encountered under the hood. These conditions include extreme temperatures, ozone, water or condensation, oil and grease, steam cleaning, strong detergents, solvents, acid and antifreeze.

Spark plug wire jackets are produced in two popular thicknesses which result in overall cable diameters of 7 and 8mm. For many years 7mm was the industry standard. In 1974 General Motors introduced HEI using 8mm spark plug wire and Ford followed in 1977. This change was made to contain the higher voltages and withstand the higher underhood temperatures.

The insulation and jacket are generally separated by a fiberglass braid which facilitates the manufacturing process and can help improve terminal pull.

Spark Plug Wire Service and Maintenance

During tune-ups, spark plug wire maintenance should include a visual inspection for cracks and other jacket deterioration caused by chemicals or abrasion. This generally occurs where the wire runs close to the exhaust manifolds or other sources of heat. Water and dirt, or the combination, contain conductive materials which can provide a path for voltage to reach ground without crossing the plug gap. For this reason it is important that spark plug wires be kept clean and free of dust which may trap moisture.

A visual inspection of the boots and terminals may uncover cracks in the boots, or loose, worn or corroded terminals. These connections are critical and should be replaced or repaired as necessary. The spark plug or distributor terminal will be one of the two common types. One type just slides over or into the mating part and is not securely retained. The other type incorporates a lock or mechanical retention in the terminal design.

The conductor can be tested with the use of an oscilloscope analyzer or an ohmmeter. The oscilloscope analyzer determines if the voltage needed to fire the spark plug is too high. It will show up as an inconsistent voltage spike line on the scope screen. The problem may be caused by corrosion, improperly seated terminals, or deteriorated or improperly gapped plugs.

Total wire resistance is measured by an ohmmeter. When testing resistance you are looking for a significant increase from when the wire was new. Since most wire is manufactured with less than 9000 ohms per foot (SAE Specification) resistance, a good guildeline for determining faulty wire is 1000 ohms per inch. Any wire with resistance in excess of 1000 ohms per inch should be replaced.

When removing or replacing spark plug wires, follow these steps to avoid problems related to handling, routing, or fit.

- *When removing a spark plug wire from the plug, twist the boot to loosen the connection. Hold the boot over the terminal and pull straight. This will help avoid damage to the boot or terminal.*
- *When replacing spark plug wires, do them one at a time, beginning with the longest. Replace that lead with the longest lead in the new set. This procedure will help you avoid ending up with a lead too long or too short.*
- *By replacing spark plug wires one at a time they can be routed just as they were originally. Proper routing of spark plug wires will avoid contact with exhaust manifolds and other engine parts which can shorten the service life. Proper routing also prevents cross-firing (ignition voltage jumping from the distributor rotor to the wrong spark plug) caused by wires being run in parallel too close together, which can result in internal engine damage.*
- *When installing spark plug wires on the plug, or at the distributor cap and coil, be sure the terminal is properly seated. With plugs manufactured with snap lock terminals, you will hear a snap when these terminals are properly seated. Any excess air trapped inside the boots or nipples should be allowed to escape. If the excess air is not removed, it will expand when heated and can force the terminal off. If a terminal is improperly seated, the voltage will jump that gap as it does the spark plug, generating heat that will cause the rapid deterioration of the terminal.*