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Service Information Bulletin

SUBJECT	DATE
Symptom Diagnostics - Coolant Loss	August 2016

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0193	GHG17 DD Medium Duty	Symptom Diagnostics - Coolant Loss	New DD5 and DD8 diagnostic procedures.
DDC-SVC-MAN-0191	GHG17 DD Platform	Symptom Diagnostics - Coolant Loss	Removed EPA10/GHG14 reference. Removed "call CSC."



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2 Symptom Diagnostics - Coolant Loss

Coolant Loss Complaint on the Engine, Aftertreatment, or Chassis

Check as follows:

1. Are any Original Equipment Manufacturer (OEM) components leaking coolant externally?
 - a. Yes; inspect the vehicle for the source of the coolant loss and consult OEM procedures for repair instructions.
 - b. No; Go to step 2.
2. Inspect the vehicle for any aftermarket components plumbed into the cooling system. Are there any aftermarket components plumbed into the cooling system on the vehicle?
 - a. Yes; Go to step 3.
 - b. No; Go to step 4.
3. Inspect the aftermarket components; refer to OEM guidelines. Are aftermarket components the source of coolant loss?
 - a. Yes; repair as necessary.
 - b. No; Go to step 4.
4. Pressure test the radiator cap and fill cap. Do the caps hold the correct rated pressure?
 - a. Yes; Go to step 5.
 - b. No; replace as necessary.
5. Check engine coolant fan operation. Does the fan function correctly?
 - a. Yes; Go to step 6.
 - b. No; repair as necessary.
6. Is the engine leaking coolant externally?
 - a. Yes; inspect the engine for the source of the coolant loss and repair as necessary.
 - b. No; Go to step 7.
7. Is there coolant contamination in the Diesel Exhaust Fluid (DEF)?
 - a. Yes; replace the DEF tank header assembly. Refer to section "Removal of the Diesel Exhaust Fluid Tank Header Unit".
 - b. No; Go to step 8.
8. Is there evidence of combustion gas in the coolant?
 - a. Yes; Refer to section "Symptom Diagnostics - Combustion Gas in Coolant".
 - b. No; Go to step 9.
9. Is there coolant contamination in the oil?
 - a. Yes; Refer to section "Coolant in Oil".
 - b. No; Go to step 10.
10. Is there coolant contamination in the fuel?
 - a. Yes; Refer to section "Fuel in Coolant/Coolant in Fuel".
 - b. No; Go to step 11.
11. Pressurize the cooling system; refer to OEM guidelines. Does the cooling system pass the pressure test?
 - a. Yes; Go to step 13.
 - b. No; Go to step 12.
12. Remove the Exhaust Gas Recirculation (EGR) hot pipe and inspect for signs of coolant contamination. Is coolant contamination present?
 - a. Yes; replace the EGR cooler. Refer to section "Removal of the Exhaust Gas Recirculation Cooler". Verify repairs.
 - b. No; Go to step 13.

**WARNING: PERSONAL INJURY**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

- Always start and operate an engine in a well ventilated area.
- If operating an engine in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system or emission control system.

**WARNING: PERSONAL INJURY**

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

**WARNING: ENGINE EXHAUST**

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

13. Install the pressure tester to the cooling system, but do not pressurize the cooling system. Start the engine and bring the engine up to operating temperature. Does the cooling system pressure exceed 138 kPa (20 psi)?
 - a. Yes; replace the air compressor.
 - b. No; Go to step 14.
14. Pressure test the Exhaust Gas Recirculation (EGR) cooler; Refer to section "Testing of the Exhaust Gas Recirculation Cooler". Does the EGR cooler pass testing and inspection?
 - a. Yes; remove and inspect the cylinder head and head gasket.
Refer to section "Removal of the Cylinder Head Assembly"
Refer to section "Inspection of the Cylinder Head"
Repair as necessary.
 - b. No; replace the EGR cooler. Refer to section "Installation of the Exhaust Gas Recirculation Cooler Water Manifold Assembly".

3 Symptom Diagnostics - Coolant Loss

Coolant Loss Complaint on the Engine, Aftertreatment, or Chassis

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 - a. Yes; inspect the vehicle for the source of the coolant loss and consult OEM procedures for repair instructions.
 - b. No; Go to step 2.
2. Inspect the vehicle for any aftermarket components plumbed into the cooling system. Are there any aftermarket components plumbed into the cooling system on the vehicle?
 - a. Yes; Go to step 3.
 - b. No; Go to step 4.
3. Inspect the aftermarket components; refer to OEM guidelines. Are aftermarket components the source of coolant loss?
 - a. Yes; repair as necessary.
 - b. No; Go to step 4.
4. Pressure test the radiator cap and fill cap. Does the cap hold the correct rated pressure?
 - a. Yes; Go to step 5.
 - b. No; repair as necessary.
5. Check engine coolant fan operation. Does the fan function correctly?
 - a. Yes; Go to step 6.
 - b. No; repair as necessary.
6. Is the engine leaking coolant externally?
 - a. Yes; inspect the engine for the source of the coolant loss and repair as necessary.
 - b. No; Go to step 7.
7. Is there coolant contamination in the Diesel Exhaust Fluid (DEF)?
 - a. Yes; replace the DEF tank header assembly. Select the proper tank:
Refer to section "Removal of the 13- and 23-Gallon Diesel Exhaust Fluid Tank Header Unit".
Refer to section "Removal of the Six-Gallon Diesel Exhaust Fluid Tank Header".
 - b. No; Go to step 8.
8. Is there evidence of combustion gas in the coolant?
 - a. Yes; Refer to section "Symptom Diagnostics - Combustion Gas in Coolant".
 - b. No; Go to step 9.
9. Is there coolant contamination in the oil?
 - a. Yes; Refer to section "Coolant in Oil".
 - b. No; Go to step 10.
10. Is there coolant contamination in the fuel?
 - a. Yes; Refer to section "Fuel in Coolant/Coolant in Fuel".
 - b. No; Go to step 11.
11. Pressurize the cooling system; refer to OEM guidelines. Does the cooling system pass the pressure test?
 - a. Yes; Go to step 13.
 - b. No; Go to step 12.
12. Remove the EGR hot pipe and inspect for signs of coolant contamination. Is coolant contamination present?
 - a. Yes; replace the EGR cooler. Verify repairs.
Refer to section "Removal of the DD13 Exhaust Gas Recirculation Cooler Water Manifold Assembly".
Refer to section "Removal of the DD15 and DD16 Exhaust Gas Recirculation Cooler".
 - b. No; Go to step 13.

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13. Install the pressure tester to the cooling system, but do not pressurize the cooling system. Start the engine and bring the engine up to operating temperature. Does the cooling system pressure exceed 138 kPa (20 psi)?
 - a. Yes; replace the air compressor.
 - b. No; Go to step 14.
14. Pressure test the Exhaust Gas Recirculation (EGR) cooler. Does the EGR cooler pass testing and inspection?

Testing of the DD13 Exhaust Gas Recirculation Cooler Water Manifold Assembly - In Chassis
Refer to section "Testing of the DD15 and DD16 Exhaust Gas Recirculation Cooler"

 - a. Yes; remove and inspect the cylinder head and head gasket.

For DD13, Refer to section "Removal of the DD13 Cylinder Head Assembly".
For DD15/16, Refer to section "Removal of the DD15 and DD16 Cylinder Head Assembly".
Refer to section "Inspection of the Cylinder Head".
Repair as necessary.
 - b. No; replace the EGR cooler.

For DD13, Refer to section "Installation of the DD13 Exhaust Gas Recirculation Cooler Water Manifold Assembly".
For DD15/16, Refer to section "Installation of the DD15 and DD16 Exhaust Gas Recirculation Cooler".