

Workshop 6

Checking Glow Plugs

Based on a Terrano II 2.7tdi Year 2000

Operation:

The glow plugs are heated in three stages

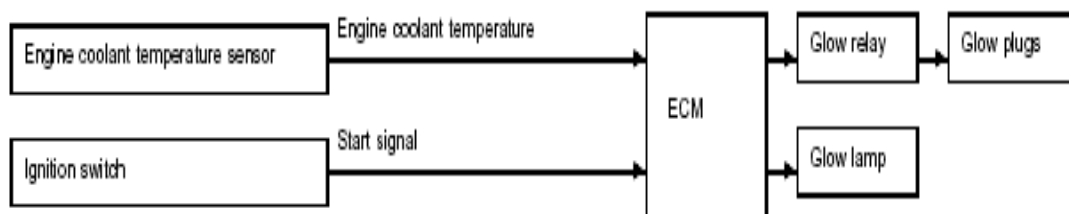
- Pre glow
- Intermediate glow
- After glow

The duration of each stage will vary with engine coolant temperature.

When the ignition key is turned to the ON position, pre glow starts and the glow plug light on the dashboard will be lit . When the glow plug light on the dashboard extinguishes the glow plugs continue to be heated during the Intermediate Glow Stage. If the ignition key is not turned to the start position the Intermediate Glow will continue to cycle on and off. You will be able to hear the glow plug relay cutting in and out.

If the engine is started, the after glow commences. The glow plugs will be continually heated for up to 10 minutes or until the engine temperature reaches 50°C

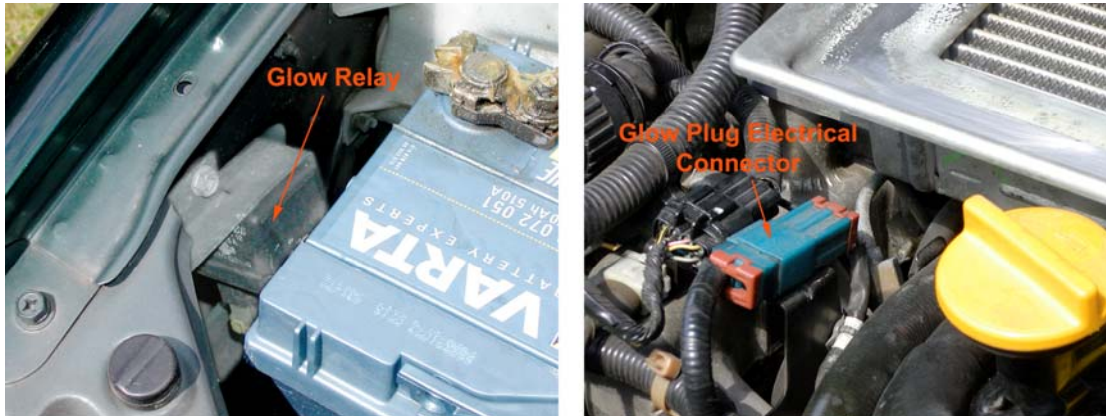
Electrical Circuit



Fuse Protection

80 Amp fuse (fusebox under bonnet)

20 Amp fuse (fusebox under bonnet)



Testing

With the engine cold connect a multimeter between a suitable earth connection and the Glow Plug Electrical Connector. I found a nappy pin to be a good tight fit down the side of the wire in the plug and attached my meter to the pin.

Place the meter where it can be seen from the drivers seat and turn the ignition switch to the ON position (do not start the engine). You should have battery voltage (slightly less due to the high current drain) during Pre Glow and the glow plug light on the dashboard should be lit. After the dashboard light extinguishes you should still have battery voltage as you enter the Intermediate Glow Stage. You should hear an audible click from the Glow Relay as the power is cycled ON and OFF. This switching will also be seen on your multimeter.

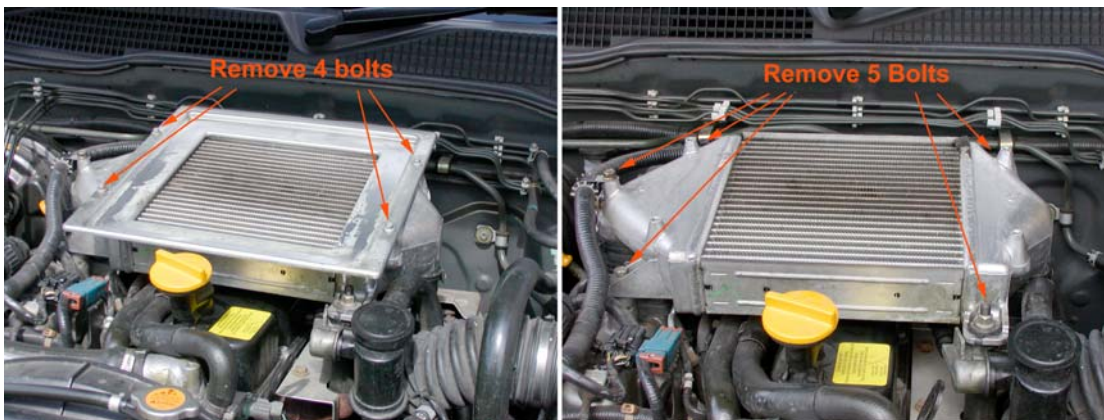
Resistance Checks

With the ignition OFF separate the two halves of the Glow Plug Electrical Connector. Connect your meter to the spade connector inside the female half of the socket (the part remaining fixed to the car not the loose wire) and a suitable earth. Does this connection look clean?

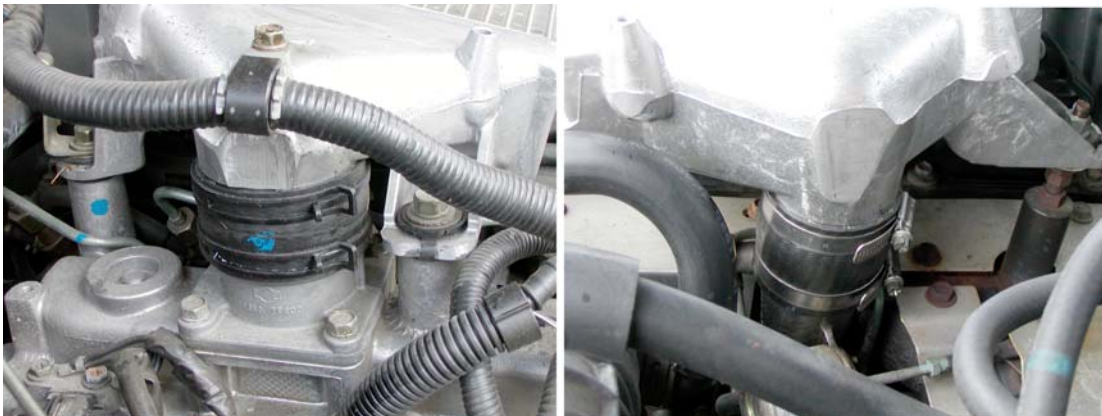
Each glow plug will have a resistance reading of approximately 0.5 Ohms. Because you are now measuring all four in parallel (and that clever chap Ohms) expect a lower reading than 0.5 Ohms. Typically 0.4 to 0.2 Ohms though this can vary as some heating will occur. These low readings are really too low for a normal multimeter to interpret accurately so this test is really only going to confirm continuity between the connector and the glow plugs. To test each glow plug individually you are going to need to remove the Intercooler. This is not a major job as it is basically only an air duct.

Removing The Intercooler

Remove the four bolts holding the top cover on.....this will give easier access to the bolts below. Be careful lifting the cover off as there is a foam sealing strip between the two halves.

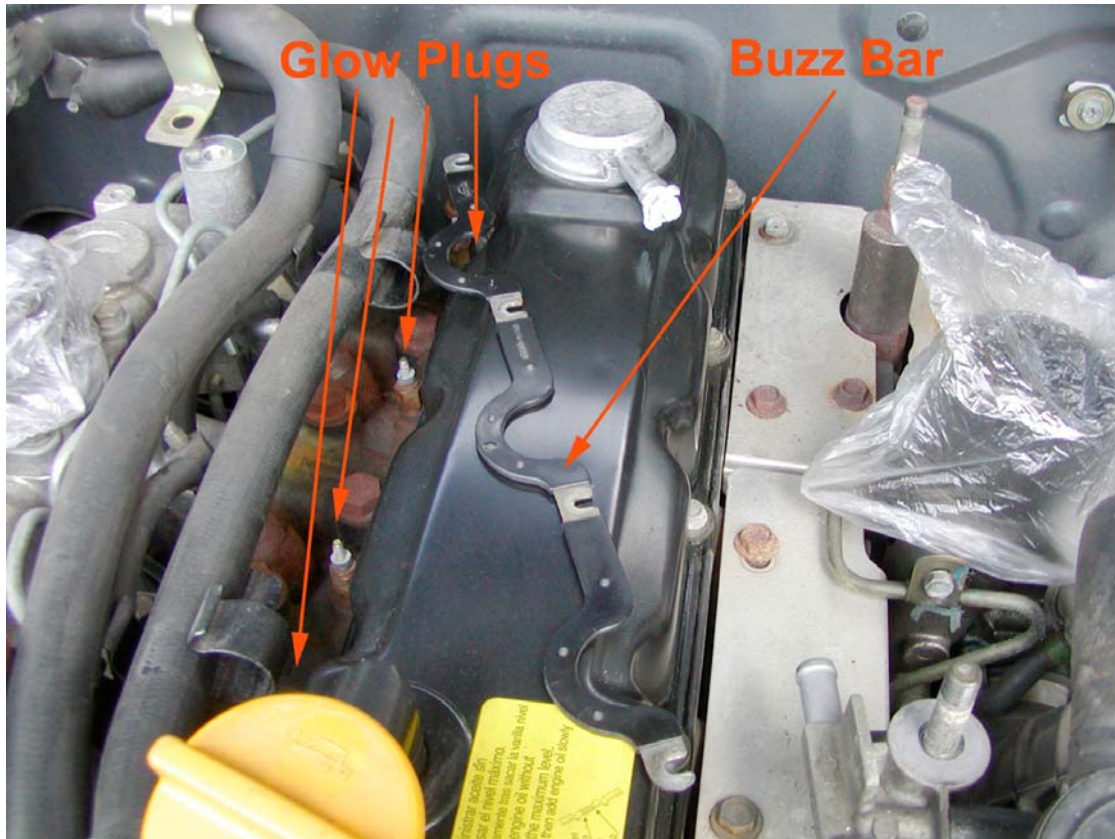


Slacken off one of the clips on each of the hoses. The intercooler will the lift off quiet easily (don't worry it goes back on easily too).



NOTE : Now cover the two holes with plastic bags otherwise you will be struck by Muphey's Law and drop something into the turbo or inlet manifold.

The four Glow Plugs are inter-linked by a metal buzz bar. Remove the four tiny nuts and washers from each glow plug and lift off the buzz bar. Take this opportunity to run one of those kitchen scouring pads over the threads, nuts, washers, buzz bar and wire connection surfaces.



Testing

Connect a multimeter between an earth connection and each glow plug in turn. Expect a reading of 0.5 – 1.0 ohms from each glow plug. The important thing is they are all the same. If one is significantly different from the rest then it is probably faulty and needs replacing.



Reassembly

Take this opportunity to run the garden hose through the fins of the intercooler. Put some copper slip on the glow plug connections and the intercooler nuts and bolts and reassemble in reverse order.

Written and Produced by
Wilf