

# MODEL T STARTER PROBLEMS?

By Milton J. Webb

Do you think you need an eight-volt battery or a twelve-volt system on your T? Six volt starting systems work just fine, *if* everything is up to snuff! Some time ago I completed a restoration/reconstruction on a 1925 T chassis. All running gear and the engine was rebuilt. I was meticulous with all systems, including the starting system. I thought the starter, switch and cable circuits were just right but it never did crank worth a darn, even with a fully charged battery. I blamed a tight engine as the cause of the slow cranking.

After the engine had had several hours of running, the body had been installed and the car had been driven about 100 miles. It still cranked very slowly. It usually took a twelve-volt jump to start the engine when it was cold. As you know, T's have a dragging neutral when cold.

I was ready to condemn the starter and rebuild another one for replacement when I decided to do some diagnosis first. Which takes us back to basics! The starter switch had about 1.1 volts drop across its terminals during cranking; too much voltage drop for a six-volt system. (See Table for measured voltage drops before service.)

On with the repairs. First, I took the starter switch apart. The starter switch used thin metal electrical parts (as Henry used to say, a "spurious" part). I replaced this part of the starter switch with a Ford script button assembly and filed the starter switch bolts fiat. I reassembled the switch and behold, it had only .05 volts drop while cranking!

The engine now cranked pretty well but not quite fast enough. More diagnosis revealed my engine ground to battery ground circuit was a joke! A whopping 1.5 volt drop while cranking! No wonder the ol' T wouldn't crank. Obviously, the engine mount ground points were not grounding properly. Rather than take all the engine mounts apart for cleaning, I installed a ground strap from the emergency brake bracket bolt to the transmission cover bolt. Lo and behold, the engine to battery ground voltage drop was only .13 volt while cranking. After this modification, the engine cranks "like crazy."

The moral to this whole story is; make all starting circuit joints shiny! Buff and shine all bolts, flat washers, lock washers and nuts before installation. Ground the engine to the frame with a flexible ground strap. Scrape, file and sand all joints, making sure that paint and rust are removed from all surfaces of each electrical connection. Make sure those battery cable joints shine!

Following all these corrections, my car yielded a 4.9 to 5.0 volts drop across the battery and a starter current draw of 200-250 amps while cranking at a steady RPM. Pretty good for an old system with long cables.\*

If you would like to check out your starting circuit, measure the voltage drop as shown in the drawing while cranking. A digital voltmeter is best for these measurements but any good voltmeter with a low-voltage (1 volt or less) range will do.\*\* Table 1 lists the recorded voltage drops before and after service. My starter was OK after all. Maybe your starter is OK too.

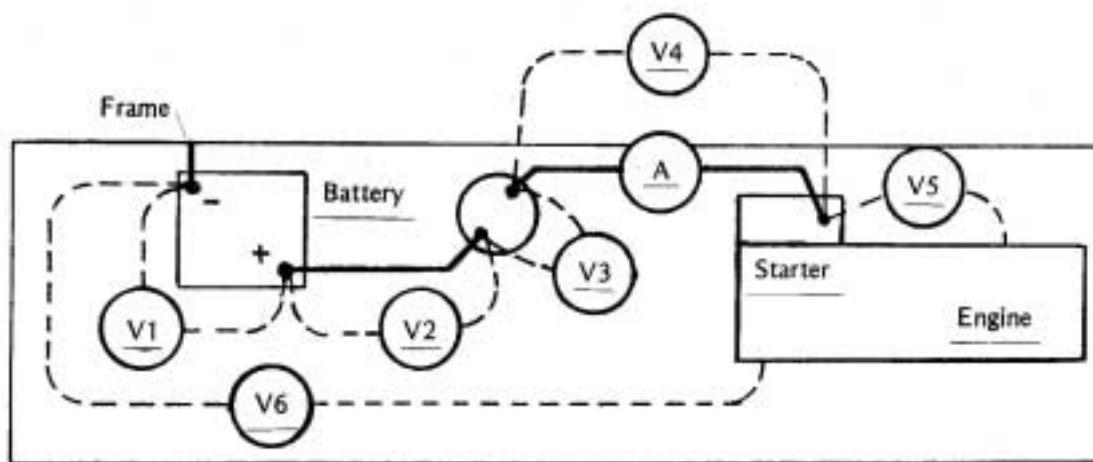


Figure 1. Starting Circuit and Voltage Measurements (Model T Ford)

Voltmeter Connection	Circuit Figure 1	Before Service	After Service
Across the battery (Engine ground to battery)	V1	Not recorded	4.9-5.0
Battery (+) to starter switch	V2	Not recorded	0.07
Across the starter switch	V3	1.10	0.05
Starter switch to starter	V4	Not recorded	0.14
Starter to engine ground	V5	Not recorded	4.60 <sup>1</sup>
Engine ground to battery (-)	V6	1.50	0.13
1. 200-250 amps measured with an induction ammeter at (A) in diagram			

**Notes:**

\* Watch those battery cables! Don't use the commonly available twelve-volt type. They just won't carry the current. Find the heavy (lots of copper) cables designed for six-volt systems or heavy-duty service. This is most important for the long battery to starter switch cable.

\*\* When using a standard voltmeter, start the measurements in a higher range (six volts or more). The voltage across the starter switch when it is in the normal (off) position is the full battery voltage (six volts). If the meter is in a lower range it could be damaged if connected across the starter switch before the cranking procedure is begun. Digital voltmeters are designed so that such over-voltage is not a problem.