



STAR ONLINE PUBLICATION



Case Number: S1425000019 REV. A

Release Date: January 2025

Symptom/Vehicle Issue: Malfunction Indicator Lamp (MIL) Illuminated. Diesel Exhaust Fluid (DEF) System Diagnostic Trouble Codes (DTCs) due to Hydrocarbon Contamination.

Discussion:

A customer may experience a MIL illumination. At times, it may also be accompanied by a Service DEF message on the Instrument Panel Cluster (IPC). Upon further inspection, the technician may find one or more of the following codes set active, pending, or stored in the Powertrain Control Module (PCM) memory:

- P204A – Reductant Pressure Sensor Circuit
- P20E8 – Reductant Pressure Too Low
- P20E9 – Reductant Pressure Too High
- P203C – Reductant Level Sensor "A" Circuit Low
- P203D – Reductant Level Sensor "A" Circuit High
- P204C – Reductant Pressure Sensor Circuit Low
- P204D – Reductant Pressure Sensor Circuit High
- P205C – Reductant Tank Temperature Sensor Circuit Low
- P205D – Reductant Tank Temperature Sensor Circuit High
- P202B – Reductant Tank Heater Control Circuit Low
- P202C – Reductant Tank Heater Control Circuit High
- P208B – Reductant Pump 1 Control Performance
- P203E – Reductant Level Sensor 1 Circuit Intermittent
- P218F – Reductant No Flow Detected

These DTCs may set because of hydrocarbon contamination being present in the DEF system. Hydrocarbon contamination may be the result of the introduction of materials in the DEF tank such as diesel fuel, fuel system additives, gasoline, or any other petroleum-based product.

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



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While effective in detecting large amounts of hydrocarbon contamination, the hydroscopic test paper (PSE part number. 223-44-863) and DEF Refractometer (94-F-00K-108-456) may not be able to detect small amounts of hydrocarbon contamination capable of causing damage to the system (concentrations less than 100 ppm).

Because of this, it may be necessary to perform a visual inspection of the DEF system components to see if there are signs of hydrocarbon contamination in the system. One key component for inspection is the pump module itself particularly the DEF tank heater element. When exposed to hydrocarbons, the DEF heater element tentacles will begin to distort as shown below. Please see (**Figure 1**).

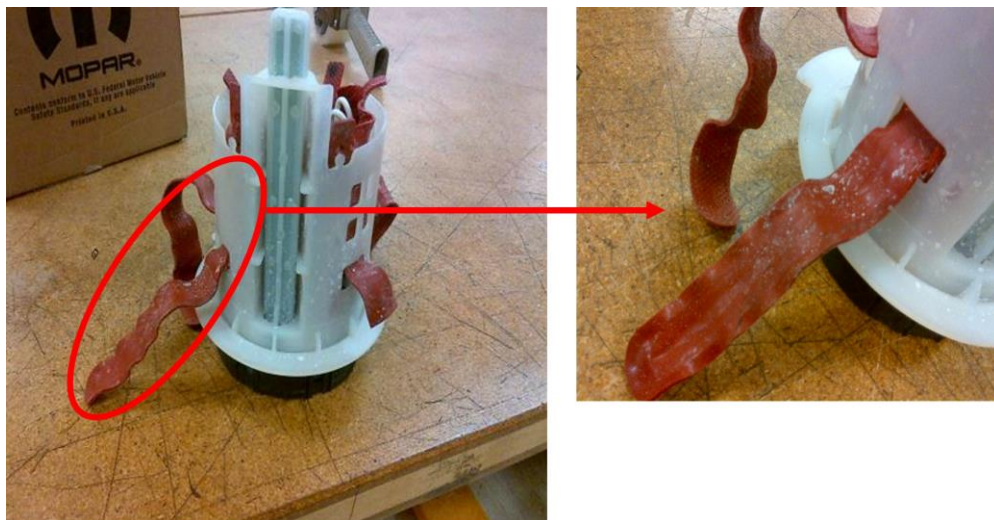


Figure 1

In addition, closely inspect the heater mat material inside the pump housing for distortion and pulling away from the housing wall due to the adhesive becoming unbonded from the mat. Please see (**Figure 2**).

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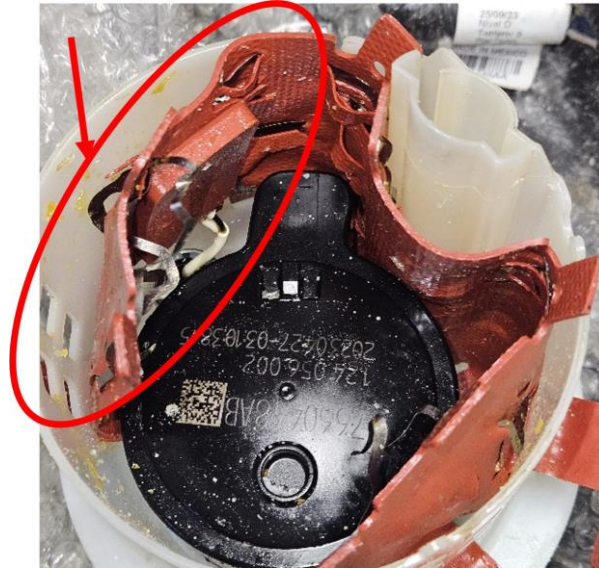


Figure 2

Below is what a good pump heater mat should look like. Please see (**Figure 3**). Note the heater mat is properly adhered to the pump housing and is not distorted.

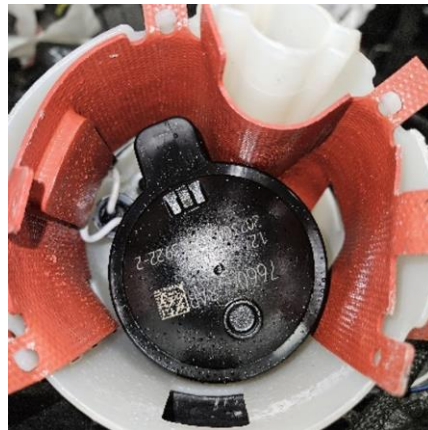


Figure 3

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NOTE: Contamination of the DEF system is not considered a warrantable repair. Please be sure to follow all current published warranty guidelines when performing any repairs to the DEF system due to contamination.

If normal diagnostics have been followed and the fluid testing or visual inspection has revealed signs of hydrocarbon contamination, then the entire DEF system will have to be replaced. Below is a list of parts that are required to properly repair the DEF system once it has been contaminated. Refer to Star Parts for the current part numbers available.

Parts Required:

- Module Kit, Urea Pump/Level Unit
- DEF Tank
- Ring, Urea Module
- Hoses, Filler and Vent
- Tube, Diesel Exhaust Fluid, Supply
- Tube, Fuel Filler assembly (pick-up only)
- Cap, Diesel Exhaust Fluid
- Injector, Diesel Exhaust Fluid

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