

Installation & Maintenance Instructions

GENERAL PURPOSE AND RAINTIGHT/WATERTIGHT/EXPLOSIONPROOF SOLENOIDS

SERIES

8017

Form No. V5381R6

IMPORTANT: See separate valve installation and maintenance instructions for information on: Operation, Positioning, Mounting, Cleaning, Preventive Maintenance, Causes of Improper Operation, Disassembly and Reassembly of basic valve.

DESCRIPTION

Solenoid Catalog Numbers 80171 and 80172 have a Type 1, General Purpose Solenoid Enclosure. Solenoid Catalog Numbers EF80171, EF80172, 80173, and 80174 meet the requirements of Enclosure Type 3 – Raintight, Type 7 (C & D) Explosionproof, and Type 9 (E, F, & G) Dust – Ignitionproof. When constructed with a cover gasket and solenoid bonnet gasket they also meet the requirement of Enclosure Type 4 – Watertight. Series 8017 solenoids (when installed as a solenoid and not as part of an ASCO valve) are supplied with a core which has a 0.250–28 UNF–2B tapped hole, with 0.38 inch minimum full thread.

OPERATION

When the solenoid is energized, the core is drawn into the solenoid base sub-assembly.

IMPORTANT: When the solenoid is de-energized, the initial return force for the core, whether developed by spring, pressure, or weight, must exert a minimum force to overcome residual magnetism created by the solenoid. Minimum return force for AC construction is 1 pound, 12 ounces and 5 ounces for DC construction.

INSTALLATION

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

Enclosure Types 3, 4, 7, and 9

CAUTION: To prevent fire or explosion, do not install solenoid enclosure and/or valve where ignition temperature of hazardous atmosphere is less than 160° C. On valves used for steam service or when a class "H" solenoid is used, do not install in hazardous atmosphere where ignition temperature is less than 180° C. See nameplate for service.

Enclosure Types 3,4,7, and 9 Used in –40° C Ambient Temperature Applications

WARNING: To prevent fire or explosion, use only conduit runs 1/2" in size with a sealing fitting connected within 3 feet of the solenoid enclosure.

IMPORTANT: To protect the solenoid operator or valve, install a strainer or filter, suitable for the service involved in the inlet side as close to the valve or operator as possible. Clean periodically depending on service conditions.

Positioning

This solenoid 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.

Wiring

Wiring must comply with local codes and the National Electrical Code.

CAUTION: Do not use the solenoid enclosure as a splice box. The general purpose solenoid housing has a 7/8" diameter hole to accommodate 1/2" conduit. To facilitate wiring, the general purpose solenoid enclosure may be rotated 360° by removing the retaining cap or clip.

CAUTION: When metal retaining clip disengages, it will spring upward. Rotate solenoid enclosure to desired position. Then replace retaining cap or clip before operating. On some solenoids, a grounding wire which is green or green with yellow stripes is provided. Use rigid metallic conduit to ground

all enclosures not provided with a green grounding wire. For the raintight/watertight/ explosionproof solenoid enclosure, electrical fittings must be approved for use in hazardous locations. This enclosure has a 1/2' conduit connection and may be rotated 360° to facilitate wiring.

WARNING: To prevent the possibility of personal injury or property damage from accidental disengagement of solenoid from valve body, hold housing securely by wrenching flats while removing or replacing housing cover.

To rotate enclosure, loosen housing cover using a 1" socket wrench. Two wrenching flats are provided on the housing to hold it securely in place while the cover is being loosened or tightened. Rotate housing to desired position and tighten cover before operating. Torque cover to 135 ± 15 in-lbs [15,3 ± 1,7 Nm].

NOTE: Alternating current (AC) and direct current (DC) solenoids are built differently. To convert from one to the other, it is necessary to change the complete solenoid including the core and solenoid base sub-assembly, not just the coil. Consult ASCO.

Solenoid Enclosure Assembly

Solenoid Catalog Numbers 80171 and 80172 may be assembled as a complete unit. Tightening is accomplished by means of a hex flange at the base of the solenoid enclosure.

Solenoid Catalog Numbers EF80171, EF80172, 80173, and 80174 must be assembled in the following manner:

1. The solenoid enclosure must be completely disassembled. For disassembly, see the instructions given in *Coil Replacement* section.
2. After disassembly, the solenoid base sub-assembly is placed inside the housing over the assembly location.
3. The assembly is then tightened in place by means of two (2) slots in the bonnet adjacent to the tube on the solenoid base sub-assembly. Use special adapter wrench provided with solenoid. For ASCO wrench kit only, Order No. K218950. Exercise care during tightening procedure to prevent deforming or raising of bonnet surface adjacent to slots.
4. Reassemble solenoid, follow instructions in *Coil Replacement* section.

Solenoid Temperature

Standard solenoids are supplied with coils 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

WARNING: To prevent the possibility of personal injury or property damage, turn off electrical power, depressurize solenoid operator or valve, and vent fluid to a safe area before servicing.

Cleaning

All solenoid operators and valves should be cleaned periodically. The time between cleaning will vary depending on 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 strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the solenoid operator or valve as free from dirt and foreign material as possible.
- While in service, the solenoid operator or valve should be operated at least once a month to ensure 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. Replace any parts that are worn or damaged.

Causes of Improper Operation

- **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic *click* indicates loss of power supply. Check for loose or blown fuses, open-circuited or grounded coil, broken lead wires or splice connections.
- **Burned-Out Coil:** Check for open-circuited coil. Replace if necessary. Check supply voltage; it must be the same as specified on nameplate and as marked on the coil.
- **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.

Coil Replacement for Solenoid Catalog Numbers 80171 and 80172

General Purpose Enclosure

1. Disconnect coil lead wires and grounding wire if present.
2. Remove retaining cap or clip from top of solenoid.

▲ CAUTION: When metal retaining clip disengages, it will spring upward.

3. Remove nameplate (if present), cover, and spring washer (alternate construction only).
4. For AC construction, slip yoke containing coil, sleeves, insulating washers, and grounding wire (if present,) off solenoid base sub-assembly. For DC construction, slip grounding wire (if present), flux washer and coil off the solenoid base sub-assembly.
- NOTE: Insulating washers are omitted when a molded coil is used.
5. Coil is now accessible for replacement.

▲ CAUTION: Solenoid must be fully reassembled because the housing and internal parts complete the magnetic circuit. Place an insulating washer at each end of non-molded coil.

Coil Replacement for Solenoid Catalog Numbers EF80171, EF80172, 80173, and 80174 Raintight/Watertight/Explosionproof Enclosure

1. Disconnect coil lead wires and grounding wire if present.

▲ WARNING: To prevent the possibility of personal injury or property damage from accidental disengagement of solenoid from valve body, hold housing securely by wrenching flats while removing or replacing housing cover.

2. Unscrew housing cover with cover gasket and nameplate attached. Two wrenching flats are provided to hold the housing securely in place while the cover is being loosened or tightened.
NOTE: Some older solenoid constructions do not have a cover gasket or solenoid bonnet gasket present.
3. Remove retainer from top of solenoid base sub-assembly.
4. For AC construction, slip yoke containing coil, sleeves, insulating washers, and grounding wire, (if present) off the solenoid base sub-assembly. For DC construction, remove grounding wire (if present), yoke, insulating washer, coil and insulating washer.
NOTE: Insulating washers are omitted when a molded coil is used.
5. Coil is now accessible for replacement.
6. If additional disassembly is required, unscrew solenoid base sub-assembly using special wrench adapter supplied in ASCO Enclosure or Rebuild Kit. For ASCO wrench kit only, Order No.K218950.
7. Remove solenoid base sub-assembly with solenoid bonnet gasket.
8. Reassemble using exploded view for identification and placement of parts. Before reassembly, see note below for cleaning and greasing requirements.
9. Torque solenoid base sub-assembly to 175 ± 25 in-lbs [$19, 8 \pm 2, 8$ Nm].
10. Torque housing cover to 135 ± 15 in-lbs [$15, 3 \pm 1, 7$ Nm].

▲ CAUTION: Solenoid must be fully reassembled because the housing and internal parts complete the magnetic circuit. Place an insulating washer at each end of non-molded coil.

NOTE: Solenoid Catalog Numbers EF80171, EF80172, 80173, and 80174—Installation and maintenance of raintight/watertight/explosionproof equipment requires more than ordinary care to insure safe performance. All finished surfaces of the solenoid are constructed to provide flame-proof seal. Be sure that the surfaces are wiped clean before reassembling. Grease the cover gasket, solenoid bonnet gasket, and the joints of the raintight/watertight/explosionproof solenoid enclosure with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease. Grease all joints thoroughly including the underside of the solenoid base sub-assembly flange and internal threads of the housing cover.

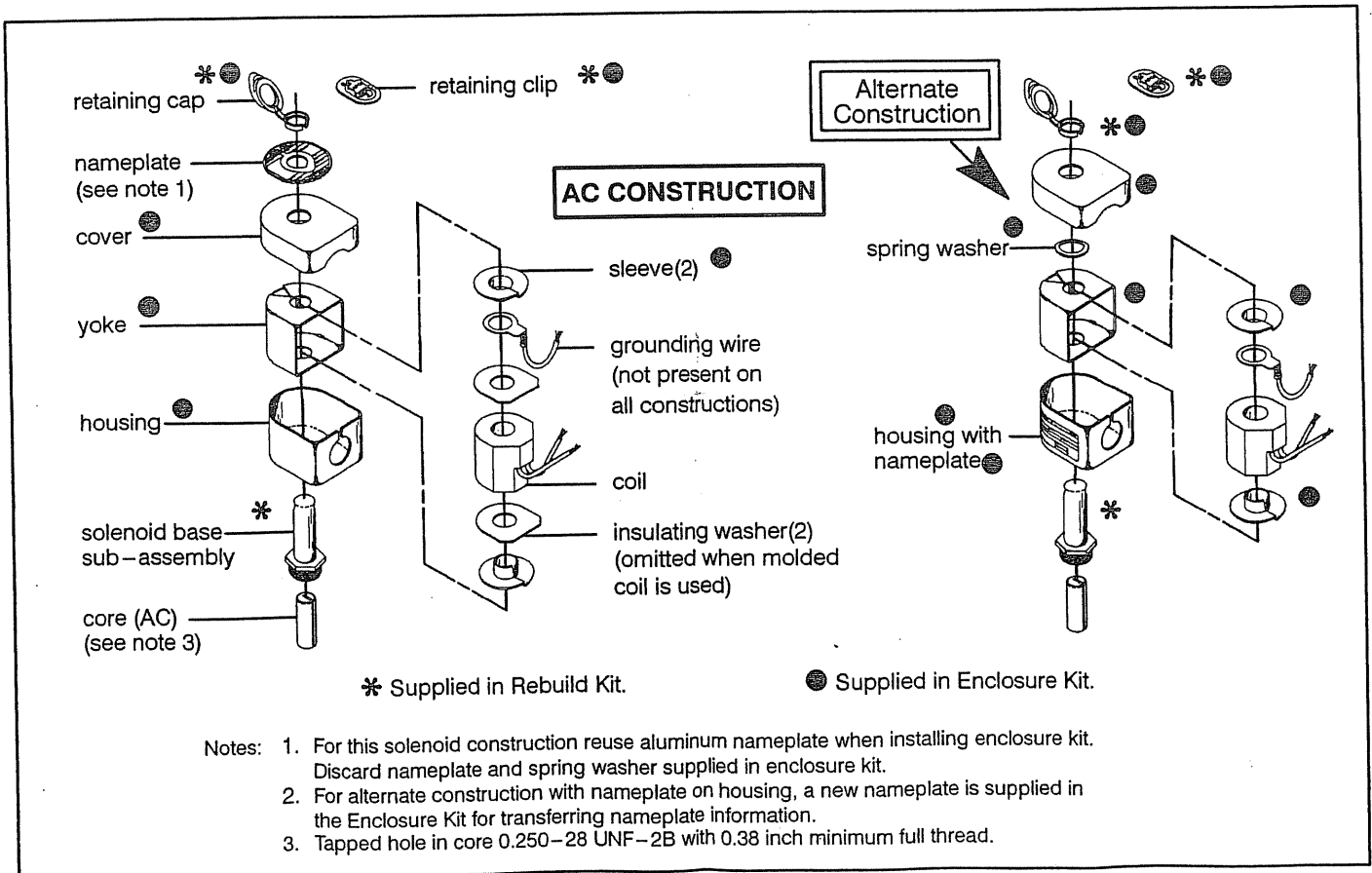


Figure 1. Catalog Nos. 80171 and 80172 General Purpose Solenoid Enclosure, AC Construction.

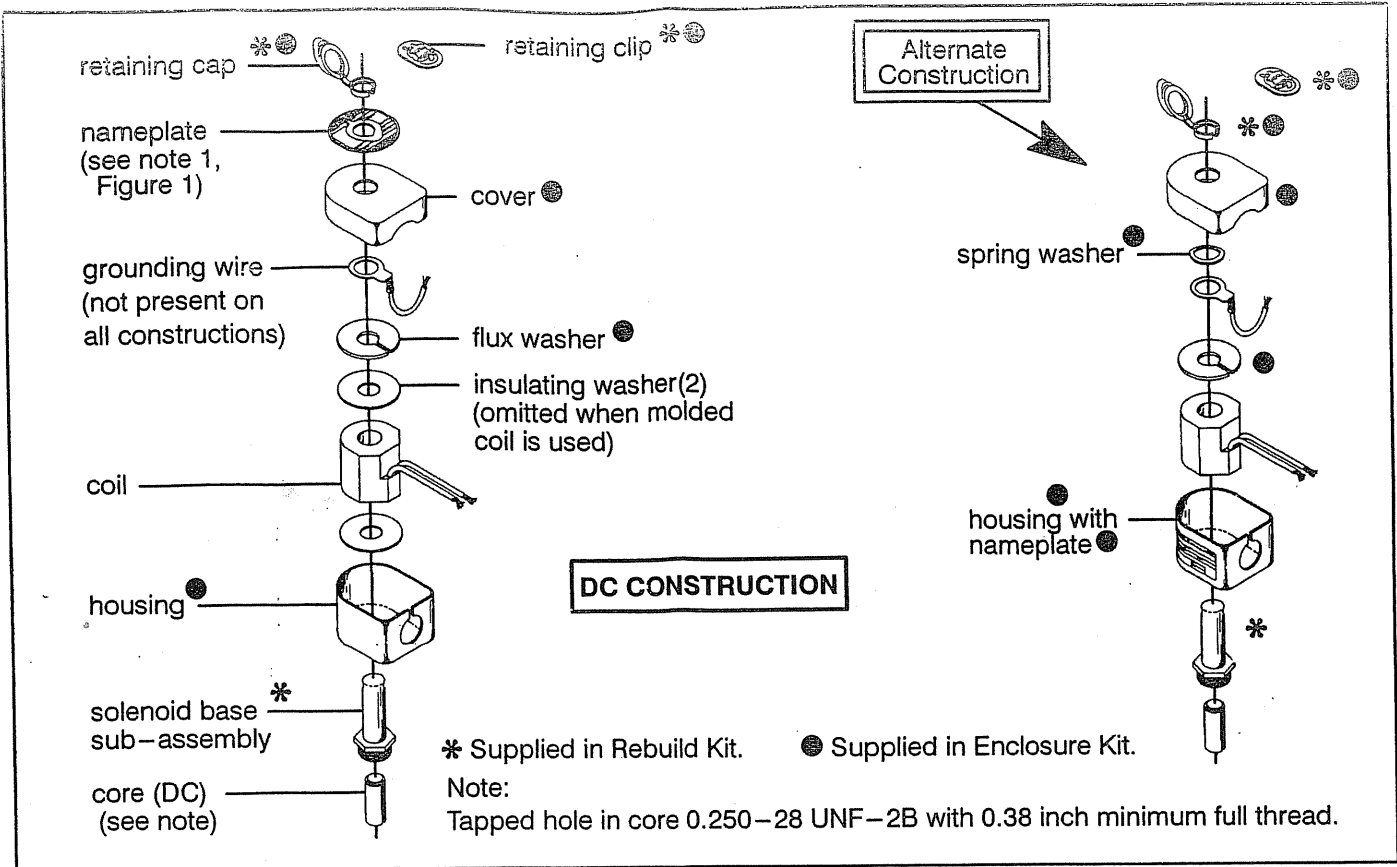


Figure 2. Catalog Nos. 80171 and 80172 General Purpose Solenoid Enclosure, DC Construction.

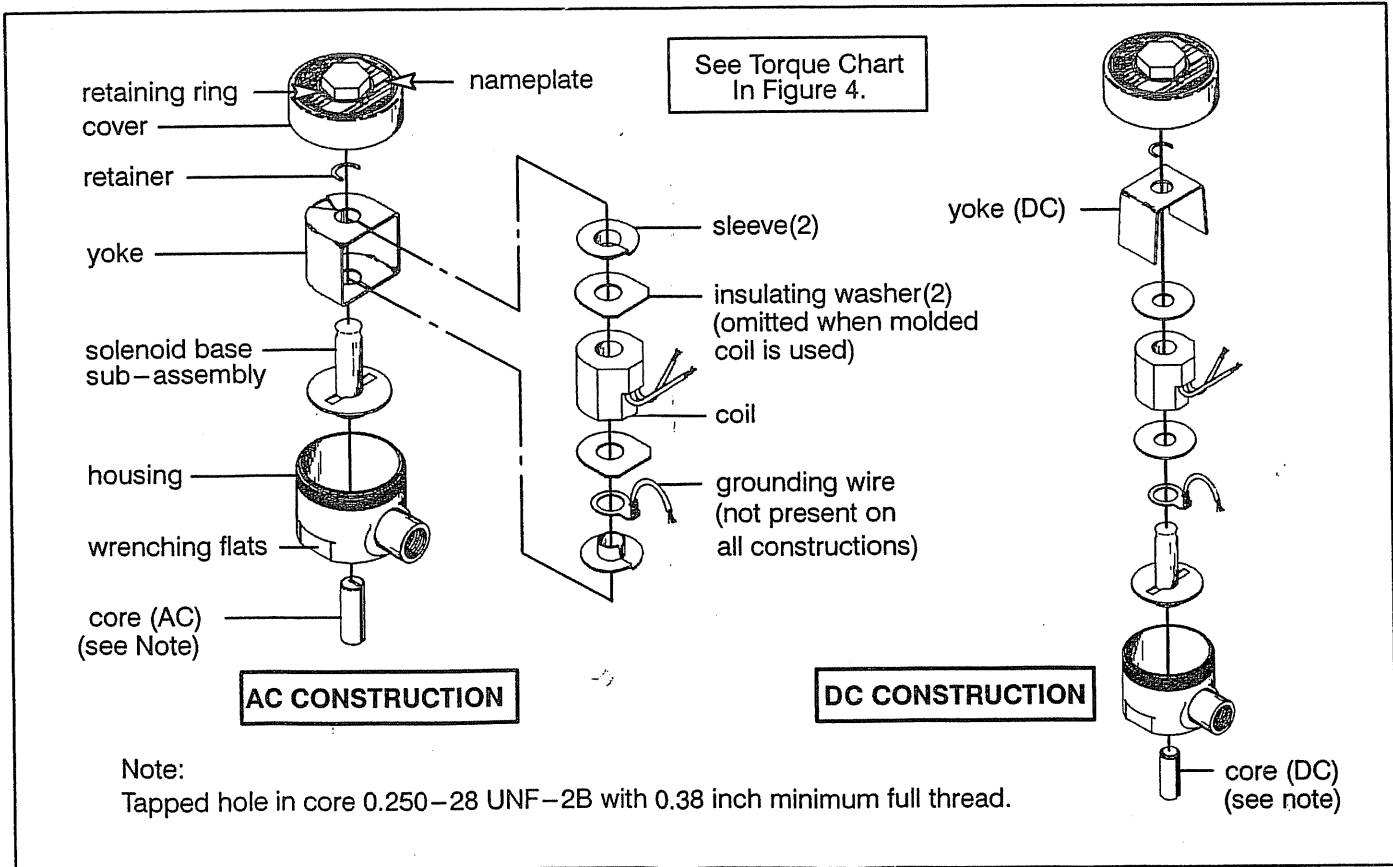
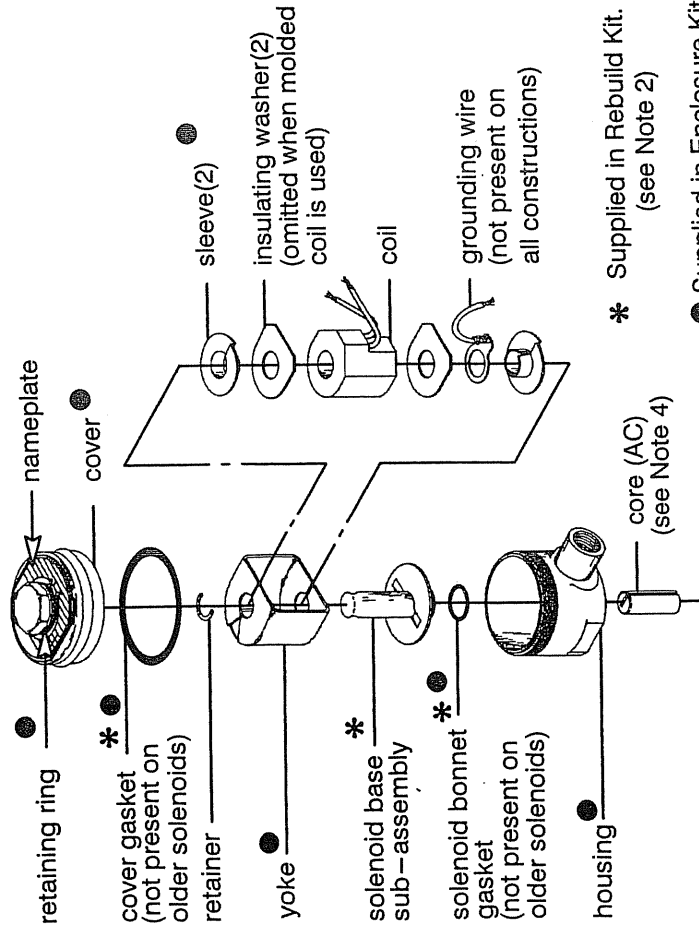


Figure 3. Catalog Nos. EF80171, EF 80172, 80173 and 80174 Raintight/Explosionproof Solenoid Enclosure.

Notes:

1. These Catalog Nos. meet watertight requirements only when cover gasket and solenoid bonnet gasket are used.
2. A solenoid base sub-assembly with a solenoid bonnet gasket are supplied in the Rebuild Kit. These two parts are a direct replacement for the existing solenoid base sub-assembly. The cover gasket is also supplied in Rebuild Kit, but may be omitted if cover does not use a gasket.
3. Install all parts supplied in Enclosure Kit except omit the solenoid bonnet gasket if the existing solenoid base sub-assembly does not use a gasket.
4. Tapped hole in core 0.250-28 UNF-2B with 0.38 inch minimum full thread.
5. Special wrench adapter for solenoid base sub-assembly is supplied in Rebuild Kit and Enclosure Kit.



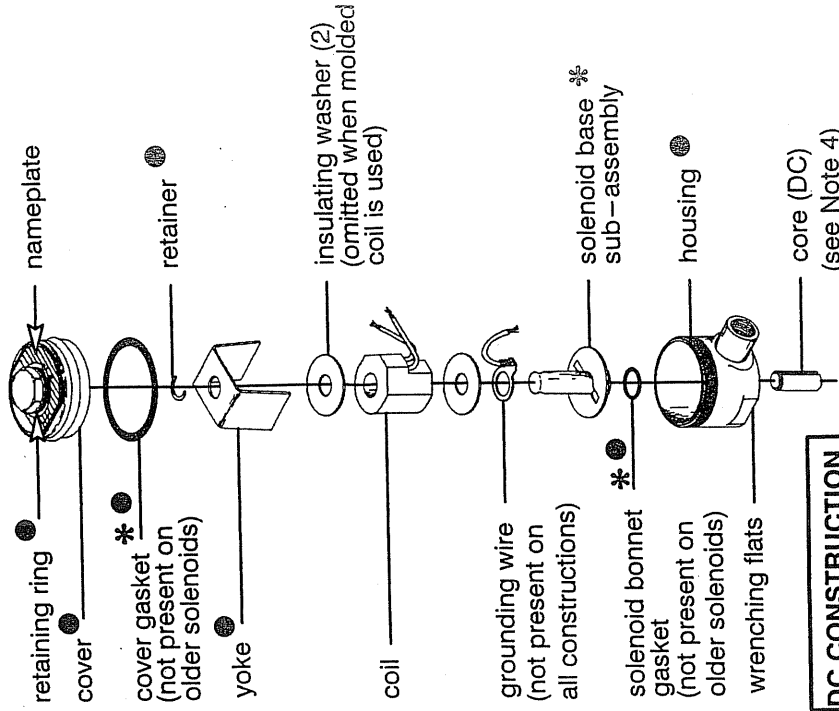
AC CONSTRUCTION

* Supplied in Rebuild Kit. (see Note 2)
 ● Supplied in Enclosure Kit. (see Note 3)

Torque Chart

Part Name	Inch - Pounds	Newton - Meters
cover	135 ± 15	15,3 ± 1,7
solenoid base sub-assembly ▲	175 ± 25	19,8 ± 2,8

▲ To order special wrench adapter for solenoid base sub-assembly, specify Kit No. K218950



DC CONSTRUCTION

Figure 4. Catalog Nos. EF80171, EF80172, 80173, and 80174 Raintight/Watertight/Explosionproof Solenoid Enclosure.