

Engine noise (rattling) after engine start

Topic number	LI05.10-N-057796
Version	3
Design group	05.10 Timing chain drive, toothed belt drive
Date	07-21-2016
Validity	ENGINE 651 in model 900, 906, 636, 639
Reason for change	Part numbers updated and operation number for "Test + work procedure B (camshaft sprockets are replaced)" adjusted
Reason for block	

Complaint:

Engine noise (rattling) after engine start.

Note:

The noises can be heard approx. 2-5 seconds after engine start. Rattling or knocking noises can be heard in the area of the chain drive.

Note:

The noise of the complaint must be compared with the reference sound sample in the "Sound" attachment!

Attachments	
File	Description
KTS OM651.MP3.mp3	Problem noise. Note: The area (6) shown in the video is to be checked acoustically for approx. 10 seconds.

Cause:

The timing chain may be stretched. The reason for this may be the chain tensioner.

Remedy:

1. Remove chain tensioner (AR05.10-D-7800WE, AR05.10-S-7800SJ).
2. Install measuring chain tensioner W 651 589 09 63 00 without sealing ring and tighten to 20 Nm.
3. Crank engine 2x and set 1st cylinder to ignition TDC. While doing so, determine the highest display value for the measuring chain tensioner throughout the entire procedure. This is generally found at ignition TDC for cylinder 1.
4. Evaluate the value read off the scale of the measuring chain tensioner:
Elongation of timing chain less than 84 mm: Perform work procedure A.
Elongation of timing chain greater than 84 mm: Perform work procedure B.

Work procedure A:

1. Install new chain tensioner (AR05.10-D-7800WE, AR05.10-S-7800SJ).

Work procedure B:

1. Replace timing chain (AR05.10-D-7601WE, AR05.10-S-7601SJ).

Note:

Depending on the degree of chain elongation, swirl marks may be found on the cylinder head. These are inconsequential and they do not justify a replacement of the cylinder head.

XENTRY TIPS

2. Check of camshaft sprockets.

Camshaft sprockets with the object number A 651 052 00 01 are to be replaced by A 651 052 00 00 (AR05.20-D-6992-08WE).

The camshafts must be removed in order to replace the camshaft sprockets.

- Model 639: AR05.20-S-6992SJ
- Model 906: AR05.20-D-6992WE

Camshaft sprockets with object number A 651 052 00 00 may only be replaced if they are seriously worn (pitting, broken tooth tips). An intact sprocket has a uniformly polished surface at the chain inlet; this is not grounds for replacement.

Note:

The object number is clearly visible on the camshaft sprockets (see picture in attachment).

As of production month 03/2012 the engines are fitted with the camshaft sprockets with object number A 651 052 00 00 as standard.

3. Install new chain tensioner (AR05.10-D-7800WE, AR05.10-S-7800SJ).

Note:

The measurements of the timing chain stretch must be recorded on the workshop order.

If the damaged parts are to be returned, the measurements must also be documented on the parts return note.

Attachments	
File	Description
01.jpg	Part number of camshaft sprocket.

Symptoms
Power generation / Engine noise / Chattering
Power generation / Engine noise / Clanking
Power generation / Engine noise / Rattling
Power generation / Engine noise / Clattering
Power generation / Engine noise / Pounding

Parts						
Part number	ES1	ES2	Designation	Quantity	Note	EPC
A 651 052 00 00			Camshaft sprocket	2	Improved steel wheels	X
A 651 050 08 00			Chain tensioner	1	Modified chain tensioner	X
A 000 993 82 76			Timing chain	1		X

Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note
			05131 36	Chain tensioner noise
05-7800	REMOVE/INSTALL CHAIN TENSIONER, REPLACE IF NECESSARY			Test + work procedure A
05-0000	CHECK LENGTH OF CHAIN (CHAIN TENSIONER REMOVED)			Test + work procedure A
05-0000	CHECK LENGTH OF CHAIN (CHAIN TENSIONER REMOVED)			"Test + work procedure B

XENTRY TIPS

				(camshaft sprockets are not replaced)"
01-5014	REMOVE/INSTALL/SEAL CYLINDER HEAD COVER (1)			"Test + work procedure B (camshaft sprockets are not replaced)"
08-7601	REPLACE TIMING CHAIN (CYLINDER HEAD COVER REMOVED)			"Test + work procedure B (camshaft sprockets are not replaced)"
05-0000	CHECK LENGTH OF CHAIN (CHAIN TENSIONER REMOVED)			"Test + work procedure B (camshaft sprockets are replaced)"
01-5014	REMOVE/INSTALL/SEAL CYLINDER HEAD COVER (1)			"Test + work procedure B (camshaft sprockets are replaced)"
05-0000	REPLACE TIMING CHAIN (CAMSHAFTS (ALL) REMOVED)			"Test + work procedure B (camshaft sprockets are replaced)"
05-6992	REMOVE/INSTALL CAMSHAFTS (ALL) (CYLINDER HEAD COVER REMOVED)			"Test + work procedure B (camshaft sprockets are replaced)"
05-0000	REMOVE/INSTALL CAMSHAFT SPROCKETS (ALL), REPLACE IF NECESSARY (TIMING CHAIN REMOVED)			"Test + work procedure B (camshaft sprockets are replaced)"

Attachments

01.jpg:

