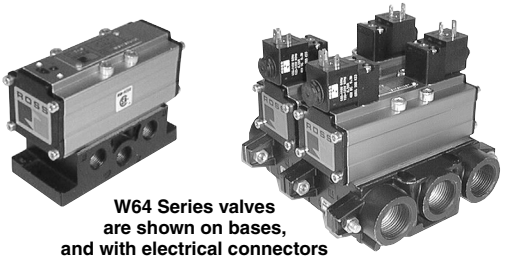
W64 Series ISO 5599-1 Valves

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.



W64 Series valves are shown on bases, 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 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.

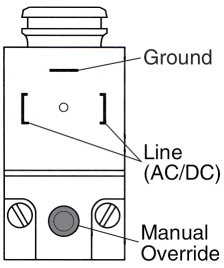
Air Lines: Before installing a valve in a new or an existing system, the air lines must be blown clean of all contaminants. *It is recommended that an air filter be installed in the inlet line close to the valve.*

Valve Inlet (Port 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 & 4): 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 & 5): 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.

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 the sketch of the pilot below. If power is supplied by a transformer it 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.

Pilot Supply:

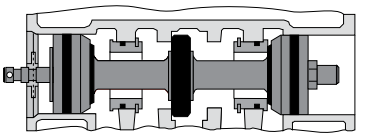
Pressure Control: For valves with single remote pressure control, connect the control line to port 14 in the sub-base or manifold. For valves with double remote pressure control, connect the control lines to ports 12 and 14 in the base. See *Valve Specifications* on page 2 for required pressures.

Solenoid Control: Pressure for the pilot valves is supplied from the inlet port. Be sure that port 14 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 of sufficient pressure must be provided. Connect the external pilot supply to port 14 in the base.

Non-Air Service: Such applications require an external pilot supply for solenoid valves. Connect to port 14 in the base. *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.

Typical Poppet Valve Cross Section



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.

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.

Replace Worn Components. After long usage dynamic seals 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.

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

VALVE SPECIFICATIONS

Construction Design	Poppet
Mounting Type	Base
Flow Media	Filtered air
Construction Material	**Valve Body:** Bar Stock Aluminum **Spool:** Aluminum & Stainless Steel **Seals:** Buna-N

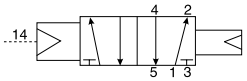
Pressure Controlled Valves	
Temperature	**Ambient/Media:** **Standard Temp:** 40° to 175°F (4° to 80°C) **High Temp:** 40° to 220°F (4° to 105°C)
	For other temperature ranges, consult ROSS.
Pilot Supply	Internal
Operating Pressure	Vacuum to 150 psig (10 bar)
	Pilot Supply - External: 30 to 150 psig (2 to 10 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)	6 watts on DC; 11 VA inrush, 8.5 VA holding on 50 or 60 Hz
Enclosure Rating	IP65, IEC 60529
Electrical Connections	EN 175301-803 Form A connector
Temperature - Ambient	**Standard Temp:** 40° to 120°F (4° to 50°C) **High Temp:** 40° to 175°F (4° to 80°C)
Temperature - Media	**Standard Temp:** 40° to 175°F (4° to 80°C) **High Temp:** 40° to 220°F (4° to 105°C)
	For other temperature ranges, consult ROSS.
Pilot Supply	Internal or External; Selected automatically
Operating Pressure	Vacuum to 150 psig (10 bar)
	Pilot Supply - Internal or External: **ISO Size 1:** Minimum 30 psig (2 bar) **ISO Size 2 & 3:** Minimum 15 psig (1 bar)
	When external pilot supply, pressure must be equal to or greater than inlet pressure.
Manual Override	Flush; Metal, non-locking

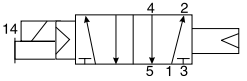
IMPORTANT NOTE: *Please read carefully and thoroughly all the* ***WARNINGS*** *and* ***CAUTIONS*** *on page 4.*

VALVE OPERATION

5/2 SINGLE CONTROL VALVES



Pressure Controlled

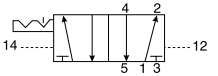


Solenoid Pilot

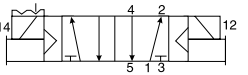
No Signal Applied: Inlet 1 connected to outlet 2; outlet 4 connected to exhaust 5; exhaust 3 closed.

Signal 14 Applied: Inlet 1 connected to outlet 4; outlet 2 connected to exhaust 3; exhaust 5 closed.

5/2 MOMENTARY CONTROL VALVES



Pressure Controlled



Solenoid Pilot

Signal 12 Applied Momentarily: Inlet 1 connected to outlet 2; outlet 4 connected to exhaust 5; exhaust 3 closed.

Signal 14 Applied Momentarily: Inlet 1 connected to outlet 4; Outlet 2 connected to exhaust 3; exhaust 5 closed.

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.

Valve Body Service Kits. These kits, listed at the right, contain all parts needed for a complete reconditioning of a valve body. Included are a spindle, all poppets and spacers, 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.)

Solenoid Coils: Replacement coils for solenoid controlled valves can be ordered by part number listed in the table below.

Complete Solenoid Pilot Assemblies: These assemblies consist of new pilot valve mechanisms and a new solenoid coil, ready to bolt in position on the valve.

Voltage	Complete Solenoid Pilot Assemblies	Replacement Solenoid Coils
	Part Number	Part Number
24 volts DC, 48 volts AC	851C79165	306K33165
110-120 volts AC, 48 volts DC	851C79166	306K33166
210-220 volts AC, 110 volts DC	851C79167	306K33167

Valve Model Number	Valve Body Service Kit	Valve-to-Base Gasket
W6456B2411	1017K77	617B11
W6456B2412	1014K77	617B11
W6456B2417	834K77	617B11
W6456B2418	843K77	617B11
W6456B3411	1018K77	618B11
W6456B3412	1015K77	618B11
W6456B3417	835K77	618B11
W6456B3418	844K77	618B11
W6456B4411	1019K77	619B11
W6456B4412	1016K77	619B11
W6456B4417	836K77	619B11
W6456B4418	845K77	619B11
W6476B2401	1017K77	617B11
W6476B2402	1014K77	617B11
W6476B2407	834K77	617B11
W6476B2408	843K77	617B11
W6476B3401	1018K77	618B11
W6476B3402	1015K77	618B11
W6476B3407	835K77	618B11
W6476B3408	844K77	618B11
W6476B4401	1019K77	619B11
W6476B4402	1016K77	619B11
W6476B4407	836K77	619B11
W6476B4408	845K77	619B11

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.

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.

ROSS CONTROLS	USA	Tel: 1-248-764-1800	rosscontrols.com
ROSS EUROPA GmbH	Germany	Tel: 49-6103-7597-100	rosseuropa.com
ROSS ASIA K.K.	Japan	Tel: 81-42-778-7251	rossasia.co.jp
ROSS UK Ltd.	UK	Tel: 44-1543-671495	rossuk.co.uk
ROSS SOUTH AMERICA Ltda.	Brazil	Tel: 55-11-4335-2200	rosscontrols.com.br
ROSS CONTROLS INDIA Pvt. Ltd.	India	Tel: 91-44-2624-9040	rosscontrols.com
ROSS CONTROLS (CHINA) Ltd.	China	Tel: 86-21-6915-7961	rosscontrolschina.com
ROSS FRANCE S.A.S.	France	Tel: 33-1-49-45-65-65	rossfrance.com
ROSS CANADA (6077170 CANADA INC. An Independent Representative)	Canada	Tel: 1-416-251-ROSS (7677)	rosscanada.com

Printed in the U.S.A. – Rev. 08/18

Form SS098
Content subject to change.