

# Installation & Maintenance Instructions

**ASCO**

RAINTIGHT AND EXPLOSIONPROOF SOLENOIDS

S E R I E S

J E 4

Form No. VJE4 R2

## IMPORTANT

**REFERENCE MANUAL** is issued for customer's convenience. The products are designed and manufactured based on Japanese laws, regulations and/or standards.

**REFERENCE MANUAL** is written under consideration of only Japanese laws, regulations and/or standards. In case the works are done outside Japan, it is strongly recommended for all customers to follow the local rules.

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

## DESCRIPTION

JE4 series solenoids have a combination Raintight and Explosionproof enclosure designed to meet "Recommended Practice of Explosion-Protected Electrical Installation in general Industries, The Research Institute of Industrial Safety, Japan".

- |                              |                                 |
|------------------------------|---------------------------------|
| (1) Product Description      | : Solenoids for solenoid valves |
| (2) Type of protection       | : Flameproof                    |
| (3) Class & Ignition group   | : d3aG4                         |
| (4) Certification number     | : See Table 1                   |
| (5) Max. ambient temperature | : 60 °C                         |

## INSTALLATION

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

**▲ WARNING: To prevent fire or explosion, do not install solenoid and/or valve where hazardous area exceeds class and ignition group of d3aG4.**

### Wiring

Wiring must comply with local codes and "Recommended Practice of Explosion-Protected Electrical Installation in general Industries" above mentioned.

The terminal box is provided with ground screw and G3/4 conduit hub. To open terminal box remove cover bolts(6) using a hex key

**▲ CAUTION: When removing the cover from the terminal box, take care not to mar or damage the mating sealing surfaces of the cover and terminal box. Since clearance between these mating parts is extremely fine, a slight rotational motion may have to be used for removing the cover. Before assembly, clean mating surfaces with a lint free rag.**

The solenoid enclosure may be rotated 360° in either direction to facilitate wiring by slackened the bolts(6) that

secure the terminal box to the housing.

**▲ CAUTION: Do not rotate the solenoid enclosure without following the above procedure, since for cable rotation may impair the flameproof seal. Integrity of the flameproof seal can also be destroyed by dropping the solenoid or exposing it to abnormal force, shock or vibration.**

For this enclosure, electrical fittings must be approved for use in the approved hazardous locations.

Make electrical hookup and replace terminal box cover and cover bolts(6). Torque cover and housing bolts in a crisscross manner to  $2.5 \pm 0.3$  N·m before operating solenoid.

### Solenoid enclosure Assembly

JE4 solenoids may be assembled in the following manner.

1.The solenoid enclosure must be completely disassembled.

For disassembly instructions, see Coil Replacement section, steps 1 through 7.

2.Position the solenoid base sub-assembly with the solenoid base gasket attached inside the housing over the assembly location.

3.Install solenoid base sub-assembly with special tool provided.

For ASCO special tool only, order Nos. 5101-014-1 and 5101-026-1.

4.Refer to Coil Replacement section steps 8 through 10.

### Solenoid temperature

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 the 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 materials as possible.
- While in service, the solenoid operator or 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. 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**

- 1.Remove cover bolts and lockwashers(6) using a hex key wrench. Remove cover and gasket from terminal box.

**▲ CAUTION:** When removing the cover from the terminal box, take care not to mar or damage the mating sealing surfaces of the cover and terminal box. Since clearance between these mating parts is extremely fine, a slight rotational motion may have to be used for removing the cover.

- 2.Disconnect supply wires, grounding wire, and rigid conduit from terminal box.
- 3.Remove terminal box and gasket from housing by removing bolts and lock-washers(6) using a hex key wrench.

**▲ CAUTION:** When removing the terminal box from the housing, take care not to mar or damage the mating sealing surfaces of the terminal box and housing. Since clearance between these mating parts is extremely fine, a slight rotational motion

may have to be used for removing the terminal box.

- 4.Disconnect coil lead wires from terminal block.

The inner parts varies with the electrical supply(AC/DC) .

**For the AC construction:**

- 5.Slip bracket and yoke containing coil and sleeves off the solenoid base sub-assembly. Remove coil and sleeves from yoke.
- 6.Slip bracket off coil lead wires and insulating tubing.
- 7.Remove insulating tubing from coil lead wires.

**For the DC construction:**

- 5.Slip bracket, yoke and coil off the solenoid base sub-assembly.
- 6.Slip bracket off coil lead wires and insulating tubing.
- 7.Remove insulating tubing from coil lead wires.
- 8.Before reassembly, clean all finished surfaces of the solenoid with a lint free rag.
- 9.Lubricate cover gaskets and joint surfaces with DOW CORNING 111 Compound lubricant or an equivalent high grade silicone grease.
- 10.Reassemble in reverse order of disassembly. Use exploded views for identification and placement parts.

**IMPORTANT:** When positioning the bracket in the housing, be sure center tabs on bracket reset against the side of the ribs in the housing on both sides. When assembled correctly, bracket will not rotate in housing.

**▲ CAUTION:** Solenoid must be fully reassembled because the housing and internal parts complete the magnetic circuit.

**ORDERING INFORMATION**

- When Ordering Coil and/or O-rings, specify valve catalog number, serial number and voltage/frequency from nameplate.

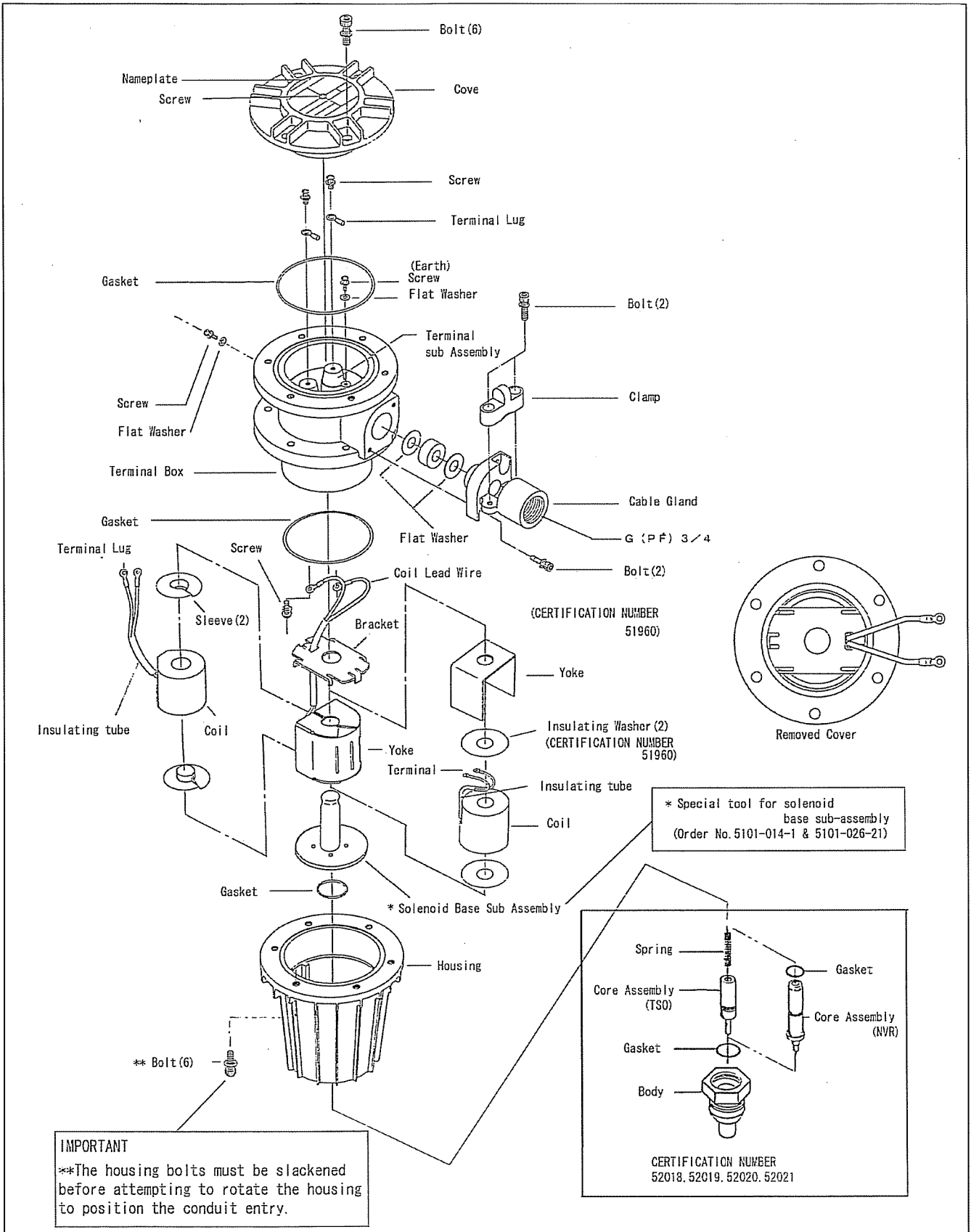
**Table-1**

CATALOG NUMBER	TYPE NUMBER	CERTIFICATION NUMBER	INSULATION CLASS	SERVICE	REMARK
JE4	JE4H	51960	H	AC,DC	
	42-311	43077	F	AC	
	42-312	43078	F	DC	
	42-321	43079	H	AC	
	42-322	43080	H	DC	
	42-321-R	50370	H	AC	REVERSE ACTING
	42-322-R	50371	H	DC	REVERSE ACTING
	42-321-M	52018	H	AC	MANUAL RESET (TSO)*1
	42-321-R-M	52019	H	AC	MANUAL RESET (NVR)*2
	42-322-M	52020	H	DC	MANUAL RESET (TSO)*1
	42-322-R-M	52021	H	DC	MANUAL RESET (NVR)*2
	42-311-D	59009		F	AC

1\*(TSO)-Electrical Tripped  
2\*(NVR)-No Voltage Release

### Torque Chart

Part Name	Torque Value(N.m)
Solenoid base sub-assembly	19.8 ± 2.8
Cover bolts	2.5 ± 0.3
Screws	1.0 ± 0.2



**IMPORTANT**  
 \*\*The housing bolts must be slackened before attempting to rotate the housing to position the conduit entry.