

# Hitachi

## Gear Reduction High Performance Starter

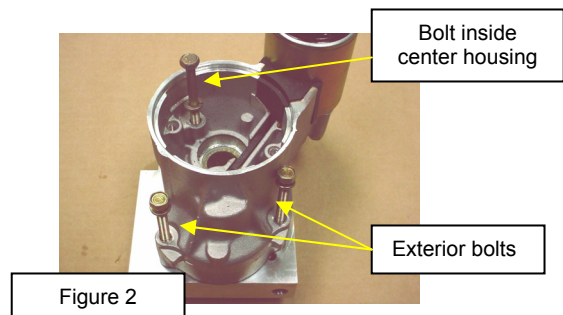
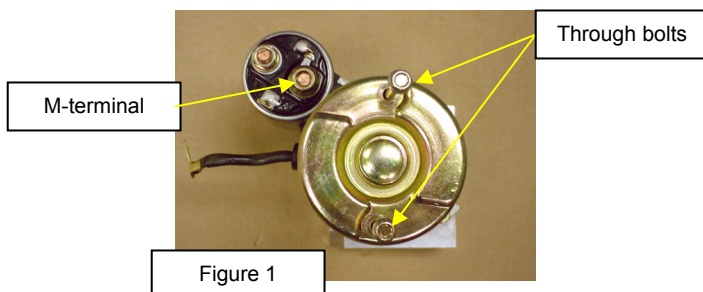
### Oldsmobile / Pontiac Applications

#### Installation Kit #4 Parts List

Two (2) Rectangular Shims  
One (1) Connector Terminal  
One (1) Round Spacer  
One (1) Housing Shaped Spacer

Congratulations on buying one of the latest innovations in starter technology. This starter offers high torque, through Gear Reduction at a compact lightweight size. Installation of this starter is similar to the original OEM starter.

- This starter is designed for use on Oldsmobile / Pontiac applications with 153 or 168 tooth ring gears (flywheels).
- This starter is designed for **12-VOLT systems only!!** Use of this starter with higher than 12 VOLTS or long periods of cranking will damage starter and void warranty. **NOTICE: Never operate the starter motor more than 30 seconds at a time without pausing to allow it to cool for at least 2 minutes. Overheating, caused by too much cranking, will damage the starter motor.**
- Depending on the particular application or type of ring gear used it may be necessary to install shims or spacers.
- The proper pinion to ring gear clearance and backlash must be obtained before trying to start the engine. **Damage to either the starter or ring gear will occur if clearance is not set properly.** Check the pinion to ring gear clearance at three ring gear locations 120° apart around the ring gear. A wide variance in the readings indicates a bent or out of round ring gear. Always wear safety glasses.
- **TO ROTATE ORIENTATION OF STARTER (due to interference issues):**
  1. Care should be taken when disassembling a starter.
  2. Loosen the nut from the M-terminal and move the field coil lead-wire aside.
  3. Mark case with paint or chalk to ease in reassemble.
  4. Loosen the two through bolts (Fig 1) and remove the back half the starter until the remaining center housing is left as shown (Fig 2). Note: please keep the back half of the starter together.
  5. Remove the one bolt from the inside of the center housing and the two exterior bolts that secure the Billet nosepiece. (Fig 2)
  6. Separate center housing from billet block and rotate to new hole position.
  7. OPTIONAL: If ring gear engagement depth needs to be adjusted:
    - a. Lift away the Billet nosepiece and place round spacer into the center of the nosepiece.
    - b. Place the Housing spacer between the Center Housing and the Billet nosepiece.
  8. Reassemble Billet block to the center housing. Torque bolts to 4.3 ft. lbs. – 6.5 ft. lbs.
  9. Assemble the Yoke and Motor assembly back to center; be sure to line up your marks.
  10. Tighten through bolts 3.6 ft-lbs to 5.1 ft-lbs.



# INSTALLATION INSTRUCTIONS

1. REMOVE GROUND CABLE FROM BATTERY.
2. Remove original starter by disconnecting battery cable, ignition switch wire, and mounting bolts.
3. Inspect ring gear for warpage and / or damage.
4. Position new starter on the engine.
5. Re-use the 2 original starter mounting bolts (torque to 31 ft-lbs.)
6. Check ring gear clearance and backlash (figures 3 and 4). Add shims and/or spacers to starter if necessary to obtain proper clearance.
7. Connect wiring (Positive battery cable to B-Terminal, Ignition wire to S-Terminal) to the starter solenoid.
8. Reconnect battery ground cable.
9. Test starter for proper engagement by starting vehicle 4-6 times, listening for proper engagement.

## **Checking Ring Gear / Pinion Clearance:**

With the starter disengaged and mounted in the proper location, the pinion to ring gear clearance should be .100in.+/- .040

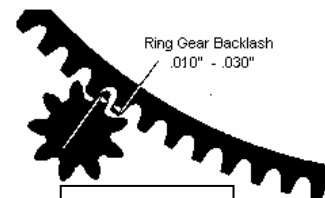


Figure 3

## **Checking Center of pinion to ring gear distance:**

If clearance is too tight, add appropriate amount of shims to obtain proper backlash. (See figure 4)

**Checking Backlash** To check the backlash, simply pull pinion as to engage. You should have .010" to .030" clearance between ring gear and pinion gear. (See figure 3)

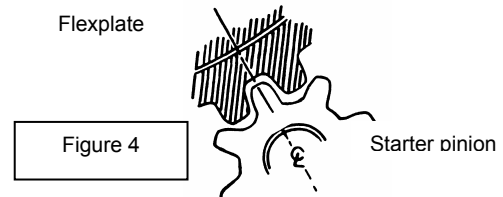


Figure 4

# SOLENOID HOOK-UP

1. Attach positive battery cable to the B-Terminal on the starter solenoid.
2. The ignition wire is then attached from the starter switch to spade terminal on starter solenoid. (See figure 5)

*Note: It may be necessary to splice the ignition switch wire and install the solder less female connector provided in the installation kit.*

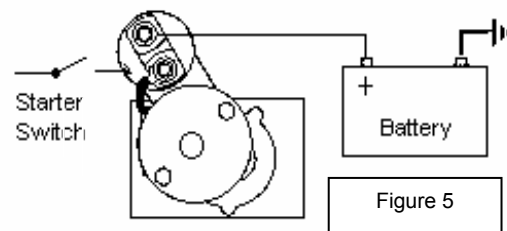


Figure 5

## **Remote Applications:**

1. Connect the battery cable from the remote solenoid to the B-Terminal on the starter.
2. Connect the "jumper wire" provided from the B-Terminal to the S-Terminal.
3. Connect another 12 to 14-gauge wire from the remote solenoid to the starter switch. (See figure 6)

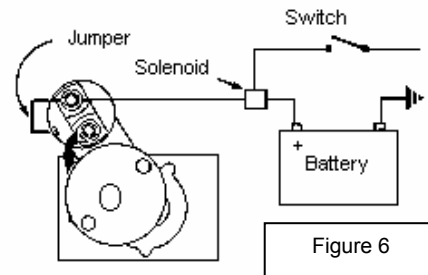


Figure 6