Check engine light with reduced power with fault codes P300A6D, P300974, P300DFB, or P300DE8

Topic number	LI09.40-N-079144
Version	6
Function group	09.40 - Turbocharger
Date	6/29/26
Validity	Model 907 with OM654
Reason for change	Remedy Update

Complaint

The check engine light is activated, accompanied by one or more of the following fault codes related to the Boost Pressure Positioner:

• P300A6D The boost pressure is too low. Charge Air Cooler.

• P300974 Component 'Boost pressure positioner' has a malfunction. The boost pressure is too low.

• P300DFB Component 'Boost pressure positioner' has a malfunction.

• P300DE8 Boost pressure control A has a malfunction after the cold start.

Cause

The potential causes for these fault codes are:

A. Leak or Blockage in the Intake or Charge Air System: This can prevent the proper flow of air, affecting the boost pressure.

B. Insufficient Source Vacuum, Vacuum Leak, or Sticking/Weak Vacuum Component: These issues can prevent the boost pressure positioner from functioning correctly.

• For Model Year 2023-Cuurent vehicles operating at approximately 4,000 ft elevation or above, reduced ambient pressure and/or high brake demand may contribute to reduced available vacuum differential and under boost complaints, even when no discrete vacuum component failure is identified.

C. Internal Malfunction of the Boost Pressure Positioner: The component itself may be faulty.

D. Internal Defect with the Variable Turbine Geometry (VTG) System inside the Turbocharger: Issues within the turbocharger can affect boost pressure control.

Remedy

Engineering Review Required:

For vehicles operating at approximately 4,000 ft elevation or above, a TIPS case MUST be opened before replacing any component for fault codes P300A6D, P300974, P300DFB, or P300DE8.

A. Leak or Blockage in the Intake or Charge Air System

1. Perform a Pressurized Smoke Test:

•Conduct a smoke test on the intake, the charge air system, and the exhaust to identify any leaks.

•Apply pressure (not exceeding 26 psi) from the exhaust pipe end while sealing the system at the clean air line near the air filter housing.

•Manipulate all components during the smoke test to ensure accurate results.

•If a leak is identified, repair it and retest.

2. Inspect for Debris or Blockages:

•Check the outlet of the turbocharger (high-pressure side), the charge air pipe at the back of the engine, and the charge air cooler inlet near the firewall for any debris or blockages.

•If oil, debris, or sludge is found in the Charge Air System, Turbocharger Outlet, or Charge Air Cooler Inlet, follow LI09.41-N-080666 for the required repair procedure.

Note: If it is determined that the Charge Air Cooler is obstructed by debris, please use damage code 50301 B2 when submitting your warranty repair claims.

B. Insufficient Source Vacuum, Vacuum Leak, or Sticking/Weak Vacuum Component

1. Check for Software Updates:

• For Model Year 2023-Current vehicles operating at approximately 4,000 ft elevation or above, if no obvious vacuum line damage or disconnected components are found, check whether an updated software version is available for the N3/40 - Motor electronics 'MRD1' for combustion engine 'OM654' (CDI).

• If an updated software version is available, update the N3/40 - Motor electronics 'MRD1' for combustion engine 'OM654' (CDI) and perform a test drive to verify whether the fault returns.

• If the fault returns, proceed to Step 2.

2. Check the Vacuum:

•Check the vacuum at all vacuum components (such as the Wastegate and Boost Pressure Control Y77, Y100/2) while driving, and compare it to the source vacuum.

•Thoroughly inspect all vacuum lines and connections for signs of wear, cracks, or disconnections.

•Refer to the Attachments for the OM654 Vacuum diagram.

3. Ensure Components Hold Vacuum:

•Ensure each component holds a vacuum when actuated.

•Replace any failed component and retest.

C. Internal Malfunction of the Boost Pressure Positioner

1. Complete Guided Tests:

• Perform the guided tests for the Boost Pressure Positioner, ensuring the linkage moves smoothly during actuation.

•If the test passes up to this point, replace the Boost Pressure Positioner.

•If the linkage fails to move, proceed to step D.

D. Internal Defect with the Variable Turbine Geometry (VTG) System inside the Turbocharger

1. Check VTG System:

•Remove the Linkage Arm from the Y77/1 Boost Pressure Actuator and manually manipulate the Turbocharger VTG rod to ensure free movement.

•If the VTG Rod does not move freely, replace the entire Turbocharger.

Additional Suggestions

1. Test Boost Pressure Sensor:

• Verify the functionality of the boost pressure sensor, as a faulty sensor can result in incorrect fault codes.

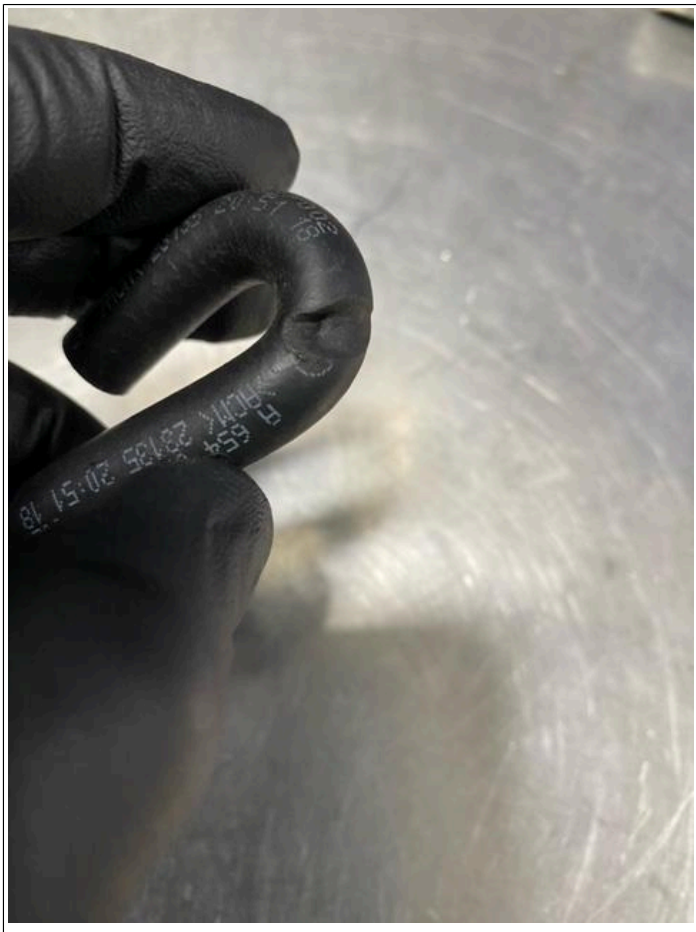
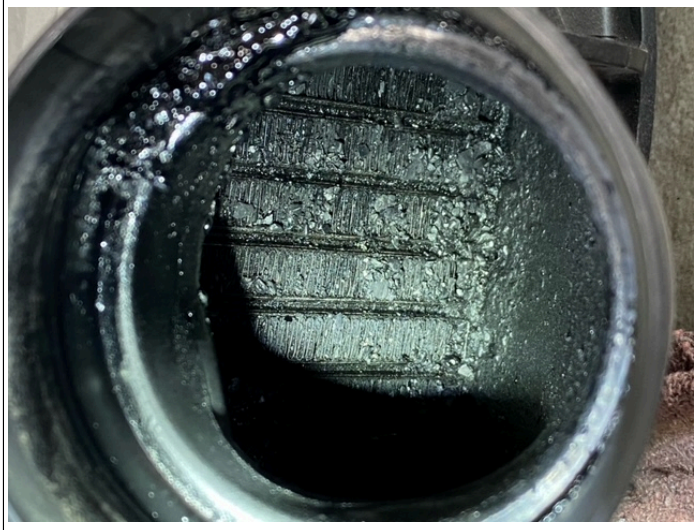
2. Check for Exhaust Restrictions:

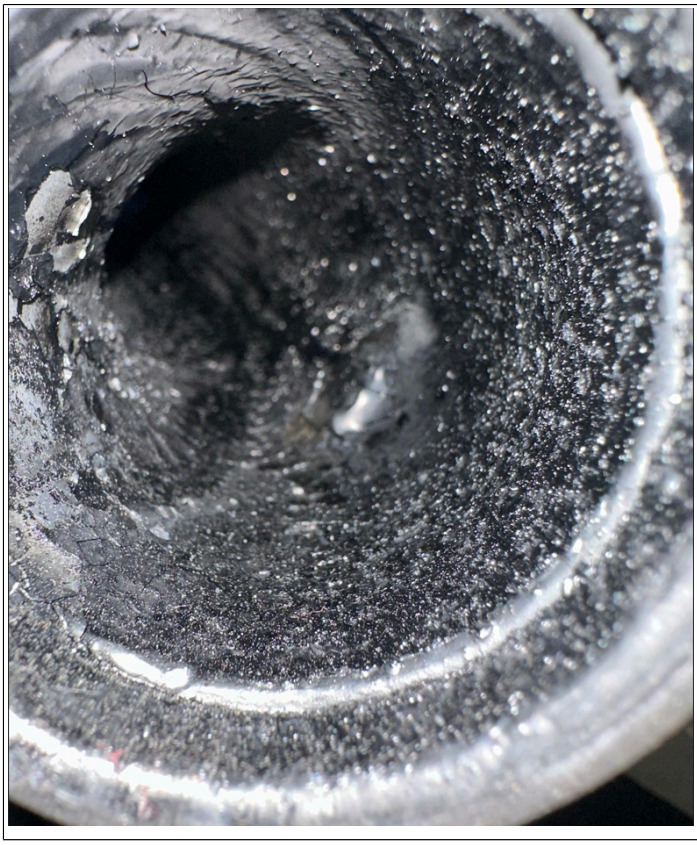
•Inspect the exhaust system for any restrictions or blockages that could affect turbocharger performance.

3. Visual Aids:

•Please review the attached photos for previously identified causes of these fault codes.

Attachments	
File	Description
OM654 Vacuum Diagram.pdf	OM654 Vacuum Diagram
Melted line.jpg 	Vacuum Line melted under Low Pressure EGR Cooler
Vacuum Line A654 070 23 32.jpeg	Vacuum Line at High Pressure EGR Cooler Bypass Valve

	
Inlet Side Of Charge Air Cooler.jpeg	Debris within the Charge Air Cooler
	
Charge Air Pipe.png	Debris within the Charge Air Pipe



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 > Engine management > Indicator lamp > Engine diagnosis > lit
Power generation > Engine management > Engine performance > No/poor output
Power generation > Engine management > Boost effect > Malfunction

Control unit/fault code

Control unit	Fault text
N3/40 - Motor electronics 'MRD1' for combustion engine 'OM654' (CDI) (MRD1NFZ)	P300A6D - The boost pressure is too low. P300DE8 - Boost pressure control A has a malfunction after the cold start. P300DFB - Component 'Boost pressure positioner' has a malfunction.

	P300974 - Component 'Boost pressure positioner' has a malfunction. The target position was not reached.

Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note
		H	50301B2	During your inspection, if it is determined that the Charge Air Cooler is obstructed by debris, please use damage code 50301 B2 when submitting your warranty repair claims.