



HIGH TORQUE GEAR REDUCTION STARTER INSTALLATION INSTRUCTIONS



Part No. 141-684

Contents:

- 1 Starter motor
- 2 Mounting Bolts
- 2 Engine block shims
- 1 Solderless terminal
- 1 Round-nose shim
- 1 Housing shim

This starter is intended for use on GM corporate engines: small and big block V-8, and 90° V-6, with either 12-3/4 inch (153-tooth) or 14 inch (168-tooth) flywheels.

The armature housing may be rotated in relation to the mounting block. This allows for adjustment, if necessary, for clearance problems when used with large wet oil sumps and/or header exhaust systems.

This starter motor is designed for 12 volt - negative ground electrical systems.

NOTICE: NEVER OPERATE THIS STARTER MOTOR MORE THAN 30 SECONDS AT A TIME WITHOUT ALLOWING IT TO COOL FOR AT LEAST TWO MINUTES. OVERHEATING CAUSED BY CRANKING FOR TOO LONG A PERIOD WILL DAMAGE THE STARTER MOTOR.

CAUTION: Disconnect battery leads prior to starter installation.

INSTRUCTIONS

Hold starter motor in position at engine block. Install (2) supplied mounting bolts. Tighten to: 38 lbs. ft.

NOTE: Before operating starter, gear clearance must be checked.

(A) Starter pinion to ring gear clearance. This should be (.100 inch = .040 inch)
(See Fig. 1). If not enough clearance exists, install the supplied shims as follows:

- 1. Remove (3) nose piece mounting bolts. NOTE – one bolt is located inside starter.
- 2. Remove (2) end cap bolts, and cap.

3. Carefully remove armature with housing, and do not to allow armature to move within housing. (Brushes may disengage if armature is moved.) NOTE – Third nose piece bolt is now accessible.
4. Fully remove nose piece gasket for re-use.
5. Insert round shim into mounting block.
6. Align gasket and housing shim in proper position.
7. Insert housing into starter mounting block.
8. Install (3) bolts and tighten to: 65 lbs. inch.
9. Assure O-ring seal is in place on armature housing.
10. Carefully install armature and housing into mounting block.
11. Install end cap and bolts, tighten to: 50 lbs. inch.

(B) Check starter pinion backlash. This should be (.040 = .015 inch). Measure and adjust as follows:

- 1) Pull out and engage pinion gear into flywheel.
- 2) Measure clearance between meshing gears. (See Fig. 2.)
- 3) Remove starter mounting bolts and install supplied shims as required.
- 4) Tighten starter mounting bolts: 38 lbs. ft.

Wiring:

CAUTION: BATTERY LEADS MUST BE DISCONNECTED PRIOR TO STARTER INSTALLATION.

NOTE: (3) terminals at end of solenoid (See Fig. 3)

- a) Upper terminal
- b) Lower terminal (NOTE: Black lead is already attached.)
- c) Spade terminal

- 1) Attach positive battery wire to upper terminal
- 2) Connect a 12 or 14 gauge wire from starter switch to the spade terminal. Use the supplied mating connector if required.

