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# **INSTALLATION AND MAINTENANCE**

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## **Installation of MMC Clutches**

### **Installation Procedure**

1. The complete unit consists of two major subassemblies: the rotor/field assembly and the armature.
2. If a modified or special clutch was ordered, a flange or pulley may already be attached to the armature assembly, in which case skip to step 3. If not, the customer-supplied flange or pulley must be mounted onto the armature assembly with two bearings to support the assembly on the shaft. The bolts provided with the clutch must be used to connect the leaf spring on the armature to the flange or pulley, and a locking compound should be used to prevent loosening. Washers are not necessary.
3. It is usually simpler to install the rotor/field assembly first. This is normally installed on the input shaft to reduce the inertial load to be accelerated at engagement. Slide the assembly onto the shaft until the bearing inner race contacts a shaft step. Depending on the shaft and key type, the key may need to be installed first. Loosely restrain the torque tab to prevent the field from rotating due to field bearing drag. A minimum of 1/16” of axial and radial clearance should be allowed so that the field bearing is not pre-loaded.
4. Calculate the distance required between the pulley bearing's inner race and the rotor face to set the proper gap. Use spacers and shims if necessary to set the gap as specified on the MMC data sheet. Then slide the armature/pulley assembly onto the shaft. Verify that the gap is within proper range and secure the assembly in place via a center bolt and washer against the pulley bearing's inner race.
5. Connect the lead wires to the power source and energize the field. If the armature is not pulled in by the magnetic force of the field, verify and reset the gap.
6. When power is disconnected, the clutch should disengage freely and there should be no contact between the armature and the rotor. If any contact is noted, verify and reset the gap.
7. In the first few engagements, the unit may not produce rated torque but will do so after the clutch surfaces wear in. The unit may squeak during initial wear because there is only metal to metal contact. This will diminish as the unit wears itself in. If full torque is required immediately, contact Ogura or a sales representative for proper burnishing procedures.

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### **Maintenance**

The gap between the armature and rotor will enlarge as the clutch wears. If the clutch fails to pull in, reset the gap and verify that it is within specified range. Depending on the duty cycle and load, the wear rate should be periodically inspected. Wear produces grooves on the two faces. This is normal and they should not be removed. Excessive wear will often initially result in loss of torque. When units are worn out, it is preferable and usually necessary to replace both the rotor/field and armature, as they tend to wear at about the same rate.

### **Loss of Torque**

The most common service problem is loss of torque. The following quick checks can easily be made and will usually take care of the problem:

1. Check for wear: The unit may be worn out and need replacing.
2. Check the friction surfaces for contaminants: Remove if any are present (see Contamination).
3. Check for proper power input: Use a DC voltmeter across the field terminals and verify that normal voltage is being supplied. If the power control has a potentiometer, this should be turned to full power for this test. The voltage should also be read as the potentiometer is turned down and should be approximately proportional.
4. If the voltage is zero or low, the wiring should be checked for a grounded (shorted) or open coil.
  - A. Grounded coil: With the power off and one lead disconnected, measure the resistance between one field terminal and the field shell. The ohmmeter should register no change (infinite resistance) with a good unit. Repeat with other terminal. If the ohmmeter shows a reading, this means there is some grounding to the shell, and the field should be replaced.
  - B. Open coil: With the power off and both leads disconnected, measure the resistance between the two field terminals. The ohmmeter should give a reading very close to the following. An open coil would give no reading (infinite resistance) and must be replaced.

**Table 1**

Model	5E	10E	20E	40E	70E	100E
Coil Resistance [ $\Omega$ ] (DC 24V – 20°C)	4.80	4.11	2.88	2.22	1.60	1.44

Model	5G	10G	20G	40G	70G	100G	200G
Coil Resistance [ $\Omega$ ] (DC 24V – 20°C)	19	16.4	11.5	8.9	6.4	5.8	3.9

## ***“What you need in a clutch”®***

### **Contamination**

Care should be taken so that contaminants such as oil, grease, etc. do not come in contact with the working faces of the unit. In some cases it may be necessary to provide a cover or baffle to prevent this. Oil and grease on the friction surfaces should be removed by wiping with a small amount of environmentally friendly grease solvent. However, depending on the permeability of the grease or oil, it may be impossible to remove completely, so if the unit shows signs of slippage it needs to be replaced.

### **Heat**

If the unit appears to be running hot, first check the temperature on the outside of the field. The field temperature can be around 150°F in an ambient temperature of 72°F due to the heat generated by the coil and operation of the unit. Excessive heat may be a source of failure and can be corrected by:

- Insuring that the input voltage is correct.
- Providing ventilation of the unit.
- Reducing system inertia and/or cycle rate.

### **Initial Torque**

Out-of-box torque of these units is approximately 70% of the rated torque (requires burnishing for units to achieve rated torque).

