

# Warnings for Your Safety and Instructions for Use

## Warning

Before changing or adjusting the plug, please switch off the engine first. Otherwise, it may cause a fire or an electrical shock.

## Instructions for Use

When the product is installed on an altered or modified vehicle engine, the product may be struck by valves, pistons, or other parts and cause damage. Please do not drop the plug onto a floor, or similar hard surfaces. It may cause internal cracks or alter the spark gap, damaging the functions of the plug. Before using the product, please carefully read the instructions on the reverse side of the package and use the product appropriately as described.

## When using a plug with a terminal nut

When using a plug with a terminal nut, please tighten the nut securely with a pair of pliers or a similar tool. If the terminal nut is crimped onto the plug, the nut may loosen during use due to vibration. Therefore, we recommend that you check it regularly. If the terminal nut becomes loose, please tighten it securely. If you use the plug with a loose terminal nut, it may be a cause of engine malfunction.

## When to replace spark plugs

If the center electrode tip becomes worn into a rounded shape, it is possible that the sparks it produces are not fully efficient, resulting in the fuel-air mixture being ignited less reliably. If this happens, the engine horsepower decreases, fuel consumption worsens, and the engine lifetime may be adversely affected. We therefore recommend the regular replacement of spark plugs. \*Service lifetime is a guideline. When used in a vehicle equipped with a simultaneous ignition system or high energy coil, the service lifetime may be shorter.

Recommended replacement guidelines (service lifetime) for ordinary plugs and **IRIDIUM POWER**

|                   |                     |
|-------------------|---------------------|
| Automobiles       | 15,000 to 20,000 km |
| Light automobiles | 7,000 to 10,000 km  |
| Motorcycles       | 3,000 to 5,000 km   |

Recommended replacement guidelines (service lifetime) for platinum plugs, **IRIDIUM TOUGH** and **IRIDIUM PLUS**

|             |                              |
|-------------|------------------------------|
| Automobiles | up to 100,000 km* (see note) |
| Motorcycles | no established guidelines    |

\*Note: Use in a small-engine vehicle, a tuning vehicle, that are usually operated under high-rpm conditions may result in a shortened lifetime of the plug.

## How to select a spark plug; failure modes

When choosing a spark plug, please confirm the specifications in your vehicle's manual, maintenance manual, and matching chart by automobile manufacturers in this book, in order to choose the appropriate plug for size and thermal value. The heat range of the plug needs to be increased, such as from No. 16 to 20 or 22, depending on the degree of tuning if your automobile has a rebuilt engine or is equipped with any of the following parts that have been modified: muffler, ignition coil, spark plug wires, turbo engine, commercial electric ignition system, NOS, etc. When the correct plug is not installed, it may generate fuel fouling, exhaust smoke, or pre-ignition, and cause failure of your automobile. Please check page 35 for the correct thermal value to use, and page 36 that lists some failure modes of spark plugs.

## How to choose a racing plug

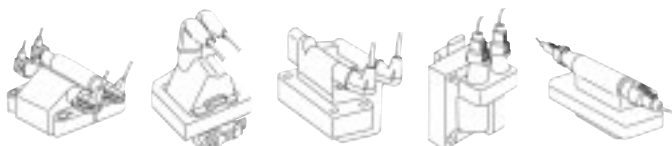
**IRIDIUM RACING** is for racing and tuning vehicles. Please choose a plug heat range that is suitable to the level of tuning, based upon the heat range of an normal plug and **IRIDIUM POWER**. Generally, electrodes that protrude into a combustion chamber have better ignitability and better performance. However, due to more exposure to high temperature combustion gases and because the ground electrode is longer, heat resistance and durability are decreased. The higher the level of tuning, the greater need there is to use a less-projecting plug type. As the level of tuning is increased, so does the need for a higher heat range tolerance.

## Adjustment of the spark gap

For ordinary plugs, please adjust the gap if it has widened at the time of inspecting the plug. Please adjust it to the specified gap of each automobile manufacturer. If the center electrode has become rounded, or worn only on its edges, please replace it with a new product. Please do not adjust the spark gap of any plug with a fine electrode, such as a platinum or iridium plug. Any adjustment may damage the center electrode.

## Service Lifetime

The service lifetime of a spark plug may be shortened due to driving conditions or ignition properties when used in a vehicle equipped with a simultaneous ignition system (plus-minus discharge and D-DLI). Please ask your dealer to check if your vehicle is equipped with a simultaneous ignition system. A simultaneous ignition system, as shown in the images, has two plug wires connected to a single coil.

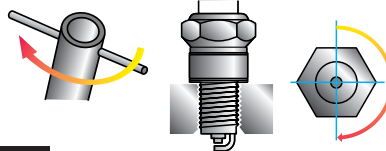


## Recommended Torque and Tightening Angle for DENSO plugs

- Use the correct wrench for the hex on the plug, and be careful not to damage the insulator.
- When changing, make sure that the oil, etc. on the outside of the plug does not enter the engine interior.
- When putting the plugs in, clean the engine side of the flange, and put in the plugs after making sure the gasket is in the flange.

- Make sure the plugs are vertical, and tighten them by hand until they cannot be tightened any further.

- Then, use a plug wrench to tighten them accurately to the torque or rotation angle showed in the chart below.



| Thread Size       | Applicable Models                     | Recommended Torque | Recommended Tightening Angle |                 |
|-------------------|---------------------------------------|--------------------|------------------------------|-----------------|
|                   |                                       |                    | New Plug                     | Previously Used |
| M 8               | All Types                             | 8 -10N·m           | About 1 turn                 | About 1/12 turn |
| M10               | Types other than the ones shown below | 10-15N·m           | About 1/3 turn               | About 1/12 turn |
| M10               | UFE, IUH, VUH, VNH Types              | 10-15N·m           | About 2/3 turn               | About 1/12 turn |
| M10               | Stainless Gasket Type <sup>(*)</sup>  | 10-15N·m           | About 3/4 turn               | About 1/12 turn |
| M12               | All Types                             | 15-20N·m           | About 1/3 turn               | About 1/12 turn |
| M14               | Types other than the ones shown below | 20-30N·m           | About 1/2 turn               | About 1/12 turn |
| M14               | Stainless Gasket Type <sup>(*)</sup>  | 20-30N·m           | About 2/3 turn               | About 1/12 turn |
| M18               | All Types                             | 30-40N·m           | About 1/4 turn               | About 1/12 turn |
| M14<br>Taper seat | All Types                             | 20-30N·m           | About 1/16 turn              | About 1/16 turn |
| M18<br>Taper seat | All Types                             | 30-40N·m           | About 1/16 turn              | About 1/16 turn |

If a thread lubricant such as grease is coated on the thread, tightening to the recommended torque is tightening too much; this has been linked to seal leakage. Do not use a thread lubricant.

Tightening more than the tightening angles and torques shown on the left could result in damage to the engine and furthermore could result in the plug coming off at the thread.

(\*) 1UH27ES, U24FER9S

(\*) PK22PR-L11S, SK22PR-M11S, IK16G, IK20G, IK22G, VK16G, VK20G, VK22G, K20PR-U9S, SK20PR-L9S, SKJ20DR-M11S