STAR ONLINE PUBLICATION

Case Number: S1525000009 REV. C

Release Date: November 2023

Symptom/Vehicle Issue: Updated Diagnostic Trouble Code (DTC) P2BA9 – Insufficient Reductant Quality, "Service Diesel Exhaust Fluid (DEF) System" Message Reset Procedure.

NOTE: Do NOT perform this procedure if the "Service DEF" message was triggered by any other fault, other than P2BA9.

Discussion: As part of the normal diagnosis for DTC, 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 or replaced.

Once the root cause of the P2BA9 has been determined, the monitor that set the P2BA9 will have to run and pass to clear out the "Service DEF System" inducement message. Perform the following procedure to get the monitor to run and pass.

NOTE: If DTC P241D - SCR Inducement – Forced Engine Shutdown is active and the vehicle is in reduced power/speed limited mode, perform the "Extend Mileage with SCR Active Faults" routine located in wiTECH Powertrain Control Module (PCM) "Misc. Functions" menu tab.

NOTE: This procedure will not operate at temperatures below 20°F (-7°C) or at altitudes above 7,500 feet.

NOTE: Ensure the PCM is at the latest available calibration before performing this procedure.

Repair Procedure:

1. Turn the ignition on, with the engine off.
2. Using wiTECH, observe the Atmospheric Pressure reading in the PCM data. Is the pressure greater than 750hPa (11 psi) and is the vehicle lower than 7,500 feet in altitude?
    a. Yes>>> Proceed to (Step 3).
    b. No>>> The vehicle will have to be brought to lower altitude to complete this procedure. Bring the vehicle to a lower altitude and proceed to (Step 3).

NOTE: Ensure the ambient temperature is greater than 20°F (-7°C) before proceeding.

3. Using wiTECH, navigate to the PCM DTCs tab and record the DTCs. If no DTCs are found, navigate to the PCM data tab. Expand the “SCR DTCs” group, and record the “SCR DTC” data parameters. Please see (Figures 1&2.). Is P2BA9 present in the PCM DTCs and/or 2BA9 present in the SCR DTC data parameters?
    a. Yes>>> Proceed to (Step 4).
    b. No>>> This document does not apply. Please follow normal published diagnostics for the other DTCs that are present.

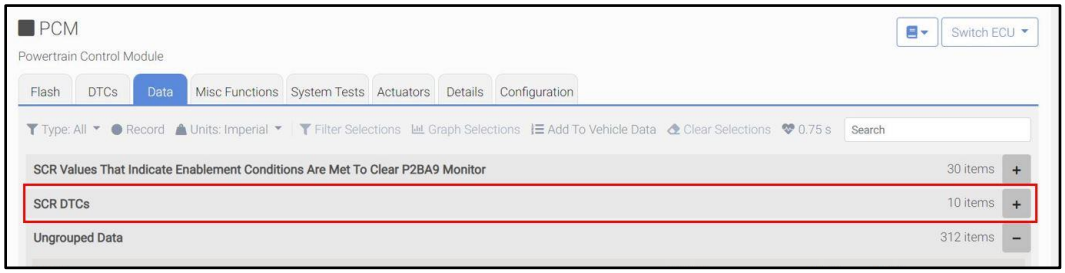


Figure 1.

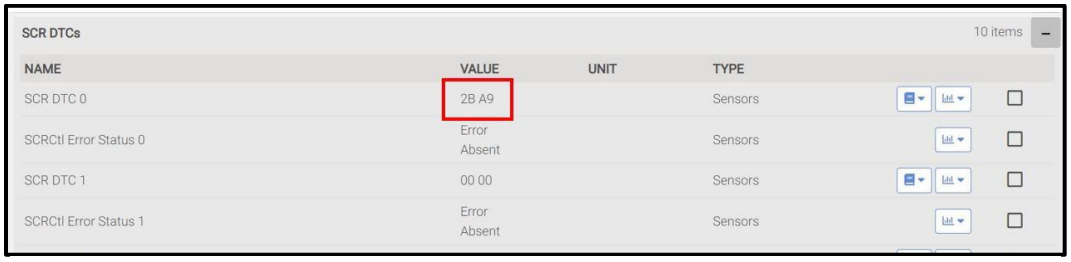


Figure 2.

This document does not authorize warranty repairs. This communication documents a record of past experiences. STAR 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.

Contact STAR Center, or your Technical Assistance Center Via TechConnect, eCONTACT or Service Library entry if no solution is found.

4. Using wiTECH, navigate to the PCM Data tab and note the current Urea Level %. If below 35%, add enough DEF fluid to bring the level above 35%.
5. Locate the current "Percentage of Soot Mass" data parameter. Is the Percentage of Soot Mass at 50% or higher?
    a. Yes>>> Proceed to (Step 6).
    b. No>>> Proceed to (Step 8).
6. Move the vehicle to a safe location outdoors and initiate the "Service Diesel Particulate Filter Regeneration" routine in PCM "Systems Tests". Follow all onscreen prompts.

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 highway speeds for at least 30 minutes to complete a "Driving Regeneration" to bring the soot level down to acceptable levels.

7. Using WiTECH, navigate to the PCM "Misc Functions" tab and perform a "Driving Regeneration Request" routine. **DO NOT** cycle the key off before performing the next step otherwise the routine will have to be performed again.
8. Drive the vehicle for at least 30 minutes to complete a "Driving Regeneration". After 30 minutes, the soot mass percentage should drop below 10%.
9. Once complete, turn the ignition off and allow the vehicle to cool for at least 5 minutes.
10. Start the engine. Using wiTECH, perform the "Initiate P2BA9 SCR Refill Monitor" routine in the PCM "Misc. Functions". Follow all onscreen prompts.

NOTE: Do not cycle the key unless instructed to do so.

11. Using wiTECH, Select "OBD II Monitors" under the "Analysis" section in the left menu. Please see (Figure 3.)

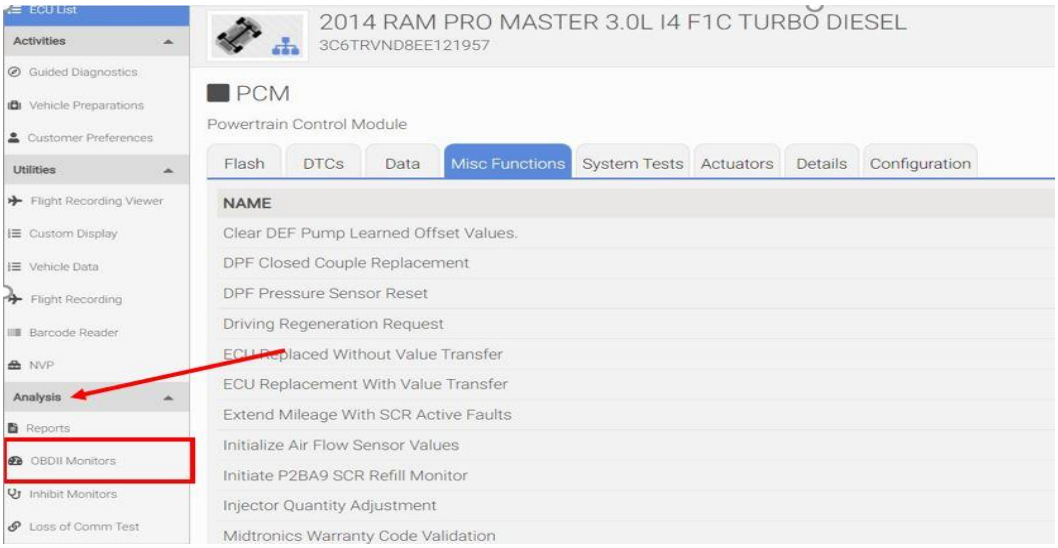


Figure 3.

12. Select OBD II and then VF SCR Refill P2BA9. Please see (Figure 4).

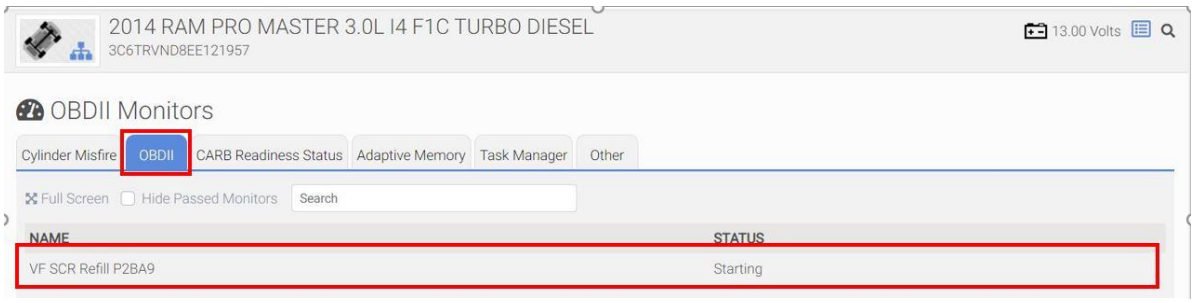
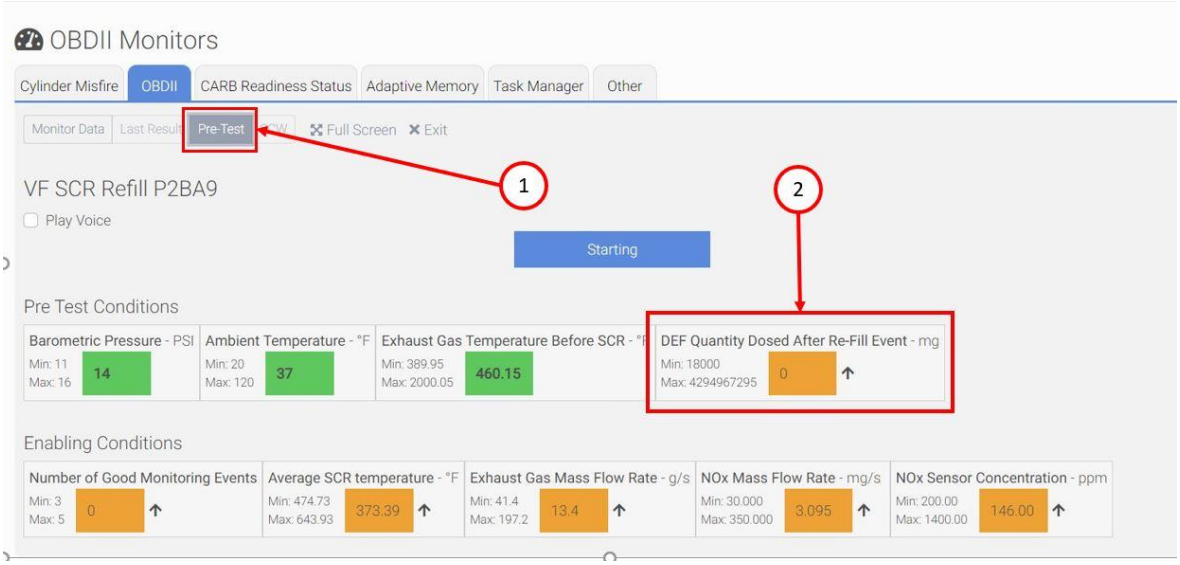


Figure 4.

NOTE: The following steps should be performed with a partner so that the data can be safely monitored while the drive cycle steps are being performed.

13. Select Pre-Test and monitor the “DEF Quantity Dosed After Refill Event” while performing the next step. Please see (Figure 5).



1. Pre-Test tab 2. DEF Quantity Dosed After Re-Fill Event Data

Figure 5.

NOTE: Please drive the vehicle exactly as written in the following steps, to efficiently clear the message.

14. Safely drive the vehicle at a steady 55-65 mph (88-105 kph) until the DEF Quantity Dosed After Re-Fill Event reading has reached 18,000 mg.

NOTE: Do not use cruise control during the next step to better allow the monitor to run.

Note: If the P2BA9 resets during the drive cycle, further diagnosis on the system will have to be performed.

15. Safely drive the vehicle in an environment that has routine stops (e.g., country road with routine stops or stop and go traffic along a boulevard). The monitor runs best during long, mild, steady accelerations from 0 to 55-60 mph (88-96 kph), using 20-40% throttle. While performing the accelerations, the system will start transitioning from “Starting” to “Calculating”. Please see (Figure 6). The longer the system indicates “Calculating”, during each acceleration, the better chance you

will have to clear the monitor. It may be necessary to slightly adjust the amount of throttle application during the accelerations, to keep the system in “Calculating” mode longer.

Figure 6.

16. As the system calculates, the “Number of Good Monitoring Events”, see (Figure 7), will begin to increase.

NOTE: While performing the above drive maneuver, the Average SCR temperature must remain between 475-644° F (246-340° C). Please see (Figure 8). Allowing the SCR temperature to fall outside these temps for too long will delay the monitor from running.

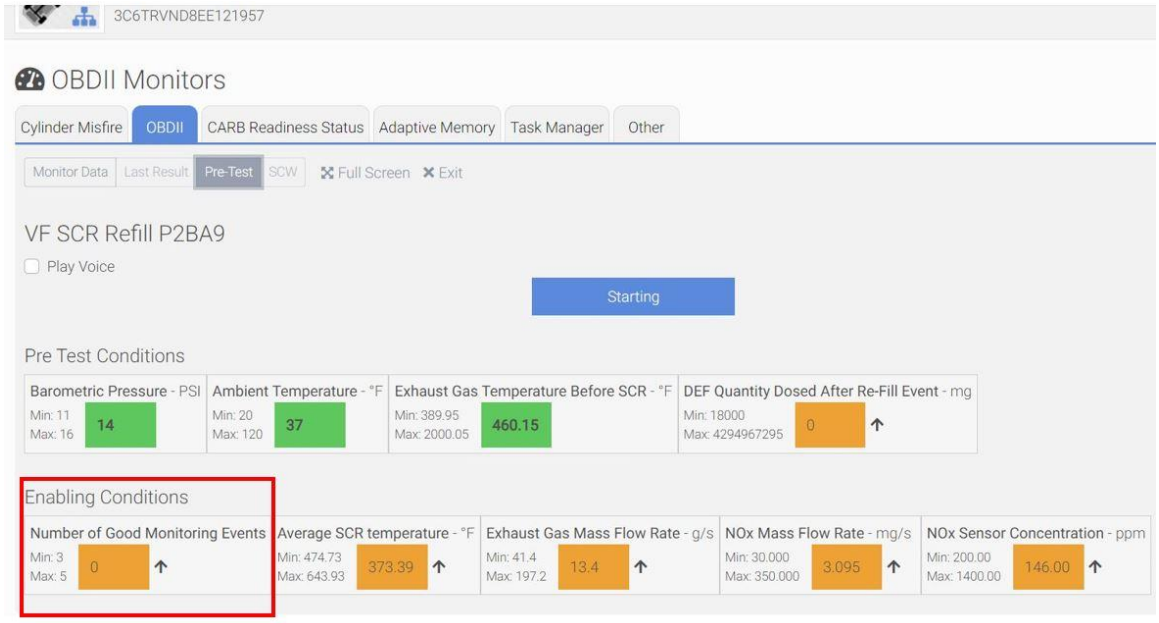


Figure 7.

Figure 8.

17. Continue the driving maneuver in step 13 until the “Number of Good Monitoring Events” reaches 3. At that time, the message will clear.
18. Cycle the ignition off, and back to run.
19. Using wiTECH, perform the “Reset Error Free Operation Time to 40 Hours” routine located in the PCM “Misc. Functions”.

Contact STAR Center, or your Technical Assistance Center Via TechConnect, eCONTACT or Service Library entry if no solution is found.