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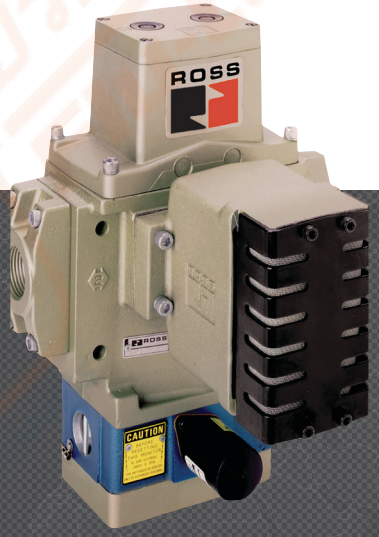
บริษัท ฟลูเทค จำกัด
Flu-tech co.,ltd
Authorized Distributor

Clutch/Brake Control E-P Monitored Double Valves

SERPAR® 35 Series

Product Catalog



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FLU - TECH CO., TD

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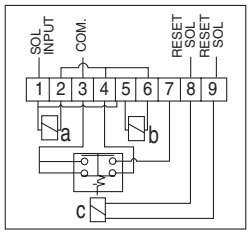
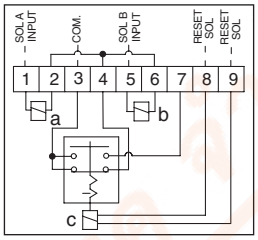
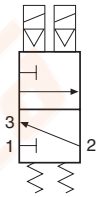
SERPAR® Double Valves with E-P Monitor 35 Series
Product Overview

Clutch/Brake Control Function

The SERPAR® E-P 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.

Monitor Wiring		Simplified Schematic
 Single Input Wiring Diagram	 Dual Input Wiring Diagram	

During Lock-out: Terminals 3 and 7 are connected which allows a panel light, bell, or other electrical device to be wired through terminals 7 and 3 to serve as a lockout indicator.

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 models with E-P monitor are available with Single Input Signal and Dual Input Signal.

Single Input valves require only one main solenoid signal wired into the terminal strip of the E-P monitored double valve. The main solenoid signal is wired into terminal 1 and internally jumpered to the second main solenoid. Commons are wired into terminal 3. This allows both solenoids to be energized and de-energized simultaneously for proper valve operation.

Dual Input valves require two solenoid signals wired independently into the terminal strip of the E-P monitored double valve. One main solenoid signal is wired into terminal 1 and the second main solenoid signal is wired into terminal 5. Commons are wired into terminal 3. Both solenoid signals must arrive simultaneously for proper valve operation.

VALVE FEATURES	
Monitoring	Internal, Electro-Pneumatic (E-P) monitoring
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	Solenoid reset, with a momentary external electric signal
Mounting	In-line, with piping flanges
Overrides	Manual, rubber grommet
SISTEMA Library	Available for download at rosscontrols.com

Specifications

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; G, NPT	
	Monitoring		Internal; E-P Monitor	
	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		30 to 125 psig (2.1 to 8.5 bar)	
ELECTRICAL DATA	Solenoids		Two solenoids, rated for continuous duty	
	Operating Voltage		24 volts DC; 110-120 volts AC, 50/60 Hz; 230 volts AC, 50/60 Hz	
	Power Consumption		14 watts on DC, 87 VA inrush, 30 VA holding on 50 or 60 Hz	
		E-P Monitor	Rated for intermittent duty	
			24-48 or 100-120 volts AC or DC	
	Enclosure Rating		IP65, IEC 60529	
	Electrical Connection		Uses terminal strip connection with multiple terminals	
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.

PRODUCT CREDENTIALS				
Safety Category	**CSA Certificate of Compliance**	**CE Conformity Declaration**	**EAC Conformity Declaration**	**ISO Standard**
SIL 3 Functional Safety				ISO 13849-1:2015

Ordering Information

MODEL NUMBER CONFIGURATOR — 3-Way 2-Position Valves

Valve Basic Size 8, 12, 30

[ ]	35	73	A	4141	W
Thread	Series	Type/Function	Revision Level		Voltage*

Thread	
G	D
NPT	Leave Blank

Type/Function
3/2-Way Solenoid

Voltage*	
24 volts DC	W
110-120 volts AC, 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				
Signal Type	Overrides	Basic Size	Port Size #	
Single Input Signal	With Manual Overrides	8	1/2	4141
			3/4	5141
		12	3/4	5151
		8	1	6151
		12	1	6161
			1-1/4	7161
		30	1-1/4	7151
			1-1/2	8161
	Without Overrides	8	1/2	4161
			3/4	5161
		12	3/4	5171
		8	1	6171
		12	1	6181
			1-1/4	7181
		30	1-1/4	7171
			1-1/2	8181

Port Size – Flanged Ports				
Signal Type	Overrides	Basic Size	Port Size #	
Dual Input Signal	With Manual Overrides	8	1/2	4341
			3/4	5341
		12	3/4	5351
		8	1	6351
		12	1	6361
			1-1/4	7361
		30	1-1/4	7351
			1-1/2	8361
	Without Overrides	8	1/2	4361
			3/4	5361
		12	3/4	5371
		8	1	6371
		12	1	6381
			1-1/4	7381
		30	1-1/4	7371
			1-1/2	8381

 # 2 inch Port Size available on Basic Size 30 valves. Order model number 1999H77 Flange Kit separately.

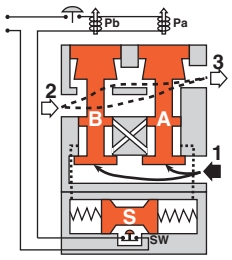
Valve Basic Size	Inlet Port Size	Flow Cv		Avg. Response Constants			Weight lb (Kg)
				M	F		
		1-2	2-3		1-2	2-3	
8	1/2	3.5	8.5	15	0.70	0.30	11.8 (5.3)
	3/4	4	12	15	0.65	0.23	
12	3/4	8	15	15	0.65	0.23	15.5 (7.0)
8	1	4	12	20	0.33	0.21	11.8 (5.3)
12	1	8.5	19	20	0.28	0.21	15.5 (7.0)
	1-1/4	9	21	20	0.28	0.21	
30	1-1/4	20	42	25	0.19	0.07	35.0 (15.8)
	1-1/2	21	43	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 *V** **M** = avg. time for parts movement **F** = msec. per cubic inch of volume **V** = volume in cubic inches

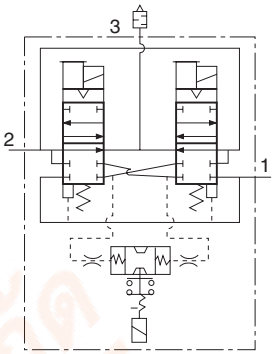
Valve Operation

Conditions at Start

Inlet 1 is closed to outlet 2 by both valve elements A and B. Outlet 2 is open to exhaust 3. Contacts of switch SW are closed. Monitoring pressure signals at both ends of spool S are exhausted.

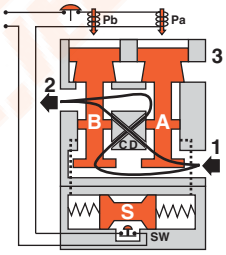


Valve Schematic



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.

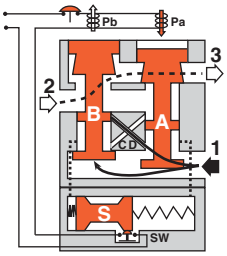


Completion of Normal Cycle

Simultaneously de-energizing both solenoids returns the valve to the "Conditions at Start" described above.

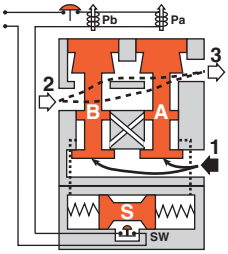
Detecting a Malfunction

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 trips switch SW, breaks the electrical circuit to the pilot solenoids, and allows valve element A to return to the closed position.



E-P Monitor Locked-out

With both valve elements closed, monitoring air pressure is exhausted from both ends of spool S so that it returns to its normal position. The electrical circuit to the pilot solenoids remains broken by switch SW. To restore the electrical circuit and return the valve to normal operation, the reset solenoid (not shown) must be briefly energized to reset switch SW. During and following reset, the pilot solenoids must be kept de-energized to prevent inadvertent and possibly dangerous cycling of the press. Prolonged energizing of the reset solenoid can cause burnout and nullify the reset function.



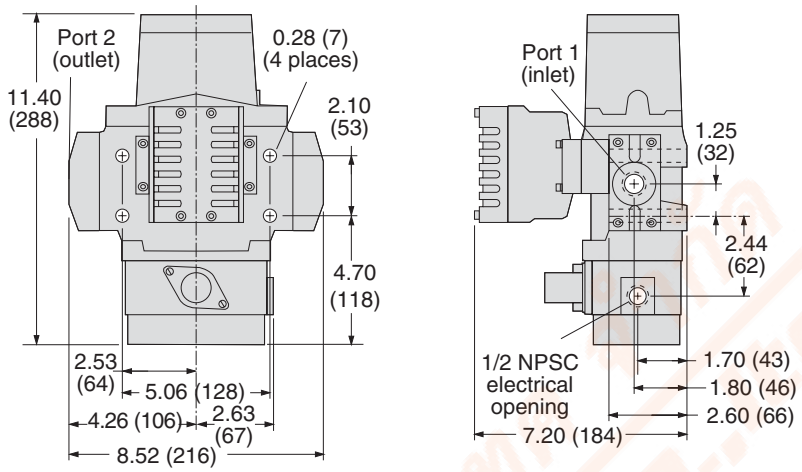
Both solenoids must be energized simultaneously to shift the valve; maintained signal required to keep valve shifted.

WARNING: *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.*

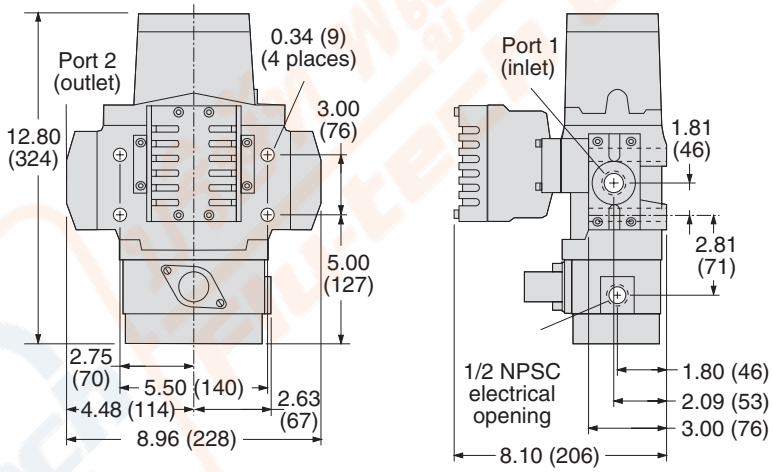
DIMENSIONS

Inches (mm)

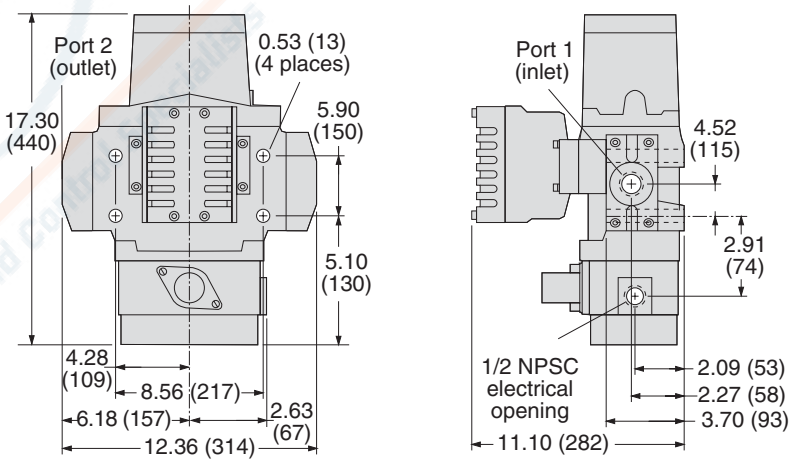
Basic Size 8



Basic Size 12



Basic Size 30



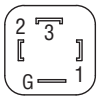
For additional information, and to assist you with piping and connectivity designs, our products are available in downloadable 2D and 3D CAD models in a wide range of formats at www.rosscontrols.com.

ENERGY RELEASE VERIFICATION

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

Mechanical Pressure Switch Connectors Pinout

DIN EN 175301-803 Form A



1 - Common
2 - Normally Closed
3 - Normally Open
G - Ground

REPLACEMENT VALVES

Valve without Piping Flanges

Signal Input	Port Size	Valve Basic Size	Voltage	Valve Model Number*			
				With Overrides		Without Overrides	
				G Thread	NPT Thread	G Thread	NPT Thread
Single	1/2, 3/4, 1	8	24 V DC	D3573A4201W	3573A4201W	D3573A4221W	3573A4221W
			120 V DC	D3573A4201Z	3573A4201Z	D3573A4221Z	3573A4221Z
			230 V DC	D3573A4201Y	3573A4201Y	D3573A4221Y	3573A4221Y
	3/4, 1, 1-1/4	12	24 V DC	D3573A5201W	3573A5201W	D3573A5221W	3573A5221W
			120 V DC	D3573A5201Z	3573A5201Z	D3573A5221Z	3573A5221Z
			230 V DC	D3573A5201Y	3573A5201Y	D3573A5221Y	3573A5221Y
	1-1/4, 1-1/2	30	24 V DC	D3573A7201W	3573A7201W	D3573A7221W	3573A7221W
			120 V DC	D3573A7201Z	3573A7201Z	D3573A7221Z	3573A7221Z
			230 V DC	D3573A7201Y	3573A7201Y	D3573A7221Y	3573A7221Y
Dual	1/2, 3/4, 1	8	24 V DC	D3573A4301W	3573A4301W	D3573A4321W	3573A4321W
			120 V DC	D3573A4301Z	3573A4301Z	D3573A4321Z	3573A4321Z
			230 V DC	D3573A4301Y	3573A4301Y	D3573A4321Y	3573A4321Y
	3/4, 1, 1-1/4	12	24 V DC	D3573A5301W	3573A5301W	D3573A5321W	3573A5321W
			120 V DC	D3573A5301Z	3573A5301Z	D3573A5321Z	3573A5321Z
			230 V DC	D3573A5301Y	3573A5301Y	D3573A5321Y	3573A5321Y
	1-1/4, 1-1/2	30	24 V DC	D3573A7301W	3573A7301W	D3573A7321W	3573A7321W
			120 V DC	D3573A7301Z	3573A7301Z	D3573A7321Z	3573A7321Z
			230 V DC	D3573A7301Y	3573A7301Y	D3573A7321Y	3573A7321Y

* For other voltages consult ROSS.

CONNECTION PIPING KITS

Valve Piping Flange Kits

Port Size	Valve Basic Size	Kit Number*		Flange Quantity
		G Thread	NPT	
1/2	8	D661K77	661K77	2
3/4	8	D662K77	662K77	2
	12	D664K77	664K77	2
1	8	D663K77	663K77	2
	12	D665K77	665K77	2
1-1/4	12	D666K77	666K77	2
	30	D667K77	667K77	2
1-1/2	30	D668K77	668K77	2

*Kits include all required seals and mounting bolts.