

Troubleshooting guide glow plugs



Alan Povey, Technical Services Manager for DENSO

Glow plugs are one of the most familiar diesel parts, but their improved performance and longer life mean you are probably fitting fewer replacements than ever before. Here DENSO technical expert, Alan Povey talks us through some of the most common visual signs of glow plug problems, as well as their likely causes and solutions.

Spark plugs are used in petrol engines to ignite the fuel. Diesel engines don't use spark plugs, as they ignite the fuel by compression. However, they do have glow plugs, which are essential to starting a diesel engine in cold weather.

A glow plug works by converting electric power to thermal power, by directing current through high-resistance coils and generating heat in the

combustion chamber. This makes it possible for the fuel injected into the combustion chamber to be self-combustible during engine start-up at colder temperatures, such as during winter.

How to install glow plugs

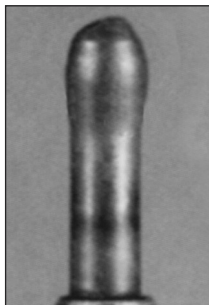
Always use the correct wrench for the glow plug and terminal. When changing glow plugs, make sure that

oil, dirt etc on the outside of the disassembled glow plug does not enter into the cylinder. When mounting the glow plug, clean the engine side of the flange and make sure the glow plug is correctly inline with the thread of the cylinder head. Make sure the plug is correctly positioned and tighten it by hand until it cannot be tightened any further. Then, use a torque wrench to tighten it accurately to the proper torque.

Enlarged Tip

Causes: Excessive voltage eg 12-V glow plug in a 24-V system or vice versa; failure of alternator and regulator; dampness during storage.

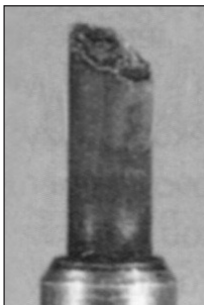
Solutions: Check on-board and glow plug voltage; check charging system; check quality of storage conditions.



Damaged/Missing Tip

Causes: Failure of ignition unit; direction or regularity of fuel jet incorrect; sealing fault causing spraying position error.

Solutions: Check that the ignition unit is correctly installed; check that you are using the correct ignition unit for the vehicle model; check the glow plug installation point for carbon deposits.



Swollen Ring on Tip

Causes: Oil in the combustion chamber, probably caused by engine wear.

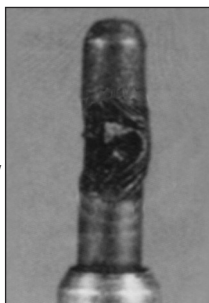
Solutions: Check piston clearance in engine cylinders; check oil consumption.



Deformed Tip

Causes: Over heating; failure of ignition unit; direction or regularity of fuel jet incorrect; wrong spraying position by faulty sealing; excessive glowing/voltage eg 24-V glow plug in a 12-V system or vice versa; failure of alternator or regulator; possible timing fault in injection unit.

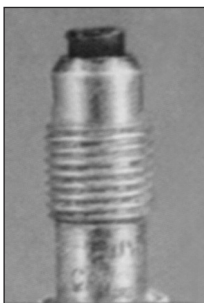
Solutions: Check that the ignition unit is correctly installed; check that you are using the correct ignition unit for the vehicle model; check the glow plug installation point for carbon deposits; check the contacts on glow plug regulator; check on-board and glow plug voltage; check charging system voltage; check fuel injection timing.



Missing Tip

Causes: Ignition unit failure; direction or regularity of fuel jet incorrect; wrong spraying position caused by faulty sealing; function or timing fault in injection unit; thread damage to opening of cylinder head where glow plug is installed; glow plug insufficiently tightened causing plug to sit incorrectly.

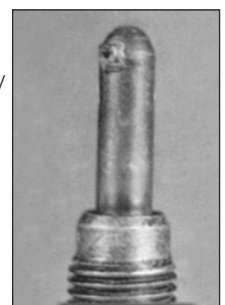
Solutions: Check that you are using the correct ignition unit for the vehicle model; check that the ignition unit is correctly installed; check the glow plug installation point for carbon deposits; check timing of injection pump; check the opening of cylinder head for thread damage/carbon fouling.



Broken Tip

Causes: Excessive glowing/voltage eg 24-V glow plug in a 12-V system or vice versa; failure of alternator and regulator.

Solutions: Check contacts on glow plug regulator; check on-board and glow plug voltage; check charging system voltage.



Tip Touching Body

Causes: Over-tightened torque; wrong tool used; thread damage to opening of cylinder head

Solutions: Check the opening of cylinder head for thread damage/carbon fouling; check glow plug torque.

