



IGNITION  
PARTS

## TECHNICAL INFORMATION SHEET

### CARBON BUILD UP AND ITS AFFECT ON GLOW PLUGS

Although carbon within the combustion chamber is expected, excessive build up around the glow plug heater tube can significantly affect both the performance of a glow plug and the degree of difficulty of its removal and/or installation. Excessive carbon accumulation can be the result of various factors including fueling set-up, blocked air cleaner, vehicle use (mainly low engine speed), high mileage or a glow plug being inoperative for a prolonged period.

Under normal operating conditions the heating cycle of a glow plug reduces carbon accumulation around the heater tube by burning it off (heating temperatures of 800 - 1350 degrees C are often achieved depending on the technology employed). It is worth noting that in modern engines glow plugs continue to operate after engine start and even intermittently heat during the driving phase.

Although glow plug failure usually results in a warning light being illuminated on the dashboard many modern engines can still be started with one or two glow plugs inoperative – sometimes with little or no difficulty experienced by the vehicle operator. Continuing to operate the vehicle in this condition can cause the carbon to accumulate as there is no glow plug heating cycle present to burn it off.

Glow plug failure can be the direct result of excessive carbon build up between the heater tube and the glow plug hole. During glow plug operation the direct contact with the carbon allows too much heat to be drawn away from the regulating segment of the glow plug causing excess internal current flow and internal coil failure can result. To prevent repeat failure and allow easier installation, recognised good engineering practice is to remove excessive carbon from glow plug holes prior to replacement (following the directions provided by glow plug carbon reamer kit manufacturers).

Signs of a problem upon *removal* of an old glow plug include: a visibly shiny or scuffed surface to the heater tube (caused as the heater tube is being withdrawn/pulled through surrounding carbon), carbon accumulation where the heater tube meets the taper seat area of the metal shell or carbon over the taper seat (indicating the glow plug was not seated – loose or screwed on to debris or into carbon, preventing seating and resulting in poor sealing).

Although best to ream in any case, a good method of ensuring no obstruction or thread damage exists is to install the glow plug by hand until it contacts the taper seat - prior to final tightening with a torque wrench.

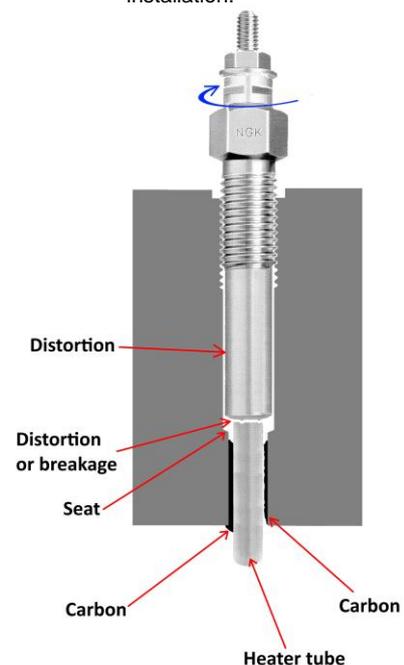
Obstruction may be dislodged debris not cleaned away prior to original glow plug removal or carbon as described, in a whole or fragmented state.

As with any component, care should be taken whilst fitting as in addition to poor sealing and premature failure, obstructions in the glow hole can cause distortion/breakage of a glow plug. This is more likely in modern engines due to the longer and smaller diameter plug designs demanded by many vehicle manufacturers.

Installation and torque advice is displayed on most NGK glow plug packaging and always follow the vehicle manufacturers instructions.

See also related topics:  
<https://www.youtube.com/watch?v=hNwi--n0h9Q>

Possible damage caused to a new glow plug during installation.



(Glow plug generic image)