



HIGH TORQUE GEAR REDUCTION STARTER INSTALLATION INSTRUCTIONS

PERFORMANCE VEHICLES / PARTS / RACING

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 two 10mm gold housing bolts from the aluminum intermediate housing, and one $\frac{1}{4}$ " Allen head bolt from the front of the starter.
- 2. Fully remove aluminum mounting plate and gasket for re-use.
- 3. Insert round shim into mounting plate.
- 4. Align gasket and housing shim in proper position.
- 5. Insert housing into starter mounting plate.

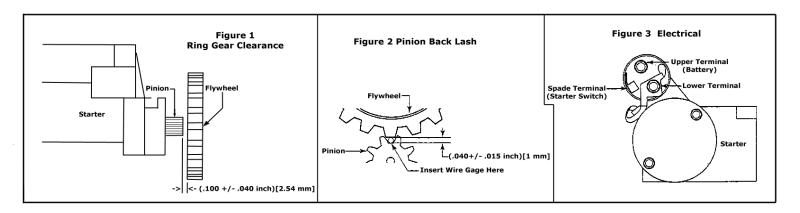
- 6. Reinstall the three bolts,(3) bolts and tighten to 9 ft/lbs.
- (B) Check starter pinion backlash. This should be (.040 = .015 inch). Measure and adjust as follows:
 - 1) Pull out and engage pinion gear into flywheel.
 - 2) Measure clearance between meshing gears. (See Fig. 2.)
 - 3) Remove starter mounting bolts and install supplied shims as required.
 - 4) Tighten starter mounting bolts: 38 ft/lbs.

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.





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