Model A Ford Spark Plugs

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This article will focus on the selection of spark plugs, (Fig.1) how to set the spark electrode gap and the correct procedure to tighten spark plugs. Spark plugs are often overlooked in the Model A. They get taken out of the box and placed into the cylinder head and then forgot about. Spark plugs can be a cause of poor idling or high speed missing. Model A spark plugs are designed for low speed, low compression engines. They are non-resistor, copper core and a mid-heat range of 5 or 6. Bad spark plugs can cause the following problems: misfire, lack of power, hard starting, or poor gas mileage. Spark plugs should be inspected and cleaned at least twice a year. Clean with a wire brush, check the condition of the center electrode and ground electrode. Clean the outside of the plug while looking for cracks, and then check the gap. Also check to be sure the ends of the electrodes are square. (Fig. 1) Spark plugs should be replaced at 10,000 miles regardless of their outside appearance.

In my opinion there are four types of Model A owners. The "show car" owners, who trailer their Model A's to different show events. The "occasional car use" owners, who use their cars for parades, cruise inns or to give their grand kids a ride. The "go car" owners, who use their cars for short trips or short tours, and the touring car owners who use their cars for long distance trips or tours. These four types of owners are good, because they involve people with the Model A.

To select the correct spark plugs for your Model A one needs to consider the following statements, and then look at the "Spark Plug Comparison Chart".

- How often do I drive my Model A?
- How many miles do I drive my Model A in a year?
- How fast do I drive my Model A in (MPH) miles per hour?
- What is the compression ratio of my Model A's cylinder head?

Something a person needs to know about spark plugs is their heat range. A spark plug must be designed so the temperature of the center electrode and gap is hot enough to burn off carbon and ignite the air/fuel mixture, but not so hot as to cause pre-ignition. The tip of the spark plug (the part inside the cylinder head) absorbs heat and this heat travels up the insulator to the shell.

Spark Plug Comparison Chart

Spark Plug	Plug Number	How often driven	How many miles in Year	Speed in MPH	Compression ratio	Plug Gap	Notes
Champion 3X	CHA-429	Seldom	300 to 500	35-45	4.22 to 1	.035	Original style, high maintenance
Motorcraft TT10	TT10 SP488	Occasional	500 to 1000	35-45	4.22 to 1	.035	Low end plug that works well
Champion W16Y	CHA-561	Short trips	1000 to 2000	40-55	4.22 to 1	.035	Lower voltage required to fire
Autolite 3076	3076	Short tours	1000 to 3000	45-55	5.5 to 1	.032	A quick fire plug, will jump higher resistance
Autolite 3076	3076	Long tours	2500 to 10,000	45-55	5.5 to 1	.032	A quick fire plug, will jump higher resistance
Autolite 66 Champion 405	66 RN14YC	Long tours Same	2500 to 10,000 Same	45-55 Same	*6.0 to 1 Same	.030 Same	A modern plug designed for higher compression and heat

The heat is dissipated mostly by the cylinder head, and water jackets, but also by some of the spark plugs body. The path the heat must follow to reach the cooling system determines a cold plug or a hot plug. Spark plugs with short paths for heat to travel are known as cold plugs. Plugs with long paths for the heat to travel are known as hot plugs. For the plugs that I have discussed, a low number is a hot plug while a higher number is a cold plug. The heat range numbering system used by spark plug manufactures is not standardized, so if you want other brands of spark plugs you must research their heat range.

Champion 3X	Hot plug
Champion W16Y	Hot plug
Motorcraft TT10	Cold plug
Autolite 3076	Cold plug
Autolite 66	Cold plug
Champion RN14YC	Cold plug

Spark Plug Notes:

- Model A's with stock heads need hot plugs
- Model A's driven at slower speeds need hot plugs
- A hot plug has a slow rate of heat transfer
- Spark plugs too hot will pre-ignite the air/fuel mixture
- Model A's with high compression heads need cold plugs
- Model A's driven at fast speeds need cold plugs
- A cold plug will transfer heat rapidly
- Spark plugs that are too cold will foul
- A wide gap for slow speed & low compression
- A narrow gap for high speed & high compression

To correctly set the spark plug gap. a feeler gauge or circular gap gauge should be used (Fig. 3). The correct gap is given on the chart, but most Model A plugs are gapped at .035. Do not assume the gap is preset from the box, they are not, and they need to be checked before installing. Set the gap by bending the side electrode, if the center electrode is bent it will crack or break the insulation around the core electrode. Be sure the porcelain is clean and free from grease and oil. Spark plug gap depends on the following: compression

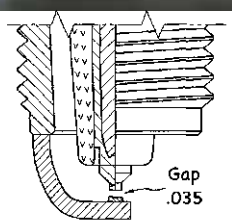
It is a good idea to use modern 14mm spark plugs with compression ratios above 5.5 to 1. This is easily done using spark plug adapter sets A-12405-ADP or A-12405-DAP.
Spark plug assembled into the adapter shown on right..

ratio, combustion chamber shape, and type of ignition system. Note if you are using a high compression head the gap range should be .030 or .032. High compression increases the resistance of the air fuel mixture through which the spark must jump. A shorter gap therefore is needed to promote the current jump. A wide gap could cause high speed missing.

Spark plugs should be installed by hand and then torqued using a torque wrench as shown in Figure 4. According to the

Ford Service Bulletins, spark plugs should be torqued between 34 and 38 foot pounds. If you are using an aluminum head check the manufactures specification for correct torque. Spark plug bodies are not known for their strength.

Too much torque could crack the porcelain as seen in Figure 5. If the plug body is distorted, it could also affect the gap between the body and electrode (Fig. 6). Spark plugs that are loose can cause compression leaks between the plug and cylinder head. If an engine does not idle satisfactorily it could be due to a narrow plug gap.



Be sure to choose the correct spark plug for your driving application, set the recommended gap and torque properly. Your Model A will enjoy your effort and reward you with easy starting and fun touring!