Honda Spark Plug Tech Guide.

After reading many times about different plugs and seeing new ones come out. Here is finally a really detailed look into each and every plug made by NGK & DENSO. Which are the OEM makers of your Honda / Acura Spark Plug.

For best and optimum performance it is always best to go with these plugs. We have heard numerous problems about running anything else. Trust us, we don't want to make a long go at this. But its true, NGK is the best for most performance apps. (Unless you have a specific tuner and application that has plugs meant for you.)

Most of the time people seem to recommend the NGK Copper Plugs. Which they are referring to the NGK V-Power plugs. Going by the fact that copper is the best heat conductor, its great price and good performance. But does this make it the best? Are people just being swayed by the copper properties?

Some complain that the platinum makes the car a little tweaky. Although some cars come with the platinum plugs stock as well as the higher price some people seem to go towards the copper. Why do these come on our cars stock? Do they hold performance or longevity or both?

Then iridium came out and further made people indecisive with their plug choice. Is it the more exotic metals that make more performance. Do they hold more power, or again longer run times? Or is it something else altogether that these plugs go for.

The answer? Read on.

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Well Its a toss up. Its almost impossible to answer those questions without specific dyno tuning to your car. All I can do is point out the simple facts and let you decide.

The main thing to know is, none of the spark plugs electrodes are made the same. Therefore metal has really nothing to do with it.

Don't let that throw you off though. It kind of does, I will explain. It seems to go in a pattern, the more exotic the metal, the more exotic the design can be. So it could come down to the same factor we all have come to know and love. You get what you pay for.

Also (this is where the metal comes into play). If the metal used is more resistant to damage. Then more radical designs can be implemented. Kind of like a computer chip manufacturer, they have to use more exotic metals in their new chips, because of the smaller more compact paths. Therefore they can achieve a design that was impossible with more standard metals.

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Now moving onto the review of each plug. We will have the NGK V-power (copper), GP or G-Power Platinum, Double or Laser Platinum (sometimes OEM platinum) & Iridium.

V-power / Copper:



Projected extended tip, V-power (v-grooved center electrode)

NGK's V-Power design directs the spark to the edge of the electrode where it develops more rapidly, this increases ignitability even in lean burn conditions. In addition the NGK V-Power plug has all the features of their traditional plugs including corrugated ribs, pure alumina silicate ceramic insulator for greater strength and better heat transfer, copper core and triple interior seal.

You can notice the larger 2.0mm standard center electrode size, but with a unique V design. V-Power spark plugs are a patented design by NGK to improve ignitability and reduce quenching. Ignitability is improved by directing the spark to the edge of the center electrode thus exposing it to more of the air/fuel mixture. Quenching is reduced in much the same manner, drawing the spark to the edge of the center and ground electrodes reduces the surface area available to quench the spark.

GP or G-Power Platinum:



Projected extended tip, long life single platinum, platinum center electrode only, trapezoid (beveled cut) ground electrode

NGK G-Power offers the performance and durability of platinum at a competitive price. The center electrode is fine wire platinum for better starts, superior acceleration and better fuel economy. Trapezoid cut ground electrode to reduce quenching. This plug is basically an efficient plug.

See also the next plug for info on general platinum use.

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Double Platinum or Laser Platinum (OEM platinum in some cars, Prelude VTEC):



Projected extended tip, extreme long life double platinum, fine point platinum on center electrode, platinum tip laser welded on ground electrode

NGK extreme life plug. By using the highest platinum content in the industry, NGK has created an extremely long life spark plug. Laser welded platinum tip on center electrode and platinum tip on the ground electrode. The center electrode is taper cut which aids in focusing the spark while reducing the voltage necessary to start the combustion process, this will provide better throttle response, improve efficiency and allow a smoother idle.

Platinum is a precious metal used for its long life and/or performance spark plugs. This is because of platinum's high melting point, which makes it useful in two ways. On a long life spark plug, a thin wafer of platinum is bonded at the firing point to the center electrode (and possibly ground electrode) solely so they don't wear as fast as a traditional plug. On a fine wire performance plug, the very tip of the center electrode is made of platinum so that the fine wire tip will last longer. Do not be fooled, all platinum plugs are not created equal, Platinum is a very expensive precious metal, a \$2 platinum spark plug will not have much platinum in it, and therefore will not last as long as a \$12 platinum spark plug. NGK platinum plugs contain the highest platinum content in the industry. Some platinum plugs have only the center electrode tipped with platinum, while others have both the center and ground electrodes platinum tipped. (By the way, it is still not suggested that platinum plugs be used on vehicles with nitrous injection. Thus far, there has been no problems reported regarding using iridium plugs with nitrous.)

NGK Iridium:



Projected extended tip, fine wire (0.6mm) iridium center electrode, tapered cut ground electrode

NGK iridium plugs, the latest evolution of spark plug technology. The iridium center electrode is both stronger and harder than platinum. This allows NGK engineers to design an ultra-fine (0.6mm) center electrode reducing the voltage requirement for spark. This allows for a brighter, stronger spark from your existing ignition system. The ground electrode has a tapered cut at the firing end, which reduces quenching for better flame core growth and increased ignitability. The combination of fine wire center electrode and tapered cut ground will increase performance, improve acceleration, and fuel efficiency

Iridium is a precious metal that is 6 times harder and 8 times stronger than platinum, it has a 1,200(=F) higher melting point than platinum and conducts electricity better. This makes it possible to create the finest wire center electrode ever. Prior till now, platinum had been favored for long life or performance spark plugs due to its high melting point, also the technology did not exist to machine and bond iridium on a spark plug electrode (at least in a cost effective manner). Iridium industrial spark plugs have been around for years, but still sells for over a hundred dollars per plug. Just now is the technology available to effectively use iridium in a spark plug for automotive applications. The strength, hardness and high melting point of iridium allows NGK to manufacture their iridium ultra-fine wire center electrode to 0.7mm. One of the finest firing points for a spark plug.

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DENSO Iridium Spark Plug:

The Denso Iridium sparkplug. Almost being identical as the NGK iridium, except one thing. It has a .4mm center electrode. The NGK has .6mm for the prelude and probably most other Honda's. So the same applies to this plug as the NGK iridium only its more enhanced.

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OVERVIEW:

Spark plugs with fine wire center electrodes operate better for two reasons, first, a smaller center electrode requires less voltage to jump the gap. This means fewer misfires, which will be seen in higher mileage and more horsepower. The second reason is smaller center electrodes reduces quenching. The smaller center electrodes have required exotic metals such as platinum or iridium so that they can still maintain (and sometimes surpass) the longevity of a traditional spark plug. NGK makes both platinum fine wire (1.1mm diameter center electrode) plugs and Iridium ultra-fine wire (0.7mm diameter center electrode), a traditional center electrode is typically 2.0 to 2.5mm.

Diagram of a Spark Plug.

