Installation & Maintenance Instructions

2–WAY INTERNAL PILOT–OPERATED SOLENOID VALVES
NORMALLY CLOSED OPERATION — 1″, 1¼″, OR 1½″ NPT
STEAM SERVICE

SERIES 8222

Form No.V5531R5

NOTICE: See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Causes of Improper Operation and Coil or Solenoid Replacement.

DESCRIPTION

Series 8222 valves are 2–way normally closed, internal pilot–operated solenoid valves designed for steam service. These valves are made of rugged brass or stainless steel. Internal parts are stainless steel with ethylene propylene and Teflon* elastomers. Series 8222 valves may be provided with a general purpose or explosionproof solenoid enclosure.

OPERATION

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

IMPORTANT: Minimum operating pressure differential is 5 psi.

Manual Operator (optional feature)

Manual operator allows manual operation when desired or during an electrical power outage. To engage manual operator (open the valve), turn stem clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator (close the valve), turn stem counterclockwise until it hits a stop.

⚠ CAUTION: For valve to operate electrically, manual operator stem must be fully rotated counterclockwise.

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.

Future Service Considerations

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a nonhazardous, noncombustible fluid after disassembly and reassembly.

⚠ CAUTION: 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 steam source to rated pressure because this would result in superheated steam of excessive temperature entering the valve.

Temperature Limitations

- Maximum Ambient 77°F
- Maximum Fluid 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 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.

⚠ 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, 8601 and 8602 for strainers.

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MAINTENANCE

⚠ WARNING: To prevent the possibility of personal 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.
- While in service, the valve should be operated at least once a month to insure proper opening and closing.
- 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

- **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.

Valve Disassembly

1. Disassemble valve in an orderly fashion. Use exploded views for identification and placement of parts.
2. Remove solenoid, see separate instructions.

NOTE: If the valve being disassembled has a manual operator refer to section on *Manual Operator Disassembly*.

3. Unscrew solenoid base sub−assembly from valve body. Then remove core assembly (with spring and core guide) and solenoid base gasket.
4. For normal maintenance (cleaning), it is not necessary to remove the valve seat. However, for valve seat removal use a 7/16″ thin wall socket wrench.
5. Remove cylinder screw, and lockwashers, piston spring, and piston assembly with piston ring and rider rings attached.
6. Remove one body gasket from 1″ or 1 1/4″ NPT valves; two body gaskets from 1 1/2″ NPT valves. Then remove body passage eyelet and gasket from valve body passage.

Note: On some 1″ and 1 1/4″ NPT valve constructions, two body gaskets are present. When installing an ASCO Rebuild Kit, one large body gasket is supplied. This replaces the two body gaskets previously used. The 1 1/2″ NPT valve constructions continue to use two body gaskets.

7. Unscrew disc nut from piston. Then remove disc washer, (disc washer only present on 1½″ NPT valve constructions) valve disc, and back−up washer from piston.
8. Remove piston ring and rider rings (2) from piston.
9. All parts are now accessible for cleaning or replacement. If parts are worn or damaged, install a complete ASCO Rebuild Kit. Be sure to clean internal passage ways in valve body and cylinder.

Valve Reassembly

1. Install back−up washer, valve disc and disc washer (disc washer only present on 1½″ NPT valve constructions) on piston. Then replace disc nut and tighten securely.
2. Install piston ring and rider rings (2) on piston.
3. Lubricate all gaskets with DOW CORNING ® 111 Compound lubricant or an equivalent high−grade silicone grease.
4. If a rebuild kit is being installed, install one body gasket on 1″ or 1 1/4″ NPT valves; two body gaskets on 1 1/2″ NPT valves. Then replace body passage gasket and eyelet.

Note: If only cleaning and inspecting the valve, re−install the existing gasket arrangement.

5. Install piston spring and piston assembly in valve cylinder.

⚠ CAUTION: To prevent damage, compress the rider rings (2) and piston ring when preassembling piston in cylinder. Be sure there is free movement of the piston assembly when installed in the cylinder.

6. When replacing the cylinder with the piston assembly compressed inside of it, a flat steel rule (or similar flat tool) may be used to retain the piston assembly in the cylinder while installing cylinder on valve body.
7. Replace cylinder screws and hand thread screws into valve body a few turns. Then torque screws in a criss-cross manner to 144±15 in−lbs [16,3±1,7 Nm].
8. Install valve seat in valve body. Apply a small amount of thread compound compatible with valve media to thread of valve seat. Torque valve seat to 75±10 in−lbs [8,5±1,1 Nm].
9. If the valve being rebuild has a manual operator, see section on *Manual Operator Reassembly.*
10. Install solenoid base gasket, core assembly (with core guide and spring) and solenoid base sub−assembly. Then torque solenoid base sub−assembly to 300±30 in−lbs [33,9±3,4 Nm].
11. Install solenoid, see separate instructions. Then make electrical hookup to solenoid.

⚠ WARNING: To prevent the possibility of personal injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

12. Restore line pressure and electrical power supply to valve.
13. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic *click* indicates the solenoid is operating.

Manual Operator Disassembly

1. Unscrew solenoid base sub−assembly from manual operator body.
2. Unscrew manual operator body with all parts engaged.
3. Disengage and remove stem retainer from stem/spacer sub−assembly and manual operator body.
4. Remove stem/spacer sub−assembly form manual operator body. Then remove core assembly (with core spring and core guide) and solenoid base gasket from manual operator body.
5. Refer to *Valve Disassembly* step 5 to continue disassembly.

Manual Operator Reassembly

1. Position bonnet gasket in valve body.
2. Install core assembly with core spring and core guide into manual operator body. Then rotate core to align flat slot with hole for stem/spacer sub−assembly.
3. Install stem/spacer sub−assembly into manual operator body and engage with core assembly.
4. Install stem retainer on base of manual operator body and engage with stem/spacer sub−assembly. Be sure the captive spacer (see Figure 1 on page 4) on the stem/sub−assembly is located on the *outside* of the stem retainer.
5. Install manual operator assembly in valve body. Torque manual operator body to 300±30 in−lbs [33,9±3,4 Nm].
6. Install solenoid base gasket and solenoid base sub−assembly on manual operator body. Then torque solenoid base sub−assembly to 300±30 in−lbs [33,9±3,4 Nm].
7. Operate manual operator a few times to be sure there is no misalignment or binding.
8. Refer to *Valve Reassembly* step 12 to continue reassembly.

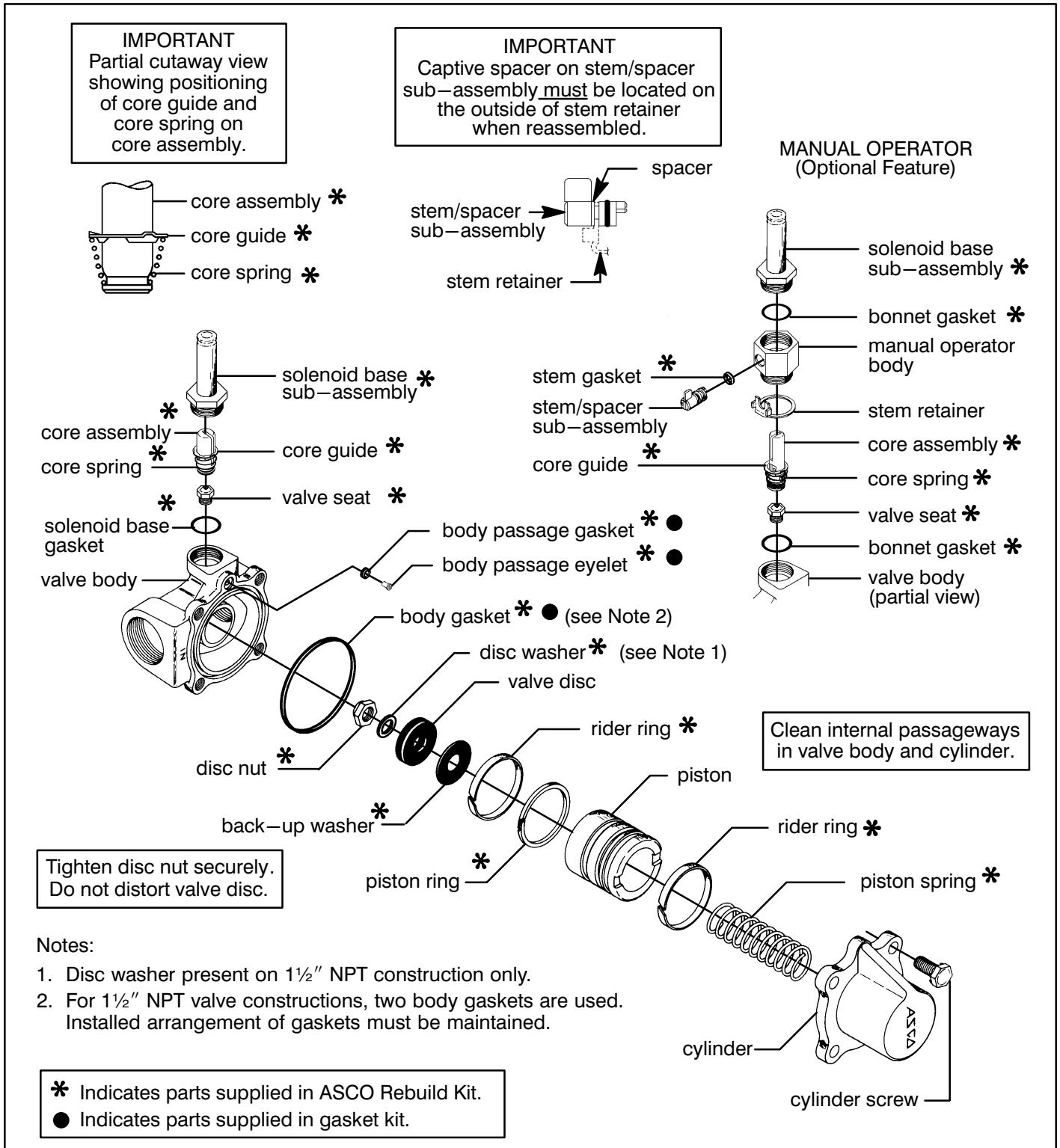
ORDERING INFORMATION

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 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.

Torque Chart

Part Name	Torque Value in Inch–Pounds	Torque Value in Newton–Meters
solenoid base sub–assembly manual operator body	300 ± 30 in–lbs	33 ± 3,4
valve seat	75 ± 10 in–lbs	8,5 ± 1,1
cylinder screws	144 ± 15 in–lbs	16,3 ± 1,7



Notes:

1. Disc washer present on 1½″ NPT construction only.
2. For 1½″ NPT valve constructions, two body gaskets are used. Installed arrangement of gaskets must be maintained.

Figure 1. Series 8222 valve without solenoid.

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