

Installation & Maintenance Instructions

2-WAY INTERNAL PILOT-OPERATED SOLENOID VALVES
PISTON TYPE — 3/8" AND 1/2" NPT
NORMALLY CLOSED OPERATION

SERIES
8210
8211

DESCRIPTION

Series 8210 valves are 2-way normally closed, internal pilot operated solenoid valves. Valves has a "Y" type body of brass or stainless steel construction. Standard valves have a General Purpose NEMA Type 1 Solenoid Enclosure.

Series 8211 valves are the same as 8210, except that the solenoids are 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, Groups E, F or G. Installation and Maintenance instructions for the explosionproof/watertight solenoid enclosure are on I&M Nos. V5380 and V5391.

Notice: Brass valves are not certified as lead-free under the Safe Water Drinking Act SWDA 1417 and are not intended for use on drinking water systems. They are intended for control of water in industrial applications. Consult ASCO for valves rated for use in potable water applications.

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, turn stem 180°. Valve will be in the same position as when the solenoid is energized. Disengage manual operator by rotating knurled cap counterclockwise 180° (returned to original normally closed position) before operating electrically.

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

For maximum valve ambient and fluid temperatures, refer to chart below. The temperature limitations listed are for UL applications. For non UL applications, higher ambient and fluid temperature limitations are available. Check nameplate for maximum temperature rating.

Construction	Coil Class	Catalog Number Prefix	Max. Amb. Temp., °F	Max. Fluid Temp., °F
AC	A	None	77	180
	F	FT	122	180
	H	HT	140	180
DC	A, F or H	None, FT or HT	77	150

Mounting

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

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.

CAUTION: 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 and 8601 for strainers.

Wiring

Wiring must comply with local codes and the National Electrical Code. Housings for all solenoids are provided with connections for 1/2" conduit. Solenoid enclosure may be rotated to facilitate wiring by removing the retaining cap or clip.

▲CAUTION: When the metal ring disengages, it will spring upward. Rotate enclosure to desired position. Then replace retaining clip before operating.

Solenoid Temperature

Coils are 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

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

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 strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the 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 ASCO Rebuild Kit.

Causes of Improper Operation

- **Faulty Control Circuits:** 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.
- **Burned-out Coil:** Check for open-circuited coil. Replace coil as necessary. Check supply voltage; it must be the same as specified on nameplate.
- **Low Voltage:** Check voltage across coil lead. Voltage must be at least 85% of nameplate rating.
- **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.

Coil Replacement (Refer to Figures 1 and 2)

▲ WARNING: Turn off electrical power supply and disconnect lead wires.

1. Remove retaining cap or clip, nameplate and cover (housing on DC Construction).

CAUTION: When metal clip disengages, it will spring upward.

2. For AC Construction, slip yoke containing coil, sleeves and insulating washers off the solenoid base sub-assembly. For DC Construction, slip spring washer, coil and insulating washers off the solenoid base sub-assembly. Insulating washers are omitted when a molded coil is used.
3. Reassemble valve in reverse order of disassembly. Use exploded view for identification and placement of parts.

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

Valve Disassembly (Refer to Figure 1.)

▲ WARNING: Depressurize valve and turn off electrical power supply.

For AC Construction refer to Figure 1, for DC Construction, refer to Figure 2.

1. Disassemble valve in an orderly fashion using exploded view for identification and placement of parts.

2. Remove retaining cap or clip and slip the entire solenoid enclosure off the solenoid base sub-assembly.

▲ CAUTION: When the metal clip disengages, it will spring upward. For AC Construction, remove flux plate from solenoid base sub-assembly.

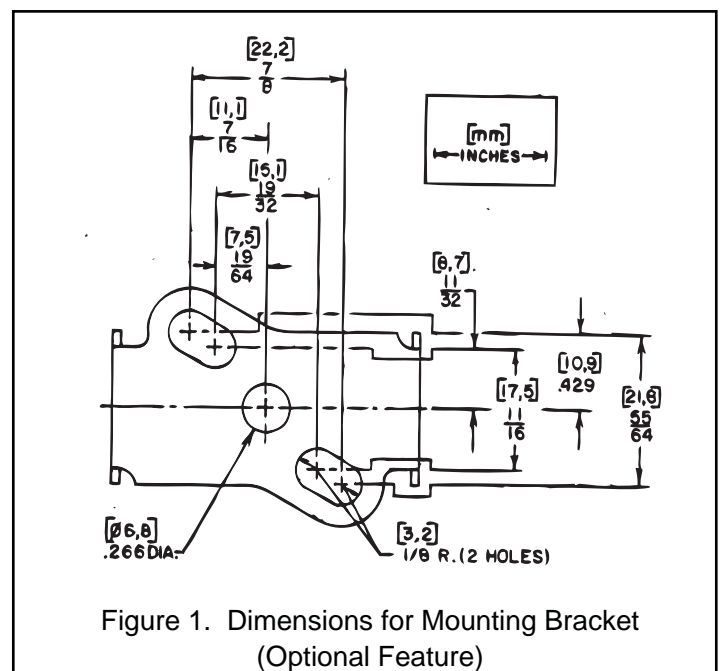
3. Unscrew solenoid base sub-assembly and remove core assembly, core spring, body gasket and piston assembly with piston ring attached.
4. For normal maintenance, it is not necessary to disassemble the manual operator unless external leakage is evident. To disassemble, remove stem pin, manual operator stem with stem gasket attached.
5. All parts are now accessible to clean or replace. Replace worn or damaged parts. However, for best results, replace all parts as supplied with an ASCO Rebuild Kit.

Valve Reassembly

1. Reassemble valve in reverse order of disassembly. Use exploded views for identification and placement of parts.
2. Replace piston assembly, body gasket, core assembly and core spring. Wide end of core spring goes in the core first, closed end protrudes from the top of the core.
3. Replace solenoid base sub-assembly and torque to 175 ± 25 inch pounds.
4. If removed, replace stem gasket, manual operator stem and stem pin.
5. Replace solenoid enclosure and retaining cap or clip.
6. After maintenance, operate the valve, a few times to be sure of proper opening and closing.

ORDERING INFORMATION FOR ASCO REBUILD KITS

Parts marked with an asterisk (*) in the exploded view 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 or the coil 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.



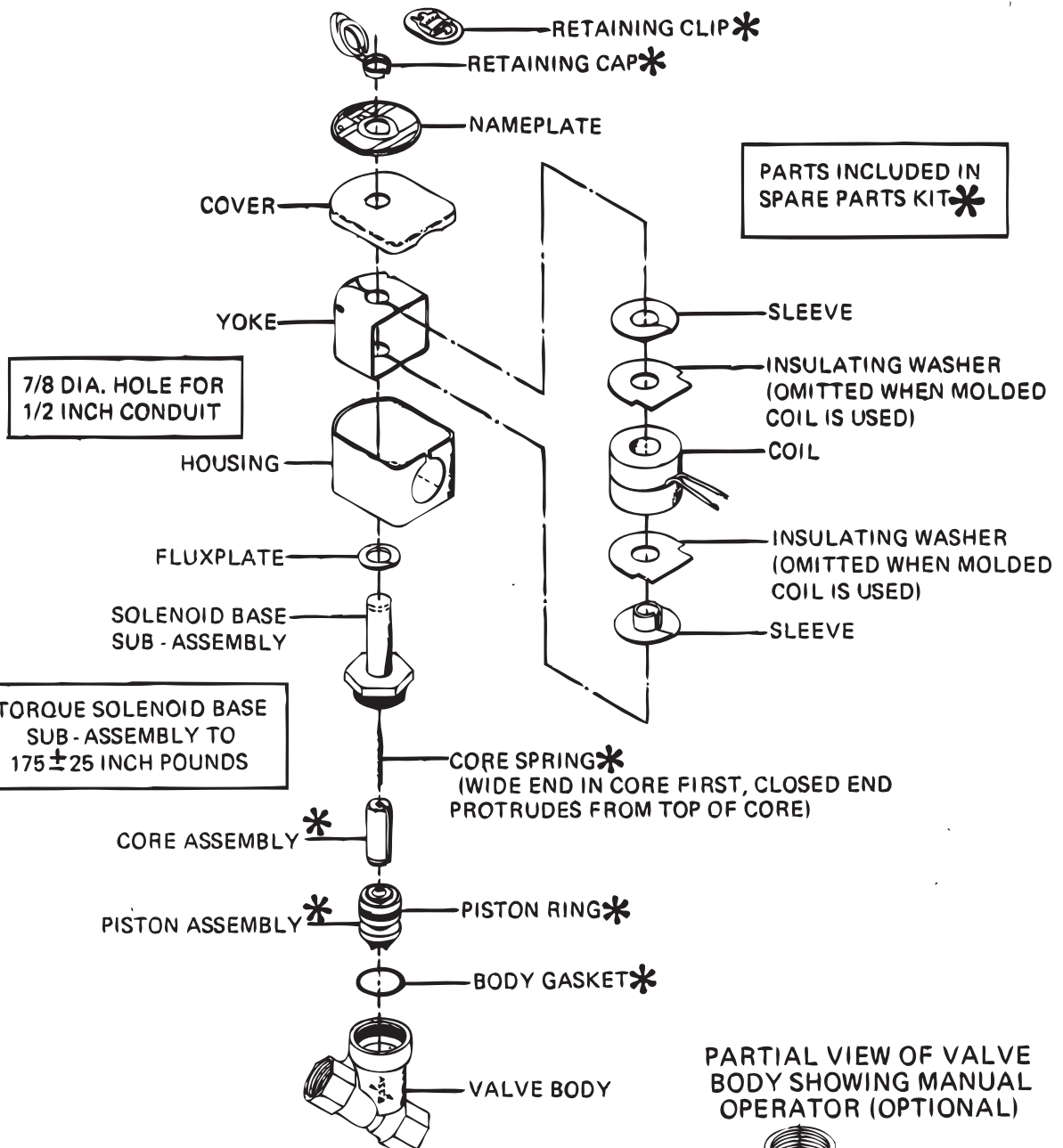


Figure 2.
 Series 8210 AC Construction
 General Purpose Solenoid Enclosure shown
 For Explosionproof/Watertight Solenoid Enclosure used on Series 8211, see I&M V5391

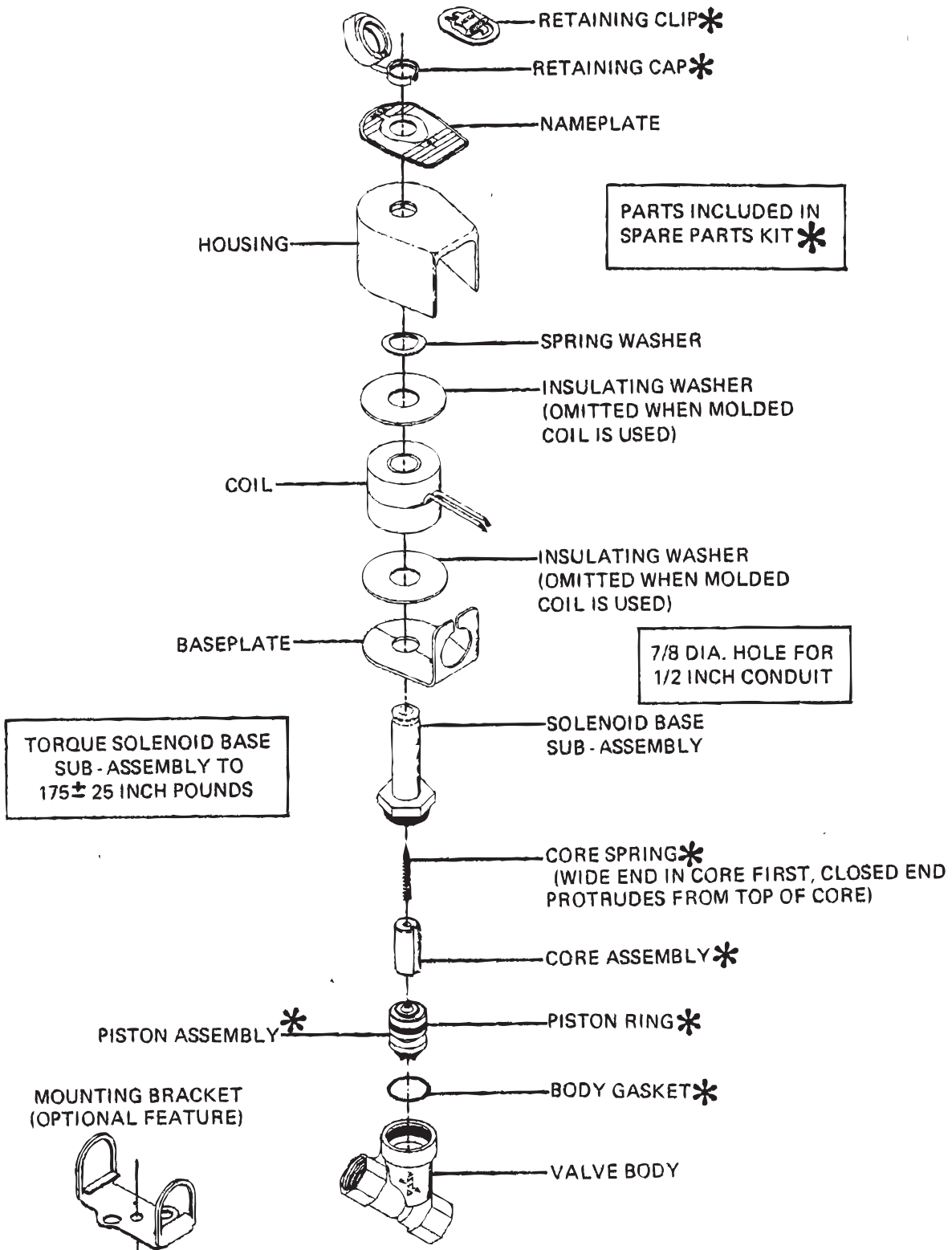


Figure 3.
 Series 8210 DC Construction
 General Purpose Solenoid Enclosure shown
 For Explosionproof/Watertight Solenoid Enclosure used on Series 8211, see I&M V5380