Subject

Spark plug resistor types

Application

Applications that require ignition electrical noise suppression

Overview

The high voltage required in the typical ignition secondary system can create magnetic pulses, or radio frequency interference (RFI). Spark plugs use different types of resistors and resistance values. This bulletin will explain the difference and which applications to use resistor spark plugs on.

Procedure

A resistor is installed internally in a spark plug during manufacturing for the sole purpose of suppressing the magnetic field known as radio frequency interference (RFI). Spark plugs may use a standard type resistor or an inductive type resistor. The incorporated resistor is internal and not removable or serviceable.

If a spark plug without an internal resistor is used in a vehicle application requiring the secondary ignition suppression, noise may be heard through the vehicle sound system (radio) and the various computerized operating systems may be affected by the magnetic pulses.

The third digit in the spark plug part number will identify if the spark plug has a resistor and which type. The letter “R” indicates the plug has a standard type resistor. The letter “Z” indicates that the spark plug has an inductive type resistor. Standard type resistor spark plugs are designed with varying resistance values of 1k, 5k, 6k, and 10k ohms. The higher the resistance value the more suppression. The resistor will have minimal effect on engine start up, acceleration, fuel economy or spark plug output in a common high voltage type ignition system. For this reason, a standard resistor type spark plug may also be used in applications that do not require a resistor spark plug.

Another type of resistor used within a spark plug is the inductive resistor. This type of resistor allows RFI suppression in applications that have a much lower secondary voltage output such as a capacitive discharge ignition (CDI) system primarily used in marine and power sport applications. This type has a much lower internal resistance value of typically 50 ohms which will allow the spark plug to not limit voltage output but still have suppression qualities. This resistor is also integrated into the spark plug and like the standard resistor spark plug is not serviceable. An inductive spark plug can be identified by the
letter “Z” in the NGK spark plug part number.

Never use a standard resistor spark plug in place of an inductive resistor spark plug, this could possibly cause the spark output to be reduced creating a weak spark concern and extremely low life cycle for the spark plug due to fouling.

“Z” indicated Inductive resistor