The "R" Terminal:

Before electronic ignition, vehicles required an R-Terminal, which bypassed the ignition resistor for easier starting. Today's electronic ignitions do not use a ballast resistor, therefore they do not require an "R" terminal. When updating an existing starter to a racing starter which does not have an "R" terminal, **simply do not connect this wire**.

Note: CVR offers a 5323R for Chevy engines with factory points ignition that requires a relay terminal. Another option is that a remote solenoid can be added that has a built-in relay terminal.

Note: The **CVR** Protorque starter is designed to cross the flywheel between .400" and .500". This is quite sufficient for this type of unit with proper shimming.

Caution: Over tightening of battery terminal may result in misalignment of solenoid contact causing intermittent starter failure. If this occurs, remove the gold tin cover held in place by three (3) hex head bolts and realign the copper contact so plunger assembly makes full contact across both contacts.

Shimming Procedure:

Unlike Ford and Chrysler which have a fixed starter drive gear to flywheel clearance, **GM starters have an Adjustable Clearance.**

Important: Most GM pad-mounted starters **prematurely fail as a result of improper shimming**, regardless of whether the old starter had shims or not, **you must inspect the clearance** of the new unit as it may or may not require shimming.

Before Installation:

You must understand the need for proper starter to flywheel clearance. This "clearance" is critical to avoid damage to Flywheel, Starter Drive and Battery.

Why Shimming Varies:

1. Mounting pad tolerances and hole locations vary from block to block, this **moves** the starter drive gear away from the flywheel varying distances.

2. The mounting pad on the engine block dimensions **vary**. This also moves the starter drive gear away from the flywheel varying distances.

• **Step 1 - Inspection:**

Remove lower flywheel housing cover and examine the entire flywheel for visual problems. (Worn, chipped or broken teeth; bent flywheel and/or incorrectly cut teeth)

• **Step 2 - Check Clearance:**

Insert a screwdriver behind the starter drive. Move starter drive assembly out toward flywheel so that starter pinion and ring gear teeth mesh.

• **Step 3 - Measure Clearance:**

Center the pinion tooth. **Check clearance** (looking for .025" - .060"). A convenient plug gauge is a common paper clip, which typically measures approximately .035". **Important** - Check at least 3 ring gear locations 120^{o} apart for proper clearance. Shim **as required at minimum** clearance location. After measuring clearance, push starter drive back into original position.

• **Step 4 - Proper Shimming:**

To increase clearance: Use entire shim across both holes. .015" shim **increases clearance** approximately .**0075**". This moves the starter down and out, **away** from the flywheel (use no more than 6 shims).

To decrease clearance: Use 1/2 shim only on the outer mounting bolt hole from oil pan. This moves the starter in and toward the flywheel. .015" shim decreases clearance approximately .010"