

Installation & Maintenance Instructions

SERIES



3-WAY INTERNAL PILOT-OPERATED SOLENOID VALVES
NORMALLY CLOSED AND NORMALLY OPEN OPERATION
3/8" AND 1/4" NPT

8321

I&M No.V7538

NOTICE: See separate solenoid installation and maintenance instructions for information on: **Wiring, Solenoid Temperature, Cause of Improper Operation and Coil Replacement.**

DESCRIPTION

Series 8321 valves are 3-way, internal pilot operated, piston type solenoid valves. Valves may be provided with a general purpose/watertight, open frame, or watertight/explosionproof solenoids.

OPERATION

Normally Open:

Solenoid De-energized: Flow is from Pressure "P" to Cylinder "A", Exhaust "E" connection is closed.

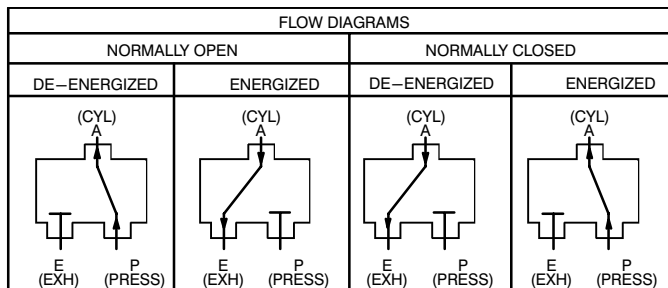
Solenoid Energized: Flow is from Cylinder "A" to Exhaust "E", Pressure "P" connection is closed.

Normally Closed:

Solenoid De-energized: Flow is from Cylinder "A" to Exhaust "E", Pressure "P" connection is closed.

Solenoid Energized: Flow is from Pressure "P" to Cylinder "A", Exhaust "E" connection is closed.

NOTE: To change from normally closed operation to normally open operation, consult ASCO.



IMPORTANT: A minimum operating pressure differential of 10 psi is required.

Manual Operation

Valves with suffix "MO" or "MS" after catalog number are provided with a manual operator which allows manual operation when desired or during an interruption of electrical power.

CAUTION: For valve to operate electrically, manual operator stem/lever must be fully rotated counterclockwise.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency, and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

Temperature Limitations

Valves with design change letter "K" or "P" within the catalog number (example: 8321K004) have a maximum fluid temperature of 180°F. Refer to separate solenoid Installation and Maintenance Instructions for maximum ambient temperature.

Positioning

This valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub-assembly area.

Piping

Connect piping or tubing to valve according to markings on valve body. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

IMPORTANT: To protect the solenoid valve, install a strainer or filter, suitable for the service involved, in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

MAINTENANCE

WARNING: To prevent the possibility of death, personal injury or property damage, turn off electrical power, depressurize solenoid valve, and vent fluid to a safe area before servicing.

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

Cleaning

All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to open or close. Clean valve strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep medium flowing through the valve as free from dirt and foreign material as possible.
- Periodic exercise of the valve should be considered if ambient or fluid conditions are such that corrosion, elastomer degradation, fluid contamination build up, or other conditions that could impede solenoid valve shifting are possible. The actual frequency of exercise necessary will depend on specific operating conditions. A successful operating history is the best indication of a proper interval between exercise cycles.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If parts are worn or damaged, install a complete rebuild kit.



Causes Of Improper Operation

- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
- **Excessive Leakage:** Disassemble valve and clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Disassembly

1. Disassemble valve in an orderly fashion using exploded views for identification of parts.
2. Remove solenoid, see separate instructions.
3. If the valve has a manual operator, refer to section on “**Manual Operator Disassembly**”.
4. Unscrew solenoid base sub–assembly and remove core spring, core assembly and body gasket.
5. A 4–40 machine screw provided in ASCO Rebuild Kit serves as a self–tapping screw to remove insert from body. Turn screw a few turns into through hole located in flat surface of the insert. **CAUTION: Do not damage center hole (pilot orifice) in raised surface of insert.** Remove insert by using a pair of pliers to grip the head of the screw.
6. Remove three gaskets from insert. Tag each as they are removed so that they can be reassembled in the same location. Middle and lower gaskets have the same physical dimensions, however, the lower gasket is a softer material. Remove disc holder sub–assembly and disc spring.
7. Remove end cap, end cap gasket and outer piston gasket.
8. Slide out piston assembly and inner piston gasket.
9. All parts are now accessible to clean or replace. Replace worn or damaged parts with a complete ASCO Rebuild Kit.

Valve Reassembly

1. Reassemble valve using exploded view for identification and placement of parts.
2. Lubricate all gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high–grade silicone grease.
3. Replace inner piston gasket and slide piston assembly into valve body.
4. Replace outer piston gasket, end cap gasket and end cap. Torque end cap to 60 ± 10 in–lbs. [$6,8 \pm 1,1$ Nm].
5. Position lower insert gasket and disc holder spring
6. Snap upper and middle insert gaskets into grooves of insert. Lower insert gasket fits into the recess between the lower corner of the insert and the lower corner of the body insert cavity. Middle and lower insert gaskets are the same size. However, the lower gasket is made of a softer material.
7. Place disc holder assembly into insert. Install insert (with gaskets and disc holder assembly) into body cavity, making certain that the disc holder spring is centered.
8. If the valve being rebuilt has a manual operator, refer to section on “**Manual Operator Reassembly.**”

9. Replace the solenoid base gasket, core assembly with spring.
10. Replace solenoid base sub–assembly (with core assembly) into valve body. Torque solenoid base sub–assembly to 175 ± 25 in–lbs. [$19,8 \pm 2,8$ Nm].
11. Install solenoid, see separate instructions and make electrical connections.

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize solenoid operator and/or valve, and vent fluid to a safe area before servicing.

12. Restore line pressure and electrical power supply to valve.
13. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic click signifies the solenoid is operating.

Manual Operator Disassembly

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1. Remove retaining screws (2)
2. Slide out manual operator stem/knob/retainer sub–assembly.
3. Remove stem gasket, guide and guide gasket. Remove spring (Suffix MS) only.
4. All manual operator parts are now accessible to clean or replace. Replace worn or damaged parts with a complete ASCO Rebuild Kit.

Manual Operator Reassembly

1. Reassemble manual operator using exploded view for identification and placement of parts.
2. Lubricate all gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high–grade silicone grease.
3. Replace guide gasket, guide and stem gasket. Replace spring (Suffix MS) with small end on stem first.
4. Screw stem/knob/retainer into valve body using two retaining screws. Torque retaining screws to 25 ± 5 in–lbs. [$2,8 \pm 0,6$ Nm].

ORDERING INFORMATION FOR ASCO REBUILD KITS

Parts marked with an asterisk (*) in the exploded views are supplied in Rebuild Kits. When Ordering Rebuild Kits for ASCO valves, order the Rebuild Kit number stamped on the valve nameplate. If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

Torque Chart

Part Name	Torque Value Inch–Pounds	Torque Value Newton–Meters
solenoid base sub–assembly	175 ± 25	19,8 ± 2,8
end cap	60 ± 10	6,8 ± 1,1
retaining screw (manual operator)	25 ± 5	2,8 ± 0,6

