Check engine light with fault code P20EE-FE in the CDI control unit CDI (N3/47)

Topic number	LI49.20-N-079593
Version	1
Function group	49.20 - Exhaust gas aftertreatment
Date	7/25/25
Validity	Model 907 with engine OM651
Reason for change	

Complaint

Check engine light is illuminated with fault code P20EEFE "The efficiency of component 'SCR catalytic converter' is not sufficient" stored in the CDI control unit (N3/47).

Cause

Excessive ammonia slip is being detected in the SCR system, often triggered by IUMPR (In-Use Monitor Performance Ratio) thresholds. This typically indicates that the SCR catalyst is not converting DEF (AdBlue) efficiently under monitored conditions.

Common Driving Scenario:

•Non-dynamic driving (e.g., highway cruising with cruise control set)

•Minimal load changes, steady-state exhaust flow

Contributing Factors:

•Software influence – IUMPR (In-Use Monitor Performance Ratio) thresholds

•DEF Overdosing – Over-injection due to faulty NOx sensors, dosing valve issues, or poor DEF quality

•Low Exhaust or Catalyst Temperatures – Common under low-load conditions; reduces SCR conversion efficiency

•Catalyst Degradation or Contamination – Aging catalyst or contamination from oil, coolant, or poor-quality DEF

Remedy

IMPORTANT: Do not replace any components unless instructed through TIPS.

For Model Year 2019–2021 Vehicles:

•Update the following control units to the latest available software:

N3/47 - Motor electronics 'CDI43' for combustion engine 'OM651' (CDI)

N118/5 - Selective catalytic reduction (SCR GEN3)

•If no newer software is available, proceed with the inspection and documentation steps listed under the No Newer Software section.

•Once all inspections are complete, open a TIPS case directed to the Powertrain Inbox, referencing this LI with the collected information and data.

No Newer Software Vehicles:

Perform the following steps in order. Document all findings with photos and actual values where applicable:

1. Tailpipe Wipe Test

•Perform and photograph results.

2. NOx Sensor Harness Inspection

•Check connectors, pins, crimps, and harnesses

3. Sensor Plausibility Checks

•Record actual values for all pressure and temperature sensors:

•Once with the engine cold (≥8 hours off)

•Again, at full operating temp, engine idling

4. Smoke Test – Intake, Charge Air, Exhaust

•Apply ≤26 psi from the tailpipe.

•Seal at clean air line.

•Manipulate components during the test.

•Document any leaks.

5. DPF Data

•Record actual values and regeneration history.

6. SCR Temp Sensor Wiring

•Inspect wiring and pins.

•Confirm sensor reaches operating temp while driving.

•Document time to temp.

7. AdBlue Injector Inspection

•Check for clogging or leaks.

•Photograph nozzle(s).

8. AdBlue Pressure Test

•Remove injector(s), perform 2–3 pressure tests.

•Check for leaks and document with photos.

9. DEF Quality Check

•Collect a sample.

•Note color, clarity, separation, odor, and quantity.

•Photograph the fluid and spray pattern.

10. DPF & SCR Visual Inspection

•Separate exhaust downstream of DPF.

•Inspect for soot, blockage, or damage.

•Photograph findings.

11. SCR Catalyst Interior

•Inspect for dried AdBlue residue.

•Photograph the interior.

12. NOx Sensor Graphing

•Perform multiple test drives at varying speeds.

•Capture 3–4 graphs/screenshots of NOx sensor signals using XENTRY.

•Include one at idle, engine warm.

•Disconnect AdBlue valve, drive 30 min, capture 2–3 more graphs.

•Once all inspections are complete, open a TIPS case directed to the Powertrain Inbox, referencing this LI with the collected information and data.

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
Communication/information > Information display > Indicator lamp > Malfunction
Overall vehicle > Networking > Diagnosis/software > Current problems
Power generation > Engine management > Function > Malfunction

Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note