

Engine makes intermittent knocking noise, ticking/crackling

Topic number	LI03.20-P-048278
Version	3
Design group	03.20 Crankshaft
Date	03-26-2013
Validity	Model series 211, 219 with OM 642 Model series 164, 251 with OM 642 Model series 203, 204, 209, 221, 461, 463 with OM 642
Reason for change	New part number for upper main bearing shell, bearing point 1
Reason for block	

Complaint:

The engine makes ticking/crackling noises at idle speed and at speeds up to approx. 1500 rpm.

Notes:

- The noise occurs after a mileage of approx. 20,000 km or after an oil change.
- Noise can be clearly heard in area of 1st crankshaft main bearing.
- Noise can no longer be heard when the poly-V belt is removed.
- It is essential to compare the noise of the complaint vehicle with the example sound file attached!
- Noise is irregular. Pulse-like crackling noise occurs at irregular intervals - compare with attachment.
- 20 pulses (ticking) which represent justifiable complaints can be heard in the attachment.

Attachments	
File	Designation
Tickern OM642_neu.mp3	Crackling noise, isolated ticking/crackling

Cause:

Run-in effect of 1st crankshaft main bearing.

Scope of test:

Remove/install poly-V belt.

- Run engine with poly-V-belt. Compare to attached reference noise file.
- Run engine without poly-V-belt and listen if the noise is still there.

Note:

If the ticking still occurs after the poly-V belt is removed, there is no defect at the main bearing shells of the 1st crankshaft main bearing. Proceed further to determine the cause.

If the ticking is gone after the poly-V belt is removed, there is a defect at the main bearing shells of the 1st crankshaft main bearing. Remove/install bearing shells of 1st crankshaft main bearing must be replaced.

Remedy:

Replacement of bearing shells of 1st crankshaft main bearing

Note:

Make sure that only the new/lead-free bearing shells are used. Observe the part number while the component is still packaged - there is no object number on the component! The old bearing shells look different from the new ones. To compare them, refer to the illustration in the attachment.

Procedure for replacement of bearing shells of 1st crankshaft main bearing, model series 211:

1. Remove belt pulley with vibration damper.
2. Determine bearing classification.

Note:

The main bearing shells exist in various type and tolerance classifications which are subdivided into different color codes. This means that the upper main bearing shell of a bearing may have a different color code from the lower main bearing shell. It is important to select the correct main bearing shell for the specific position - according to the defined specifications. For the positioning of the bearings: The bearing class information runs from left (1st main bearing) to right (2nd - 4th main bearings). Meaning of color codes (color index): G = yellow (54), R = red (56), B = blue (52), W = white (57), V = violet (58).

The tolerance class is determined based on the following specifications (see attachment "Bearing classification"):

- for the upper bearing shell on the cylinder crankcase,
- for the lower bearing shell on the front crankshaft end.

3. Disconnect battery ground line.
4. Remove underfloor soundproofing.
5. Remove automatic transmission.
6. Remove crankshaft drive plate.
7. Remove oil pan.
8. Remove oil pump.
9. Detach A/C compressor.

Note:

Detach A/C compressor from cylinder crankcase and tie up to one side with lines connected.

10. Remove crankshaft bearing cap of 1st crankshaft main bearing.

Note:

Do not remove the remaining main bearing caps.

Chain tensioner does not have to be removed.

11. Remove/install new bearing shells of 1st crankshaft main bearing.

Note: Using a soft tool (plastic wedge or brass strip approx. 4 mm thick), press out the main bearing shell from the side without the guide lug and pull out from the other side using the holes in the main bearing shell. Be careful not do damage or scratch the bearing surface of the crankshaft (see picture of brass strip in attachment).

Coat new bearing shells with engine oil and install. Make sure that the main bearing shell/guide lug is correctly engaged.

12. Install crankshaft bearing cap of 1st crankshaft main bearing.
13. Replace crankshaft radial sealing ring.
14. Reassemble the removed components in the reverse order.
15. Check oil level in automatic transmission.
16. Carry out a quick test after repair.
17. Clean engine.

For the repair scope "Replacement of main bearing shells of 1st crankshaft main bearing" refer to the operation numbers for the relevant model series. Refer to the respective valid repair instructions for the tightening torques.

Attachments	
File	Designation
Lagerklassifizierung.pdf	Information on classification of bearing shells of crankshaft main bearing on cylinder crankcase and on crankshaft journals.

Symptoms
Power generation / Engine noise / Ticking

Parts							
Part number	ES1	ES2	Designation	Quantity	Note	EPC	Other make part
A 642 033 19 01			Upper main bearing shell (in cylinder crankcase) for bearing points 2-4, see Figure (A)	1	Index by color code required	X	
A 642 033 08 02			Lower main bearing shell (in bearing cap), see Figure (B)	1	Index by color code required	X	
A 642 033 22 01			Upper main bearing shell (in cylinder crankcase) for bearing point 1, see Figure (A)	1	Index by color code required	X	

Attachments	
File	Designation
Neue Glyco Lagerschalen.jpg	Visible differences between installed crankshaft bearing shells and replacement crankshaft bearing shells (picture)
Messingstreifen.JPG	Brass strip for pressing out the main bearing shell

Validity		
Vehicle	Engine	Transmission

164.120	642	*
164.122	642	*
164.125	642	*
164.822	642	*
164.825	642	*
204.022	642.960	*
204.089	642.961	*
204.222	642.960	*
204.289	642.961	*
221.022	642.930	*
221.080	642.932	*
221.122	642.930	*
221.180	642.932	*
251.020	642	*
251.022	642	*
251.026	642	*
251.122	642	*
251.125	642	*
251.126	642	*
461.304	642	722
461.334	642	722
461.344	642	722
461.346	642	722
463.303	642.970	*
463.340	642.970	*
463.341	642.970	*
C (203)	642	*
CLK (209)	642	*
CLS (219)	642	*
E (211)	642	*