

1 08 05-17



Service Information Bulletin

SUBJECT	DATE
Contaminated Fluids	August 2017

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0191	DD Heavy Duty	Fuel in Coolant/Coolant in Fuel	Updated HD diagnostic procedures
DDC-SVC-MAN-0084			
DDC-SVC-MAN-0184	Euro IV		

DiagnosticLink users: Please update the troubleshooting guides in DiagnosticLink with this newest version. To update the tool troubleshooting guide, open DiagnosticLink and from the Help – Troubleshooting Guides menu, select the appropriate troubleshooting manual, then click Update.



13400 Outer Drive, West, Detroit, Michigan 48239-4001
 Telephone: 313-592-5000
www.demanddetroit.com

2 Fuel in Coolant/Coolant in Fuel

Table 1.

Service Tool Used in the Procedure	
Tool Number	Description
W470589012500	DD13 Cylinder Head Leak Tool
W470589002500	DD15/16 Cylinder Head Leak Tool

NOTE: DEF contamination in the fuel system can be mistaken for coolant in the fuel. When DEF is found to be a contaminant of the fuel system, its appearance will be a brown or rusty color most notable in the fuel filter module.

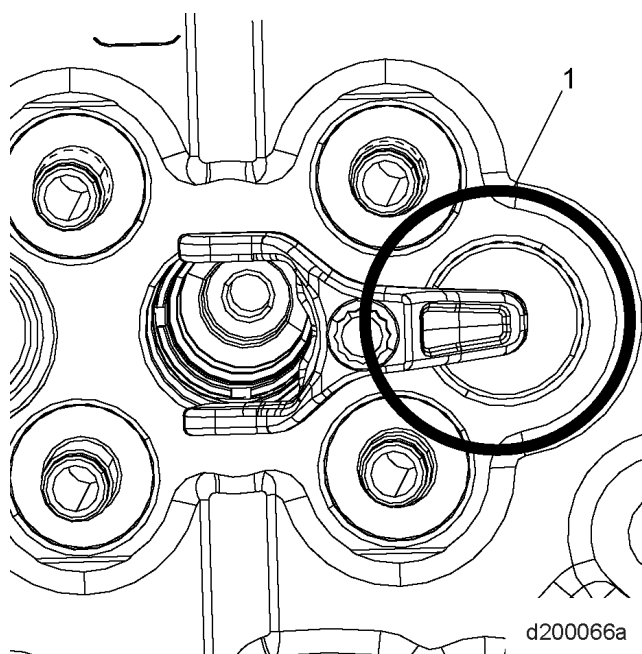
1. Shut off the engine, apply the parking brake, chock the wheels, and perform any other applicable safety steps.
2. Verify that fuel/coolant contamination is present.
3. Pressurize the cooling system, per Original Equipment Manufacturer (OEM) specifications. Inspect for external coolant leaks. Are any leaks present?
 - a. Yes; repair as necessary. Then, Go to step 9.
 - b. No; Go to step 4.

NOTE: The fuel injector O-rings and the fuel injector clamp hold-down bolts must be replaced each time they are removed from the cylinder head.

4. Release the pressure from the cooling system.
5. Remove all six fuel injectors. Refer to section "Removal of the Fuel Injector - Two-Filter System".

NOTICE: Failure to reinstall the fuel injector hold-down clamps may damage the cylinder head coolant gallery plugs (1).

6. Reinstall the fuel injector hold-down clamps with old fuel injector bolts. Torque bolts to 20 N·m (15 lb·ft) + 90-degree torque turn.



7. Pressurize the cooling system per OEM specifications. Inspect for coolant leaks around the fuel injector cups. Are any leaks present?

- a. Yes; clean the injector cups and replace all six injector cup O-rings. Refer to section "Removal of the Fuel Injector - Two-Filter System". Then Go to step 9.
 - b. No; Go to step 8.
8. Remove the cylinder head. Pressure test the cylinder head. For DD13 engines, use tool W470589012500. For DD15 and DD16 engines, use tool W470589002500. Are there any leaks present?
For the DD13: Refer to section "Removal of the DD13 Cylinder Head Assembly".
For the DD15 and DD16: Refer to section "Removal of the DD15 and DD16 Cylinder Head Assembly".
 - a. Yes; replace or repair as necessary. Then Go to step 9.
For the DD13: Refer to section "Installation of the DD13 Cylinder Head Assembly".
For the DD15 and DD16: Refer to section "Installation of the DD15 and DD16 Cylinder Head Assembly".
 - b. No; review the results of the above troubleshooting steps. Then Go to step 9.
9. If fuel has been identified as a contaminant in the coolant, replace the components listed below. All fuel system repairs should now be complete. If the WIF Light is on refer to Power Service Literature for the fault that is present.

Table 2.

Description	Qty.	Comments
Fuel Injector Cup Seals	1	This is a kit consisting of six seals.
Coolant Line - Air Compressor To Fuel Filter Module	1	
Coolant Line - Air Compressor To Cylinder Block	1	
Coolant Line - Fuel Filter Module To Oil/ Coolant Module	1	
Gasket - Fuel Injector Jumper Lines	6	
Fuel Injector O-Ring Seal Kit	6	
Coolant Filter (if equipped)	1	Use applicable coolant filter. Note that some engines may not have a coolant filter if previously removed by the customer.
Coolant	NA	Use applicable coolant as listed in the "Coolant Selections" manual (DDC-SVC-BRO-0002)

3 Fuel in Coolant/Coolant in Fuel

Table 3.

Service Tool Used in the Procedure	
Tool Number	Description
W470589012500	DD13 Cylinder Head Leak Tool
W470589002500	DD15/16 Cylinder Head Leak Tool

NOTE: DEF contamination in the fuel system can be mistaken for coolant in the fuel. When DEF is found to be a contaminant of the fuel system, its appearance will be a brown or rusty color most notable in the fuel filter module.

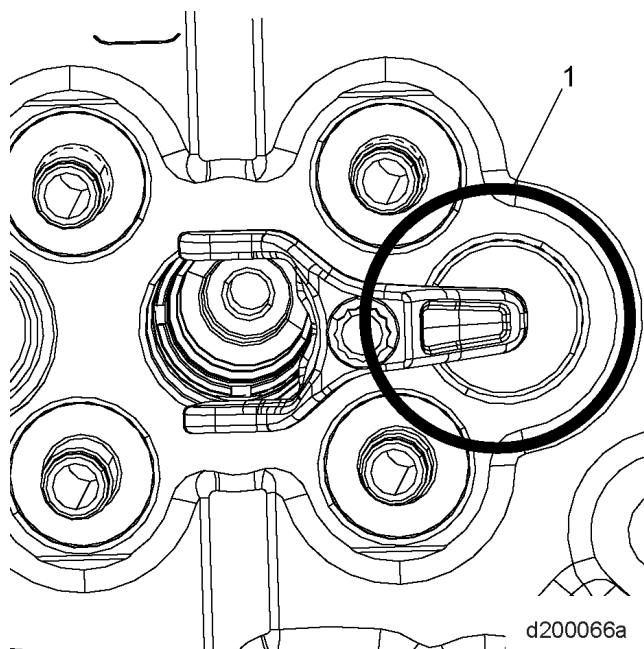
1. Shut off the engine, apply the parking brake, chock the wheels, and perform any other applicable safety steps.
2. Verify that fuel/coolant contamination is present.
3. Pressurize the cooling system, per Original Equipment Manufacturer (OEM) specifications. Inspect for external coolant leaks. Are any leaks present?
 - a. Yes; repair as necessary. Then, Go to step 13.
 - b. No; Go to step 4.

NOTE: The fuel injector O-rings and the fuel injector clamp hold-down bolts must be replaced each time they are removed from the cylinder head.

4. Release the pressure from the cooling system.
5. Remove all six fuel injectors.
For the three-filter fuel system, Refer to section "Removal of the Fuel Injector - Three-Filter System".
For the two-filter fuel system, Refer to section "Removal of the Fuel Injector - Two-Filter System".

NOTICE: Failure to reinstall the fuel injector hold-down clamps may damage the cylinder head coolant gallery plugs (1).

6. Reinstall the fuel injector hold-down clamps with old fuel injector bolts. Torque bolts to 20 N·m (15 lb·ft) + 90-degree torque turn.



7. Pressurize the cooling system per OEM specifications. Inspect for coolant leaks around the fuel injector cups. Are any leaks present?
 - a. Yes; clean the injector cups and replace all six injector cup O-rings. Then Go to step 13.
For the three-filter fuel system, Refer to section "Removal of the Fuel Injector Cup - Three-Filter System".
For the two-filter fuel system, Refer to section "Removal of the Fuel Injector Cup - Two-Filter System"
 - b. No; Go to step 8.
8. Is the engine equipped with a two-filter fuel system?
 - a. Yes; Go to step 9.
 - b. No; Go to step 10.

Table 4.

NOTE: Beginning in May 2, 2014, engines with the two-filter fuel system are built with a fuel cooler delete bypass plate in place of the fuel cooler. The updated module with the fuel cooler delete bypass plate is backwards-compatible with engines built with a fuel cooler.	
 d470368	 d470368a
Figure 1 - Module with Fuel Cooler Delete Bypass Plate	Figure 2 - Module with Fuel Cooler

9. Using a mirror, look between the fuel filter module and the cylinder block to identify if the fuel filter module is equipped with a fuel cooler. A fuel cooler can be identified by the ribbed exterior as shown in Figure 2. Is the engine equipped with a fuel cooler?
 - a. Yes; Go to step 10.
 - b. No; Go to step 12.
10. Test the fuel cooler for leaks. Refer to section "Fuel Cooler Leak Test Procedure - Three-Filter Fuel System" or Refer to section "Fuel Cooler Leak Test Procedure - Two-Filter Fuel System". Are any leaks present?
 - a. Yes; Go to step 11.
 - b. No; Go to step 12.
11. Is the engine equipped with a two-filter system?

- a. Yes; replace the fuel cooler with a Fuel Cooler Delete Bypass Plate. Refer to section "Installation of the Fuel Cooler Delete Bypass Plate - Two Filter System". Then, Go to step 13.
 - b. No; replace the fuel cooler. Refer to section "Installation of the Fuel Cooler - Three-Filter System". Then, Go to step 13.
12. Remove the cylinder head. Pressure test the cylinder head. For DD13 engines, use tool W470589012500. For DD15 and DD16 engines, use tool W470589002500. Are there any leaks present?
For the DD13: Refer to section "Removal of the DD13 Cylinder Head Assembly".
For the DD15 and DD16: Refer to section "Removal of the DD15 and DD16 Cylinder Head Assembly".
 - a. Yes; replace or repair as necessary. Then Go to step 13.
For the DD13: Refer to section "Installation of the DD13 Cylinder Head Assembly".
For the DD15 and DD16: Refer to section "Installation of the DD15 and DD16 Cylinder Head Assembly".
 - b. No; review the results of the above troubleshooting steps. Then Go to step 13.
13. If fuel has been identified as a contaminant in the coolant, replace the components listed below. All fuel system repairs should now be complete. If the WIF Light is on refer to Power Service Literature for the fault that is present.

Table 5.

Description	Qty.	Comments
Fuel Injector Cup Seals	1	This is a kit consisting of six seals.
Seal between Coolant Collector and Cylinder Head	1	Only for DD15/16 engine S/N (last five digits) 32840 built before March 22, 2010. Do not replace for DD13 engines.
Coolant Line - Air Compressor To Fuel Filter Module	1	
Coolant Line - Fuel Filter Module To Oil/ Coolant Module	1	
Coolant Line - Air Compressor To Cylinder Block	1	
Gasket - Fuel Injector Jumper Lines	6	
Fuel Injector O-Ring Seal Kit	6	
Coolant Filter (if equipped)	1	Use applicable coolant filter. Note that some engines may not have a coolant filter if previously removed by the customer.
Coolant	NA	Use applicable coolant as listed in the "Coolant Selections" manual (DDC-SVC-BRO-0002)

4 Fuel in Coolant/Coolant in Fuel

Table 6.

Service Tool Used in the Procedure	
Tool Number	Description
W470589012500	DD13 Cylinder Head Leak Tool
W470589002500	DD15/16 Cylinder Head Leak Tool

NOTE: DEF contamination in the fuel system can be mistaken for coolant in the fuel. When DEF is found to be a contaminant of the fuel system, its appearance will be a brown or rusty color most notable in the fuel filter module.

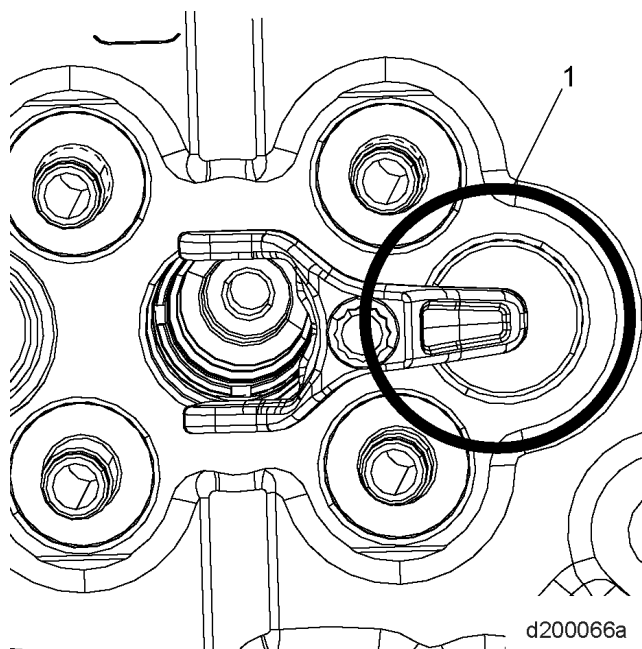
1. Shut off the engine, apply the parking brake, chock the wheels, and perform any other applicable safety steps.
2. Verify that fuel/coolant contamination is present.
3. Pressurize the cooling system, per Original Equipment Manufacturer (OEM) specifications. Inspect for external coolant leaks. Are any leaks present?
 - a. Yes; repair as necessary. Then, Go to step 13.
 - b. No; Go to step 4.

NOTE: The fuel injector O-rings and the fuel injector clamp hold-down bolts must be replaced each time they are removed from the cylinder head.

4. Release the pressure from the cooling system.
5. Remove all six fuel injectors.
For the three-filter fuel system, Refer to section "Removal of the Fuel Injector - Three-Filter System".
For the two-filter fuel system, Refer to section "Removal of the Fuel Injector - Two-Filter System".

NOTICE: Failure to reinstall the fuel injector hold-down clamps may damage the cylinder head coolant gallery plugs (1).

6. Reinstall the fuel injector hold-down clamps with old fuel injector bolts. Torque bolts to 20 N·m (15 lb·ft) + 90-degree torque turn.



7. Pressurize the cooling system per OEM specifications. Inspect for coolant leaks around the fuel injector cups. Are any leaks present?
 - a. Yes; clean the injector cups and replace all six injector cup O-rings. Then Go to step 13.
For the three-filter fuel system, Refer to section "Removal of the Fuel Injector Cup - Three-Filter System".
For the two-filter fuel system, Refer to section "Removal of the Fuel Injector Cup - Two-Filter System"
 - b. No; Go to step 8.
8. Is the engine equipped with a two-filter fuel system?
 - a. Yes; Go to step 9.
 - b. No; Go to step 10.

Table 7.

NOTE: Beginning in May 2, 2014, engines with the two-filter fuel system are built with a fuel cooler delete bypass plate in place of the fuel cooler. The updated module with the fuel cooler delete bypass plate is backwards-compatible with engines built with a fuel cooler.	
 d470368	 d470368a
Figure 1 - Module with Fuel Cooler Delete Bypass Plate	Figure 2 - Module with Fuel Cooler

9. Using a mirror, look between the fuel filter module and the cylinder block to identify if the fuel filter module is equipped with a fuel cooler. A fuel cooler can be identified by the ribbed exterior as shown in Figure 2. Is the engine equipped with a fuel cooler?
 - a. Yes; Go to step 10.
 - b. No; Go to step 12.
10. Test the fuel cooler for leaks. Refer to section "Fuel Cooler Leak Test Procedure - Three-Filter Fuel System" or Refer to section "Fuel Cooler Leak Test Procedure - Two-Filter Fuel System". Are any leaks present?
 - a. Yes; Go to step 11.
 - b. No; Go to step 12.
11. Is the engine equipped with a two-filter system?

- a. Yes; replace the fuel cooler with a Fuel Cooler Delete Bypass Plate. Refer to section "Installation of the Fuel Cooler Delete Bypass Plate - Two Filter System". Then, Go to step 13.
 - b. No; replace the fuel cooler. Refer to section "Installation of the Fuel Cooler - Three-Filter System". Then, Go to step 13.
12. Remove the cylinder head. Pressure test the cylinder head. For DD13 engines, use tool W470589012500. For DD15 and DD16 engines, use tool W470589002500. Are there any leaks present?
For the DD13: Refer to section "Removal of the DD13 Cylinder Head Assembly".
For the DD15 and DD16: Refer to section "Removal of the DD15 and DD16 Cylinder Head Assembly".
 - a. Yes; replace or repair as necessary. Then Go to step 13.
For the DD13: Refer to section "Installation of the DD13 Cylinder Head Assembly".
For the DD15 and DD16: Refer to section "Installation of the DD15 and DD16 Cylinder Head Assembly".
 - b. No; review the results of the above troubleshooting steps. Then Go to step 13.
13. If fuel has been identified as a contaminant in the coolant, replace the components listed below. All fuel system repairs should now be complete. If the WIF Light is on refer to Power Service Literature for the fault that is present.

Table 8.

Description	Qty.	Comments
Fuel Injector Cup Seals	1	This is a kit consisting of six seals.
Seal between Coolant Collector and Cylinder Head	1	Only for DD15/16 engine S/N (last five digits) 32840 built before March 22, 2010. Do not replace for DD13 engines.
Coolant Line - Air Compressor To Fuel Filter Module	1	
Coolant Line - Fuel Filter Module To Oil/ Coolant Module	1	
Coolant Line - Air Compressor To Cylinder Block	1	
Gasket - Fuel Injector Jumper Lines	6	
Fuel Injector O-Ring Seal Kit	6	
Coolant Filter (if equipped)	1	Use applicable coolant filter. Note that some engines may not have a coolant filter if previously removed by the customer.
Coolant	NA	Use applicable coolant as listed in the "Coolant Selections" manual (DDC-SVC-BRO-0002)