

## Model A Spark Rod Movement

By Lynn Sondenaa

The spark control rod on the Model A is somewhat misunderstood. Today modern cars have computers that control the spark setting automatically. Before the computer, vacuum and centrifugal weights were used both individually and together to advance the spark. The Model A relies on the driver to control the spark advance. One must know why there is a spark control on cars. Here is a quick lesson on four stroke gasoline engines. (1) **Intake** – The piston moves down creating a vacuum. The intake valve opens allowing the air/fuel mixture into the cylinder. (2) **Compression** – The air/fuel mixture is compressed as the piston travels upward with both valves closed. (3) **Power** – The air/fuel mixture explodes forcing the piston downward with both valves closed. This is where the energy in the engine is created. This is also what the spark rod controls. Ideally the full force of the explosion needs to be pushing on a piston traveling in a downward direction. If not you could get backfiring or excessive pressure on the top of the piston, rings, rod bearings and even the crankshaft bearings. So you want the spark timed to the downward direction. (4) **Exhaust** – The piston moves upward with the exhaust valve open forcing the burnt gases out of the combustion chamber.

Here are some points to consider when advancing or retarding the spark control lever:

- A cold engine has slow combustion so more spark advance is needed.
- A hot engine the combustion is faster so less spark advance is needed.
- In a stock bore the combustion is faster (smaller space) so less spark advance is needed.
- In a large bore the combustion is slower (larger space) so more spark advance is needed.
- A stock cylinder head the combustion is slower (larger space) so more spark advance is needed.
- A high compression head 5.5 or 6.0 combustion is faster (smaller space) so less spark advance is needed.
- At low speeds combustion is slower so more spark advance is needed.
- At high speeds the combustion is faster so less spark advance is needed.
- Heavy loads the combustion is faster so less spark advance is needed.
- Old gasoline has lower volatility so combustion is slower and more spark advance is needed.
- New fresh gasoline has high volatility so combustion is faster and less spark advance is needed.
- If the spark lever is retarded too much it will cause the engine to overheat.
- If the spark lever is advanced too much it will cause ignition knock. Fuel ignition too soon.

- Climbing steep hills or grades less spark advance is needed.
- Fully retard the spark lever when starting a cold engine.
- Advance the spark lever 2 notches when starting a warm engine.
- Fully retard the spark lever when setting the carburetor idling adjustment.

For normal driving the spark lever should be  $\frac{1}{2}$  to  $\frac{3}{4}$  the way down the quadrant. High speeds or flat driving the spark lever can be  $\frac{7}{8}$  to the full range of the quadrant, but as soon as hills arrive the spark lever must be retarded some to prevent power loss and ignition knocking.

In conclusion, there are many factors that affect the spark control setting on the Model A. They are also interrelated. Do not be afraid to experiment with the spark control setting. You might discover more power and less overheating! Listen to your Model A, they usually tell you if something is not quite right.