Check engine light or Adblue warning with fault codes P206B31, P203B31, or P300494 when outside temperatures are below 32 degrees Fahrenheit. SCR Gen4 (KP7)

Topic number	LI49.20-N-078838
Version	7
Function group	49.20 - Exhaust gas aftertreatment
Date	3/18/25
Validity	Model 907 with SCR Gen4 (KP7)
Reason for change	Validity Update

Complaint

The check engine light or AdBlue warning is activated, accompanied by one or more of the following fault codes related to the AdBlue tank:

P206B31: Malfunction of the concentration sensor for AdBlue; the signal is absent.

P203B31: Malfunction of the AdBlue fill level sensor; the signal is absent.

P300494: The quality of the AdBlue is insufficient.

Cause

A. The software for the AdBlue (SCR) control unit (N118/5) is outdated.

B. The concentration of AdBlue is either above or below the Mercedes-Benz specifications, which can lead to premature freezing.

C. Frozen or partially frozen AdBlue can cause the AdBlue level sensor to misread levels.

D. The AdBlue level sensor is damaged.

Remedy

A. Software

1. Verify no newer software in AdBlue® SCR control unit (N118/5).

2. Complete LI49.20-N-075995 for Adblue warning reset.

--NOTE-- If there is no updated software available, print the XENTRY screen indicating this and proceed to step B.

B. Adblue Concentration

1. Verify the AdBlue concentration

a. According to WIS AR49.20-D-9264TS - Check the concentration of AdBlue

b. Per the freeze frame data 'Development data (Urea Qualitaet Rohwert)', see attachment 'Urea Quality'.

--NOTE-- If the AdBlue concentration is below 31.8% or above 33.2%, it must be replaced. Please note that this will be at the customer's expense.

2. If the AdBlue concentration is within the approved specifications, please proceed to step C.

C. Frozen Adblue or the SCR Actual Values state 'Frozen Adblue'

1. Check if the AdBlue is frozen. If it is, let the vehicle sit in a warm place overnight and recheck.

2. Have the vehicle running and XENTRY hooked up displaying Adblue level values

3. Drain the Adblue Tank and verify fill level reflects the change in the Adblue level

4. Fill the Adblue Tank SLOWLY and do not overfill, verify fill level reflects the change in the Adblue level. Print the Actual Values page of the XENTRY with the AdBlue tank showing Full, Empty, and Full states.

--NOTE-- The Fill Level Sensor 1 functions as the "empty sensor." It accurately measures the bottom 60 mm (2.3 inches) of the AdBlue tank. Once the tank is filled beyond the 60 mm (2.3 inch) mark, the sensor may not read accurately, and you might notice the displayed value fluctuating. This behavior is normal, see attachment 'Fill Level 1'.

5. Reset the Adblue Tank fill level via XENTRY. Please print the XENTRY pages that indicate the AdBlue tank fill-up was completed successfully.

--NOTE-- If the XENTRY still shows that there is frozen Adblue or the concentration is still inaccurate after draining and filling, please refer to the attachments 'Adblue Frozen' and 'Adblue Concentration' and proceed to step D.

6. Complete LI49.20-N-075995 for Adblue warning reset. Please print the XENTRY pages that indicate the AdBlue warning reset was completed successfully.

--NOTE-- If the steps above do not fix the vehicle, please proceed to step D.

D. Damaged Adblue Level Sensor/Concentration Sensor

1. Replace the Adblue Tank

2. With the vehicle running and XENTRY hooked up displaying Adblue level values

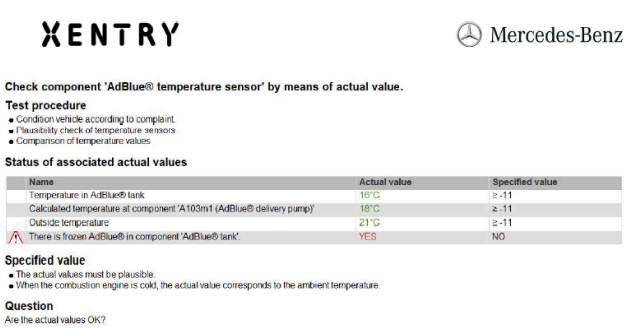
3. Fill the Adblue Tank SLOWLY and do not overfill, verify fill level reflects the change in the Adblue level

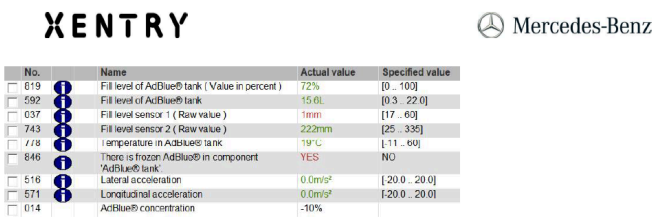
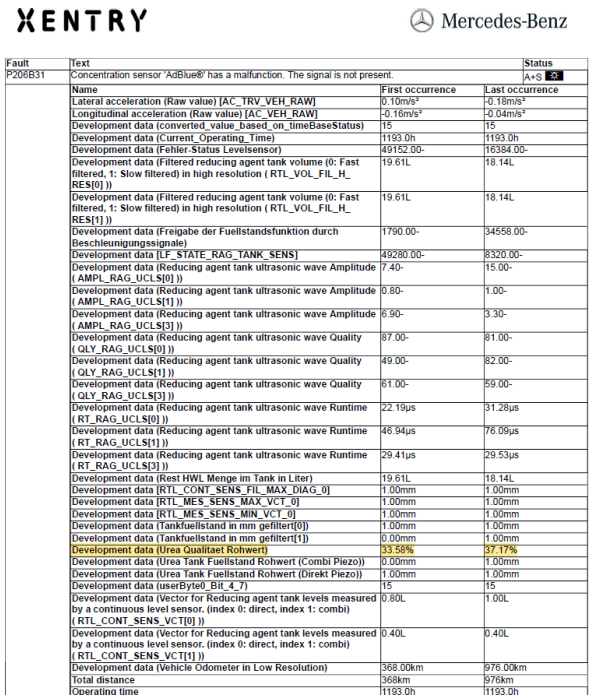
3. Reset the Adblue Tank fill level via XENTRY

4. Complete LI49.20-N-075995 for Adblue warning reset.

--NOTE-- During LI49.20-N-075995 for Adblue warning reset, please ensure that the outside temperature sensor is reading above 10 degrees Fahrenheit. If it is not, keep the vehicle inside the shop overnight. Complete LI49.20-N-075995 again. Additionally, please note that the vehicle may need to be driven to allow the NOx sensors and SCR system to complete their self-test. Once this is finished, the P13DF00 code should be stored and can then be cleared.

--NOTE-- During cold weather, when temperatures are below 32 degrees Fahrenheit, please advise the client to keep the AdBlue tank fill level between 50% and 85%. This will allow for proper fluid expansion and help prevent damage to the level/concentration sensor.

Attachments	
File	Description
Adblue Frozen.png  XENTRY Mercedes-Benz **Check component 'AdBlue® temperature sensor' by means of actual value.** **Test procedure** • Condition vehicle according to complaint. • Plausibility check of temperature sensors • Comparison of temperature values **Status of associated actual values** Name / Actual value / Specified value Temperature in AdBlue® tank / 16°C / ≥ -11 Calculated temperature at component 'A103m1 (AdBlue® delivery pump)' / 18°C / ≥ -11 Outside temperature / 21°C / ≥ -11 There is frozen AdBlue® in component 'AdBlue® tank'. / YES / NO **Specified value** • The actual values must be plausible. • When the combustion engine is cold, the actual value corresponds to the ambient temperature. **Question** Are the actual values OK?	Adblue Frozen

Adblue Concentration.png  XENTRY Mercedes-Benz No. / Name / Actual value / Specified value 619 Fill level of AdBlue® tank (Value in percent) 72% [0 .. 100] 592 Fill level of AdBlue® tank 15.0L [0.3 .. 22.0] 037 Fill level sensor 1 (Raw value) 1mm [17 .. 60] 743 Fill level sensor 2 (Raw value) 222mm [25 .. 335] 778 Temperature in AdBlue® tank 19°C [-11 .. 60] 846 There is frozen AdBlue® in component 'AdBlue® tank'. YES NO 516 Lateral acceleration 0.0m/s² [-20.0 .. 20.0] 571 Longitudinal acceleration 0.0m/s² [-20.0 .. 20.0] 014 AdBlue® concentration -10%	Adblue Concentration
Adblue Fill Level.mp4	Adblue Fill Level 1
Urea Quality.png  XENTRY Mercedes-Benz Fault / Text / Status P206B31 Concentration sensor 'AdBlue®' has a malfunction. The signal is not present. A+S Name / First occurrence / Last occurrence Lateral acceleration (Raw value) [AC_TRV_VEH_RAW] 0.10m/s² -0.18m/s² Longitudinal acceleration (Raw value) [AC_VEH_RAW] -0.16m/s² -0.04m/s² Development data (converted_value_based_on_timeBaseStatus) 15 15 Development data (Current_Operating_Time) 1193.0h 1193.0h Development data (Fehler-Status Levelsensor) 49152.00- 16384.00- Development data (Filtered reducing agent tank volume (0: Fast filtered, 1: Slow filtered) in high resolution (RTL_VOL_FIL_H_RES[0])) 19.61L 18.14L Development data (Filtered reducing agent tank volume (0: Fast filtered, 1: Slow filtered) in high resolution (RTL_VOL_FIL_H_RES[1])) 19.61L 18.14L Development data (Freigabe der Fuellstandsfunktion durch Beschleunigungssignale) 1790.00- 34558.00- Development data [LF_STATE_RAG_TANK_SENS] 49280.00- 8320.00- Development data (Reducing agent tank ultrasonic wave Amplitude (AMPL_RAG_UCLS[0])) 7.40- 15.00- Development data (Reducing agent tank ultrasonic wave Amplitude (AMPL_RAG_UCLS[1])) 0.80- 1.00- Development data (Reducing agent tank ultrasonic wave Amplitude (AMPL_RAG_UCLS[3])) 6.90- 3.30- Development data (Reducing agent tank ultrasonic wave Quality (QLY_RAG_UCLS[0])) 87.00- 81.00- Development data (Reducing agent tank ultrasonic wave Quality (QLY_RAG_UCLS[1])) 49.00- 82.00- Development data (Reducing agent tank ultrasonic wave Quality (QLY_RAG_UCLS[3])) 61.00- 59.00- Development data (Reducing agent tank ultrasonic wave Runtime (RT_RAG_UCLS[0])) 22.19µs 31.28µs Development data (Reducing agent tank ultrasonic wave Runtime (RT_RAG_UCLS[1])) 46.94µs 76.09µs Development data (Reducing agent tank ultrasonic wave Runtime (RT_RAG_UCLS[3])) 29.41µs 29.53µs Development data (Rest HWL Menge im Tank in Liter) 19.61L 18.14L Development data [RTL_CONT_SENS_FIL_MAX_DIAG_0] 1.00mm 1.00mm Development data [RTL_MES_SENS_MAX_VCT_0] 1.00mm 1.00mm Development data [RTL_MES_SENS_MIN_VCT_0] 1.00mm 1.00mm Development data (Tankfuellstand in mm gefiltert[0]) 1.00mm 1.00mm Development data (Tankfuellstand in mm gefiltert[1]) 0.00mm 1.00mm Development data (Urea Qualitaet Rohwert) 33.58% 37.17% Development data (Urea Tank Fuellstand Rohwert (Combi Piezo)) 0.00mm 1.00mm Development data (Urea Tank Fuellstand Rohwert (Direkt Piezo)) 1.00mm 1.00mm Development data (userByte0_Bit_4_7) 15 15 Development data (Vector for Reducing agent tank levels measured by a continuous level sensor. (index 0: direct, index 1: combi) (RTL_CONT_SENS_VCT[0])) 0.80L 1.00L Development data (Vector for Reducing agent tank levels measured by a continuous level sensor. (index 0: direct, index 1: combi) (RTL_CONT_SENS_VCT[1])) 0.40L 0.40L Development data (Vehicle Odometer in Low Resolution) 368.00km 976.00km Total distance 368km 976km Operating time 1193.0h 1193.0h	Urea Quality

WIS-References

Document number	Title	Note
AP49.20-D-0101TS	AdBlue(R) tank - Check/correct fluid level	
AR49.20-D-2015TS	Empty/fill AdBlue(R) tank	
AR49.20-D-2014TSF	Remove/install AdBlue(R) tank	

Disclaimer

NOTE: The information contained in this document is intended for use by trained, professional technicians with the knowledge to properly and safely perform diagnosis and repairs on Mercedes-Benz vehicles, using Mercedes-Benz approved tools and equipment. It informs service technicians about conditions that could occur in certain vehicles and provides information that could assist in proper vehicle diagnosis, service, or repair. It does not indicate that a defect is present in any vehicle referenced in this document nor does it imply warranty coverage. DO NOT assume that a symptom or condition, or a described cause of a symptom or condition, affects any particular vehicle or groups of vehicles, or that a described repair applies to any particular vehicle or groups of vehicles. There can be multiple causes resulting in the same or similar symptoms or conditions described in this document, and trained professional service

technicians must use their diagnostic skills to make evaluations on a case-by-case basis. The information contained in this document does not guarantee warranty coverage nor does it extend the vehicle's warranty in any way.

Symptoms
Power generation > Fuel system > Fuel tank > Function > Different level
Power generation > Exhaust system > AdBlue > AdBlue consumption > Too high

Parts

Part number	ES1	ES2	Designation	Quantity	Note	EPC
A9104702401			NOX REDUCING AGENT TANK	1		X

Control unit/fault code

Control unit	Fault text
N3/40 - Motor electronics 'MRD1' for combustion engine 'OM654' (CDI) (MRD1NFZ)	P300494 - The AdBlue® quality is insufficient.
N118/5 | N141 - Selective catalytic reduction (SCR GEN4) (UDCM2)	P203B31 - The AdBlue® fill level sensor has a malfunction. The signal is not present. P206B31 - Concentration sensor 'AdBlue®' has a malfunction. The signal is not present.

Operation numbers/damage codes

Op. no.	Operation text	Time	Damage code	Note
470643	Check separate parts of AdBlue(R) system: ... as per fault code	0-.7		This Operation item is used for completing LI49.20-N-075995.
499264	Check AdBlue(R) concentration (After quick test)			
499290	Empty/fill AdBlue(R) tank			
499292	Replace AdBlue(R) tank		4707250	
540650	On-board power supply voltage Maintain (when checking/testing and troubleshooting)			
540990	Program, code ..... control unit (After quick test)			If newer software is available
541011	Perform quick test			