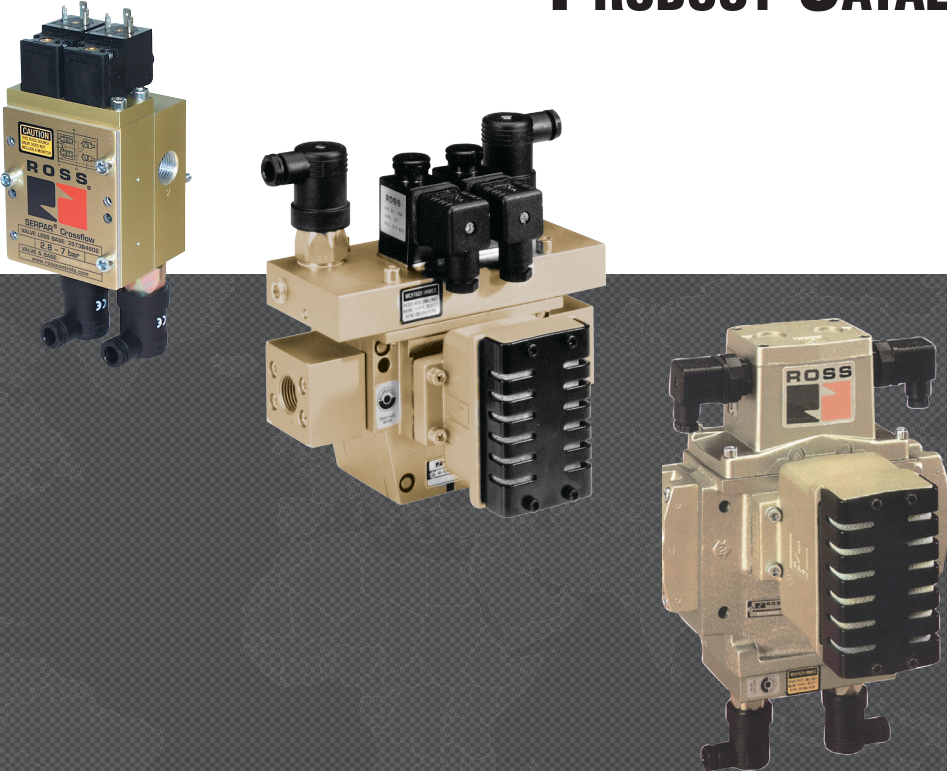




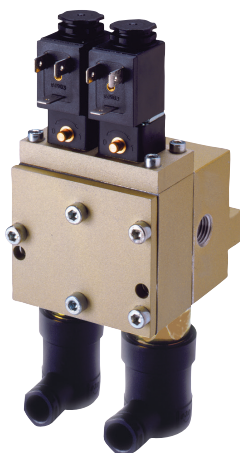
# CLUTCH/BRAKE CONTROL DOUBLE VALVES CROSSFLOW™ 35 SERIES

## PRODUCT CATALOG



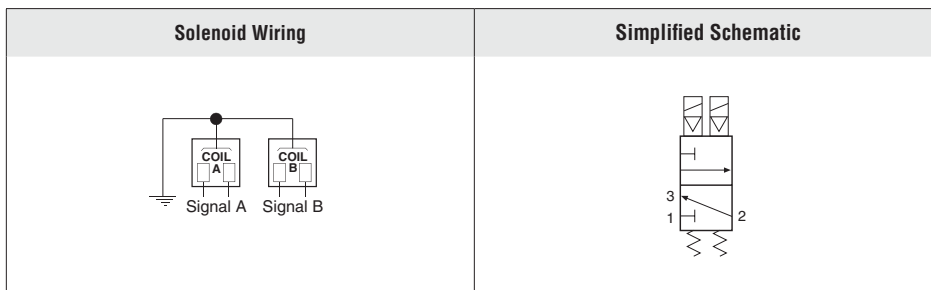
# CROSSFLOW™ Double Valves for External Monitoring – with or without Pressure Switches

## Product Overview



### Clutch/Brake Control Function

The CROSSFLOW™ double valve is designed to provide control of clutch/brake mechanisms on stamping presses, and many other critical applications such as alternative lockout systems for energy isolation, air cylinder press load-holding systems, as well as other Category -3 and -4 safety circuits.



### Pressure Switches & Monitoring

Valves without pressure switches must not be used to control clutch/brake mechanisms on press machinery.

Valves with pressure switches must be used in conjunction with an external monitoring device to assist with OSHA compliance (Ref. 1910.217).

## VALVE FEATURES

<b>External Monitoring</b>	Dynamic, cyclical, external with customer supplied equipment. Monitoring should check state of both valve pressure sensors with any and all changes in state of valve control signals.
<b>Poppet Design</b>	Dirt tolerant, wear compensating for quick response and high flow capacity
<b>PTFE Backup Piston Rings</b>	Enhances valve endurance enabling operation with or without in-line lubrication
<b>Pressure Switches</b>	Valves equipped with pressure switches (when externally monitored), provide feedback signals, which allows the main press controls, or separate monitoring device, to check for proper operation of each valve element on every cycle.
<b>Silencer</b>	High flow, clog resistant silencer included on Basic Size 4, 8, 12, and 30
<b>Mounting</b>	Basic Size 1 – Base mounted for ease of valve replacement; Captive valve-to-base mounting screws Basic Size 2 – Base mounted with right or left inlet orientation option Basic Size 4, 8, 12, and 30 – Inline mounted with flanged ports
<b>SISTEMA Library</b>	Available for download at <a href="http://rosscontrols.com">rosscontrols.com</a> .

## PRODUCT CREDENTIALS

Safety Category	DGVV (German Social Accident Insurance)	CE Conformity Declaration	EAC Conformity Declaration	ISO Standard	CSA Certificate of Compliance	CRN Certification
				ISO 13849-1:2015		Available for appropriately tested valves

## STANDARD SPECIFICATIONS

<b>GENERAL</b>	Function		3/2 Normally Closed valve			
	Construction Design		Dual Poppet			
	Actuation		Electrical – Solenoid Pilot Controlled			
	Mounting	Type	Valve Basic Size	1, 2	Base mounted, threaded ports	
		Orientation	4, 8, 12, 30	Inline mounted, threaded ports		
	Connection		Threaded; G, NPT			
	Monitoring		Dynamic, cyclical, external with customer supplied equipment			
	Minimum Operation Frequency		Once per month, to ensure proper function			
<b>OPERATING CONDITIONS</b>	Temperature	Ambient	15° to 122°F (-10° to 50°C)			
		Media	40° to 175°F (4° to 80°C)			
	Flow Media		Filtered air			
	Operating Pressure	Valve Basic Size	1, 2	40 to 100 psig (2.8 to 7 Bar)		
4			40 to 150 psig (2.8 to 10 Bar)			
8, 12, 30			30 to 125 psig (2 to 8.5 Bar)			
<b>ELECTRICAL DATA</b>	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 <i>Voltages at pressure switches must not exceed 250 volts.</i>			
	Power Consumption	Solenoids	Valve Basic Size	1	7.5 watts nominal on DC; 12 VA maximum inrush, 9.8 VA maximum holding on AC 50/60 Hz	
				2	6 watts nominal on DC; 8.5 VA maximum inrush, 8.5 VA maximum holding on AC 50/60 Hz	
				4	14 watts nominal on DC; 35 VA maximum inrush, 22 VA maximum holding on AC 50/60 Hz	
				8, 12, 30	16 wats nominal on DC; 8.5 VA maximum inrush, 8.5 maximum holding on AC 50/60Hz	
	Enclosure Rating	Valve Basic Size	1, 2	IP65, IEC 60529		
			4, 8, 12, 30	IP 65 according to IEC-Publication 144 and DIN 40050, Sheet 1		
	Electrical Connection	Valve Basic Size	1	Electrical connection type – DIN EN 175301-803 (DIN) Form B		
			2, 4, 8, 12, 30	Electrical connection type – DIN EN 175301-803 (DIN) Form A		
Mechanical Pressure Switch (Status Indicator) Rating		NO/NC Contacts - 0.1 A, 125/250 volts AC; 0.1 A, 30 volts DC; 0.3 A, 60 volts DC				
Solid State Pressure Sensor (Status Indicator) Rating		Supply Voltage - 8-30 volts DC Current Consumption <4mA				
<b>CONSTRUCTION MATERIAL</b>	Valve Body		Cast Aluminum			
	Poppet		Acetal and Stainless Steel			
	Seals		Buna-N			
<b>SAFETY DATA</b>	Functional Safety Data	Category	CAT 4, PL e			
		B <sub>100</sub>	20,000,000			
		PFH <sub>D</sub>	7.71x10 <sup>-9</sup>			
		MTTF <sub>D</sub>	301.9 (n <sub>op</sub> : 662400)			
	Vibration/Impact Resistance		Tested to DIN EN 60068-2-6			

**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 1

<b>Thread</b>	<b>Series</b>	<b>Revision Level</b>	<b>Pressure Switch</b>
G <span style="color: red;">D</span>	<b>35</b> <b>73</b> <b>B</b> <b>2632</b> <b>W</b>		None/Valve Only (N/A) <span style="color: red;">Leave Blank</span>
NPT <span style="color: red;">Leave Blank</span>	<b>Type/Function</b>		Mechanical Pressure Switch <span style="color: red;">1</span>
	3/2-Way Solenoid		M12 Solid State Pressure Sensor <span style="color: red;">2</span>

Port Size	Pressure Switches#	
1/4	None	<span style="color: red;">2632</span>
	Two	<span style="color: red;">2642</span>
3/8	None	<span style="color: red;">2645</span>
	Two	<span style="color: red;">2644</span>

Voltage*	
24 volts DC	<span style="color: red;">W</span>
110-120 volts AC, 50/60 Hz	<span style="color: red;">Z</span>
230 volts AC, 50/60 Hz**	<span style="color: red;">Y</span>

\*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).

Valve and base can be ordered separately, see valve technical data page.

# Only valves with pressure switches should be used to control clutch/brake mechanisms on press machinery. The pressure switches must be used in conjunction with a monitoring device to assist with OSHA compliance (Ref. 1910.217).

### Pressure Switches & Monitoring

Valves without pressure switches must not be used to control clutch/brake mechanisms on press machinery.

Valves with pressure switches must be used in conjunction with an external monitoring device to assist with OSHA compliance (Ref. 1910.217).

The valves on this page do not have a built-in monitor, and so must only be used in conjunction with an external monitoring system. Such monitoring system must be capable of inhibiting the operation of the valve and associated machinery in the event of a failure within the valve.

**CAUTION:** If the system must be reset, electrical signals to both solenoids must be removed to prevent the machine from immediately recycling and producing a potentially hazardous condition.

Port Sizes	Pressure Switches	Flow C <sub>v</sub>		Avg. Response Constants			Weight lb (Kg)
		1-2	2-3	M	F		
					1-2	2-3	
1/4	None	0.9	1.4	28	4.6	3.4	2.1 (0.95)
	Two	0.9	1.4	28	4.6	3.4	2.5 (1.14)
3/8	None	1.2	1.7	25	3.1	2.8	2.5 (1.14)
	Two	1.2	1.7	25	3.1	2.8	2.9 (1.32)

#### 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

## MODEL NUMBER CONFIGURATOR 3-Way 2-Position Valves

### VALVE BASIC SIZE 2

**Thread**

G	D
NPT	Leave Blank

**Series**

35    73

**Type/Function**

3/2-Way Solenoid

**Pressure Switch**

None/Valve Only (N/A)	Leave Blank
Mechanical Pressure Switch	1
M12 Solid State Pressure Sensor	2

**Pressure Switch**

None/Valve Only (N/A)	Leave Blank
Mechanical Pressure Switch	1
M12 Solid State Pressure Sensor	2

**Pressure Switch**

None/Valve Only (N/A)	Leave Blank
Mechanical Pressure Switch	1
M12 Solid State Pressure Sensor	2

Inlet Orientation	Port Size		Pressure Switches#	Model
	1,2	3		
Left Hand	1/2	3/4	None	C4652
			Two	C4741
		1	None	A4735
	3/4	3/4	None	C4645
			Two	C4644
		1	Two	A4738

Inlet Orientation	Port Size		Pressure Switches#	Model
	1,2	3		
Right Hand	1/2	3/4	None	C4658
			Two	B4702
		1	None	B4717
	3/4	1	Two	B4706
			None	B4718
		Two	B4715	

**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).

Valve and base can be ordered separately, see valve technical data page.

# Only valves with pressure switches should be used to control clutch/brake mechanisms on press machinery. The pressure switches must be used in conjunction with a monitoring device to assist with OSHA compliance (Ref. 1910.217).

### Pressure Switches & Monitoring

Valves without pressure switches must not be used to control clutch/brake mechanisms on press machinery. Valves with pressure switches must be used in conjunction with an external monitoring device to assist with OSHA compliance (Ref. 1910.217). The valves on this page do not have a built-in monitor, and so must only be used in conjunction with an external monitoring system. Such monitoring system must be capable of inhibiting the operation of the valve and associated machinery in the event of a failure within the valve.

**CAUTION:** If the system must be reset, electrical signals to both solenoids must be removed to prevent the machine from immediately recycling and producing a potentially hazardous condition.

Port Sizes		Pressure Switches	Flow C <sub>v</sub>		Avg. Response Constants			Weight lb (Kg)
					M	F		
1, 2	3		1-2	2-3				
1/2	3/4	None	3.7	9.0	25	1.2	0.9	4.7 (2.13)
		Two	3.7	9.0	25	1.2	0.9	5.2 (2.36)
	1	None	3.7	9.1	25	1.2	0.9	5.2 (2.36)
		Two	3.7	9.1	25	1.2	0.9	5.7 (2.58)
3/4	3/4	None	4.2	9.0	25	1.1	0.9	4.7 (2.13)
		Two	4.2	9.0	25	1.1	0.9	5.2 (2.36)
	1	None	4.2	9.3	25	1.1	0.8	5.2 (2.36)
		Two	4.2	9.3	25	1.1	0.8	5.7 (2.58)

<b>Valve Response Time</b>	<p>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:</p>	<p><b>Vlv. Resp. Time (msec) = M + F * V</b>  <b>M</b> = avg. time for parts movement  <b>F</b> = msec. per cubic inch of volume  <b>V</b> = volume in cubic inches</p>
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# Ordering Information

## MODEL NUMBER CONFIGURATOR

## 3-Way 2-Position Valves

### VALVE BASIC SIZE 4

<b>Thread</b>	<b>Series</b>	<b>Revision Level</b>	<b>Inlet Orientation</b>	<b>Pressure Switch</b>
G <span style="color: red;">D</span>	<b>35</b>	<b>73</b>	Right <span style="color: red;">0</span>	None/Valve Only (N/A) <span style="color: red;">Leave Blank</span>
NPT <span style="color: red;">Leave Blank</span>	<b>Type/Function</b>	<b>C</b>	Left <span style="color: red;">6</span>	Mechanical Pressure Switch <span style="color: red;">1</span>
	3/2-Way Solenoid	<b>327</b>		M12 Solid State Pressure Sensor <span style="color: red;">2</span>
		<b>0</b>		
		<b>W</b>		

Port Size – Flanged Ports		
Basic Size	Port Size	
4	3/8	<span style="color: red;">327</span>
	1/2	<span style="color: red;">427</span>
	3/4	<span style="color: red;">523</span>

Voltage*	
24 volts DC	<span style="color: red;">W</span>
110-120 volts AC, 50/60 Hz	<span style="color: red;">Z</span>
230 volts AC, 50/60 Hz**	<span style="color: red;">Y</span>

\*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).

### Pressure Switches & Monitoring

Valves with pressure switches must be used in conjunction with an external monitoring device to assist with OSHA compliance (Ref. 1910.217). The valves on this page do not have a built-in monitor, and so must only be used in conjunction with an external monitoring system. Such monitoring system must be capable of inhibiting the operation of the valve and associated machinery in the event of a failure within the valve.

**CAUTION:** If the system must be reset, electrical signals to both solenoids must be removed to prevent the machine from immediately recycling and producing a potentially hazardous condition.

Valve Basic Size	Inlet Port Size	Flow C <sub>v</sub>		Avg. Response Constants			Weight lb (Kg)
		1-2	2-3	M	F		
					1-2	2-3	
4	3/8	3	7	15	0.70	0.40	8.4 (3.8)
	1/2	3	9	15	0.65	0.35	
	3/4	3	11	15	0.65	0.35	

<b>Valve Response Time</b>	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:	<b>Vlv. Resp. Time (msec) = M + F *V</b> <b>M</b> = avg. time for parts movement <b>F</b> = msec. per cubic inch of volume <b>V</b> = volume in cubic inches
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## MODEL NUMBER CONFIGURATOR 3-Way 2-Position Valves

VALVE BASIC SIZE 8, 12, 30

<b>Thread</b>		<b>Series</b>	<b>Revision Level</b>							
G	D	35	D	4638	W					
NPT	Leave Blank	<b>Type/Function</b>				<b>Pressure Switch</b>				
		3/2-Way Solenoid				None/Valve Only (N/A)		Leave Blank		
						Mechanical Pressure Switch		1		
						M12 Solid State Pressure Sensor		2		
<b>Port Size – Flanged Ports</b>										
<b>Basic Size</b>	<b>Port Size</b>									
8	1/2	4638								
	3/4	5638								
12	3/4	5632								
8	1	6638								
	12	1	6632							
12	1-1/4	7632								
	30	1-1/4	7630							
	1-1/2	8630								
			<b>Voltage*</b>							
			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).							

### Pressure Switches & Monitoring

Valves with pressure switches must be used in conjunction with an external monitoring device to assist with OSHA compliance (Ref. 1910.217). The valves on this page do not have a built-in monitor, and so must only be used in conjunction with an external monitoring system. Such monitoring system must be capable of inhibiting the operation of the valve and associated machinery in the event of a failure within the valve.

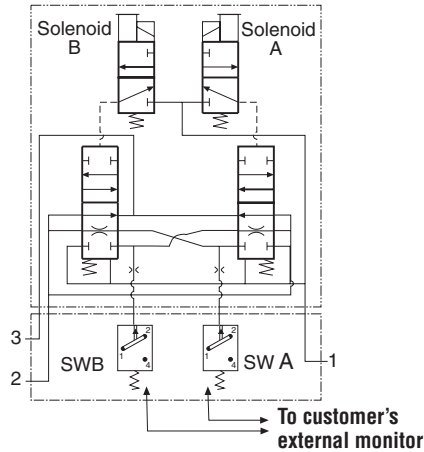
**CAUTION:** If the system must be reset, electrical signals to both solenoids must be removed to prevent the machine from immediately recycling and producing a potentially hazardous condition.

Valve Basic Size	Inlet Port Size	Flow C <sub>v</sub>		Avg. Response Constants			Weight lb (Kg)
				M	F		
		1-2	2-3		1-2	2-3	
8	1/2	3.5	10	15	0.70	0.30	11.4 (5.2)
	3/4	4	14	15	0.65	0.23	
12	3/4	8	15	15	0.65	0.23	
8	1	4	14	20	0.33	0.21	15.4 (7.0)
	12	1	8.5	19	0.28	0.21	
	12	1-1/4	9.0	21	20	0.28	
30	1-1/4	20	42	25	0.19	0.07	33.9 (15.4)
	1-1/2	21	43	25	0.18	0.07	

<b>Valve Response Time</b>	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:	$\text{Viv. Resp. Time (msec)} = M + F * V$ M = avg. time for parts movement F = msec. per cubic inch of volume V = volume in cubic inches
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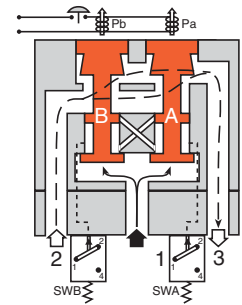
# Valve Operation

Valve Schematic



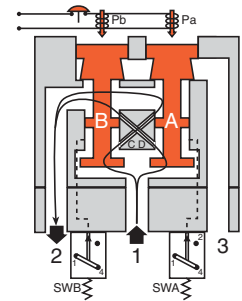
## Conditions at Start

Inlet 1 is closed to outlet 2 by both valve elements A and B. Outlet 2 is open to exhaust 3. Pressure signals at both switches SWA and SWB are exhausted. Contacts 1 and 2 of switches SWA and SWB are connected.



## 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. Sensing pressure signals go to each pressure switch and become equal to inlet pressure. Both switches trip and now contacts 1 and 4 of switches SWA and SWB are connected instead of contacts 1 and 2.

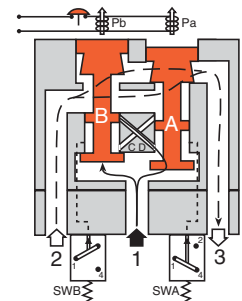


## Completion of Normal Cycle

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 2% of inlet pressure. Full sensing air pressure from side A goes to switch SWA, and a reduced pressure goes to switch SWB. This full pressure signal causes switch SWA to trip. Switch SWB, with a reduced pressure signal, does not trip. An external monitoring system can detect the malfunction by monitoring the condition of the switches SWA and SWB. The external monitoring system may then react accordingly by shutting down the power to the valve solenoids and any other components deemed necessary to stop the machine.



## CAUTION

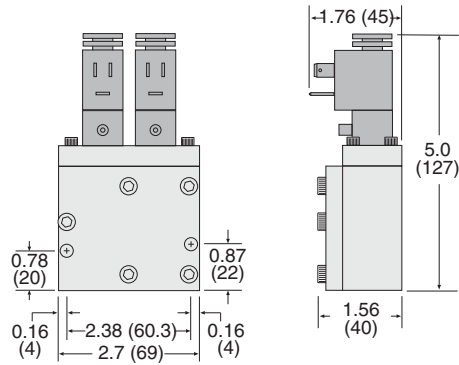
If the system must be reset, electrical signals to both solenoids must be removed to prevent the machine from immediately recycling and producing a potentially hazardous condition.

## Valve Basic Size 1

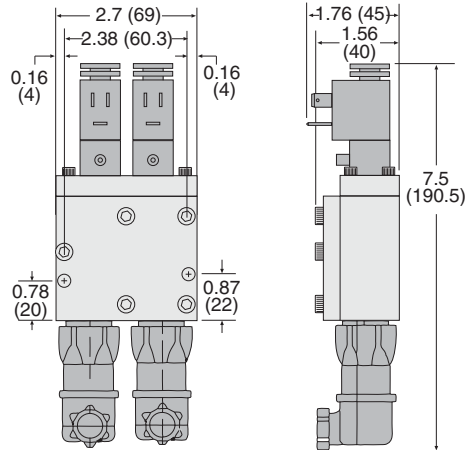
### DIMENSIONS

Inches (mm)

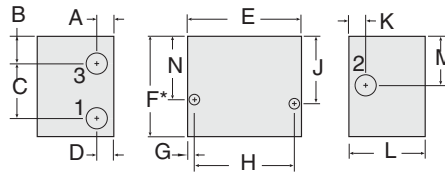
Valve without Pressure Switches



Valve with Pressure Switches



Base



For additional information, and to assist you with piping and connectivity designs, our products are available in downloadable 2D drawings and 3D CAD models in a wide range of options including native formats, visit [www.rosscontrols.com](http://www.rosscontrols.com).

Model Number		BASE Dimensions – inches (mm)												
Valve & Base	Base	A	B	C	D	E	F	G	H	J	K	L	M	N
3573B2632	1120C91	0.4 (11)	0.7 (17)	1.29 (32.8)	0.4 (11)	2.7 (69)	2.4 (61)	0.2 (5)	2.38 (60.5)	1.6 (41)	0.4 (11)	1.8 (46)	1.2 (30)	1.5 (38)
3573B2642	888C91													
3573B2644	1171C91	0.5 (13)	0.6 (15)	1.47 (37.2)	0.5 (13)	2.7 (69)	2.5 (63)	0.2 (5)	2.38 (60.5)	1.6 (41)	0.8 (19)	1.8 (46)	1.1 (27)	1.5 (38)
3573B2645	1172C91													

For replacement valve only (less base), order model number 3573B2602.

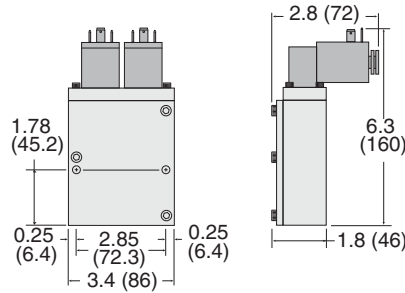
# Valve Technical Data

## Valve Basic Size 2

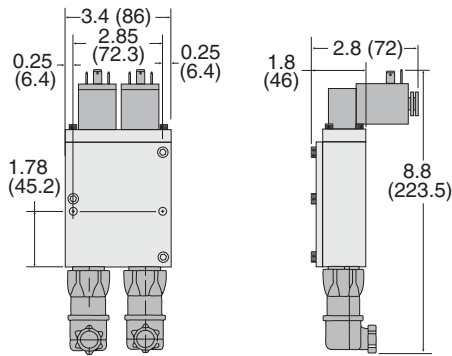
### DIMENSIONS

Inches (mm)

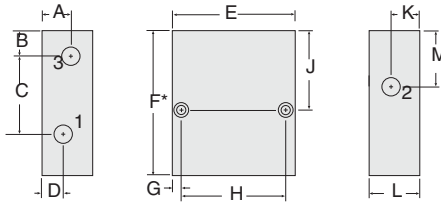
Valve without Pressure Switches



Valve with Pressure Switches



Base



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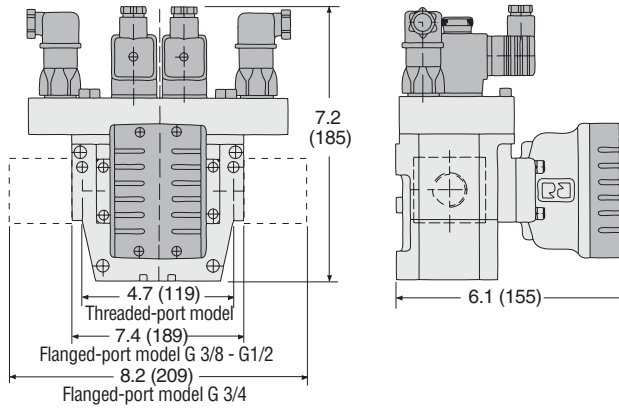
Model Number			BASE Dimensions – inches (mm)												
Valve & Base	Base	Replacement Valve	A	B	C	D	E	F	G	H	J	K	L	M	
3573A4735	1633C01	3573B4605L	Consult ROSS.												
3573A4736	1633C01	3573B4605L													
3573A4738	1163C91	3573B4605L													
3573B4702	1132C91	3573C4602R													
3573B4706	1132C91	3573B4605R													
3573B4715	1784C91	3573B4605R													
3573B4717	1805F91	3573B4605R													
3573B4718	1806F91	3573B4605R													
3573B4741	1129C91	3573C4602L	Consult ROSS.												
3573C4644	1163C91	3573C4602L													
3573C4645	1163C91	3573C4602L	1.1 (27)	0.8 (19)	2.86 (72.7)	0.7 (17)	3.7 (94)	4.3 (110)	0.3 (7)	2.85 (72.4)	2.6 (64)	0.7 (17)	2.0 (50)	1.8 (46)	
3573C4652	1129C91	3573C4602L	1.1 (27)	1.0 (24)	2.32 (58.9)	0.6 (15)	3.4 (86)	4.3 (110)	0.3 (7)	2.85 (72.4)	2.6 (64)	0.8 (19)	1.7 (44)	1.9 (48)	
3573C4658	1132C91	3573C4602R	Consult ROSS.												

## Valve Basic Size 4, 8, 12, 30

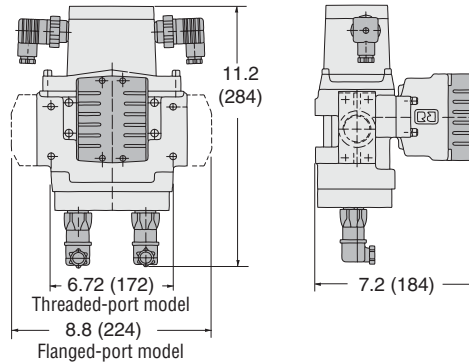
### DIMENSIONS

Inches (mm)

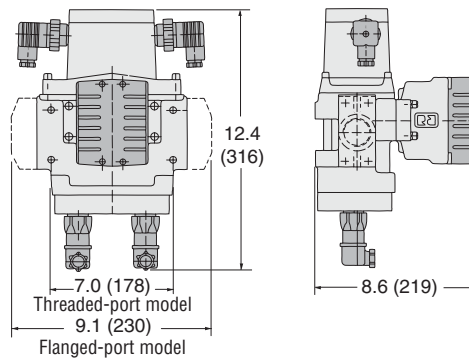
Basic Size 4



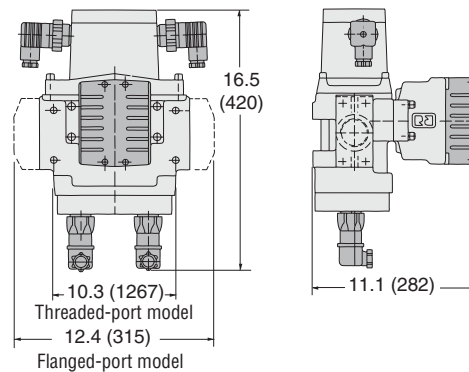
Basic Size 8



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 drawings and 3D CAD models in a wide range of options including native formats, visit [www.rosscontrols.com](http://www.rosscontrols.com).

# Accessories

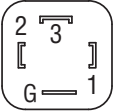
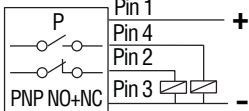
## ELECTRICAL STATUS INDICATION

Pressure Switches (Electrical Lockout Indicators)	Indicator Type	Installation Location	Connector Type	Model Number	Port Thread	Factory Preset psi (bar)
	Mechanical Pressure Switch	Pressure Sensing Port	DIN EN 175301-803 Form A	1104A30	M10x1	22 (1.5) falling
	Solid State Pressure Sensor	Pressure Sensing Port	M12	1335B30W	M10x1	17 (1.2) falling

## ENERGY RELEASE VERIFICATION

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

### Connectors Pinout

DIN EN 175301-803 Form A	M12
 <p>1 - Common 2 - Normally Closed 3 - Normally Open G - Ground</p>	 <p>1, 2, 3, 4 - Pin PNP - Switched Positive NO - Normally Open NC - Normally Closed</p>

## ELECTRICAL CONNECTORS

Pre-wired Connectors	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	DIN 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
	DIN EN 175301-803 Form B**	Connector	Flying leads	2 (6.5)	10-mm	372K77	382K77-W	382K77-Z	382K77-Y	1	

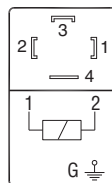
\* Used on Valve Basic Size 2, 4, 8, 12, 30 only.  
\*\* Used on Valve Basic Size 1 only.

Connectors (no cable)	Connection Type	For Valve Basic Size	Connector Type	Fitting Connection	Kit Number				Quantity
					Without Light	Lighted Connector			
						24 V DC	120 V AC	230 V AC	
Solenoid	2, 4, 8, 12, 30	DIN EN 175301-803 Form A	Cable grip	937K87	936K87-W	936K87-Z	936K87-Y	1	
				1/2" NPT conduit	723K77	724K77-W	724K77-Z	724K77-Y	1
	1	DIN EN 175301-803 Form B	Cable grip	266K77	267K77-W	267K77-Z	267K77-Y	1	

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

### Solenoid Connectors Pinout

#### EN DIN Connector



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

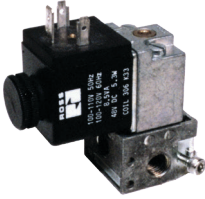


**SILENCERS**

	Port Size	Thread Type	Model Number		Flow Avg. C <sub>v</sub>	Pressure Range psig (bar)
			R Thread	NPT Thread		
<b>Silencers</b>	1/4	Male	D5500A2003	5500A2003	2.1	0-290 (0-20) maximum
	3/8	Male	D5500A3013	5500A3013	2.7	
	1/2	Male	D5500A4003	5500A4003	4.7	
	3/4	Male	D5500A5013	5500A5013	5.1	
			D5500A5003	5500A5003	12	
	1	Male	D5500A6003	5500A6003	15	

# Accessories

## 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 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
			

### Direct Solenoid Pilot Control – Compact Valves 16 Series for Line Mounting

Valve Type	Port Size	Valve Model Number*						Flow $C_v$	Average Response Constants**	
		G Thread			NPT 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	D1613B1020W	D1613B1020Z	D1613B1020Y	1613B1020W	1613B1020Z	1613B1020Y	0.3	5	2.90

\* For other voltages, consult ROSS.

<b>**Valve Response Time</b>	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:	<b>Vlv. Resp. Time (msec) = M + F * V</b> <b>M</b> = avg. time for parts movement <b>F</b> = msec. per cubic inch of volume <b>V</b> = volume in cubic inches
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### Direct Solenoid Pilot Control – Miniature Valve W14 Series for Base Mounting

Valve Type	Override Type	Valve Model Number*			Flow $C_v$
		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

\* For other voltages, consult ROSS.

<b>Sub-Base for Direct Solenoid Control Valves</b> (Required for use with Miniature Valve W14 Series Valves)	<b>Sub-Base Model Number</b>	
	<b>G Thread</b>	<b>NPT Thread</b>
	D516B91	516B91

### Manual Palm Button Valves 12 Series

Valve Style	Valve Operator Type	Port Size	Button Color	Valve Model Number		Flow $C_v$
				G Thread	NPT Thread	
Heavy Duty Palm Button	3/2 NC Spring Return	1/4	Green	D1223B2001	1223B2001	0.8
			Red	D1223B2003	1223B2003	
Flush Pushbutton	3/2 NC Spring Return	1/4	Green	D1223B2FPG	1223B2FPG	0.9
			Red	D1223B2FPR	1223B2FPR	
Mushroom Button	3/2 Spring Return	1/4	Green	D1223B2MBG	1223B2MBG	
			Red	D1223B2MBR	1223B2MBR	

# CAUTIONS, WARNINGS And STANDARD WARRANTY



ROSS OPERATING VALVE, ROSS CONTROLS®, ROSS DECCO®, and AUTOMATIC VALVE INDUSTRIAL, collectively the “ROSS Group”.

## 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 Group 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 Group 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 Group location.
4. Each ROSS Group Product should be used within its specification limits. In addition, use only ROSS Group components to repair ROSS Group 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 Group recommends a filter with a 5-micron rating for normal applications.
2. All standard ROSS Group 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®, N06 and N16 Series 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 Group are warranted for a one-year period [with the exception of Filters, Regulators and Lubricators (“FRLs”) 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 Group's obligation under this warranty is limited to repair, replacement or refund of the purchase price paid for products which the ROSS Group 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 Group freight prepaid.

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