

## Engine switches to limp-home mode or has insufficient output, fault stored in CDI control unit

Topic number	LI14.10-P-047525
Version	3
Design group	14.10 Exhaust manifold
Date	09-13-2012
Validity	Model 164, 203, 204, 207, 209, 211, 212, 218, 219, 221, 251, 461, 463 with engine 642
Reason for change	Check performed on exhaust back pressure sensor (B60) added. Check performed on boost pressure regulator removed as it has no useful effect.
Reason for block	

### Complaint:

Engine switches to limp-home mode or has insufficient output, fault code stored in CDI control unit.

#### Note:

Fault codes P2510, P2359, P2616, P2592 or combinations P2510 + P2359, P2510 + P2616 may be stored in the CDI control unit (N3/9).

Corresponding fault codes as of CDI6: 11D300, 126800, 126900.

### Cause:

Turbocharger may have been damaged or had its function briefly impaired by foreign objects from exhaust manifold.

Attachments	
File	Designation
Picture 1.jpg	Torn inner pipe in exhaust manifold at three-hole flange
Bruchstück.jpg	Metal part from exhaust manifold

### Remedy:

#### Note:

The vehicle mileage, the sequence of test steps and the frequency counter in the fault freeze frame data must be strictly observed!

1. Perform plausibility check on pressure sensors.

After ignition ON with engine OFF and the air extraction system not connected, the exhaust back pressure sensor (B60), boost pressure sensor (B5/1) and atmospheric pressure sensor must indicate similar values.

If one of the sensors indicates implausible values, replace the sensor concerned and proceed with operation step 2.

2. Check performed on turbocharger by recording DIAGNOSTIC PERFORMANCE DATA in DAS/Xentry.

#### Note:

Test prerequisites: Engine at idle, transmission stage set to N, all electrical consumers switched off, air conditioning system OFF, engine is at operating temperature (oil and coolant temperature > 80° C), load condition of diesel particulate filter < 50 %.

With a load condition > 50 %, manual regeneration must be performed first.

#### Note:

In the DAS, select: Control units -> Drive -> CDI common rail diesel injection -> Recording of DIAGNOSTIC PERFORMANCE DATA -> Diagnostic performance data with actual values concerning status of combustion engine.



In Xentry, select: Control units -> CDI - Engine electronics 'CDI' for combustion engine 'OM642' (N3/9) -> Special procedures -> Recording of diagnostic performance data -> Diagnostic performance data with actual values concerning status of combustion engine.

Start program.

3. Print out or save result log.

Note:

In the measurement section "Measurement values with increased engine speed and deactivated exhaust gas recirculation", check the exhaust back pressure value.

Note: Row labeling in DAS: "DT\_38\_EGpCD\_pP3Val "

Note: Row labeling in DAS for model series 221: "DT\_31\_EGpCD\_pP3FltValB1/2"

Note: Row labeling in Xentry: "DT\_0168\_Exh\_p TrbnUs"

If the exhaust back pressure is higher than 2000 +/- 50 hPa, replace the turbocharger and both exhaust manifolds.

If the exhaust back pressure is lower than 2000 +/- 50 hPa, proceed as per the diagnostic tree (flow chart) in the annex.

4. Check exhaust manifolds and turbocharger while they are still installed.

Note:

If one of the two exhaust manifolds exhibits external damage (picture 1), replace both exhaust manifolds and the turbocharger.

If, when the turbocharger is removed, metal parts (picture 2) fall out of the turbine housing, replace both exhaust manifolds and the turbocharger.

If the turbine wheel of the turbocharger exhibits external damage, replace both exhaust manifolds and the turbocharger.

Tip:

Inspect the exhaust manifolds using an endoscope (if available). If cracks or metal parts (picture 2) are discovered in the exhaust manifold, replace both exhaust manifolds and the turbocharger.

Note:

The diagnostic log must be enclosed with the damaged parts. All loose fragments must be enclosed with the removed parts.

Attachments	
File	Designation
Flussdiagramm ATL Partikelbeschuss de.pdf	German
en_Flussdiagramm_Partikelbeschuss.pdf	Flow diagram in English
es_Flussdiagramm_Partikelbeschuss.pdf	Diagrama de flujo en español
fr_Flussdiagramm_Partikelbeschuss.pdf	Diagramme en français
it_Flussdiagramm_Partikelbeschuss.pdf	Diagramma di flusso in italiano
pt_Flussdiagramm_Partikelbeschuss.pdf	Fluxograma em Português

Symptoms
Power generation / Engine management / Engine management indicator lamp / Engine diagnosis / lit
Power generation / Engine management / Engine performance / Goes into limp-home mode
Power generation / Engine management / Engine performance / No/poor output
Power generation / Engine management / Engine performance / Poor acceleration

Control unit/fault code		
Control unit	Fault code	Fault text
CDI4-Common Rail Diesel Injection, CDI 4-Common Rail Diesel Injection, CDI-Common Rail Diesel Injection (CDI4)	2616 (002)	Check component B60 (Exhaust back pressure sensor). Control variation-Exhaust backpressure is too high.



(CLK (209),M (164),C (203), E (211),R (251),CLS (219),GL (164),S (221),G (463))		
CDI - Motor electronics 'CDI6' for combustion engine 'OM642' (N3/9) (CR6) (GLK (204),C (204))	126800	Component 'Y77/1 (Boost pressure positioner)' is faulty.
CDI - Motor electronics 'CDI6' for combustion engine 'OM642' (N3/9) (CR6) (GLK (204),C (204))	126900	Component 'Y77/1 (Boost pressure positioner)' is faulty.
CDI4-Common Rail Diesel Injection, CDI 4-Common Rail Diesel Injection, CDI-Common Rail Diesel Injection (CDI4) (CLK (209),M (164),G (461), C (203),E (211),R (251),CLS (219),GL (164),S (221),G (463) )	2510 (001)	Check component Y77/1 (Boost pressure regulator). Positioner signals fault.
CDI4-Common Rail Diesel Injection, CDI 4-Common Rail Diesel Injection, CDI-Common Rail Diesel Injection (CDI4) (CLK (209),M (164),G (461), C (203),E (211),R (251),CLS (219),GL (164),S (221),G (463) )	2359 (001)	Check system 'Charge pressure control'. Too low boost pressure
CDI 5-Common Rail Diesel Injection, CDI5-Common Rail Diesel Injection (M (164),E (211),GL (164),S (221))	2592 (001)	Check component Y77/1 (Charge pressure positioner). Positioner signals fault. ((not(DEF@OM629)))
CDI 60LS-Common Rail Diesel Injection, CDI 6-Common Rail Diesel Injection (CDI60LS) (M (164),R (251),GL (164),S (221) )	126900	Component Y77/1 (Charge pressure positioner) is faulty.
CDI 60LS-Common Rail Diesel Injection, CDI 6-Common Rail Diesel Injection (CDI60LS) (M (164),R (251),GL (164),S (221) )	126800	Component Y77/1 (Charge pressure positioner) is faulty.
CDI 6EU5-Common Rail Diesel Injection, CDI6EU5-Common Rail Diesel Injection (M (164),G (461),GL (164))	11D300	The signal voltage of component B60 (Exhaust back pressure sensor) is too high.
CDI 6EU5-Common Rail Diesel Injection, CDI6EU5-Common Rail Diesel Injection (M (164),G (461),GL (164))	126900	Component Y77/1 (Charge pressure positioner) is faulty.
CDI 6EU5-Common Rail Diesel Injection, CDI6EU5-Common Rail Diesel Injection (M (164),G (461),GL (164))	126800	Component Y77/1 (Charge pressure positioner) is faulty.



Work units				
Op. no.	Operation text	Time	Damage code	Note
			14135 07	Left exhaust manifold cracked
			14136 07	Right exhaust manifold cracked

Validity		
Vehicle	Engine	Transmission
*	642.950	*
*	642.856	*
*	642.820	*
*	642.940	*
*	642.884	*
*	642.838	*
*	642.910	*
*	642.921	*
*	642.960	*
*	642.822	*
*	642.932	*
*	642.858	*
*	642.850	*
*	642.920	*
*	642.872	*
*	642.975	*
*	642.836	*
*	642.834	*
*	642.853	*
*	642.862	*
*	642.830	*
*	642.835	*
*	642.886	*
*	642.868	*
*	642.961	*
*	642.870	*
*	642.832	*
*	642.852	*
*	642.930	*
*	642.970	*
204.983	642.961	*
204.992	642.832	*

212.020	642	*
212.023	642	*
212.024	642	*
212.025	642	*
212.089	642	*
212.093	642	*
212.220	642	*
212.223	642	*
212.224	642	*
212.225	642	*
212.289	642	*
212.293	642	*
218.323	642.853	*
C (203)	642	*
C (204)	642	*
CLK (209)	642	*
CLS (219)	642	*
E (207)	642	*
E (211)	642	*
G (461)	642	*
G (463)	642	*
GL (164)	642	*
M (164)	642	*
R (251)	642	*
S (221)	642	*