GE Power

# Service Bulletin

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Engine type **6 and 9**

Subject **Denso 518 spark plug**
**Version update**

SB-109 | July 25, 2017

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The Service Bulletin SB-109 describes a version update of the Denso 518 spark plug (D518 for short) used in Types 6 and 9 engines.

## AFFECTED ENGINES / SCOPE OF THIS BULLETIN

All Type 6 and 9 engines where the D518 spark plug is used. Details of this can be found in the Inspection and Maintenance Instruction IW 0309 M0 "Spark plugs" and the Technical Instruction TA 1530-0191 "Denso 301, 518 spark plugs".

## DESCRIPTION OF THE CONTENT / PURPOSE OF THIS BULLETIN

Elevated temperatures have been observed in the combustion chambers of Types 6 and 9 engines under certain operating conditions. This can cause the temperatures at the spark plug electrodes to become too high. To increase the service life of the spark plugs, noble metals are applied to the centre and earth electrodes. If thermal conditions are too hot these metals can melt, which adversely affects the service life of the spark plug. This can result in short-circuits at the electrodes (globule formation) and reduced spark-plug voltage. This Bulletin describes the version update of the D518 spark plug which drastically reduces the risk of so-called globule formation.

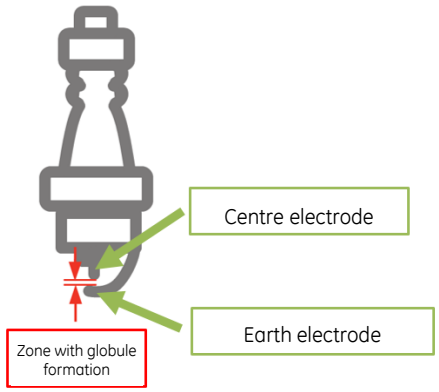


**Figure 01:** Spark plug with globule formation

## PROBLEM DETECTION

The first thing the operator should do is have a look at the DIA.NE control panel. Under full load, the spark-plug voltage should be in the range above 9kV. Under normal conditions the spark-plug voltage increases during the service life of the spark plug. In this case the noble metal on the spark plug electrode burns away, the gap between the earth and centre electrode becomes greater and the spark plug needs a higher ignition voltage.

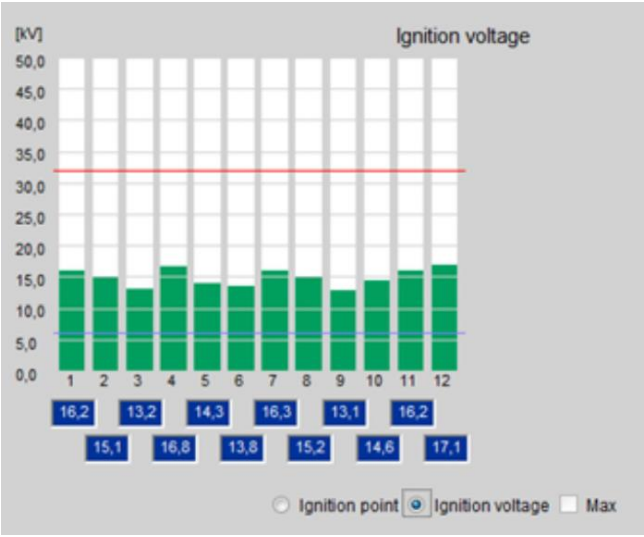


**Figure 02:** Spark-plug voltage (normal operation)

When globule formation occurs, melted metal forms a globule on the surface of the electrode. This reduces the gap between the earth and centre electrode. Instead of increasing, the ignition voltage drops. In the default setting the engine operator is given a warning (*Spark-plug voltage too low 3547*) when the spark-plug voltage at one of the cylinders is less than 9kV.

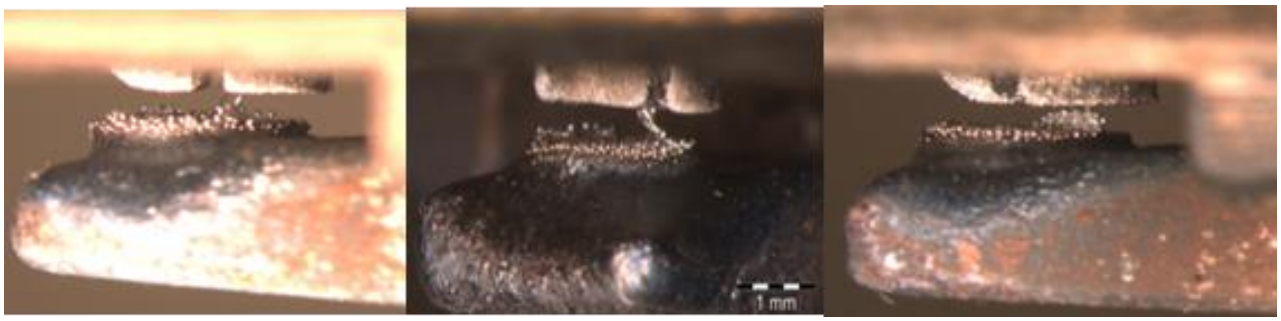


**Figure 03:** Globule formation on the electrode surface between centre and earth electrode (fault)

## REQUIRED ACTIONS

The material/noble metal for the earth electrode of the D518 has been optimised to counter this. The name and part number of the improved spark plug remain unchanged. The change in this noble metal on the earth electrode of the D518 is not discernible to the naked eye. The only way of telling whether a plug is the further-developed version is to read the batch number on the plug. **As from batch number 4U21R, D518 plugs have the further-developed material/noble metal.** In the event of a fault, existing D518 spark plugs can be simply replaced by the version update of the D518 without have to be changed on all cylinders. All the engine settings remain the same and should not be changed. If the ignition voltage is within the normal range and is not in the critical area under 9kV, engine operation can be continued with the existing D518 spark plugs.

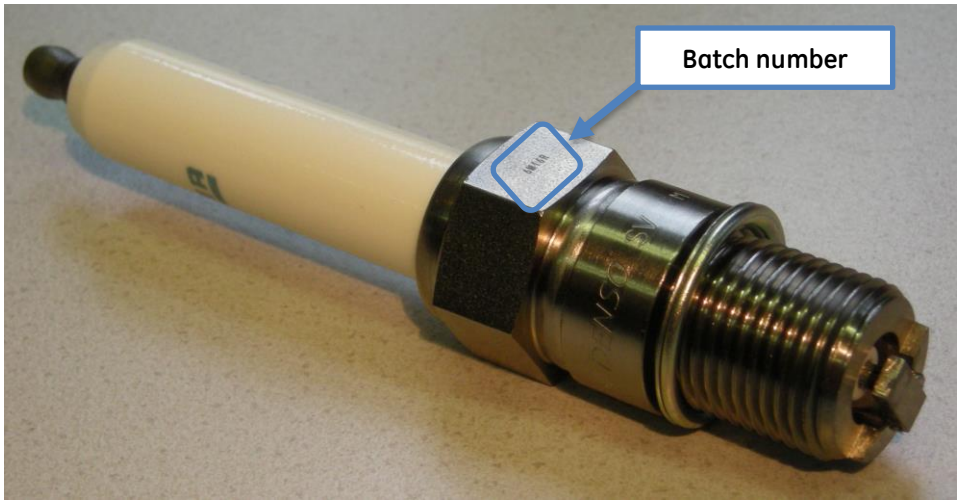


**Figure 04:** Position of the batch number

## RELEVANT DOCUMENTS

When working on GE Jenbacher modules, all applicable local regulations must of course be observed in addition to our documentation. We would particularly like to emphasise observation of the following documents in connection with this Service Bulletin:

- Technical Instruction TA 1100-0111: General conditions – Operation & maintenance
- Technical Instruction TA 1530-0191: Denso 301, 518 spark plugs
- Technical Instruction TA 2300-0005: Safety regulations
- Inspection and Maintenance Instruction IW 0309 M0: Spark plugs

## REVISION CODE

| INDEX | DATE | DESCRIPTION / REVISION SUMMARY |
|---|---|---|
| 01 | Jul. 25, 2017 | First version of this document |

**Table 04:** Revision history