# Starter Troubles

Car Starts Hard
or
Won't turn over.

Check, clean, tighten battery connections, and strap from body sheet metal to transmission.
Is the battery charged? Should read **6.3 volts**.

A trouble shooting procedure will at times not point directly to the trouble, but will eliminate some circuitry, thereby isolating areas, which will aid in finding the problem.

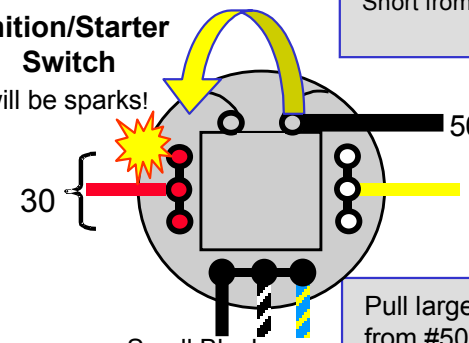
It spins easy.

YES → **Starter Works You are finished.**

NO

Raise car---Pull right rear wheel---Transmission in neutral----Ignition **OFF**
Short from large battery cable, to either one of the quick disconnect male terminals (pinch screw terminal) on the Starter's Solenoid.
Use an old screwdriver. There will be ***sparks***.

**Ignition/Starter Switch**
There will be sparks!

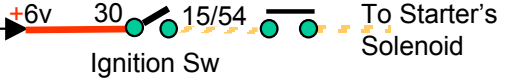



Engine spins easily

NO

YES

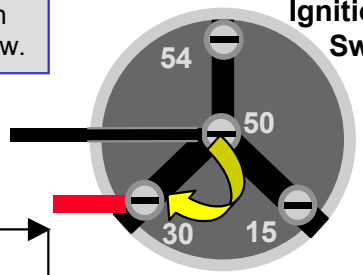
Is it?
**T5/T6 Pre A**
**A/T2**




Pull large black wire from #50 on the Ignition Starter sw, and touch to a vacant #30 hole.

Jump 50 to 30 on Ignition/Starter Sw.

**Ignition Starter Switch**




On the Pre A Jump around the Starter PB first, (Ignition On) then jump 30 on Ign. Sw. to either side of the PB.

If this doesn't work then proceed to "Now it Cranks Easily"

Now it Cranks easily

YES → Ignition/Starter sw. is defective. Replace or repair

NO

Can you feel the solenoid energizing?

NO → Test for continuity of wiring.

YES

There is 6 volts at solenoid control.

YES

NO → **Starter or Mechanical Problems. Pull the Starter. Scroll Down to next Page.**

Now it spins.

YES → **Starter Works**

NO

# Starting Troubles Sheet 2

356 Electrics (303) 431-5764 356electric@mho.com www.356electrics.com

From the preceding work, we have determined that the control, and power connections are working.
There remains the starter, or the bushing for the starter, as the problem. The starter must be removed in either case.

**To remove the starter:**
Lift the ground strap at the battery. Now remove the large battery cable, a smaller black wire going to the regulator, and the control wire (#50) (quick-disconnect) all at the starter's solenoid. The #50 wire is a held by a pinch screw/ring on the early cars. Then remove the two mounting bolts, one easy, and one more difficult.

## Starter cranked but was slow

This trouble is more often than not, the bushing for the starter. It is in the transmission. It is 13mm (ID) and as it wears the starter's shaft drops down, and the mechanism is in a bind. Use a 14 mm tap. Hold with vise grips, and turn until a couple of threads are caught.

*Others like to run the tap in until it bottoms, then it pushes the bushing out.*

(It doesn't have to be a 14mm tap but one that is just a bit larger that will grip the bushing.)

*A special tool is available for this job as well.*

Now pull with a slight wiggle and out it will come.

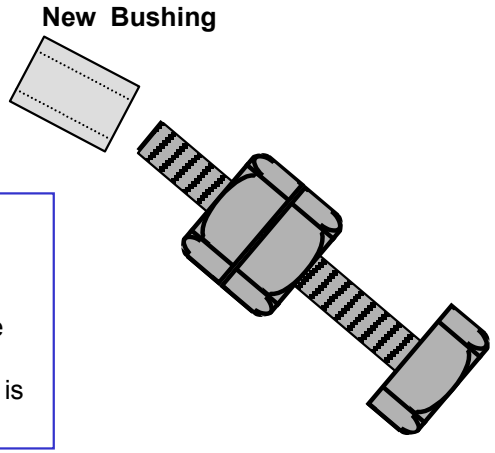
## Solenoid

Check solenoid's action, installed, by applying 6 volts between the quick-disconnect male terminal and end of the housing. The solenoid's shaft will retract, and the large contacts inside will make up.
To test the solenoid off of the starter, ground the short large stud to ground. This enables the pick-up function. Then apply 6 volts to the quick-disconnect (#50) and ground.
The solenoid shaft will snap back.

***If you can't remember the last time the bushing was changed, then change it.***

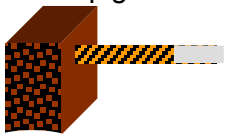
## Installing the new Bushing

Prepare a long bolt that will just fit inside of the new bushing. Check bushing fit with shaft before installing.
Run up two nuts, and lock them together, a distance just short of the bushing length.
Align with the hole in the transmission, and tap into place with a hammer. Lubricate bushing before installing starter.




## Check Brushes and Commutator

The brushes should have a nice polish on the running face.
Brushes will measure 11/16-inches (17.9-mm) new. Note spring tension, if weak replace. In doubt replace.
Commutator should have a brown film. Do not remove the film. If there is burning between the commutator segments then take the starter to an auto-electric shop. Ask for a "**growler**" test and if good, a "**turn and under cut**" of the armature's commutator.
Carbon dust can be removed by blowing with air, aided with a soft brush. Do not **pour/spray** solvents on the armature. If there is an area you wish to clean, moisten a cloth with solvent and wipe off. **Do not dunk!!**




## 12 volt conversions

With the 12 volt conversion and the solenoid is not changed to 12 volts, the teeth on the flywheel's ring-gear will be damaged. This will make meshing of the starter's gear and the flywheel's ring-gear difficult in time. This can be confirmed by rolling the car ahead a short distance in 4th gear. Now a fresh set of teeth will present themselves and the gears will mesh. If the 356 is not driven much, the ring-gear will not be damaged as quickly, but the starting currents will be **very high** and will take their toll of the Ignition/Starter switch.