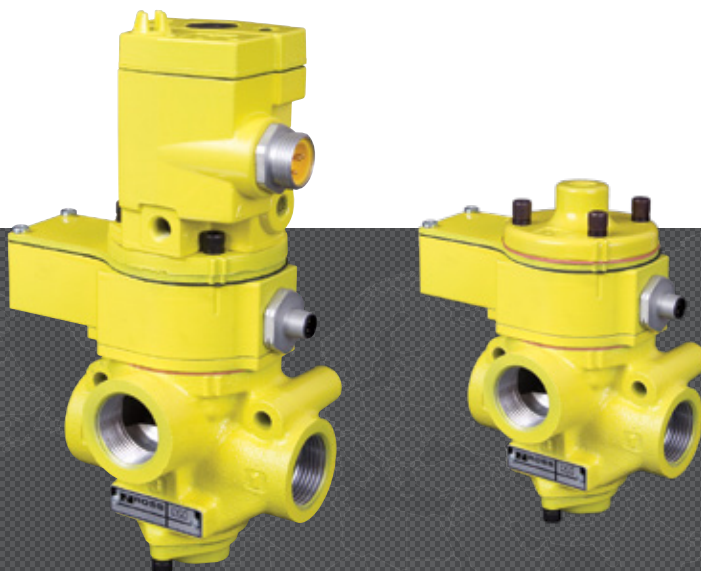




SAFE EXHAUST SENSING VALVES

SV27 SERIES

PRODUCT CATALOG



Sensing Valves SV27 Series

Product Overview

Air/Dump Release Safety Function

The SV27 Series Sensing Valve uses a safety-rated DPST (Double-Pole Single-Throw) switch to monitor the valve's operating position. The SV27 valve can be used for safe shut-off and exhaust functions for Category 2 applications with proper integration and monitoring. The feedback switch informs the controls that the valve internals have shifted properly.



Solenoid Pilot Controlled	Pressure Controlled
	

Illustration examples.







Sensing Valves SV27 Series, based upon the proven 27 Series valve family, combine the tough, dirt tolerant characteristics of poppet technology with sensing for actual poppet position and state.

Electrical feedback is provided via a positively-driven, safety-rated DPST (Double-Pole Single-Throw) switch with both normally open (NO) and normally closed (NC) contacts. For 3/4 and 1 1/4 bodies, the DPST switch is actuated whenever the valve is not in the normal home position. For size 2 body, the DPST switch is only actuated whenever the valve is in the normal home position.

Enhanced safety can be achieved by installing an optional visual pressure indicator or pressure switch into the 1/8 NPT pressure verification port (PV) for verification of pressure release.

These sensing valves are available in 3/2 normally closed functions with single solenoid pilot or pressure controlled pilot actuation.

VALVE FEATURES	
Poppet Design	Poppet construction for near zero leakage Dirt tolerant, wear compensating poppet design for quick response and high flow capacity
Sensing	Senses internal position & state
Electrical Feedback	Electrical feedback via DPST switch (Double-Pole Single-Throw)
Locking Protection	Directly operated safety-rated force-guided positive-break status switch (DPST)
Diagnostic Coverage	A diagnostic coverage (DC) of 99% can be obtained by monitoring the safety switch status
Visible Pressure Indication Option	Includes integrated 1/8" sensor port for pressure verification with either a visual pop-up indicator or electrical pressure switch
Mounting	Inline
SISTEMA Library	Available for download

PRODUCT CREDENTIALS				
<p>Performance Level Per ISO 13849-1:2015</p> <p></p>	<p>Safety Integrity Level Per IEC 2061:2001</p> <p></p>	<p>TÜV Rheinland Per ISO 9001:2015</p> <p></p> <p>Precisely Right.</p>	<p>Declaration of Conformity</p> <p></p>	<p>Certificate of Compliance</p> <p></p>

Specifications

STANDARD SPECIFICATIONS				
GENERAL	Function		3/2 Valve, Normally Closed	
	Construction Design		Poppet	
	Actuation		Electrical	Solenoid Pilot Controlled
			Pneumatic	Pressure Controlled
	Mounting	Type	Inline	
		Orientation	Any, preferably vertical	
	Connection		Threaded	NPT, G
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		40 to 150 psig (2.8 to 10.3 bar)	
	Pilot Pressure		Must be equal to or greater than inlet pressure	
ELECTRICAL DATA	Switch Current/Voltage	Maximum	2.5 A/120 volts AC	
		Minimum	50 mA/24 volts DC	
	Switch Rating		Rated in excess of 15 million cycles; electrical life of switch varies with conditions and voltage	
ELECTRICAL DATA FOR SOLENOID PILOT CONTROLLED VALVES	Solenoids	Current Flow	Operating Voltage	Power Consumption (each solenoid)
		DC	24 volts	14 watts
		AC	110-120 volts, 50/60 Hz	87 VA inrush, 30 VA holding
			230-240 volts, 60 Hz	
		Rated for continuous duty		
CONSTRUCTION MATERIAL	Valve Body		Cast Aluminum	
	Poppet		Acetal and Stainless Steel	
	Spool (Lockout Valve)		Stainless Steel	
	Seals		Buna-N; Fluorocarbon	
	Manual Override (Solenoid Pilot Controlled Valves)		Flush; rubber, non-locking	
SAFETY DATA	Safety Integrity Level (SIL)		Certified by TÜV Rheinland in accordance to IEC 61508 and IEC 61511 safety integrity level 2 (SIL 2) and EN ISO 13849-1, PL c (with application specific diagnosis) in singular application with HFT = 0 and SIL 3 and PL e in redundant application with HFT≥1, for details see certificate.	
	Functional Safety Data	Category		CAT 2, PL e
		B _{10D}		20,000,000
		PFH _D		2.35x10 ⁻⁷
		MTTF _D		98.15 (nop: 7360)
		DC (obtained by monitoring safety switch status)		99%
		ROSS recommends testing the switch function and sealing for load holding valves every 8 hours		
	Vibration/Impact Resistance		Calculated to DIN EN 60068-2-6.	
IMPORTANT NOTE: Please read carefully and thoroughly all of the CAUTIONS, WARNINGS on the inside back cover.				

Ordering Information

Solenoid Pilot Controlled Valves

MODEL NUMBER CONFIGURATOR

3-Way 2-Position Valves

SV27

D

C

30

540

7PS

AA

1A

Series

Port Thread

NPT

G

Revision Level

Valve Function

3/2

Body Size	Port Size		
	In-Out	Exhaust	
3/4	1/2	1	540
	3/4	1	550
	1	1	560
1-1/4	1	1-1/2	760
	1-1/4	1-1/2	770
	1-1/2	1-1/2	780
2	1-1/2	2-1/2	980
	2	2-1/2	990
	2-1/2	2-1/2	995

Current	Voltage*	
DC	24 V	1D
AC	110 V, 50 Hz	1A
	120 V, 50/60 Hz	
	230 V, 50/60 Hz	2A

* For other voltages consult ROSS.

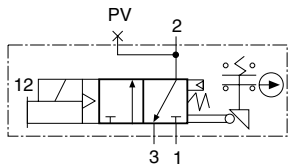
Mounting

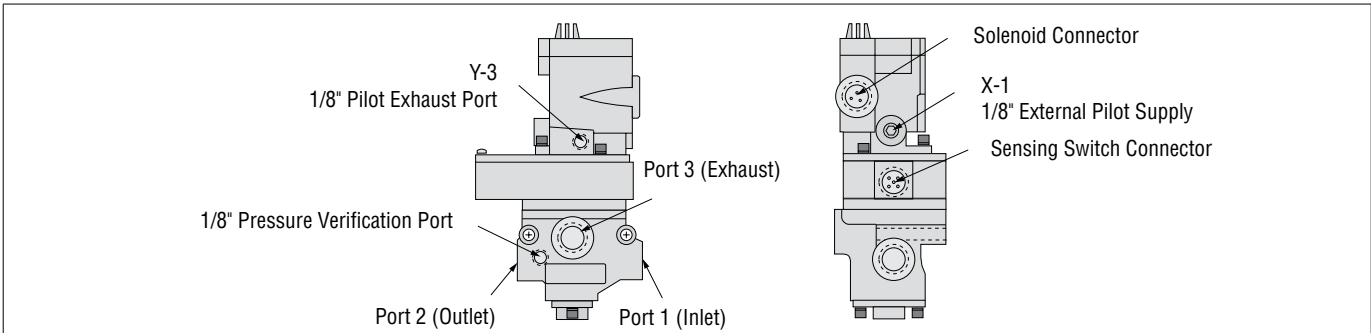
Inline

Actuation

Solenoid Pilot

Model Number examples: SV27DC305407PSAA1A, SV27NC307707PSAA1A.

Size			Flow Cv (NI/min)		Weight lb (kg)	Valve Schematic
Body	Port 1, 2	Port 3	1-2	2-3		
3/4	1/2	1	6.2 (6100)	9.4 (9300)	4.5 (2.0)	
	3/4	1	8.2 (8100)	10 (9800)		
	1	1	9.1 (9000)	12 (1200)		
1-1/4	1	1-1/2	21 (2100)	27 (27000)	7.8 (3.5)	
	1-1/4	1-1/2	29 (29000)	29 (29000)		
	1-1/2	1-1/2	30 (30000)	30 (30000)		
2	1-1/2	2-1/2	45 (44000)	75 (74000)	18.1 (8.2)	
	2	2-1/2	57 (56000)	78 (77000)		
	2-1/2	2-1/2	66 (65000)	82 (81000)		



Pressure Controlled Valves

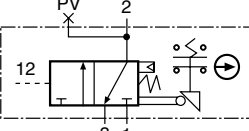
MODEL NUMBER CONFIGURATOR

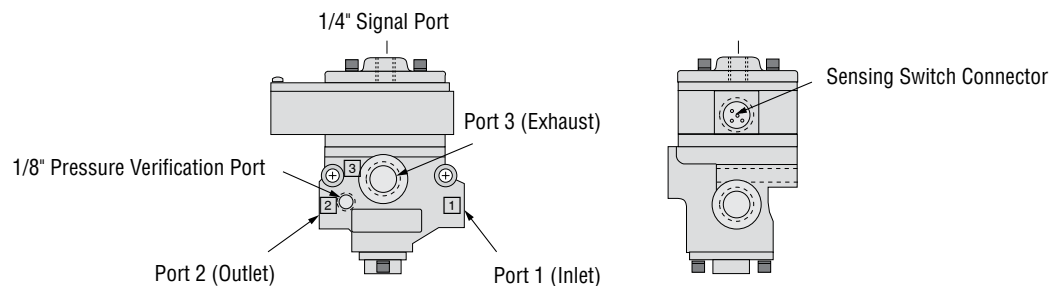
3-Way 2-Position Valves

Series	SV27	Port Thread		Mounting	Inline
	D	NPT	N	Actuation	Pressure Controlled
	C	G	D		
Revision Level	30				
Valve Function	540				
	5AS				
	AA				

Body Size	Port Size		
	In-Out	Exhaust	
3/4	1/2	1	540
	3/4	1	550
	1	1	560
1-1/4	1	1-1/2	760
	1-1/4	1-1/2	770
	1-1/2	1-1/2	780
2	1-1/2	2-1/2	980
	2	2-1/2	990
	2-1/2	2-1/2	995

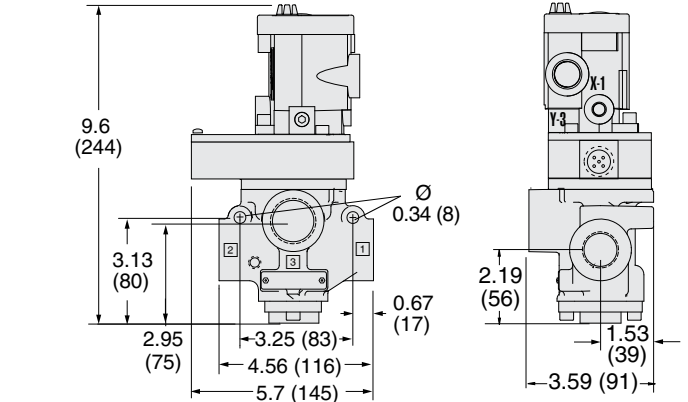
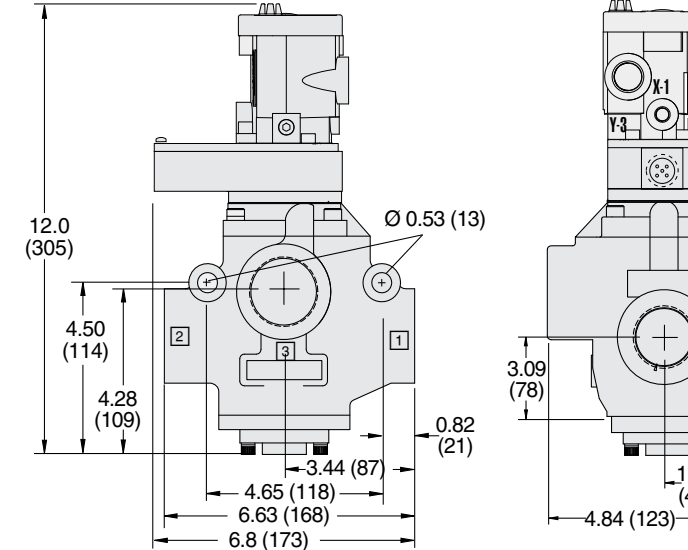
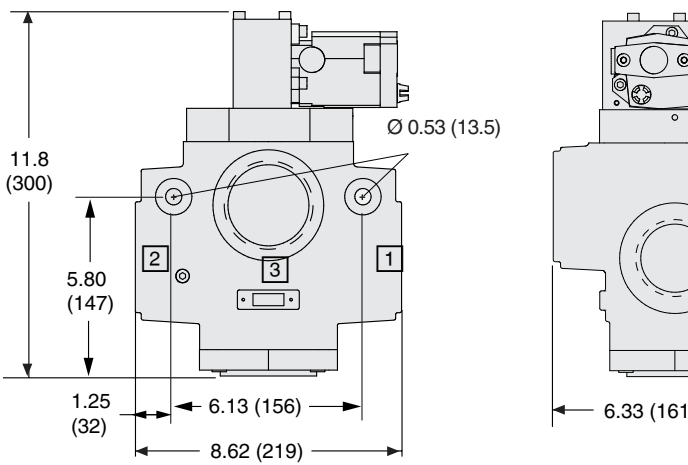
Model Number examples: SV27DC305405ASAA, SV27NC307605ASAA.

Size			Flow Cv (NI/min)		Weight lb (kg)	Valve Schematic
Body	Port 1, 2	Port 3	1-2	2-3		
3/4	1/2	1	6.2 (6100)	9.4 (9300)	3.3 (1.5)	
	3/4	1	8.2 (8100)	10 (9800)		
	1	1	9.1 (9000)	12 (1200)		
1-1/4	1	1-1/2	21 (2100)	27 (27000)	6.4 (2.9)	
	1-1/4	1-1/2	29 (29000)	29 (29000)		
	1-1/2	1-1/2	30 (30000)	30 (30000)		
2	1-1/2	2-1/2	45 (44000)	75 (74000)	17.2 (7.8)	
	2	2-1/2	57 (56000)	78 (77000)		
	2-1/2	2-1/2	66 (65000)	82 (81000)		



Valve Technical Data

Solenoid Pilot Controlled Valves

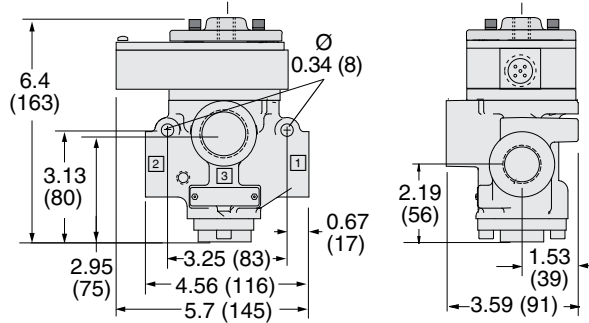
DIMENSIONS	Inches (mm)
Body Size 3/4	 <p>Technical drawings of the Body Size 3/4 valve. The front view shows a vertical dimension of 9.6 (244) from the base to the top of the solenoid. The main body has a diameter of Ø 0.34 (8). Other dimensions include 3.13 (80) for the upper body section, 2.95 (75) for the lower body section, 3.25 (83) for the central opening, 4.56 (116) for the base width, 5.7 (145) for the total base width, 0.67 (17) for the base thickness, 2.19 (56) for the side view height, 1.53 (39) for the side view base width, and 3.59 (91) for the total side view width. Ports are labeled 1, 2, and 3. The solenoid is labeled X-1 and Y-3.</p>
Body Size 1-1/4	 <p>Technical drawings of the Body Size 1-1/4 valve. The front view shows a vertical dimension of 12.0 (305) from the base to the top of the solenoid. The main body has a diameter of Ø 0.53 (13). Other dimensions include 4.50 (114) for the upper body section, 4.28 (109) for the lower body section, 3.44 (87) for the central opening, 4.65 (118) for the base width, 6.63 (168) for the total base width, 6.8 (173) for the total base width, 0.82 (21) for the base thickness, 3.09 (78) for the side view height, 1.78 (45) for the side view base width, and 4.84 (123) for the total side view width. Ports are labeled 1, 2, and 3. The solenoid is labeled X-1 and Y-3.</p>
Body Size 2	 <p>Technical drawings of the Body Size 2 valve. The front view shows a vertical dimension of 11.8 (300) from the base to the top of the solenoid. The main body has a diameter of Ø 0.53 (13.5). Other dimensions include 5.80 (147) for the upper body section, 1.25 (32) for the lower body section, 6.13 (156) for the central opening, 8.62 (219) for the total base width, and 6.33 (161) for the total side view width. Ports are labeled 1, 2, and 3. The solenoid is labeled X-1 and Y-3.</p>
Downloadable CAD models available.	

Pressure Controlled Valves

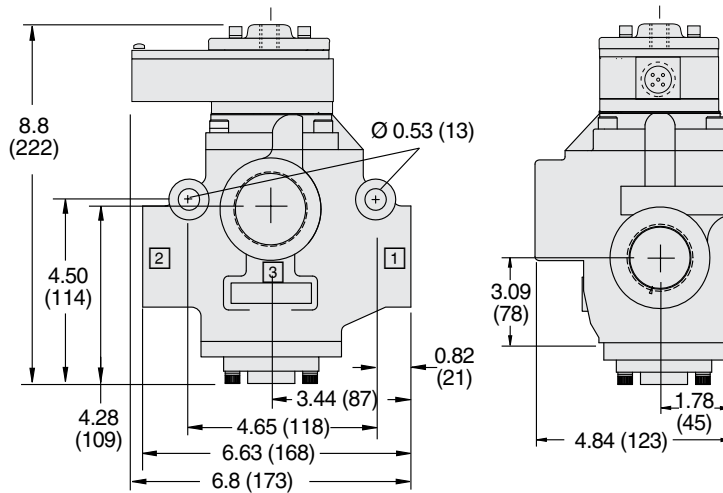
DIMENSIONS

Inches (mm)

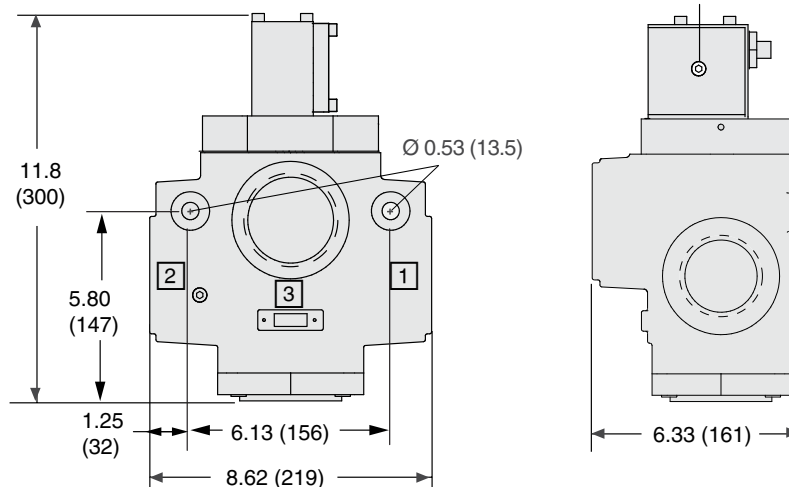
Body Size 3/4



Body Size 1-1/4



Body Size 2



Downloadable CAD models available.

ENERGY RELEASE VERIFICATION



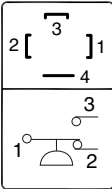
Visual Pressure Indicator	Pressure Switch
	

Illustration examples.

Visual Pressure Indicator	Verification Type	Installation Location	Indicator Type	Model Number	Port Thread
	Pneumatic	Pressure Sensing Port	Visual Pop-up Pin	988A30	1/8 NPT

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

Pinout	
DIN EN 175301-803 Form A	
	<ul style="list-style-type: none">1 - Common2 - Normally Closed3 - Normally Open4 - Ground (Not Used)

PREWIRED ELECTRICAL CONNECTORS



Illustration example.

Prewired Connector Kits	Cable					Kit Number
	End 1	End 2	Connection	Quantity Included	Length feet (meters)	Without Light
	Connector	Cord				
	MINI, 3-pin	Flying leads	Solenoid	1	13.1 (4)	2239H77
	M12, 5-pin		Sensing Switch	1		
	MINI, 3-pin	Flying leads	Solenoid	1	32.8 (10)	2240H77
	M12, 5-pin		Sensing Switch	1		

Prewired Connectors for Pressure Controlled Valves	Cable					Model Number
	End 1	End 2	Connection	Quantity Included	Length feet (meters)	Cord Diameter mm
	Connector	Cord				
	M12, 5-pin	Flying Leads	Sensing Switch	1	13.1 (4)	6
				1	32.8 (10)	10

Solenoid Connector Pinout	Sensing Switch Connector Pinout	
MINI, 3-pin	M12, 5-pin	
<p>1 - Green/Yellow (Ground) 2 - Blue 3 - Brown</p>	<p>Valve Basic Size 3/4 & 1-1/4</p> <p>1 - Brown 2 - White 3 - Blue 4 - Black 5 - Gray Current/Voltage Max. 2.5 A / 120 V AC</p> <p>Integrated Double-Pole Single-Throw Switch (DPST) Switch States Contact conditions during switch travel (0 to 6 mm).</p> <p>NC - Normally Closed NO - Normally Open</p> <p>The DPST switch is actuated whenever the valve is not in the normal home position.</p>	<p>Valve Basic Size 2</p> <p>1 - Brown 2 - White 3 - Blue 4 - Black 5 - Gray Current/Voltage Max. 2.5 A / 120 V AC</p> <p>Integrated Double-Pole Single-Throw Switch (DPST) Switch States Contact conditions during switch travel (0 to 6 mm).</p> <p>NC - Normally Closed NO - Normally Open</p> <p>The DPST switch is only actuated whenever the valve is in the normal home position.</p>

SOLENOID PILOT INDICATOR LIGHT KITS

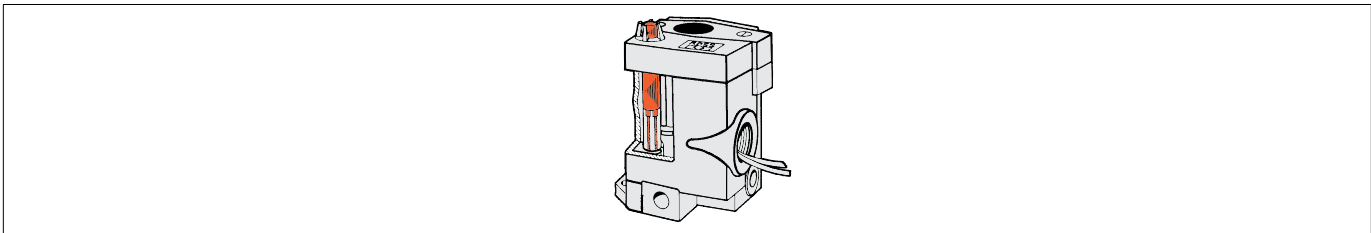


Illustration example.

Indicator Light Kits	Kit Number		
	24 V DC	110-120 V AC, 50-60 Hz	230 V AC, 50-60 Hz
	862K87-W	862K87-Z	862K87-Y
	To visually verify valve operation, indicator light kits are available for single solenoid models. Indicator lights are standard on double solenoid valves. The indicator light is illuminated when the solenoid is energized.		

SOLENOID PILOT MANUAL OVERRIDE KITS

Flush Button	Extended Button	Extended Button with Palm
		

Illustration examples.

Manual Override Kits	Manual Override Type	Kit Number	
		Locking Type	Non-Locking Type
	Flush Button	792K87	790K87
	Extended Button	–	791K87
	Extended Button with Palm	–	984H87
Flush rubber button, non-locking manual override is standard on solenoid models. Each of the buttons in the override kits is made of metal and is spring-returned. The locking type button, however, can be kept in the actuated position by turning the slot in the top of the button with a screwdriver.			

EXHAUST SILENCERS



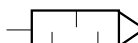

Aluminum	
Port Size 1/8 through 2	Port Size 2-1/2
	

Illustration examples.

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	Male	18 (18000)	5500A6003	D5500A6003	5.4 (14)	2.0 (51)	0.9 (0.4)
	1-1/2	Female	39 (38000)	5500A8001	D5500A8001	5.7 (14)	2.5 (64)	1.3 (0.6)
	2-1/2	Female	104 (100000)	5500A9002	D5500A9002	4.0 (102)	5.7 (145)	2.9 (1.4)

FEMALE SILENCER CONNECTORS

Hex Nipples	Material	Fitting Pipe Size	Thread Type	Model Number		
				NPT Thread	BSPT Thread	
	Steel	1-1/2	Male - Male	488J27	122J39	
	Stainless Steel	2-1/2	Male - Male	490J27	123J39	

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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Full-Service Global Locations

There are ROSS Distributors Throughout the World

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

Other literature is available for engineering, maintenance, and service requirements.

If you need products or specifications not shown in this catalog, please visit ROSS' website, contact ROSS or your ROSS distributor. The ROSS Support Team will be happy to assist you in selecting the best product for your application.