INSTALLATION AND MAINTENANCE INSTRUCTIONS

2-WAY INTERNAL PILOT OPERATED SOLENOID VALVES PISTON TYPE – 1, 1-1/4, AND 1-1/2 N.P.T. NORMALLY CLOSED OPERATION

BULLETINS
8210
8211

ASCO®

DESCRIPTION

Bulletin 8210's are 2-way, normally closed, internal pilot operated solenoid valves. Standard valves have a General Purpose, NEMA Type 1 Solenoid Enclosure.

Bulletin 8211's are the same as Bulletin 8210's except the solenoid enclosure is designed to meet NEMA Type 4 - Watertight, NEMA Type 7 (C or D) Hazardous Locations - Class I, Group C or D and NEMA Type 9 (E, F or G) Hazardous Locations, Class II, Groups E, F or G. Explosion-Proof/Watertight Solenoid Enclosures are shown on separate Installation and Maintenance Instructions, Form Nos. V-5380 and V-5381.

OPERATION

Normally Closed: Valve is closed when de-energized and opens when energized.

IMPORTANT: Minimum operating pressure differential is 10 psi.

MANUAL OPERATOR (Optional)

Valves with suffix "MO" in the catalog number are provided with a manual operator which allows manual operation when desired or during an interruption of electrical power. To operate manual operator, fully rotate stem clockwise. Valve will then remain in the solenoid energized position until the stem is rotated counterclockwise to the original position. Manual operator stem must be fully rotated counterclockwise before operating electrically.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage and service.

TEMPERATURE LIMITATIONS

For Catalog No. 8210B78 (A-C Construction only) maximum valve ambient temperature is 77°F. Maximum valve fluid temperature is 200°F. The above temperature limitations are for UL applications. For other valves and non UL applications, higher ambient and fluid temperature limitations are available. Consult factory.

POSITIONING

Valve may be mounted in any position.

PIPING

Connect piping to valve according to markings on valve body. Apply pipe compound sparingly to male pipe threads only; if applied to valve threads, it may enter valve and cause operational difficulty. Pipe strain should be avoided by proper support and alignment of piping. When tightening pipe, do not use valve as a lever. Wrenches applied to valve body or piping are to be located as close as possible to connection point.

IMPORTANT: For protection of the solenoid valve, install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible. Periodic cleaning is required depending on the service conditions. See Bulletins 8600 and 8601 for strainers.

WIRING

Wiring must comply with Local and National Electrical Codes. For valves equipped with an explosion-proof/watertight solenoid enclosure, the electrical fittings must be approved for use in the approved hazardous locations. Housings for all solenoids are made with connections for 1/2 inch conduit. The general purpose enclosure may be rotated to facilitate wiring by removing the retaining cap. Rotate to desired position. Replace retaining cap before operating.

NOTE: Alternating Current (A-C) and Direct Current (D-C) Solenoids are built differently. To convert from one to the other, it is necessary to change the complete solenoid including the solenoid base sub-assembly and core assembly.

SOLENOID TEMPERATURE

Standard catalog valves are supplied with coils designed for continuous duty service. When the solenoid is energized for a long period, the solenoid enclosure becomes hot and can be touched with the bare hand for only an instant. This is a safe operating temperature. Any excessive heating will be indicated by the smoke and odor of burning coil insulation.

MAINTENANCE

WARNING: Turn off electrical power and line pressure to valve before making repairs. It is not necessary to remove the valve from the pipe line for repairs.

CLEANING

A periodic cleaning of all solenoid valves is desirable. The time between cleanings will vary, depending on the media and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive leakage or noise will indicate that cleaning is required.

PREVENTIVE MAINTENANCE

1. Keep the medium flowing through the valve as free from dirt and foreign material as possible.
2. While in service, operate valve at least once a month to insure proper opening and closing.
3. Periodic inspection (depending on media and service conditions) of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any parts that are worn or damaged.

IMPROPER OPERATION

1. **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic click signifies the solenoid is operating. Absence of the click indicates loss of power supply. Check for loose or blown-out fuses, open-circuited or grounded coil, broken lead wires or splice.
2. **Burned-Out Coil:** Check for open-circuited coil. Replace coil if necessary.
3. **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.
4. **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
5. **Excessive Leakage:** Disassemble valve and clean all parts. Replace parts that are worn or damaged with a complete Spare Parts Kit for best results.

ASCO Valves ASCO®

Form No. V-5559R1 PRINTED IN U.S.A. 1974 Automatic Switch Co FLORHAM PARK, NEW JERSEY 07932

COIL REPLACEMENT

(Refer to Figures 1. A-C Construction, and 2. D-C Construction)

Turn off electrical power supply and disconnect coil lead wires. Proceed in the following manner:

1. Remove retaining cap, nameplate and housing or cover.
2. Slip spring washer or fluxwasher, insulating washers and coil from solenoid base sub-assembly. Insulating washers are omitted when a molded coil is used.
3. Coil is now accessible. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for identification and placement of parts.

CAUTION: Solenoid must be fully reassembled as the housing and internal parts are part of and complete the magnetic circuit. Place insulating washers at each end of coil if required.

VALVE DISASSEMBLY AND REASSEMBLY

(Refer to Figure 1 or 3)

Depressurize valve and turn off electrical power supply.

1. Remove the retaining cap and slip the entire solenoid enclosure off the solenoid base sub-assembly.
2. Unscrew the solenoid base sub-assembly. Remove core assembly, core spring and bonnet gasket. For normal maintenance it is not necessary to remove the valve seat.
3. Remove cylinder screws, cylinder, piston spring and piston with piston ring and rider rings (2) attached. Remove body gasket and body passage gasket.
4. Unscrew the disc nut from the piston. On the 1-1/2 N.P.T. construction, there is a disc washer between the disc nut and valve disc. Remove valve disc and back-up washer. CAUTION: Do not damage piston.
5. All internal parts are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete Spare Parts Kit for best results. Clean internal passageways in valve body and cylinder.
6. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for identification and placement of parts.
7. When replacing the piston, care should be taken to see that the rider rings and piston ring are properly located on the piston. To prevent damage, compress the rider rings and piston ring when pre-assembling the piston in the cylinder. Be sure there is free movement of the piston assembly when installed in the cylinder.
8. When reassembling the cylinder with the piston assembly compressed inside of it, a flat steel rule (or similar flat tool) may be used to retain the piston assembly in the cylinder while installing the cylinder on the valve body.

MANUAL OPERATOR DISASSEMBLY AND REASSEMBLY

(Refer to Figure 2 or 4)

1. Remove the retaining cap and slip the entire solenoid enclosure off the solenoid base sub-assembly. Unscrew solenoid base sub-assembly and remove bonnet gasket.
2. Unscrew the manual operator body. Remove the body, stem retainer, core assembly, core spring and bonnet gasket.
3. Slip stem/spacer sub-assembly and stem gasket from manual operator body.
4. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for identification and placement of parts. Be sure the spacer on the stem/spacer sub-assembly is located properly when reassembling.

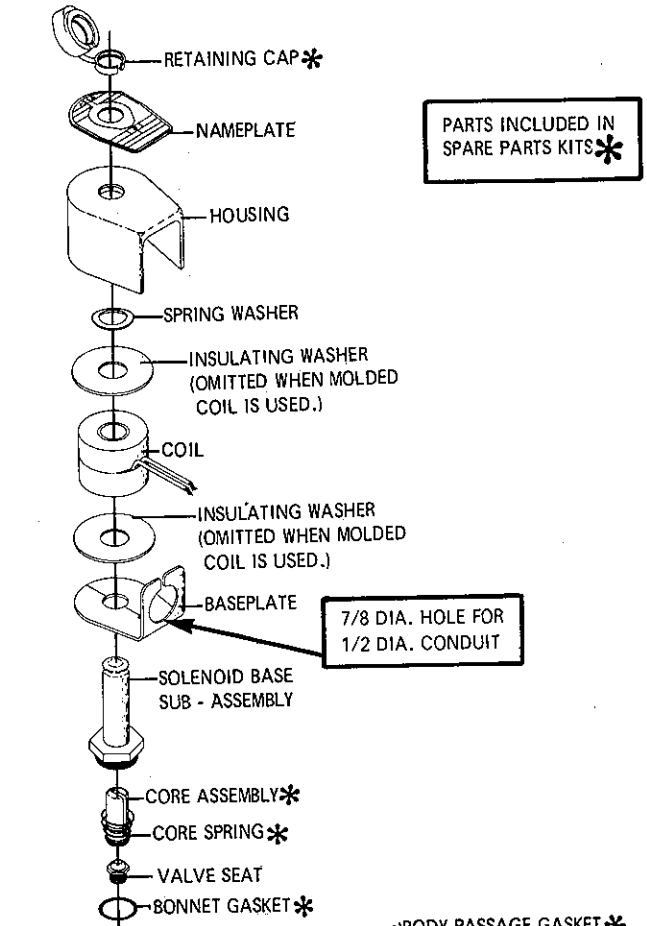
SPARE PARTS KITS

Spare Parts Kits and Coils are available for ASCO valves.
Parts marked with an asterisk (*) are supplied in Spare Parts Kits.

ORDERING INFORMATION FOR SPARE PARTS KITS

When Ordering Spare Parts Kits or Coils Specify Valve Catalog Number, Serial Number and Voltage.

ASCO® ASCO Valves
Automatic Switch Co. FLORHAM PARK, NEW JERSEY 07932 Form No. V-5559R1 PRINTED IN U.S.A. 1974



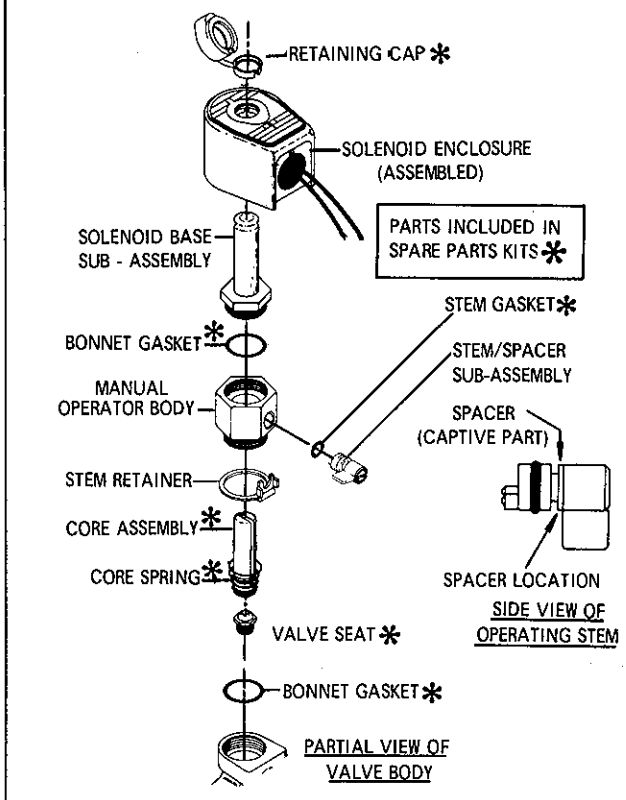
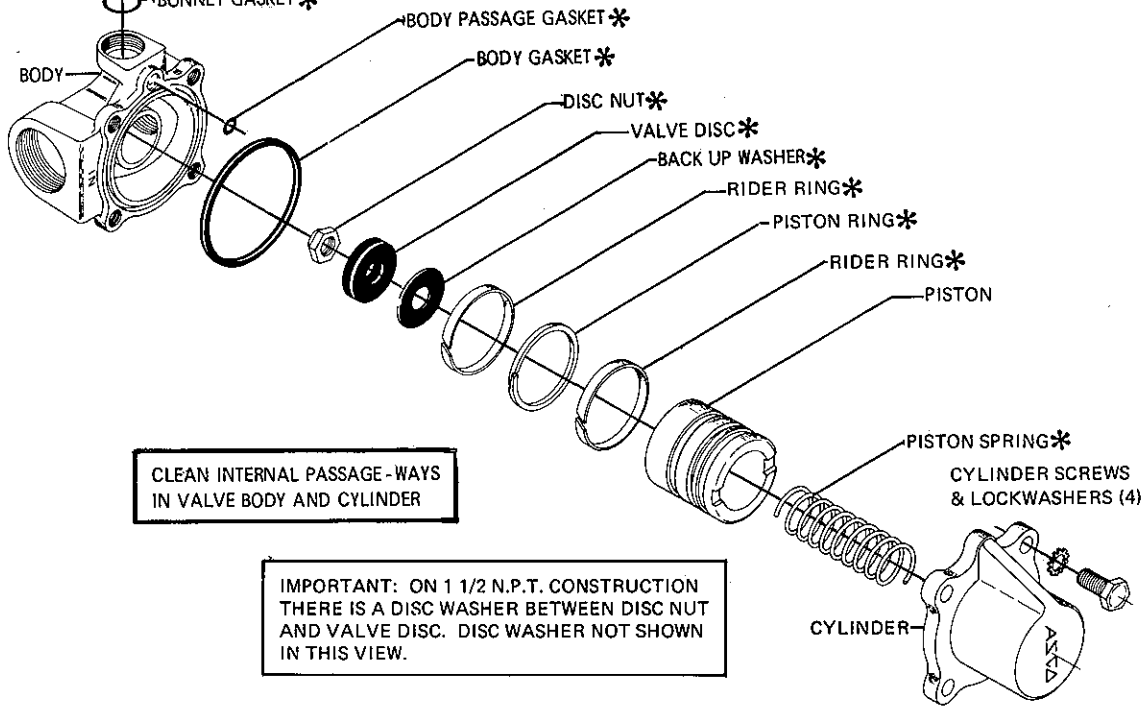


Figure 2. Manual Operator — A-C Construction



Bulletin 8210 — 1, 1-1/4 and 1-1/2 N.P.T. — A-C Construction
General purpose solenoid enclosure shown.
For explosion-proof/watertight solenoid enclosure used on Bulletin 8211, see Form No. V-5380.

Figure 1.

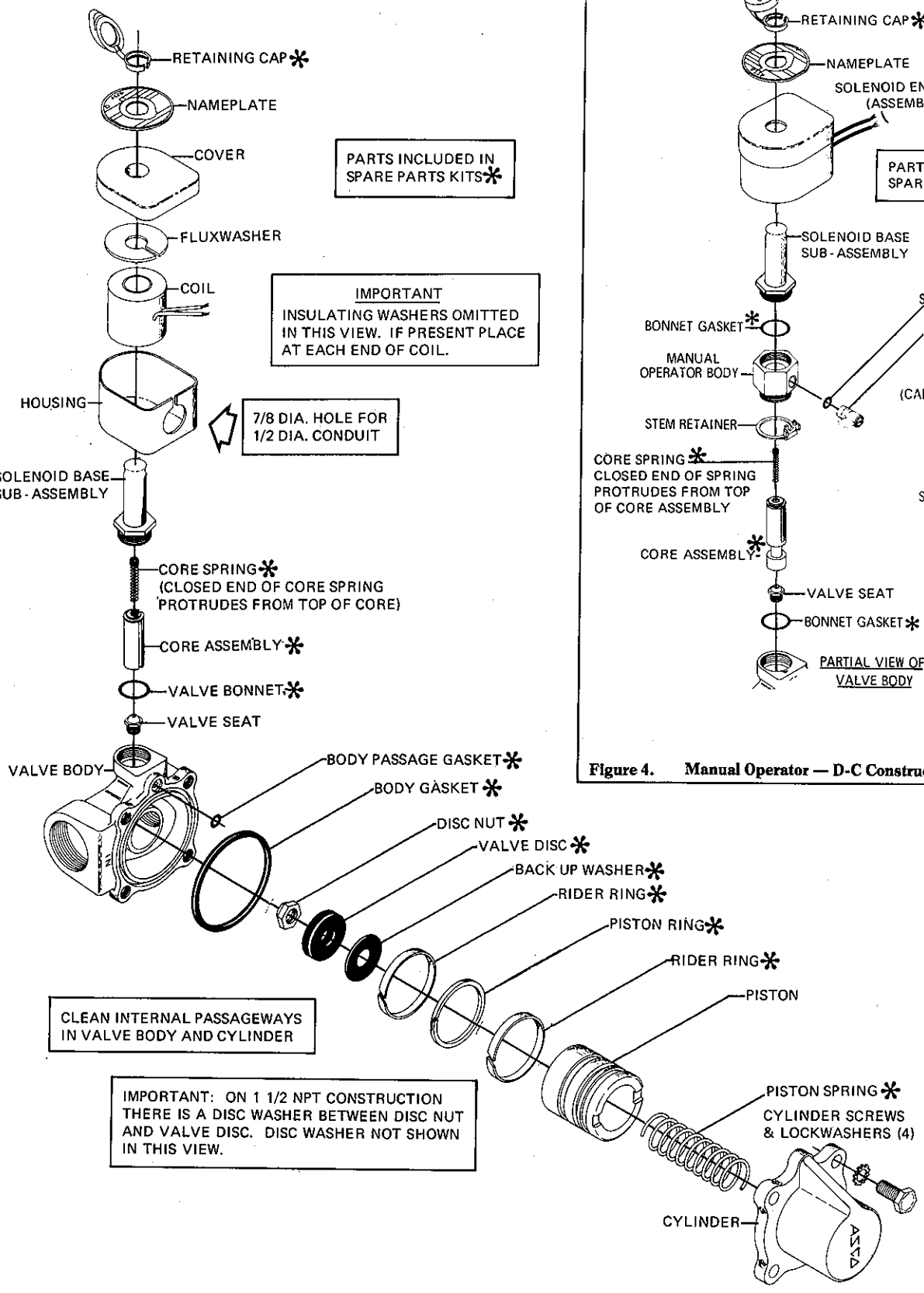


Figure 4. Manual Operator — D-C Construction

Figure 3. **Bulletin 8210 — 1, 1-1/4 and 1-1/2 N.P.T. — D-C Construction**
General purpose solenoid enclosure shown.
For explosion-proof/watertight solenoid enclosure used on Bulletin 8211, see Form No. V-5381.