



# INSTALLATION INSTRUCTIONS

## Chevy Gear Reduction Starter 51301ZG

**IMPORTANT! POSITIVE BATTERY CABLE MUST BE DISCONNECTED AT BATTERY PRIOR TO INSTALLATION! THIS IS A PERFORMANCE MODIFICATION, NOT JUST A REPLACEMENT STARTER. ALL INSTRUCTIONS & PROCEDURES MUST BE FOLLOWED FOR A SUCCESSFUL INSTALL.**

*This starter is intended for use on Chevy small and big block V8 engines as well as 90 degree V6 engines with either a 153 tooth (12 3/4" OD) or 168 tooth (14" OD) flywheel and with a 12 volt negative ground electrical system. Prior to installation, be sure engine block to starter mounting surface is free of any rust, paint or debris to ensure proper grounding.*



153 Tooth Flywheel



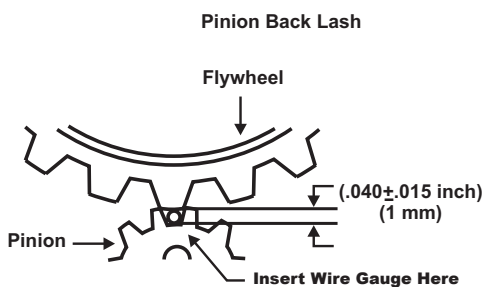
168 Tooth Flywheel

These gear reduction starters have 4 mounting holes so they can be mounted on engines with either a small 153 tooth or large 168 tooth flywheel/flex plates. When mounting on an engine with a small 153 tooth flywheel/flex plate, mount the starter using the second and fourth holes as shown in the photo. When mounting on an engine with a large 168 tooth flywheel/flex plate, use the first and third mounting holes to mount the starter. Verify that the pinion gear will engage into the flywheel before final bolt torquing.

### Starter installation

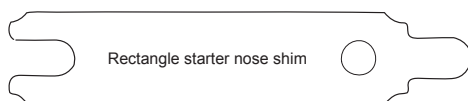
1. Disconnect starter wiring harness and remove old starter.
2. Hold new starter motor in position at engine block. Determine correct bolt holes in starter mounting block to use. You may have to index the mounting block to utilize the correct bolt holes. The notch in the top of the mounting block is for the oil pan rail clearance.
3. Install (2) supplied mounting bolts. Tighten to 38 ft lbs.

Note: Before operating starter, gear clearances MUST be checked! Note that shims may or may not be necessary – it depends upon actual clearances as noted below.



### Pinion Back Lash - Rectangle shims

When the pinion is engaged into the ring gear, there is to be  $.040 \pm .015$ " backlash between them. This can be checked with a wire gauge (a standard size paper clip will work fine) when holding the pinion into the ring gear with a screwdriver. If the fit is too tight, shim the nose from the block using the rectangle shims provided.



### Indexing

If the starter solenoid interferes with the engine block or any component, the entire starter can be rotated about the nose to gain additional clearance.

**CAUTION: 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 extended cranking will damage the starter motor and void warranty.



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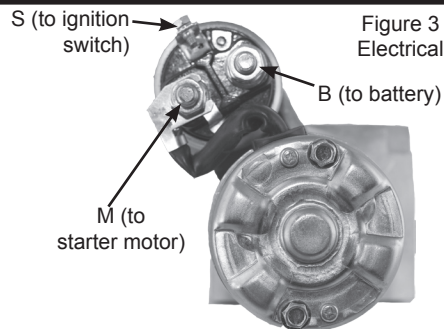


Figure 3  
Electrical

### Wiring the starter

Note the 3 terminals at the end of the solenoid, See figure 3.

\* If your original full size starter has an "R" terminal (to coil) on the starter solenoid, please see the special instructions below.

1. Attach the positive battery cable to the upper "B" terminal. DO NOT connect it to the "M" terminal that is connected to the black starter motor cable. DO NOT OVERTIGHTEN THE NUTS ON THE SOLENOID TERMINALS! The terminals are made of soft brass material for superior conductivity and will strip if overtightened. If you strip the terminals, a replacement solenoid is available.
2. Connect existing ignition switch wire to the "S" spade terminal using the supplied connector, if required.

### \* Replacing stock starters that have an "R" terminal (to coil) on solenoid

The wire connected to the "R" terminal of the solenoid provides full battery voltage to the coil while cranking. If you no longer have a points distributor, it is no longer needed. If you still have the points ignition, you have (2) choices. Either use a 3A/400PIV diode in the wire that was connected to this terminal and connect it to the "M" terminal on the solenoid or purchase and install a remote solenoid (Mr. Gasket P/N 51340G) and wire as below.

### Schematic for replacing GM full size starters using a solenoid with an "R" terminal to the coil

