
INSTALLATION AND MAINTENANCE

Installation of MZS Clutches

Description

The MZS is a single position tooth clutch designed to engage the input and the output in the same position each time.

Installation Procedure

1. The unit consists of three major components: the field, the rotor and the armature/hub assembly. There are bearing mount type (2.5~50) and flange mount type (100~). Contact surfaces of the armature and the rotor have teeth. If the rotor/field assembly and armature/hub assembly are mounted on two shafts (clutch acts as coupling), care should be taken for the concentricity and perpendicularity of the two shafts.
- 2a. For sizes 2.5~50 the clutch field and rotor are slid onto the shaft (prior to this a key should be installed between the shaft and rotor). The clutch should slide up against the step, set collar or other locking device. A collar should then be slid onto the shaft. Use a collar made of non-magnetic material (BSB, SUS303, 304, etc.) when setting the gap between teeth on the rotor and the armature.
- 2b. For types 100~400 the field assembly is bolted to the frame of the machine. The rotor is then slid onto the shaft (prior to the rotor being put in place the key is installed between the shaft and the rotor). The clutch should slide up against the step, set collar or other locking device. A collar should then be slid onto the shaft. Use a collar made of non-magnetic material (BSB, SUS303, 304, etc.) when setting the gap between teeth on the rotor and the armature. A locking collar or other axial restraint should contact the inner race of the customer supplied bearings to make sure there is no axial movement in the assembly.
3. Output gear or pulley is supplied by the customer and should have two bearings to support the armature/hub assembly and align it concentric and perpendicular to the shaft within 0.002" TIR. Prior to installation the gear/pulley should be attached to the armature. The armature/hub assembly and the gear, etc. should be tightened securely in addition to the specified knock pins.
4. Set air gap between teeth on the rotor and the armature as follows:

Model	2.5~50	100	160	250~400
Air Gap (inch)	0.012	0.012~0.020	0.016~0.024	0.024~0.031

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5. For sizes 2.5~50 the anti-rotational restraint should not be tightened in the axial direction. The field should be concentric and perpendicular to the shaft at OD within 0.002" TIR.

Maintenance

1. Torque of this unit is determined by the voltage. Periodically, it should be checked if the specified voltage is supplied to the unit (When a long wire is used, the voltage at the unit can be lower than the voltage at the power supply).
2. Care should be taken so that contamination, such as oil, grease or dust will not be introduced to the teeth, which will reduce the torque and ultimately damage the unit.
3. Wet type should be properly lubricated with oil (turbine oil: ISO VG32~68). Also, bearing for the wet type requires lubrication as well.
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	2.5	5	10	16	25	50	100	160	250	400
Coil Resistance [Ω] (DC 90V – 20°C)	38.4	25.0	19.2	16.5	14.4	11.5	9.0	7.2	6.4	5.8

Engagement

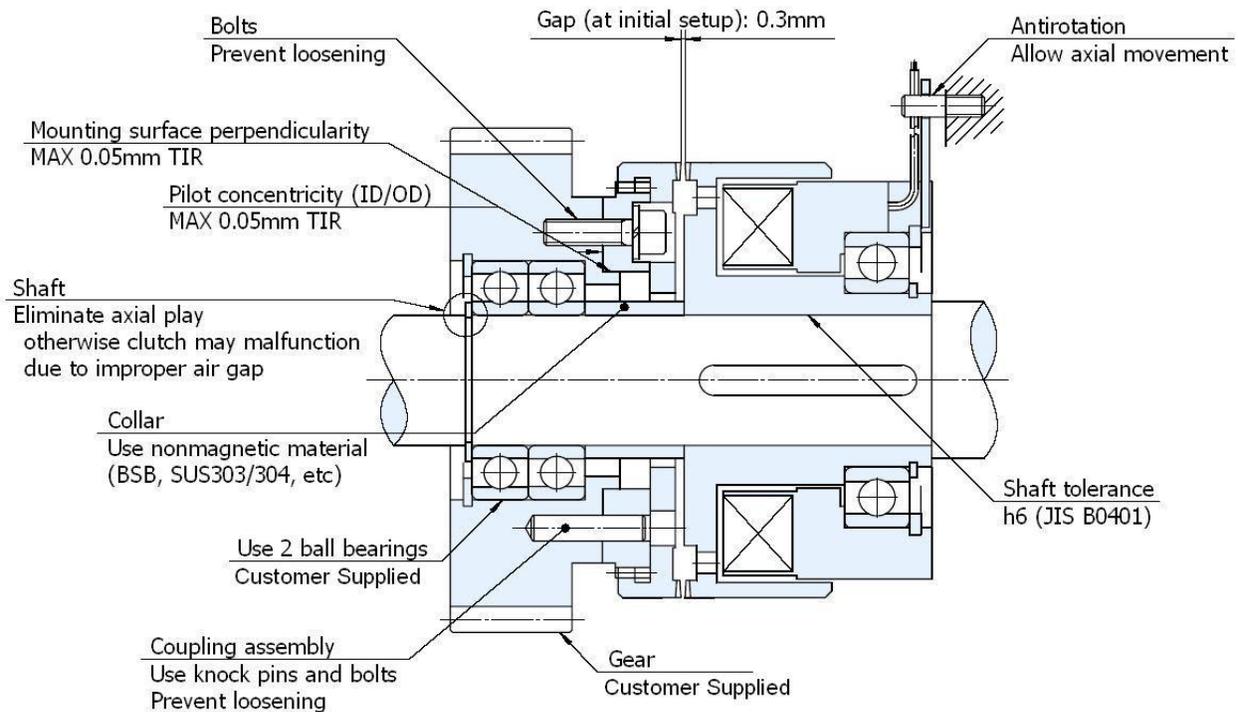
1. This unit can engage only at a low or zero rpm. It varies with inertia and torque of the load, generally, max engagement speed is 30rpm.
2. If this unit engages at zero rpm, it sometimes engages with teeth not fully interlocking with each other. If the unit is accelerated in such a state, it can cause slippage between the teeth.

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.

Models 2.5~50



Models 100~400

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