

35 Series SERPAR® Double Valves with Dual Monitoring



CSA Z142
Compliant

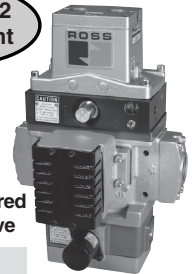
Thank You!

You have purchased a premium-quality ROSS® pneumatic valve.

It is a SERPAR® double valve designed to offer added safety to the operation of many pneumatically controlled machines. When properly installed, it conforms with the OSHA & CSA standards for control of air clutch/brake mechanisms used on certain mechanical power presses.

With care in its installation and maintenance, you can expect the valve 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.

Size 8
Dual Monitored
Double Valve



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.

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 a 5-micron-rated air filter be installed in the inlet line close to the valve. See ROSS FRLs catalog section for available filter products.

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 below*), 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 the operation of the valve.

Electrical Supply: Electrical supply for the pilot solenoids and the E-P reset solenoid is connected via 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. If power is supplied by a transformer, the transformer must be capable of handling the inrush current without significant voltage drop. See *Valve Specifications* below for inrush current data.

Operating Pressures and Temperatures: Allowable ranges for pressure and temperatures are given in the *Valve Specifications* below. 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.

Monitors: Connect the wiring according to the circuit diagram supplied with the valve. An L-G lockout signal port (on same side as reset port) can be connected to a normally closed pressure switch to operate a lockout indicator light.

Once the valve is installed, the monitoring function of the valve must be tested. See TEST PROCEDURE on page .

VALVE SPECIFICATIONS

Pilot Solenoid: Two, rated for continuous duty.

Standard Voltages: 100 – 110 volts 50 Hz;

100 – 120 volts 60 Hz; 24 volts DC.

Power Consumption: Each solenoid, 87 VA inrush, 30 VA holding on 50 or 60 Hz; 14 watts on DC.

E–P Reset Solenoid: Rated for intermittent duty. *Standard Voltages:* Same as above for pilot solenoids.

Electrical Connections: Terminal Strip

Ambient Temperature: 40° to 120°F (4° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered air; 5 micron recommended.

Inlet Pressure: 30 to 125 psig (2 to 8.5 bar).

L–G Reset Pressure: 60 psig (4 bar) minimum.

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

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 both main valve elements do not open or close at the same time, one or both of the valve's monitors will detect this condition and lock the valve out so that it cannot be cycled. The L-G and E-P monitors detect discordance in somewhat different ways, but the end result is the same; discordance in the shifting of the two main valve elements shuts down the valve. The valve cannot be operated again until the locked out monitor(s) are reset.

Resetting a Monitor:

CAUTION: Before resetting any monitor, power to the pilot solenoids must be turned off. Otherwise, the press or other mechanism controlled by the valve will cycle immediately and produce a potentially hazardous condition.

Resetting the L-G Monitor:

The L-G monitor is reset pneumatically, and must have a line supplying air pressure attached to the pneumatic reset port (on the side of the L-G monitor housing). Also, a small 3/2 normally closed reset valve (either solenoid or manual), to control the reset signal, should be installed in this line. The L-G monitor requires a reset pressure of at least 60 psig (4 bar). Applying pressure momentarily 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. An electrical signal applied to terminals 1 and 9 energizes the reset solenoid, which, in turn, resets the monitor. Energize the reset solenoid only briefly; prolonged energization can burn the solenoid out.

Coordination of Reset Signals:

The L-G and E-P monitors operate independently to lock out the valve so that it cannot be cycled after a discordance in the shifting of the two main valve elements is detected. Sometimes only one of the two monitors will lock out, and other times, both will lock out. It is recommended that, after a lock out occurs, reset signals should be provided to both monitors in accordance with the instructions provided, in the paragraphs above, before attempting to resume normal operation.

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 a 5-micron-rated 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 is not 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.

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

A schedule should be established for cleaning all valves, the frequency depending on the cleanliness of the air being supplied. 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 3.

TEST PROCEDURE

Once the valve is installed, the monitoring functions of the valve must be tested. While testing the monitoring functions, take standard press operation safety precautions to avoid personal injury or damage to equipment.

Step 1: Electrically energize both pilot solenoids.

Step 2*: Depress one of the manual overrides and hold depressed.

Step 3*: De-energize both pilot solenoids while continuing to hold the manual override depressed for at least 1 second after de-energizing the solenoids.

Performing steps 1 through 3 should result in a valve lockout and prevent the valve from operating. Do not attempt to reset either monitor before performing steps 4 and 5.

Step 4: Determine whether or not the L-G monitor has locked out. Locate the vent on the back of the L-G monitor and check for a continuous stream of air exhausting from the vent. If air is not exhausting from the vent, the L-G monitor has not locked out properly.

Step 5: Determine whether or not the E-P monitor has locked out. Electrically energize both pilot solenoids and listen for the sound of the solenoids shifting. If the solenoids shift, the E-P monitor has not locked out properly.

Step 7: De-energize both pilot solenoids. Next, reset both monitors following procedures outlined on page 2. Note that once both monitors are reset, the leakage from the back of the L-G monitor should stop.

Step 8*: Repeat steps 1 through 7 using the other manual override this time.

*NOTE: If your valve is not equipped with manual overrides, step 2 should be replaced with "remove the input signal from one pilot solenoid." Replace step 3 with "De-energize both pilot solenoids." Also, step 8 should read "Repeat steps 1 through 7 using the other pilot solenoid this time."

NOTE: Occasionally one monitor may lockout the valve before the other monitor has had time to react. Contact ROSS Technical Services for further instructions should this occur.

WARNING: Both pilot solenoids must be de-energized before resetting the monitors. Otherwise, the press or other mechanism can cycle immediately and produce a potentially hazardous condition.

WARNING: Do not connect power input signals directly to both terminals 5 and 7 as this could cause the machine being controlled by the valve to immediately cycle and produce a potentially hazardous condition.

After performing the above tests and obtaining the appropriate results, energizing both pilot solenoids simultaneously should result in normal valve operation.

NOTE: The above test procedure checks for proper operation of the valve's overall monitoring function. If you have concerns about the operation of either or both of the monitors, please contact ROSS Technical Services for further assistance.

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.

When servicing the valve yourself, be sure to turn off electrical power to the valve, shut off the air supply, exhaust the air in the system, and lock-out all power sources before beginning any disassembly operation. Listed below are kits for servicing your valve, as well as replacement components.

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. See chart below for kit numbers.

Gasket and Seal Kits. These kits are needed when valve bodies are disassembled for cleaning. They include all necessary gaskets, O-rings, other seals, and lubricants. These parts are included in the *Valve Body Service Kits* above. See chart below for kit numbers.

Solenoid Pilot Kit. This kit contains all parts needed to recondition one pilot valve of size 8, 12, and 30 double valves. Order kit number **946K87** (Each valve has two pilots, therefore two kits required for each valve).

Solenoids. Order replacement pilot solenoids by the following part number: **411B04** (specify voltage and hertz). See chart below for replacement E-P Reset Solenoid number (specify voltage and hertz).

Basic Size	Port Sizes	Valve Body Service Kit	Gasket Seal Kit	E-P Monitor Service Kit	L-G Monitor Service Kit	Lockout Kit (L-G)	Reset Solenoid
8	1/2, 3/4, 1	2071K77	2072K77	2079H77	2078H77	2202H77	2069K77
12	3/4, 1, 1¼	2073K77	2074K77	2079H77	2078H77	2202H77	2069K77
30	1¼, 1½	2075K77	2076K77	2079H77	2078H77	2202H77	2069K77

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).

CAUTIONS And WARNINGS



PRE-INSTALLATION or SERVICE

1. Before servicing a valve or other pneumatic component, be sure that all sources of energy are turned off, the entire pneumatic system is shut off and exhausted, and all power sources are locked out (ref: OSHA 1910.147, EN 1037).
2. All ROSS® products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any installation can be tampered with or need servicing after installation, persons responsible for the safety of others or the care of equipment must check every installation on a regular basis and perform all necessary maintenance.
3. All applicable instructions should be read and complied with before using any fluid power system in order 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 location listed in the table below.
4. Each ROSS product should be used within its specification limits. In addition, use only ROSS parts to repair ROSS products.

WARNINGS: Failure to follow these directions can adversely affect the performance of the product or result in the potential for human injury or damage to property.

FILTRATION and LUBRICATION

5. 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. ROSS recommends a filter with a 5-micron rating for normal applications.
6. All standard ROSS filters and lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Do not fail to 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, hazardous leakage, and the potential for human injury or damage to property. Immediately replace a crazed, cracked, or deteriorated bowl. When bowl gets dirty, replace it or wipe it with a clean dry cloth.

7. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum based 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 human injury, and/or damage to property.

AVOID INTAKE/EXHAUST RESTRICTION

8. Do not restrict the air flow in the supply line. To do so could reduce the pressure of the supply air below the minimum requirements for the valve and thereby cause erratic action.
9. 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:

ROSS expressly disclaims all warranties and responsibility for any unsatisfactory performance or injuries caused by the use of the wrong type, wrong size, or an inadequately maintained silencer installed with a ROSS product.

POWER PRESSES

10. 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.

ENERGY ISOLATION/EMERGENCY STOP

11. Per specifications and regulations, ROSS L-O-X® valves and L-O-X® valves with EEZ-ON® operation are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

STANDARD WARRANTY

All products sold by ROSS CONTROLS are warranted for a one-year period [with the exception of all Filters, Regulators and Lubricators ("FRLs") which are warranted for a period of seven years] from the date of purchase to be free of defects in material and workmanship. ROSS' obligation

under this warranty is limited to repair or replacement of the product or refund of the purchase price paid solely at the discretion of ROSS and provided such product is returned to ROSS freight prepaid and upon examination by ROSS is found to be defective. This warranty becomes void in the event that product has been subject to misuse, misapplication, improper maintenance, modification or tampering.

THE WARRANTY EXPRESSED ABOVE IS IN LIEU OF AND EXCLUSIVE OF ALL OTHER WARRANTIES AND ROSS EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES EITHER EXPRESSED OR IMPLIED WITH RESPECT TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ROSS 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 ROSS 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 ROSS MAY EXTEND THE LIABILITY OF ROSS AS SET FORTH HEREIN.

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