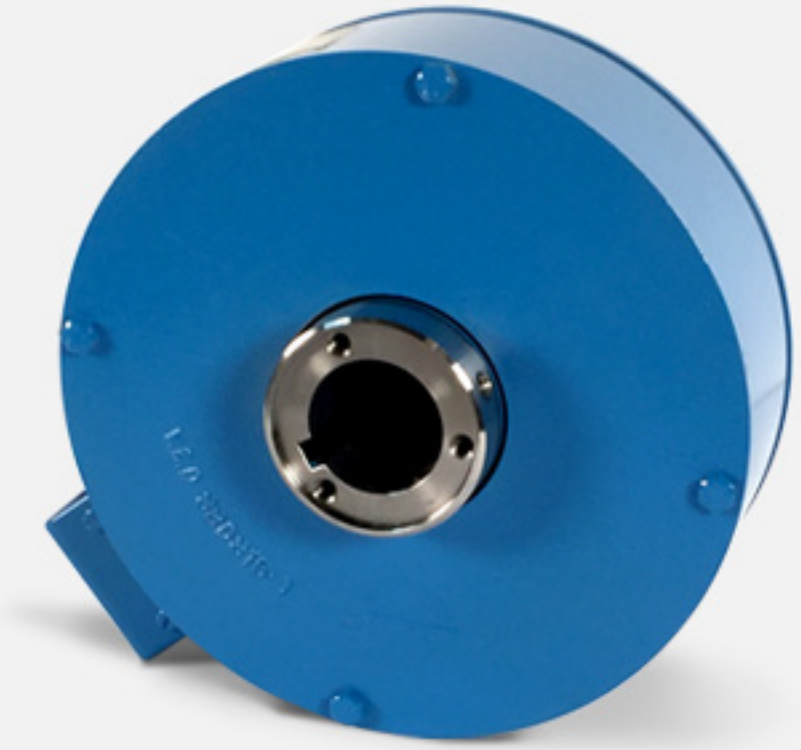
MAGNE POWER

INSTALLATION AND MAINTENANCE

MAGNEBRAKE MAGNETIC PARTICLE BRAKE SHAFT MOUNTED

MAGNEBRAKE MODELS:
5MB90S
25MB90S
50MB90S
75MB90S



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DESCRIPTION:

The Magnebrake is a dry magnetic particle device containing a ball bearing supported steel rotor located within a concentric stator. The gap between the rotor and stator is partially filled with a measured amount of specially prepared steel powder called "magnetic medium".

The rotor of the Magnebrake mounts on the shaft of the equipment requiring braking action. To prevent rotation of the stator, a torque arm is used to secure the stator frame (housing) to a stationary element external to the brake.

When braking action is required, electrical current is passed through the coil located in the stator of the Magnebrake. The energized coil develops a magnetic field causing particles of the magnetic medium to cling together between the stator and rotor resulting in braking action. This braking action is controlled by changing the current through the coil.

INSTALLATION:

Mechanical

The Magnebrake mounts in a horizontal position with a maximum deviation of 30° from horizontal and is mounted on a customer supplied shaft that matches the finish bore, with key way and set screws or taper-lock bushings, or a customer supplied flange that matches the rotor sleeve configuration. A torque arm must be mounted to the Magnebrake, using the three tapped holes in the rear end bell (on the Model 5MB*S only), or using any two of the through bolts in the stator frame, and attached to an external point to prevent rotation of the stator.

Electrical

Direct current (DC) coil power may be derived from any suitable 0 to 90 VDC power source. Nameplate torque can be obtained with less than the nominal voltage rating. Nominal standard coil voltage is 90 VDC.

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.

MAINTENANCE:

With normal maintenance, the service life of a Magnebrake is exceptionally long. Bearings, seals, and magnetic medium, however, may require replacement some time during the service life of the Magnebrake. Self repair kits are available for each model or products may be returned to the factory for evaluation and repair.

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

NOTE: Nominal resistance value for 90 VDC coils is as follows:

Model 5MB90S - 470 ohms @ 20°C
Model 25MB90S - 142 ohms @ 20°C
Model 50MB90S - 230 ohms @ 20°C
Model 75MB90S - 69.8 ohms @ 20°C

1. **No Braking Action:** Check current through clutch 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 Braking Action:** Check current through clutch 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.

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3. **Excessive Noise or Vibration:** Check for loose parts and proper mounting. If problem is isolated at brake, disassemble and check bearings. Replace if necessary.
4. **Intermittent/Erratic Operation:** Check brake power supply for rated output voltage. Check coil for continuity. If normal, disassemble brake, clean parts and add new charge of magnetic medium.

PROCEDURE FOR FILLING MAGNEBRAKE WITH MAGNETIC MEDIUM:

1. Tilt the Magnebrake 45° from its normal position with the fill plug (screw) up and place on a clean white sheet of paper so if powder is lost during filling, it will not become contaminated. Remove fill plug (screw). **NOTE: Magnetic medium should only be added after the brake has been disassembled, the old powder disposed of, and all parts thoroughly cleaned.**
2. Fill Magnebrake while simultaneously rotating shaft, slowly, to assure proper distribution of powder. Replace fill plug (screw) and tighten. All powder in the repair kit must be used to properly fill the Magnebrake.

CAUTION - For all Models of Magnebrake

1. *Do not attempt to pry the aluminum end bells or end shields from the stator frame (housing) as sharp tools can mar the finished mounting surfaces. During removal of end bells or end shields, powder magnetic medium will fall out of unit. Remove powder from all parts immediately with the use of a clean dry brush.*
2. *Do not use grease to facilitate assembly. If necessary, use a dry lubricant such as Graphite or Molykote Type Z.*
3. *Use only replacement bearings supplied in the repair kit.*

DISASSEMBLY PROCEDURE:

Model 5MB*S MAGNEBRAKE

Reference: "Front" refers to end of Magnebrake with extended shaft. "Rear" refers to end of Magnebrake with tapped holes in end bell.

1. Remove screws and lock washers attaching front and rear end bells to housing. **Caution: Refer to caution No. 1.**
2. Remove set screws in shaft. Remove rear end bell and shaft assembly by tapping lightly on front end of shaft and/or rear end bell with a rubber mallet. Use a wooden dowel to drive shaft out of bearing in front end bell.
3. Remove shaft assembly from rear end bell by tapping lightly with a rubber mallet. Use a wooden dowel to drive shaft out of bearing in rear end bell.
4. Remove retaining ring and seal from both sides of rotor.
5. Remove front end bell from housing.
6. Remove retaining ring and bearing from front and rear end bells.
7. Coil subassembly may be removed from stator frame by pressing from the side opposite the coil lead groove located in the stator frame. **Removal the other way will shear the coil leads.**

ASSEMBLY PROCEDURE:

Model 5MB*S MAGNEBRAKE

Reference: Use a piece of plastic shim stock or equivalent to roll up and use as a sleeve to protect seals during assembly.
Caution: Refer to caution No. 2 and No. 3.

1. Press new seal in front and rear end bells. Make sure open side of seal is in toward rotor.
2. Attach rear end bell to housing with screws and lock washers.
3. Place rear end of shaft through housing and seal in rear end bell (use shim stock). Remove shim stock and install new retaining ring on shaft.
4. Press new bearing into rear end bell and onto rear end of shaft simultaneously and install new retaining ring.

5. Lay Magnebrake down on rear bell, keeping shaft movement at a minimum. Slide front end bell onto front end shaft (use shim stock) and attach to housing with screws and lock washers. Remove shim stock and install new retaining ring on shaft.
6. Press new bearing onto front end of shaft and into front end bell simultaneously and install new retaining ring. Replace set screws in shaft. Magnebrake is now ready for filling with magnetic medium.

DISASSEMBLY PROCEDURE:

Model 25MB*S MAGNEBRAKE

Reference: "Front" refers to end of Magnebrake having the button plug. "Rear" refers to end of Magnebrake having flange mount and set screws.

1. Remove tie bolts, lock washers and nuts holding end shields to stator frame. **Caution: Refer to caution No. 1.**
2. Remove rear end shield by tapping lightly with rubber mallet on rotor mounting sleeve on front end of Magnebrake. Entire rotor assembly will come out with rear end shield. Access to rotor mounting sleeve on front of Magnebrake is made by removing the front end cover.
3. Remove front end shield by tapping with a rubber mallet through stator frame.
4. Remove rear end shield from rotating assembly as follows:
    a) Pry lock washer tang from notch in lock nut. Remove lock nut, lock washer, wave washer and/or end play washer(s) from rotor sleeve.
    b) Slide bearing off the rotor and key from the rotor sleeve.
    c) Slide the rotor sleeve through the rear end shield and bearing assembly. If needed, tap lightly with rubber mallet.
    d) The bearing and the rear end shield can now be separated by removing retaining ring and end play washer.
5. Coil subassembly may be removed from stator frame by pressing from the side the coil lead groove is located on the coil bobbin. **Removal the other way will shear the coil leads.**

ASSEMBLY PROCEDURE:

Model 25MB*S MAGNEBRAKE

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

1. Reverse disassembly sequence to assemble unit.
2. Magnebrake is now ready for filling with magnetic medium.

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DISASSEMBLY PROCEDURE:
Model 50MB*S MAGNEBRAKE

Reference: "Front" refers to end of Magnebrake having the button plug. "Rear" refers to end of Magnebrake having flange mount and set screws.

1. Remove tie bolts, lock washers and nuts holding end shields to stator frame, and the button plug on front end shield. **Caution: Refer to caution No. 1.**
2. Remove end shields from stator frame by tapping end shields and rear end of rotor sleeve lightly with rubber mallet. Rotor assembly separates from end shields as a unit.
3. Remove o-rings and end play washers from front and rear end shields. **Keep end play washers with their respective end shield.**
4. Disassemble rotor assembly as follows:
    a) Pry lock washer tang from notch in lock nut and remove nut and washer, from sleeve.
    b) Slide bearing off sleeve.
    c) Remove rotor and key from sleeve by tapping lightly with rubber mallet.
    d) Slide bearing off sleeve.
5. Coil subassembly may be removed from stator frame by pressing from the side opposite the coil lead groove located in the stator frame. **Removal the other way will shear the coil leads.**

ASSEMBLY PROCEDURE:
Model 50MB*S MAGNEBRAKE

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

1. Reverse disassembly sequence to assemble unit.
2. Magnebrake is now ready for filling with magnetic medium.

DISASSEMBLY PROCEDURE:
Model 75MB*S MAGNEBRAKE

1. Remove tie bolts, lock washers and nuts holding end shields to stator frame, and the screws and lock washers holding the bearing retainers to the end shields. **Caution: Refer to caution No. 1.**
2. Remove end shields from stator frame and the rotor from the bearings by tapping lightly with rubber mallet on the end shields and end of rotor as required.
3. Remove bearing and o-ring from each end shield.
4. Coil subassembly may be removed from stator frame by pressing from the side opposite the coil lead groove located in the stator frame. **Removal the other way will shear the coil leads.**

ASSEMBLY PROCEDURE:
Model 75MB*S MAGNEBRAKE

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

1. Reverse disassembly sequence to assemble unit.
2. Magnebrake is now ready for filling with magnetic medium.