

19 Series and 18 Series Valves for Air Flow Control



Thank You!

You have purchased a premium-quality ROSS® pneumatic valve. It is designed for in-line mounting, and has been 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.

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.

Valve Inlet (Port 1): Be sure that the inlet line is of adequate size and does not restrict the air supply.

Valve Outlet (Port 2): For meter out applications, the flow control valve port 2 must be connected to the inlet port of the actuator. For maximum control of the mechanism being operated by the valve, locate the valve as close as possible to the mechanism.

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.

IDENTIFICATION and OPERATION

FLOW CONTROL VALVES



Free flow from port 1 to port 2;
controlled flow from port 2 to port 1.

Turn adjustment screw clockwise
to reduce air flow.

Turn adjustment screw
counterclockwise to increase flow.



Turn knob counterclockwise to
reduce air flow; clockwise to
increase flow.



Loosen locking collar (where
provided). Turn knob or screw
clockwise to reduce air flow;
counterclockwise to increase
flow. Tighten locking collar.



Turn knob clockwise to reduce
air flow; counterclockwise to
increase flow.

CHECK VALVES

Allow air flow from port 1 to port 2;
block reverse flow.



**SHUTTLE
VALVES**



Has two inlets and one outlet. The outlet can be operated by either of two inlets. The first inlet to be pressurized is connected to the outlet, and the second inlet is then closed.



**QUICK EXHAUST
VALVES**

Allows quick reversal of the cylinder.
Opens as soon as the controls
valve begins exhausting.

VALVE MAINTENANCE

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

Supply Clean Air: Foreign material lodging in valves is a major cause of breakdowns. The use of a ROSS 5-micron-rated air filter is strongly recommended. Install the filter upstream of and as close as possible to the directional valve that supplies air to the flow control or check valve. 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 ROSS 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 valves 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 below for a partial list of lubricants that are compatible with the materials in ROSS valves and are suitable for use in compressed air systems.

Cleaning Valve: If the air supplied to the valve has not been well filtered, the interior of the valve may accumulate dirt which can affect the valve's performance, and so require cleaning.

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 can damage seals, and abrasives can do permanent damage to metal parts.

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.

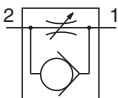
See page 3 for information about such kits.

COMPATIBLE LUBRICANTS

Although air line lubrication is not required for most ROSS valves, other mechanisms in the system may need such lubrication. When a lubricator is used it should be supplied only with oils which are compatible with the materials used in the valves for seals and poppets. Generally speaking, these are petroleum base oils with oxidation inhibitors, and aniline point between 180°F (82°C) and 220°F (104°C) and an ISO 32, or lighter, viscosity. Oils with phosphate type additives, such as zinc dithiophosphate, must be avoided because they can harm polyurethane valve components. Diester oils should be avoided because they harm Buna-N elastomers.

Some of the available compatible lubricants are listed at the right. However, oil manufacturers sometimes change the chemistry of their oils. The oils listed, although believed to be compatible at the time of printing, could change without notice. Therefore, the best oils to use are those specifically compounded for air line lubricator service. If it is a synthetic oil, you should contact the oil manufacturer for compatibility information.

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

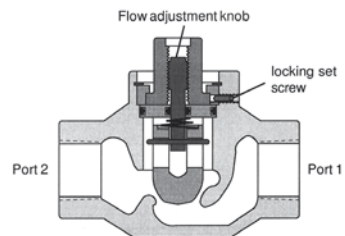


Flow Control



Check Valve

Cross Section of Model
1968E4007
Flow Control Valve



VALVE SPECIFICATIONS

19 Series Valves

Low-Profile Flow Control Valves	
Temperature	Ambient/Media: 41° to 140°F (5° to 60°C)
Flow Media	Filtered air
Operating Pressure	Supply Pressure: 217 psi (14.9 bar) Maximum Pressure: 150 psi (10.3 bar)

Right-Angle Flow Control Valves	
Temperature	Ambient/Media: 40° to 175°F (4° to 80°C)
Flow Media	Filtered air
Operating Pressure	5 to 150 psig (0.3 to 10 bar)

Check Valves	
Temperature	Ambient/Media: -40° to 175°F (-40° to 80°C) <i>For temperatures below 40°F (4°C) air must be free of water vapor to prevent formation of ice. For temperatures below -40°F (-40°C), consult ROSS.</i>
Flow Media	Filtered air
Operating Pressure	5 to 150 psig (0.3 to 10 bar) Signal Pressure: Must be equal to or greater than inlet

Low-Profile High-Capacity and High Capacity Flow Control Valves	
Temperature	Ambient/Media: -40° to 175°F (-40° to 80°C) <i>For temperatures below 40°F (4°C) air must be free of water vapor to prevent formation of ice. For temperatures below -40°F (-40°C), consult ROSS.</i>
Flow Media	Filtered air
Operating Pressure	5 to 150 psig (0.3 to 10 bar)

19 & 18 Series Valves

Shuttle & Quick Exhaust Valves	
Temperature	Ambient/Media: -40° to 175°F (-40° to 80°C) <i>For temperatures below 40°F (4°C) air must be free of water vapor to prevent formation of ice. For temperatures below -40°F (-40°C), consult ROSS.</i>
Flow Media	Filtered air
Operating Pressure	5 to 150 psig (0.3 to 10 bar)

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

VALVE SERVICE

The service kits listed below contain all of the parts needed for complete reconditioning of the valve.

Service kits are *not available* for all flow control and check valves.

Note that some valve model numbers may be preceded by the letter D or S.

Valve Model	Service Kit
1968 B2007.....	695K87
B3007.....	695K87
B4007.....	696K87
E4007.....	1169K77
A4107.....	1701K77
B4017.....	696K87
A4F07.....	1701K77
B5007.....	696K87
E5007.....	1169K77
A5107.....	1701K77
A5H07.....	1701K77
B6007.....	697K87
E6007.....	1170K77
B6017.....	696K87
A6107.....	1702K77
A6117.....	1701K77

Valve Model	Service Kit
1968 A6K07.....	1702K77
A6K17.....	1701K77
B7007.....	697K87
E7007.....	1170K77
A7107.....	1702K77
A7L07.....	1702K77
B8007.....	698K87
B8017.....	697K87
A8107.....	1703K77
A8117.....	1702K77
A8M07.....	1703K77
A8M17.....	1702K77
B9007.....	698K87
B9017.....	698K87
A9107.....	1703K77
A9117.....	1703K77
A9N07.....	1703K77

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	www.rosscontrols.com
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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
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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 (5077170 CANADA INC. AN INDEPENDENT REPRESENTATIVE)	Canada	Tel: 1-416-251-ROSS (7677)	www.rosscanada.com