

# Installation & Maintenance Instructions

**ASCO Red Hat**  
NEXT GENERATION



2-WAY INTERNAL PILOT-OPERATED SOLENOID VALVES  
NORMALLY CLOSED OPERATION 1/4, 3/8, 1/2 & 3/4 NPT  
5/16, 3/8 AND 3/4 ORIFICE – HIGH PRESSURE SERVICE

**SERIES**

**8223**

**I&M No.V7516**

## MAINTENANCE

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

### DESCRIPTION

Series 8223 valves are 2-way normally closed piston type solenoid valves designed for high pressure service. These valves are made of rugged brass or stainless steel with Teflon\* or Buna N elastomers depending upon requirements. Series 8223 valves may be provided with a general purpose/watertight, open-frame, or watertight/explosionproof solenoid.

### OPERATION

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

**IMPORTANT: Minimum operating pressure differential for 1/2 and 3/4 NPT is 25 psi.**

**IMPORTANT: Minimum operating pressure differential for 1/4 and 3/8 NPT is 10 psi.**

### 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.

#### Temperature Limitations

Valves with design change letter “K” or “P” within the catalog number (example: 8223K023) have a maximum fluid temperature of 200°F. Refer to separate solenoid Installation and Maintenance Instructions for maximum ambient temperature.

#### 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, 8601 and 8602 for strainers.

**⚠ WARNING:** To prevent the possibility of death, 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 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 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 using exploded views for identification and placement of parts.
2. Remove solenoid, see separate instructions.
3. Unscrew solenoid base sub-assembly from valve body. Then remove body gasket and core assembly with core spring.
4. For normal valve maintenance (cleaning and/or rebuilding) it is not necessary to remove the valve seat.
5. Unscrew valve end cap from valve body. For 3/4" NPT cast stainless steel valves, remove six bolts and lockwashers using a 1/2" wrench, then remove valve bonnet.
6. Remove end cap gasket, or bonnet gasket (3/4" NPT stainless steel construction), piston spring and piston assembly. To remove piston assembly, a small hole is provided through the wall of the piston assembly. Hook an appropriate tool or a bent piece of wire in hole and pull piston assembly from valve body.
7. All parts are now accessible to clean or replace. If parts are worn or damaged, install a complete ASCO Rebuild Kit. Clean internal passage ways in the valve body.

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## Valve Reassembly

1. Lubricate all gaskets, piston ring, rider rings and piston u-cups with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease.
2. Assemble valve as shown in Figure 1 below. See *Torque Chart* for torque values required. For 3/4" NPT cast stainless steel construction, hand thread screws into valve body and torque in a crisscross manner.
3. Install solenoid, see separate instructions, and make electrical hookup.

**▲ WARNING: To prevent the possibility of death, 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.**

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

## 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	Torque Nm	Part Name	Torque Value	Torque Nm
solenoid base sub-assembly	175 ± 25 in-lbs	17,8 ± 2,8	end cap	30 ft-lbs	40,7
valve seat	45 ± 5 in-lbs	5,1 ± 0,6	bonnet screws	144 ± 15 in-lbs	16,3 ± 1,7

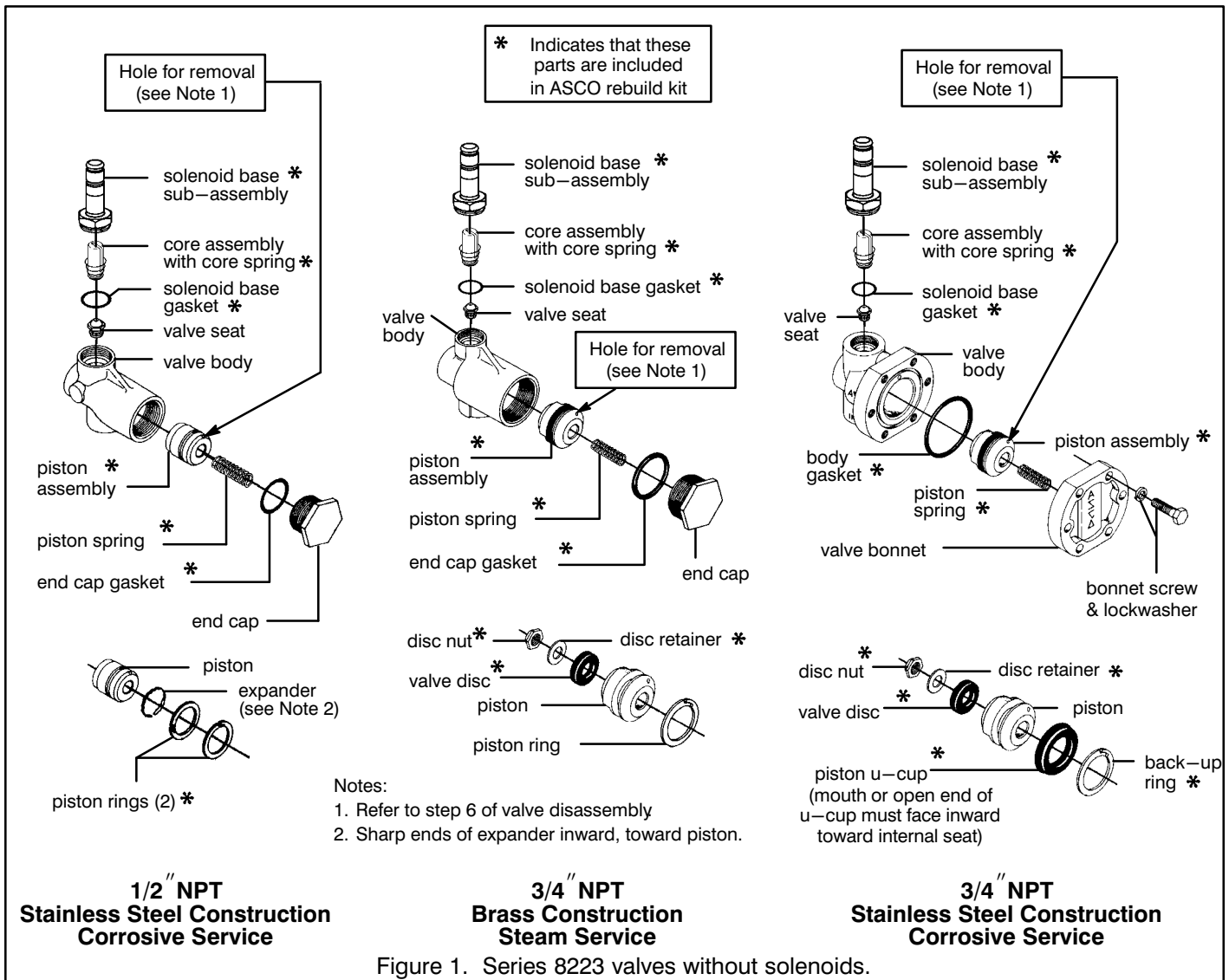
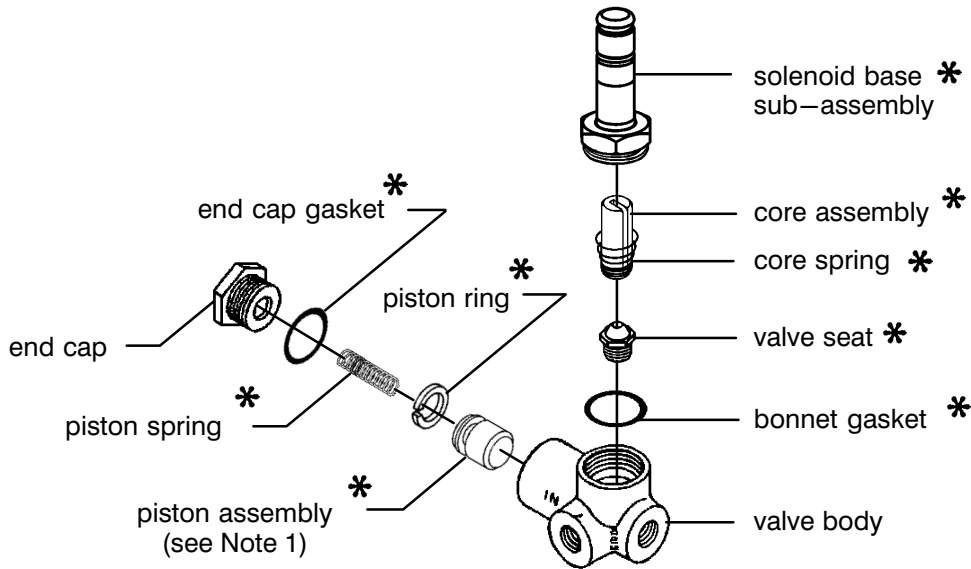


Figure 1. Series 8223 valves without solenoids.

## Torque Chart

Part Name	Torque Value	Torque in Newton–Meters
solenoid base sub–assembly	175 ± 25 in–lbs	19,8 ± 2,8
end cap	30 ft–lbs	40,7
valve seat	35 ± 5 in–lbs	3,9 ± 0,7

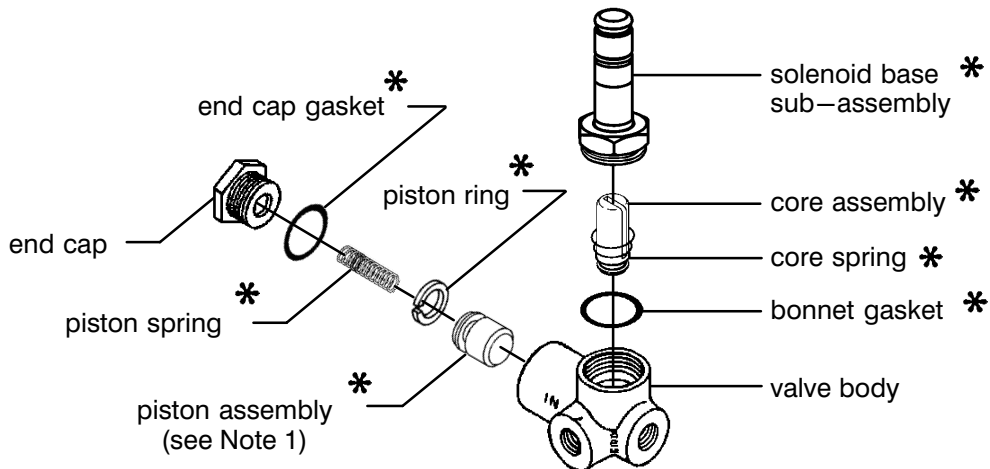


### Brass Construction

Notes:

1. Refer to step 6 of valve disassembly.

\* Indicates Parts Supplied  
In ASCO Rebuild Kits



### Brass Construction Resilient seating

Figure 2. Series 8223 – 1/4 and 3/8 NPT valves without solenoids.