Installation & Maintenance Instructions

2–WAY INTERNAL PILOTED–OPERATED SOLENOID VALVES
NORMALLY CLOSED OPERATION
3/4″ and 1″ NPT – BRASS CONSTRUCTION

SERIES
8210
8211

Form No.V5411R4

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

DESCRIPTION

Series 8210 valves are 2–way normally closed internal pilot–operated solenoid valves designed for general service. Valves are made of rugged forged brass. Series 8210 valves are provided with a general purpose solenoid enclosure.
Series EF8210 and 8211 are the same as Series 8210 except they are provided with an explosionproof or explosionproof/watertight solenoid enclosure.

OPERATION

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

NOTE: No minimum operating pressure differential required.

Manual Operator (optional feature)

Manual operator allows manual operation when desired or during an electrical power outage.

- **For 3/4″ NPT Valve Construction –** To engage manual operator (open valve), rotate stem clockwise as far as possible. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator, rotate stem counterclockwise as far as possible.

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

- **For 1″ NPT Valve Construction –** To engage manual operator (open valve), push knobs upward and rotate one quarter turn. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator, rotate manual operator one quarter turn until the manual operator disengages and returns to its original position.

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

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

For maximum valve ambient and fluid temperatures, refer to chart below. Check catalog number prefix and watt rating on nameplate.

Watt Rating AC/DC	Catalog Number Prefix	Coil Class	Maximum Ambient Temp.	Maximum Fluid Temp.
15.4 AC	None, DF or HT	F or H	125°F(51.7°C)	200°F(93°C)
16.1 AC	None, KF, SF or SC	F	125°F(51.7°C)	
	HT, KH, ST or SU	H	140°F(60°C)	
20 AC	None, HB or DP	F or H	77°F(25°C)	
20.1 AC	None, KP, SP or SD	F	125°F(51.7°C)	
	HB, KB, SS or SV	H	140°F(60°C)	
30.6 DC	HT	H	77°F(25°C)	77°F(25°C)

Positioning

Valve must be mounted with solenoid vertical and upright.

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.

⚠ 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.

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.

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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 using exploded views for identification and placement of parts. Refer to Figure1 & 2 for AC construction; Figure 3 for DC construction.
2. Remove solenoid enclosure. See separate instructions.
3. Unscrew solenoid base sub−assembly. For DC construction, a special wrench is supplied in ASCO Rebuild Kit. For wrench only, Order ASCO Wrench Kit No. K168146−001.
4. Remove bonnet screws, valve bonnet, bonnet gasket, piston/core sub−assembly with core spring and body gasket from valve body.
5. For normal maintenance, it is not necessary to remove or disassemble the manual operator unless external leakage is evident. If required, proceed a as follows:

- **For 3/4″ NPT Valve Construction**: Unscrew bonnet from valve body and remove gasket. Remove stem pin, stem and stem gasket.
- **For 1″ NPT Valve Construction**: Unscrew stuffing box and remove stuffing box gasket. Remove knob pin using a suitable punch. Then remove knob, spring and stem from stuffing box.

6. All parts are now accessible for cleaning or replacement. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Reassembly

1. Lubricate all gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high−grade silicone grease.
2. Install body gasket in valve body and bonnet gasket in valve bonnet.
3. Insert piston/core sub−assembly in valve bonnet. To prevent damage, compress rider rings and piston ring when preassembling piston/core sub−assembly in valve bonnet. Be sure there is free movement of the piston/core sub−assembly.
4. When replacing bonnet with piston/core assembly compressed inside of it, a flat steel rule (or similar flat tool) may be used to retain the piston/core sub−assembly in the valve bonnet while bonnet is engaged to the valve body.
5. Torque bonnet screws (4) in a crisscross manner to 110 ±10 in−lbs [12,4 ±1,1 Nm].
6. Replace core spring, for AC construction install wide end of core spring in core first, closed end protruding from top of core. For DC construction, install core spring with closed end of core spring protruding from top of core.
7. Hand thread solenoid base sub−assembly into valve bonnet as far as possible. Then torque solenoid base sub−assembly to 175 ± 25 in−lbs [19,8 ± 2,8 Nm]. For DC construction, the solenoid base sub−assembly must be placed inside the housing before assembling into the valve body. Before doing this, read separate lubrication instructions in ***Solenoid Installation & Maintenance Instructions.***
8. For valves provided with a manual operator, reassemble in reverse order of disassembly. Then torque bonnet or stuffing box to 75 ± 10 in−lbs [8,5 ± 1,1 Nm].
9. Install solenoid. See separate instructions.

⚠ WARNING: To prevent the possibility of death, serious 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.

10. Restore line pressure and electrical power supply to valve.
11. 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 Inch−Pounds	Torque Value Newton−Meters
Bonnet screws	110 ± 10	12,4 ± 1,1
Solenoid base sub−assembly	175 ± 25	19,8 ± 2,8
Bonnet or Stuffing box	75 ± 10	8,5 ± 1,1

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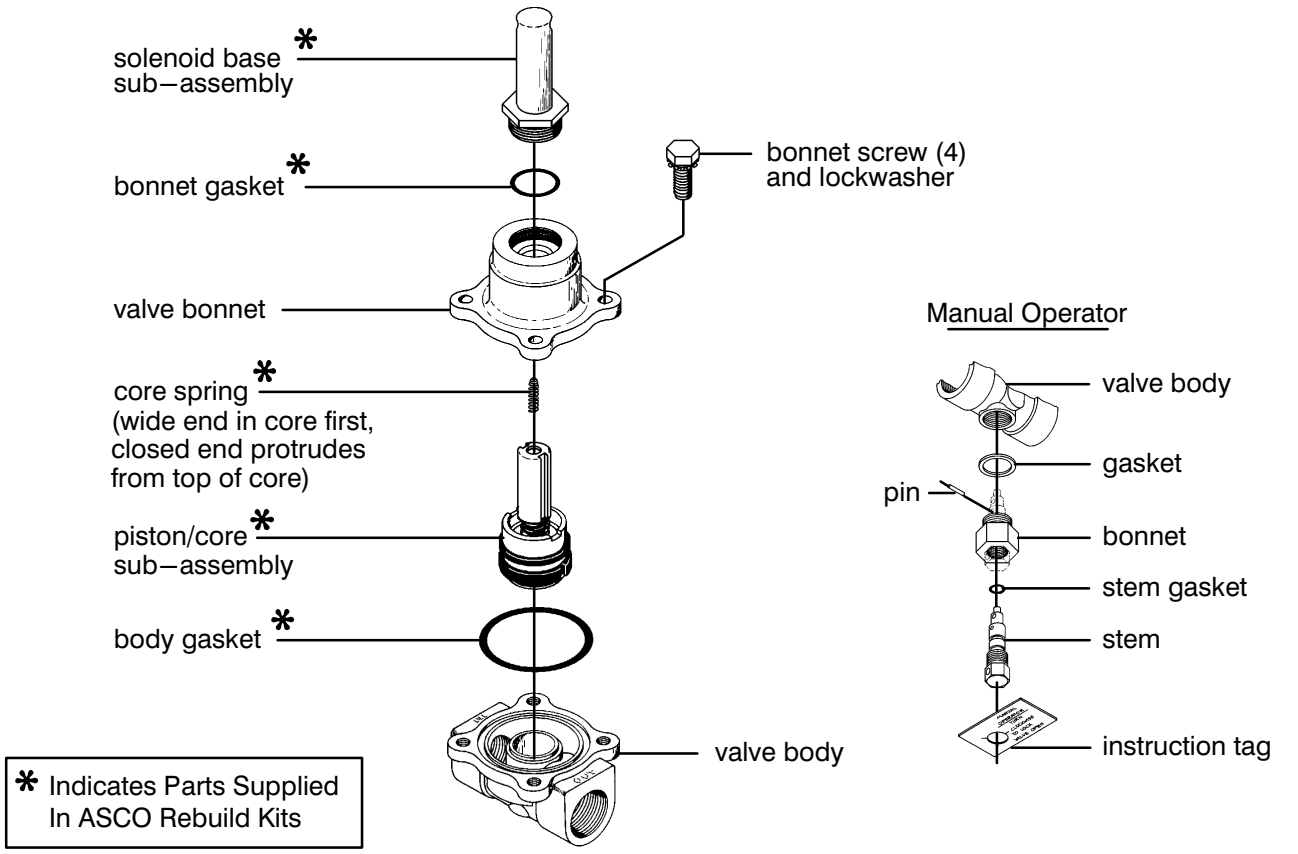

Figure 1. Series 8210 valve without solenoid – 3/4″ NPT – AC construction.

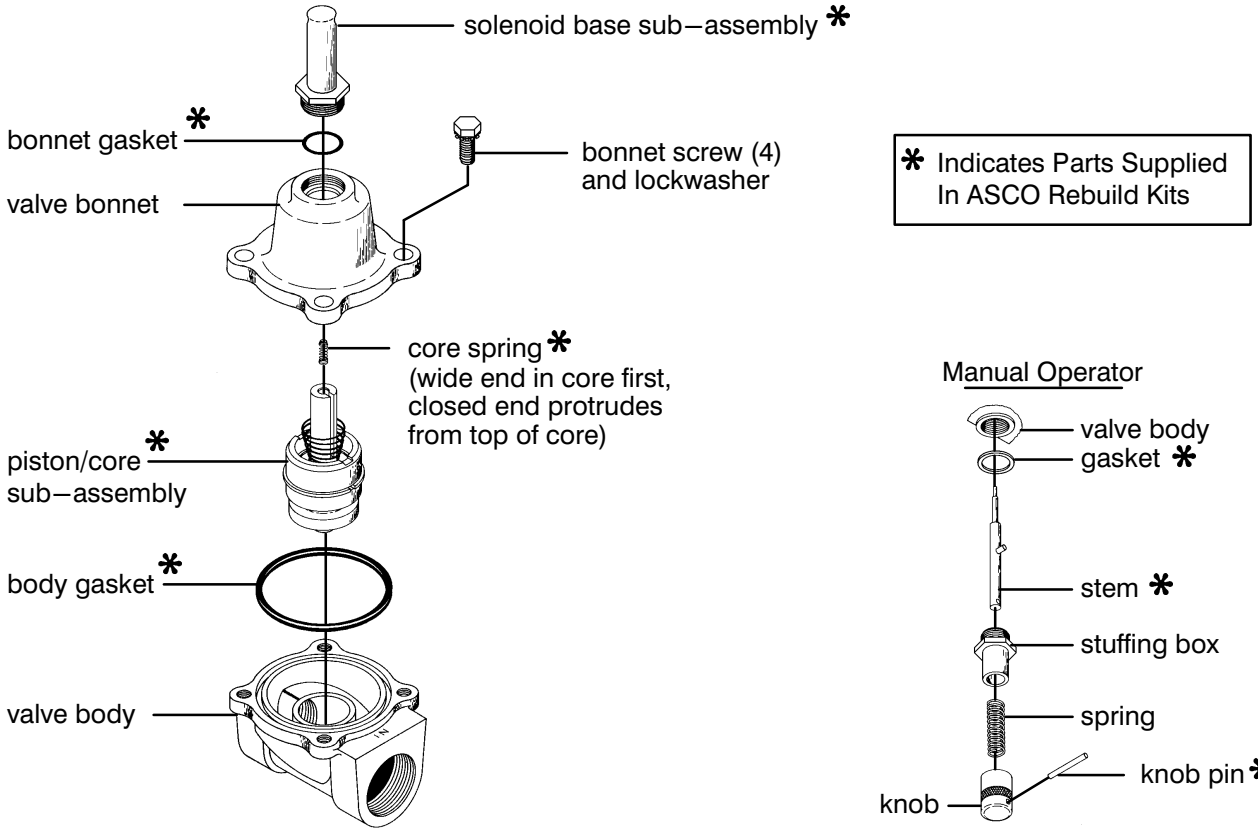

Figure 1. Series 8210 valve without solenoid – 1″ NPT – AC construction.

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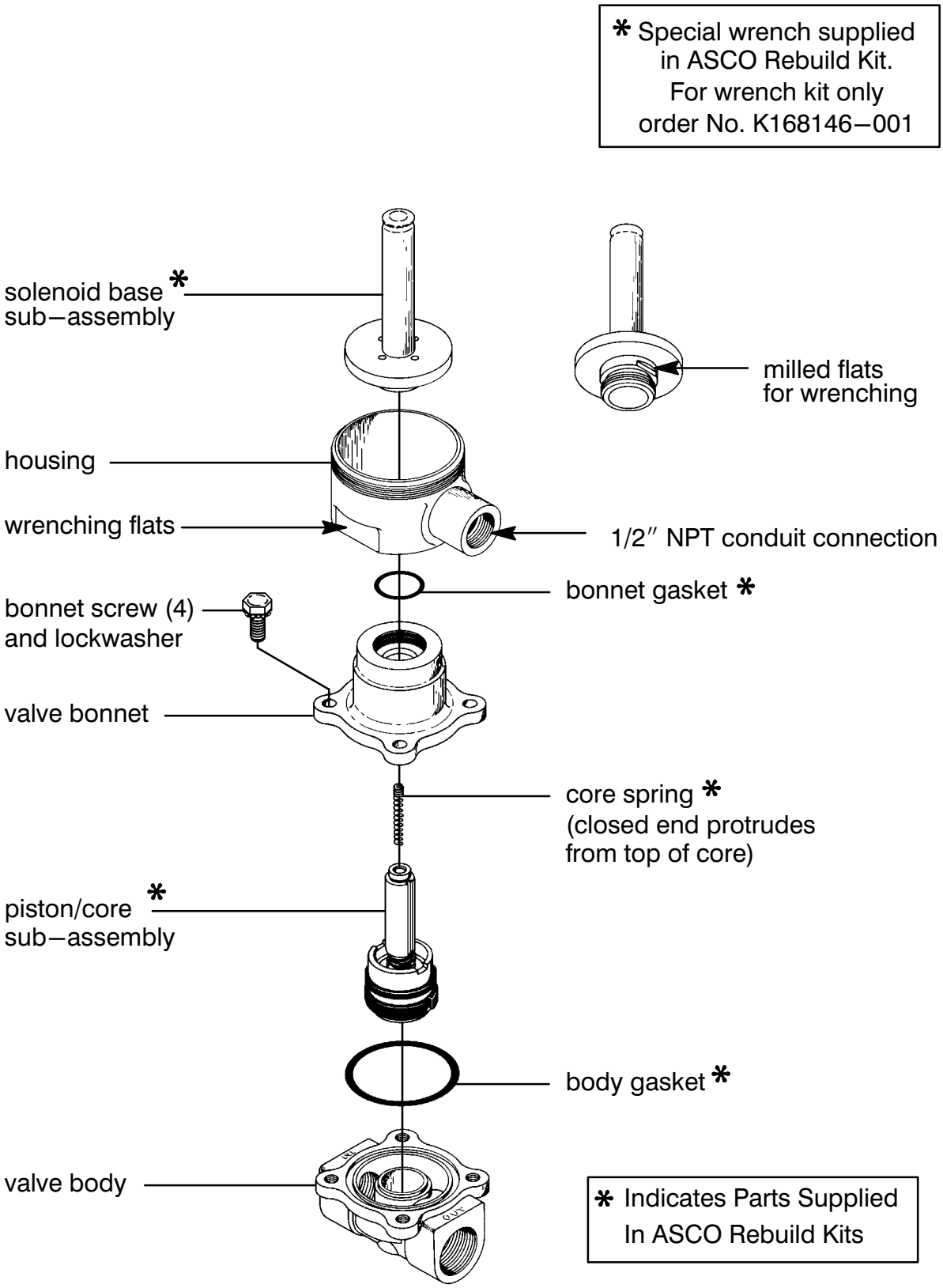

Figure 3. Series 8211/EF8210 valve without solenoid – 3/4″ NPT – DC construction.

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