

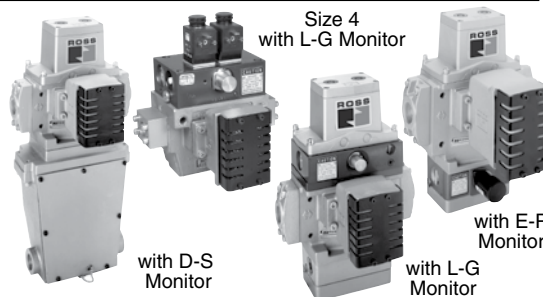
35 Series SERPAR® Double Valves



Thank You!

You have purchased a premium-quality ROSS® pneumatic valve. It is a double valve designed to offer added safety to the operation of many pneumatically controlled machines. When properly installed, it conforms with the OSHA standards for control of air clutch/brake mechanisms used on certain mechanical power presses. With care in its installation and maintenance you can expect it to have a long and reliable service life. Before you go any further, please take a few minutes to look over the information in this folder, and save it for future reference.

Service manuals with additional information are also available, please visit ROSS' website at www.rosscontrols.com.



VALVE INSTALLATION

Please read and make sure you understand all installation instructions before proceeding with the installation.

Additional technical documentation is available for download at www.rosscontrols.com.

If you have any questions about installation or servicing your valve, please contact ROSS or your authorized ROSS distributor, see contact information listed at the back of this document, or visit www.rosscontrols.com to find your distributor.

WARNINGS:

Valves Without Monitor – If your valve does not have its own monitor, the valve must be connected to an external monitoring system, which ensures that press operation will be inhibited in the event of a malfunction.

Valves with E-P, L-G, or D-S Monitor – Both solenoids must be de-energized before resetting the monitor. Otherwise, the press or other mechanism can cycle immediately, and could result in personal injury and/or property damage.

Valves with E-P Monitor – This product is a dual input device which requires two separate and distinct inputs. Connect inputs only to terminals 1, 3 & 5. Using a single input or connecting an input to a terminal other than 1, 3 & 5 could result in personal injury and/or property damage.

Pneumatic equipment should be installed only by persons trained and experienced in such installation.

Air Lines: Before installing a valve in a new or an existing system, the air lines must be blown clean of all contaminants. It is recommended that an air filter be installed in the inlet line close to the valve.

Valve Inlet (Port 1): Be sure that the supply line is of adequate size and does not restrict the air supply because of a crimp in the line, a sharp bend, or a clogged filter element. The air supply must not only provide sufficient pressure (see *Valve Specifications*, page 3), but must also provide an adequate flow of air on demand. Otherwise, the valve elements will be momentarily starved for air and the valve may be locked out by the monitoring system.

Valve Outlet (Port 2): For faster pressurizing and exhausting of the mechanism being operated by the valve, locate the valve as close as possible to the mechanism. The lines must be of adequate size and be free of crimps and sharp bends.

Valve Exhaust (Port 3): Do not restrict air flow from the exhaust port as this can adversely affect valve operation.

Pilot Solenoid Electrical Supply: Basic Size 4 valves get electrical power through plug-in connectors. All larger valves have an internal terminal strip which must be connected according to the circuit diagram accompanying the valve. In either case, the electrical supply must correspond to the voltage and hertz ratings of the solenoids. Otherwise, the solenoids are subject to early failure.

The power supply must be capable of handling the maximum power. See *Valve Specifications* on page 3 for information on maximum power.

Operating Pressures and Temperatures: Allowable ranges for pressure and temperature are given in the *Valve Specifications* on page 3. Exceeding the values shown can adversely affect performance and shorten valve life.

Pipe Installation: To install pipe in valve ports, engage pipe one turn, apply pipe thread sealant (tape not recommended), and tighten pipe. This procedure will prevent sealant from entering and contaminating the valve.

Monitor: Connect the wiring according to the circuit diagram supplied with the valve. A lockout signal port (on valve models with L-G monitor) can be connected to a normally closed pressure switch to operate a lockout indicator light.

After installation, the monitor (L-G, E-P, D-S and/or external monitor) must be tested for proper functioning. Take normal press operation safety precautions during these tests to avoid personal injury or damage to equipment. Electrically energize both solenoids; depress one manual override; de-energize both solenoids. This should result in a valve lockout and prevent the valve from operating. Reset the monitor, and repeat the test using the second manual override. Contact ROSS for testing procedures for valves without manual overrides. After satisfying these tests, energizing both solenoids simultaneously should result in normal valve operation.

VALVE OPERATION

Normal Operation: After installation, the valve is operated by energizing both pilot solenoids simultaneously. This causes both main valve elements to open so that inlet air (port 1) flows to the outlet (port 2). When the solenoids are de-energized, both valve elements close. Air no longer flows from inlet to outlet, but downstream air is exhausted through port 3.

Detecting a Malfunction: If the main valve elements do not both open or close at the same time, the valve's monitor detects this condition and locks the valve out so that it cannot be cycled. Each of the monitors detects a malfunction in somewhat different ways, but the end result is the same: a malfunction shuts down the valve. The valve cannot be operated again until the monitor is reset.

Resetting a Monitor: **WARNING:** (E-P, L-G, & D-S Monitors) Both solenoids must be de-energized before resetting the monitor. Otherwise, the press or other mechanism can cycle immediately, and could result in personal injury and/or property damage.

Resetting the L-G Monitor: Basic Size 4 models have either a manual reset button or a pneumatic reset port. All other sizes have a pneumatic reset port only.

Models with a manual reset button (on the side of the monitor housing) have the monitor reset simply by pushing the reset button. Models with a pneumatic reset port (also on the side of the monitor housing) must have a line supplying air pressure attached to the port, and a small 3/2 reset valve to control the pressure. Basic Size 4 valves require a pressure of at least 30 psig (2 bar), and larger sizes require a pressure of at least 60 psig (4 bar). Applying pressure to the reset port resets the monitor so that normal operation can be resumed.

Resetting the E-P Monitor: The E-P monitor is reset electrically. A solenoid wired through terminals 8 and 9 resets the monitor when energized. Energize the reset solenoid only briefly; prolonged energization can burn it out.

Resetting the D-S Monitor: An external switch connected to terminals G and H is used to reset the monitor. Closing the switch momentarily will reset the monitor after a delay of about two seconds. Reset can also be accomplished by momentarily interrupting the power supply to the monitor.

VALVE SERVICE

ROSS would be happy to service this valve for you at its factory repair center. If you purchased your valve from ROSS please contact ROSS customer service, if you purchased your valve thru an authorized ROSS distributor please contact the distributor for return instructions. However, if you choose to service this valve yourself, it is strongly recommended that you visit our website at www.rosscontrols.com for available downloadable technical documentation.

If you service the valve yourself, be sure to turn off electrical power to the valve, shut off the air supply, and exhaust the air in the system before beginning any disassembly operation. They contain the parts required to recondition pilots and valve bodies. Service kits for monitors are also available; consult ROSS.

Basic Size	Port Sizes	Monitor Type	Valve Body Service Kit	Gasket Seal Kit	Monitor Service Kit	Lockout Kit	Reset Solenoid	Manual Reset	Adaptor Kit	Solenoid Pilot Kit
4	3/8, 1/2, 3/4	L-G	541K77	—	545K77	542K77	—	544K77	—	—
8	1/2, 3/4, 1	E-P	429K77	438K77	421K77	—	422K77	—	—	946K87 Two kits required for each valve.
		L-G	428K77	437K77	416K77	418K77	—	—	—	
		D-S	430K77	439K77	—	—	—	—	—	
12	3/4, 1, 1¼	E-P	432K77	441K77	421K77	—	422K77	—	423K77	
		L-G	431K77	440K77	416K77	418K77	—	—		
		D-S	433K77	442K77	—	—	—	—		
30	1¼, 1½	E-P	435K77	444K77	421K77	—	422K77	—	—	
		L-G	434K77	443K77	416K77	418K77	—	—	—	
		D-S	436K77	445K77	—	—	—	—	423K77	

Valve Body Service Kits. These kits contain all parts needed for complete reconditioning of a valve body. Included are poppets, spindles, gaskets, seals, and instructions for use.

Gasket and Seal Kits. These kits are needed when valve bodies are disassembled for cleaning. Included are all necessary gaskets, O-rings, other seals and lubricants (these parts are included in the *Valve Body Service Kits* above).

Solenoid Pilot Kit. This kit contains all parts needed to recondition one pilot valve of basic size 8, 12, and 30 double valves.

Solenoids. Order replacement solenoids or solenoid coils by the following part numbers (specify voltage and hertz):

Basic Size 4: Solenoid coil only, **290B33.**

Basic Sizes 8, 12, 30: Complete solenoid, **411B04.**

If you have any questions about installing or servicing your valve, call ROSS Technical Services at your nearest ROSS location (see page 4) or in the U.S.A. at: 1-888-TEK-ROSS(835-7677).

VALVE SPECIFICATIONS

Construction: Dual poppet.
Mounting Type: Inline.
Pilot Solenoids: Two, rated for continuous duty.
Standard Voltages: 24 volts DC; 110-120 volts AC, 50/60 Hz.
Power Consumption (each solenoid):
Basic Size 4: 30 VA inrush, 16 VA holding on AC; 11 watts on DC.
Basic Size 8, 12, 30: 87 VA inrush, 30 VA holding on AC; 14 watts on DC.
Ambient Temperature: 40° to 120°F (4° to 50°C).
Media Temperature: 40° to 175°F (4° to 80°C).
Flow Media: Filtered air.
Inlet Pressure: *Basic Size 4:* 30 to 100 psig (2 to 6.9 bar).
Basic Size 8, 12, 30: 30 to 125 psig (2 to 8.5 bar).
Pilot Pressure: Supplied internally from inlet port.

E-P MONITOR: Reset solenoid is rated only for intermittent duty. Energizing it continuously will lead to solenoid burnout and nullify the reset function. Permissible voltage range is marked on the solenoid housing.
Enclosure Rating: IP65, IEC 60529.
Electrical Connections: EN 175301-803 Form A, uses two cord-grip connectors at solenoids.
L-G MONITOR: Reset pressure requirements.
Electrical Connections: Uses terminal strip connectors.
Basic Size 4: At least 30 psig (2 bar).
Basic Sizes 8, 12, 30: At least 60 psig (4 bar).
D-S MONITOR: Use voltage and hertz as shown on D-S monitor label. Power supply must be independent and continuous.

IMPORTANT NOTE: Please read carefully and thoroughly all the **WARNINGS** and **CAUTIONS** on page 1 and page 4.

Electrical Connector Form	Electrical Connector Type	Cord Length meter (feet)	Cord Diameter	Electrical Connector Model Number		
				Without Light	Lighted Connector	
EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (61/2)	6-mm	721K77	720K77-W	720K77-Z
	Prewired Connector (18 gauge)	2 (61/2)	10-mm	371K77	383K77-W	383K77-Z
	Connector for threaded conduit (1/2 inch electrical conduit fittings)	—	—	723K77	724K77-W	724K77-Z
	Connector Only	—	—	937K87	936K87-W	936K87-Z

CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

VALVE MAINTENANCE

Pneumatic equipment should be maintained only by persons trained and experienced in the maintenance of such equipment.

Supply Clean Air. Foreign material lodging in valves is a major cause of breakdowns. The use of an air filter located close to the valve is strongly recommended. The filter bowl should be drained regularly, and if its location makes draining difficult, the filter should be equipped with an automatic drain.

Check Lubricator Supply Rate. A lubricator should put a fine oil mist into the air line in direct proportion to the rate of air flow. Excessive lubrication can cause puddling in the valve and lead to malfunctions. For most applications an oil flow rate in the lubricator of one drop per minute is adequate. (Note that the double valve itself does not require air line lubrication.)

Compatible Lubricants. Although this valve does not require air line lubrication, it may be used with lubricated air being supplied to other mechanisms. Some oils contain additives that can harm seals or other valve components and so cause the valve to malfunction. Avoid oils with phosphate additives (e.g., zinc dithiophosphate), and diester oils; both types can harm valve components. The best oils to use are generally 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.

Some compatible oils are listed above at the right. These oils, although believed to be compatible, could change without notice because manufacturers sometimes reformulate their oils. Therefore, use oils specifically compounded for air line service. If it is a synthetic oil, contact the oil manufacturer for compatibility information.

Cleaning the Valve. If the air supplied to the valve has not been well filtered, the interior of the valve may accumulate dirt and varnish which can affect the valve's performance. This can cause sluggish or erratic valve action and nuisance lockouts. A schedule should be established for cleaning all valves, the frequency depending on the cleanliness of the air being supplied.

COMPATIBLE LUBRICANTS

Maker	Brand Name
Amoco	American Industrial Oil 32 Amoco Spindle Oil C, Amolite 32
Citgo	Pacemaker 32
Exxon	Spinesstic 22, Teresstic 32
Mobil	Velocite 10
Non-Fluid Oil	Air Lube 10H/NR
Shell	Turbo T32
Sun	Sunvis 11, Sunvis 722
Texaco	Regal R&O 32
Union	Union Turbine Oil

To clean the valve use any good commercial solvent. Do *not* scrape varnished surfaces. Also do *not* use chlorinated solvents or abrasive materials. The former damages seals, and abrasives can do permanent damage to metal parts. Before reassembling the valve, lubricate all sliding surfaces with a grease such as MobilGrease 28.

Electrical Contacts. In the electrical circuits associated with the valve solenoids, keep all switches or relay contacts in good condition to avoid solenoid malfunctions.

Replace Worn Components. In most cases it is not necessary to remove the valve from its installation for servicing. However, turn off the electrical power to the valve, shut off the air supply, and exhaust the air in the system before beginning any disassembly operation. Service kits are listed on page 2.

You may also request a free service manual from ROSS in the U.S.A. at 1-800-GET-ROSS.



CAUTIONS And WARNINGS



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. Safety 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 safety 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.

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.

ROSS CONTROLS	USA	Tel: 1-248-764-1800	www.rosscontrols.com
ROSS EUROPA GmbH	Germany	Tel: 49-6103-7597-0	www.rosseuropa.com
ROSS ASIA K.K.	Japan	Tel: 81-42-778-7251	www.rossasia.co.jp
ROSS UK Ltd.	UK	Tel: 44-1543-671495	www.rossuk.co.uk
ROSS SOUTH AMERICA Ltda.	Brazil	Tel: 55-11-4335-2200	email: vendas@rosscontrols.com
ROSS CONTROLS INDIA Pvt. Ltd.	India	Tel: 91-44-2624-9040	email: ross.chennai@rosscontrols.com
ROSS CONTROLS (CHINA) Ltd.	China	Tel: 86-21-6915-7961	www.rosscontrolschina.com
ROSS FRANCE S.A.S.	France	Tel: 33-1-49-45-65-65	www.rossfrance.com
ROSS CANADA (6077170 CANADA INC. AN INDEPENDENT REPRESENTATIVE)	Canada	Tel: 1-416-251-7677 (416-251-ROSS)	www.rosscanada.com