

Rattling noise after engine start for several seconds

Topic number	LI05.10-P-056435
Version	2
Design group	05.10 Timing chain drive, toothed belt drive
Date	03-21-2014
Validity	Engine 276, engine 278, engine 157 as follows: Engine 157: Up to engine 1579xx 60 022333 Engine 2768: Up to engine 2768xx 30 001280 Engine 2769: Up to engine 2769xx 30 406603 Engine 278: Up to engine 2789xx 30 103675
Reason for change	Validity included in the topic section
Reason for block	

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 001280 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. Otherwise, claims might be rejected by Warranty.

Note:

The installation of check valves for the stated complaint in the "Complaint section" does not reverse what might have been accomplished with the Service Campaign 2013010001. There two different reasons for performing the work in the campaign and in this LI TIPS document.

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	

Validity		
Vehicle	Engine	Transmission
*	276.958	*
*	276.955	*
*	276.956	*
*	276.954	*
*	276.957	*
*	276.950	*
*	276.952	*
*	278.922	*
*	278.920	*
*	278.928	*
*	278.932	*
*	278.927	*
*	157	*

Full model designation breakdown		
Vehicle	Engine	Transmission
166.055	276.955	722.906
166.057	276.955	722.906

166.058	276.955	722.906
166.073	278.928	722.909
166.073	278.928	725.031
166.073	278.928	725.032
166.074	157.982	722.905
166.074	157.982	722.931
166.872	278.928	722.909
166.872	278.928	725.031
166.872	278.928	725.032
166.872	278.928	725.033
166.873	278.928	722.909
166.873	278.928	725.031
166.873	278.928	725.032
166.873	278.928	725.033
166.874	157.982	722.905
166.874	157.982	722.931
172.457	276.956	722.906
204.055	276.957	722.906
204.057	276.957	722.906
204.080	276.957	722.960
204.088	276.957	722.960
204.257	276.957	722.906
204.357	276.957	722.906
204.388	276.957	722.960
204.957	276.957	722.906
204.988	276.957	722.960
204.990	276.957	722.960
207.355	276.957	722.906
207.359	276.957	722.906
207.373	278.922	722.909
207.388	276.957	722.960
207.455	276.957	722.906
207.459	276.957	722.906
207.473	278.922	722.909
212.055	276.952	722.906
212.059	276.952	722.906
212.073	278.922	722.909
212.073	278.922	725.011
212.073	278.922	725.032
212.074	157.981	722.931
212.074	157.981	722.965
212.075	157.981	722.931
212.076	157.981	722.971

212.080	276.952	722.960
212.088	276.952	722.960
212.091	278.922	722.967
212.091	278.922	725.021
212.092	157.981	722.971
212.095	276.952	724.206
212.195	276.952	724.206
212.255	276.952	722.906
212.259	276.952	722.906
212.273	278.922	722.909
212.273	278.922	725.011
212.273	278.922	725.032
212.273	278.922	725.033
212.274	157.981	722.931
212.275	157.981	722.931
212.276	157.981	722.971
212.280	276.952	722.960
212.288	276.952	722.960
212.291	278.922	722.967
212.291	278.922	725.021
212.292	157.981	722.971
216.373	278.920	722.909
216.374	157.980	722.931
216.394	278.920	722.967
218.355	276.952	722.906
218.359	276.952	722.906
218.359	276.952	725.011
218.373	278.922	722.909
218.373	278.922	725.011
218.374	157.981	722.931
218.375	157.981	722.931
218.376	157.981	722.971
218.391	278.922	722.967
218.391	278.922	725.041
218.392	157.981	722.971
218.959	276.952	722.906
218.959	276.952	725.011
218.973	278.922	722.909
218.973	278.922	725.011
218.974	157.981	722.931
218.975	157.981	722.931
218.976	157.981	722.971
218.991	278.922	722.967

218.991	278.922	725.041
218.992	157.981	722.971
221.057	276.950	722.906
221.073	278.932	722.909
221.074	157.980	722.931
221.082	276.950	722.960
221.094	278.932	722.967
221.157	276.950	722.906
221.173	278.932	722.909
221.174	157.980	722.931
221.182	276.950	722.960
221.194	278.932	722.967
222.077	157.985	722.931
222.177	157.985	722.931
222.178	157.985	722.971
231.457	276.954	722.906
231.473	278.927	722.909
231.474	157.983	722.931
251.057	276.958	722.906
251.157	276.958	722.906
463.272	157.984	722.905
463.273	157.984	722.905