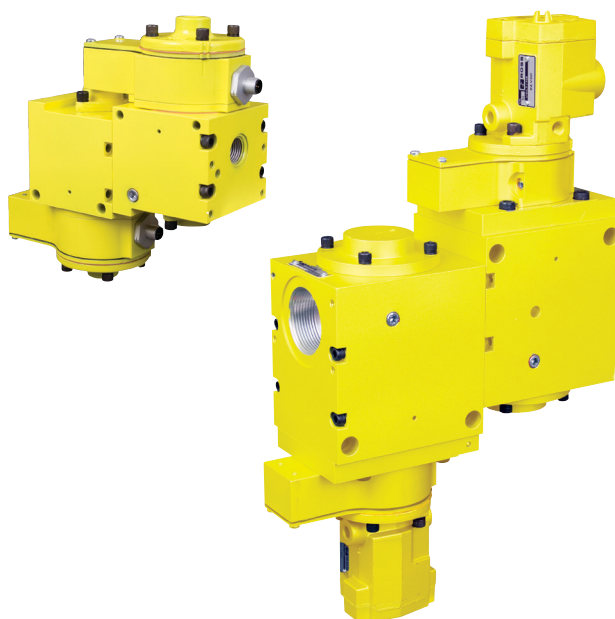




SAFE LOAD HOLDING SV27 PO CHECK SERIES VALVES



PRODUCT CATALOG

Safe Load Holding PO Check Sensing Valves SV27 Series

Product Overview

Sensing 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 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.

Single (CAT-2 / PL c)		Redundant (CAT-3 / PL e)	
Solenoid Pilot Controlled	Pressure Controlled	Solenoid Pilot Controlled	Pressure Controlled
			

Illustration examples.

Pilot Operated Check valves are designed to trap pressure in order to hold a cylinder in place when a safety event occurs. The SV27 Series Sensing Valve uses a safety-rated DPST switch to monitor the valve's operating position. The SV27 PO Check valves can be used for load holding functions in Category 2 (single) or Category 3 (redundant) applications with proper integration and monitoring. The feedback switch informs the controls that the valve internals have shifted properly.

VALVE FEATURES

Poppet Design	Dirt tolerant, wear compensating for quick response and high flow capacity Poppet construction for near zero leakage & dirt tolerance
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 up to 90% can be obtained by monitoring the safety switch status
Mounting	Inline
SISTEMA Library	Available for download

PRODUCT CREDENTIALS

Performance Level Per ISO 13849-1:2015  	Safety Integrity Level Per IEC 2061:2001 	TÜV Rheinland of North America Certificate  Precisely Right.	Declaration of Conformity  	Certificate of Compliance 
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STANDARD SPECIFICATIONS					
GENERAL	Function		2/2 Valve	Single	
			Redundant		
	Construction Design		Poppet		
	Actuation		Electrical	Solenoid Pilot Controlled	
			Pneumatic	Pressure Controlled	
	Mounting	Type	Inline		
		Orientation	Any, preferably vertical		
	Monitoring		External		
	Connection		Threaded Port		NPT
G					
Manual Override (Solenoid Controlled valves)		Pacer Style Pilot (only)		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 Pressure		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)
	Body Size 3/4	CNOMO Style Pilot	DC	24 volts	6 watts
			AC	110-120 volts, 50/60 Hz	8.5 VA inrush, 30 VA holding
				230-240 volts, 60 Hz	
			Rated for continuous duty		
	Body Size 1-1/4	Pacer Style Pilot	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		
	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	Single	CAT 2, PL c	
			Redundant	CAT 3, PL d	
		B _{10D}	20,000,000		
		PFH _D	Single	2.35x10 ⁻⁷	
			Redundant	2.47x10 ⁻⁸	
		MTTF _D	Single	98.15 (nop: 7360)	
			Redundant	100 (nop: 7360)	
		DC (obtained by monitoring safety switch status)			90%
	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

2-Way 2-Position Valves

SV27

N

C

11

540

8CS

AA

1A

Series

Port Thread

Revision Level

Valve Function

Body Size

NPT

G

2/2 - Single (Cat-2)

2/2 - Redundant (Cat-3)

In

Out

1/2

3/4

1

1

1-1/4

1-1/2

1/2

3/4

1

1-1/2

1-1/2

1-1/2

540

550

560

760

770

780

Current

Voltage*

DC

AC

24 V

110 V, 50 Hz

120 V, 50/60 Hz

230 V, 50/60 Hz

1D

1A

2A

* For other voltages consult ROSS.

Mounting

Actuation

Inline

Solenoid Pilot

Model Number examples: SV27NC115508CSAA1D, SV27DC555508CSAA1A.

Function	Size			Flow Cv (NI/min)	≈ Weight lb (kg)
	Body	Port 1	Port 2	1-2	
Single	3/4	1/2	1/2	4.5 (4400)	5.0 (2.3)
		3/4	3/4	8.3 (8200)	
		1	1	10 (10000)	
	1-1/4	1	1	20 (20000)	12.5 (5.6)
		1-1/4	1-1/4	29 (29000)	
		1-1/2	1-1/2	33 (32000)	
Redundant	3/4	1/2	1/2	3.8 (3800)	10.0 (4.5)
		3/4	3/4	5.6 (5500)	
		1	1	8.0 (7900)	
	1-1/4	1	1	12 (12000)	25.0 (11.3)
		1-1/4	1-1/4	19 (19000)	
		1-1/2	1-1/2	22 (22000)	

Valve Schematic

Single

Redundant

1/8" EPS

1/8" PV

C

V

1/8" EPS

1/8" PV

C

V

4

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Pressure Controlled Valves

Model Number Configurator

2-Way 2-Position Valves

Series SV27

Port Thread

NPT	N
G	D

Revision Level

2/2 - Single (Cat-2)	11
2/2 - Redundant (Cat-3)	55

D C 11 540 5AS AA

Mounting

Inline

Actuation

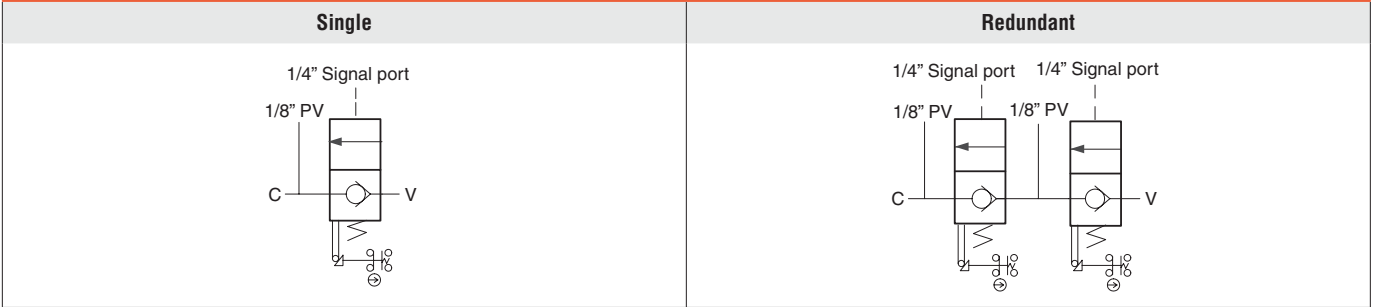
Pressure Controlled

Body Size	Port Size		
	In	Out	
3/4	1/2	1/2	540
	3/4	3/4	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: SV27NC115405ASAA, SV27DC5557605ASAA.

Function	Size			Flow C _v (l/min)	≈ Weight lb (kg)
	Body	Port 1	Port 2	1-2	
Single	3/4	1/2	1/2	4.5 (4400)	4.0 (1.8)
		3/4	3/4	8.3 (8200)	
		1	1	10 (10000)	
	1-1/4	1	1	20 (20000)	11.0 (5.0)
		1-1/4	1-1/4	29 (29000)	
		1-1/2	1-1/2	33 (32000)	
Redundant	3/4	1/2	1/2	3.8 (3800)	9.0 (4.1)
		3/4	3/4	5.6 (5500)	
		1	1	8.0 (7900)	
	1-1/4	1	1	12 (12000)	22.0 (10.0)
		1-1/4	1-1/4	19 (19000)	
		1-1/2	1-1/2	22 (22000)	

Valve Schematic



Valve Technical Data

DIMENSIONS		
Body Size	Single, Solenoid Pilot Controlled Valves	
3/4 (CNOMO Style Pilot)		
1-1/4 (Pacer Style Pilot)		
Redundant, Solenoid Pilot Controlled Valves		
3/4 (CNOMO Style Pilot)		
1-1/4 (Pacer Style Pilot)		
Downloadable CAD models available.		

DIMENSIONS

Body Size	Single, Pressure Controlled Valves	
3/4 (CNOMO Style Pilot)		
1-1/4 (Pacer Style Pilot)		
Redundant, Solenoid Pilot Controlled Valves		
3/4 (CNOMO Style Pilot)		
1-1/4 (Pacer Style Pilot)		

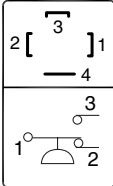
Downloadable CAD models available.

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

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

* Redundant valves require two Connector Kits or two Pre-wired Connectors.

Solenoid Connector Pinout	Sensing Switch Connector Pinout
MINI, 3-pin 1 - Green/Yellow (Ground) 2 - Blue 3 - Brown	M12, 5-pin 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 The DPST switch is actuated whenever the valve is not in the normal home position.

SOLENOID PILOT INDICATOR LIGHT KITS

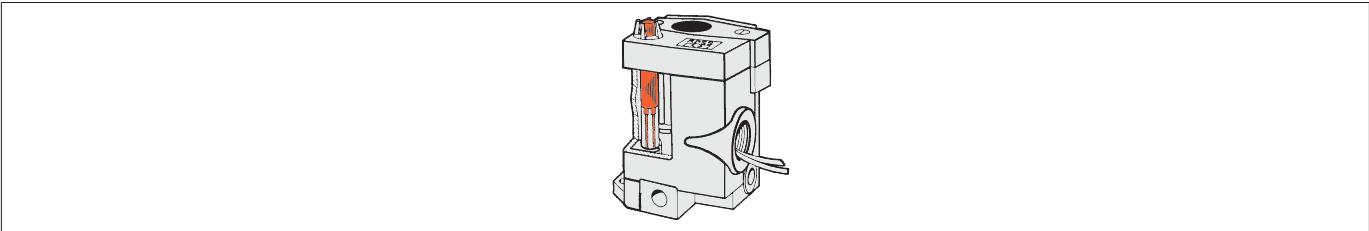


Illustration example.

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.			

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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