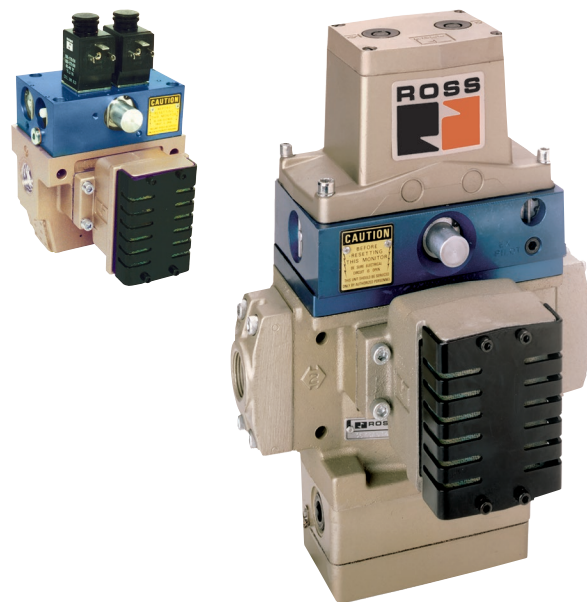




CLUTCH/BRAKE CONTROL
35 SERIES L-G MONITOR SERPAR® VALVES



PRODUCT CATALOG

SERPAR® Double Valves with L-G Monitor 35 Series

Product Overview

Clutch/Brake Control Function

The SERPAR® L-G double valve is designed to provide control of clutch/brake mechanisms on mechanical stamping presses as well as other safety applications, such as alternative lockout systems for energy isolation.

Size 4	Basic Size 8, 12, & 30
	

Illustration examples.

The SERPAR® Series valves are internally monitored double valves with a built-in monitoring device that checks for the proper operation of each valve element. If the internal monitor detects a valve fault on a particular cycle, the double valve will fail to a safe condition (all downstream air is exhausted) and the monitor will lock-out to inhibit further operation of the device. Normal operation can only be resumed by a momentary reset signal to the valve.

VALVE FEATURES

Monitoring	Internal, Pneumatic (L-G) monitoring; requires no additional monitoring circuitry
Poppet Design	Dirt tolerant, wear compensating for quick response and high flow capacity
PTFE Backup Piston Rings	Enhances valve endurance enabling operation with or without in-line lubrication
Automatic Lock-out	Automatic lock-out/inhibit upon detection of a malfunction
Fault Detection	Default to de-energized position upon fault detection
Valve Reset	Pneumatic reset, with a momentary external pneumatic signal
Mounting	In-line, with piping flanges
Overrides	Manual, flush button or rubber grommet
SISTEMA Library	Available for download

PRODUCT CREDENTIALS

Performance Level Per ISO 13849-1:2015 	Safety Integrity Level Per IEC 2061:2001 	Declaration of Conformity  	Certificate of Compliance 
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STANDARD SPECIFICATIONS								
GENERAL	Function		3/2 Valve					
	Construction Design		Dual Poppet					
	Actuation		Electrical		Solenoid Pilot Controlled			
	Mounting	Type	In-line					
		Orientation	Preferably vertically (with pilot solenoids on top)					
	Connection		Threaded	NPT				
				G				
	Monitoring		Internal; L-G monitor					
	Overrides		Valve Basic Size	4	Manual, flush button			
8, 12, 30				Manual, rubber grommet				
Minimum Operation Frequency		Once per month, to ensure proper function						
OPERATING CONDITIONS	Temperature	Ambient	40° to 120°F (4° to 50°C)					
		Media	40° to 175°F (4° to 80°C)					
	Flow Media		Filtered air					
	Operating Pressure		Valve Basic Size	4	30 to 100 psig (2.1 to 7 bar)			
				8, 12, 30	30 to 125 psig (2.1 to 8.5 bar)			
	Reset Pressure	Remote	Valve Basic Size	4	Require a pressure of minimum 30 psig (2 bar)			
				8, 12, 30	Require a pressure of minimum 60 psig (4 bar)			
			Manual	Valve Basic Size 4 only		Use internal valve pressure		
ELECTRICAL DATA	Solenoids		Valve Basic Size	Current Flow	Operating Voltage		Power Consumption (each solenoid)	
			4	DC	24 volts		11 watts on DC	
				AC	110-120 volts, 50/60 Hz		30 VA inrush, 16 VA holding on 50 or 60 Hz	
					230 volts, 50/60 Hz			
			8, 12, 30	DC	24 volts		14 watts	
				AC	110-120 volts, 50/60 Hz		87 VA inrush, 30 VA holding on 50 or 60 Hz	
					230 volts, 50/60 Hz			
			Rated for continuous duty					
	Design according to VDE 0580							
	Enclosure Rating		IP65, IEC 60529					
	Electrical Connection		Valve Basic Size	4	EN 175301-803		Form A	
					Uses two cord-grip connectors at solenoids			
8, 12, 30				Uses terminal strip connectors				
CONSTRUCTION MATERIAL	Valve Body		Cast Aluminum					
	Poppet		Acetal and Stainless Steel					
	Seals		Buna-N					

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

Ordering Information

MODEL NUMBER CONFIGURATOR

3-Way 2-Position Valves

VALVE BASIC SIZE 4

Examples: 3573D3192W, 3573D4212Z

Port Thread							
NPT							
Leave Blank							
G	D						
Series							
Actuation							
Solenoid Controlled							
Valve Function							
3/2							
Revision Level							
Port Size – Flanged Ports							
Basic Size	Port Size						
	In-Out						
4	3/8						319
	1/2						421
	3/4						521

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

*For other voltages consult ROSS.
**230 V AC not available in the U.S. (OSHA regulations limit press control voltage to no more than 120 volts AC).

Inlet Orientation	Monitor Reset	
Right	Manual	1
	Remote	2
Left	Manual	5
	Remote	6

Solenoid Wiring				Simplified Schematic			

Size		Flow C _v (NI/min)		Avg. Response Constants			Weight lb (Kg)
Basic	Port 1, 2			M	F		
		1-2	2-3		1-2	2-3	
4	3/8	3 (3000)	6 (5900)	15	0.70	0.40	8.4 (3.8)
	1/2	3 (3000)	8 (7900)	15	0.65	0.35	
	3/4	3 (3000)	9 (8900)	15	0.65	0.35	

Valve Response Time	The constants above, designated M and F, can be used to determine the amount of time required to fill or exhaust a volume of any size using the formula on the right. Vlv. Resp. Time (msec) = M + F * V M = avg. time for parts movement F = msec. per cubic inch of volume V = volume in cubic inches
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RESET VALVES for L-G MONITOR	On valve models with manual reset a button on the side of the monitor is pushed to perform the reset function. Valves with remote reset option require a small 3/2 reset valve and the installation of a 1/8 inch air line from the reset valve to the reset port of the double valve. ROSS offers 3/2 normally closed valves with either manual or electric control that are suitable for this purpose.
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MODEL NUMBER CONFIGURATOR

3-Way 2-Position Valves

VALVE BASIC SIZE 8, 12, 30

Examples: 3573D4142W, 3573D6162Z

	35	7	3	A	5152	W
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Port Thread	
NPT	
Leave Blank	
G	D

Series	

Actuation	
Solenoid Controlled	

Valve Function	
3/2	

Revision Level	

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

*For other voltages consult ROSS.
**230 V AC not available in the U.S. (OSHA regulations limit press control voltage to no more than 120 volts AC).

Port Size – Flanged Ports			
Overrides	Basic Size	Port Size #	
		In-Out	
With Manual Overrides	8	1/2	4142
		3/4	5142
	12	3/4	5152
		1	6152
	12	1	6162
		1-1/4	7162
Without Overrides	8	1-1/4	7152
		1-1/2	8162
	8	1/2	4162
		3/4	5162
	12	3/4	5172
		1	6172
Without Overrides	12	1	6182
		1-1/4	7182
Without Overrides	30	1-1/4	7172
		1-1/2	8182

Solenoid Wiring	Simplified Schematic

2 inch Port Size available on Basic Size 30 valves. Order model number 1999H77 flange kit separately.

Size		Flow C _v (NI/min)		Avg. Response Constants			Weight lb (Kg)
Basic	Port 1, 2			M	F		
		1-2	2-3		1-2	2-3	
8	1/2	3.5 (3400)	8.5 (8400)	15	0.70	0.30	15.3 (6.9)
	3/4	4.0 (3900)	12 (15000)	15	0.65	0.23	
12	3/4	8.0 (7900)	15 (15000)	15	0.65	0.23	19.0 (8.6)
8	1	4.0 (3900)	12 (12000)	20	0.33	0.21	15.3 (6.9)
12	1	8.5 (8400)	19 (19000)	20	0.28	0.21	19.0 (8.6)
	1-1/4	9.0 (8900)	21 (21000)	20	0.28	0.21	
30	1-1/4	20 (20000)	42 (41000)	25	0.19	0.07	37.5 (16.9)
	1-1/2	21 (21000)	43 (42000)	25	0.18	0.07	

Valve Response Time

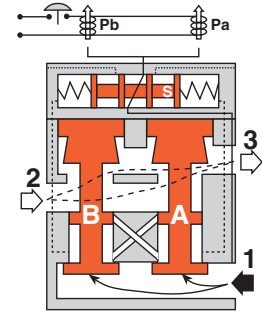
The constants above, designated M and F, can be used to determine the amount of time required to fill or exhaust a volume of any size using the formula on the right.

$Vlv. Resp. Time (msec) = M + F \cdot V$
 M = avg. time for parts movement
 F = msec. per cubic inch of volume
 V = volume in cubic inches

Valve Operation

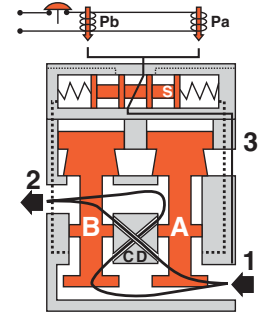
Conditions at Start

Inlet 1 is closed to outlet 2 by both valve elements A and B. Outlet 2 is open to exhaust 3. Pilot air is ported from inlet 1 and through the center section of spool S to the normally closed pilots Pa and Pb. Monitoring pressure signals at both ends of spool S are exhausted.



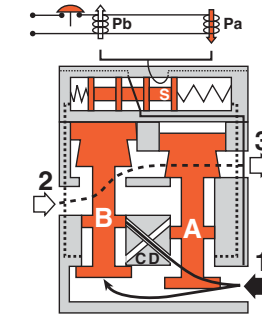
Normal Operation

Simultaneously energizing both solenoids actuates both pilots and causes valve elements A and B to shift. Inlet 1 is then connected to outlet 2 via crossflow passages C and D. Exhaust 3 is closed. Monitoring pressure signals go to each end of spool S and become equal to inlet pressure.



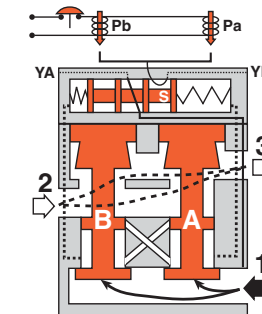
Detecting a Malfunction

A malfunction in the system or the valve itself could cause one valve element to be open and the other closed. Air then flows past the inlet poppet on valve element A, into crossflow passage D, but is substantially blocked by the spool portion of element B. The large size of the open exhaust passage past element B keeps the pressure at the outlet port below two percent of inlet pressure. Full monitoring air pressure from side A goes to the right end of spool S, and a reduced pressure goes to the left end. This pressure imbalance causes the spool to shift to the left. This shuts off and exhausts pilot air to both solenoid pilots, and allows valve element A to return to the closed position.



L-G Monitor Locked-out

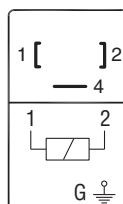
When the L-G spool shifts it is held by a lockout pin (not shown). Pilot air is then exhausted to atmosphere via port YB, and pilot supply air is diverted to atmosphere via port YA. The lockout mechanism must be reset before the valve can return to normal operation. During and following reset, the pilot solenoids must be kept de-energized to prevent inadvertent and possibly dangerous cycling of the press. The reset function is either manual or remote-pneumatic depending on valve model.



Both solenoids must be energized simultaneously to shift the valve; maintained signal required to keep valve shifted.

If monitor must be reset, electrical signals to both solenoids must be removed to prevent the machine controlled by the valve from immediately recycling and producing a potentially hazardous condition.

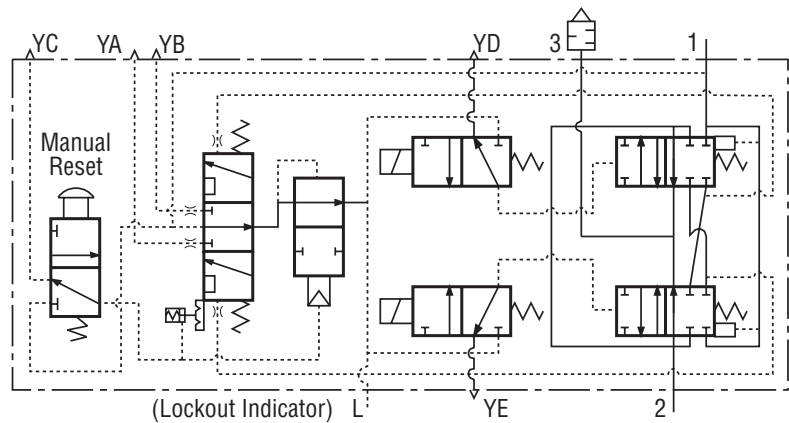
SOLENOID PINOUT



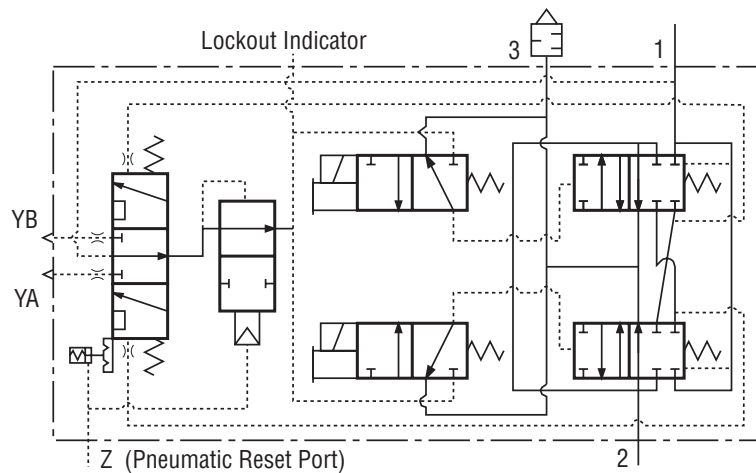
1 - Positive
2 - Negative
4 - Ground

VALVE SCHEMATICS

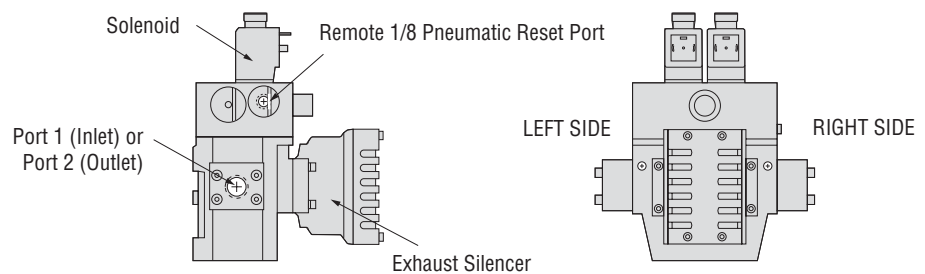
Valve Body Size 4



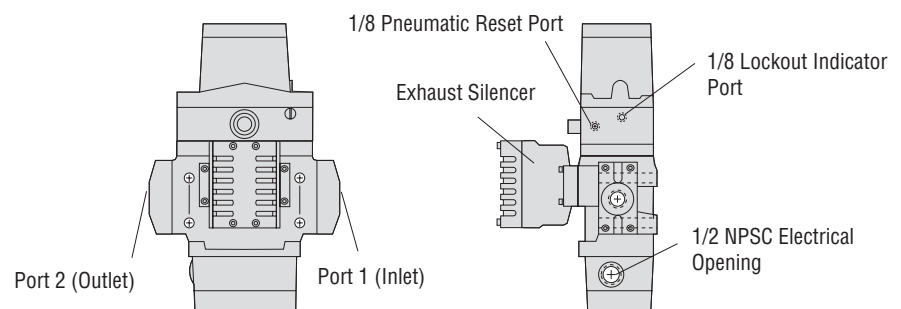
Valve Body Size 8, 12, 30



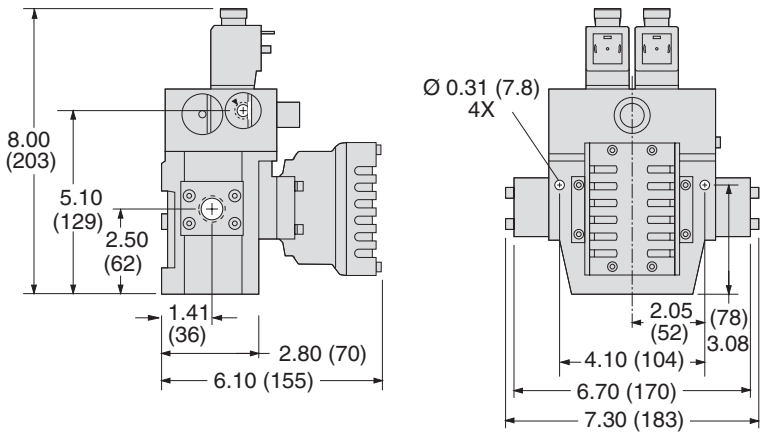
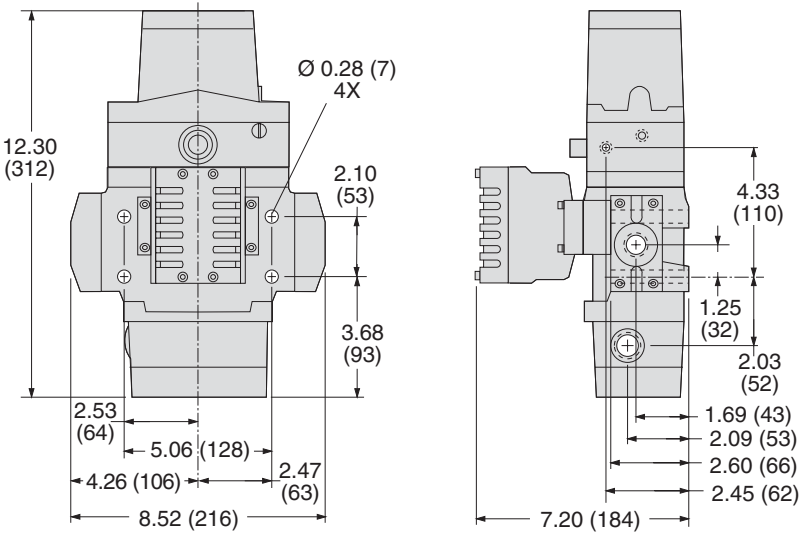
Valve Body Size 4



Valve Body Size 8, 12, 30



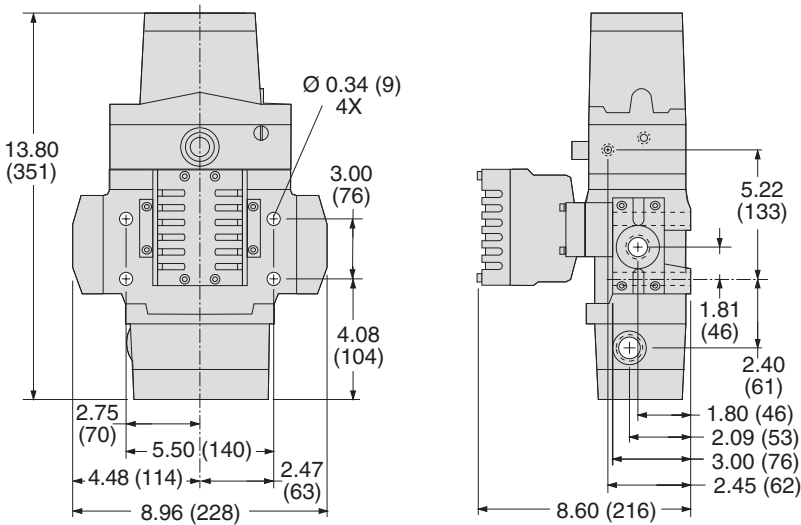
Valve Technical Data

DIMENSIONS	Inches (mm)
Basic Size 4	 Technical drawings of the Basic Size 4 valve. The front view (left) shows a vertical valve with a handle on the right. Dimensions include a total height of 8.00 (203), a distance from the base to the handle of 5.10 (129), a distance from the base to the valve body of 2.50 (62), a base width of 1.41 (36), a distance from the base to the valve body of 2.80 (70), and a total base width of 6.10 (155). The top view (right) shows a rectangular valve with two ports. Dimensions include a port diameter of $\varnothing 0.31$ (7.8) 4X, a distance from the center to the side of 2.05 (52), a distance from the center to the top of 3.08, a distance from the center to the side of 4.10 (104), a total width of 6.70 (170), and a total width of 7.30 (183).
Basic Size 8	 Technical drawings of the Basic Size 8 valve. The front view (left) shows a vertical valve with a handle on the right. Dimensions include a total height of 12.30 (312), a distance from the base to the handle of 2.10 (53), a distance from the base to the valve body of 3.68 (93), a base width of 2.53 (64), a distance from the base to the valve body of 5.06 (128), a distance from the base to the valve body of 4.26 (106), a distance from the base to the valve body of 2.47 (63), and a total base width of 8.52 (216). The side view (right) shows a horizontal valve with a handle on the left. Dimensions include a distance from the center to the side of 4.33 (110), a distance from the center to the side of 1.25 (32), a distance from the center to the side of 2.03 (52), a distance from the center to the side of 1.69 (43), a distance from the center to the side of 2.09 (53), a distance from the center to the side of 2.60 (66), a distance from the center to the side of 2.45 (62), and a total width of 7.20 (184).
Downloadable CAD models available.	

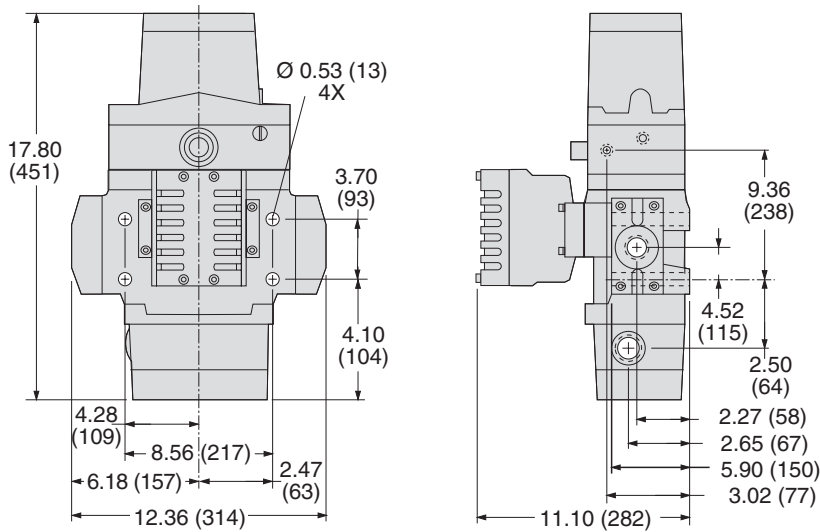
DIMENSIONS

Inches (mm)

Basic Size 12



Basic Size 30



Downloadable CAD models available.



ELECTRICAL STATUS INDICATION



Illustration example.

Pressure Switch (Electrical Lockout Indicator)	Installation Location	Indicator Type	Connector Type	Model Number	Port Thread	Factory Preset psi (bar)
	Pressure Sensing Port	Mechanical Pressure Switch	EN 175301-803 Form A	586A86	1/8 NPT	5 (0.3) falling

ENERGY RELEASE VERIFICATION



Illustration example.

Redundant Pressure Switch Assembly	Installation Location	Indicator Type	Connector Type	Model Number	Port Thread	Factory Preset psi (bar)
	In-line Downstream	Mechanical Pressure Switch	EN 175301-803 Form A	RC026-13	3/8 NPT	5 (0.3) falling

Pinout

DIN EN 175301-803 Form A

2 [3] 1

4

3

1 2

1 - Common
2 - Normally Closed
3 - Normally Open
4 - Ground (Not Used)

PREWIRED ELECTRICAL CONNECTORS

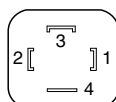


Illustration example.

Prewired Connectors For Basic Size 4	Connection Type	Connector Type	End 1	End 2	Length meters (feet)	Cord Diameter	Kit Number				Quantity
							Without Light	Lighted Connector			
								24 V DC	120 V AC	230 V AC	
	Solenoid	EN 175301-803 Form A	Connector	Flying leads	2 (6.5)	6-mm	721K77	720K77-W	720K77-Z	720K77-Y	1
10-mm						371K77	383K77-W	383K77-Z	383K77-Y	1	

Connector Pinout

DIN EN 175301-803 Form A



- 1 - Black
- 2 - Black
- 4 - Green/Yellow (Ground)

ELECTRICAL CONNECTORS

Cable Grip

Without Light



With Light

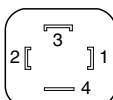


Illustration examples.

Connectors	Connector					Model Number			
	Type	Connection	Fitting Connection	Quantity Included	Cord Diameter mm	Without Light	Lighted Connector		
							24 V DC	120 V AC	230 V AC
DIN EN 175301-803 Form A	Solenoid		Cable grip	1	8 to 10	937K87	936K87-W	936K87-Z	936K87-Y
			1/2" NPT conduit	1	—	723K77	724K77-W	724K77-Z	724K77-Y

Connector Pinout

DIN EN 175301-803 Form A



- 1 - Black
- 2 - Black
- 4 - Green/Yellow (Ground)

REPLACEMENT VALVES

Valve without Piping Flanges For Basic Size 4	Valve Basic Size	Port Size	Monitor Reset	Voltage	Valve Model Number*			
		In-Out			Right Inlet		Left Inlet	
					NPT Thread	G Thread	NPT Thread	G Thread
	4	3/8, 1/2, 3/4	Manual	24 V DC	3573D4241W	D3573D4241W	3573D4245W	D3573D4245W
				120 V AC	3573D4241Z	D3573D4241Z	3573D4245Z	D3573D4245Z
				230 V AC	3573D4241Y	D3573D4241Y	3573D4245Y	D3573D4245Y
			Remote	24 V DC	3573D4242W	D3573D4242W	3573D4246W	D3573D4246W
				120 V AC	3573D4242Z	D3573D4242Z	3573D4246Z	D3573D4246Z
				230 V AC	3573D4242Y	D3573D4242Y	3573D4246Y	D3573D4246Y
	* For other voltages consult ROSS.							

Valve without Piping Flanges For Basic Size 8, 12, 30	Valve Basic Size	Port Size	Voltage	Valve Model Number*			
		In-Out		With Manual Overrides		Without Overrides	
				NPT Thread	G Thread	NPT Thread	G Thread
	8	1/2, 3/4, 1	24 V DC	3573A4202W	D3573A4202W	3573A4222W	D3573A4222W
			120 V AC	3573A4202Z	D3573A4202Z	3573A4222Z	D3573A4222Z
			230 V AC	3573A4202Y	D3573A4202Y	3573A4222Y	D3573A4222Y
	12	3/4, 1, 1-1/4	24 V DC	3573A5202W	D3573A5202W	3573A5222W	D3573A5222W
			120 V AC	3573A5202Z	D3573A5202Z	3573A5222Z	D3573A5222Z
			230 V AC	3573A5202Y	D3573A5202Y	3573A5222Y	D3573A5222Y
	30	1-1/4, 1-1/2	24 V DC	3573A7202W	D3573A7202W	3573A7222W	D3573A7222W
120 V AC			3573A7202Z	D3573A7202Z	3573A7222Z	D3573A7222Z	
230 V AC			3573A7202Y	D3573A7202Y	3573A7222Y	D3573A7222Y	
* For other voltages consult ROSS.							

CONNECTION PIPING KITS

Flanges

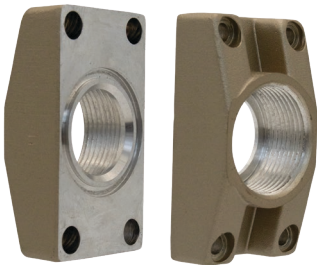


Illustration example.

Valve Piping Flange Kits	Port Size	Valve Basic Size	Kit Number*		Flange Quantity
	In-Out		NPT Thread	G Thread	
	3/8	4	658K77	D658K77	2
	1/2	4	659K77	D659K77	2
		8	661K77	D661K77	2
	3/4	4	660K77	D660K77	2
		8	662K77	D662K77	2
		12	664K77	D664K77	2
	1	8	663K77	D663K77	2
		12	665K77	D665K77	2
	1-1/4	12	666K77	D666K77	2
		30	667K77	D667K77	2
	1-1/2	30	668K77	D668K77	2
	1-1/2	30	668K77	D668K77	2
* Kits include all required seals and mounting bolts.					

Options

RESET VALVES FOR DOUBLE VALVES WITH REMOTE RESET

Valves with the remote reset option require a small 3/2 reset valve and the installation of a 1/8 inch air line from the reset valve to the reset port of the double valve. ROSS offers 3/2 Normally Closed (NC) valves with either manual or electric control that are suitable for this purpose.

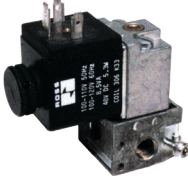
Compact Valves for Line Mounting	Miniature Valve for Base Mounting	Manual Palm Button Valves	Mushroom Valves
			

Illustration examples.

Direct Solenoid Pilot Control – Compact Valves for Line Mounting

Valve Type	Port Size	Valve Model Number*						Flow C _v (NI/min)	Average Response Constants**	
		NPT Thread			G Thread				M	F
	1, 2, 3	24 V DC	110-120 V AC 50/60 Hz	230 V AC 50/60 Hz	24 V DC	110-120 V AC 50/60 Hz	230 V AC 50/60 Hz			
Normally-Closed	1/8	1613B1020W	1613B1020Z	1613B1020Y	D1613B1020W	D1613B1020Z	D1613B1020Y	0.3 (290)	5	2.90

* For other voltages, consult ROSS.

**Valve Response Time

The constants above, designated M and F, can be used to determine the amount of time required to fill or exhaust a volume of any size using the formula on the right:

Vlv. Resp. Time (msec) = M + F * V
M = avg. time for parts movement
F = msec. per cubic inch of volume
V = volume in cubic inches

Direct Solenoid Pilot Control – Miniature Valve for Base Mounting

Valve Type	Override Type	Valve Model Number*			Flow C _v (NI/min)
		24 V DC	110-120 V AC 50/60 Hz	230 V AC 50/60 Hz	
Normally-Closed	Non-Locking	W1413A1409W	W1413A1409Z	W1413A1409Y	0.1 (98)

* For other voltages, consult ROSS.

Sub-Base for Direct Solenoid Control Valves

Sub-Base Model Number	
NPT Thread	G Thread
516B91	D516B91

Manual Palm Button Valves

Valve Operator Type	Port Size	Button Color	Valve Model Number		Flow C _v (NI/min)
			NPT Thread	G Thread	
Heavy Duty Palm Button	1/4	Green	1223B2001	D1223B2001	0.8 (780)
		Red	1223B2003	D1223B2003	
Flush Pushbutton	1/4	Green	1223B2FPG	D1223B2FPG	0.9 (890)
		Red	1223B2FPR	D1223B2FPR	
Mushroom Button	1/4	Green	1223B2MBG	D1223B2MBG	
		Red	1223B2MBR	D1223B2MBR	

CAUTIONS, WARNINGS And STANDARD WARRANTY



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

PRE-INSTALLATION or SERVICE

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

WARNINGS:

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

FILTRATION and LUBRICATION

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

220°F (104°C), and an ISO 32, or lighter, viscosity. Avoid oils with phosphate type additives which can harm polyurethane components, potentially leading to valve failure which risks personal injury, and/or damage to property.

WARNINGS:

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

AVOID INTAKE/EXHAUST RESTRICTION

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

WARNINGS:

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

SAFETY APPLICATIONS

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

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

STANDARD WARRANTY

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

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





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