MAGNE POWER

INSTALLATION AND MAINTENANCE

MAGNECLUTCH MAGNETIC PARTICLE CLUTCH

MAGNECLUTCH

MODELS:

7MC90C

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DESCRIPTION:

Magneclutch model 7MC*C is designed for mounting on NEMA 56 frame C-face motors and gear reducers. The clutch consists of a stator, coil, drive cylinder, rotor, bearings - to support and align the output shaft - and a measured amount of specially prepared steel powder called "magnetic medium" which occupies the space between the drive cylinder and rotor. When clutching action is required, electric current is passed through the coil (located in the stator) creating a magnetic field which passes through the stator, then the rotating components (drive cylinder and rotor), causing the magnetic medium to cling together between the rotating components resulting in clutching action.

INSTALLATION:

Mechanical

NOTE: WHEN ASSEMBLING THE MAGNECLUTCH BETWEEN A MOTOR AND GEAR REDUCER, EITHER THE MOTOR OR THE GEAR REDUCER SHOULD BE FOOT-MOUNTED, BUT NOT BOTH AS MISALIGNMENT OF THE ASSEMBLY WILL SHORTEN BEARING LIFE.

The Magneclutch mounts in a horizontal position with a maximum deviation of 30°.

The Magneclutch installs as follows:

1. Install key on motor shaft and slide Magneclutch onto shaft.

CAUTION: DO NOT TIGHTEN SET SCREWS IN MAGNECLUTCH ROTOR ASSEMBLY AT THIS TIME.

2. Install screws and lockwashers in end bell to mount Magneclutch.
3. With screw driver or pry bar, slide the rotor assembly (taking care to not damage the seal by over movement of rotor) along the motor shaft until travel is limited and mark shaft with pencil or chalk. Slide rotor assembly in opposite direction until travel is limited and mark shaft. Center rotor assembly between the two lines of maximum travel and tighten set screws in rotor assembly. This adjustment ensures internal clearances of the rotor assembly and the end shields, as the rotor assembly is free floating until mounted and adjusted as previously stated.
4. Check for free rotation of Magneclutch shaft.

Electrical

1. Connect the two lead wires in the junction box to a suitable 0 to 90 VDC power supply.

WARNING: IN APPLYING MAGNETIC PARTICLE DEVICES CERTAIN PRECAUTIONS SHOULD BE EXERCISED. PROVISIONS SHOULD BE MADE FOR CONNECTING THE CLUTCH AND BRAKE FRAME TO AN EFFECTIVE GROUND. PROPER GUARDING OF ALL ROTATING COMPONENTS SHOULD BE ACCOMPLISHED. FAILURE TO EXERCISE THESE PRECAUTIONS COULD RESULT IN SERIOUS PERSONAL INJURY, UP TO AND INCLUDING DEATH. MAGNE IN NO WAY IMPLIES THAT IF APPLICATION SUGGESTIONS ARE ADOPTED THAT A PIECE OF EQUIPMENT WILL MEET APPLICABLE SAFETY STANDARDS. MAGNE RECOMMENDS THAT ALL DESIGN APPLICATIONS INCORPORATING ITS CLUTCHES, BRAKES AND CONTROLS BE FULLY EVALUATED AND SUBMITTED TO APPROPRIATE REGULATORY AGENCIES FOR TESTING SPECIFICALLY RELATED TO SAFETY CONSIDERATIONS.

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MAINTENANCE:

With normal maintenance, the service life of the Magneclutch is exceptionally long. Bearings, seals, and magnetic medium however, may require replacement sometime during the service life of the Magneclutch. Self repair kits are available for the 7MC*C or units may be returned to the factory for evaluation and repair.

Use the following outline as a guide for determining the cause for improper operation.

CAUTION: ALWAYS DISCONNECT POWER SUPPLIES BEFORE SERVICING THE MAGNECLUTCH.

NOTE: Nominal resistance value for the 90 VDC coil is as follows:
Model 7MC90C 257 OHMS @ 20°C

1. **No Clutching Action:** Check current through the coil and voltage across the coil.
   a) Voltage normal - Current zero; probable open coil - replace coil.
   b) Voltage low - Current low or zero; check power source for proper output.
2. **Lower Than Normal Clutching Action:** Check current through the coil and voltage across the coil.
   a) Voltage normal or low - Current high; probable shorted coil - replace coil.
   b) Voltage low - Current low; check power supply for rated output voltage.
   c) Voltage normal - Current normal: disassemble, clean parts, add new charge of magnetic medium.
3. **Excessive Noise or Vibration:** Check for loose components and proper mounting. If problem is isolated at clutch, disassemble and check bearings. Replace if necessary.
4. **Intermittent/Erratic Operation:** Check power supply for rated output voltage. Check coil for continuity. If normal, disassemble clutch, clean parts and add new charge of magnetic medium.

CAUTION

1. ***Do not attempt to pry the aluminum End Bells from the housing Assembly as sharp tools can mar the finished mounting surfaces. During removal of drive and seal covers on the Magneclutch, powder magnetic medium will fall out of units. Remove powder from all parts immediately with the use of a dry brush.***
2. ***Do not use grease or oil to facilitate assembly. If necessary, a dry lubricant such as Graphite or Molykote Type Z may be rubbed on the shaft and the bore of the bearings.***
3. ***Use only replacement bearings supplied in repair kits.***

DISASSEMBLY PROCEDURE:

Model 7MC*C MAGNECLUTCH

1. Disconnect lead wires and remove Magneclutch from installation by reversing Steps 1, 2, and 3 under "INSTALLATION".

CAUTION: Refer to Caution No. 1.

2. Remove screws and lockwashers from front and rear end bells and separate from housing assembly and coil assembly. (Front end bell, shaft, end shields and rotor assembly are together in one assembly at this point.)
3. If coil assembly needs replacing, remove it from housing assembly, carefully feeding wires through hole in housing assembly from the junction box simultaneously so as to not damage them.
4. Remove retaining ring on shaft and separate shaft from front end bell by tapping lightly on front end of shaft with rubber mallet. Use a wooden dowel to drive shaft out of bearing.
5. Remove front bearing, retaining ring and spacer from front end bell.
6. Remove bearing from shaft (only if being replaced).
7. Remove set screws in rotor assembly.
8. Remove screws and lockwashers on rear end shield and separate end shield (with rotor assembly) from drive cylinder. Powder magnetic medium will fall out of drive cylinder at this time.
9. Slide rear end shield off rotor assembly.
10. Remove seal from rear end shield.

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ASSEMBLY PROCEDURE:
Model 7MC*C MAGNECLUTCH

Reference: Use a piece of plastic shim stock or equivalent to roll up and use as a sleeve to protect the seal during assembly.

CAUTION: Refer to Caution No. 2 and No. 3.

1. Slide coil assembly into housing assembly, carefully feeding lead wires through hole in housing assembly into junction box simultaneously so as to not damage leads. (Align lead exit on coil assembly with lead exit hole in housing assembly to assemble.)
2. Press new seal in rear end shield. Make sure open side of seal is in toward rotor assembly.
3. Slide rear end shield onto rotor assembly and install set screws into rotor assembly.
4. Press new bearing onto shaft (with end shield and drive cylinder attached).
5. Install retaining ring into back groove of front end bell and insert spacer behind retaining ring.
6. Slide front end bell onto shaft.
7. Attach front end bell to housing assembly with screws and lock washers.
8. Press new bearing onto shaft.
9. With rear end of Magneclutch facing up, pour the measured load of magnetic medium evenly into the void in the drive cylinder. Insert rotor assembly (with end shield) and attach rear end shield to drive cylinder with screws and lock washers.
10. With guard ring properly located on rear end bell, attach rear end bell to housing assembly with screws and lock washers.
11. Install Magneclutch per instructions under "INSTALLATION".
12. Connect lead wires.