

## STAR Case

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**Case Number: S1525000009**

**Release Date: 9/09/2020**

**Symptom/Vehicle Issue: (Revision B): P2BA9 - NOX Exceedence - Insufficient Reductant Quality**

### **Diagnosis:**

As part of the normal diagnosis for DTC P2BA9 - NOX Exceedence - Insufficient Reductant Quality, a Diesel Exhaust Fluid (DEF) quality check must be performed. Refer to DealerCONNECT>Service>TechCONNECT>Service Info>25 – Emission Control>Diesel Exhaust Fluid Emissions>Diagnosis and Testing>DIAGNOSIS AND TESTING – DIESEL EXHAUST FLUID for additional information. If contamination is found, the DEF tank will have to be completely drained and cleaned.

Once the root cause of the P2BA9 has been determined, the monitor that set the P2BA9 will have to run in order to clear out the “Service DEF” inducement message. The monitor for the P2BA9 will only run one time after the system detects a DEF tank fill. In order for the monitor to detect a refill, perform the following procedure. It will be necessary for the DEF tank to only contain approximately 1.5 gallons (5.5L) of DEF before beginning this procedure.

**NOTE: If DTC P241D - SCR Inducement – Forced Engine Shutdown is active and the engine will not start, perform the “SCR Mileage Extend W Active Fault” wiTECH routing in the Powertrain Control Module (PCM) “MISC Functions” menu tab. If it has been performed once already and the procedure is now locked out, overflash the PCM with the current calibration to allow the mileage reset to be performed again.**

**NOTE: This procedure will not operate at temperatures below -7°C (20°F) or at altitudes above 8000 feet (750 Hpa barometric pressure). Barometric pressure can be read on WiTECH.**

This document does not authorize warranty repairs. This communication documents a record of past experiences. STAR Center Online does not provide any conclusions about what is wrong with the vehicle. Rather, it captures all previous cases known that appear to be similar or related to the vehicle symptom / condition. You are the expert, and you are responsible for deciding on the appropriate course of action.

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### Repair Procedure:

1. Turn the ignition on but do not start the vehicle.
2. Using the wiTECH diagnostic scan tool, clear the codes from the ECM.
3. If the DEF system was completely drained due to contamination, fill the DEF tank with about 1.5 gallons (5.5)L of new DEF. If the system has not been drained, make sure that there is at least 1.5 gallons (5.5L) of empty space in the DEF tank.

**NOTE: Do not completely fill the DEF tank at this time.**

4. Using WiTECH, navigate to the PCM “Misc Functions,” and perform the “SCR System Tank Pump Replacement” routine. Follow all onscreen prompts. This ensures that the SCR system is properly initialized.
5. Start the vehicle and allow it to warm up to normal operating temperature.

**NOTE: When observing the Primary Pump Command Status, it may be necessary to view the data in graph mode. Once the proper exhaust temperatures have been reached, the command status will only go to on for brief spikes in the data during normal operation.**

6. Using wiTECH, monitor the “Primary Pump Command Status” to verify that the system is operational and being commanded on. Further diagnostics would be required if the DEF system is not operational. If necessary, drive the vehicle for a couple of miles to see if parameter begins to go active.
7. Using WiTECH, observe the current Soot Mass percentage readout in the PCM data. Is it less than 60%?
  - a. Yes>>> Proceed to **Step 13**.
  - b. No>>> Proceed to **Step 8**.
8. Move the vehicle outdoors in a suitable location.
9. Perform the “Service Diesel Particulate Filter Regeneration” located in the PCM “Systems Tests” tab in wiTECH

**NOTE: After performing the Service Regeneration, the soot mass reading will be defaulted to 57%. This is normal. The vehicle will then have to be driven at**

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### highway speeds for at least 30 minutes to complete a “While Driving” Regeneration to bring the soot level down to acceptable levels

10. Using WiTECH, perform a “Diesel Particulate Filter Regeneration Enable” routine. **DO NOT** cycle the key off before performing the next step otherwise the routine will have to be performed again.
11. Drive the vehicle for at least 30 minutes to complete a “While Driving” Regeneration. After 30 minutes, the soot mass percentage should drop below 10%.
12. Turn the ignition off for 5 minutes, open and close the doors, and disconnect WiTECH from the DLC to allow all modules to go to sleep.
13. Turn the ignition on and, using WiTECH, record the “Total Number of Urea Refilling” data parameter in the PCM data.
14. Using WiTECH, perform the “SCR DEF Tank Fluid Level Reset” procedure located in the PCM “System Test”
15. Turn the ignition off for 5 minutes, open and close the doors, and disconnect WiTECH from the DLC to allow all modules to go to sleep again.
16. Add 1.5 gallons (5.5L) of new DEF.
17. Turn the ignition on and record the “Total Number of Urea Refilling” data parameter in the PCM data again. Did the value increase by at least 1 from step 12?  
Yes>>> Proceed to **Step 18**.  
No>>> Ensure there is at least 1.5g (5.5L) of empty space in the DEF tank and repeat steps 12-16.
18. Drive the vehicle in a safe city type driving environment. Using between 20 – 40% throttle, decelerate and accelerate the vehicle between 35 – 50 mph (56 – 50 kph) for a minimum of 45 minutes. Driving the vehicle in this fashion, will allow the diagnostic monitor for P2BA9 to run. If the DEF quality is sufficient and NOX reduction efficiency is >60% during the drive cycle, the DEF quality diagnostics will pass and clear inducement identified issues. The “Service DEF” message will then turn off. If after 45 minutes of driving, the message did not clear, or the P2BA9 did not reset, then additional drive time will be necessary as the monitor did not run.

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