

Question:

How can HotWires be so good? They look like conventional ignition wires, except for the ground wire and the heavy insulation.

Answer:

HotWires are not just ignition wires, they're more like a complete ignition system. Each **HotWire** has a capacitor built into the section closest to the spark plug. This creates the most powerful spark possible. Look at it like a CD ignition system for each spark plug.

Question:

Doesn't a spark that hot melt a hole in the piston?

Answer:

No. A spark can never be too hot. All the thermal energy (heat) from the spark is absorbed by the fuel/air mixture, where it initiates combustion. Thermal energy (heat) created by the combustion, is converted to kinetic energy (piston travel). Since the **HotWire** spark improves the combustion efficiency, more of the thermal energy is converted to kinetic energy and the exhaust temperature is actually lower.

Question:

Why does an engine benefit from a hotter spark?

Answer:

When the spark occurs, all the thermal energy (heat) is transferred to the fuel/air mixture, where it initiates combustion. A hotter spark will transfer more thermal energy and therefore accelerates flame front propagation. The fuel is used more efficiently and engine performance increases.

Question:

Doesn't a spark that hot, melt the spark plug?

Answer:

No. All the thermal energy from the plasma (spark) is absorbed by the fuel/air mixture, and the spark duration of only 4 nanoseconds is too short for a significant thermal transfer to take place at the spark plug electrodes. Not only is the temperature important, but also the time the temperature is present.

Question:

Doesn't a spark that powerful, accelerate spark plug wear?

Answer:

No. The spark duration of only 4 nanoseconds is so short, electrode erosion is decreased. It is not the power of the spark that is primarily responsible for spark plug wear, but the length of time the spark is present (spark duration). Therefore, a shorter spark duration results in less spark plug erosion (electrode wear).

Question:

Can a spark be too powerful and actually push away the fuel/air molecules, preventing ignition?

Answer:

No. This would be like saying, "the campfire is so hot it pushes all the wooden logs away". It is not actually the "spark" that ignites the fuel/air mixture, but the temperature of the plasma that is generated between the spark plug electrodes. The **HotWire** spark is so hot that instantaneous and complete combustion takes place.

Question:

Why do I even need a hotter spark? Isn't the spark of my ignition system sufficient to ignite the fuel/air mixture?

Answer:

Yes it is sufficient, if you are satisfied with the performance and efficiency of your engine. But any improvement in flame front propagation will improve combustion and therefore increase engine performance and efficiency.

Question:

A spark, is a spark, is a spark, isn't it?

Answer:

No. The hotter the spark the easier ignition occurs and the sooner combustion is completed. A spark made by a flint, the spark of a ignition system, a lightning bolt, a spark is a spark is a spark? You decide! A match, a blow torch or a napalm bomb. What will completely burn, (ignite), a one acre parcel of forest quicker?

Question:

What about other plug wires, especially those thick 8mm wires. Which one is the best?

Answer:

The thickness of the wire has absolutely no effect on the power of the spark. Thicker wires only have more insulation, primarily for looks. The conductor on the inside of the wire is no different from most other wires. If changing to a thick wire would make the spark more powerful, we would all change the wiring in our house to make the lights brighter.

Question:

What about plug wire resistance. Isn't lower better?

Answer:

In general yes. But only if you are talking about using plug wires with 1,000 Ohm resistance instead of 10,000 Ohm resistance. However, using plug wires with 100 Ohm resistance instead of 1,000 Ohm is not significant enough to increase performance.

Question:

Why is a short duration spark better than a long duration spark? If the spark duration is long am I guaranteed ignition?

Answer:

No, just because the spark duration is long doesn't guarantee ignition. A weak spark will be weak regardless of the duration and if ignition doesn't take place at the exact time (ignition timing), performance suffers. The ultra powerful, short duration spark of **HotWires** guarantees exact ignition timing and complete and efficient combustion, every time.

Question:

Why is a long duration spark not as powerful as the ultra short duration spark made by the Nology HotWires?

Answer:

Consider a long duration spark that releases 100% of the energy over a long period of time. At any point along this timeline only a fraction of the energy is available. In other words, the energy is stretched out over a long period of time. Now take the same 100% of energy and release it all at once. This is the **HotWires** spark. A good analogy would be if we were to burn 1,000 gallons of gasoline (100% of the energy) over a long period of time (days), or blow it up, all at once, in a gigantic explosion lasting only 1 second. The energy released is the same, but the latter is much more powerful.

Question:

Isn't there any benefit to a long duration spark?

Answer:

No. A long duration spark is a complete waste of energy. At 7500 rpm the spark of a conventional ignition system, with a duration of 3 milliseconds, will take 135 degrees of crankshaft rotation to finish. That means there is a spark between the spark plug electrodes long after TDC. A complete waste of energy. However, if ignition has not been initiated 10 or 15 degrees after the optimum ignition timing, performance suffers greatly. The **HotWires** spark needs less than one degree of crankshaft rotation to complete. With a spark duration that short ignition timing is much more precise and spark power is increased substantially. Flame front propagation is much quicker and combustion more complete, resulting in increased horsepower and a cleaner burn.

Question:

What about a multi-spark ignition system?

Answer:

Most people are not aware that there is no multi-spark at higher engine rpm. There just isn't any time for multiple sparks. So what are multi-spark ignition systems good for? Maybe it's just a sales gimmick! If the first spark is powerful enough to initiate combustion, multiple sparks are not necessary. By the way, if a multi-spark ignition system generates 6 sparks, which one of the sparks would you want to be the one to ignite the mixture? # 2 or # 4 or maybe # 1?

Question:

Do I have to use non-resistor spark plugs together with HotWires, and what will happen if I use resistor spark plugs?

Answer:

To take full advantage of the performance gain possible when using **HotWires**, non-resistor spark plugs are best. If for any reason resistor spark plugs must be used, performance gain is less, because the resistor is impeding the spark, however, performance will still increase.

Question:

Why do car manufacturers recommend resistor spark plugs, aren't they needed to suppress interference (EMI) with my radio or engine management system?

Answer:

There are many reasons for OEM's to use resistor plugs. One reason is actually emissions. Since the resistor is an obstacle it forces the spark voltage to be higher, assuring combustion in a lean mixture. Also resistor plugs are MUCH cheaper to produce. You will never find resistor plugs in serious race cars, yet these cars use some of the most sophisticated engine management systems and data acquisition systems. But these cars have no EMI problem. Why? Because the resistor in the plug is NOT needed to suppress EMI. The spark happens inside the combustion chamber where it is completely shielded by the metal cylinder head. No EMI can escape the combustion chamber.

Question:

Do I have to change ignition timing after installing HotWires, and if yes, why?

Answer:

Yes, some engines need less timing advance. Mostly engines with a large cylinder bore diameter, or inefficient combustion chambers. This is the direct result of much faster and improved combustion.

Question:

What about fuel mixture setting?

Answer:

If you're looking for performance, fuel flow can be increased. The **HotWire** spark is so hot even the added fuel will be ignited, which increases performance. If you're looking for economy, fuel flow can be decreased. Even this lean fuel/air mixture will be ignited reliably.

Question:

Are there situations where I absolutely have to change jetting?

Answer:

Yes. Because a hot spark will burn the fuel/air mixture in the combustion chamber more completely, and since some engines run lean to begin with, re-jetting could be necessary.

Question:

How come that with other ignition systems I don't have to make so many additional changes to my engine, such as timing and jetting?

Answer:

Because **HotWires** is the only ignition system that influences the combustion process positively. Other ignition systems that don't require changes to perimeter settings probably don't do anything more than your stock ignition system.

Question:

What about on modern computer controlled engines where timing or fuel flow can not be adjusted?

Answer:

The computer collects all the data and makes the necessary adjustments automatically

Question:

What if I have a "hotter" chip in my computer with more timing advance?

Answer:

If the timing is too advanced from the stock setting, and the engine is not equipped with a knock sensor, caution should be taken so the engine does not experience detonation. In some cases timing has to be returned to the stock setting.

Question:

Do I need to use spark plugs with a different heatrange when I use HotWires?

Answer:

No. Spark plug heatrange stays the same.

Question:

Won't a "hotter" spark plug make a hotter spark?

Answer:

No. A hotter, or colder spark plug refers only to the ability of the spark plug to dissipate heat.

Question:

Will HotWires cause interference (EMI) with my radio or engine management system?

Answer:

No. HotWires are manufactured using spiral-core technology, which prevents substantial amounts of EMI. Only low quality aftermarket stereos, or badly

installed stereos (wiring) could be a problem. However, there are thousands upon thousands of satisfied users without any EMI problems whatsoever.

Question:

Why do car manufacturers recommend resistor spark plugs and high-resistance plug wires, aren't they needed to suppress interference (EMI) with my radio or engine management system?

Answer:

There are some EMI issues, but only ONE resistor is needed on the secondary side of the ignition system. The resistor could be in the spark plug, or in the plug wire (not in both). Most US cars use resistor plugs and carbon core wires (resistance is too high and causes performance loose). European cars don't use carbon wires. They use solid or spiral core wires with resistors in the plug or in the plug wire connectors. HotWires use spiral core technology and sometimes we add resistive distributor connectors. No resistor plugs are needed. There are many reasons for OEM's to use resistor plugs. One reason is actually emissions. Since the resistor is an obstacle it forces the spark voltage to be higher, assuring combustion in a lean mixture. Also resistor plugs are MUCH cheaper to produce. You will never find resistor plugs in serious race cars, yet these cars use some of the most sophisticated engine management systems and data acquisition systems. But these cars have no EMI problem. Why? Because the resistor in the plug is NOT needed to suppress EMI. The spark happens inside the combustion chamber where it is completely shielded by the metal cylinder head. No EMI can escape the combustion chamber and the spiral core wire is taking care of the "ringing" that may find its way back to the coil etc.