Model A Ford Ignition Diagnostic

(revised 2010)

by Tom Endy

Ammeter "Jiggle":

Once upon a time I was rolling down the road in Miss Vic, my Model A Ford Victoria A-190, when out of the blue the engine quit. As I coasted to the side of the road I tried to contemplate what had gone wrong. The car is well maintained and therefore there was no reason for this outrage. The problem had to be a lack of spark or a lack of fuel. Nine times out of ten it's usually a lack of spark. Before I climbed out from behind the wheel, I decided to perform a diagnostic test. With the ignition still switched on, I cranked the engine over a few times, not expecting it to start, but intently watching the ammeter. The ammeter needle did a small rain dance, that is it "jiggled" from left to right a couple of notches in each direction as the engine turned over.

A wealth of knowledge:

This visual indication provided a wealth of information. I now knew that the battery was alive and well and still attached to the car and that the primary side of the ignition circuit was functional. Functional means that the ignition switch and pop-out cable was not shorted out or open-circuited, the points were opening and closing and were connected to the circuit, the condenser was not shorted out, the primary side of the coil had continuity and was still connected to the battery at one end and to the points at the other end, and Henry's wayward wire that connects the upper distributor plate to the lower distributor plate had not broken or shorted out. Without even getting out of the car, I had ascertained that the primary side of the ignition circuit was working properly.

Under the hood investigation:

But since the car wouldn't start, it was time to get out and look under the hood. The problem had to be in the secondary side of the ignition circuit, or it had to be a lack of fuel. When I looked under the hood I found that the high tension wire that plugs into the bottom of the coil had fallen out. I plugged it back in and the engine fired right up. The high tension wire is in the secondary side of the ignition circuit along with the secondary winding of the coil, the distributor cap, the rotor, the copper spark plug wires and the spark plugs themselves. Volumes have been written about the Model A Ford electrical system, and the Jiggling ammeter has been mentioned numerous times. But for those folks who aren't electrical types, much of the explanation is meaningless.

Jiggling explanation:

What the jiggling ammeter is all about, is that with a properly functioning ignition switched on and the engine turning over (but not running), the points will open and close as the engine rotates. Each time the points close electric current flows through the ammeter causing the needle to move two notches to the left. Each time the points open the needle returns toward the center, but since the needle movement is undamped, it swings past center to about two notches to the right much like pendulum. As engine cranking continues, the ammeter needle appears to jiggle back and forth and it is telling you that all is well in the primary circuit of the ignition.

Catch 22:

There is a catch! Not all Model A Fords are wired so that the ammeter will jiggle. The early production cars up until November 1929 were wired such that the ignition primary circuit was not wired with the ammeter in the circuit. **There was no jiggling!** The later cars were wired with the ammeter in the circuit (Ford Service Bulletin, page 390), and this now provided the desired diagnostic Jiggling. All is not lost though; you can easily convert your non-jiggling Model A Ford to a jiggling version. All you have to do is move one wire.

Determination:

First determine which way your car is wired. To do this pull the high tension wire out of the bottom of the coil. Switch the ignition on and crank the engine over. Watch the ammeter needle. If it jiggles, your car is wired to the later configuration. If it does not jiggle, your car is wired to the early configuration. It is an easy matter to convert from the early wiring configuration to the later.

How to convert:

Remove the two broken-looking wing nuts on the front cover of the terminal box on the fire wall that a number of wires go to. Remove the cover and locate the small black wire that runs from the coil to the terminal box. On the non-jiggling cars it will be connected to the threaded post that is toward the right side of the car (right as in the passenger's side). Remove this wire and put it on the other threaded post. This one will be on the left side of the car (as in the driver's side). Before you do this, disconnect the battery, or better yet remove the fuse if you have one installed (look for it on the top of the starter). This will prevent an undesired rain of sparks. It's as simple as that; you now have a diagnostic Jiggling Model A Ford.

More information:

If you want to learn more about this diagnostic phenomenon, there is an excellent two-part article that appeared in the Restorer in the 1987 November-December and 1988 January-February publications. Both articles were written by the late Paul Moller of Evergreen Park, Illinois. The two articles were also reprinted in "How To Restore Your Model A", Volume 5 (1994).☺