

# Basic Ignition

*We discuss the basics of ignition wire technology to help builders understand how and why certain materials and design features are employed in the manufacturing of today's performance spark plug wires.*

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**S**park plug wires provide the main arteries that allow spark energy to travel from the source (coil and/or capacitive discharge unit) to the spark plugs. Poor quality or faulty wires can easily cause poor engine performance, intermittent problems, engine miss or degraded fuel economy. All too often, plug wires are selected by rodders based on color and overall appearance. While the exterior attraction may provide initial gratification and "trophy show-ability," as time goes by you begin to realize that performance and reliability are the factors that really count.

We can generally place spark plug wire into three basic categories: resistor (distributed resistance), inductance and solid core.

Resistor wire is intended to provide maximum suppression of EMI (electromagnetic interference, also known as RFI, or radio frequency interference). This prevents disruption signals from being absorbed by onboard electronics such as radios, CD ignition boxes and engine controllers. This type of wire usually features fairly high resistance, to the tune of 3,000–12,000 ohms per foot. The central core typically consists of a carbon or fiberglass material that's impregnated with graphite.

Inductance wire, also referred to as mag wire, features a wound core outer layer of a metal alloy (such as copper/nickel or a stainless alloy). This provides EMI suppression that results from a magnetic field that's generated along the alloy windings. This type of wire generally features a much-lower resistance than a true resistor-type wire, allowing a stronger amount of energy to flow to the spark plugs.

Solid core wire has a non-suppression design intended to produce maximum current flow. Because this type of wire offers no suppression, it can't be used along with ignition controllers, ECUs, radios, etc.

## Spark Plug Wire Construction

Basic construction of a spark plug wire starts with a central core/conductor. The core is wrapped with a

▲ Flowing and grouping wires provides a neater appearance than if you just flopped them over the valve covers.

► Distributorless ignition systems that feature individual coilpacks per cylinder require shorter wires if the coilpacks are mounted in OEM locations.



▲ Performance Distributors' LiveWires feature a very cool shrink-wrapped braided outer cover for enhanced abrasion protection. The braided cover allows the wires to withstand a staggering 1,400 degrees Fahrenheit, according to Performance Distributors.