

Heat Range

The term "spark plug heat range" can be misleading. Many think that it has something to do with a hotter spark and it does NOT. The heat range of a spark plug is its ability to transfer heat from the combustion chamber to the cylinder head. The heat transfer pulls heat out of the combustion chamber and at the same time away from the spark plug tip. This is most commonly done by changing the contact area of the porcelain insulator nose to the shell during manufacturing. A visual comparison of the two extremes make this very clear, looking at the colder plug you can see where the porcelain meets the shell and on the hotter plug the point where the porcelain meets the shell is further down inside.

As a general rule of thumb use the coldest plug possible without fouling at low speed or idle. The use of too hot a plug may cause severe engine damage. The guideline for the difference in tip temperature from each heat range to the next is 70°C (158°F) to 100°C (212°F).

Considerations in choosing the heat ranges:

If an engine is normally operated at low speeds or at low temperatures then, a hotter heat range may be required to keep the spark plug from fouling. If the engine is modified, operates at high RPM, under heavy loads or at high temperatures then, a colder heat range spark plug will be necessary to help prevent detonating or pre-igniting.

All engine modifications which increase cylinder pressure typically increase combustion temperatures, and therefore, increasing these temperatures will require a colder heat range. So, if you think you need a higher octane fuel to keep the engine from pinging, you will probably need a colder plug as well.

It is important to follow the cylinder head manufacturers recommended torque specification for the spark plugs. It is also a good practice to put a small amount of anti-seize compound on the treads, but be sure that this does NOT insulate the spark plug from the cylinder head.



Colder Plug



Hotter Plug