

Assembly

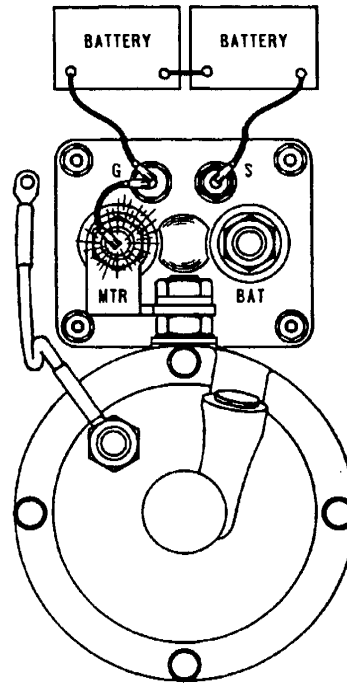
Lubricate all bearings, wicks and oil reservoirs with SAE No. 20 oil during assembly.

Bearing Replacement:

1. If any of the bronze bearings are to be replaced, dip each bearing in SAE No. 20 oil before pressing into place.
2. Install wick, soaked in oil, prior to installing bearings.
3. **Do not** attempt to drill or ream sintered bearings. These bearings are supplied to size. If drilled or reamed, the I.D. will be too large and the bearing pores will seal over.
4. Do not cross-drill bearings. Because the bearing is so highly porous, oil from the wick touching the outside bearing surface will bleed through and provide adequate lubrication.
5. The middle bearing is a support bearing used to prevent armature deflection during cranking. The clearance between this bearing and the armature shaft is large compared to the end frame bearings.

Motor Assembly:

1. Install the end frame (with brushes) onto the field frame as follows:
 - a. Insert the armature (45, Figure 3-3) into the field frame (35). Pull the armature out of the field frame just far enough to permit the brushes to be placed over the commutator.
 - b. Place the end frame (1) on the armature shaft. Slide end frame and armature into place against the field frame.
 - c. Insert screws (34) and washers (33) and tighten securely.
2. Assemble lever (63) into lever housing (78) if removed.
3. Place washer (79) on armature shaft and install new O-ring (80). Position drive assembly (71) in lever (63) in lever housing. Apply a light coat of lubricant (Delco Remy Part No. 1960954) on washer(75) and install over armature shaft. Align lever housing with field frame and slide assembly over armature shaft. Secure with screws (76) and washers (77).
4. Assemble and install solenoid assembly through lever housing and attach to field frame. Install nut (64) but do not tighten at this time. Install brush inspection plugs (52).



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FIGURE 3-7. PINION CLEARANCE CHECK CIRCUIT

5. Using a new gasket (72), install drive housing (69) and secure with screws (70).
6. Assemble field coil connector (42) to solenoid.
7. Adjust pinion clearance per instructions on the following page.
8. After pinion clearance has been adjusted, install gasket (74) and plug(73).

Pinion Clearance

To adjust pinion clearance, follow the steps listed below.

1. Make connections as shown in Figure 3-7.
2. **Momentarily** flash a jumper lead from terminal "G" to terminal "MTR". The drive will now shift into cranking position and remain so until the batteries are disconnected.
3. Push the pinion or drive back towards the commutator end to eliminate slack movement.
4. The distance between the drive pinion and housing should be between .330 in. to .390 in. (8.3 mm to 9.9 mm) as shown in Figure 3-8.
5. Adjust clearance by turning shaft nut (64, Figure 3-3).

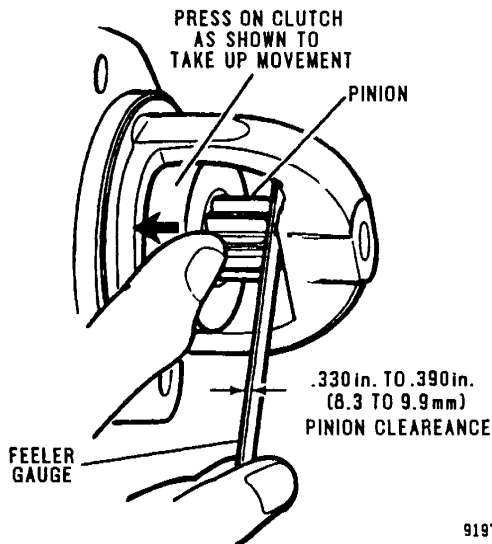


FIGURE 3-8. CHECKING PINION CLEARANCE

Magnetic Switch

The magnetic switch is a sealed unit and not repairable.

Removal

1. Remove battery power as described in Cranking Motor "Removal", page D3-8.
2. Disconnect cables from the switch terminals and wires from coil terminals (Figure 3-9).

NOTE: If the magnetic switch has a diode across the coil terminals, mark the leads prior to removal to ensure correct polarity during installation.

3. Remove mounting capscrews and washers. Remove switch from mounting bracket.
4. The switch coil circuit can be tested as described below.

Installation

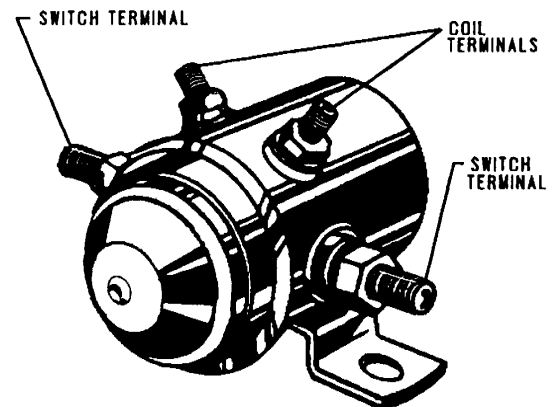
1. Attach magnetic switch to the mounting bracket using the capscrews and lockwashers removed previously.
2. Inspect cables and switch terminals. Clean as required and install cables.

3. Install the diode across the coil terminals if required. Be certain diode polarity is correct. (Refer to the wiring diagram on the following page.) Attach wires from the truck harness to the coil terminals (See Figure 3-9).
4. Connect battery power as described in Cranking Motor "Installation", page D3-1.

Coil Test

1. Using an ohmmeter, measure the coil resistance across the coil terminals.
 - a. The coil should read approximately 28Ω at 72°F (22.2°C).
 - b. If the ohmmeter reads ∞ , the coil is open and the switch must be replaced.
 - c. If the ohmmeter reads 0Ω , the coil is shorted and the switch must be replaced.
2. Place one of the ohmmeter probes on a coil terminal and another on the switch mounting bracket. If the meter displays any resistance reading, the coil is grounded and the switch must be replaced.
3. The ohmmeter should display ∞ when the probes are placed across the switch terminals.

NOTE: The switch terminals should show continuity when 24 VDC is applied to the coil terminals, however high resistance across the internal switch contacts due to arcing etc. could prevent the switch from delivering adequate current to the cranking motor. If the coil tests are satisfactory but the switch is still suspect, it should be replaced with a new part.



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FIGURE 3-9. MAGNETIC SWITCH ASSEMBLY

ELECTRIC START SYSTEM WIRING DIAGRAMS

The following wiring diagram represent the starter system hookup for the 140M and 210M model trucks. Refer to the schematics in Section "R" for additional components and wiring information.

