

Spark Plug Functions and Conditions

Based from the term itself, the spark plug is responsible for providing an electrode gap to produce an ignition to the vapor packed in fuel-air mixture. It also provides the gas-tight path starting from the high-tension lead wire to the supplied electrode gap. At great engine velocity, about 20,000 volts must be produced in roughly 40 times every second without any dripping to the ground.

There are three main parts consisting the spark plug; the electrode, insulator and the threaded meta shell. To combine all of these and form a complete leak-resistant component, dry powder or cement is being used. Both the insulator tip and electrode are prone to intense change in temperature, from the normal fresh air to about an extreme 4,000oF as well as under great pressure reaching to 800 lb for every square inch. The tip of the insulator determines the range of heat of the spark plug, whether cold or hot. Due to potential replacement or great force during removal, the insulator tip can be broken, cracked or even damaged.

Generally, the best possible heat range of the spark plug can be determined based from the engine design and working conditions. When the vehicle engine is cold and there are many start and stop driving, a hotter spark plug is employed. On the other hand, when the engine is hot and used in continuous driving especially in hot weather conditions, a colder plug option can be used. Because of these conditions, getting the proper temperature range of the plug is important. Fouling of the spark plug, in Jaguar spark plug is caused by the combustion products that accumulate on the insulator. Additionally, extremely hot plug can damage the insulator. It can also be a source of premature burning of the fuel-air mixture which then fritters away fuel, decreases power and even damages the engine. However, fouling can be prevented when the spark plug is hot enough while pre-ignition and fast wearing down of electrodes can be avoided when the plug is adequately cold.

In addition to the abovementioned functions of the spark plug, the component can also be a helpful indicator regarding the condition of the car engine. This is because the spark plug is extended into the vehicle's combustion chamber. Accordingly, it is necessary to check the plugs.

The following are the spark plug conditions helpful in determining the possible cause of failures.

1. When the plug is operating in good condition, a gray or light tan color can be observed. There is a small gap clearance and minimal amount of deposits on the tip of insulator.
2. A worn-out ground and electrode is a big sign that a new one must be at hand. Moreover, if all of the plugs in the car engine are experiencing the same situation together with sticking valves, weak condenser or coil, faulty breaker points and defective ignition leads, then a new hotter plug must be utilized.
3. An oily, muddy and black deposit accumulated on the spark plug causes oil fouling. Though a hotter plug can be of assistance, repair must still be implemented.
4. When plugs contain splotchy particles on the insulator, splashed fouling may occur. The deposits have been built up from misfiring or poor operation. To restore better and accurate performance, a new plug is a good choice.
5. Materials found between the ground and electrode and are produced from combustion can initiate gap or core bridging. This may likewise cause plugs to become defective. When there is a poor oil control or continuous start and stop driving, too much deposit accumulation is most likely to happen.
6. Three conditions can indicate overheating of the spark plug. These are poorly eroded electrodes, yellow or white glaze and burned insulator nose. A defective thermostat, improper heat range or too rich carburetor can be a cause of this plug problem.

Source: <http://automechanics.wordpress.com/2007/11/13/spark-plug-functions-and-conditions/>