

Engine runs irregularly and shakes. Check engine lamp lights up

Topic number	LI03.10-N-071148
Version	1
Function group	03.10 Connecting rods, pistons
Date	03-19-2020
Validity	Model 906 with engine OM651 Model 906, 907 with engine OM642
Reason for change	Contents revised Market validity adapted
Reason for block	

Complaint:

Engine runs irregularly and shakes. Check engine lamp lights up.

Information:

Fault codes for injectors and/or combustion misfires may be stored in the CDI control unit:

- On engine 642 cylinder 6 is affected.
- On engine 651 cylinder 2 is affected.

Cause:

Charge air from the exhaust gas recirculation is condensed after being introduced into the charge air system.

Information:

Under certain operating conditions, condensation that has collected in the charge air cooler can enter the combustion chamber to a damaging degree causing a mild hydro lock scenario and the connecting rod(s) to bend.

Remedy:

Perform following testing and diagnosis operations

1. Attach diagnostic system (see AD00.00-D-2000-04SD in model 906 or AD00.00-D-2000-06TS in model 907).

2. Perform initial quick test and save to paperless (see AD00.00-D-2000-04SD in model 906 or AD00.00-D-2000-06TS in model 907).

Information: For fault codes (current or stored) on injector and/or combustion misfires in the CDI control unit, continue with operation step 2.

Information: If there are no fault codes on the injector or combustion misfires in the CDI control unit, conduct further research on the exact reason for the customer complaint and initiate corresponding repair measures.

3. Remove charge air hoses from inlet and outlet fittings on charge air cooler (see AR09.41-D-1311-01WE) and check if there is any condensation in them.

Information: If any condensation is detected, it must be removed.

XENTRY TIPS

4. Check air filter and air filter housing for ingressed fluid (see AR09.10-D-1050US and AR09.10-D-1150SF in model 906 with engine 642, AR09.10-D-1050US and AR09.10-D-1150WE in model 906 with engine 651, AR09.10-D-1050TS and AR09.10-D-1150TSV in model 907 with engine 642).

Information: If any fluid is detected, it must be removed.

5. Perform compression test using XENTRY Diagnosis.

Information: If noticeable problems are found (speed deviations), continue with operation step 6.

Information: If no noticeable problems are found, conduct further research on the exact reason for the customer complaint and initiate corresponding repair measures.

6. Check compression pressure using compression pressure recorder (see AR01.00-D-1200SF in model 906 with engine 642, AR01.00-D-1200WE in model 906 with engine 651, AR01.00-D-1201TSV in model 907 with engine 642).

Information: If, when checking the compression pressure using the compression pressure recorder (on engine 651 this affects cylinder 2 and on engine 642 cylinder 6) a pressure difference is detected to the other 3 or 5 cylinders that is greater than 3 bar, you can assume that the connecting rod is damaged or bent. If noticeable problems are found, continue with operation step 7.

Information: If no noticeable problems are found, conduct further research on the exact reason for the customer complaint and initiate corresponding repair measures.

7. Remove fuel injectors (see AR07.16-D-1000SF in model 906 with engine 651, AR07.16-D-1000WE in model 906 with engine 642, AR07.16-D-1020TSV in model 907 with engine 642).
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8. Manually turn cylinders, one after the other, to TDC position (see AR01.00-D-0100SF in model 906 with engine 642, AR01.00-D-0100-01TSV in model 907 with engine 642, AR01.10-D-1000-01WE in model 906 with engine 651) and use welding wire or a vernier caliper through the fuel injector slot to measure the distance to the piston (see Picture 01 and 02).

Information: If noticeable problems are found, continue with operation step 9.

Information: If no noticeable problems are found, conduct further research on the exact reason for the customer complaint and initiate corresponding repair measures.

9. Replace engine (see AR01.10-D-2401SF in model 906 with engine 642, AR01.10-D-2401TSV in model 907 with engine 642, AR01.10-D-2401WE in model 906 with engine 651) or repair it (see AR03.10-S-7021SE in model 906 with engine 642, AR03.10-D-7021TSV in model 907 with engine 642, AR03.10-D-7021WE in model 906 with engine 651).

Information:

- On vehicles covered by warranty: Replace engine.

- On vehicles not covered by warranty and with a properly operating crankcase and properly operating cylinder barrel: repair engine or offer replacement engine.

- On vehicles not covered by warranty and with defective crankcase and/or defective cylinder barrel: replace engine (offer replacement engine).

XENTRY TIPS

10. Check as-built configuration of charge air cooler.

Information: Perform only on model 906, 907 before production date 02/2019.

Information: For an older as-built configuration (fitting in center, see Picture 03, 04 and 05), continue with operation step 11.

Information: For a current as-built configuration (see Picture 03, 04 and 05), do not undertake any more repair measures.

11. Replace charge air cooler (see AR09.41-D-6817SD in model 906 with engine 642, AR09.41-D-6817TS in model 907 with engine 642 or AR09.41-D-6817WE in model 906 with engine 651).

Information: Perform only in accordance with result after checking as-built configuration of charge air cooler (see operation step 10) and only in model 906, 907 before production date 02/2019.

Information: The new charge air cooler with lowered fitting on the cold side (see AR09.41-D-8619M in model 906 with engine 642, AR09.41-D-8621TSR in model 907 with engine 642 or AR09.41-D-8619WE in model 906 with engine 651) must be installed (see Picture 04 and 05). Cost acceptance to be checked through advance agreement with regard to goodwill (ESKULAB). The modification of the charge air cooler is to be applied for as additional work through an ESKULAB query for engine damage (Note service information bulletin SI01.10-S-0001A hereto).

Information: On vehicles in which the charge air cooler and charge air hose were replaced, the following text must be entered in the "Vehicle Documentation" (VeDoc) as FO texts:

- Text for engine 651: Charge air cooler and charge air hose modified. New part numbers: Charge air cooler A 907 501 16 00, charge air hose A 907 528 23 00.

- Text for engine 642: Charge air cooler and charge air hose modified. New part numbers: Charge air cooler A 907 501 17 00, charge air hose A 907 528 22 00.

Attachments	
File	Description
01.jpeg	Measurement of distance to piston (cylinder 1).
02.jpeg	Measurement of distance to piston (cylinder 2).
03.jpeg	Old as-built configuration of charge air cooler (fitting in center) (A 906 501 02 01). Standard on model 906.
04.jpeg	New as-built configuration of charge air cooler (with lowered fitting on cold side) (A 907 501 16 00). Model 907 with engine 651.
05.jpeg	New as-built configuration of charge air cooler (with lowered fitting on cold side) (A 907 501 17 00). Model 907 with engine 642.

Symptoms
Power generation / Engine management / Engine running / Surges
Power generation / Engine management / Engine running / RPM too high/low
Power generation / Engine noise / Noise
Power generation / Engine management / Engine running / Runs rough/shakes

XENTRY TIPS

Power generation / Engine management / Engine running / RPM reduces with delay
Power transmission / Function / Vibrates
Power generation / Engine management / Indicator lamp / Engine diagnosis / lit
Power generation / Engine management / Indicator lamp / Electronic diesel control / lit
Power generation / Engine management / Engine performance / No/poor output
Power generation / Engine management / Function / Malfunction

Control unit/fault code		
Control unit	Fault code	Fault text
N3/28 - Motor electronics 'CDI61NFZ' for combustion engine 'OM642' CR61NFZ (Sprinter 907)	P3004DA	Combustion misfiring of cylinder 6 has been detected.
N3/28 - Motor electronics 'CDID3' for combustion engine 'OM651' (CDI) (Code: MA5 MP6 MP8 MA6 MB6) (CRD3NFZ) (Sprinter III)	P026685	Teach-in of the operating parameters for cylinder 2 has a malfunction. The correction value for the smooth running control of cylinder 2 is outside the permissible range.
N3/28 - Motor electronics 'CDID3S2' for combustion engine 'OM651' CRD3S2NFZ (Code: MP6 MP8 MR6 MP5 MS3) (Sprinter 907)	P310179	Teach-in of the operating parameters for cylinder 2 has a malfunction. Calibration is missing.
N3/28 - Motor electronics 'CDID3S2' for combustion engine 'OM651' CRD3S2NFZ (Code: MP6 MP8 MR6 MP5 MS3) (Sprinter 907)	P3100F9	Teach-in of the operating parameters for cylinder 2 has a malfunction. There is a signal above the permissible limit value.
N3/28 - Motor electronics 'CDI61NFZ' for combustion engine 'OM642' CR61NFZ (Sprinter 907)	P3004C6	Combustion misfiring of cylinder 6 has been detected.

Parts						
Part number	ES1	ES2	Designation	Quantity	Note	EPC
A 907 501 16 00			Charge air cooler	1	Model 907 with engine 651 Information: For old as-built configuration only (fitting in center, see Picture 03, 04 and 05 and operation step 10 of remedy).	X
A 907 501 17 00			Charge air cooler	1	Model 907 with engine 642 Information: For old as-built configuration only (fitting in center, see Picture 03, 04 and 05 and operation step 10 of remedy).	X
A 907 528 22 00			Charge air hose	1	Model 907 with engine 642 Information: For old as-built configuration only (fitting in center, see	X

XENTRY TIPS

					Picture 03, 04 and 05 and operation step 10 of remedy).	
A 907 528 23 00			Charge air hose	1	Model 907 with engine 651 Information: For old as-built configuration only (fitting in center, see Picture 03, 04 and 05 and operation step 10 of remedy).	X
					Additional necessary replacement part scopes, small parts and consumable materials must be replaced according to the information in the repair documents referred to in this document. These are to be determined according to the vehicle identification number (VIN) through the XENTRY Portal Parts Information system.	

Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note
54-1011	PERFORM QUICK TEST	---		
07-0641	CHECK ENGINE COMPONENTS: ACCORDING TO FAULT CODE	---		
01-1200	CHECK COMPRESSION PRESSURE	---		
00-9152	CUSTOMER COMPLAINT:, WORKSHOP FINDINGS: , REMEDY:	ZM		
			03201 A3	Connecting rod – warped The listed damage code is not to be considered as an acceptance of costs. The general guidelines in the Warranty Manual apply.

WIS-References			
Document number	Title	Note	Allocation
AD00.00-D-2000-04SD	Connect STAR DIAGNOSIS, read out fault memory	Model 906	Remedy
AD00.00-D-2000-06TS	Connect/disconnect diagnostic device	Model 907	Remedy
AR01.00-D-0100SF	Crank engine	Model 906 with engine 642	Remedy
AR01.00-D-0100-01TSV	Crank engine on belt pulley of crankshaft	Model 907 with engine 642	Remedy
AR01.00-D-1200SF	Check compression pressure	Model 906 with engine 642	Remedy
AR01.00-D-1200WE	Check compression pressure	Model 906 with engine 651	Remedy

XENTRY TIPS

AR01.00-D-1201TSV	Check compression pressure	Model 907 with engine 642	Remedy
AR01.10-D-1000-01WE	Move engine to TDC position	Model 906 with engine 651	Remedy
AR01.10-D-2401SF	Remove/install engine with transmission	Model 906 with engine 642	Remedy
AR01.10-D-2401TSV	Remove/install engine with transmission	Model 907 with engine 642	Remedy
AR01.10-D-2401WE	Remove/install engine with transmission	Model 906 with engine 651	Remedy
AR03.10-D-7021TSV	Remove/install piston	Model 907 with engine 642	Remedy
AR03.10-D-7021WE	Remove/install piston	Model 906 with engine 651	Remedy
AR03.10-S-7021SE	Remove/install piston	Model 906 with engine 642	Remedy
AR07.16-D-1000SF	Remove/install fuel injectors	Model 906 with engine 651	Remedy
AR07.16-D-1000WE	Remove/install fuel injectors	Model 906 with engine 642	Remedy
AR07.16-D-1020TSV	Remove/install fuel injectors	Model 907 with engine 642	Remedy
AR09.10-D-1050TS	Remove/install air filter	Model 907 with engine 642	Remedy
AR09.10-D-1050US	Remove/install air filter	Model 906 with engine 642, 651	Remedy
AR09.10-D-1150SF	Remove/install air filter housing	Model 906 with engine 642	Remedy
AR09.10-D-1150TSV	Remove/install air filter housing	Model 907 with engine 642	Remedy
AR09.10-D-1150WE	Remove/install air filter housing	Model 906 with engine 651	Remedy
AR09.41-D-1311-01WE	Open/close connector		Remedy
AR09.41-D-6817SD	Remove/install charge air cooler	Model 906 with engine 642	Remedy
AR09.41-D-6817TS	Remove/install charge air cooler	Model 907 with engine 642	Remedy
AR09.41-D-6817WE	Remove/install charge air cooler	Model 906 with engine 651	Remedy
AR09.41-D-8619M	Remove/install charge air hose	Model 906 with engine 642	Remedy
AR09.41-D-8619WE	Remove/install charge air hose	Model 906 with engine 651	Remedy
AR09.41-D-8621TSR	Remove/install charge air hose upstream of charge air cooler	Model 907 with engine 642	Remedy
SI01.10-S-0001A	Service Information bulletin: Standardized procedure for engine problems		Remedy

Validity		
Vehicle	Engine	Transmission
Sprinter 907	642	*

XENTRY TIPS

Sprinter III	651	*
Sprinter III	642	*

Attachments

01.jpeg:



XENTRY TIPS

02.jpeg:



03.jpeg:



XENTRY TIPS

04.jpeg:



05.jpeg:

