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INSTALLATION AND MAINTENANCE INSTRUCTIONS

BULLETIN
8344
ASCO®
Form No. V-5789

4-WAY VALVES — DUAL SOLENOID
1/4" — 3/8" — 1/2" N.P.T. — 1/4" — 3/8" ORIFICE

DESCRIPTION

Bulletin 8344 valves are packless, solenoid pilot controlled, heavy duty, 4-way valves with forged brass valve bodies and poppet type main discs. The main discs are power driven in both directions by line pressure. No return springs are required.

The standard valves have a General Purpose, NEMA Type 1 Solenoid Enclosure. Valves may also be equipped with an enclosure which 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, Group E, F or G and are shown on a separate sheet of Installation and Maintenance Instructions, Form Nos. V-5380 and V-5391.

OPERATION (Refer to Figure 1)

When Solenoid 'A' is energized, Pressure is applied to Cylinder 'A'; Cylinder 'B' is open to Exhaust. When Solenoid 'B' is energized, Pressure is applied to Cylinder 'B'; Cylinder 'A' is open to Exhaust. The main valve operates when one solenoid is energized and remains in this position when power to the solenoid is disconnected. Valve will not return to the original position until the opposite solenoid is energized. Solenoids may be energized momentarily or continuously, depending upon the application. Minimum on time for valves is 0.3 second on air service and 1.0 second on liquids.

NOTE: Minimum operating pressure differential is 10 P.S.I. on air, gas or water and 25 P.S.I. on hydraulic oil (300 S.S.U.).

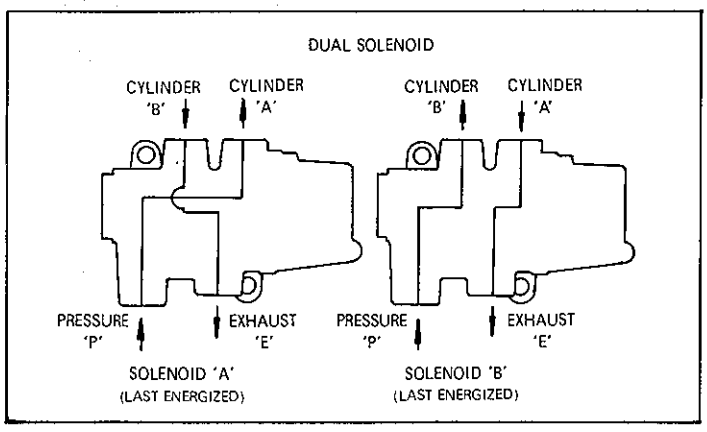


Figure 1.

MANUAL OPERATOR (Optional) (Refer to Figures 6, 7 & 8)

DESCRIPTION

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

OPERATION

To actuate valve manually, turn required operator clockwise to stop. Valve will now be in same position as when the solenoid above that manual operator is energized. To shift valve to the opposite position the manual operator must be turned counterclockwise to stop and the other manual operator then turned clockwise to stop. For the valve to be operated electrically, both manual operators must be turned counterclockwise to stops.

SPEED/FLOW CONTROL — METERING DEVICES

(Refer to Figure 2)

Speed/flow control valves (2) may be added to allow full unrestricted flow in one direction and controlled flow in the opposite direction. These valves must be located in the 'A' and/or 'B' cylinder piping, between the solenoid valve and the cylinder.

IMPORTANT:

NOTE: Do not install the speed control or any other restrictive devices in either the pressure (inlet) connection or the exhaust (outlet) connection of the valve. Restricting either of these lines may cause valve malfunction.

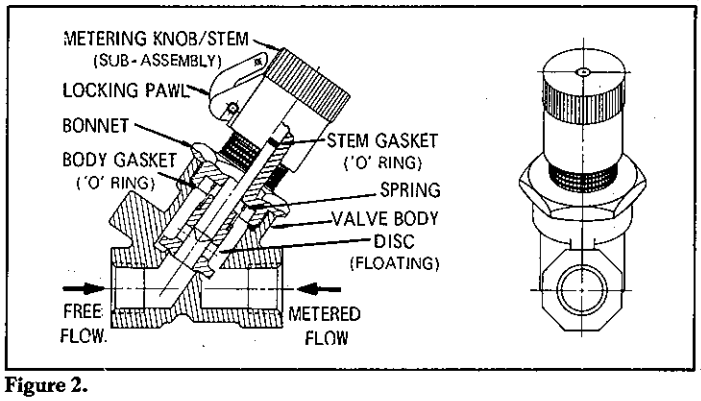


Figure 2.

INSTALLATION

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

POSITIONING

Valve may be mounted in any position.

PIPING (Refer to Figure 3)

Connect piping to the pressure, exhaust and cylinder ports according to flow diagram. 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 to connection point as possible.

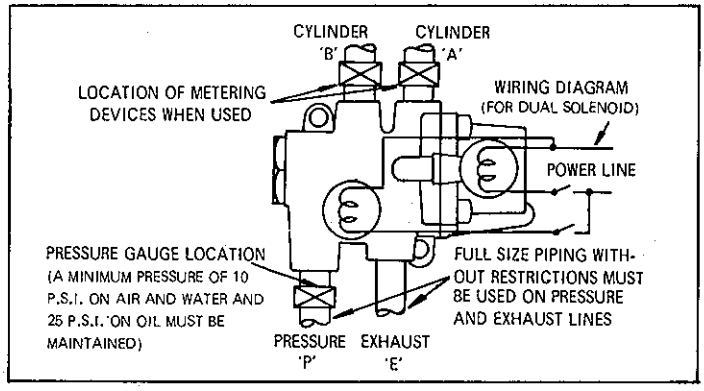


Figure 3.

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, 8601 and 8602 for strainers.

To insure operation of the valve, the pressure and exhaust lines must be full area without restriction and a minimum differential pressure as stamped on the nameplate must be maintained between the pressure and exhaust at the moment of changeover. Hydraulic pumps or air reservoirs must have adequate capacity to maintain the minimum pressure during changeover. To check pressure during changeover, install a gage in the pressure connection, close to the valve as shown.

WIRING

Wiring must comply with Local and National Electrical Codes. For valves equipped with an explosion-proof, watertight enclosure (NEMA 4, 7 & 9) 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 (NEMA 1) may be rotated to facilitate wiring by removing the retaining cap. After rotating to desired position, be certain to 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, not just the coil.

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 hand only for 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 valve from 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 heating 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 both of the solenoids. 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 connections.
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 at the solenoid valve. Pressure to the valve must be within the range indicated on the nameplate. Flow must be adequate to maintain a minimum differential to allow valve to transfer (see pressure limitation on nameplate).
5. **Excessive Leakage:** Disassemble valve and clean all parts and passageways. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

STANDARD COIL REPLACEMENT (A-C AND D-C)

(Refer to Figure 5)

Turn off electrical power and disconnect coil lead wires.

1. Remove retaining cap or clip, nameplate and solenoid cover. CAUTION: When metal retaining clip disengages it will spring upward.
2. Slip yoke containing coil, sleeves and insulating washers off the solenoid base sub-assembly. Insulating washers are omitted when a molded coil is used.

NOTE: Alternating Current (A-C) and Direct Current (D-C) Solenoids are built differently. To convert from one to another, it is necessary to change the complete solenoid, not just the coil.

3. Coil is now accessible for replacement. Reassemble in reverse order of disassembly.

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.

ALTERNATE CONSTRUCTION – COIL REPLACEMENT (A-C Only)

(Refer to Figure 4)

Turn off electrical power and disconnect coil lead wires.

1. Remove retaining cap or clip, nameplate and solenoid housing/cover. CAUTION: When metal retaining clip disengages it will spring upward.
2. Lift off spring washer, upper insulating washer and coil. NOTE: Insulating washers are omitted when a molded coil is used.
3. Reassemble parts in reverse order of disassembly.

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 (Refer to Figures 4 and 5)

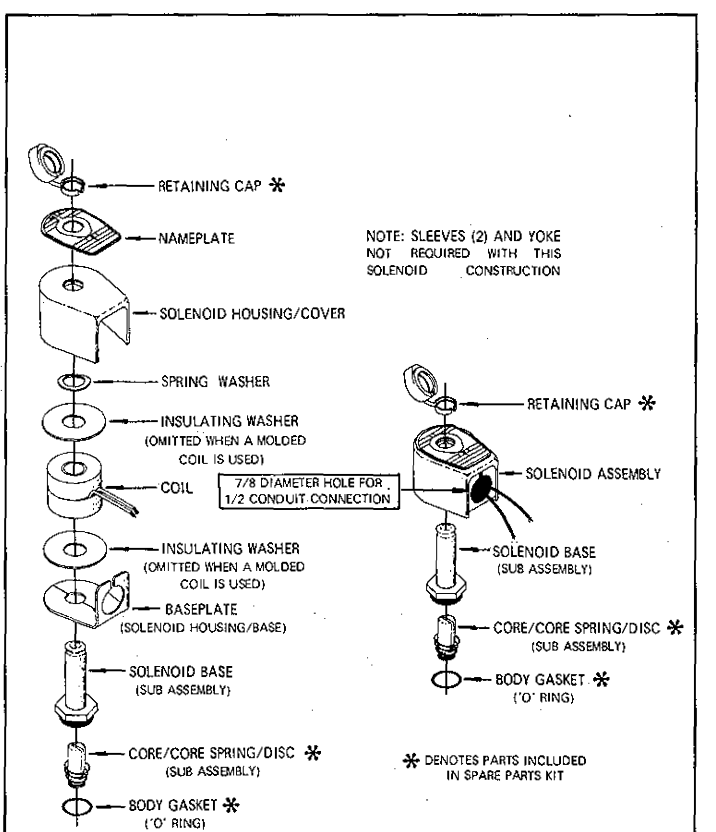
Depressurize valve and turn off electrical power. Disconnect coil lead wires.

1. Solenoids may be removed intact by loosening and removing solenoid base sub-assemblies from body.
2. A-C/D-C Standard Construction:
   Remove core spring, core/disc sub-assembly and body gasket ('O' ring) respectively.
   A-C Alternate Construction:
   Remove core/core spring/disc sub-assembly and body gasket ('O' ring) respectively.
3. Solenoid pilots are now completely disassembled and may be serviced.
4. Remove four (4) body screws and slip piston end body from piston.
5. Slide piston/shaft assembly out of body.
6. Remove four (4) 'O'-ring gaskets, two (2) from piston end body, counter bores and two (2) from body insert (one (1) from each end).
7. To disassemble piston/shaft assembly, insert brass rod in cross hole of shaft. (NOTE: Rod must be brass or other soft material, so as not to burr edges of hole). Unscrew piston nut. Remove piston nut gasket, piston, body insert and main disc.
8. Remove two (2) 'U' Shaped lip seals from piston.
9. Unscrew end cap/seat from main body. Remove two (2) 'O'-ring gaskets from end cap/seat, and main disc.
10. All parts and passageways are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete "Spare Parts Kit" for best results.

VALVE REASSEMBLY (Refer to Figures 4 and 5)

1. Clean all parts and passageways thoroughly.
2. Reassemble parts in reverse order of disassembly. Parts should be installed in the same cavity that they were removed from.
3. Lubricate all rubber parts with Dow Corning's Valve Seal or equivalent silicone grease.

NOTE: Main discs must be assembled with 'U' cup lip seals facing out (flat brass surface facing in). 'U' cup shaped lip seals on piston must face out at each end.



ALTERNATE SOLENOID CONSTRUCTION — A-C ONLY

Figure 4.

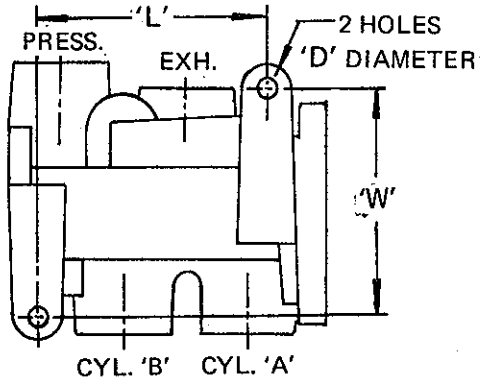
SPARE PARTS KITS

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

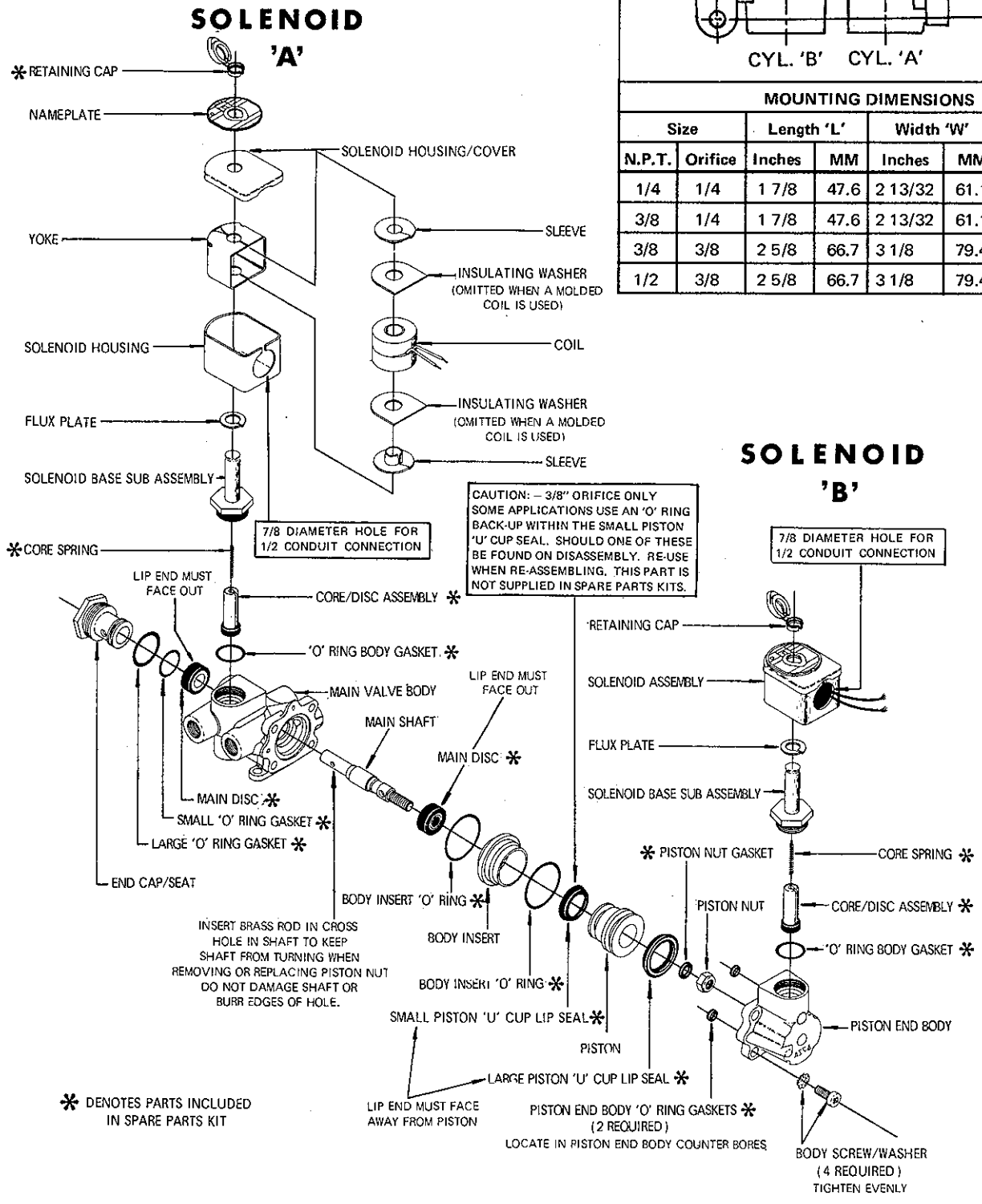
When Ordering Spare Parts Kits or Coils Specify Valve Catalog Number, Serial Number and Voltage.

MOUNTING DIMENSIONS



MOUNTING DIMENSIONS

Size		Length 'L'		Width 'W'		Holes 'D' Dia.	
N.P.T.	Orifice	Inches	MM	Inches	MM	Inches	MM
1/4	1/4	1 7/8	47.6	2 13/32	61.1	9/32	7.1
3/8	1/4	1 7/8	47.6	2 13/32	61.1	9/32	7.1
3/8	3/8	2 5/8	66.7	3 1/8	79.4	11/32	8.7
1/2	3/8	2 5/8	66.7	3 1/8	79.4	11/32	8.7



BULLETIN 8344 — Dual Solenoid
1/4 - 3/8 - 1/2 N.P.T.

Figure 5.

MANUAL OPERATOR

To actuate valve manually, turn required operator clockwise to stop. Valve will now be in same position as when the solenoid above that manual operator is energized. To shift valve to the opposite position the manual operator must be turned counterclockwise to stop and the other manual operator then turned clockwise to stop. For the valve to be operated electrically, both manual operators must be turned counterclockwise to stops.

MANUAL OPERATOR DISASSEMBLY (Refer to Figures 6, 7 & 8)

Depressurize valve and turn off electrical power. Disconnect coil lead wires.

1. Remove the solenoid intact by loosening and removing the solenoid base sub-assembly from the manual operator body.
2. Remove core spring on standard construction and solenoid base to manual operator body gasket ('O' ring) from manual operator body.
3. Unscrew manual operator body from main valve body.
4. Slip retainer from lower manual operator body threads. Then slide manual operator stem/lever assembly from manual operator body.
5. Remove core sub-assembly from manual operator body.
6. Remove 'O' ring from manual operator stem/lever sub-assembly.
7. All parts are now accessible for cleaning and/or replacement. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

MANUAL OPERATOR REASSEMBLY (Refer to Figures 6, 7 & 8)

1. Reassemble manual operator in reverse order of disassembly. Note that the body gasket must be installed in the pilot body cavity before installing the manual operator body sub-assembly.
2. Preassemble the following manual operator body parts in the following order to make up the manual operator body sub-assembly. Slip core sub-assembly thru the manual operator body. (NOTE: On cores with double recesses, line up manual operator stem with the lower groove.) There is a captive spacing washer on the manual operator stem/lever sub-assembly. Locate this stem/lever spacer on the inside or outside of the retaining fork as follows:
   A. All cores with an outside diameter up to 13/32" (.406 dia.), the spacer must be located inside the retainer fork.
   B. All cores with an outside diameter greater than 13/32" (.406 dia.), the spacer must be located outside the retainer fork.
3. Having installed the stem gasket on the stem and correctly determined the proper location of the spacer, slip the stem assembly into the manual operator body and slide the retainer up over the lower threads engaging the stem/lever sub-assembly.
4. Screw manual operator body sub-assembly into main body.
5. Turn manual operator lever to the 9 o'clock position, i.e., this is the same position that the operator would be in if the valve were to be operated electrically.
6. Install the solenoid base to manual operator body gasket. Install core spring on Standard Construction.
7. Reinstall solenoid base sub-assembly complete with solenoid.

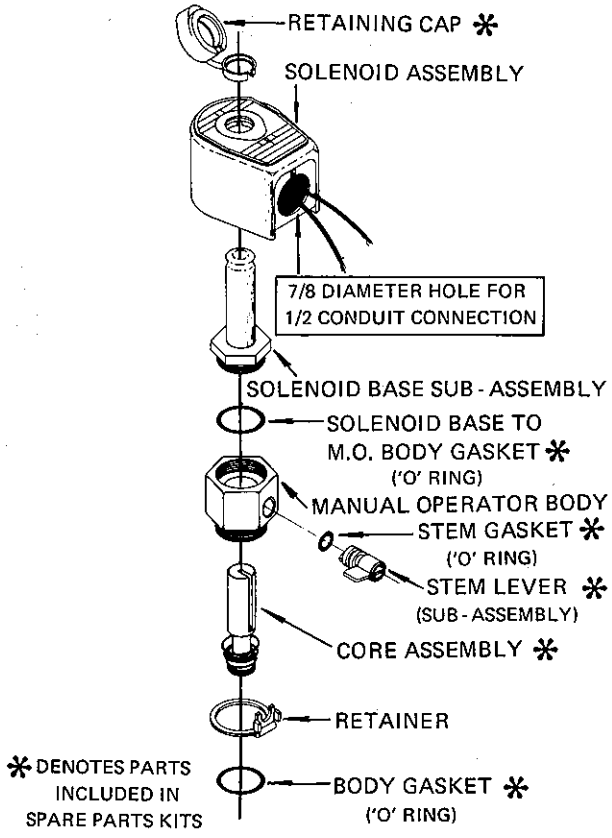


Figure 6. Manual Operator Alternate Solenoid Construction - A-C Only

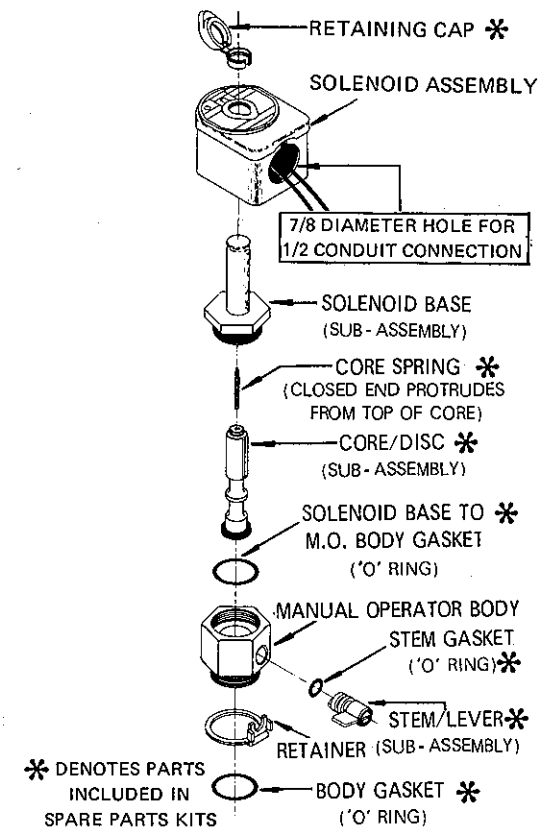
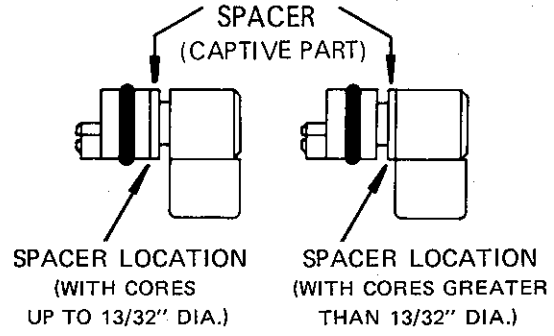


Figure 7. Manual Operator Standard A-C/D-C Construction



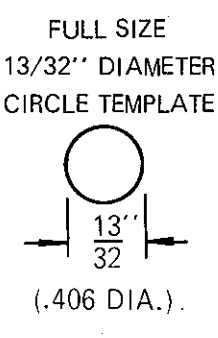


Figure 8.

ASCO Valves
Automatic Switch Co. FLORHAM PARK, NEW JERSEY 07932 Form No. V-5789 PRINTED IN U.S.A. 1974

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