



# SERVICE BULLETIN

Classification: FE16-004a	Reference: NTB16-125a	Date: December 3, 2018
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## 2016-2019 TITAN XD; DIESEL FUEL DEF CONTAMINATION

This bulletin has been amended. See Amendment History on the last page.  
Please discard previous versions of this bulletin.

**APPLIED VEHICLES:** 2016-2019 Titan XD (A61)  
**APPLIED ENGINE:** Cummins 5.0L V8 Diesel

### SERVICE INFORMATION

**CAUTION:**

Putting Diesel Exhaust Fluid (DEF) into the diesel fuel system will contaminate the entire system causing permanent damage to system components.

DEF contamination requires replacement of the complete diesel fuel system. See page 12 for a list diesel fuel system components.

**IMPORTANT:**

Damage to the diesel fuel system due to DEF contamination is not covered by the Nissan New Vehicle Warranty and will be the responsibility of the vehicle owner.

Vehicle owners must be extremely careful to put the appropriate fluid/fuel into the appropriate tank.

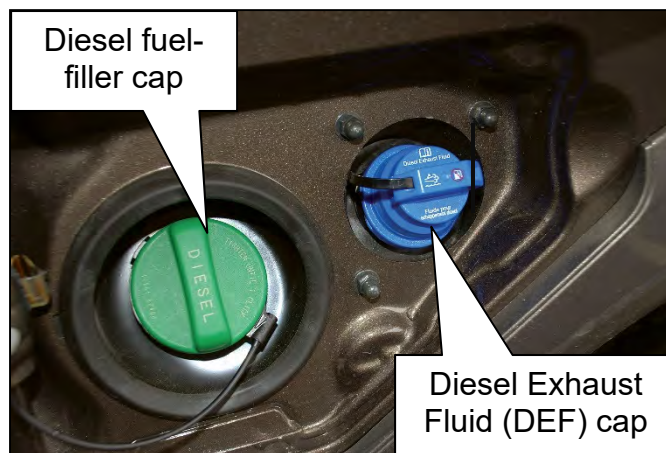


Figure 1

Nissan Bulletins are intended for use by qualified technicians, not 'do-it-yourselfers'. Qualified technicians are properly trained individuals who have the equipment, tools, safety instruction, and know-how to do a job properly and safely. NOTE: If you believe that a described condition may apply to a particular vehicle, DO NOT assume that it does. See your Nissan dealer to determine if this applies to your vehicle.

**IMPORTANT:** Diesel fuel contaminated with DEF will damage the complete diesel fuel system and cause many symptoms, including but not limited to the following:

- Crank no start
- Long crank or hard to start
- Rough idle
- Low power warning
- Fuel gauge inop or erratic gauge operation
- Noise from the stage one fuel pump
- Diagnostic trouble codes (DTC) including, but not limited to:
  - P008A-00 LOW FUEL PRESSURE CONTROL SYSTEM
  - P00C6-00 FUEL RAIL PRESSURE
  - P0087 FRP CONTROL SYSTEM
  - P0463 FUEL LEVEL SENSOR
  - P2269-00 WATER IN FUEL CONDITION

**IMPORTANT:** The inspections in this bulletin can help determine if there is DEF contamination in the diesel fuel system. Inspection and/or repairs for DEF contamination are NOT covered by the Nissan New Vehicle Warranty and will be the responsibility of the vehicle owner.

1. Use **Table A** to determine the best first inspection for DEF contamination.

**NOTE:** All inspections may need to be completed to determine if the fuel system has DEF contamination.

**Table A**

<b>Symptom(s)</b>	<b>First Inspection</b>
P2269-00 WATER IN FUEL CONDITION	<b>Fuel Inspection</b> on page 3
P0463 FUEL LEVEL SENSOR Fuel gauge inop or erratic gauge operation	<b>Fuel Level Sensor Unit Inspection</b> on page 11
All other symptoms related to DEF contamination in the diesel fuel system. P008A-00 LOW FUEL PRESSURE CONTROL SYSTEM P00C6-00 FUEL RAIL PRESSURE P0087 FRP CONTROL SYSTEM	Fuel Filter Element and Housing (Stage 1 and Stage 2) Inspection on page 5

**NOTE:**

- The current fuel sample obtained from the vehicle may NOT be reflective of the previous fuel quality levels that may have led to the customer’s concern, and should not be used as the “SOLE” indicator of DEF contamination.

## Fuel Inspection

2. Disconnect the left and right side batteries.
  - Disconnect both negative terminals first, then the positive terminals.
3. Clean the area around the water-in-fuel drain valve to prevent dirt or debris from entering the fuel sample.

4. Obtain a fuel sample from the fuel filter housing (Stage 1) in an appropriate sample bottle using the water-in-fuel drain on the fuel filter housing (Stage 1).
  - a. Place a sample bottle under the fuel filter housing (Stage 1).
  - b. Turn the water-in-fuel drain valve counterclockwise  $\frac{1}{4}$  turn.
  - c. Drain the fuel filter housing (Stage 1) until fuel is reduced to a trickle.

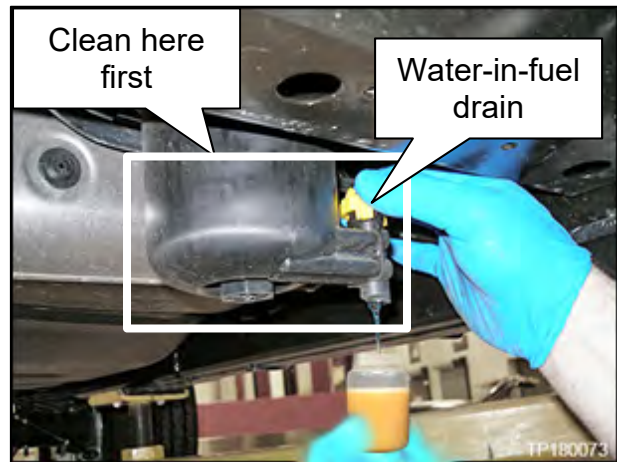


Figure 2

5. Close the water-in-fuel drain on the fuel filter housing (Stage 1) by turning the water-in-fuel drain valve clockwise  $\frac{1}{4}$  turn.

6. Let the sample sit for 15 minutes.

7. Visually inspect the fuel sample for DEF contamination, see Figure 3 for an example of DEF contamination. See Figure 4 to compare a known good sample to varying levels of DEF contamination.

**NOTE:** See page 12 for a list of components that must be replaced if DEF contamination is found in the diesel fuel system.

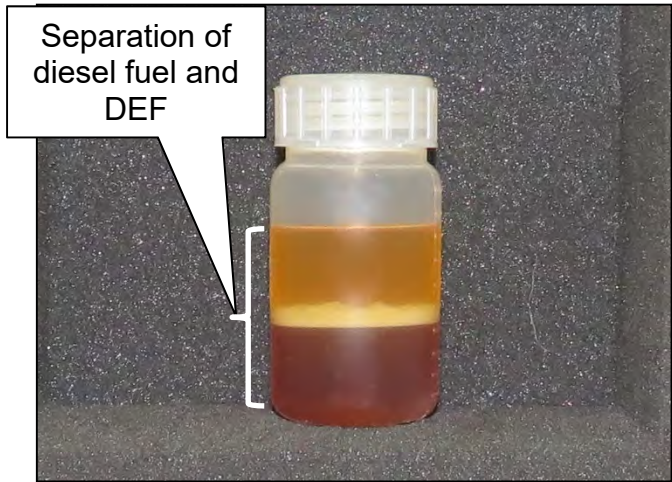


Figure 3

**NOTE:** The examples in Figure 4 represent varying levels of DEF contamination in the diesel fuel as seen when a sample is removed from the water-in-fuel drain valve. Diesel fuel is slightly yellow in color and is shown floating on top of the DEF.



Figure 4

## Fuel Filter Element (Stage 1) and Fuel Filter Housing (Stage 1) Inspection

**NOTE:** Exploded view of filter assembly (Stage 1) for reference.

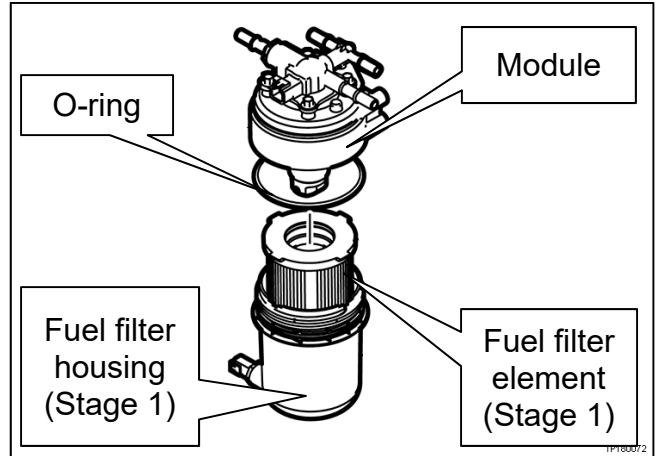


Figure 5

8. Disconnect the harness connector from the water-in-fuel sensor.

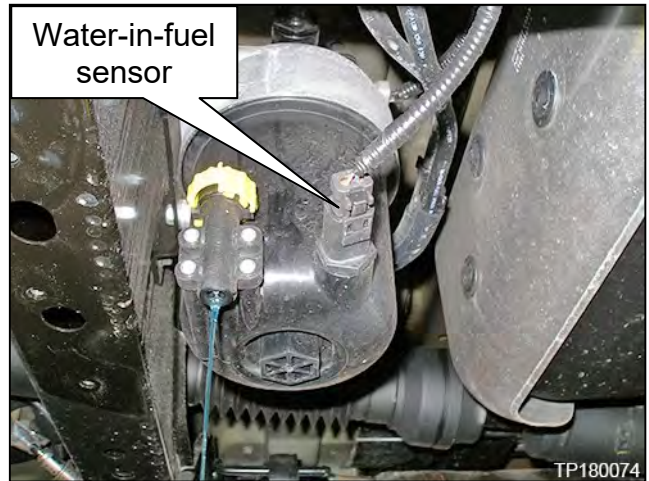


Figure 6

9. Remove fuel filter housing (Stage 1) protector.
  - Fuel filter housing (Stage 1) protector is held on with 3 bolts, circled in Figure 7.

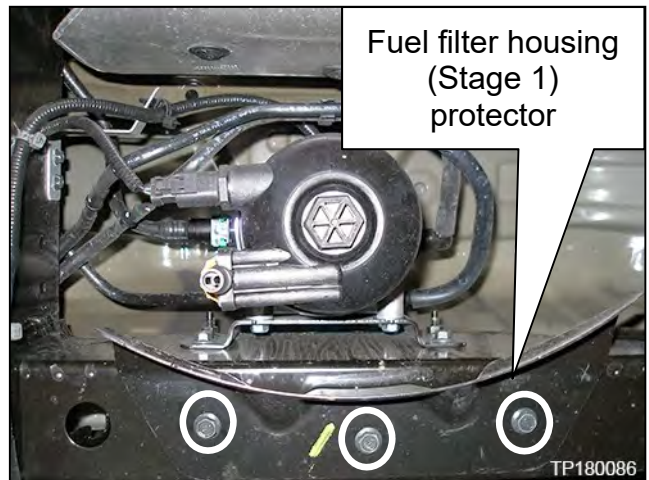


Figure 7



10. Turn/twist the fuel filter housing (Stage 1) counter-clockwise to remove it from the module.

- A socket can be used on the hex on the bottom of the fuel filter housing (Stage 1) to assist in removal.

**IMPORTANT:** If the fuel filter element (Stage 1) stays attached to the module (Figure 9), do not bend, or exert a side force on the fuel filter element (Stage 1) when removing. This may damage the module and result in a no-start.

- Only remove the fuel filter element (Stage 1) by simultaneously twisting and pulling directly away from the module.

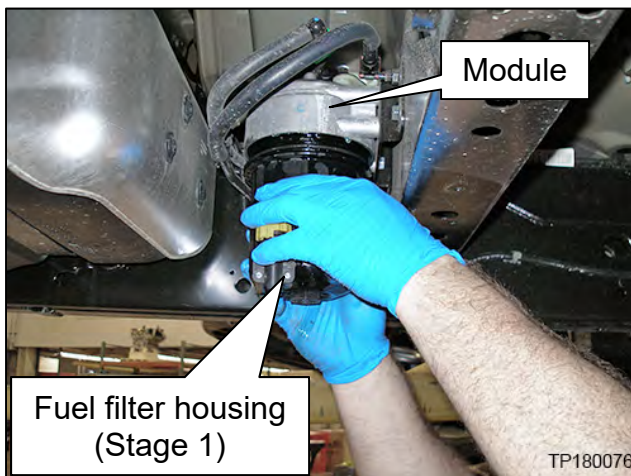


Figure 8

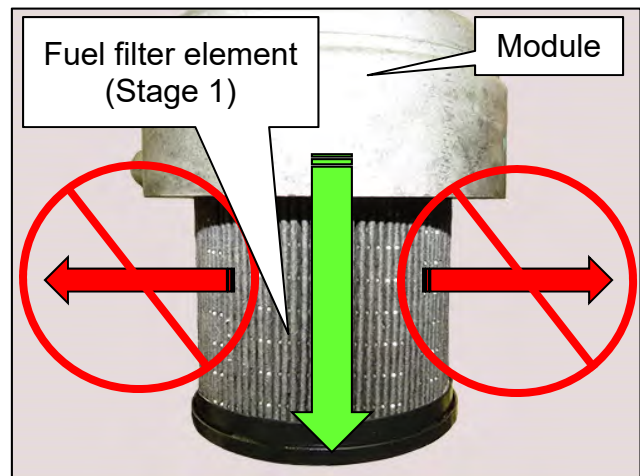


Figure 9

11. Remove the fuel filter element (Stage 1) by lifting it straight out of the fuel filter housing (Stage 1).

**NOTE:**

- It may be necessary to use a flathead screwdriver in the slots provided to remove the fuel filter element (Stage 1) from the fuel filter housing (Stage 1).



Figure 10

12. Allow the fuel filter housing (Stage 1) and the fuel filter element (Stage 1) to dry (about 24 hours).

**NOTE:** Drying time can be reduced if a heat gun is used to accelerate evaporation.

13. Visually inspect the fuel filter element (Stage 1) for the formation of white crystals or white vertical areas on the fuel filter element (Stage 1) pleating or inside of the fuel filter housing (Stage 1). White crystals or white vertical areas form when DEF has been introduced to the fuel system. See Figure 11 and Figure 12 for examples.

**NOTE:**

- If DEF crystals are found after drying, the complete fuel system **MUST** be replaced and is **NOT** a warrantable repair.
- See page 12 for a list of components that must be replaced if DEF contamination is found in the diesel fuel system.



Figure 11

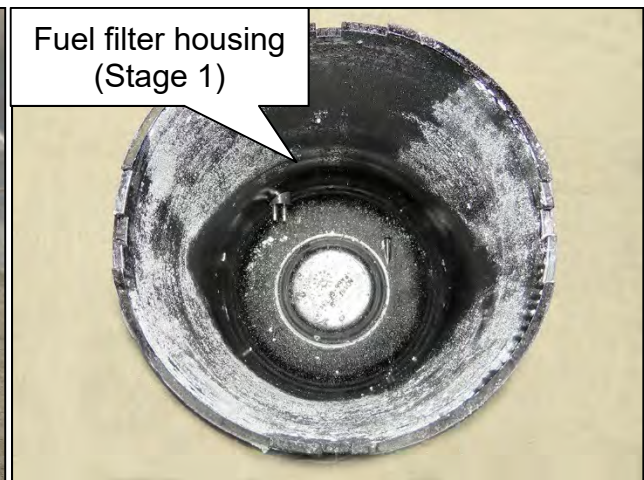


Figure 12

## Fuel Filter Element (Stage 2) and Fuel Filter Housing (Stage 2) Inspection

**NOTE:** Exploded view of filter assembly Stage 2 for reference.

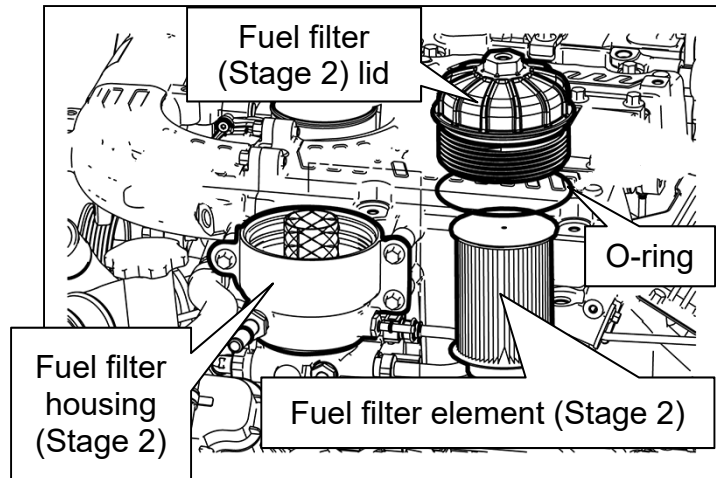


Figure 13

14. Disconnect MAF sensor connector.

15. Disconnect the “turbocharger compressor intake pressure/temperature sensor” (pressure/temperature sensor).

16. Remove the air cleaner lid and the air inlet air ducts from intake plenum.

17. Cap or wrap the air inlet ducts with suitable material to avoid dirt or contaminants from entering the air inlet system or engine.

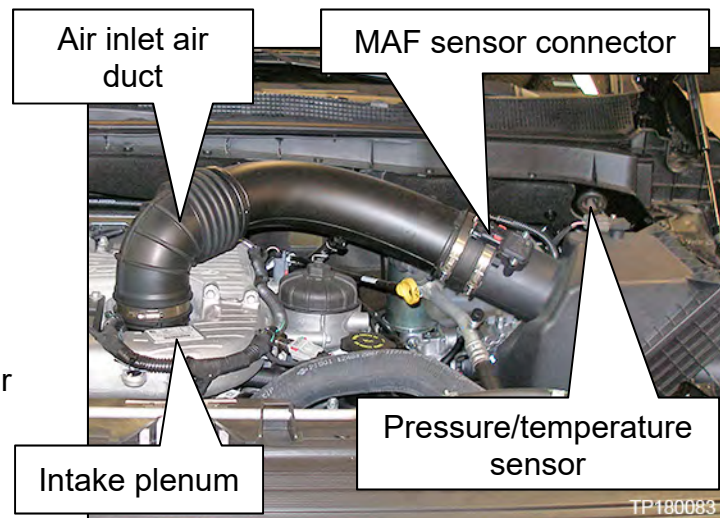


Figure 14

**CAUTION:** If Step 16 is not performed, the fuel filter element (Stage 2) cannot be installed correctly and will likely damage the fuel filter (Stage 2) inner seal and can cause DTCs to set and/or a no-start condition.

18. Clean the area around the fuel filter (Stage 2) to prevent dirt or debris from entering the fuel filter housing (Stage 2).



19. Remove the fuel filter (Stage 2) lid from the fuel filter housing (Stage 2).

- a. Twist/screw counterclockwise to remove.
  - A socket can be used on the hex on the top of the fuel filter (Stage 2) lid to assist in removal.
- b. Lift straight up and then out of the fuel filter housing (Stage 2).

**NOTE:** Remove the fuel filter (Stage 2) lid slowly to avoid fuel spillage.

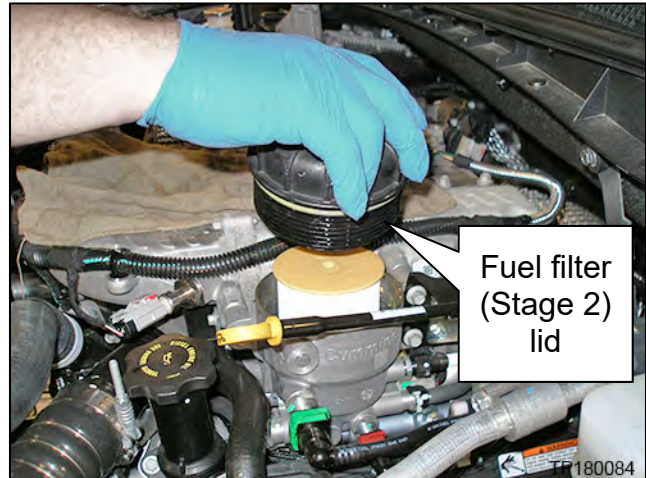


Figure 15

**CAUTION:**

- The fuel filter element (Stage 2) will come out with the fuel filter (Stage 2) lid.
- Do **NOT** reinstall the new fuel filter element (Stage 2) into the fuel filter (Stage 2) lid.
- Install the new stage 2 filter element into the fuel filter housing (Stage 2).

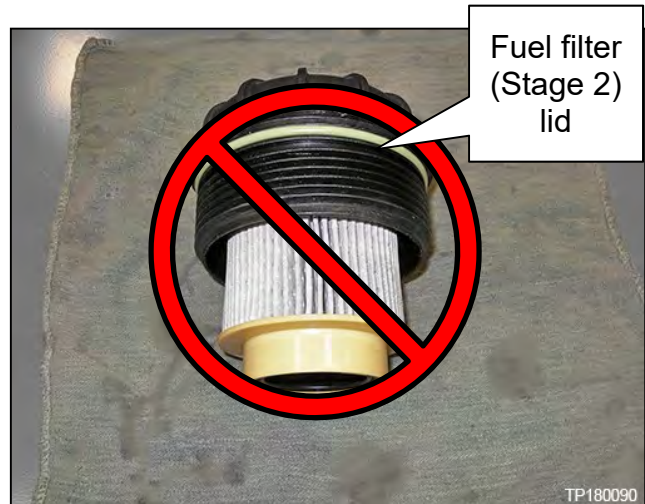


Figure 16

20. Allow the fuel filter housing (Stage 2) and the fuel filter element (Stage 2) to dry (about 24 hours).

**NOTE:** Drying time can be reduced if a heat gun is used to accelerate evaporation.

21. Visually inspect the fuel filter element (Stage 2) for formation of white crystals or white vertical areas on the fuel filter element (Stage 2) pleating. White crystals or white vertical areas form when DEF has been introduced to the fuel system. See Figure 17 and Figure 18 for examples.

**NOTE:**

- If DEF crystals are found after drying, the complete fuel system **MUST** be replaced and is **NOT** a warrantable repair.
- See page 12 for a list of components that must be replaced if DEF contamination is found in the diesel fuel system.



Figure 17



Figure 18

## Fuel Level Sensor Unit Inspection

22. Remove the fuel level sensor unit from the fuel tank.

- Refer to Electronic Service Manual (ESM) section ENGINE > FUEL SYSTEM > CUMMINS 5.0L > REMOVAL AND INSTALLATION > FUEL LEVEL SENSOR UNIT.

**NOTE:** Do not wipe the fuel level sensor unit or wash with cleaning fluids.

23. Allow the fuel level sensor unit to dry (about 24 hours).

**NOTE:** Drying time can be reduced if a heat gun is used to accelerate evaporation.

24. Inspect for DEF contamination (see Figure 19 and Figure 20 for examples of DEF contamination).

- Visually inspect the fuel level sensor unit for white crystals (BOTH inside and out).

**NOTE:** If DEF crystals are found after drying, the complete fuel system MUST be replaced and is NOT a warrantable repair. See page 12 for a list of components that must be replaced if DEF contamination is found in the diesel fuel system.

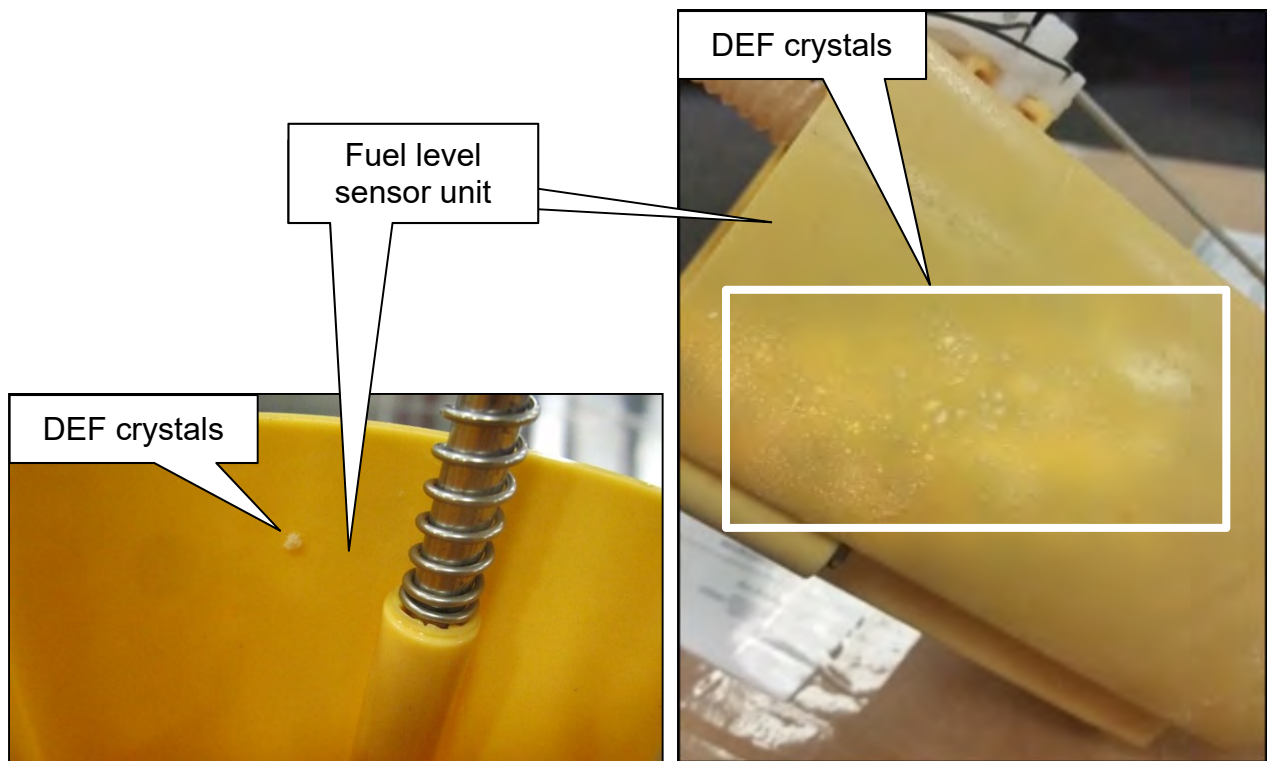


Figure 19

Figure 20

**Fuel System Components That MUST Be Replaced If DEF Contamination Is Found:**

- 8 Fuel Injectors
- 8 High Pressure Fuel Rail To Injector Supply Lines
- High Pressure Fuel Pump To Fuel Rail Supply Line
- High Pressure Fuel Rail To Fuel Rail Supply Lines
- High Pressure Fuel Pump
- Left Bank Fuel Rail
- Right Bank Fuel Rail
- Return Line From Left Bank Rail To Stage 2 Fuel Filter
- Fuel Injector Return Line
- Supply Line From Stage 2 Fuel Filter To High Pressure Pump
- Drain Line From High Pressure Pump To Stage 2 Fuel Filter
- Stage 2 Fuel Filter Module
- Stage 1 Fuel Filter Module (Contains Electric Lift Pump)
- Supply Line From Stage 1 To Stage 2
- Return Line From Stage 2 To Stage 1
- Supply Line From Tank To Stage 1
- Return Line From Stage 1 To Fuel Tank
- Fuel Tank
- Fuel Level Sensor Unit
- Fuel Filler Tube
- Fuel Filler Hose

**AMENDMENT HISTORY**

<b>PUBLISHED DATE</b>	<b>REFERENCE</b>	<b>DESCRIPTION</b>
December 20, 2016	NTB16-125	Original bulletin published
December 3, 2018	NTB16-125a	Changes made throughout