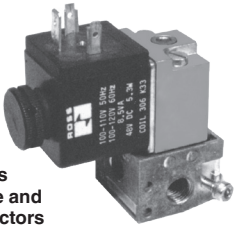
W14 Series MiniatureValves

Thank You!

You have purchased a premium-quality ROSS® pneumatic valve. It is a single-direct solenoid operated 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.



ROSS W14 Series valve shown on base and with electrical connectors (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 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 an air filter be installed in the inlet line close to the valve.*

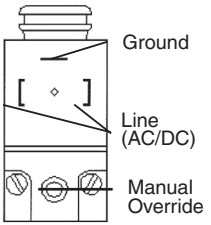
Valve Inlet (Port 1): Be sure that the supply line is of adequate size and does not restrict the air supply because of a crimp in the line, sharp bends, or a clogged filter element.

Valve Outlets (Ports 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 Exhausts (Ports 3): Do not restrict exhaust air flow as this can adversely affect valve performance.

Electrical Supply: The voltage and hertz ratings of the valve solenoids (if any) are printed on the solenoids.The electrical supply must correspond to these ratings, or the life of the solenoids will be shortened.

Connections are made with a plug-in connector to the prongs as shown in the sketch of the pilot on the right. If power is supplied by a transformer must be capable of handling the inrush current without significant voltage drop. See *Valve Specifications* on page 2 for information on inrush current.

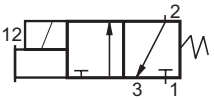


Operating Pressures and Temperatures: Allowable ranges for pressure and temperatures are given in the *Valve Specifications* on page 2. Exceeding the values shown can shorten valve life.

Consult ROSS Technical Services for fluid media other than air.

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.

VALVE OPERATION



No Signal Applied: Inlet 1 is closed; outlet 2 is connected to exhaust 3.

Signal 12 Applied: Inlet 1 connected to outlet 2; exhaust 3 is closed.

VALVE MAINTENANCE

Pneumatic equipment should be maintained only by persons trained and experienced in 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.

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 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.

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 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.

VALVE SPECIFICATIONS

Construction Design	Poppet
Mounting Type	Base
Solenoids	Rated for continuous duty
Voltage	24 volts DC; 110-120 volts AC, 50/60 Hz
Power Consumption	6 watts on DC; 8 VA inrush, 6 VA holding on 50 or 60 Hz
Enclosure Rating	IP65, IEC 60529
Electrical Connections	EN 175301-803 Form A connector

Temperature	Ambient: 5° to 120°F (-15° to 50°C) Media: 5° to 175°F (-15° to 80°C)
	For temperatures below 40°F (4°C) air must be free of water vapor to prevent formation of ice.
Flow Media	Filtered air
Operating Pressure	Vacuum to 150 psig (10 bar)
Construction Material	Valve Body: Cast Aluminum Seals: Buna-N
Manual Override	Flush; metal, locking and non-locking

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

Electrical Connector	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Electrical Connector Model Number		
				Without Light	Lighted Connector*	
					24 Volts DC	120 Volts AC
EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z
	Prewired Connector (18 gauge)	2 (6½)	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

*Lights in connectors with a translucent housing can be used as indicator lights to show when solenoids are energized.

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.

W1413A1408 – Valve with locking manual override.
W1413A1409 – Valve with non-locking manual override.

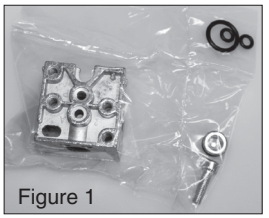


Figure 1

For individual valve installations, use the **516B91 Sub-base** (1 per valve).

Kit includes the following: Valve-to-Base O-rings, quantity (2), Sub-Base to Sub-Base O-ring, quantity (1), Sub-Base to Sub-Base fastening screw, quantity (1), Pipe Plug, quantity (1), see figure 1.

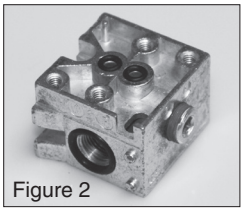


Figure 2

Sub-base Installation Instructions:
Connect supply line to port 1 on either side of the sub-base. Install the provided pipe plug in the remaining open port 1. Port 2 is the work port that would be connected to your cylinder or other work device as needed, see figure 2.

For installations involving multiple valves onto a single manifold assembly use the **535K91 Manifold** (one per valve).

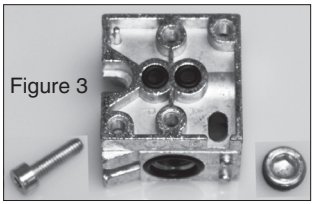


Figure 3

Kit includes the following: Valve-to-Base O-rings, quantity (2), Sub-Base to Sub-Base O-ring, quantity (1), Sub-Base to Sub-Base fastening screw, quantity (1), Pipe Plug, quantity (1).

Manifold installation instructions:
Remove any of the pipe plugs that may have previously been installed in the port 1 of all the manifold stations that will be assembled together, see figure 3.

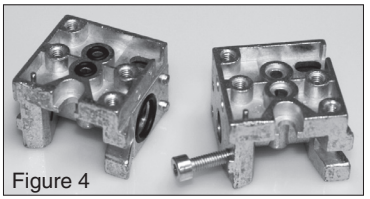


Figure 4

Install the fastening screw in each of the stations. Assemble as shown in figure 4 and 5, then tighten the fastening screws. Supply pressure may be connected via port 1 on either end of the manifold assembly or both. If supply is only to be connected to one end of the manifold, be sure to install one of the provided pipe plugs into the remaining port 1 on the opposite end of the manifold.

Port 2 is the work port that would be connected to your cylinder or other work device as needed.

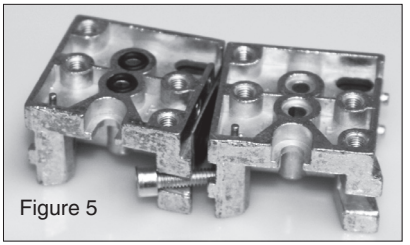


Figure 5

Solenoid Coils: Replacement coils for W14 Series valves can be ordered by part number listed in the table on the right.

Replacement Solenoid Coils	Voltage		
	24 volts DC 48 volts AC	110-120 volts AC 48 volts DC	210-220 volts AC 110 volts DC
	306K33165	306K33166	306K33167

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.

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