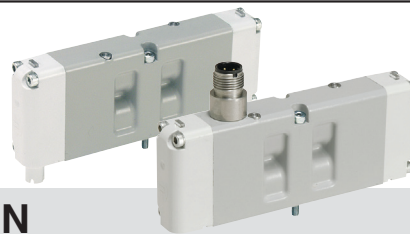


W66 Series ISO 15407 Valves



Thank You! You have purchased a premium-quality ROSS® pneumatic valve. It is a 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 folder. 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 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.

SAFETY WARNINGS AND CAUTIONS

WARNING To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion. Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

Safety Guide For more complete information on recommended application guidelines, see the Installation Safety Guidelines section of Bulletin 600 (Form A10309) or you can download the Installation Safety Guidelines at: rosscontrols.com.

WARNING FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from ROSS CONTROLS, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by ROSS CONTROLS and its subsidiaries at any time without notice.

Introduction Follow these instructions when installing, operating, or servicing the product.

Port Identification / Connections / Symbols

NOTE: The operator identification describes the ports that are connected when the operator is energized: operator 12 connects Port 1 to Port 2; operator 14 connects Port 1 to Port 4. Other ports may also be connected, or blocked – see symbols on the valve.

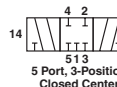
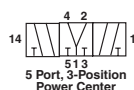
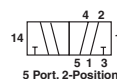
CAUTION: It is recommended that double solenoid and double remote air pilot operated 2-Position valves be mounted so that the axis of the valve spool is in the horizontal plane.

Lubrication: Factory Pre-lubed. If lubricating in service, use paraffin based mineral oil with 150 to 200 SSU viscosity @100°F.

CAUTION: Do not use oils that are synthetic, reconstituted, have an alcohol content or a detergent additive.

Application Limits: These products are intended for use in general purpose compressed air systems only.

Port No.	Single Pressure	Dual Pressure
1	Inlet	Exhaust
2	Outlet	Outlet
3	Exhaust	Inlet
4	Outlet	Outlet
5	Exhaust	Inlet
12, 14	Pilot ports for External Pilot or Remote Pilot	



Valves may be used for single outlet (3-Way) by plugging an outlet Port.

VALVE SPECIFICATIONS

Construction Design	Spool and Sleeve
Mounting Type	Base
Voltage	24 volts DC; 120 volts AC
Power Consumption (each solenoid)	1.0 watts on DC; 2.0 VA holding on 60 Hz
Temperature	Ambient/Media: 5° to 120°F (-15° to 50°C)
Flow Media	Filtered air
Pilot Supply	Internal or External
Operating Pressure	Maximum: 145 PSIG (1000 kPa). Minimum: See Chart.
	<i>When external pilot supply, pressure must be equal to or greater than inlet pressure.</i>

Construction Material	Valve Body: Cast Aluminum End Caps: Polybutylene Terephthalate (PBT) Fasteners: Zinc Plated Steel Coils: Thermoset Plastic
Manual Override	Flush; Metal, non-locking

Internal Pilot	Min. PSIG (kPa) Size 0	Min. PSIG (kPa) Size 00
Single Solenoid - 2-Position	25	25
Double Solenoid - 2-Position	(173)	(173)
Single Remote - 2-Position	Vacuum	Vacuum
Double Remote Pilot - 2-Position	Vacuum	Vacuum
Double Solenoid - 3-Position	35 (241)	35 (241)
Double Remote Pilot - 3-Position	Vacuum	Vacuum
Single Solenoid - 2-Position Air Return / Spring Assist	30 (207)	30 (207)
Single Remote Pilot - 2-Position Air Return / Spring Assist		
External Pilot*		
Size 0 & Size 00 Series	Vacuum	Vacuum

* External Pilot Pressure / Remote Pilot Signal - 45 to 145 PSIG (310 to 1000 kPa).

CAUTION: Solenoid versions of this valve contain solid state components that can be damaged by transient voltage spikes, over-voltage or high temperature.

To protect against premature solenoid failure, please read and adhere to the following:

If this solenoid operated valve is used in a circuit with other inductive loads, the solenoid should be electrically protected with a voltage suppression device (e.g. transient voltage suppressor or varistor) that has a minimum rating of 1.6 times the rated voltage of the solenoid valve and sufficient capacity to dissipate the energy of other inductive loads.

CAUTION: Solenoid versions of this valve are to be earth grounded through the direct metal to metal contact of the valve body to an appropriately grounded metal mounting surface.

VALVE BODY SERVICE

Refer to Figures 1 and 2 to aid with disassembly and reassembly.

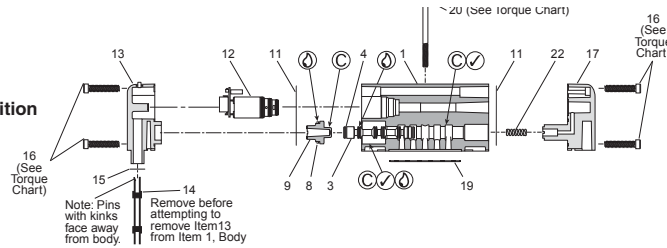
1. Remove Valve from base by removing Body to Base Screws (20).
2. For ISO 15407-2: Remove Connector (14) by carefully gripping the pins with a needle nose pliers and pull to remove.
For ISO 15407-1: Go directly to Step 3.
3. Remove each End Cap (13 / 17 / 18) by removing the Screws (16).
4. Remove the Pistons (9 or 10), Spool Return Spring (22), if applicable, and the Spool (3, 5, 6 or 7), **being careful not to scratch the valve body bore.**
5. Using a clean, lint free cloth, clean sealing surfaces.
6. Apply a light coating of grease to each part noted in Figure 1 and the mating sealing surface of each of these parts.
7. Reassemble valve in reverse order of disassembly, replacing the necessary parts. Care must be taken when reassembling the End Caps. **Install Item 14 Connector after Item 13 Operator End Cap is installed on the Body. Note pin kink orientation in Figure 1.**
8. Install Base Gasket (19) onto pin on bottom of valve. For Internal Pilot Pressure, be sure the letters "I" are visible. For External Pilot Pressure, be sure the letters "X" are visible. See the valve to base gasket drawings below.

Note: After servicing the valve in any way, apply pressure to the valve and check for leaks. If any leak exists, repeat assembly process and retest until valve is leak free.

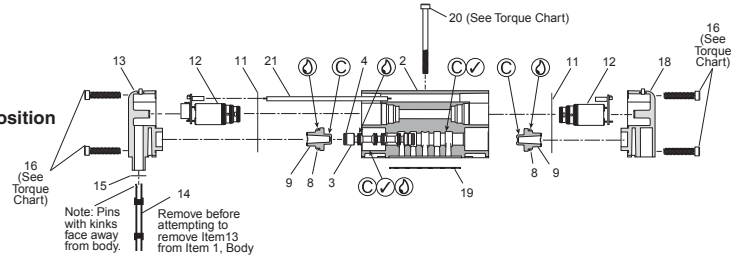
- ① Lightly grease with provided lubricant.
- ② Inspect for nicks, scratches, and surface imperfections. If present, reduced service life is probable and future replacement should be planned.
- ③ Clean with lint-free cloth.

Item	Description
1	Body, Single Solenoid
2	Body, Double Solenoid
3	Spool - 2-Position (Seals Assembled)
4	Seal - Spool
5	Spool - 3-Position CC (Seals Assembled)
6	Spool - 3-Position OC (Seals Assembled)
7	Spool - 3-Position PC (Seals Assembled)
8	Seal, Operator Piston
9	Operator Piston, 2-Position
10	Operator Piston, 3-Position
11	End Cap Gasket
12	Solenoid / Circuit Board Assy
13	Solenoid Operator End Cap
14	Connector
15	O-Ring
16	Screws, Operator to Body
17	Return Operator End Cap, Single Solenoid
18	Return Operator End Cap, Double Solenoid
19	Body to Base Gasket
20	Screws, Body to Base
21	Connector, 2-Pin
22	Spool Return Spring
23	M12 Insert Assembly
24	O-Ring

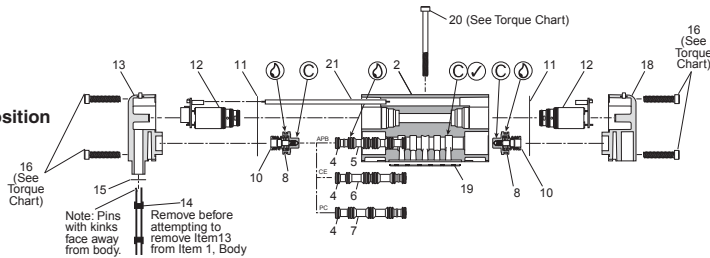
**Single Solenoid, 2-Position
ISO 15407-2**



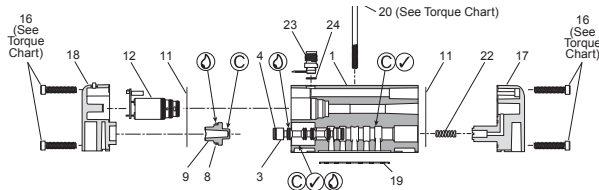
**Double Solenoid, 2-Position
ISO 15407-2**



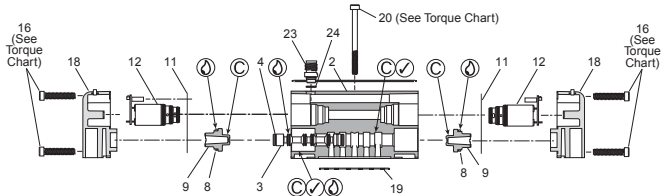
**Double Solenoid, 3-Position
ISO 15407-2**



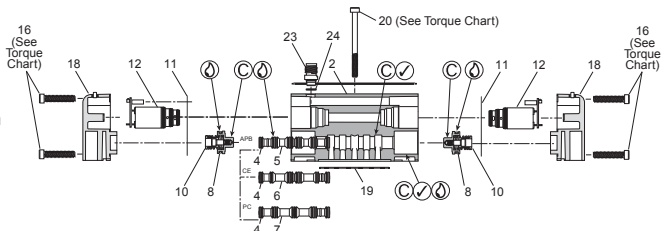
**Single Solenoid
ISO 15407-1**



**Double Solenoid
ISO 15407-1**



**Double Solenoid, 3-Position
ISO 15407-1**



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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