Model A Ford
Tech Talk

By Willie Priaulx Jan 2023

Understanding Spark Advance

I think the Model A discussion I hear most often has to do with Spark Advance and Ignition Timing. Of course these topics are related, but the manual adjustment of the spark advance is the least understood. Since all production cars after the Model A (so by1932) have had an automatic spark advance, it's not a common topic for drivers today. You did not learn this in Drivers Ed!

I solved this problem for myself by installing an automatic spark advance on my Model A, and absolutely love it. This was the topic of my very first tech article written for the club, "Model A Mechanical Spark Advance - Feb 2018". I've been subjected to an endless barrage of derision from non-believers ever since. ☺

So, for all you "Henry didn't do it like that" types out there… here are the directions for adjusting the spark advance direct from the "Ford Model A Instruction Book".

> Before Starting the Engine
>
> Place the spark lever (left hand) at the top of the quadrant (the notched quartercircle on which the lever is operated). This is the retard position. The spark lever regulates the timing of the spark which explodes the gas in the cylinders.
>
> Always retard the spark lever when starting your car. Starting the engine with the spark advanced may cause the engine to kick back, and damage the starter parts. After the engine is started, advance the spark lever about half way down the quadrant.

> The Spark Control
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> For average driving the spark lever should be carried about half way down the quadrant. Only for high speeds should the spark lever be advanced all the way down the quadrant. When the engine is under heavy load as in climbing steep hills, driving through heavy sand, etc., the spark lever should be retarded sufficiently to prevent a spark knock.

The problem Henry… there's a little more to it than that.

The amount of spark advance required equates directly to the engine speed (RPM).

The spark that ignites the air-fuel mixture needs to incrementally occur sooner (advance) as the engine speed increases, so the gas has enough time to fully burn.

Advance is expressed in degrees of rotation Before the piston is at Top Dead Center in the cylinder. The advance needed on a Model A engine is roughly 10 degrees per thousand RPM.

The functional spark range for the Model A is therefore from 0 degrees TDC to advance 30 degrees BTDC. The spark lever quadrant has a range of 40 degrees, with 0 degrees at the top of the quadrant to 40 degrees advance with the spark lever all the way down. This means we typically will use only the top 3/4 of the spark lever range.

Enhanced Spark Control

Always retard the spark lever all the way up when starting your car.
Lever up, 0° advance, Starting

After starting, advance the spark lever about 1/4 down to a high idle / low speed position.
Lever 1/4 down, 10° advance, 930 RPM

For medium speed driving move the lever down to around the 1/2 way mark.
Lever 1/2, 20° advance, 1870 RPM

For high speed driving move the spark lever to the 3/4 *maximum* position.
Lever 3/4, 30° advance, 2800 RPM

When the engine is under heavy load, as in climbing hills, or any time the RPM drops, the spark lever should be retarded accordingly to prevent lugging the engine.

Conversely, remember to advance the spark as RPM increases to prevent stalling when taking off from a stop or just sputtering along with low power as you punch it up to speed.

If you can't find em grind em – Willie