

SI B11 02 08

Engine October 2010

Technical Service

This Service Information bulletin supersedes SI B11 02 08 dated August 2010.

designates changes to this revision

SUBJECT

Power Reduction, FC 2A82 Intake VANOS and/or FC 2A87 Exhaust VANOS Camshaft Faults are Stored in DME

MODEL

E82 and E88 (1 Series) with N51, N52K and N54 engines produced from 1/2008

E90 and E91 (3 Series) with N52 engine produced from 3/2005 through 6/2006

E90, E91, E92 and E93 (3 Series) with N51, N52K and N54 engines produced from 7/2006

E85 and E86 (Z4) with N52 engine produced from 1/2006

E83 (X3) with N52K engine produced from 9/2006

E60 and E61 (5 Series) with N52, N52K and N54 engines produced from 3/2005

E70 (X5) with N52K engine produced from 10/2006

E71 (X6) with N54 engine produced from 1/2008

SITUATION

The "Service Engine Soon" (MIL) lamp is illuminated and a power reduction is clearly perceptible. This situation can occur after driving for some time with the engine already at full operating temperature. If the ignition is cycled, the engine then usually performs normally.

The following faults are stored in the DME:

2A82 VANOS intake – stiff; jammed mechanically

2A87 VANOS exhaust – stiff; jammed mechanically

3100 Boost-pressure control, deactivation – boost-pressure buildup prohibited (N54 only)

CAUSE

The VANOS faults can be caused by an insufficient oil pressure supply to the inlet VANOS adjustment unit. To effectively move the camshafts to the target positions in the specified time and under all engine conditions, sufficient oil pressure supply to the VANOS control pistons must always be available. When the engine operation requires that the VANOS quickly advance or retard the intake or exhaust camshaft, fault 2A82 or 2A87 may be set if the camshaft is "late", or does not reach the target position. In this situation, engine power may be reduced and a check control message is displayed. The consequential fault 3100 can also be set in the DME fault memory as well.

PROCEDURE

Perform all applicable test plans for the faults stored. A mechanical restriction or electrical failure of the VANOS solenoid and/or the electrical circuit can cause insufficient oil supply to the VANOS assemblies as well. If the results of the test plans are inconclusive then proceed to step 2.

The oil filter cap insert may have been inadvertently removed during the vehicle's last oil service. If this insert is not

installed, it will result in non-filtered engine oil being supplied to the engine, thus possibly clogging or damaging the VANOS solenoids.

Replace both VANOS solenoids and change the engine oil and filter. Drive the vehicle to verify effectiveness. If this repair is inconclusive and the fault returns, continue to step 4.

If the oil filter cap is found intact, it is possible that the camshaft hook ring seals (3) have worn a groove into the camshaft bearing ledge (1), causing a drop in oil supply to the VANOS unit.

Camshaft bearing ledge

Intake camshaft

Hook ring seals

Note the deep grooves worn into the intake camshaft bearing ledge by the camshaft hook ring seals.

Acceptable camshaft bearing ledge – minor wear marks from the rotation of the camshaft are normal.

If the oil filter cap insert is found to be missing, then the entire oil filter housing cap must be replaced (refer to the EPC). If excessive wear to the camshaft bearing ledge is found, it is only necessary to replace the camshaft hook ring seals and the affected camshaft bearing ledge.



Tech Tip: BMW's Power Reduction and Vanos Faults Are Stored In DME

January 31, 2012

Affected models:

E82 and E88 (1 Series) with N51, N52K and K54 engines produced from January 2008

E90 and E91 (3 Series) with N52 engine produced from March 2005 through June 2006

E90, E91, E92 and E93 (3 Series) with N51, N52K and N54 engines produced from July 2006

E85 and E86 (Z4) with N52 engine produced from January 2006

E83 (X3) with N52K engine produced from September 2006

E60 and E61 (5 Series) with N52, N52K and N54 engines produced from March 2005

E70 (X5) with N52K engine produced from October 2006

E71 (X6) with N54 engine produced from January 2008.

The "Service Engine Soon" (MIL) lamp is illuminated and a power reduction is clearly perceptible. This situation can occur after driving for some time with the engine already at full operating temperature. If the ignition is cycled, the engine then usually performs normally.

The following faults are stored in the DME:

- 2A82 VANOS intake – stiff, jammed mechanically
- 2A87 VANOS exhaust – stiff, jammed mechanically

- 3100 Boost-pressure control, deactivation – boost-pressure buildup prohibited (N54 only).

The VANOS faults can be caused by an insufficient oil pressure supply to the inlet VANOS adjustment unit. To effectively move the camshafts to the target positions in the specified time and under all engine conditions, sufficient oil pressure supply to the VANOS control pistons must always be available.

When the engine operation requires that the VANOS quickly advance or retard the intake or exhaust camshaft, fault 2A82 or 2A87 may be set if the camshaft is “late,” or does not reach the target position. In this situation, engine power may be reduced and a check control message is displayed. The consequential fault 3100 can be set in the DME fault memory as well.

Service Procedure:

1. Perform all applicable test plans completely for the faults stored. A mechanical restriction or electrical failure of the VANOS solenoid and/or the electrical circuit can cause insufficient oil supply to the VANOS assemblies as well. If the completed test plans results are inconclusive, then proceed to step 2. See **Fig. 1**.

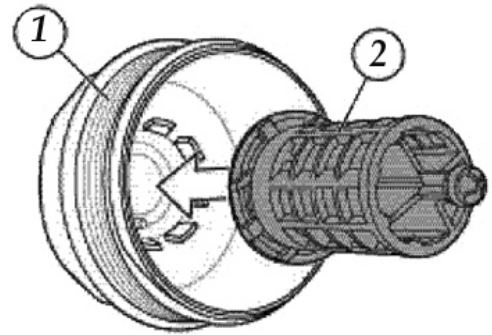


Fig. 1

2. The oil filter cap insert may have been inadvertently removed during the vehicle’s last oil service. If this insert is not installed, it will result in non-filtered engine oil being supplied to the engine, thus possibly clogging or damaging the VANOS solenoids.

If the oil filter cap insert is found to be missing, the entire oil filter housing cap must be replaced (refer to the EPC).

Note: Repairs related to step 2 are not considered a defect in materials or workmanship.

3. Replace both VANOS solenoids (P/N 11 36 7 585 425), change the engine oil and filter (P/N 11 42 7 566 327) and reset the service data only when applicable, as outlined in the Warranty Information section. Drive the vehicle to verify effectiveness.

If excessive wear to the camshaft bearing ledge is found, it is only necessary to replace the camshaft hook ring seals and the affected camshaft bearing ledge. N51, N52 and N52K intake camshaft bearing ledges and hook ring seals cannot be replaced separately. Cylinder head replacement requires a TeileClearing PuMA case.

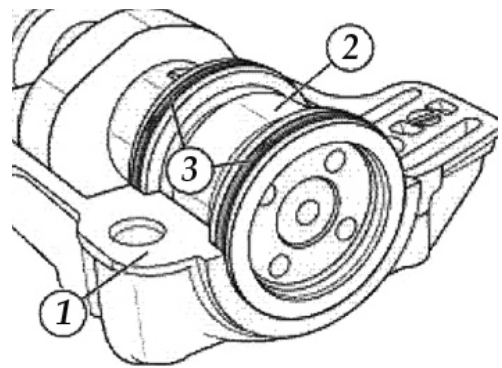
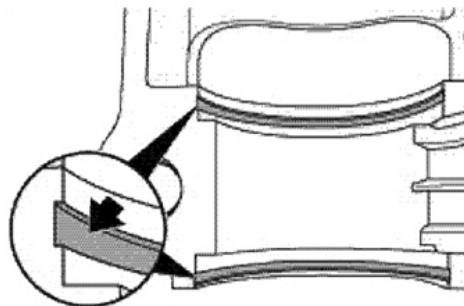


Fig. 2

Camshaft Bearing Ledge Wear Assessment:

While performing the test plan for the VANOS faults stored (ABL-DIT-B1214_NGNWA or E), the inspection of the camshaft hook ring seals is advised.



Figs. 2, 3 and 4 are illustrations of worn *Fig. 3*

camshaft bearing ledges and the acceptable wear of the camshaft bearing ledge.

Note the deep grooves worn into the camshaft bearing ledge by the camshaft hook ring seals in **Fig. 3**. The camshaft bearing ledge is worn.

Fig. 4 shows acceptable camshaft bearing ledge — minor gray wear marks from the rotation of the camshaft are normal. If deep grooves are not apparent, the camshaft bearing ledge is acceptable and should not be replaced.

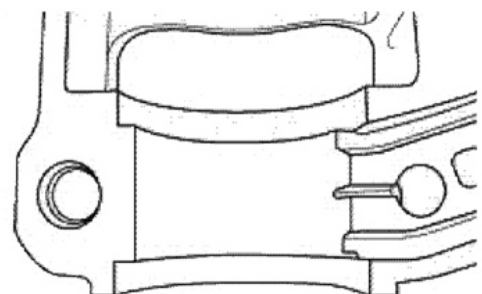


Fig. 4