

STARTER MOTOR

To service a defective cranking motor, the following steps are suggested:

Removal

1. Remove the battery cables from the battery.
2. Remove the battery if it is on the starter motor side.
3. Remove all bolts at muffler-header connection.
4. Remove all header nuts and lock washers.
5. Carefully manipulate the exhaust header assembly out of the engine compartment.
6. Pull the clad gaskets off of the head.
7. Remove all cables from the starter motor.
8. Remove the two starter motor mounting nuts and lockwashers. (If the crossmember interferes with the removal of the mounting nuts, loosen the engine mounts and jack the engine up slightly.)
9. Carefully slide the starter motor out of the bellhousing.

Testing

Holding the starter motor securely on a bench, connect the negative cable of a fully charged 12 Volt battery to the case (1) on the motor and the positive lead to the solenoid terminal (B) where the heavy (vehicle) cable was connected. By temporarily connecting a test wire between the small (C) terminal of the solenoid and the positive (B) lead to the battery, the solenoid should engage and the motor begin to turn. If the solenoid does not produce a definite clunk, indicating engagement, it may be defective. Separate the solenoid from the starter by removing the two screws (A) securing it to the frame, and disconnecting the wire (D) to the motor. The coil can be removed from the solenoid and the contacts inspected.

STARTER MOTOR (continued)

If they are burned or dirty, file them flat and smooth. For severely damaged contacts, machine flat or replace. The contactor, 13, should be cleaned smooth. Inspect the coil for burnt wire or water damage. Re-assemble the solenoid into the housing, and tighten the through bolts (A) securely. The coil should energize when battery voltage is applied to the small terminal (C). A definite klunk should be heard and the engagement gear, 5, should move forward. Connect the lead from the starter motor to terminal (D), and repeat the test. With battery voltage applied to terminal (B) and a jumper wire connected from (B) to (C) the motor should spin rapidly, about 200-400 RPM. If the motor appears sluggish in performance, then an overhaul is indicated. Remove the two end cap screws (E), and pull the end cover, 9, off. Inspect the brushes and commutator for damage or wear. Replace worn brushes with new ones obtained from a dealer. Smooth the commutator (copper colored area) (F), with #400 sandpaper. Clean the slots between each segment of the commutator with a thin blade. Clean and lube the bearings on each end. Springs 11, and 12 should be in good condition, replace any broken or weak disengagement springs with new parts. Never use solvents or thinners to clean the inside of the starter, improper chemicals may soften the insulation on the windings. If the starter draws heavy current and still does not spin fast, the windings may be shorted. Remove the armature (3) and have it tested on a "growler" to find any damage. Replacement windings can be ordered through authorized dealers.