

# INSTALLATION & MAINTENANCE INSTRUCTIONS

## 2-WAY INTERNAL PILOT-OPERATED SOLENOID VALVES

### NORMALLY CLOSED OPERATION

1/2" AND 3/4" NPT - 5/8" ORIFICE

**ASCO**

BULLETINS

8210

8211

Form No. V5827R1

## DESCRIPTION

Bulletin 8210's are 2-way normally closed, internal pilot-operated solenoid valves, and are made of stainless steel. Standard valves have a General Purpose Type I Solenoid Enclosure.

Bulletin 8211's are the same as Bulletin 8210's except for the solenoid enclosure. Bulletin 8211's have a combination Watertight and Explosion-Proof Solenoid Enclosure designed to meet Enclosure Type 4-Watertight, Type 7 (C and D) Explosion-Proof Class I, Groups C and D and Type 9 (E, F & G) Dust Ignition-Proof Class II, Groups E, F and G. Installation and maintenance instructions for the watertight and explosion-proof solenoid enclosure are on Form No. V5380.

## OPERATION

**Normally Closed:** Valve is closed when solenoid is de-energized; open when energized.

### Manual Operator (Optional)

Valves with suffix "MO" in catalog number are provided with a manual operator which allows manual operation when desired or during an interruption of electrical power. To operate valve manually, rotate stem clockwise 180°. Disengage manual operator by rotating stem counterclockwise 180° before operating electrically.

## INSTALLATION

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

### Temperature Limitations

For maximum valve ambient and fluid temperatures, refer to chart below. Check catalog number prefix on nameplate to determine maximum temperatures.

CONSTRUCTION	COIL CLASS	CATALOG NUMBER PREFIX	MAXIMUM AMBIENT TEMP. °F	MAXIMUM FLUID TEMP. °F
AC Construction (Alternating Current)	F	NONE	77	175
DC Construction (Direct Current)	A, F or H	None, FT or HT	77	150

### 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.

### Mounting

For mounting bracket (optional feature) mounting dimensions, refer to Figure 1.

### 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, 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 Bulletins 8600, 8601, and 8602 for strainers.

## Wiring

Wiring must comply with local codes and the National Electrical Code. The solenoid housing has a 7/8" diameter hole to accommodate 1/2" conduit. On some constructions, a green grounding wire is provided. To facilitate wiring, the solenoid enclosure may be rotated 360° by removing the retaining cap or clip. **WARNING: When metal retaining clip disengages, it will spring upward.** Rotate enclosure to desired position. Then replace retaining cap or clip before operating.

### 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 by 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

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

**WARNING:** Turn off electrical power supply and depressurize valve before making 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 current 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 the valve.

### Preventive Maintenance

1. Keep the medium flowing through the valve as free from dirt and foreign material as possible.
2. While in service, the valve should be operated at least once a month to insure proper opening and closing.
3. Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace worn or damaged parts. However, for best results, replace all parts as supplied with an ASCO Rebuild Kit.

### Causes Of Improper Operation

1. **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic "click" signifies that the solenoid is operating. Absence of the "click" indicates loss of power supply. Check for loose or blown 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. Check supply voltage; it must be the same as specified on nameplate.
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 (see MAINTENANCE) and clean all parts. Replace worn or damaged parts. However, for best results, replace all parts as supplied with an ASCO Rebuild Kit.

### Coil Replacement (Refer to Figure 2.)

**WARNING: Turn off electrical power supply.** Then proceed as follows:

1. Disconnect coil lead wires and green grounding wire if present.
2. Remove retaining cap or clip, nameplate, and housing.

**WARNING: When metal retaining clip disengages, it will spring upward.**

3. Remove spring washer, insulating washer, grounding wire terminal (if present), and coil from solenoid base sub-assembly. Insulating washers are omitted when a molded coil is used.
4. Reassemble in reverse order of disassembly. Use exploded view provided for identification and placement of parts.

**CAUTION: The solenoid must be fully reassembled because the housing and internal parts complete the magnetic circuit. Place an insulating washer at each end of non-molded coil.**

### Valve Disassembly and Reassembly

**NOTE:** For valves with a manual operator (Suffix MO in catalog number) refer to Figure 3. For standard valves refer to Figure 2.

**WARNING: Depressurize valve and turn off electrical power supply.** Proceed in the following manner:

1. Remove retaining cap or clip and pull the entire solenoid enclosure off the solenoid base sub-assembly. **CAUTION: When metal retaining clip disengages, it will spring upward.**
2. Unscrew the solenoid base sub-assembly and remove bonnet gasket. For valves with a manual operator, unscrew manual operator body and remove stem retainer, manual operator stem sub-assembly, stem gasket, and bonnet gasket.
3. Remove bonnet screws (4), valve bonnet, core spring, core/diaphragm sub-assembly, and body gasket. **CAUTION: Do not damage or distort hanger spring between core/diaphragm sub-assembly.**
4. All parts are now accessible for cleaning or replacement. Replace worn or damaged parts. However, for best results, replace all parts as supplied with an ASCO Rebuild Kit.
5. Reassemble in reverse order of disassembly. Use exploded view provided for identification and placement of parts.
6. Replace body gasket and core/diaphragm sub-assembly, locating the bleed hole in the diaphragm assembly approximately 45° from the valve outlet.
7. Replace valve bonnet and bonnet screws (4). Torque bonnet screws (4) in a crisscross manner to  $95 \pm 10$  inch-pounds ( $10,7 \pm 1,1$  newton-meters).
8. Insert core spring in core, wide end of core spring in core first, closed end protruding from top of core.
9. Replace bonnet gasket and solenoid base sub-assembly. Torque solenoid base sub-assembly to  $175 \pm 25$  inch-pounds ( $19,8 \pm 2,8$  newton-meters).
10. For valves with a manual operator, replace stem gasket and manual operator stem sub-assembly in manual operator body.
11. Replace stem retainer on manual operator body. Be sure that the captive washer on manual operator stem sub-assembly is on the outside of the stem retainer when assembled.
12. Replace bonnet gasket, manual operator body, bonnet gasket, and solenoid base sub-assembly. Torque manual operator body and solenoid base sub-assembly to  $175 \pm 25$  inch-pounds ( $19,8 \pm 2,8$  newton-meters).
13. Replace solenoid enclosure and retaining cap or clip.
14. Restore electrical power and line pressure.
15. After maintenance, operate the valve a few times to be sure of proper opening and closing.

### ASCO REBUILD KITS

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

#### ORDERING INFORMATION FOR ASCO REBUILD KITS

When Ordering Rebuild Kits or Coils,  
Specify Valve Catalog Number,  
Serial Number, Voltage,  
and Frequency.

#### PARTIAL VIEW OF MOUNTING BRACKET (OPTIONAL)

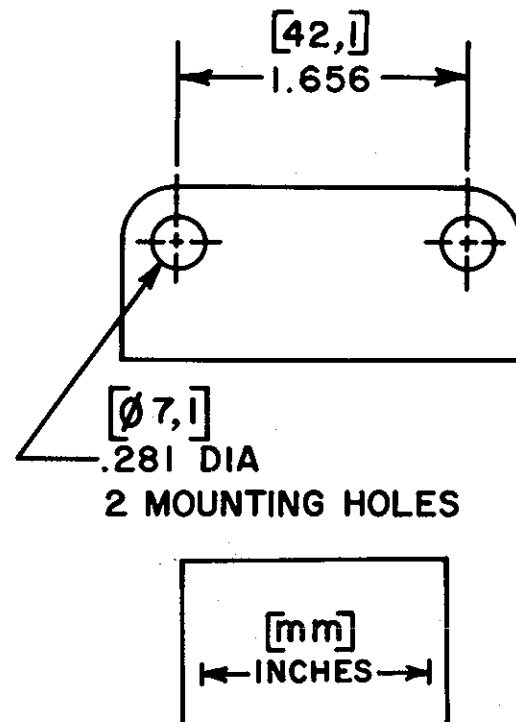
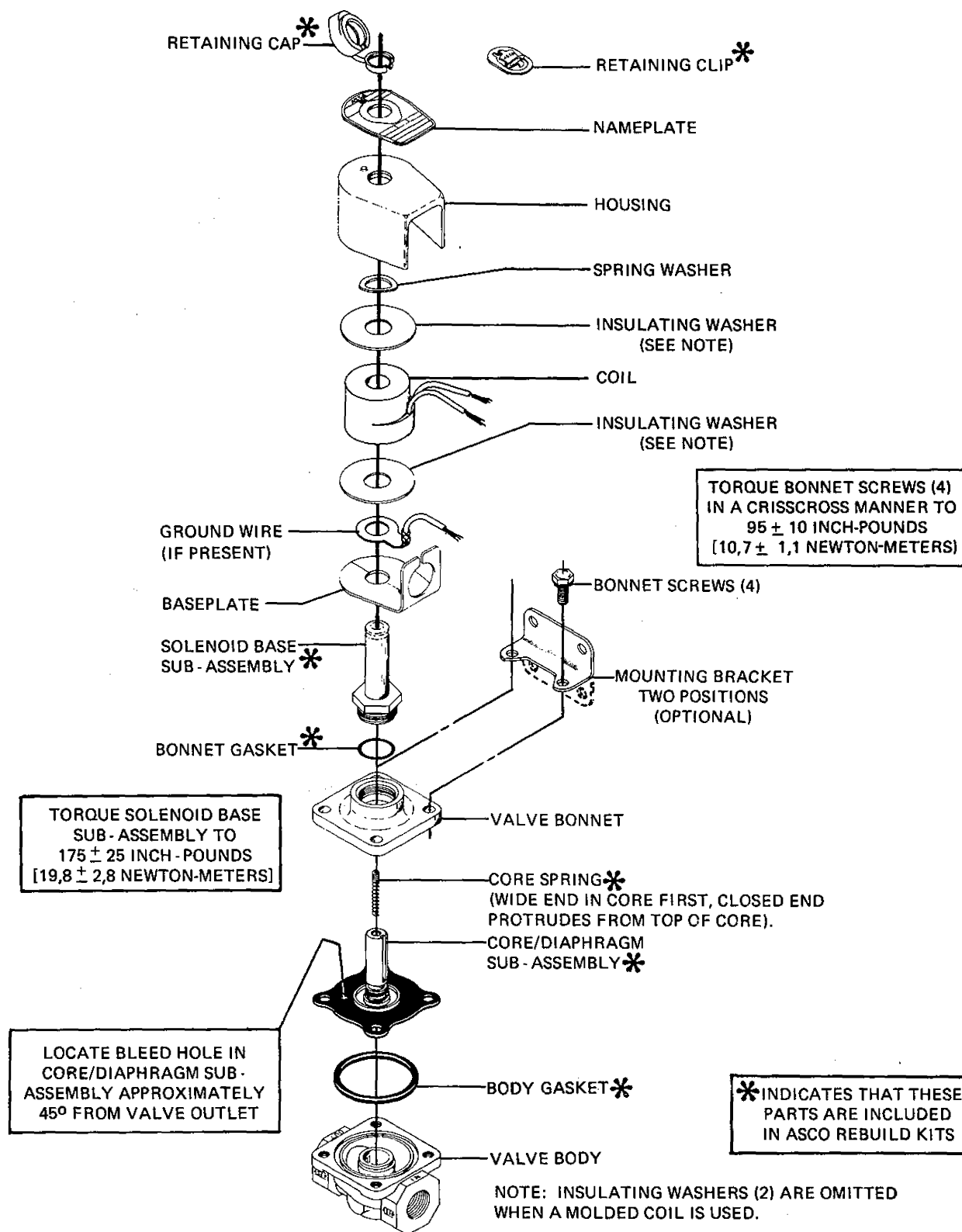
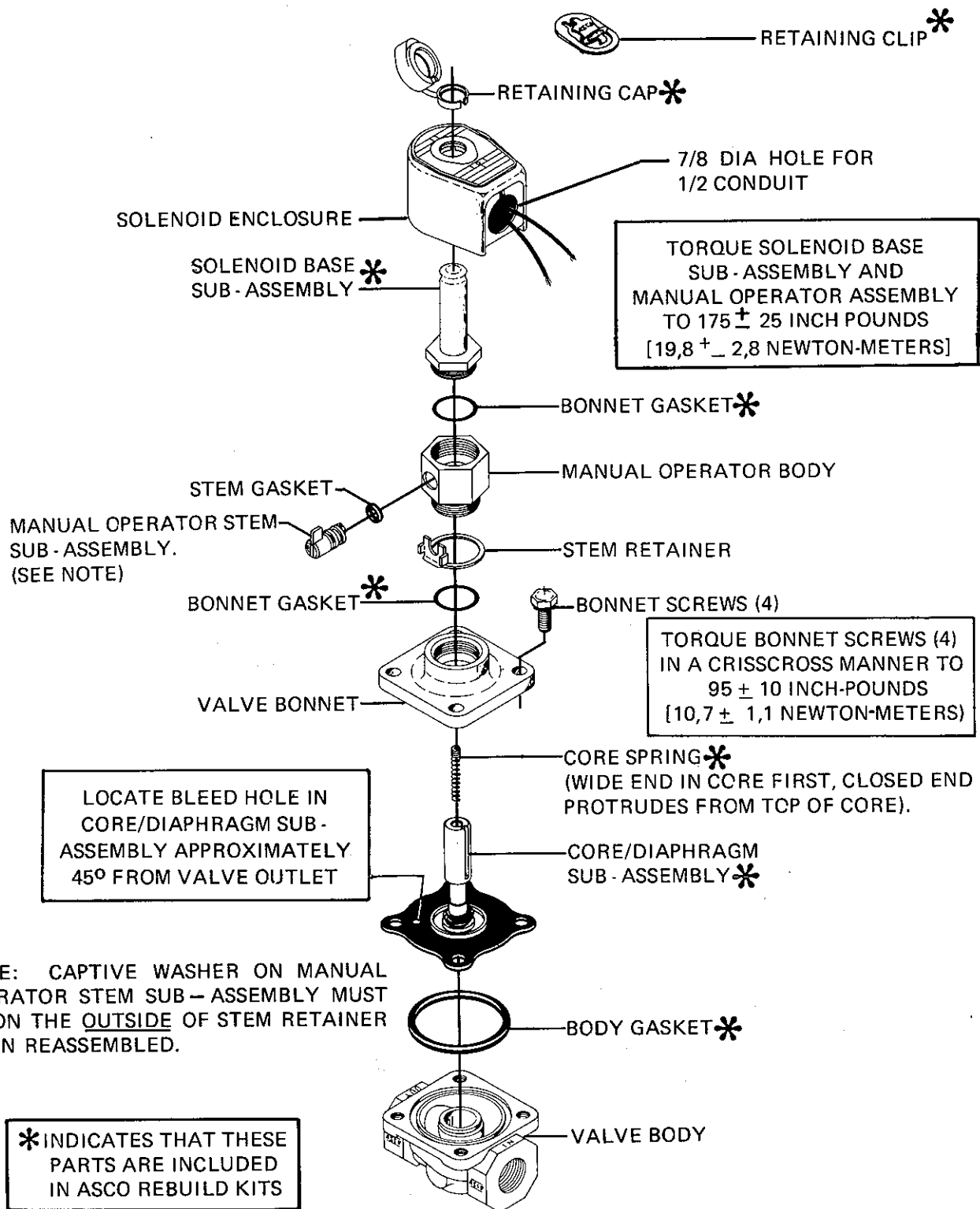


Figure 1.  
Dimensions for Mounting Bracket  
(Optional Feature)



**Figure 2. Bulletin 8210 - 1/2" and 3/4" NPT**  
**General purpose solenoid enclosure shown.**  
**For watertight and explosion-proof solenoid enclosure used on**  
**Bulletin 8211, see Form No. V5380.**



**Figure 3. Bulletin 8210 - Manual Operator**  
 (Catalog No. with Suffix MO) General purpose solenoid enclosure shown.  
 For watertight and explosion-proof solenoid enclosure used on  
 Bulletin 8211, see Form No. V5380.



**ASCO Valves**

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