

# Plug Tips Tell the Story

## How to Read Your Spark Plug

**Autolite**  
IGNITING YOUR PASSION

### TECHNICAL INFORMATION



1. NORMAL



2. NORMAL WITH RED COATING



3. FUEL FOULED



4. DETONATION



5. WORN OUT



6. GLAZING



7. CARBON FOULED



8. SUSTAINED PREIGNITION



9. ASH DEPOSITS



10. OIL FOULED



11. MECHANICAL DAMAGE



12. LEAD FOULED

Looking at spark plug firing tips can tell you if your engine has a problem that needs correcting. They reflect the performance of a well-tuned engine or a poorly maintained engine.

Even though spark plugs are easily replaced, inexpensive and immediately improve engine performance, they are often ignored until they cause serious performance problems. Bad plugs can cause overheating, rough running, power loss and even engine failure. Check your spark plugs regularly, and use this chart as a guide to spot performance problems.

### RECOMMENDATIONS

#### 1. NORMAL

Correct heat range of spark plug is being used. Replace with the equivalent Autolite spark plug at the proper interval.

#### 2. NORMAL WITH RED COATING

Normal - coloration is from the use of additives in unleaded fuel.

#### 3. FUEL FOULED

Indicates the cylinder from which the spark plug came is not using all the fuel supplied to it. Check for faulty or sticking choke, overly rich fuel mixture, ignition problems, leaking fuel injectors, or spark plug heat range is too cold.

#### 4. DETONATION

Caused by low octane fuel or over advanced timing. Can be noticed as engine knock. Check for faulty EGR system, detonation sensor, and correct spark plug heat range.

#### 5. WORN OUT

Spark plug used beyond its intended life. Replace with a new set of Autolite spark plugs.

#### 6. GLAZING

Spark plug is operating too hot at high speeds. Replace with a colder heat range of Autolite spark plug.

#### 7. CARBON FOULED

Spark plug heat range is too cold and/or caused by extensive low-speed, short distance driving. Replace with the correct heat range of Autolite spark plug.

Also caused by weak ignition system and/or rich fuel mixture. Fuel injection engines would produce carbon fouling from clogged fuel injectors, vacuum leaks, and/or problem with carbon canister/purge valve operation. Carburetor equipped engines cause carbon fouling from improperly adjusted or malfunctioning choke.

#### 8. SUSTAINED PREIGNITION

Check for correct application of spark plug (heat range too hot, wrong spark plug for engine), cross firing of ignition cables, over advanced timing, lean fuel mixture, defective EGR valve, accumulation of combustion chamber deposits, hot spots in the combustion chamber due to poor heat dissipation, improper installation torque applied to spark plug, and/or head gasket protrusion into the combustion chamber.

#### 9. ASH DEPOSITS

Caused by the use of leaded fuel, fuel additives, and/or oil additives. Check for worn piston rings and/or valve guides. Misfiring may occur due to the deposits on the electrodes.

#### 10. OIL FOULED

Caused by presence of oil in the combustion chamber. Check for worn rings, worn valve guides, and/or worn valve seals.

#### 11. MECHANICAL DAMAGE (New Catalog Addition)

Locate and remove foreign object from inside of cylinder. Check catalog for proper spark plug application. Improper spark plug thread reach can protrude into cylinder and sustain damage.

#### 12. LEAD FOULED

Occurrence is from use of leaded fuel or fuel additives containing lead which become conductive over the firing tip. Install new spark plugs.

### APPEARANCE

1. Grayish-tan to white color

2. Pinkish-red color on the ceramic insulator tip, the center electrode, and the ground electrode.

3. Firing tip is damp with gasoline, usually the odor of fuel is present on the spark plug. The insulator is often tinted the color of charcoal.

4. Insulator is usually cracked, chipped, or broken. Ground electrode can also exhibit damage.

5. Center and ground electrodes are eroded, have rounded edges, and are excessively worn away. Difficulty starting engine and misfiring during acceleration may occur.

6. Ceramic insulator tip appears to have a melted, glazed coating.

7. Black, sooty coating on firing end.

8. Melted center and ground electrodes and damaged ceramic insulator tip. Initial and sustained preignition are two extremes of the same engine problem.

9. Center electrode, ground electrode, and/or ceramic insulator tip are coated with tan colored deposits.

10. Center electrode, ground electrode, and/or ceramic insulator tip are coated with a black, oily substance.

11. Center electrode and ground electrode are bent out of position, down or to one side of the spark plug. Ceramic tip is broken and missing from the firing tip.

12. Ceramic insulator tip is coated with a brownish-yellow glazed coating.