

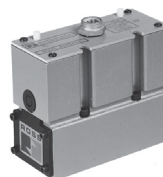
84 Series SAE Valves



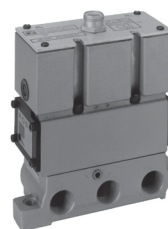
Thank You!

You have purchased a premium-quality ROSS® pneumatic valve. It is a single-spindle poppet valve built to the highest standards.

With care in its installation and maintenance you can expect it to have a long and economical service life. So before you go any further, please take a few minutes to look over the information in this document. Then, save it for future reference and for the useful service information it contains.



SAE 250 shown



ROSS 84 Series valves and bases must be purchased separately.

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 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 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 an air filter be installed in the inlet line close to the valve.

Valve Inlet (Port P): Be sure that the supply line is of adequate size and does not restrict the air supply because of a crimp in the line, sharp bends, or a clogged filter element.

Valve Outlets (Ports A & B): 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 Exhausts (Ports EA & EB): Do not restrict exhaust air flow as this can adversely affect valve performance. However, to reduce noise you may use an efficient silencer. ROSS silencers reduce impact noise by as much as 25 dB, and produce little back pressure.

Pilot Supply:

Solenoid Control: Pressure for the pilot valves is supplied from the inlet port. Be sure that the external pilot supply port X in the base is plugged or pilot air will escape. If the valve must operate with an inlet pressure less than the required pilot pressure (see *Valve Specifications* on page 2), an external pilot supply must be provided. Connect to port X in the base.

Pressure Control: Connect the control line(s) to the ports provided in the valve. See *Valve Specifications* on page 2 for required pressures.

Non-Air Service: Such applications require an external pilot supply for solenoid valves. Connect to port X in the base.

Electrical Supply: The voltage and hertz ratings of the valve solenoids are shown on the plate on the top of the valve. The electrical supply must correspond to these ratings, or solenoid life will be shortened.

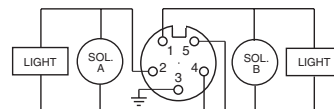
Power is supplied via the 5-pin connector or conduit in the top of the valve. (See connector diagrams on the right.)

If power is supplied by a transformer it must be capable of handling the inrush current without significant voltage drop.

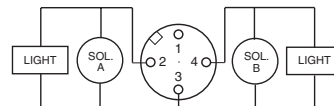
Operating Pressures and Temperatures: Allowable ranges for pressure and temperatures are given in the *Valve Specifications* on page 2. Exceeding the values shown can shorten valve life.

Pipe Installation: To install pipe in valve or base 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.

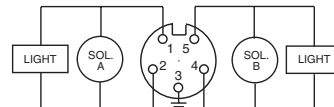
Ford Wired 5-pin mini-connector (all voltages)



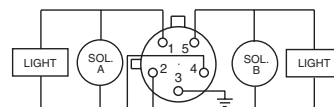
Ford Wired 4-pin micro-connector (24 Volts DC)



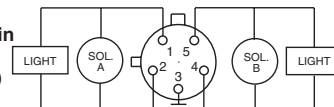
Chrysler Wired 5-pin mini-connector (all voltages)



Chrysler Wired 5-pin micro-connector (24 Volts DC)



Chrysler Wired 5-pin micro-connector (120 volts / 60 Hz)



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 as close to the valve as possible is strongly recommended. The filter bowl should be drained regularly, and if the filter's location makes draining difficult, the filter should be equipped with an automatic drain.

Check Lubricator Supply Rate. A lubricator should put atomized oil into the air line in direct proportion to the rate of air flow. Excessive air line 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 of air flow is adequate. (Note that your ROSS valve does not itself require air line lubrication.) See next column for a partial list of lubricants that are compatible with ROSS valves and are suitable for use in compressed air systems.

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.

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

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. Although ROSS poppet valves are very tolerant of dirty air, cleaning may sometimes be needed.

To clean the valve use any good commercial solvent or kerosene. Do *not* use a chlorinated solvent 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 equivalent to Dow Corning BR-2.

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. After long usage the poppets may show signs of wear. The valve can be reconditioned with the use of ROSS service kits. See page 3 for information about such kits.

VALVE SPECIFICATIONS

Construction Design	Spool and Sleeve
Mounting Type	Poppet
Flow Media	Filtered air
Construction Material	Valve Body: Cast Aluminum Poppet: Rubber Coated Aluminum & Stainless Steel Seals: Buna-N

Pressure Controlled Valves	
Temperature	Ambient/Media: 40° to 175°F (4° to 80°C)
	For other temperature ranges, consult ROSS.
Operating Pressure	Vacuum to 150 psig (10 bar)
	Pilot Supply - External: Minimum 15 psig (1 bar) Pilot supply pressure must be equal to or greater than inlet pressure.

Solenoid Pilot Controlled Valves	
Solenoids	Rated for continuous duty
Voltage	24 volts DC; 110-120 volts AC, 50/60 Hz
Power Consumption (each solenoid)	SAE Size 125 & 250: 8 watts on DC; 8 VA inrush, 6 VA holding on 50/60 Hz SAE Size 500: 14 watts on DC; 87 VA inrush, 30 VA holding on 50/60 Hz
Temperature	Ambient: 40° to 120°F (4 to 50°C) Media: 40° to 175°F (4° to 80°C)
Pilot Supply	Internal or External
Operating Pressure	30 to 150 psig (2 to 10 bar)
	Pilot Supply - Internal or External: Minimum 30 psig (2 bar) When external pilot supply, pressure must be equal to or greater than inlet pressure.
Indicator Light	One per solenoid
Manual Override	Flush; Rubber, non-locking

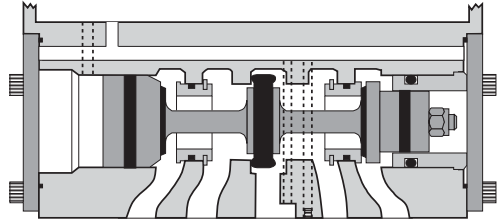
IMPORTANT NOTE: Please read carefully and thoroughly all the **CAUTIONS** and **WARNINGS** on page 4.

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 rosscontrols.com for available downloadable technical documentation.

**Typical cross section of a ROSS 84 Series poppet valve body.
Internal pressure return model shown.**



Valve Body Service Kits

These kits, listed in the chart at the right, contain all parts needed for a complete reconditioning of a valve body. Included are a spool-and-sleeve assembly, all required gaskets and seals, detent assemblies for valves using them, and instructions for use.

Valve-to-Base Gasket

If your valve is removed from its base for any reason, a new valve-to base gasket must be used to ensure a leak-free seal. (This gasket is already included in valve body service kits).

Solenoids

Replacement solenoids or solenoid coils are available, see chart below.

Pilot Service

Pilot service kits and complete pilot assemblies are available, see chart below (2 each required for double solenoid valves).

Valve SAE Size	Solenoid Valve Type	Valve Body Service Kit	Valve-to-Base Gasket
		Kit Number	Model Number
125	Single	1244K77	637B11
	Double	1247K77	
250	Single	1245K77	677B11
	Double	1248K77	
500	Single	1246K77	631B11
	Double	1249K77	

Solenoid Pilot Service		Valve SAE Size	Description	Model Number	
				Voltage	
				24 volts DC	110 or 120 volts AC
Solenoids	Solenoid Coil	125	Coil Only	314B33168	314B33151
		250	Coil Only	308K33168	308K33151
	Complete Solenoid	500	Complete Solenoid	411B0416	411B04105
Pilot Service	Pilot Service Kit	125	Coil Not Included	1100K77	1100K77
	Complete Pilot Assembly	250	Solenoid Coil Included	936C79168	936C79151
	Pilot Service Kit	500	Solenoid Not Included	946K87	946K87

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 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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