

## STAR ONLINE PUBLICATION

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**Case Number: S2014000002**

**Release Date: 9/17/2020**

**Symptom/Vehicle Issue:** Metal Or Other Debris Contamination In The High Pressure Fuel System. Parts Ordering, And Repair Process Information.

**NOTE: This SOL Publication does not provide authorization to perform any repairs under warranty. Any information laid out in this SOL publication must be performed following all current published warranty repair guidelines.**

**Discussion:** There has been some confusion in the field as to which fuel system components must be replaced, and what the proper repair procedure is, if you encounter a fuel system that has been contaminated with metal or other solid debris (e.g. rust, dirt, organic material).

Once you have determined that the fuel system has been contaminated with metal or other types of solid debris, please refer to the following guidelines to help ensure a proper repair.

### **Parts Required:**

**NOTE: The High Pressure Fuel Injection Pump may be under STAR restriction. Please refer to the Parts Restriction Information section below for all of the information required for STAR to order the injection pump. Once the injection pump is ordered by STAR, it is the dealer's responsibility to order the remainder of the fuel system components to perform the repair.**

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**NOTE: If the vehicle is off road, it is the dealer's responsibility to upgrade all parts orders to VOR status. Including the fuel injection pump, and any parts ordered by STAR.**

**NOTE: Part numbers may vary depending on vehicle model, and model year. Please refer to STAR Parts for all current part numbers pertaining to the VIN of the vehicle being repaired.**

The following is a complete list of parts needed to repair a fuel system in the event of contamination by metal or other solid debris.

Part Qty	Part Name	Notes
1	High Pressure Fuel Injection Pump Kit	Ordered by STAR if under Restriction
1	High Pressure Fuel Injector, 6 pack	
1	High Pressure Fuel Injector Connector Tube, 6 pack	
1	High Pressure Fuel Rail	
1	High Pressure Fuel Rail Supply Line (lower)	If for a 2019 MY vehicle, they may be included with the fuel injection pump kit. Check current listings
1	High Pressure Fuel Rail Supply Line (upper)	
1	High Pressure Fuel Line, Rail to Cylinder Head, Cylinder #1	
1	High Pressure Fuel Line, Rail to Cylinder Head, Cylinder #2	
1	High Pressure Fuel Line, Rail to Cylinder Head, Cylinder #3	
1	High Pressure Fuel Line, Rail to Cylinder Head, Cylinder #4	
1	High Pressure Fuel Line, Rail to Cylinder Head, Cylinder #5	
1	High Pressure Fuel Line, Rail to Cylinder Head, Cylinder #6	
1	Fuel Filter Element, Chassis Mounted Filter	
1	Fuel Filter Element, Engine Mounted Filter	
1	In-tank Fuel Pump Module Kit	

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### STAR Parts Restriction Process:

The following information must be provided to STAR in order for STAR to process the order for a restricted fuel system part.

1. Obtain a sample of fuel in a clean, glass container, and attach a picture of it to the STAR case.
2. Remove the Fuel Quantity Solenoid (FQS) from the injection pump, and take clear pictures of the FQS screen as well as the FQS bore showing the metal or debris contamination. Attach both pictures to the case.
3. Attach a picture of the engine serial number tag to the case.
4. Attach a current vehicle scan report, vehicle configuration report, and freeze frame report to the case.
5. Using wiTECH, locate the duty cycle report routine in the PCM Misc. Functions and email it to the STAR agent working the case. You may also email it to yourself, and attach the copy of it to the case when opening it.
6. STAR may provide a questionnaire to fill out pertaining to the issue. Please fill out the form, and attach the completed copy to the case.
7. Once all appropriate information has been submitted, STAR will then order the restricted part, and provide you with the order information.

### Repair Procedure:

**NOTE: Do not attempt to flush any of the high pressure fuel components using Brakleen or similar harsh solvent cleaners. This may cause damage to any internal coatings. For an effective repair, all high pressure fuel system components should be replaced.**

1. Remove the fuel tank. Refer to Service Library Service Information Section 14-Fuel System > Fuel Delivery, Diesel > Tank, Fuel > Removal and Installation.

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2. Using appropriate storage and/or disposal methods, in accordance with your local regulations drain, and dispose of all of the contaminated fuel from the fuel tank.
3. Thoroughly clean, and flush the fuel tank using fresh, clean, diesel fuel.
4. Inspect the in-tank fuel pump module for signs of metal or other debris. If found, replace the in-tank fuel pump module.
5. Reinstall the fuel tank, leaving the chassis fuel return line disconnected at the tank.
6. Fill the tank with 5 gallons of fresh fuel.
7. Remove the chassis mounted fuel filter element.
8. Place an appropriate catch basin under the fuel filter housing to capture all fuel expelled during the next steps.
9. Turn the ignition to run, and allow the in-tank fuel pump to run a complete cycle (approx. 15 seconds). Capture all of the fuel expelled from the filter housing.
10. Using wiTECH, navigate to the PCM “Actuators” tab, and perform the Lift Pump Relay routine to activate the in-tank fuel pump. This routine will run the pump for 20 seconds. Capture all fuel expelled from the fuel filter housing.
11. Repeat step 10, 2 additional times.
12. Install a new chassis mounted fuel filter element.
13. Place an appropriate catch basin under the engine mounted fuel filter housing to capture all fuel expelled during the next steps.
14. Open the drain valve, and drain the engine mounted fuel filter housing.
15. Remove the filter element. Leave the drain valve open at this time.
16. Thoroughly clean the filter housing bowl of all debris.
17. Using wiTECH, perform the Lift Pump Relay routine to activate the in-tank fuel pump. The fuel filter housing will begin to fill. If necessary, stop the routine before the housing begins to overflow.
18. Allow the housing to fully drain, and clean out any additional debris that is present.
19. Repeat steps 16, and 17, 2 additional times.
20. Install a new fuel filter element, and tighten the cap to specifications.
21. Close the fuel filter housing drain valve.
22. Disconnect the fuel supply hose from the high pressure fuel injection pump.

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23. Connect a suitable hose to the fuel supply hose, and route it into a suitable container
24. Using wiTECH, perform the Lift Pump Relay routine to activate the in-tank fuel pump for 1 complete cycle to flush any contaminants out of the supply line.
25. Replace the High Pressure Fuel Injection Pump. Refer to Service Library, Service Information Section 14-Fuel System > Fuel Delivery, Diesel > Pump, Fuel Injection > Removal and Installation. Be sure to reattach the fuel supply hose previously disconnected.
26. Reprogram the PCM with the correct calibration for the High Pressure Fuel Injection pump installed. Please refer to all published TSBs regarding Fuel Injection Pump identification, and PCM reprogramming procedures.
27. Replace the High Pressure Fuel Rail. Refer to Service Library, Service Information Section 14-Fuel System > Fuel Delivery, Diesel > Rail, Fuel > Removal and Installation.
28. Replace all 6 fuel injectors, and injector connector tubes. Refer to Service Library, Service Information Section 09 – Engine, 6.7L Diesel > Fuel Injection > Injector(s), Fuel > Removal, and Installation.
29. Install new high pressure fuel rail to injector connector tube fuel lines.
30. Install new high pressure fuel injection pump to rail supply lines.
31. Attach a suitable hose to the fuel return line fitting left disconnected at the tank in step 5.
32. Route the hose into a suitable container.
33. Prime the fuel system. Refer to Service Library, Service Information Section 14 – Fuel System > Fuel Delivery, Diesel > Standard Procedure > Fuel System Priming, Diesel.
34. Start the engine, and allow it to run until approximately 2-3 gallons of fuel has been captured from the fuel return line. This ensures that any debris in any of the remaining fuel return system components, including the cylinder head, has been fully expelled from the system.
35. Reconnect the chassis fuel return line at the tank.
36. Top off the fuel tank with fresh fuel if necessary, and verify the repair.

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