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# INSTALLATION AND MAINTENANCE

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## Installation of P Clutch/Brakes

### Installation Procedure

1. The unit is shipped ready for installation. However, before operating the unit, rotate both the input and output shafts to verify that no contact is felt and no noise is present. If contact or noise is noted, there is a possibility that the armature has moved on the spline hub and is dragging against either the clutch rotor face or brake face. In this case, remove the bolts holding the housing halves together and separate the unit in two. Apply slight even pressure to the face of the armature to move it back slightly away from the friction face. Reassemble the unit and apply power. Once the clutch and brake pull in, they will automatically set the air gap to the proper distance.
2. The conduit box is supplied with a standard ½” pipe connection. The clutch wires are white, and the brake wires are gray. The conduit box can be relocated to the opposite side of the clutch/brake package if necessary, but in doing so, make sure that when the wires are moved they do not contact any of the rotating components.
3. The maximum side load, as measured from the center of the input/output shafts, should be limited to the following to maintain bearing life.

**Table 1**

Model	20	50	100	150
Max Side Load [lbs]	100	150	225	275

### Maintenance

The clutch and brake self-adjust for wear and the bearings are lubricated for life. Under normal operating conditions, it should require no maintenance during its life. However, internal parts are replaceable. The clutch and brake usually wear at the same rate and should be replaced as such unless one component is wearing at a faster rate. Upon replacing clutch and/or brake parts, all wear surfaces should be replaced at the same time to maintain life and optimal performance.

## 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 2**

Model	20	50	100	150
Coil Resistance [ $\Omega$ ] (DC 90V – 20°C)	1087	237	202	219

## 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.