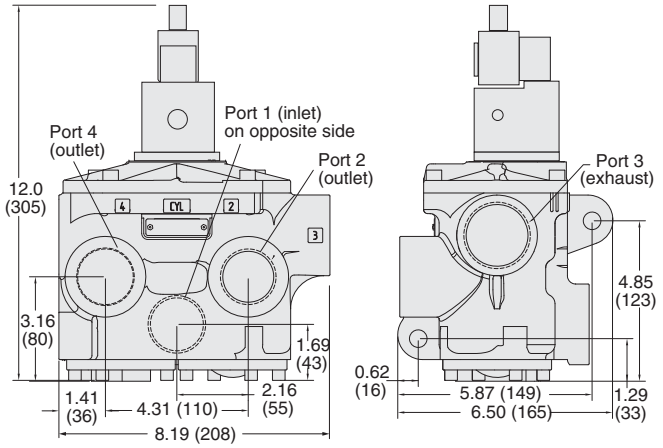
Body Size 3/8



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).

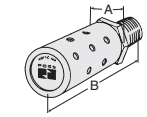
IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Silencers

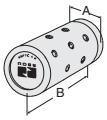
Port size 1/8 thru 2

Port size 2½

Port Size	Thread Type	Model Number*		Avg. C_v	Dimensions inches (mm)		Weight lb (kg)
		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)



Male Pipe Threads



Female Pipe Threads

Pressure Range: 0 to 300 psig (0 to 20.7 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

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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 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.

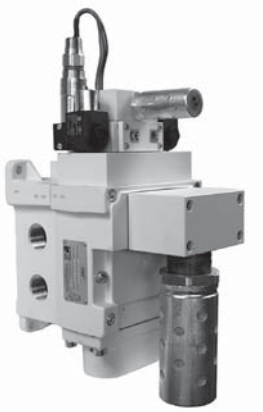
Mounting: Base mounted – with BSPP or NPT pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included). Captive valve-to-base mounting screws.

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

FM APPROVED



HOW TO ORDER

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

DM2C	N	A	4	2	A	2	1	019

Thread

BSPP	D
NPT	N

Revision Level

Size 4, 12, 30	A
Size 2	B

Basic Size

2	2
4	4
12	6
30	8

Basic Size	Port Size Inlet	Port Size Outlet	
2	3/8	3/8	1
4	1/2	1/2	2
12	1	1	6
30	1½	2	8

Voltage*

24 volts DC	A
120 volts AC, 60 Hz	B

* For other voltages consult ROSS.

Reset Type

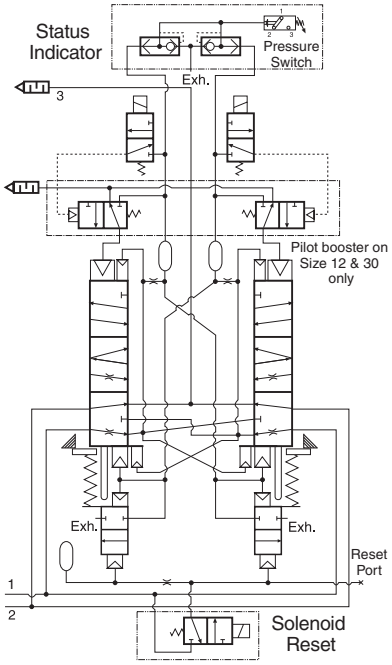
Solenoid	2

Status Indicator

Yes	1
No	X

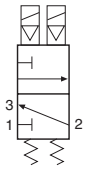
Pilot Type

Explosion Proof	019



Schematic - Valve de-actuated

Simplified Schematic



Valve Basic Size	Cv 1-2	Cv 2-3	Weight lb (Kg)
2	2.17	2.61	5.3 (2.4)
4	3	10	5.9 (2.6)
12	8.5	20	15.3 (3.7)
30	22	64	34.7 (15.1)

STANDARD SPECIFICATIONS (for valves on this page):

Construction: Dual poppet.
Mounting Type: Base mounted.
Pilot Solenoids: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Three solenoids, rated for continuous duty.
Standard Voltages/Pilot Solenoids Power Consumption (each solenoid):
Primary and reset solenoids:
24 volts DC, 4.6 watts; 120 volts AC, 60 Hz, 6.8 volt amps.
Enclosure Rating: IP65, IEC 60529.
Electrical Connection: Three lead wires with 1/2 NPT conduit connection.
Ambient Temperature: 15° to 122°F (-10° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered, lubricated or unlubricated (mineral oils according to DIN 51519, viscosity classes 32-46).
Inlet Pressure: 30 to 120 psig (2 to 8 bar).
Pressure Switch (Status Indicator) Rating: Contacts - 1 amps at 250 volts AC, SPDT.
Pressure Switch Enclosure Rating: IP66.
Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.
Mounting Orientation: Preferably horizontally (valve on top of base) or vertically with pilot solenoids on top.

Functional Safety Data: Category 4 PL e; B10D: 20,000,000; PFHD: 7.71×10^{-9} ; MTTFD: 301.9 (n_{op}: 662400).
Certifications: CE Marked for applicable directives, DGUV Test, CSA/UL, TSSA for appropriately tested valves.
Vibration/Impact Resistance: Tested to BS EN 60068-2-27.

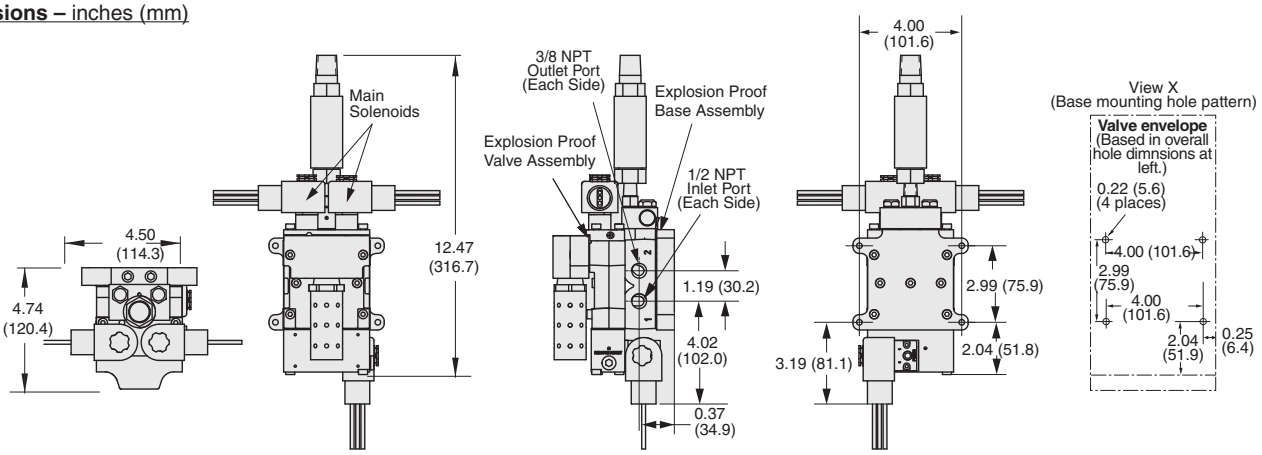
This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM2® Series D for mechanical power press applications.

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

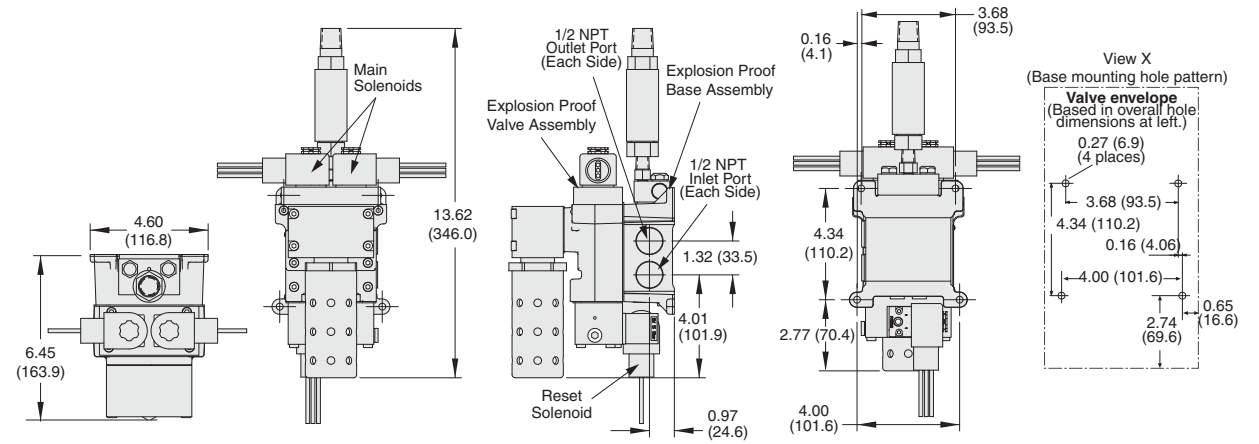
Online Version
Rev. 07/21/17

Valve Dimensions – inches (mm)

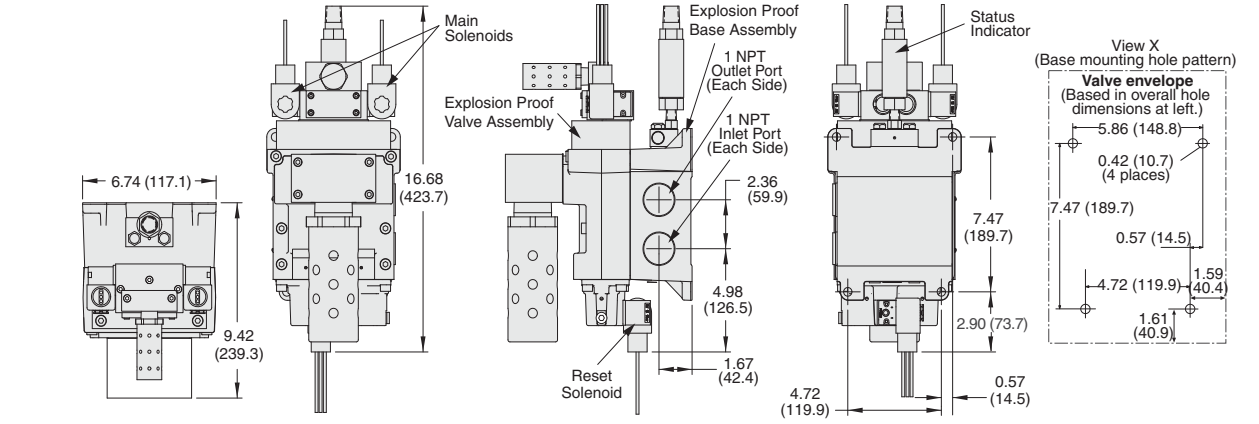
Basic Size 2



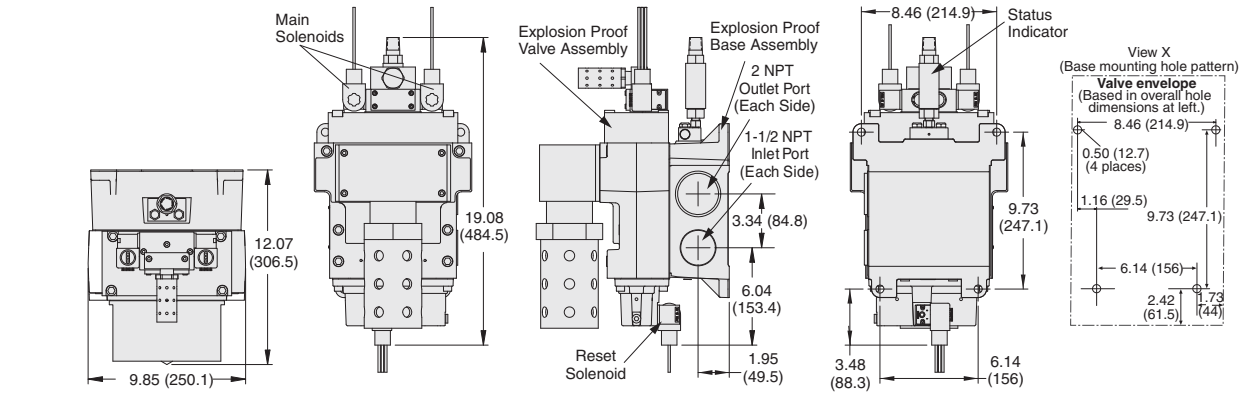
Basic Size 4



Basic Size 12



Basic Size 30



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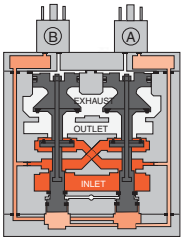
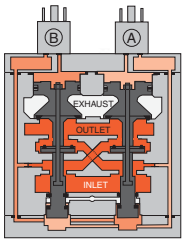
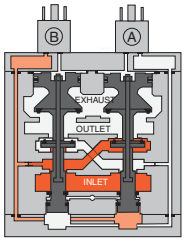
Valve de-actuated (ready-to-run): The flow of inlet air pressure into the crossover passages from the inlet chamber is restricted by orifices that allow air pressure to bypass the lower inlet poppets. Flow is sufficient to quickly pressurize the pilot supply/timing chambers on both sides A and B. The 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.)



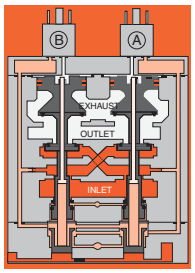
Valve actuated: Energizing the pilot solenoids simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated position, where inlet air flow to outlet is open and both exhaust poppets are closed. The outlet is then quickly pressurized, and pressure in the inlet, 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.



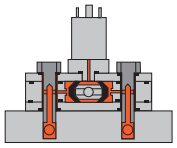
Asynchronous Operation: If the valve elements operate in a sufficiently asynchronous manner on ACTUATION, the valve will shift into a position where one crossover and its related timing chambers will be exhausted, and the other crossover and its related timing chambers will be pressurized.
In the illustration,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

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

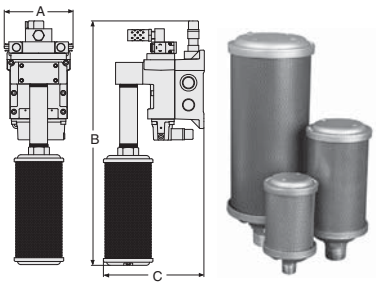
Accessories & Options

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*		Flow scfm	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.



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

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.

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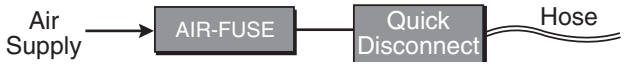
ROSS CONTROLS®

AIR-FUSE FLOW DIFFUSERS

www.rosscontrols.com

AIR-FUSE Flow Diffusers

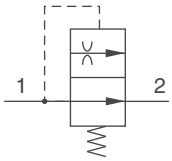
The ROSS AIR-FUSE Flow Diffuser automatically reduces air flow to minimize hose whip. After a hose failure has occurred, the AIR-FUSE is designed to minimize the whip effect of the hose. A minimal amount of media flow will occur after the AIR-FUSE is triggered. This pilot flow will escape to atmosphere and continue until the AIR-FUSE is reset, therefore, the AIR-FUSE is intended to be used only with non-corrosive, non-flammable, non-hazardous gases. To reset the AIR-FUSE, simply shut-off the air supply.



Ordering Information

Proper sizing of the Air-Fuse unit is guided by the air-operated work elements. Required flow rating must be ensured; i.e., flow capacity of the pneumatic element (pressure regulator, ball valve) installed upstream of the Air-Fuse must be larger, than that of the used hose-break protection.

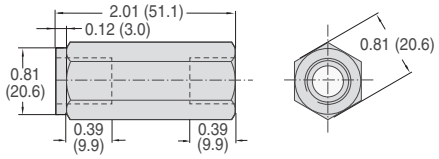
Port Size	Porting Type	Model Number*	Shut-off Flow Rate at 100 psi (7 bar) scfm (dm³/s)	Flow at 100 psi (7 bar) ΔP 1 psi (0.07 bar) scfm (dm³/s)	Weight lb (kg)
1/4	Female-Female	1969D2002	29.7 (14)	13.8 (8)	0.09 (0.04)
3/8	Female-Female	1969D3002	68.2 (32)	28.6 (14)	0.15 (0.07)
1/2	Female-Female	1969D4002	102.3 (48)	49.2 (23)	0.33 (0.15)
3/4	Female-Female	1969D5002	169.5 (80)	91.1 (43)	0.28 (0.13)
1	Female-Female	1969D6002	271.0 (128)	144 (68)	1.19 (0.54)
1½	Female-Female	1969D8002	568.0 (268)	307 (145)	2.20 (1.00)



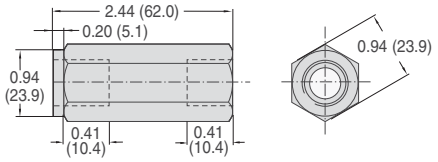
*NPT port threads. For BSPP threads add a "D" prefix to the model number, e.g., D1969D2002.

Valve Dimensions – inches (mm)

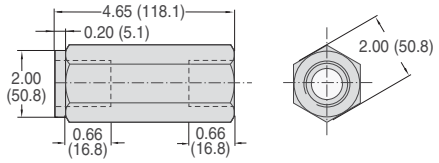
Port Size 1/4



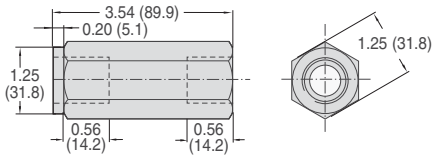
Port Size 3/8



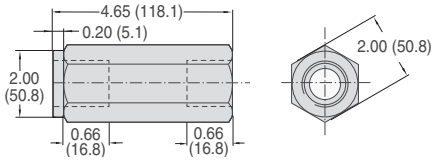
Port Size 1/2



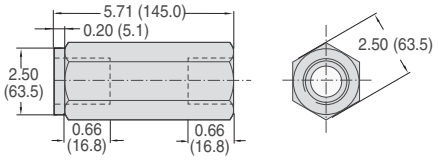
Port Size 3/4



Port Size 1



Port Size 1½



Reduces the Dangers of Hose and Plastic Tubing Failure

STANDARD SPECIFICATIONS (for valves on this page)**:**

Ambient/Media Temperature: 35° to 175°F (2° to 80°C). For temperature below 35°F (2°C), consult ROSS.
Flow Media: Filtered air.
Operating Pressure: Maximum 232 psi (16 bar). Minimum according to hose length.
Drop pressure at shut-off flow: 4.4 psi (0.3 bar).

Mounting: In-line two-way valve. To be inserted between fixed air supply and flexible air lines
Material: *Housing:* Aluminum.
Inner parts: Brass.
Spring: Stainless Steel.

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

Online Version
Rev. 07/21/17

Coiled Hose Selection Information

Minimum Supply Working pressure based on hose length and diameter psig (bar)												
Model Number	**Port Size**	**Hose Length** feet (meter)	**Internal Hose Diameter** inch (mm)									
			0.25 (0.08)	0.313 (0.10)	0.370 (0.11)	0.470 (0.14)	0.500 (0.15)	0.590 (0.18)	0.750 (0.23)	1.000 (0.30)	1.250 (0.38)	1.500 (0.46)
1969D2002	1/4	12 (3.65)	70 (4.82)	31 (2.13)	17 (1.17)	10 (0.69)	9 (0.62)	8 (0.55)	7 (0.48)	7 (0.48)	7 (0.48)	7 (0.48)
		25 (7.62)	137 (9.45)	57 (3.93)	27 (1.86)	13 (0.90)	11 (0.76)	9 (0.62)	8 (0.55)	7 (0.48)	7 (0.48)	7 (0.48)
		50 (15.24)		107 (7.38)	47 (3.24)	19 (1.31)	15 (1.03)	11 (0.76)	8 (0.55)	7 (0.48)	7 (0.48)	7 (0.48)
		100 (30.48)		207 (14.27)	87 (6)	30 (2.10)	23 (1.58)	14 (0.96)	9 (0.62)	8 (0.55)	7 (0.48)	7 (0.48)
1969D3002	3/8	12 (3.65)		132 (9.10)	57 (3.93)	21 (1.45)	17 (1.17)	11 (0.76)	8 (0.55)	8 (0.55)	7 (0.48)	7 (0.48)
		25 (7.62)			111 (7.65)	37 (2.55)	28 (1.93)	16 (1.10)	10 (0.69)	8 (0.55)	7 (0.48)	7 (0.48)
		50 (15.24)			215 (14.82)	67 94.61)	49 (3.38)	25 (1.72)	12 (0.83)	8 (0.55)	8 (0.55)	7 (0.48)
		100 (30.48)				126 (8.69)	91 (6.27)	42 (2.90)	17 (1.17)	9 (0.62)	8 (0.55)	7 (0.48)
1969D4002	1/2	12 (3.65)			119 (8.20)	39 (2.69)	30 (2.07)	17 (1.17)	10 (0.69)	8 (0.55)	7 (0.48)	7 (0.48)
		25 (7.62)				74 (5.10)	54 (3.72)	27 (1.86)	13 (0.90)	8 (0.55)	8 (0.55)	7 (0.48)
		50 (15.24)				141 (9.72)	102 (7.03)	46 (3.17)	19 (1.31)	10 (0.69)	8 (0.55)	8 (0.55)
		100 (30.48)					196 (13.51)	85 (5.86)	29 (2)	12 (0.83)	9 (0.62)	8 (0.55)
1969D5002	3/4	12 (3.65)				96 (6.62)	70 (4.83)	33 (2.27)	15 (1.03)	9 (0.62)	8 (0.55)	7 (0.48)
		25 (7.62)				193 (13.31)	139 (9.58)	62 (4.27)	23 (1.58)	11 (0.76)	8 (0.55)	8 (0.55)
		50 (15.24)						116 (8)	38 (2.62)	14 (0.97)	9 (0.62)	8 (0.55)
		100 (30.48)						224 (15.44)	69 (4.76)	20 (1.38)	11 (0.76)	9 (0.62)
1969D6002	1	12 (3.65)				231 (15.93)	166 (8)	73 (15.03)	26 (1.79)	11 (0.76)	8 (0.55)	8 (0.55)
		25 (7.62)						144 (9.93)	47 (3.24)	16 (1.10)	10 (0.69)	8 (0.55)
		50 (15.24)							85 (5.86)	24 (1.65)	12 (0.83)	9 (0.62)
		100 (30.48)							163(11.24)	14 (0.96)	17 (1.17)	11 (0.76)
1969D8002	1½	12 (3.65)							89 (6.14)	25 (1.72)	13 (0.89)	9 (0.62)
		25 (7.62)							179 (12.34)	44 (3.03)	18 (1.24)	12 (0.83)
		50 (15.24)								81 (5.58)	20 (1.38)	16 (1.10)
		100 (30.48)								154 (10.62)	52 (3.58)	24 (1.65)

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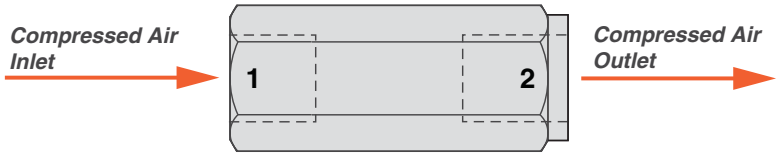
Important Notes:

Flow is automatically reduced to a non-hazardous level after the ROSS AIR-FUSE has sensed a broken hose or tube.
Until the supply of the compressed media is turned off, a nominal amount of flow will occur through the AIR-FUSE, therefore use only with non-corrosive, non-flammable and non-hazardous gases (check material compatibility). AIR-FUSE size should equal hose inside diameter.
No reduced fittings should be used downstream of the AIR-FUSE before the tool. Flow-reducing fittings may only be used if they are directly connected with the work element.
When applying the AIR-FUSE to a directional valve application, the valve should be oversized to eliminate excessive back pressure.

F7



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 superseds 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

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 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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There are ROSS Distributors Throughout the World

To meet your requirements across the globe, ROSS distributors are located throughout the world. Through ROSS or its distributors, guidance is available for the selection of ROSS products, both for those using pneumatic components for the first time and those designing complex pneumatic systems.

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.

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

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