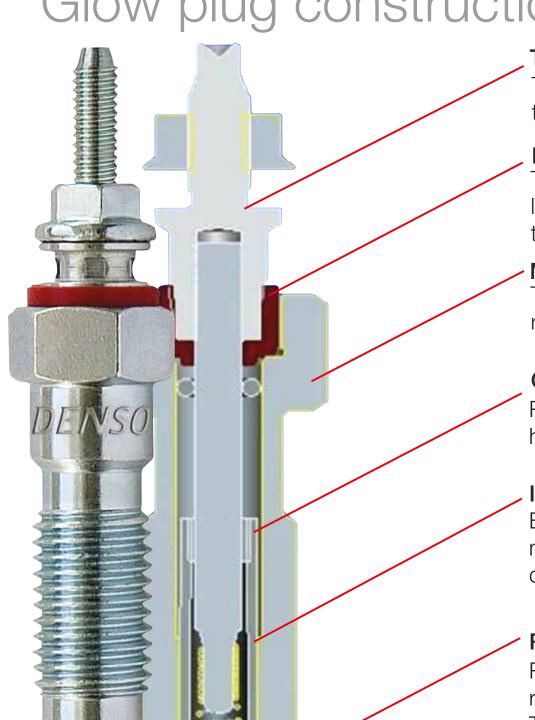
# **DENSO**

# DENSO glow plugs

Discover DENSO technology



# Glow plug construction



## TERMINAL AND FLANGE NUT

Terminal and metal shell are galvanized to protect the connection against corrosion

### **INSULATOR**

The insulating spacer is very durable, has excellent insulating properties and good heat conductivity qualities, which helps to prevent shorting

## **METAL SHELL**

The plug's shell is made of a special alloy ensuring thermal endurance.

## **GASKET**

Rubber gasket prevents air penetration and heating coil corrosion.

## **INSULATION POWDER**

Electric insulation of the heating coil consists of magnesium oxide that is also a good heat conductor.

## **REGULATING COIL**

Regulating coil is the glow plug temperature regulator. It is made of a PTC resistor (Positive Temperature Coefficient), that increases its resistance with the growth of temperature, thus the glow plug is self-regulated on the basis of temperature.

# **CONNECTION OF COILS**

Heating and regulating coils are connected by means of a laser joint that ensures unchanged position of the coils and stable resistance.

# **HEATING COIL**

Heating coil located on the tip of the plug ensures quick engine start, even at a very low ambient temperature. The coil is very efficient and can glow up to 6 minutes, enabling the engine to obtain appropriate temperature of operation fast, which, in turn, decreases vibrations and emission of toxic gasses.

# **PROBE TIP**

Narrowed tip ensuring better heating efficiency and excellent performance.

# Glow pluas tightening torques

Thursdains Recommended		
Thread size		torque
Glow plug thread	M8x1,00	8-10 Nm
	M9x1,00	8-10 Nm
	M10x1,00	10-12 Nm
	M10x1,25	10-12 Nm
	M12x1,25	15-20 Nm
	M14x1,25	20-25 Nm
	M18x1,50	30-40 Nm
Terminal thread	M4x0,7	1-1,5 Nm
	M5x0,8	3-4 Nm

- **1.** Use an appropriate tool for the plug and terminal.
- 2. During the replacement, make sure that oil, dirt or any other foreign from the removed Glow Plug do not penetrate into the combustion chamber.
- 3. Prior to assembly, clean the flange located on the engine and insert the new plug into threaded opening, maintaining coaxial position in relation to the opening.
- **4.** Make sure that the glow is positioned coaxially in relation to the opening and tighten the plug by hand.
- 5. Tighten the plug with a torque wrench, using appropriate value from the table.

# Visual inspection of glow plugs

## **Enlarged** probe

**Damaged** 

or missing

probe tip

- > Excessive voltage (e.g. 12V Glow Plug in a 24V system or
- > Failure of alternator and regulator. > Dampness during storage.

### Solution:

Cause:

Solution:

> Check on-board and Glow Plug Voltage.

> Direction or regularity of fuel jet incorrect

> Sealing fault causing spraying position error.

> Check the ignition unit is correctly installed.

> Check charging system.

> Failure of ignition unit

> Check quality of storage condition.

# Broken probe

- Solution: > Check contact on Glow Plugs regulator.
  - > Check on-board and Glow Plug Voltage. > Check charging system voltage.

> Failure of alternator and regulator.

vice versa).



**Swollen** 

ring on the

probe tip

Holes in

melting

next to

body of

**Glow Plug** 

probe/cracks/

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

Solution:

Cause:

- > Check piston clearance in engine cylinders.
- > Check oil consumption. > Check turbocharger seals.

> Failure of ignition unit.

incorrectly.

carbon fouling.

carbon fouling.

Solution:

> Check the crankcase ventilation system.

> Direction of regularity of fuel jet incorrect.

> Function or timing fault in injection unit.

> Thread damage to opening of cylinder head.

> Check the ignition unit is properly installed.

> Check timing of injection pump and timing gear.

> Wrong spraying position caused by faulty sealing.

> Glow Plug insufficiently tightened causing plug to sit

> Check you are using the correct ignition unit for the ve-

> Check the Glow Plug installation for thread damage/

> Check the opening of cylinder head for thread damage/

# > Check you are using the correct ignition unit for the ve-> Check the Glow Plug installation point for carbon de-

### **Deformed** probe

> Failure of ignition unit.

Cause:

- **(overheating)** > Direction of regularity of fuel jet incorrect.
  - > Wrong spraying position caused by faulty sealing. > Excessive glowing/voltage (e.g. 24V Glow Plug in a 12V
  - system or vice versa.
  - > Failure of alternator and regulator. > Function or timing fault in injection unit.

# Solution:

- > Check the ignition unit is correctly installed. > Check the ignition unit works correctly.
- > Check you are using the correct ignition unit for the vehicle model.
- > Check the Glow Plug installation point for carbon depos-
- > Check contacts on glow Plug regulator.
- > Check on-board and Glow-Plug voltage. > Check charging system voltage.
- > Check fuel injection timing.

# Carbon deposits between

probe and

Plug

**Probe** 

touching

glow plug

body of

# Cause:

Cause:

Solution:

> Over-tightened torque.

damage/carbon fouling.

> Check Glow Plug torque.

> Wrong tool used.

- > Failure of ignition unit.
- > Direction or regularity of fuel jet incorrect.
- > Wrong spraying position caused by faulty sealing. **body of Glow** > Injection pump operation/timing failure.

### Solution: > Check you are using the correct ignition unit for the vehicle

- model.
- > Check the ignition unit is correctly installed.
- > Check the Glow Plug installation point for carbon deposits.

> Thread damage to opening of cylinder head.

> Check the opening of the cylinder head for thread

- > Check the opening of cylinder head for thread
- damage/carbon fouling.
- > Check timing of injection pump.

### Missing probe

- > Ignition unit failure.
- > Glow Plug insufficiently tightened causing plug to sit incorrectly.
- > Direction of regularity of fuel jet incorrect.
- > Wrong spraying position caused by faulty sealing.
- > Damaged injectors. > Function of timing fault in injection unit.
- > Thread damage to opening of cylinder head. Solution:
- > Check you are using the correct ignition unit for the vehicle model.
- > Check the ignition unit is correctly installed.
- > Check the Glow Plug installation point for thread
- damage/ carbon fouling.
- > Check timing of injection pump. > Scheck the opening of cylinder head for thread
- damage/carbon fouling.

> Over-tightened torque.

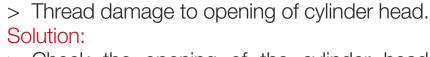
> Wrong tool used.

Cause:

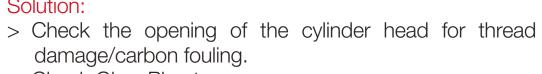
# Broken /bent











> Check Glow Plug torque.



