

Vehicle Analysis Log: Evaluating Over-Revving Events (Boxster/Cayman/Carrera) (6/09)

Vehicle Type: **Boxster (986)/Boxster S (986)
911 Carrera (996)/911 Carrera 4 (996)
Model year 1997 to 2004**

Vehicle Type: **Boxster (987)/Boxster S (987)/Cayman/Cayman S
911 Carrera (997)/911 Carrera S (997)
Model year 2005 to 2008**

Vehicle Type: **Boxster (987)/Boxster S (987)/Cayman/Cayman S
911 Carrera (997)/911 Carrera S (997)
Model year as of 2009**

Concerns: **Evaluating overspeed events using the Vehicle Analysis Log** (referred to below as "VAL").

Situation: **Damaged unit parts due to high engine speed.**

The information below is intended to help you to evaluate engine damage, which may occur as a result of one or more overspeed events. Using the values entered in the VAL, you can also evaluate the assignment of "**Porsche Approved Warranties**" better and check entitlement for processing repairs under warranty and goodwill, for example.

Engines are designed to operate at a maximum permitted speed. This engine speed is not exceeded when the vehicle is driven normally. However, **driving and operating problems** (e.g. "changing to the wrong gear" on vehicles with manual transmission) or **manipulation** (e.g. tuning) can cause the maximum permitted engine speed to be exceeded when the vehicle is driven.

Overspeed events are stored in the DME control unit. The following values are also recorded:

- **Number of ignition attempts** in each overspeed range ¹, **and**,
- Status of the **hourmeter** during the **last** overspeed event ².

¹ Overspeed range = Defined rev ranges with classification of expected engine damage, e.g. engine damage possible, ... probable, ... very probable, engine damage has generally occurred; see section ⇒ 'Rev ranges'.

² For technical reasons, overspeed events are entered in a preset time interval. As a result, there may be entries in a higher rev range (e.g. range 2), while no entries are stored in the lower range.

Typical **faults and symptoms** as a result of overspeed events may include the following:

- Damaged valves and/or pistons (impact marks on the valve, valve impressions on the piston, valve bent).

- Cylinder liner damage (even "piston seizure").
- Damaged or displaced connecting rod bearings.
- Loosened or loose fastening screw(s) on the crankshaft pulley.
- Loosened or loose fastening screw(s) on the camshaft gear.
- Loosened or loose connecting rod bolts.
- Cracked timing chain(s).
- Changed timing.
- Irreparably damaged clutch elements (pressure plate and/or drive plate).
- Vibrations and/or engine imbalance due to irreparably damaged clutch elements.
- Vibrations around the transmission.
- Defective synchronization.



Information

If such faults or symptoms are present together with engine damage, the **VAL that was created must be checked for overspeed entries**.

If overspeed entries are found and if the **difference between the current hourmeter and the status when the last overspeed event was recorded is less than 50 operating hours**, there is a **high probability that the damage was caused by overspeed event(s)**.

The value "50 operating hours" should be seen as a guide. The possibility of engine damage occurring much later due to previous overspeed event(s) cannot be ruled out.

RPM ranges -
986 + 996:

Create the **VAL before deleting the fault memory**. Overspeed events are documented as follows in the VAL:

RPM range 1: $7,200^{-1}$... to $7,900^{-1}$

⇒ Maximum permitted engine rpm exceeded; engine damage **possible**.

RPM range 2: over $7,900^{-1}$

⇒ Maximum permitted engine rpm exceeded; engine damage **probable**.



Information

Before starting engine repairs or granting a pre-owned car warranty:

In the event of overspeed events in **range 2**, we recommend that you contact the Technical Hotline before starting repairs or granting a pre-owned car warranty in order to find out how to proceed and verify warranty coverage.

RPM ranges
987 + 997:

Create the **VAL before deleting the fault memory**. Overspeed events are documented as follows in the VAL:

RPM range 1: $7,200^{-1}$... to $7,500^{-1}$

⇒ Maximum permitted engine rpm exceeded; engine damage **possible**.

RPM range 2: $7,500^{-1}$... to $7,700^{-1}$

⇒ Maximum permitted engine rpm exceeded; engine damage **possible**.

RPM range 3: $7,700^{-1}$... to $7,900^{-1}$

⇒ Maximum permitted engine rpm exceeded; engine damage **possible**.

RPM range 4: 7,900⁻¹ ... to 8,400⁻¹

⇒ Maximum permitted engine rpm **clearly** exceeded; engine damage **probable**.

RPM range 5: 8,400⁻¹ ... to 9,500⁻¹

⇒ Maximum permitted engine rpm **very clearly** exceeded; engine damage **very probable**.

RPM range 6: over 9,500⁻¹

⇒ **Engine damage has generally occurred.**



Information

Before starting engine repairs or granting a pre-owned car warranty:

In the event of overspeed events in **range 4 – 6**, we recommend that you contact the Technical Hotline before starting repairs or granting a pre-owned car warranty in order to find out how to proceed and verify warranty coverage

RPM ranges
987/2 +
997/2:

Create the **VAL before deleting the fault memory**. Overspeed events are documented as follows in the VAL:

RPM range 1: 7,500⁻¹ ... to 7,700⁻¹

⇒ Maximum permitted engine rpm exceeded; engine damage **possible**.

RPM range 2: 7,700⁻¹ ... to 7,900⁻¹

⇒ Maximum permitted engine rpm exceeded; engine damage **possible**.

RPM range 3: 7,900⁻¹ ... to 8,100⁻¹

⇒ Maximum permitted engine rpm exceeded; engine damage **possible**.

RPM range 4: 8,100⁻¹ ... to 8,400⁻¹

⇒ Maximum permitted engine rpm **clearly** exceeded; engine damage **probable**.

RPM range 5: 8,400⁻¹ ... to 8,900⁻¹

⇒ Maximum permitted engine rpm **very clearly** exceeded; engine damage **very probable**.

RPM range 6: over 8,900⁻¹

⇒ **Engine damage has generally occurred.**



Information

Before starting engine repairs or granting a pre-owned car warranty:

In the event of overspeed events in **range 4 – 6**, we recommend that you contact the Technical Hotline before starting repairs or granting a pre-owned car warranty in order to find out how to proceed and verify warranty coverage

References: ⇒ *Workshop Manual '03350003 Creating Vehicle Analysis Log (VAL)'*

→ "After Sales News 11/2007" and "Porsche Aktuell": PIWIS Tester: Function for returning Vehicle Analysis Logs (VALs)

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Service
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Technical Information

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