## FROM THE BENCH BY CHRIS WICKERSHAM

## The Spark Lever and What to Do with It

We all know that it is necessary to move the spark lever all the way up to fully retard the ignition timing when starting the engine, and to advance the igniting timing by pulling the spark lever down when driving the car; but how far down should the lever be for optimum performance. If you read the Instruction Book (Owner's Manual), Henry says "For average driving the spark lever should be carried about half way down the quadrant". Now, if you have the timing adjusted correctly, the ignition should have 0 degrees of advance when the lever is all the way up and 40 degrees of advance when the lever about half way down for average driving. This would only be 20 degrees of advance.

From experience and actual tests we find that the Model A engine will produce maximum power between 2000 and 2250 RPM with a spark advance of 30-31 degrees. We also know the engine requires less timing at lower engine speeds. However, most owners just start the car, pull the spark lever down and drive off.

For those who like to work with the controls find the engine seems to perform better if you start the engine, pull the lever about half way down (20 degrees) for idle and slow speed around the neighborhood driving and increase the timing to three fourths the way down the quadrant (30 degrees) for highway diving. Operating the spark lever in this manner definitely improves engine performance below 2000 RPM, but by how much?

I recently found the answer to this question when I ran across an old Secrets of Speed Magazine from July of 1995. Ron Kelly had written an article about tests he conducted using a dynamometer to investigate how different modifications affected the performance of the Model A engine.

The first test was for base line purposes using a stock Model A Ford engine with the timing fixed at 30 degrees This would simulate just leaving the spark lever in one position as the car was driven.

Test #2 used the same engine but the stock distributor was replaced with a Mallory distributor with centrifugal advance which would continuously adjust timing as the engine speed changed. The Mallory distributor was set up with 16 degrees of total centrifugal advance. The ignition timing was adjusted for 15 degrees of advance at 700 engine RPM and 31 degrees at 2,000 RPM.

These tests showed horsepower at 1,000 RPM increased from 14.7 HP with the timing fixed at 30 degrees to 21.9 HP when timing was automatically adjusted for engine speed. The 50% increase in power was the result of using the Mallory distributor which automatically adjusted

the timing to 19 degrees at 1,000 RPM. This advantage decreased as engine speed increased. At 2,000 RPM, when the Mallory distributor reached its maximum overall advance, power output was essentially the same because the total timing was essentially the same, 30 degrees for the stock distributor with fixed timing and 31 degrees for the Mallory.

In conclusion, if you are using a stock Model A distributor with manual spark control, you will experience better engine performance by manipulating the spark lever so the timing more closely follows what is required by the engine for optimum performance.

## Tech Tip

Timing of the Model A Ford engine with a stock distributor is accomplished when the piston of #1 cylinder is at the top of its compression stroke. This occurs when the timing pin inserted into the front cover falls into a recess in the timing gear while the engine is being very slowly rotated. Sometimes the recess is very shallow and it is difficult to determine when the pin drops into the recess. A modification to the end of the pin will make it easier to find this recess and make it easier to check ignition timing.

Illustration below courtesy of Marco Tahtaras, at MarcoT@abarnyard.com.

