INSTALLATION & MAINTENANCE INSTRUCTIONS

ASCO BULLETIN 8222

Form No.V5550R2

2-WAY INTERNAL PILOT-OPERATED SOLENOID VALVES NORMALLY CLOSED OPERATION — STEAM SERVICE 1/2" AND 3/4" NPT — 1/2" ORIFICE

DESCRIPTION

Bulletin 8222 valves are 2-way normally closed, internal pilot-operated solenoid valves designed for heavy-duty steam service. Valves are made of rugged forged brass.

Standard valves have a Type 1, General Purpose Solenoid Enclosure. Valves may also be provided with an explosion-proof solenoid enclosure designed to meet Enclosure Type 3-Raintight, Type 7 (C & D)-Explosion-Proof Class I, Groups C & D and Type 9 (E, F, & G)-Dust Ignition-Proof Class II, Groups E, F, and G. Installation and maintenance instructions for the explosion-proof solenoid enclosure are on Form No.V5380.

OPERATION

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

IMPORTANT: Minimum operating pressure differential required is 2 psi.

INSTALLATION

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

Temperature Limitations

Maximum valve ambient temperature is 77°F. Maximum valve fluid temperature is 353°F.

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 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. Solenoid housings are provided with a 7/8" diameter hole to accommodate 1/2" conduit. On some constructions, a green grounding wire is provided. Use rigid metallic conduit to ground all enclosures not provided with a green grounding wire. To facilitate wiring, the enclosure may be rotated 360° by removing the retaining clip. **WARNING: When metal retaining clip disengages, it will spring upward.** Rotate enclosure to desired position. Then replace retaining clip before operating.

Solenoid Temperature

Coils for Bulletin 8222 valves 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

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 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 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 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.
2. **Burned-Out Coil:** Check for open-circuited coil. Replace coil as necessary. Check supply voltage; it must be the same as specified on nameplate.
3. **Low Voltage:** Check voltage across the coil lead. 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.)

NOTE: For valves with explosion-proof solenoid enclosures (Figure 3), see Form No.V5380.

WARNING: Turn off electrical power supply.

1. Disconnect coil lead wires and green grounding wire if present.
2. Remove retaining clip, nameplate, and housing. **WARNING: When metal retaining clip disengages, it will spring upward.**
3. Remove spring washer, insulating washer, and coil from solenoid base sub-assembly. Insulating washers are omitted when a molded coil is used.
4. Coil is now accessible for replacement. Reassemble in reverse order of disassembly. Use exploded view for identification and placement of parts.

CAUTION: Solenoid must be fully reassembled because housing and internal parts complete the magnetic circuit. Be sure to replace insulating washer at each end of non-molded coil.

Valve Disassembly

NOTE: For valves with general purpose solenoid enclosures, see Figure 2. For valves with explosion-proof solenoid enclosures, see Figure 3 and refer to Installation and Maintenance Instructions, Form No.V5380 for the solenoid portion of the valve.

WARNING: Depressurize valve and turn off electrical power supply.

1. Disassemble valve in an orderly fashion. Use exploded views for identification and placement of parts.
2. If necessary, disconnect coil lead wires, grounding wire (if present), and rigid conduit from solenoid housing.
3. For valves with general purpose solenoid enclosures, remove retaining clip and slip the entire solenoid enclosure off the solenoid base sub-assembly. **WARNING: When metal retaining clip disengages, it will spring upward.**

   For valves with explosion-proof solenoid enclosures, follow instructions on Form No.V5380 for disassembly of solenoid.

   NOTE: Explosion-proof construction requires a special wrench adapter to remove solenoid base sub-assembly.
4. Unscrew solenoid base sub-assembly and remove the following parts:

General Purpose (Figure 2)	Explosion-Proof (Figure 3)
• core assembly with core spring	• housing
• solenoid base gasket	• core assembly with core spring
• body gasket	• solenoid base gasket
• piston stop	• adapter
	• adapter gasket
	• body gasket
	• piston stop

5. Insert a stiff wire, bent paper clip, or similar tool into the center hole (pilot orifice) of the piston assembly and dislodge piston assembly. Pull piston assembly with piston ring from valve body. Be careful not to damage pilot seating surface.
6. 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 in reverse order of disassembly. Use exploded views for identification and placement of parts.
2. Lubricate solenoid base gasket and adapter gasket (Figure 3) with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease.
3. A flexible plastic sheet (Form No.V5661) is provided in the ASCO Rebuild Kit to aid in the installation of the piston assembly. Wrap the piston assembly with plastic sheet; be sure one edge of the sheet is even with the top of the piston assembly. Compress piston ring and place opposite end of plastic sheet into valve cavity. Slide piston assembly into cavity and remove and discard plastic sheet. CAUTION. Do not damage piston ring or force piston assembly into valve.
4. Replace piston stop with flared end up and body gasket with beveled side up.
5. For valves with a general purpose solenoid enclosure (Figure 2), replace solenoid base gasket, core assembly with core spring, and solenoid base sub-assembly. Torque solenoid base sub-assembly to 250 ± 25 inch-pounds (28,3 ± 2,8 newton-meters). Replace the following solenoid parts:
   - baseplate
   - grounding wire**
   - insulating washer*
   - coil
   - insulating washer*
   - spring washer
   - housing
   - nameplate
   - retaining clip

   * Omitted when molded coil is used.

   ** Not present on all constructions.

   For valves with an explosion-proof solenoid enclosure (Figure 3.) place adapter gasket in valve body. Apply Dow Corning Corporation's MOLYKOTE® Anti-Seize Thread Compound to adapter threads and install adapter into valve body. Then torque adapter to 250 ± 25 inch-pounds (28,3 ± 2,8 newton-meters). For lubrication instructions, refer to Form No.V5380 before proceeding. Then install solenoid base gasket, core assembly with core spring, housing, and solenoid base sub-assembly. Torque solenoid base sub-assembly to 175 ± 25 inch-pounds (19,8 ± 2,8 newton-meters). Install remaining solenoid parts as shown on Form No.V5380.
6. Restore line pressure and electrical power supply to valve.
7. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic "click" signifies the solenoid is operating.

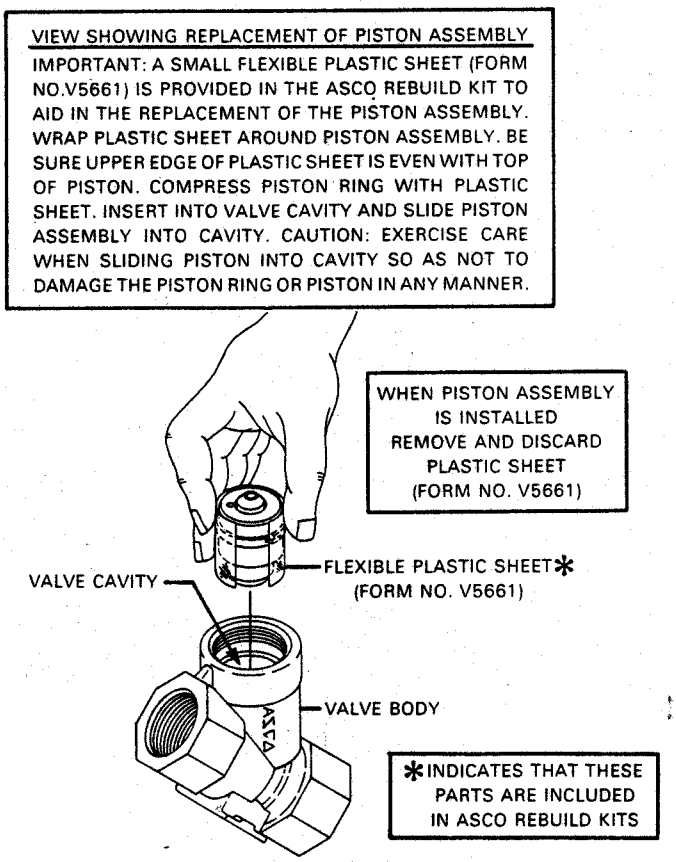

Figure 1. Installation of Piston Assembly

ORDERING INFORMATION FOR ASCO REBUILD KITS AND COILS

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.+
- **When Ordering Coils for ASCO valves,** order the number stamped on your coil.+

+ If the number of the Rebuild Kit or the Coil is not visible, order them and specify your valve's Catalog Number, Serial Number, Voltage, and Frequency.

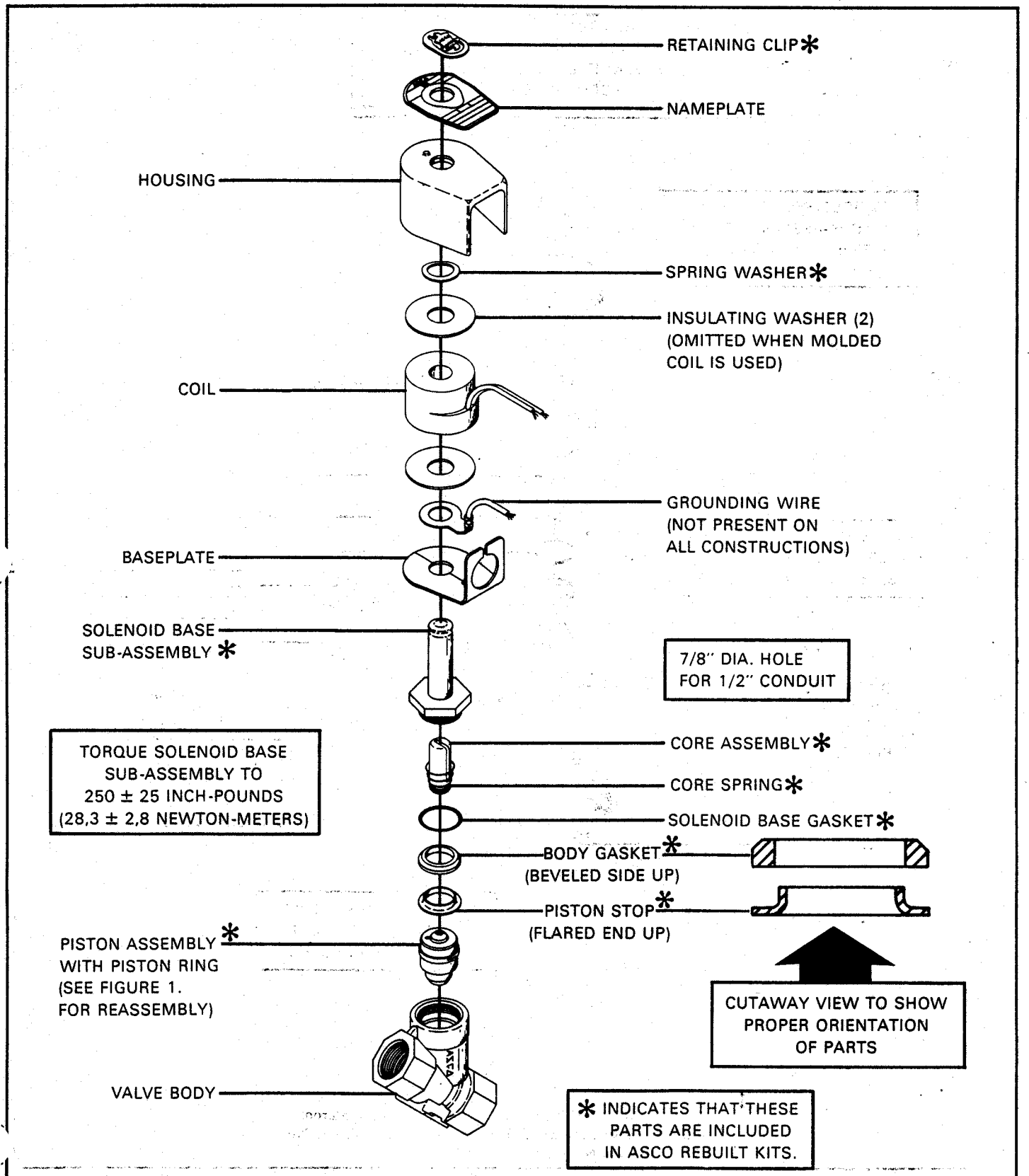

Figure 2. Bulletin 8222, General Purpose Solenoid Enclosure Shown.

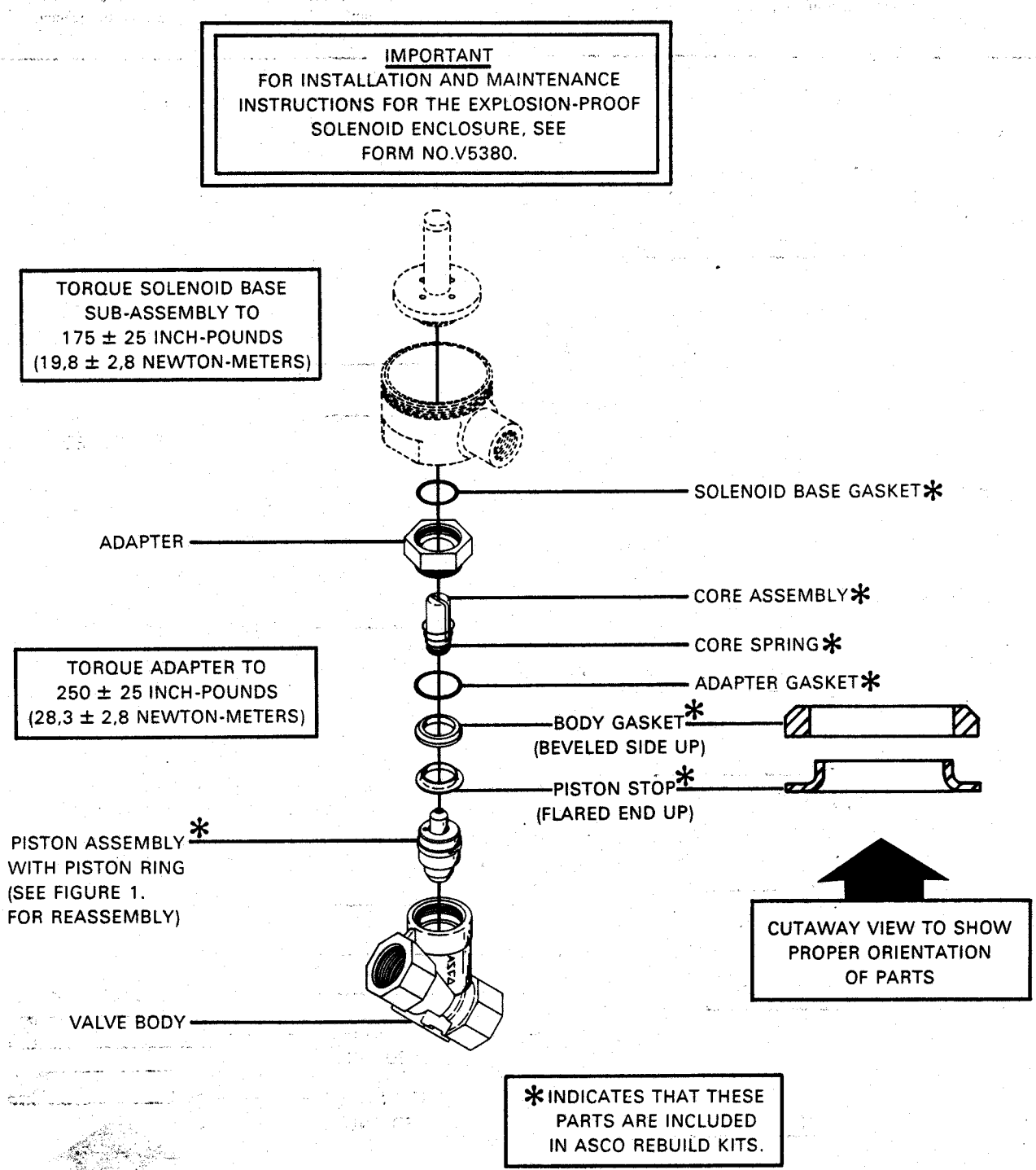

Figure 3. Partial View of Bulletin 8222, With Explosion-proof Solenoid Enclosure Shown. For the Portion of the Solenoid Not Shown, See Form No.V5380.