BlueTec 4/5 - "Nitrogen oxide emissions too high (threshold 1 exceeded)" - MR fault code 0 29 71

Topic number	GI14.40-N-040737
Version	8
Design group	14.40 Exhaust-gas Aftertreament, AdBlue
Date	08-14-2011
Validity	Vehicles with code (MS4) BlueTec 4 or code (MS5) BlueTec 5 and code (KD6) NOx sensor
Reason for change	Publication of download MR_1_98 for Econic
Reason for block	

Complaint:

The malfunction indicator lamp in the Instrument flashes (see attachment 1).
Fault code 0 29 71 "Nitrogen oxide emissions too high (threshold 1 exceeded)" is stored in the fault memory in the engine control (MR) control unit.
In addition, the following fault codes may be present:
0 42 35 - AdBlue quality inadequate
0 42 36 - AdBlue metering insufficient
0 42 46 - Untreated nitrogen oxide emissions too high
0 42 48 - AdBlue quality inadequate or AdBlue metering insufficient
0 42 49 - AdBlue quality inadequate, AdBlue metering insufficient or SCR catalytic converter defective

Attachments	
File	Designation
Anlage 1 MIL_Lampe.pdf	MIL = Malfunction indicator lamp

Cause:

1) Old software release in engine control (MR) control unit

2) Poor AdBlue quality
3) Insufficient metering by metering unit
The metering unit is injecting insufficient AdBlue fluid into the exhaust pipe due to a blockage. The blockage is not detected by the pressure sensors.
4) Air humidity and air temperature combination sensor
The air humidity always has a great influence on nitrogen oxide emissions. For this reason the injected AdBlue quantity must be adjusted to the humidity level. If the air humidity sensor is defective and indicates an excessively high humidity, insufficient AdBlue is injected. If this happens, there is not enough AdBlue in the catalytic converter to reduce the nitrogen oxides.
5) Exhaust pipe cracked.
It must be ensured that the entire exhaust stream, including the injected AdBlue, arrives in the catalytic converter.
6) Catalytic converter defective.
Physical damage to the catalytic converter (accident damage). The ceramic substrate is broken, allowing untreated nitrogen oxides to leave the catalytic converter.

Remedy:

To process the faults via Star Diagnosis, the parts listed in the parts table are required (also see SI00.00-W-0108A).
1) Update software release in engine control (MR) control unit.
Note: If the latest software is already installed in the control unit, the message "The control unit already contains the latest control unit software version" appears. The download does not need to be performed in this case.
- Econic: Download MR_1_98 (specifically for garbage collectors; as of Star Diagnosis version 07/11); other model series: MR 1_35 (as of Star Diagnosis version 09/10)

Was the latest software release already installed in the engine control (MR) control unit?
Yes:Continue with test step 2.
No: Continue with test step 7.
2) Check AdBlue quality.
See AR14.40-W-2041A.

Is the urea content OK (>30% urea)?
Yes:Continue with test step 3.
No:If the value is < 30%, the AdBlue fluid in the AdBlue tank must be replaced. Observe SI14.40-W-0006A!

If another party is responsible for the mistake, only the testing work can be billed with damage code 4700D C8 (AdBlue - wrong version).

Continue with test step 7.
3) Check metering quantity of metering unit.
Determine metering quantity as per WIS document AR14.40-W-2039A. Calculated quantities > 250 ml are OK. The control loop via the NOx sensor means that the system can cope with certain tolerances.

Is the determined quantity less than 250 ml ?
Yes: Replace metering device. Use damage code 14473 B2 (metering device blocked). Continue with test step 7.
No: Perform test steps 4 to 6.
4) Replace air humidity and air temperature combination sensor. See AR14.40-W-2018A. Use damage code 83068 52.

5) Check exhaust pipe for leaks. If the exhaust pipe is cracked, it must be replaced. Use damage code 49012 07.
6) Check catalytic converter for deformation.

If the catalytic converter has serious damage due to an accident, it must be replaced in consultation with the customer (not covered by warranty).
If no external deformation/damage to the catalytic converter can be found, it may only be replaced under warranty after consulting the MPC. A TIPS case must be created for this.

If the catalytic converter is requested by the warranty office via a parts return slip, specimens of the following operating fluids must be sent at the same time:
- Engine oil sample
- Fuel sample
- AdBlue sample

In addition, the following documents must be included:
- Initial quick test log
- Actual values of counter reading (see example in attachment 5)
- NOx questionnaire (see attachment)

Use damage code 49025.
7) Erase fault memory.
Reset fault memory as per AR07.15-W-3100A.
Note: If the guided troubleshooting does not rectify the fault, please create a TIPS case. The questionnaire from the attachment, together with the Star Diagnosis printouts described on the questionnaire, must be attached to the TIPS case.

If diagnosis fails to reveal the cause of the fault, then damage code 14200 (exhaust aftertreatment) must be used.
Use the appropriate damage type according to the fault code in the engine control (MR) control unit:

Fault code 1 29 71: Nitrogen oxide emissions too high (threshold 1 exceeded) ==> Damage type FH

Fault code 1 29 71: Nitrogen oxide emissions too high (threshold 2 exceeded) ==> Damage type FJ

Attachments	
File	Designation
en_Questionnaire on NOx_Control.pdf	English
es_Cuestionario Control de NOx.pdf	Spanish
fr_Questionnaire temoin NOx.pdf	French
Fragenbogen NOx-Control.pdf	German
it_Questionario NOx-Control.pdf	Italian
pt_Questionario Controle-NOx.pdf	Portuguese
Anlage 5.jpg	Counter readings

Symptoms
Communication/information / Information display / Displays fault code / Multifunction display / Multifunction display / Displays /

Control unit/fault code		
Control unit	Fault code	Fault text
MR engine control, MR engine control (PLD) (MRSKR) (Econic,Actros 2,3,Atego II,Axor II)	4235	Excessive nitrogen oxide emission due to low quality AdBlue
MR engine control, MR engine control (PLD) (MRSKR) (Econic,Actros 2,3,Atego II,Axor II)	4236	Excessive nitrogen oxide emission due to insufficient AdBlue dosage
MR engine control, MR engine control (PLD) (MRSKR) (Econic,Actros 2,3,Atego II,Axor II)	4249	Poor AdBlue quality, insufficient AdBlue dosage or defective SCR catalytic converter
MR engine control, MR engine control (PLD) (MRSKR) (Econic,Actros 2,3,Atego II,Axor II)	2971	Excessive nitrogen oxide emission (threshold 1 exceeded)
MR engine control, MR engine control (PLD) (MRSKR) (Econic,Actros 2,3,Atego II,Axor II)	4246	Excessive untreated nitrogen oxide emission
MR engine control, MR engine control (PLD) (MRSKR) (Econic,Actros 2,3,Atego II,Axor II)	4247	Component 'Catalytic converter' is defective.
MR engine control, MR engine control (PLD) (MRSKR) (Econic,Actros 2,3,Atego II,Axor II)	4248	Poor AdBlue quality or insufficient AdBlue dosage

Parts							
Part number	ES1	ES2	Designation	Quantity	Note	EPC	Non-EPC
M102000			BlueTec test kit	1	http://.gotis.aftersales.daimlerchrysler.com under Work-		X

					shop Equipment - Chapter D - Group 09/14/49 Topic 01.0 Supplier: Mollenkopf Fr. GmbH & Co.KG Hospitalstr.35 70174 Stuttgart Tel.: +49 (0)711 - 16279-0 Fax: +49 (0)711 - 16279-25 E-mail: t.mollenkopf@mollen-kopf-stuttgart.de www.mollenkopf-stuttgart.de		
A5411400855			Metering line	3	For determining the metering quantity in engine series 500 and 900. Metering lines should be kept in the BlueTec test kit.	X	
A4571401155			Metering line	3	For determining the metering quantity in engine 457. Metering lines should be kept in the BlueTec test kit.	X	
A0001400368			AdBlue injection nozzle	3	For determining the metering quantity. AdBlue injection nozzles should be kept in the BlueTec test kit.	X	

Work units

Op. no.	Operation text	Time	Damage code	Note
			14200 FH	Damage code: Exhaust aftertreatment - use damage type FH (NOx threshold 1 exceeded)
			14473 B2	Damage code: Metering device - clogged
			4700D C8	Damage code: AdBlue - wrong type, only if poor-quality AdBlue was found
			49012 07	Damage code: Exhaust pipe - cracked
			83068 52	Damage code: Moisture sensor - does not operate correctly

WIS-References

Document number	Title	Note	Allocation
SI00.00-W-0108A	Revisions to testing and repair work due to introducti-		Remedy

	on of NOx sensor/OBD NOx Control		
AR14.40-W-2041A	Check AdBlue concentration		Remedy
SI14.40-W-0006A	Incorrect filling of AdBlue tank		Cause
AR14.40-W-2039A	Connect/disconnect tester for checking AdBlue metering quantity at metering device	Select appropriate document in WIS according to model.	Remedy
AR07.15-W-3100A	Reset current OBD NOx Control fault code and torque limitation in engine control (MR) control unit		Remedy
AR14.40-W-2018A	Remove/install SCR air temperature and air humidity combination sensor	Select appropriate document in WIS according to model.	Remedy