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# INSTALLATION AND MAINTENANCE

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## Installation of TMB Brakes

There are five options available for TMB series brakes:

- **Standard (E)** – The standard unit consists of a combination the field and the armature. It has a single spring which allows it to perform with zero backlash.
- **Silent (S) type** – This type is equipped with quiet arm that dampens the vibration at the brake engagement.
- **Higher Torque (H) type** – This type uses coil of higher capacity than the standard type.
- **Auto Adjust (A) Type** – The auto adjust type consists of a combination field assembly and the armature auto adjust hub. This unit is not zero backlash, but had a minimal amount of backlash. This type also automatically adjusts for wear between the armature and the rotor.
- **One Piece (P) Type** – This unit is pre-assembled at the factory and includes a universal mount hub, so customers can mount their sprockets, pulleys or coupling. This unit also has a zero backlash spring.

### Installation Procedure (for all except One Piece P type)

1. The complete unit consists of two major sub-assemblies: the field/flange assembly and the armature/hub assembly.
2. Mount the field to the wall of the machine or support bracket via 4 customer-supplied screws and make sure the field is locked down solidly.
3. The shaft going through the field assembly should be concentric within 0.003" TIR and have an angular misalignment within 0.006" TIR at a 5" diameter.
4. Mount the armature/hub assembly onto the shaft.
  - a. Standard (E) type is armature only; the customer provides their own custom hub. In this case the armature should be mounted to the hub prior to installation using the three holes provided through the armature. Bolts with locking compounds should be used to prevent movement. The concentricity of the armature mounting should be the same as the concentricity of the shaft going through the brake. (Section 3)
  - b. All others except P & E types: Verify that a step or spacer is in place on the shaft to position the hub. Slide the armature/hub assembly onto the shaft and install the key. Set the gap via spacers and shims. Verify that the gap is within proper range and attach a snap ring or set collar to lock the hub in place.
  - c. P Type: Units are shipped as a one piece assembly. Prior to sliding the unit onto the shaft, make sure the key is in place. The unit should slide onto the shaft and have a solid

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connection to the step, locking collar or other locking device. The unit should have solid contact on both sides of the inner hub. A torque restraint should be attached to the backing plate. Any combination of the four holes on the backing plate can be used. Torque restraints should be capable of withstanding the unit's brake torque. The torque arm should be solidly connected to the brake backing plate but should NOT have a solid connection at the base of the torque tab. The torque tab needs to have at least 1/16<sup>th</sup> clearance both axially and radially to prevent any type of pre-load to the brake's bearings.

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, there should be no contact between the armature and the field. If any contact is noted, verify and reset the gap. (This should be for all but P type.)
7. In the first few engagements, the unit may not produce rated torque but will do so after the brake 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.

### **Maintenance**

The gap between the armature and brake field will enlarge as the brake wears. If the brake 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 brake 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.

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- 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	0.6	1.2	2.5	5
Coil Resistance [ $\Omega$ ] (DC 24V =20°C)	48	39 (32 H type)	26	17

### **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:

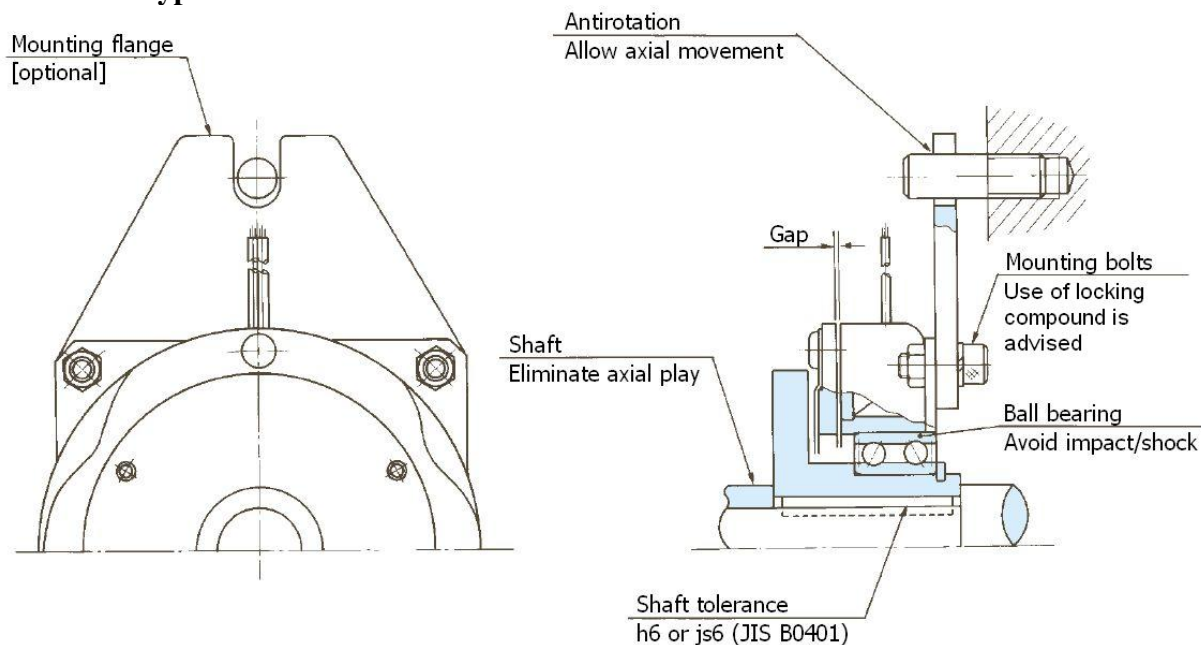
- Insuring that the input voltage is correct.
- Providing ventilation of the unit.
- Reducing system inertia and/or cycle rate.

### **Initial Torque**

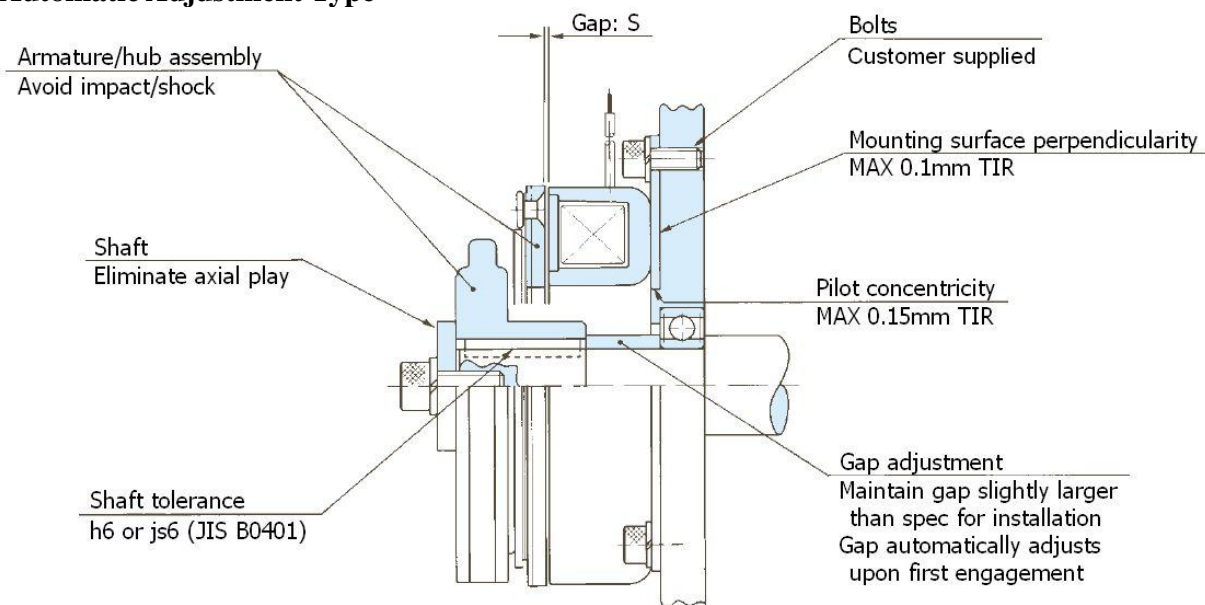
Out-of-box torque of these units is approximately 70% of the rated torque (requires burnishing for units to achieve rated torque).

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## One Piece Type



## Automatic Adjustment Type



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## Silent Type

