



SAFE EXHAUST SV27 SERIES VALVES



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
SISTEMA Library	Available for download

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

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 Port	NPT	
				G	
Manual Override (Solenoid Pilot valves)		Flush; rubber, non-locking			
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 Supply Pressure	Internal	Must meet minimum operating pressure		
		External	Must be equal to or greater than inlet pressure, and meet minimum operating 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		
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		Up to CAT 3, PL e
			B _{10D}		20,000,000
			PFH ₀		2.35x10 ⁻⁷
			MTTF ₀		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

N

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.

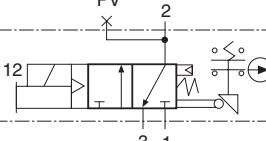
Mounting

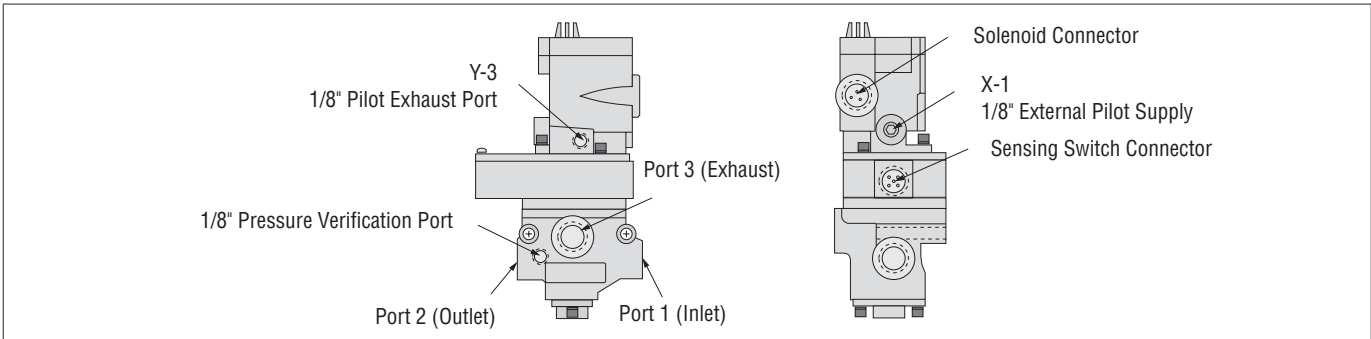
Inline

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 (12000)		
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

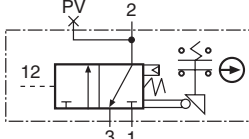
MODEL NUMBER CONFIGURATOR

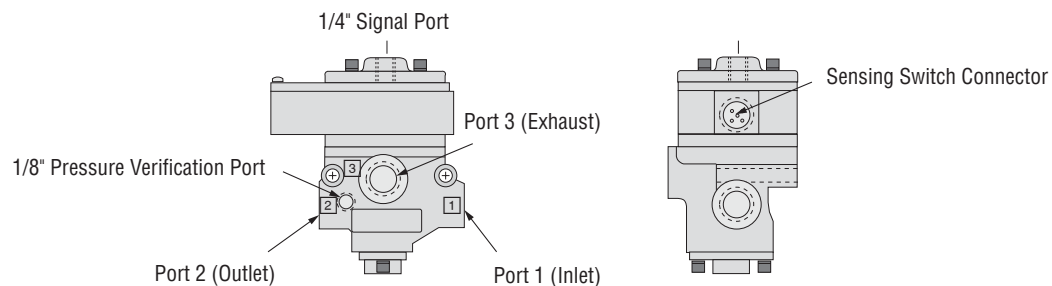
3-Way 2-Position Valves

Series	SV27	Port Thread	N	Revision Level	C	Valve Function	3/2	Body Size	30	Port Size	540	Actuation	5AS	Mounting	AA
		NPT	N											Inline	
		G	D									Pressure Controlled			

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

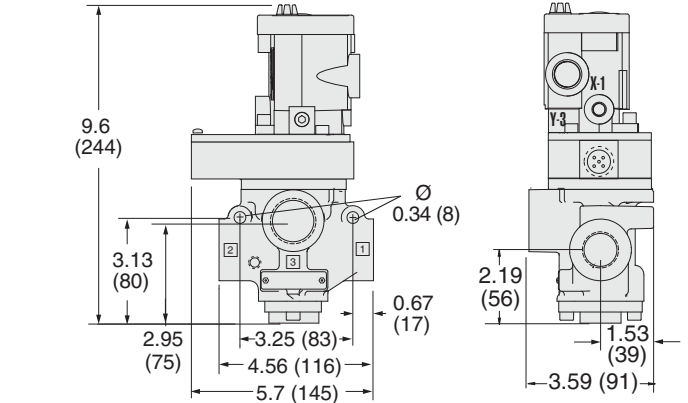
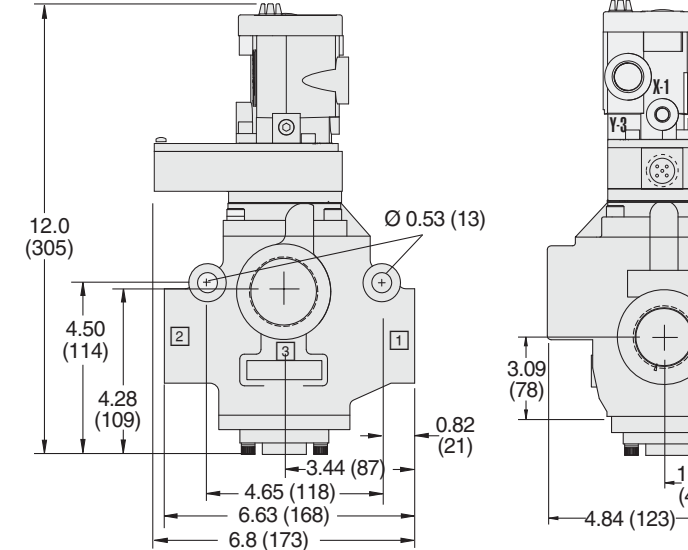
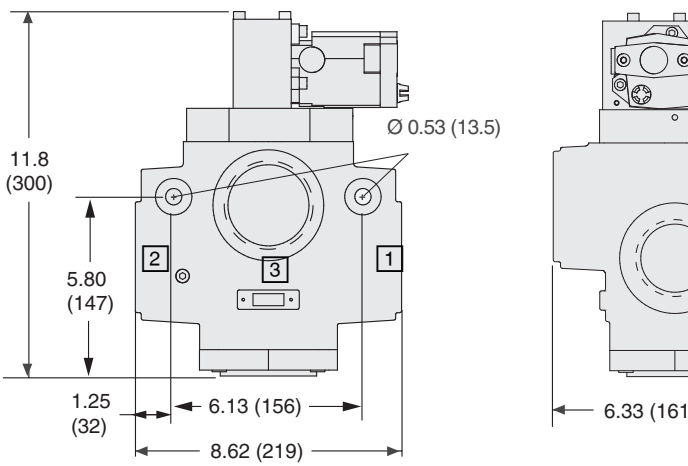
Model Number examples: SV27DC305405ASAA, SV27NC307605ASAA.

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 (12000)		
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

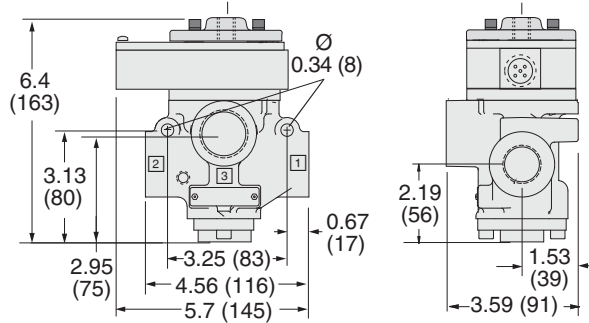
DIMENSIONS	Inches (mm)
Body Size 3/4	 Technical drawings of the Body Size 3/4 valve. The front view shows a vertical dimension of 9.6 (244) from the base to the top of the solenoid. The body has a central port (3) and two side ports (1 and 2). The distance from the base to the center of port 3 is 3.13 (80). The distance from the base to the center of port 2 is 2.95 (75). The distance from the base to the center of port 1 is 3.25 (83). The overall width of the body is 5.7 (145). The distance between the centers of ports 1 and 2 is 4.56 (116). The distance from the center of port 3 to the side of the body is 0.67 (17). The solenoid has a diameter of Ø 0.34 (8). The side view shows a vertical dimension of 2.19 (56) from the base to the top of the solenoid. The distance from the base to the center of port 3 is 1.53 (39). The overall width of the body is 3.59 (91).
Body Size 1-1/4	 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 body has a central port (3) and two side ports (1 and 2). The distance from the base to the center of port 3 is 4.50 (114). The distance from the base to the center of port 2 is 4.28 (109). The distance from the base to the center of port 1 is 3.44 (87). The overall width of the body is 6.8 (173). The distance between the centers of ports 1 and 2 is 6.63 (168). The distance from the center of port 3 to the side of the body is 0.82 (21). The solenoid has a diameter of Ø 0.53 (13). The side view shows a vertical dimension of 3.09 (78) from the base to the top of the solenoid. The distance from the base to the center of port 3 is 1.78 (45). The overall width of the body is 4.84 (123).
Body Size 2	 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 body has a central port (3) and two side ports (1 and 2). The distance from the base to the center of port 3 is 5.80 (147). The distance from the base to the center of port 2 is 1.25 (32). The distance from the base to the center of port 1 is 6.13 (156). The overall width of the body is 8.62 (219). The distance between the centers of ports 1 and 2 is 6.33 (161). The solenoid has a diameter of Ø 0.53 (13.5). The side view shows a vertical dimension of 6.33 (161) from the base to the top of the solenoid.
Downloadable CAD models available.	

Pressure Controlled Valves

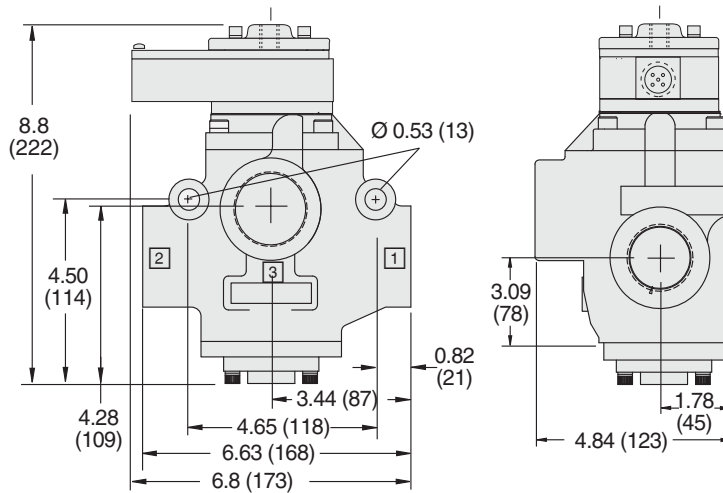
DIMENSIONS

Inches (mm)

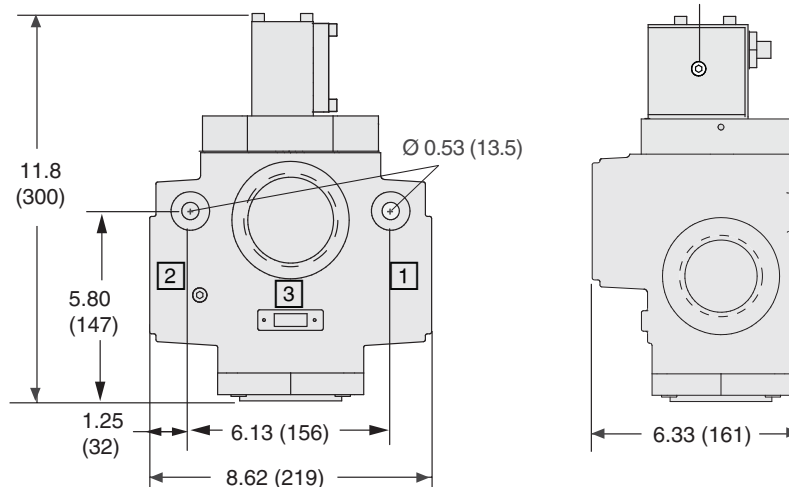
Body Size 3/4



Body Size 1-1/4



Body Size 2



Downloadable CAD models available.

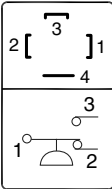
ENERGY RELEASE VERIFICATION

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

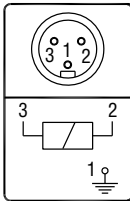
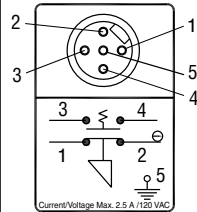
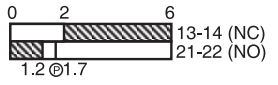
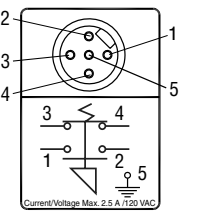
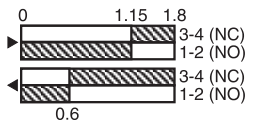
PREWIRED ELECTRICAL CONNECTORS



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	
 1 - Green/Yellow (Ground) 2 - Blue 3 - Brown	Valve Basic Size 3/4 & 1-1/4  1 - Brown 2 - White 3 - Blue 4 - Black 5 - Gray Current/Voltage Max. 2.5 A / 120 V AC Integrated Double-Pole Single-Throw Switch (DPST) Switch States Contact conditions during switch travel (0 to 6 mm). NC - Normally Closed NO - Normally Open  0 2 6 1.2 @ 1.7 13-14 (NC) 21-22 (NO) The DPST switch is actuated whenever the valve is not in the normal home position.	Valve Basic Size 2  1 - Brown 2 - White 3 - Blue 4 - Black 5 - Gray Current/Voltage Max. 2.5 A / 120 V AC Integrated Double-Pole Single-Throw Switch (DPST) Switch States Contact conditions during switch travel (0 to 6 mm). NC - Normally Closed NO - Normally Open  0 1.15 1.8 3-4 (NC) 1-2 (NO) 3-4 (NC) 1-2 (NO) 0.6 The DPST switch is only actuated whenever the valve is in the normal home position.

SOLENOID PILOT INDICATOR LIGHT KITS

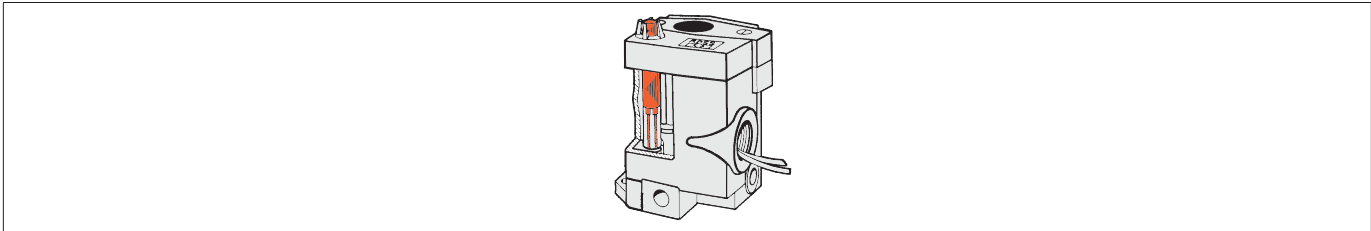


Illustration example.

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
		

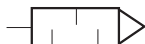
Illustration examples.

Manual Override Kits	Manual Override Type	Kit Number	
		Locking Type	Non-Locking Type
	Flush Button	792K87	–
	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

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		
	Steel	1-1/2	Male - Male	NPT Thread	BSPT Thread	
				488J27	122J39	
Hex Nipples	Stainless Steel	2-1/2	Male - Male	490J27	123J39	
	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.

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



GLOBAL LOCATIONS

	AMERICAS	USA	ROSS CONTROLS	Tel: +1-248-764-1800	www.rosscontrols.com
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		Brazil	ROSS BRASIL	Tel: +55-11-4335-2200	www.rosscontrols.com.br
	EUROPE	Germany	ROSS EUROPA	Tel: +49 (0)6103-7597-100	www.rosseuropa.com
		France	ROSS FRANCE	Tel: +33(0)1-49-45-65-65	www.rossfrance.com
		United Kingdom	ROSS UK	Tel: +44 (0)1254 872277	www.rossuk.co.uk
	ASIA & PACIFIC	India	ROSS CONTROLS INDIA	Tel: +91-44-2624-9040	www.rosscontrolsindia.com
		China	ROSS CONTROLS CHINA	Tel: +86-21-6915-7961	www.rosscontrolschina.com
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