

Installation & Maintenance Instructions

**2-WAY INTERNAL PILOT-OPERATED SOLENOID VALVES
NORMALLY CLOSED OPERATION – STEAM SERVICE
3/8", 1/2" AND 3/4" NPT**

SERIES

8220

DESCRIPTION

Bulletin 8220 valves are 2-way normally closed, internal pilot-operated solenoid valves designed for steam service. Valve bodies are made of forged brass with internal parts of stainless steel and elastomers of ethylene propylene and/or TEFLON*.

Standard Bulletin 8220 valves are provided with 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)-Dust Ignition Proof Class II Groups E & F and have a temperature range code as specified in the temperature limitations and pressure ratings chart. 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 5 psi. Valve will remain open down to 0 psi differential, once opened at 5 psi.

INSTALLATION

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

IMPORTANT: Maximum operating pressure differentials are based on temperature-related material limitations. Therefore, do not use valves with a steam source of higher pressure than the nameplate maximum operating pressure differential. Also do not use a pressure reducing valve to reduce to rated pressure because this would result in a superheated steam of excessive temperature entering the valve.

Temperature Limitations and Pressure Ratings

For maximum valve ambient and fluid temperatures, refer to chart below. Check nameplate for maximum pressure rating.

Maximum Pressure Rating psi (Maximum Operating Pressure Differential)	Coil Class	Maximum Ambient Temp. °F	Maximum Fluid Temp. °F	Temperature Range Code Type 7 & 9 Enclosure
50	F	77	300	T3C
125	H	77	353	T3A

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 or tubing to valve according to markings on valve body. **CAUTION:** This valve is equipped with ethylene propylene elastomers which can be attacked by oils and greases. Wipe the pipe threads clean of cutting oils. 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 is 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.

*Dupont Co. Registered Trademark.

Solenoid Temperature

Coils for Bulletin 8220 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 1.)

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. Slip spring washer and coil off the solenoid base sub-assembly.
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 the housing and internal parts complete the magnetic circuit.

Valve Disassembly (Refer to Figure 1.)

WARNING: Depressurize valve and turn off electrical power supply.

1. Disassemble valve in an orderly fashion. Use exploded view for identification and placement of parts.
2. If necessary, disconnect coil lead wires, grounding wire (if present), and rigid conduit from solenoid housing.
3. 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.
4. Unscrew solenoid base sub-assembly and remove core assembly, core spring, and solenoid base gasket.
5. Remove bonnet screws, valve bonnet, piston assembly, lip seal, support, inner and outer body gaskets.

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 view for identification and placement of parts.
2. Lubricate all gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease.
3. Position support and inner and outer body gaskets in valve body.
4. Position lip seal, flanged end up, onto piston assembly. Install piston assembly with lip seal into support in valve body cavity.
5. Replace valve bonnet and bonnet screws. Torque bonnet screws in a crisscross manner to 95 ± 10 inch-pounds ($10,7 \pm 1,1$ newton-meters).
6. Replace solenoid base gasket, core assembly, core spring, and solenoid base sub-assembly. Torque solenoid base sub-assembly to 175 ± 25 inch-pounds ($19,8 \pm 2,8$ newton-meters).

7. Replace solenoid enclosure and retaining clip.
8. Restore line pressure and electrical power supply to valve.
9. After maintenance is completed, operate the valve a few times to be sure of proper opening and closing.

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.

