

INSTALLATION AND MAINTENANCE INSTRUCTIONS

3-WAY DIRECT-ACTING SOLENOID VALVES NORMALLY CLOSED OPERATION — 3/8 AND 1/2 NPT

BULLETIN

8377

ASCO

FORM NO. V-6060R1

DESCRIPTION

Bulletin 8377 valves are 3-way normally closed direct-acting solenoid valves having bodies of brass construction. Standard valves are supplied with a General Purpose, NEMA Type 1 Junction Box Solenoid Enclosure. Valves may also be equipped with a solenoid 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, Groups E, F or G. Installation and Maintenance Instructions for the Explosion-Proof/Watertight Solenoid Enclosure are shown on Form No. V-5381.

OPERATION

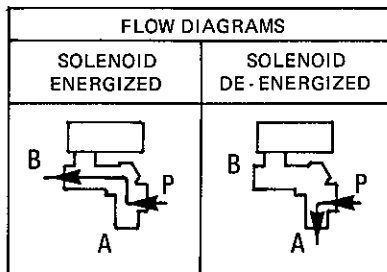
Normally Closed

Solenoid De-energized: Flow is from Pressure Connection "P" to Connection "A." Connection "B" is closed.

Solenoid Energized: Flow is from Pressure "P" to Connection "B." Connection "A" is closed.

NOTE: Valve intended for burner control with low pressure drop when energized. For other applications, be sure pressure drop, when energized, does not exceed 65 psi.

IMPORTANT: No minimum operating pressure differential required.



INSTALLATION

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

TEMPERATURE LIMITATIONS

Maximum valve ambient temperature 115°F. Maximum valve fluid temperature 265°F. For higher ambient and fluid temperatures, consult factory.

CAUTION: Fluid and ambient temperatures above only indicate maximum application temperatures for field wiring rated at 90°C. For higher fluid and/or ambient temperatures, consult factory.

POSITIONING

Valve must be mounted with solenoid vertical and upright.

MOUNTING

Mounting bracket supplied may be used in two positions in any of three locations on the valve to accommodate mounting. For mounting dimensions, refer to Figure 1.

PIPING

Connect piping to valve according to markings on valve body. Refer to flow diagrams provided. Apply pipe compound sparingly to male pipe threads only; if applied to valve threads, it may enter the valve and cause operational difficulty. Pipe strain should be avoided by proper support and alignment of piping. When tightening the 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. To facilitate installation, the lower valve body Connection "P" may be rotated to three positions at 90° increments to facilitate piping. To do this, remove body screws (4). Rotate valve to desired position and replace body screws (4). Torque body screws in a crisscross manner to 105 ± 10 inch-pounds [11.9 ± 1.1 newton meters].

CAUTION: To insure proper operation of the valve, the piping at Connection "A" must be full area without restriction. Restriction of piping at Connection "A" may cause valve malfunction.

IMPORTANT: For the 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 service conditions. See Bulletins 8600, 8601 and 8602 for strainers.

As an additional precaution against malfunction on startup, resulting from large particles of pipe scale, welding splatter, TEFLON* tape or other debris in the pipe line, these valves have a large-mesh screen (not a filter) at inlet. This screen is not a substitute for the strainers recommended above whose function it is to provide continuous filtration of the line fluid.

WIRING

Wiring must comply with Local and National Electrical Codes. A ground screw (No. 8 thread cutting screw) is provided in the solenoid enclosure as a loose piece and may be installed into either of two holes in the yoke for grounding. Solenoid housings are provided with two 7/8 diameter knockouts or with one 7/8 diameter hole to accommodate 1/2 inch conduit hub. For extra support, leave solenoid enclosure assembled when driving out 7/8 diameter knockout. Remove housing cover by spreading cover and disengaging nibs. Lift up and pull down simultaneously. Solenoid enclosure may be rotated 360° to facilitate wiring by removing the retaining cap or clip. Use wire rated at 90°C or greater for splice connections.

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 supply and depressurize valve before making repairs. It is necessary that the valve be removed from the pipe lines for repairs.

CLEANING

A periodic cleaning of all solenoid valves is desirable. The time between cleanings will vary depending on 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. Clean valve strainer or filter when cleaning solenoid valve.

PREVENTIVE MAINTENANCE

1. Keep the medium flowing through the valve as free from dirt and foreign material as possible.
2. While in service, operate the valve at least once a month to insure proper opening and closing.
3. Periodic inspection (depending on medium 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 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. Pressure to valve must be within range specified on nameplate.
5. **Excessive Leakage:** Disassemble valve and clean all parts. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

COIL REPLACEMENT (Refer to Figure 2)

Turn off electrical power supply. Proceed in the following manner:

1. Remove housing cover by spreading housing cover and disengaging nibs. Lift up and pull down simultaneously.
2. Disconnect coil lead wires and ground connection.
3. Remove retaining cap, nameplate and cover.
4. Slip yoke containing coil, sleeves and insulating washers off the solenoid base sub-assembly. Insulating washers (2) are omitted when a molded coil is used. Slip coil, sleeves and insulating washers from yoke.
5. Reassemble in reverse order of disassembly paying careful attention to exploded view provided for identification and placement of parts.

*DuPont's trademark for its TFE-fluorocarbon resin

ASCO Valves

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

VALVE DISASSEMBLY

Depressurize valve and turn off electrical power supply. Disconnect electrical power supply and piping. Remove valve from the pipe line.

1. Disassemble valve in an orderly fashion paying careful attention to exploded view provided.
2. Remove retaining cap and slip the entire solenoid enclosure off the solenoid base sub-assembly.
3. Unscrew end cap and remove end cap gasket.
4. Unscrew solenoid base sub-assembly.
5. Remove bearing screw and bearing screw gasket. Disengage core from valve lever and remove core (with upper and lower spring), solenoid base gasket and valve lever from upper body.
6. Remove upper and lower springs from core.
7. Remove lower seat, lower seat gasket, strainer screen, disc spring and disc assembly.
8. Using a 3/4 inch deep well socket, unscrew upper seat and remove upper seat gasket.
9. Remove body screws (4), lower valve body and body gasket.
10. All parts are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

VALVE REASSEMBLY

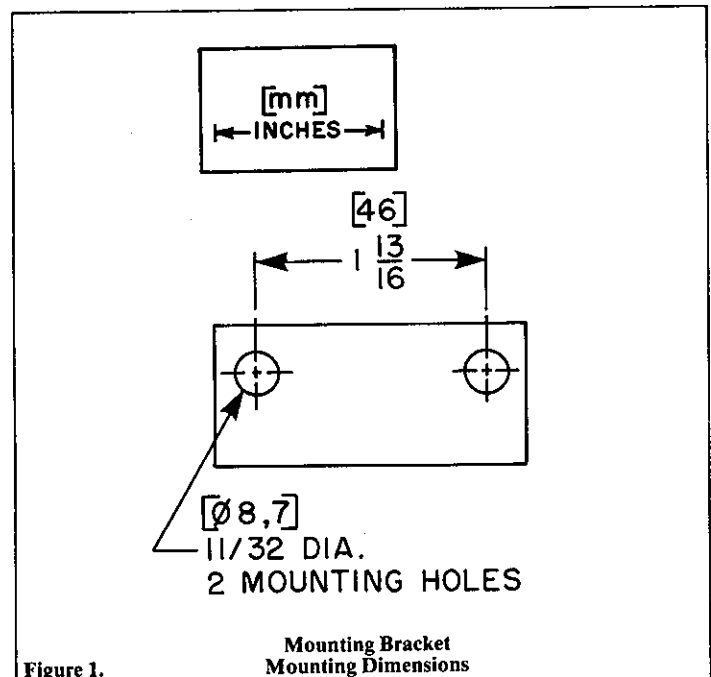
1. Reassemble in reverse order of disassembly paying careful attention to exploded view provided for identification and placement of parts.
2. Lubricate all gaskets with Dow Corning Corporation's MOLYKOTE® valve seal silicone compound or equivalent.
3. Replace body gasket, lower valve body and body screws (4). Torque body screws in a crisscross manner to 105 ± 10 inch-pounds [11,9 ± 1,1 newton meters].
4. Install upper seat gasket on upper seat. Install upper seat into lower valve body. Torque upper seat to 200 ± 20 inch-pounds [22,6 ± 2,3 newton meters].
5. Install lever, bearing screw gasket and bearing screw. Torque bearing screw to 50 ± 5 inch-pounds [5,7 ± 0,6 newton meters].
6. Install lower core spring onto core, small end first. Small diameter of lower core spring will engage in circular groove in core. Install upper core spring, large diameter first; small diameter (closed end) of upper core spring will protrude from top of core. Be sure upper core spring is bottomed in hole in core.
7. Engage core with upper and lower spring to valve lever.
8. Replace solenoid base gasket assembly. Flat surface of solenoid base gasket assembly to seat in upper valve body. Rounded surface (gasket area) to face solenoid base sub-assembly.
9. Replace end cap gasket and end cap. Torque end cap to 50 ± 5 foot-pounds [67,8 ± 6,8 newton meters].
10. Replace disc assembly, disc spring, strainer screen, lower seat gasket and lower seat. For ease of assembly, position all parts on lower seat then install them as a complete unit. Torque lower seat to 70 ± 5 foot-pounds [94,9 ± 6,8 newton meters].
11. Replace solenoid base sub-assembly. Torque solenoid base sub-assembly to 175 ± 25 inch-pounds [19,8 ± 2,8 newton meters].
12. Replace solenoid enclosure and retaining cap or clip.
13. After maintenance, operate the valve a few times to be sure of proper operation.

SPARE PARTS KITS

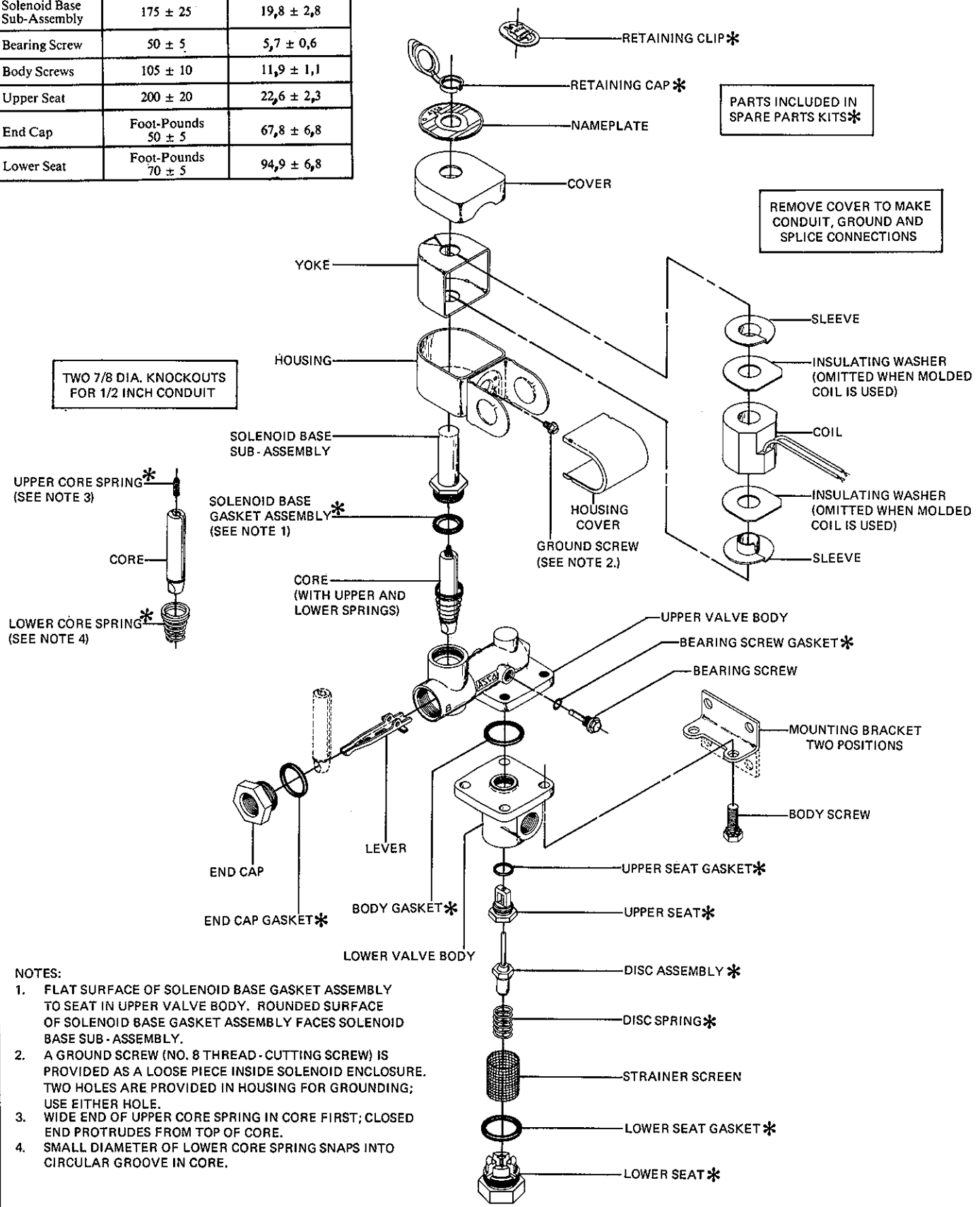
Spare Parts Kits and Coils are available for ASCO valves. Parts marked with an asterisk (*) are supplied in Spare Parts Kits.

ORDERING INFORMATION FOR SPARE PARTS KITS

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



Part Name	Torque Value Inch-Pounds	Torque Value Newton Meters
Solenoid Base Sub-Assembly	175 ± 25	19,8 ± 2,8
Bearing Screw	50 ± 5	5,7 ± 0,6
Body Screws	105 ± 10	11,9 ± 1,1
Upper Seat	200 ± 20	22,6 ± 2,3
End Cap	Foot-Pounds 50 ± 5	67,8 ± 6,8
Lower Seat	Foot-Pounds 70 ± 5	94,9 ± 6,8



NOTES:

1. FLAT SURFACE OF SOLENOID BASE GASKET ASSEMBLY TO SEAT IN UPPER VALVE BODY. ROUNDED SURFACE OF SOLENOID BASE GASKET ASSEMBLY FACES SOLENOID BASE SUB-ASSEMBLY.
2. A GROUND SCREW (NO. 8 THREAD-CUTTING SCREW) IS PROVIDED AS A LOOSE PIECE INSIDE SOLENOID ENCLOSURE. TWO HOLES ARE PROVIDED IN HOUSING FOR GROUNDING; USE EITHER HOLE.
3. WIDE END OF UPPER CORE SPRING IN CORE FIRST; CLOSED END PROTRUDES FROM TOP OF CORE.
4. SMALL DIAMETER OF LOWER CORE SPRING SNAPS INTO CIRCULAR GROOVE IN CORE.

Bulletin 8377
General Purpose Junction Box Solenoid Enclosure Shown.
For Explosion-Proof/Watertight Solenoid Enclosure, See Form No. V-5381.

Figure 2.



ASCO Valves

Automatic Switch Co.

FLORHAM PARK, NEW JERSEY 07932

Form No. V-6060R1

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