



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.





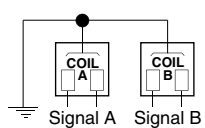
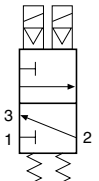
Valve Basic Size			
1	2	4	8, 12, 30
			

Illustration examples.

Solenoid Wiring		Simplified Schematic	
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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

External Monitoring	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.
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
Pressure Switches	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.
Silencer	High flow, clog resistant silencer included on Basic Size 4, 8, 12, and 30
Mounting	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
SISTEMA Library	Available for download

PRODUCT CREDENTIALS

Performance Level Per ISO 13849-1:2015 	Safety Integrity Level Per IEC 2061:2001 	DGUV 	Declaration of Conformity   	Certificate of Compliance 
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STANDARD SPECIFICATIONS						
GENERAL	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	
				4, 8, 12, 30	Inline mounted, threaded ports	
	Orientation		Vertically with pilot solenoids on top			
	Connection		Threaded		NPT, G	
	Monitoring		Dynamic, cyclical, external with customer supplied equipment			
Minimum Operation Frequency		Once per month, to ensure proper function				
OPERATING CONDITIONS	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)			
ELECTRICAL DATA	Power Consumption	Solenoids	Current Flow	Operating Voltage	Valve Basic Size	Power Consumption (each solenoid)
					DC	24 volts
			2	6 watts nominal		
			4	14 watts nominal		
			8, 12, 30	16 watts nominal		
			AC	110-120 volts, 50/60 Hz	1	12 VA maximum inrush, 9.8 VA maximum holding
					2	8.5 VA maximum inrush, 8.5 VA maximum holding
					4	35 VA maximum inrush, 22 VA maximum holding
					8, 12, 30	8.5 VA maximum inrush, 8.5 maximum holding
			Rated for continuous duty			
<i>Voltages at pressure switches must not exceed 250 volts.</i>						
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	DIN EN 175301-803 Form B		
			2, 4, 8, 12, 30	DIN EN 175301-803 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				
CONSTRUCTION MATERIAL	Valve Body		Cast Aluminum			
	Poppet		Acetal and Stainless Steel			
	Seals		Buna-N			
SAFETY DATA	Functional Safety Data		Category	CAT 4, PL e		
			B _{10D}	20,000,000		
			PFH _D	7.71x10 ⁻⁹		
			MTTF _D	301.9 (n _{op} : 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

	35	7	3	B	2632	W	
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Port Thread	
NPT	
Leave Blank	
G	D

Series

Actuation
Solenoid Controlled

Valve Function
3/2

Revision Level

Port Size	Pressure Switches [#]	
1/4	None	2632
	Two	2642
3/8	None	2645
	Two	2644

Pressure Switch	
Mechanical Pressure Switch	
Leave Blank	
M12	2

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

* For other voltages consult ROSS.
** 230 V AC (OSHA regulations limit press control voltage to no more than 120 V AC in the US).

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).

Model Number examples: D3573B2632W, 3573B2644Z1.

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 <i>C_v</i> (NI/min)		Avg. Response Constants			Weight lb (Kg)
		1-2	2-3	M	F		
					1-2	2-3	
1/4	None	0.9 (890)	1.4 (1400)	28	4.6	3.4	2.1 (0.95)
	Two	0.9 (890)	1.4 (1400)	28	4.6	3.4	2.5 (1.14)
3/8	None	1.2 (1200)	1.7 (1700)	25	3.1	2.8	2.5 (1.14)
	Two	1.2 (1200)	1.7 (1700)	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

35
7
3
C
4652
W

Port Thread		
NPT		
Leave Blank		
G		D

Series

Actuation	
Solenoid	

Valve Function	
3/2	

Pressure Switch	
None	
Leave Blank	
Mechanical Pressure Switch *	
Leave Blank	
M12 Solid State Pressure Sensor *	2
* When Two Pressure Switches are selected	

Inlet Orientation	Port Size		Pressure Switches#	Revision Level	
	1,2	3			
Left Hand	1/2	3/4	None	C	4652
			Two	C	4741
		1	None	A	4735
	Two		A	4736	
	3/4	3/4	None	C	4645
			Two	C	4644
1		Two	A	4738	

Inlet Orientation	Port Size		Pressure Switches#	Revision Level	
	1,2	3			
Right Hand	1/2	3/4	None	C	4658
			Two	B	4702
		1	None	B	4717
	Two		B	4706	
	3/4	1	None	B	4718
			Two	B	4715

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

* For other voltages consult ROSS.
** 230 V AC (OSHA regulations limit press control voltage to no more than 120 V AC in the US).

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).

Model Number examples: D3573C4652W, 3573A4736Z1.

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 _v (NI/min)		Avg. Response Constants			Weight lb (Kg)
1, 2	3		1-2	2-3	M	F		
						1-2	2-3	
1/2	3/4	None	3.7 (3600)	9.0 (8900)	25	1.2	0.9	4.7 (2.13)
		Two	3.7 (3600)	9.0 (88900)	25	1.2	0.9	5.2 (2.36)
	1	None	3.7 (3600)	9.1 (9000)	25	1.2	0.9	5.2 (2.36)
		Two	3.7 (3600)	9.1 (9000)	25	1.2	0.9	5.7 (2.58)
3/4	3/4	None	4.2 (4100)	9.0 (8900)	25	1.1	0.9	4.7 (2.13)
		Two	4.2 (4100)	9.0 (8900)	25	1.1	0.9	5.2 (2.36)
	1	None	4.2 (4100)	9.3 (9200)	25	1.1	0.8	5.2 (2.36)
		Two	4.2 (4100)	9.3 (9200)	25	1.1	0.8	5.7 (2.58)

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

Ordering Information

MODEL NUMBER CONFIGURATOR

3-Way 2-Position Valves

VALVE BASIC SIZE 4

	35	7	3	C	327	0	W			
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								327	
	1/2								427	
	3/4								523	
				Pressure Switch						
				Mechanical Pressure Switch						
				Leave Blank						
				M12 Solid State Pressure Sensor		2				
				Current		Voltage*				
				DC		24 V		W		
				AC		110 V, 50 Hz		Z		
						120 V, 50/60 Hz		Y		
						230 V, 50/60 Hz **				
				* For other voltages consult ROSS.						
				** 230 V AC (OSHA regulations limit press control voltage to no more than 120 V AC in the US).						
				Inlet Orientation						
				Right		0				
				Left		6				

Model Number examples: D3573C3276W, 3573C2530Z2.

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.

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	3.0 (3000)	7.0 (6900)	15	0.70	0.40	8.4 (3.8)
	1/2	3.0 (3000)	9.0 (8900)	15	0.65	0.35	
	3/4	3.0 (3000)	11 (11000)	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:

$$\text{Vlv. Resp. Time (msec)} = M + F * V$$

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 8, 12, 30

Port Thread	
NPT	
Leave Blank	
G	D

Actuation	
Solenoid Controlled	

Valve Function	
3/2	

Port Size – Flanged Ports		
Basic Size	Port Size In-Out	
8	1/2	4638
	3/4	5638
12	3/4	5632
8	1	6638
12	1	6632
	1-1/4	7632
30	1-1/4	7630
	1-1/2	8630

35
7
3
D
4638
W

Series

Revision Level

Pressure Switch		
Mechanical Pressure Switch		
Leave Blank		
M12 Solid State Pressure Sensor		2

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

* For other voltages consult ROSS.
 ** 230 V AC (OSHA regulations limit press control voltage to no more than 120 V AC in the US).

Model Number examples: D3573D4638W, 3573D6632Z2.

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.

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)	10 (9800)	15	0.70	0.30	11.4 (5.2)
	3/4	4.0 (3900)	14 (14000)	15	0.65	0.23	
12	3/4	8.0 (7900)	15 (15000)	15	0.65	0.23	
8	1	4.0 (4000)	14 (14000)	20	0.33	0.21	15.4 (7.0)
		8.5 (8400)	19 (19000)	20	0.28	0.21	
12	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	33.9 (15.4)
	1-1/2	21 (21000)	43 (42000)	25	0.18	0.07	

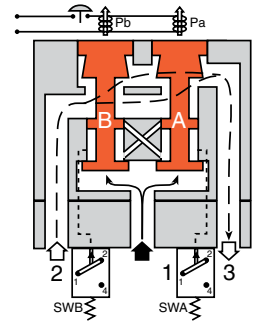
Valve Response Time The constants above, designated M and F, can be used to determine the amount of time required to fill or exhaust a volume of any size using the formula on the right:

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

Valve Operation

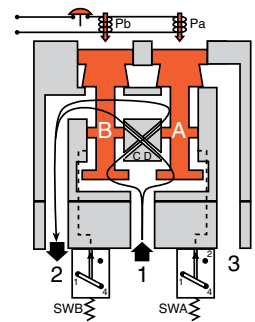
Conditions at Start

Inlet 1 is closed to outlet 2 by both valve elements A and B. Outlet 2 is open to exhaust 3. 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.

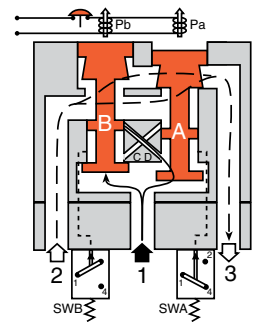


Completion of Normal Cycle

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.

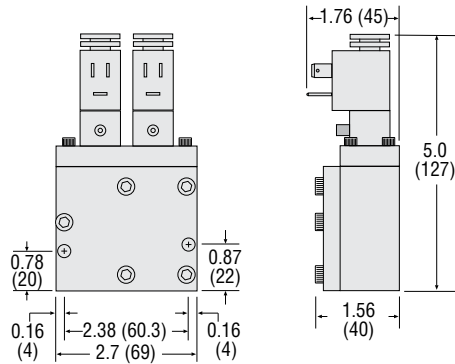
Valve Technical Data

Valve Basic Size 1

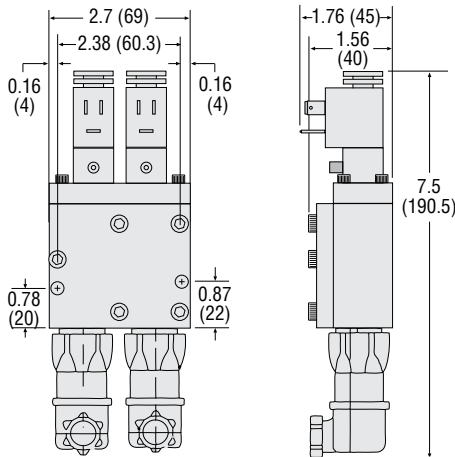
DIMENSIONS

Inches (mm)

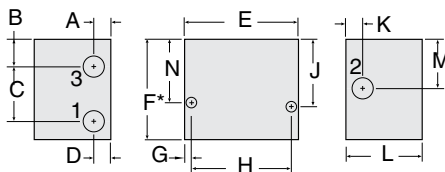
Valve without Pressure Switches



Valve with Pressure Switches



Base



Downloadable CAD models available.

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													

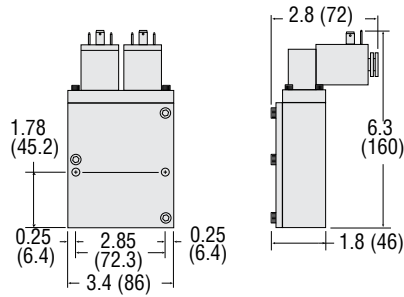
For replacement valve only (less base), order model number 3573B2602.

Valve Basic Size 2

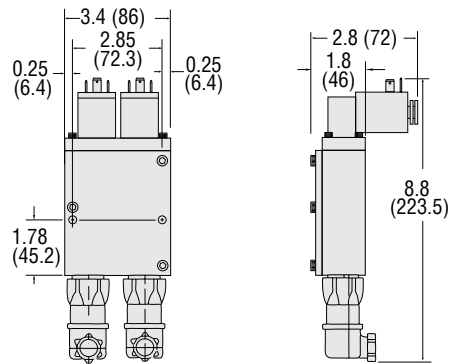
DIMENSIONS

Inches (mm)

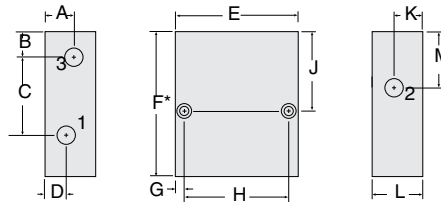
Valve without Pressure Switches



Valve with Pressure Switches



Base



Downloadable CAD models available.

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												
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.											

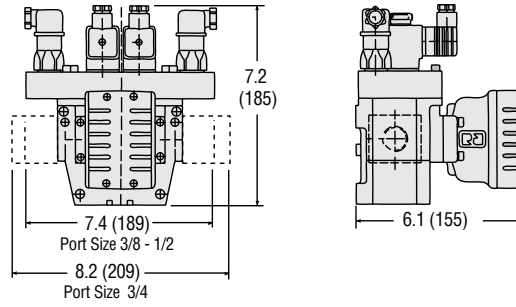
Valve Technical Data

Valve Basic Size 4, 8, 12, 30

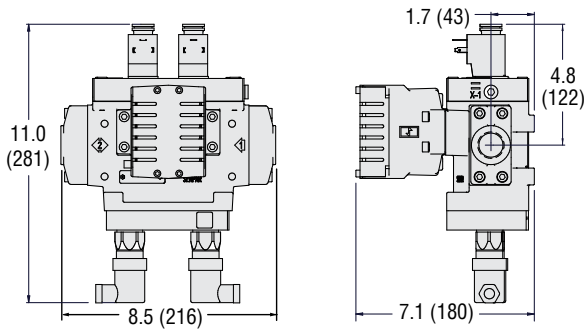
DIMENSIONS

Inches (mm)

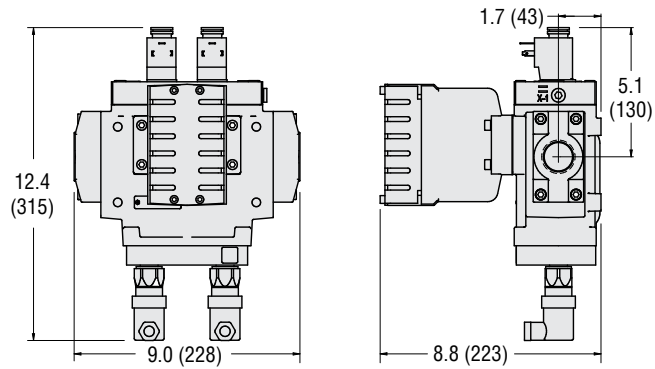
Basic Size 4



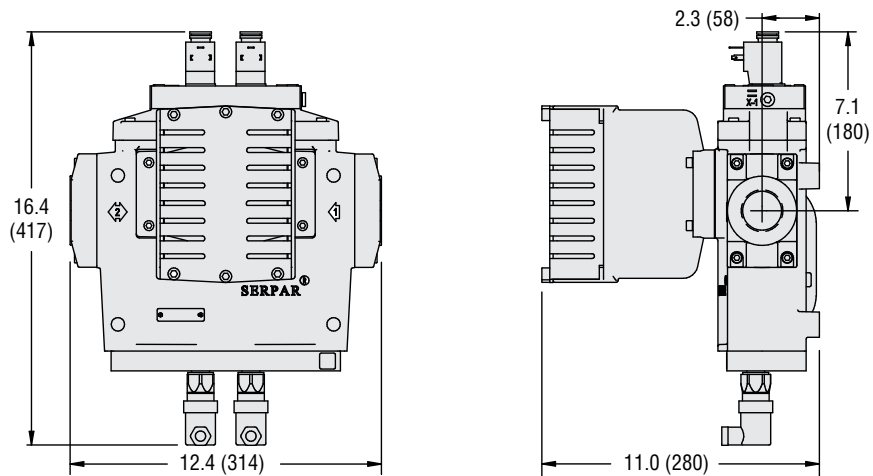
Basic Size 8



Basic Size 12



Basic Size 30



Downloadable CAD models available.

ELECTRICAL STATUS INDICATION



Illustration example.

Pressure Switches (Electrical Lockout Indicator)	Indicator Type	Connector Type	Model Number	Port Thread	Factory Preset psi (bar)
	Mechanical Pressure Switch	DIN EN 175301-803 Form A	1104A30	M10x1	22 (1.5) falling
		M12	1153A30		
Solid State Pressure Sensor	M12	1335B30W	M10x1	17 (1.2) falling	

ENERGY RELEASE VERIFICATION

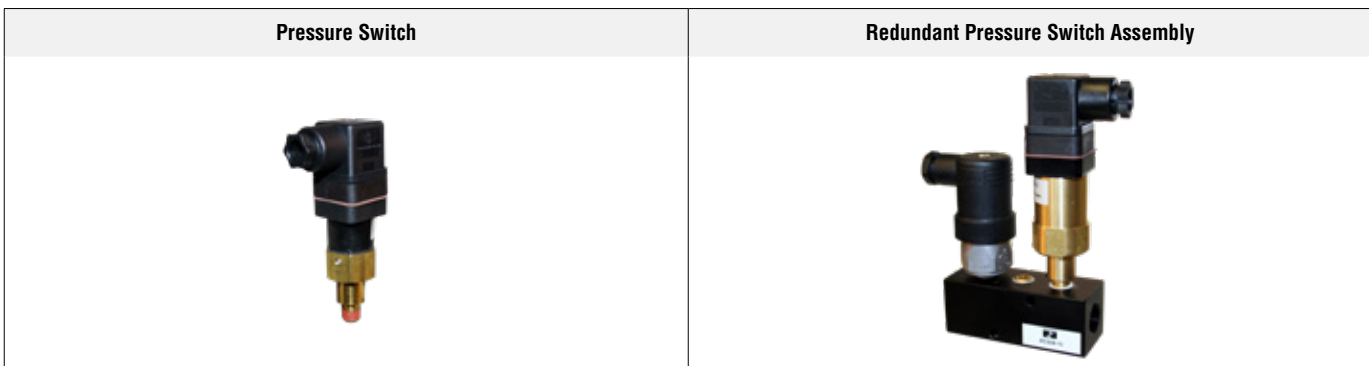


Illustration example.

Pressure Switches	Verification Type	Installation Location	Connector Type	Model Number	Port Thread	Factory Preset psi (bar)
	Electrical	Downstream	DIN EN 175301-803 Form A	586A86	1/8 NPT	5 (0.3) falling

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

Pinouts		
Mechanical Pressure Switch		Solid State Pressure Sensor
DIN EN 175301-803 Form A	M12	M12
<p>1 - Common 2 - Normally Closed 3 - Normally Open 4 - Ground (Not Used)</p>	<p>1 - Common 2 - Normally Closed 3 - Not Used 4 - Normally Open</p>	<p>1, 2, 3, 4 - Pin PNP - Switched Positive NO - Normally Open NC - Normally Closed</p>

Accessories

PREWIRED ELECTRICAL CONNECTORS



Illustration example.

Prewired Connectors	For Valve Basic Size	Cable					Kit Number				
		End 1	End 2	Length feet (meters)	Connection	Quantity Included	Cord Diameter mm	Without Light	Lighted Connector		
		Connector	Cord						24 V DC	120 V AC	230 V AC
2, 4, 8, 12, 30	DIN EN 175301-803 Form A	Flying leads	2 (6.5)	Solenoid	1	6	721K77	720K77-W	720K77-Z	720K77-Y	
						10	371K77	383K77-W	383K77-Z	383K77-Y	
1	DIN EN 175301-803 Form B	Flying leads	2 (6.5)	Solenoid	1	10	372K77	382K77-W	382K77-Z	382K77-Y	

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

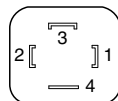
ELECTRICAL CONNECTORS

Connectors	Connection Type	For Valve Basic Size	Connector			Model Number			
			Type	Fitting Connection	Quantity Included	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	1	937K87	936K87-W	936K87-Z	936K87-Y	
			1/2" NPT conduit	1	723K77	724K77-W	724K77-Z	724K77-Y	
	1	DIN EN 175301-803 Form B	Cable grip	1	266K77	267K77-W	267K77-Z	267K77-Y	

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)

EXHAUST SILENCERS



Illustration example.

Silencers	SPECIFICATIONS		Silencer Material		Pressure Range psig (bar)		Schematic	
			Aluminum		0-290 (0-20) maximum			
	Port Size	Thread Type	Flow C _v (NI/min)	Model Number		Dimensions inches (mm)		Weight lb (kg)
NPT Thread				R/Rp Thread	Length	Hex Size (D)		
1/4	Male	2.3 (2300)	5500A2003	D5500A2003	2.2 (6)	0.81 (21)	0.07 (0.03)	
3/8	Male	9.0 (8900)	5500A3013	D5500A3013	2.2 (6)	0.81 (21)	0.07 (0.03)	
1/2	Male	6.8 (6700)	5500A4003	D5500A4003	3.6 (9)	1.25 (32)	0.2 (0.1)	
3/4	Male	7.2 (7100)	5500A5013	D5500A5013	3.6 (9)	1.25 (32)	0.2 (0.1)	
		15 (15000)	5500A5003	D5500A5003	5.3 (14)	2.0 (51)	0.9 (0.4)	
1	Male	18 (18000)	5500A6003	D5500A6003	5.4 (14)	2.0 (51)	0.9 (0.4)	

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.



Illustration example.

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

Valve Type	Port Size	Valve Model Number*						Flow C _v (NI/min)	Average Response Constants**	
		NPT Thread			G Thread				M	F
Normally-Closed	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	0.3 (300)	5	2.90
	1/8	1613B1020W	1613B1020Z	1613B1020Y	D1613B1020W	D1613B1020Z	D1613B1020Y			

* For other voltages, consult ROSS.

**Valve Response Time	<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>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</p>
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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 (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 (Required for use with Miniature Valve W14 Series Valves)	Sub-Base Model Number	
	NPT Thread	G Thread
	516B91	D516B91

Manual Palm Button Valves 12 Series

Valve Style	Valve Operator Type	Port Size	Button Color	Valve Model Number		Flow C _v (NI/min)
				NPT Thread	G Thread	
Heavy Duty Palm Button	3/2 NC Spring Return	1/4	Green	1223B2001	D1223B2001	0.8 (790)
			Red	1223B2003	D1223B2003	
Flush Pushbutton	3/2 NC Spring Return	1/4	Green	1223B2FPG	D1223B2FPG	0.9 (890)
			Red	1223B2FPR	D1223B2FPR	
Mushroom Button	3/2 NC Spring Return	1/4	Green	1223B2MBG	D1223B2MBG	
			Red	1223B2MBR	D1223B2MBR	

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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AMERICAS	ROSS CONTROLS	USA	Tel: +1-248-764-1800	www.rosscontrols.com
	ROSS CONTROLS CANADA Ltd.	Canada	Tel: +1-416-251-7677	www.rosscanada.com
	ROSS DO BRASIL LTDA	Brazil	Tel: +55-11-4335-2200	www.rosscontrols.com.br
EUROPE	ROSS EUROPA GmbH	Germany	Tel: +49 (0)6103-7597-100	www.rosseuropa.com
	ROSS FRANCE SAS	France	Tel: +33-(0)1-49-45-65-65	www.rossfrance.com
	ROSS PNEUMATROL Ltd.	United Kingdom	Tel: +44 (0)1254 872277	www.rossuk.co.uk
ASIA & PACIFIC	ROSS CONTROLS INDIA Pvt. Ltd.	India	Tel: +91-44-2624-9040	www.rosscontrolsindia.com
	ROSS CONTROLS (CHINA) Ltd.	China	Tel: +86-21-6915-7961	www.rosscontrolschina.com
	ROSS ASIA K.K.	Japan	Tel: +81-42-778-7251	www.rossasia.co.jp
	AUTOMATIC VALVE INDUSTRIAL LLC	USA	Tel: +1-248-474-6700	www.automaticvalve.com
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	ROSS PNEUMATROL Ltd.	United Kingdom	Tel: +44 (0)1254 872277	www.pneumatrol.com
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