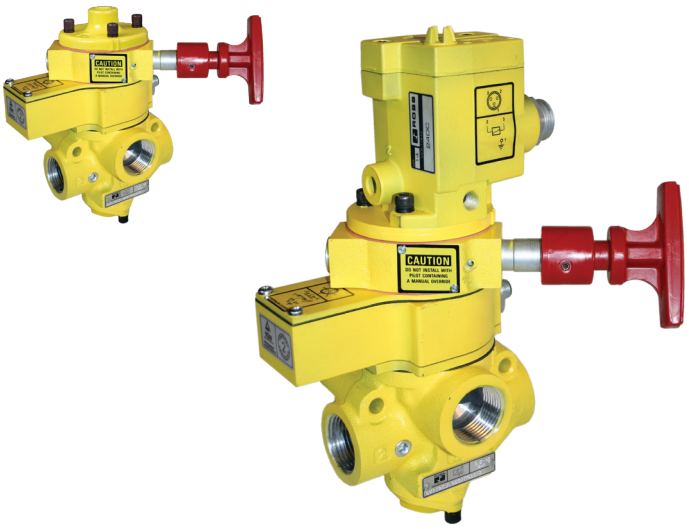
ROSS®

SAFE EXHAUST
SV27 SERIES VALVES WITH LOCKOUT



PRODUCT CATALOG

ROSS®
a global family

SV27 Sensing Valves with Manual Lockout L-O-X® Control
Product Overview

Lockout/Tagout Air Dump/Release 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 3/2 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 internal 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. The DPST switch is actuated whenever the valve is not in the normal home position.

Additional verification 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.

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)
Lockout L-O-X® Control	Operated just like manual L-O-X® valve; the position of the red handle indicates instantaneous full flow pressurizing or exhausting capability.
Lockout Protection	L-O-X® design only allows the valve to be lockable in the OFF position
PTFE Seals	Fluorocarbon slipper seals for easy shifting, even after long periods of inactivity
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

NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

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 Port	NPT
				G
	Manual Override (Solenoid Pilot Controlled)		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	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.

PRODUCT CREDENTIALS

Performance Level	Safety Integrity Level	TÜV Rheinland	Declaration of Conformity		Certificate of Compliance
Per ISO 13849-1:2015	Per IEC 2061:2001	Per ISO 9001:2015			
Cat. 2 PL c	SIL 2 Functional Safety	TÜVRheinland® Precisely Right.	CE	EAC	c SP® US

Ordering Information

Solenoid Pilot Controlled Valves

MODEL NUMBER CONFIGURATOR — 3-Way 2-Position Valves

SV27	N	C	3	L	540	7PS	AA	1A

Series

Port Thread	
NPT	N
G	D

Revision Level

Valve Function

3/2

Manual Lockout

L-O-X®

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

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

* For other voltages consult ROSS.

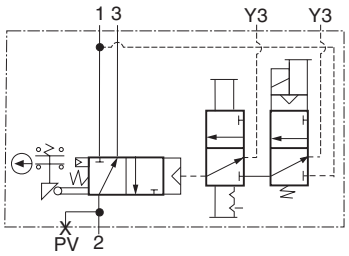
Mounting

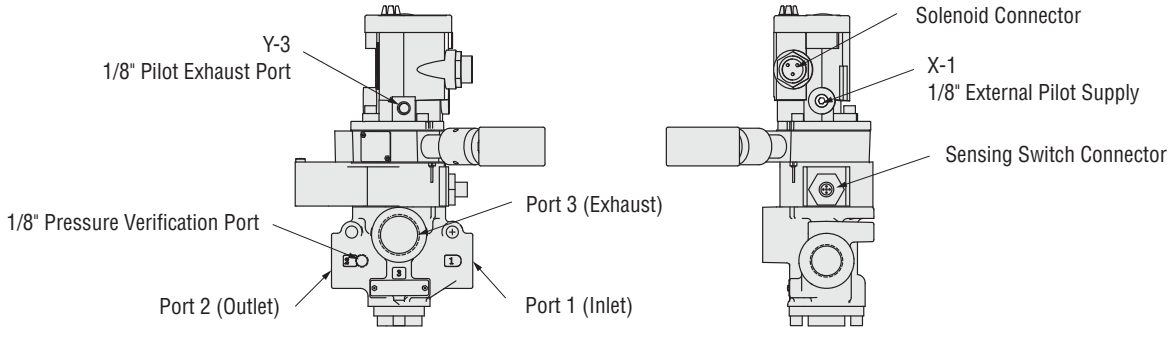
Inline

Actuation

Solenoid Pilot

Model Number examples: SV27DC3L5507PSAA1D, SV27DC3L5407PSAA1A

Size			Flow C_v (Nl/min)		≈ Weight lb (kg)	Valve Schematic
Body	Port 1, 2	Port 3	1-2	2-3		
3/4	1/2	1/2	6.2 (6100)	9.4 (9300)	5.5 (2.5)	
	3/4	3/4	8.2 (8100)	10 (9800)		
	1	1	9.1 (9000)	12 (12000)		
1-1/4	1	1-1/2	21 (21000)	27 (27000)	9.0 (4.0)	
	1-1/4	1-1/2	29 (29000)	29 (29000)		
	1-1/2	1-1/2	30 (30000)	30 (30000)		



Pressure Controlled Valves

MODEL NUMBER CONFIGURATOR — 3-Way 2-Position Valves

SV27	N	C	3	L	540	5AS	AA

Series

Port Thread

NPT	N
G	D

Revision Level

Valve Function

3/2

Manual Lockout

L-O-X®

Mounting

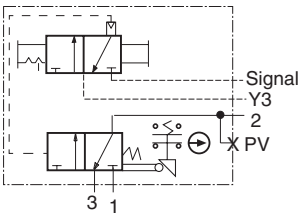
Inline

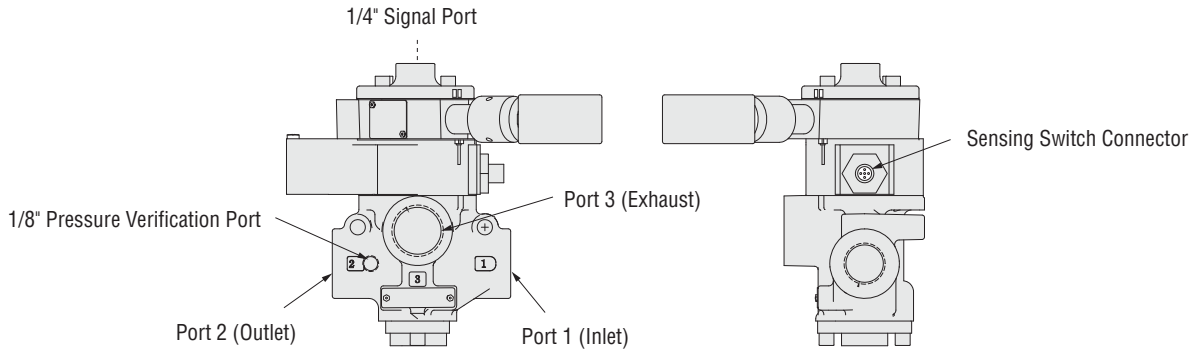
Actuation

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

Model Number examples: SV27DC3L5505ASAA, SV27NC3L5405ASAA.

Size			Flow C_v (Nl/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)	4.3 (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 (21000)	27 (27000)	7.4 (3.4)	
	1-1/4	1-1/2	29 (29000)	29 (29000)		
	1-1/2	1-1/2	30 (30000)	30 (30000)		

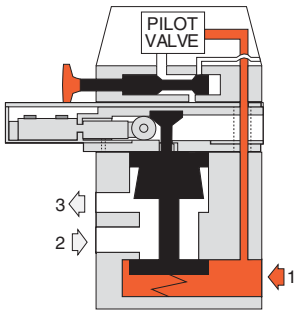


Valve Operation

Solenoid Pilot Controlled Valves

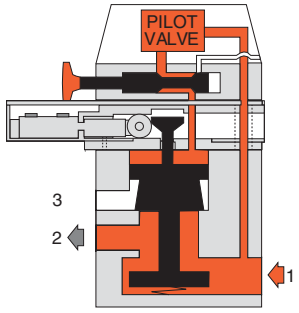
Pilot De-energized

With the solenoid pilot de-energized (regardless of the position of the L-O-X® handle) the inlet poppet remains closed. The outlet port is connected to the exhaust port so that pressure in the downstream lines is vented to atmosphere.
The switch is in a de-actuated position.



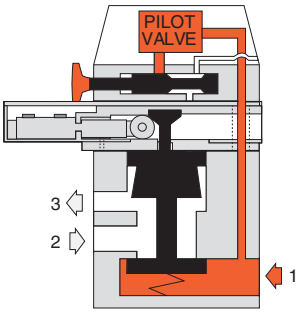
Pilot Energized

With the solenoid pilot energized and the L-O-X® control in the open position, air can flow from inlet to outlet port. The exhaust port is closed.
The inlet poppet stem will cause the switch to be actuated indicating that the valve is open.



L-O-X® Valve Closed

With the handle pushed inward, the L-O-X® control is closed, and air to the valve piston is cut off. This allows the inlet poppet to be closed by its spring and the pressure of the inlet air. The outlet is connected to exhaust so downstream pressure is vented.
The switch is in a de-actuated position.

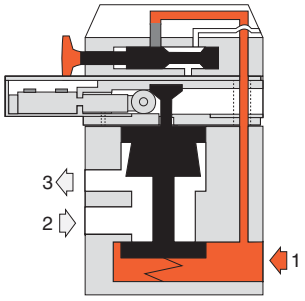


NOTE: Per specifications and regulations, these products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

Pressure Controlled Valves

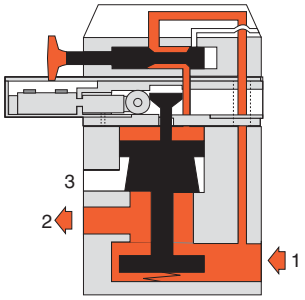
Valve Closed

With a short push of the red handle inward the flow of supply air is blocked and downstream air is exhausted via the exhaust port. Air pressure on the inlet and exhaust poppets produces a large closing force. The L-O-X® valve should be padlocked in this position to prevent the handle from being pulled outward inadvertently when potential for human injury exists or servicing machinery.
The switch is in a de-actuated position.



Valve Open

With the red handle pulled out, pilot air flows to the top of the actuating piston, causing it to open the inlet poppet. Supply air then flows freely from inlet to outlet, and the exhaust port is blocked. A detent keeps the L-O-X® handle in the open position. The handle is designed not to be locked in the open position, thereby allowing for quick shut-off when necessary.
The inlet poppet stem will cause the switch to be actuated indicating that the valve is open.



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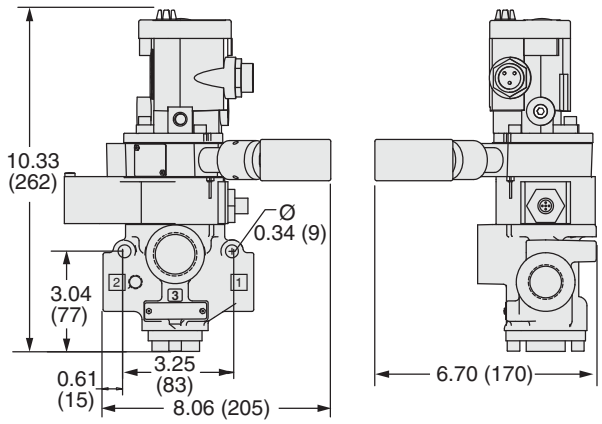
3/2 Solenoid Pilot Controlled Valves

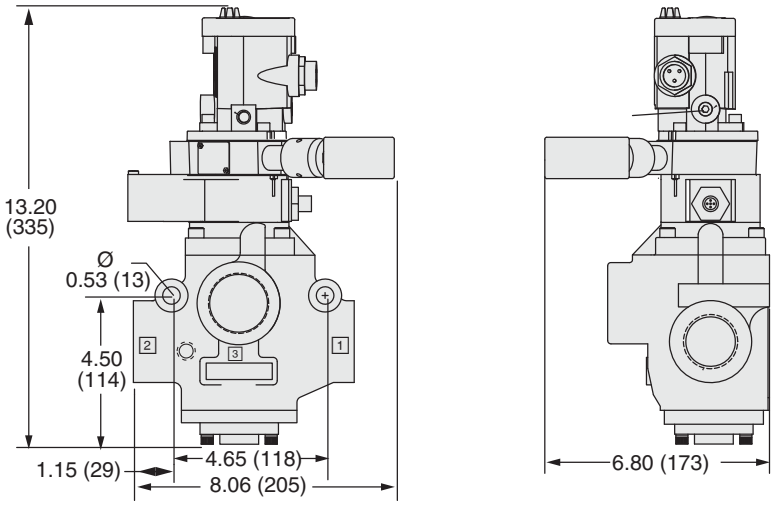
DIMENSIONS — **Inches (mm)**

Solenoid Pilot Controlled Valves

Body Size 3/4

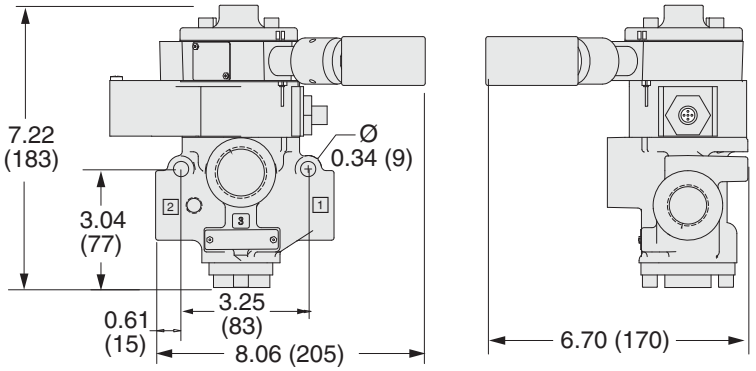
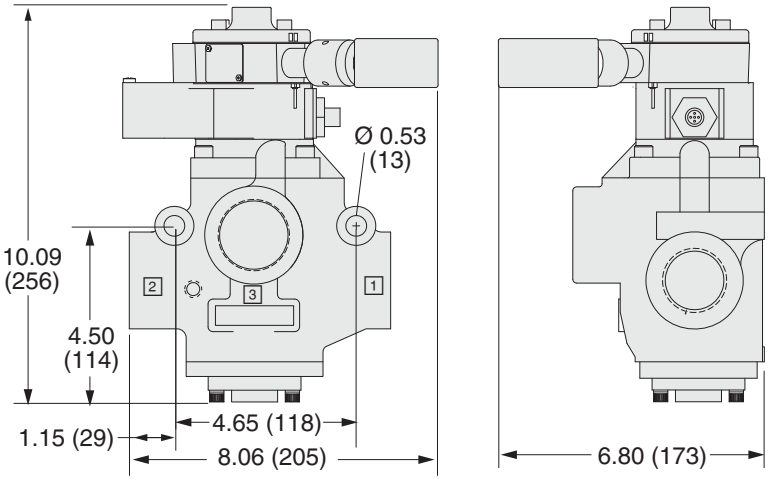


Body Size 1-1/4



Downloadable CAD models available.

3/2 Pressure Controlled Valves

DIMENSIONS	Inches (mm)
Pressure Controlled Valves	
Body Size 3/4	
Body Size 1-1/4	
Downloadable CAD models available.	

Accessories

ENERGY RELEASE VERIFICATION

Visual Pressure Indicator	Pressure Switch
	

Illustration examples.

Visual Pressure Indicator

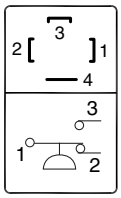
Verification Type	Installation Location	Indicator Type	Model Number	Port Thread
Pneumatic	Pressure Sensing Port	Visual Pop-up Pin	988A30	1/8 NPT

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



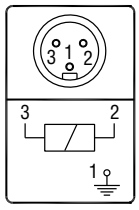
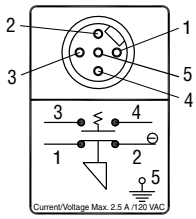
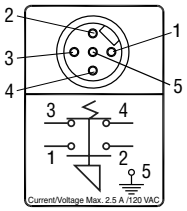
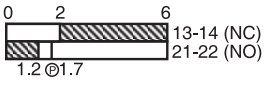
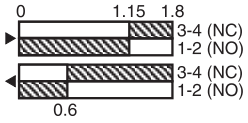
1 - Common
2 - Normally Closed
3 - Normally Open
4 - Ground (Not Used)

PREWIRED ELECTRICAL CONNECTORS

Illustration example.

Prewired Connector Kits	Cable					Kit Number
	End 1 Connector	End 2 Cord	Connection	Quantity Included	Length feet (meters)	Without Light
	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 Connector	End 2 Cord	Connection	Quantity Included	Length feet (meters)	Cord Diameter mm	Without Light
	M12, 5-pin	Flying Leads	Sensing Switch	1	13.1 (4)	6	2241H77
				1	32.8 (10)	10	2242H77

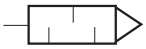
Solenoid Connector Pinout	Sensing Switch Connector Pinout	
MINI, 3-pin	M12, 5-pin	
	Valve Basic Size 3/4 & 1-1/4	Valve Basic Size 2
		
	1 - Brown 2 - White 3 - Blue 4 - Black 5 - Gray Current/Voltage Max. 2.5 A / 120 V AC	1 - Brown 2 - White 3 - Blue 4 - Black 5 - Gray Current/Voltage Max. 2.5 A / 120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

Accessories

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 (Nl/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)

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	

LOCKOUT DEVICE

Lockout Hasp

Valve Model Use	Model Number	
Lockout L-O-X® Classic Style	356A30	

SOLENOID PILOT INDICATOR LIGHT KITS

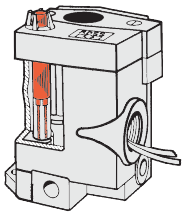


Illustration example.

	Kit Number		
	24 V DC	**110-120 V AC, 50-60 Hz**	**230 V AC, 50-60 Hz**
Indicator Light Kits	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.		

Notes

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.

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