SB-10037065-7220

SI M11 02 07
Engine

September 2012
Technical Service

This Service Information bulletin supersedes SI M11 02 07 **dated May 2012.**

NEW designates changes to this revision

SUBJECT
Rattle Noise from Engine

MODEL
R55 Cooper S with N14 engine

R56 Cooper S with N14 engine

NEW R57 Cooper S with N14 engine

From start of production up May 4, 2009

SITUATION
The customer complains of a rattle noise from the engine.

- During cold start-up: most often at the 1,600-1,800 rpm range, or in some instances (elongated timing chain) from the idle speed up to 2,000 rpm.
- The rattle noise occurs more frequently when driving short distances.
- The noise is more prevalent when the outside temperature is approximately 15 Celsius (59 Fahrenheit) or below.

CAUSE
The complaint can be caused by one or both of the following reasons:

- Insufficient tension of the timing chain
- The chain tensioner has not been bled sufficiently.

PROCEDURE
Work through the following procedure in order to eliminate other possible causes:

1. If a fault is stored in the DME memory (e.g., misfiring, VANOS, etc.), then work through all relevant test plans first.

   Note: When the ISTA system message displays :

   Battery voltage only “XX.XX” V. Please connect charger.

   Please note the displayed battery voltage reading in the repair order comments section.

2. A one-off short shrill will be heard within the first two seconds of engine operation. This is an inherent noise caused by the first regulation cycle of the engine oil pump. This is normal operation and no parts should be replaced.

3. If the noise appears to be coming from the valve cover or the vacuum pump area, refer to SI M11 02 08. To verify the source of the noise, disconnect the vacuum hose from the mechanical vacuum pump to eliminate the knocking noise. This is not a failure of the mechanical vacuum pump; do not replace any parts.

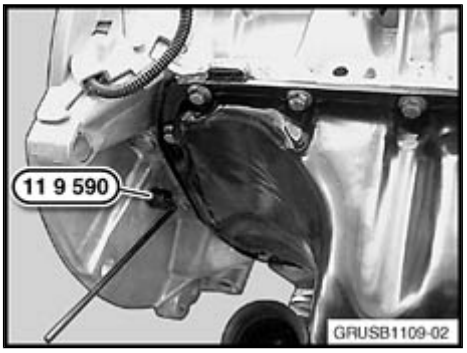
4. Ensure that the noise is not created or eliminated by depressing the clutch pedal, if equipped.

5. Disconnect the electrical connector from the tank ventilation valve. If the noise disappears when the connector is removed, reconnect to verify whether the noise returns. If the noise returns, replace the tank ventilation valve.

If all of the steps above are unsuccessful in eliminating the noise, please proceed to step 6.

6. Remove the right-hand wheel arch trim to access the crankshaft central bolt.

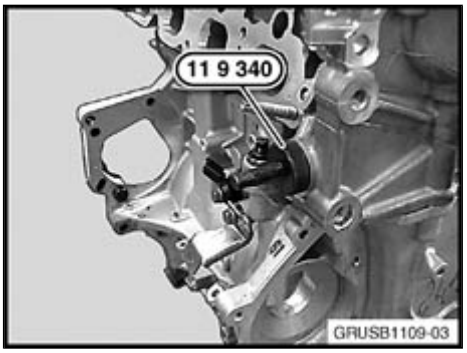
7. Disconnect the battery and remove the ignition coils and the spark plugs. Turn the engine in the clockwise direction by hand to move the flywheel to approximately 90° before TDC. Rotating the engine counterclockwise may cause an incorrect measurement.



8. Install the locating pin (Special Tool 11 9 590) to lock the position of the engine.

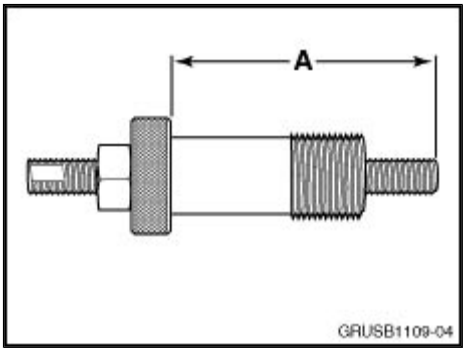
Note:
Do not remove the cylinder head cover! Do not install camshaft locking tool during this procedure. To achieve an accurate measurement, the camshafts need to rotate.

9. Remove the chain tensioner and collect the residual oil with a shop towel.



10. Fit the chain tensioner (Special Tool 11 9 340) without the seal ring and with the lock nut loose. Pretension the chain tensioner with Special Tool 00 9 250 to **0.6 Nm**. Finger-tighten the lock nut on Special Tool 11 9 340.

Note:
Gently turn Special Tool 00 9 250 while applying the torque. Quickly rotating the tool will provide an inaccurate measurement result.



11. Remove the chain tensioner Special Tool 11 9 340 from the engine, with the lock nut still tight. Measure the distance (A), as described in the illustration.

12. NEW If distance A is less than 72 mm (and the noise can only be reproduced between 1,600-1,800 rpm), only replace the chain tensioner with P/N 11 31 7 607 551.

    Discard the seal ring that was originally supplied with the new timing chain tensioner. Refer to Repair Instruction REP 11 31 090, “Installing and removing/replacing chain tensioner piston N14.”

13. NEW If distance A is 72 mm or greater (and the noise is reproducible both at the 1,600-1,800 rpm range as well as at idle speed when cold), replace the components in the list below (refer to parts list B):

    - Guide rail
    - Tensioner rail
    - Sliding rail
    - Sprocket on the crankshaft
    - Bearing bolts for the tensioner and guide rails

If you are uncertain regarding repair attempts already made, each chain tensioner part number is stamped on the outer sleeve. It must be removed from the engine in order to read the part number.

NEW Install timing chain tensioner P/N 11 31 7 597 895 only!

Note: P/N 11 31 7 607 551, Timing chain tensioner should not be installed with a new timing chain.

Refer to Repair Instruction REP 11 31 051 (Replacing timing chain N14).

Refer to the EPC for additional parts required, i.e., gaskets, seals, etc.

The incorrect crankshaft central bolt tightening torque is stated in the current release of ISTA. Disregard the torque specified in the current Repair Instructions when performing repairs that include replacing the crankshaft central bolt, P/N 11 21 7 585 184. The correct torque specification is described below.

11 21 Crankshaft and Bearings

1 AZ	Type	Thread	Tightening	Measure
Torsion	N14	M14 x 1.5 x 74	specification	
Dampener (hub)			Replace screws	
to crankshaft				
(central bolt)			Lightly oil screws	
			and threads	
			Jointing torque	50 Nm
			Torque angle	180°

Do not replace the hydraulic valve lifters (HVA), intake camshaft VANOS adjustment unit, or the exhaust camshaft sprocket for this type of noise. It is NOT necessary to obtain a Part Replacement Authorization (TeileClearing) for this specific issue. Refer to the Warranty section of this bulletin for more details.

14. NEW After completion of the repairs, reprogram the complete vehicle using the current ISTA/P version (ISTA/P 2.47.1 or higher; target integration level R056-12-07-503 or higher). The new DME calibration software includes optimized injection timing strategy, as well as an increased operating pressure, improving the injector's operation.

    Note that ISTA/P will automatically reprogram and code all programmable control modules that do not have the latest software.

    For information on programming and coding with ISTA/P, refer to Centernet / Aftersales Portal / Service / Workshop Technology / Vehicle Programming.

NEW PARTS INFORMATION

Part Number	Description	Quantity
Parts List A		
11 31 7 607 551	Chain tensioner	1
Parts List B		
11 31 7 597 895	Chain tensioner	1
11 31 7 534 784	Timing chain	1
11 31 7 568 241	Guide rail	1
11 31 7 534 833	Tensioner rail	1
11 31 7 534 771	Bearing bolt	1
11 31 7 534 768	Bearing bolt	2
11 31 7 550 461	Bearing bolt gasket ring A14x21	1

11 31 7 546 697	Slide rail	1
11 21 7 534 654	Crankshaft sprocket	1
11 21 7 585 184	Bolt	1

Refer to the EPC for additional gaskets, seals and bolts, as described in Repair Instruction REP 11 31 051.

NEW **WARRANTY INFORMATION**

Covered under the terms of the MINI New Passenger Car Limited Warranty or the MINI NEXT Certified Pre-Owned MINI Program.

Defect Code **Refer to KSD2** **See "Other Repairs" below**

A. Repairs Performed Based on the Completion of Steps 1 through 5

Labor Operation:	**Labor Allowance:**	**Description:**
00 00 006	Refer to KSD2	Performing vehicle test
and if necessary, also		
61 21 528	Refer to KSD2	Charging battery
and		
11 99 000	4 FRU	Work time to perform repair procedure steps 2-5.

Other Repairs

If performing Procedure steps 1 through 5 results with **eligible and covered work**, claim this work with the applicable defect code and labor operations listed in KSD2.

Please follow any TeileClearing or Diagcode requirements that may apply to this additional work.

Labor operation code 00 00 006 is a main labor operation. If you are using a main labor code for another repair; use the plus code labor operation 00 00 556 instead.

Even though work time labor operation code 11 99 000 ends in "000"; it is not considered a Main labor operation.

B. Repairs Performed Based on the Completion of Steps 1 through 12 or 13

Defect Code	**11 31 04 39 00**	
Labor Operation:	**Labor Allowance:**	**Description:**
00 00 006	Refer to KSD2	Performing vehicle test
and if necessary, also		
61 21 528	Refer to KSD2	Charging battery

and		
11 99 000	10 FRU	Work time to perform Procedure steps 2 to 11.

Replace Piston for Timing Chain Tensioner (Parts List A)

11 31 590	Refer to KSD2	Replacing piston for timing chain tensioner (Parts list A)

or

Replace Timing Chain (Parts List B) and Programming/Encoding Control Units (as applicable)

11 31 555	Refer to KSD2	Replacing timing chain (Parts list B)
and		
61 00 710	Refer to KSD2	Programming/encoding control unit (s), without CAS
or		
61 00 720	Refer to KSD2	Programming/encoding control unit (s), with CAS

Labor operation code 00 00 006 is a main labor operation. If you are using a main labor code for another repair; use the plus code labor operation 00 00 556 instead.

Even though work time labor operation code 11 99 000 ends in “000”; it is not considered a Main labor operation.

Refer to KSD2 for the corresponding flat rate unit (FRU) allowance. Enter the Chassis Number, which consists of the last 7 digits of the Vehicle Identification Number (VIN). Click on the “Search” button, and then enter the applicable flat rate labor operation in the FR code field.

If a control module fails to program correctly or initializations are required, the additional work must be claimed with separate labor operations under the applicable defect code listed above; refer to KSD2.