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## Rattling noise after engine start for several seconds

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Topic number	LI05.10-P-056435
Version	1
Design group	05.10 Camshaft drive
Date	07-16-2013
Validity	Engine 276, engine 278, engine 157
Reason for change	

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**Complaint:**

Engine rattling noise after engine start for several seconds

Attachments	
File	Designation
Rasselgeräusch nach Motorstart.mp3	Rattling noise after engine start

**Cause:**

Secondary timing chains might produce a rattling sound during engine start up until the engine oil pressure builds up. Once there is sufficient oil pressure created in secondary chain tensioners, they provide operating tensions to timing chains and the rattling stops. No consequential damage is to be expected.

**Remedy:**

Install non-return valves (check valves) and replace left and right secondary chain tensioners as required. Install check valves by inserting them into the tensioner oil supply opening in the left and the right cylinder head. Correctly installed check valves and optimized secondary chain tensioners will minimize oil drainage from tensioners.

Order chain tensioners and check valves directly from parts with part numbers listed. Refer to the applicable engine number to install correct version of the secondary chain tensioner.

**Note:**

Verify correct number or a sub through EPC as the secondary chain tensioners might be updated and part numbers could change.

Install check valves based on information provided in this document and measurements of the oil supply opening diameter in cylinder heads. Refer to the attachments for instructions on how to measure the oil supply opening and how to install check valves.

**Note:**

Check valve installation special tool W276 589 00 33 00

**Engine 157:**

- 1) From engine number 157 9xx 60 009368 up to engine number 157 9xx 60 017984 install check valves and chain tensioners
- 2) From engine number 157 9xx 60 017985 up to engine number 157 9xx 60 022333 (December 2012) install check valves (optimized tensioners installed in this production range)

**Engine 2768:**

- 1) Up to engine number 276 8xx 30 000790 install check valves and chain tensioners
- 2) From engine number 276 8xx 30 000791 up to engine number 276 8xx 30 001281 install check valves only

**Engine 2769:**

- 1) Up to engine number 276 9xx 30 365996 install check valves and chain tensioners
- 2) From engine number 276 9xx 30 365997 up to engine number 276 9xx 30 406603 (February 2013) install check valves only (optimized tensioners installed in this production range)

**Engine 278:**

- 1) Up to engine number 278 9xx 30 073273 install check valves and chain tensioners
- 2) From engine number 278 9xx 30 073274 up to engine number 278 9xx 30 103675 (February 2013) install check valves only (optimized tensioners installed in this production range)

**Note:**

When performing repairs and only the check valves are supposed to be installed, the tensioners must still be checked according to WIS documentation. If optimized tensioner is found to be defective it must be replaced

**Note:**

Check valves were installed in the factory in the engines above the ranges provided above. In case of 157 engines either A 278 050 40 00 or A 278 050 33 00 check valves were installed. In engines 276 and 278 check valves A 278 050 33 00 were installed. It is important to measure the oil supply opening in cylinder heads to install correct check valve.

**Note:**

If the noise is still present after installation of check valves and correct tensioners or the engine is outside of the ranges provided, open a PTSS case and attach all information including the short test and sound file. The case will be forwarded to SE.

Attachments	
File	Designation
assembling of check valve.pdf	Instructions for installing check valves and measuring the bore opening

Symptoms
Power generation / Engine noise / Knocking/clacking
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	Other make part
A 276 050 25 00			M276 Left chain tensioner	1	Chain tensioner as of engine 276 9xx 30 129269	X	
A 276 050 26 00			M276 Right chain tensioner	1	Chain tensioner as of engine 276 9xx 30 129269	X	
A 278 050 40 00			Non-return valve (check valve)	2	Smaller oil supply bore - Refer to notes in Remedy	X	
A 278 050 15 00			M157 M278 left chain tensioner	1	Secondary chain tensioner from engine 278 9xx 30 035186 respectively 157 9xx 60 009367	X	
A 278 050 16 00			M157 M278 right chain tensioner	1	Secondary chain tensioner from engine 278 9xx 30 035186 respectively 157 9xx 60 009367	X	
A 278 050 33 00			Non-return valve (check valve)	2	Installed in factory. Only for cylinder heads with staged bore - larger outside diameter (8 mm)	X	
A 276 050 23 00			M276 Left chain tensioner	1	Chain tensioner up to engine 276 9xx 30 129268	X	
A 276 050 24 00			M276 Right chain tensioner	1	Chain tensioner up to engine 276 9xx 30 129268	X	
A 278 050 13 00			M157 M278 left chain tensioner	1	Secondary chain tensioner up to engine 278 9xx 30 035185 respectively 157 9xx 60 009366	X	
A 278 050 14 00			M157 M278 right chain tensioner	1	Secondary chain tensioner up to engine 278 9xx 30 035185 respectively 157 9xx 60 009366	X	