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Service Information Bulletin

SUBJECT	DATE
Symptom Diagnostics - Low Engine Coolant Temperature	May 2018

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084	DD13, DD15, DD16	Low Engine Coolant Temperature	Added clarification to complaint verification and added link to remove the thermostat prior to inspecting the thermostat.
DDC-SVC-MAN-0191			
DDC-SVC-MAN-0193	DD5, DD8	Low Engine Coolant Temperature	Added clarification to complaint verification, added link to remove the thermostat prior to inspecting the thermostat and updated temperature specifications.
DDC-SVC-MAN-0200			

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.

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2 Low Engine Coolant Temperature

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.

Check as follows:

NOTE: In extremely cold ambient temperatures, it may take longer than 20 minutes of driving to reach operating temperature. In these cases, performing a Parked Regeneration is preferred.

NOTE: Use DiagnosticLink ® to monitor engine coolant temperature.

1. Verify the complaint by driving the vehicle for 20 minutes or performing a Parked Regeneration. Does the engine coolant temperature reach and maintain a minimum of 85°C (185°F)?
    a. Yes; the vehicle is performing as intended; no further troubleshooting is required. Shut down the engine.
    b. No; shut down the engine. Go to step 2.

NOTE: If there is no heat in the cab but the engine temperature does rise to normal operating temperature, diagnose the Heating Ventilation and Air Conditioning (HVAC) system.

2. Check engine coolant fan operation. Does the fan function and cycle correctly?
    a. Yes; Go to step 3.
    b. No; diagnose the engine fan operation.
3. Inspect the vehicle for aftermarket cooling system components plumbed into the engine cooling system. Are any aftermarket cooling system components present?
    a. Yes; Go to step 4.
    b. No; Go to step 5.

NOTE: Use DiagnosticLink ® to monitor engine coolant temperature.

4. Bypass the aftermarket cooling system component and verify the complaint by driving the vehicle for 20 minutes or performing a Parked Regeneration. Does the engine coolant temperature reach and maintain a minimum of 85°C (185°F)?
    a. Yes; no further engine troubleshooting is required. Shut down the engine. Troubleshoot the aftermarket cooling system component.
    b. No; Go to step 5.
5. Remove the thermostat. Refer to section "Removal of the Engine Coolant Thermostat and Seal".
6. Inspect the thermostat. Refer to section "Inspection of the Coolant Thermostat and Seal". Is the thermostat faulty or damaged?
    a. Yes; replace the thermostat. Refer to section "Removal of the Engine Coolant Thermostat and Seal". Verify repair.

b. No; review the results of the above troubleshooting steps to see if all results are consistent and accurate. Replace the thermostat. Refer to section "Removal of the Engine Coolant Thermostat and Seal". Verify repair.

3 Low Engine Coolant Temperature

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.

Check as follows:

NOTE: In extremely cold ambient temperatures, it may take longer than 20 minutes of driving to reach operating temperature. In these cases, performing a Parked Regeneration is preferred.

NOTE: Use DiagnosticLink ® to monitor engine coolant temperature.

1. Verify the complaint by driving the vehicle for 20 minutes or performing a Parked Regeneration. Does the engine coolant temperature reach and maintain a minimum of 85°C (185°F)?
    a. Yes; the vehicle is performing as intended; no further troubleshooting is required. Shut down the engine.
    b. No; shut down the engine. Go to step 2.

NOTE: If there is no heat in the cab but the engine temperature does rise to normal operating temperature, diagnose the Heating Ventilation and Air Conditioning (HVAC) system.

2. Check engine coolant fan operation. Does the fan function and cycle correctly?
    a. Yes; Go to step 3.
    b. No; diagnose the engine fan operation.
3. Inspect the vehicle for aftermarket cooling system components plumbed into the engine cooling system. Are any aftermarket cooling system components present?
    a. Yes; Go to step 4.
    b. No; Go to step 5.

NOTE: Use DiagnosticLink ® to monitor engine coolant temperature.

4. Bypass the aftermarket cooling system component and verify the complaint by driving the vehicle for 20 minutes or performing a Parked Regeneration. Does the engine coolant temperature reach and maintain a minimum of 85°C (185°F)?
    a. Yes; no further engine troubleshooting is required. Shut down the engine. Troubleshoot the aftermarket cooling system component.
    b. No; Go to step 5.
5. Remove the thermostat. Refer to section "Removal of the Engine Coolant Thermostat and Seal".
6. Inspect the thermostat. Refer to section "Inspection of the Coolant Thermostat and Seal". Is the thermostat faulty or damaged?
    a. Yes; replace the thermostat. Refer to section "Removal of the Engine Coolant Thermostat and Seal". Verify repair.

b. No; review the results of the above troubleshooting steps to see if all results are consistent and accurate. Replace the thermostat. Refer to section "Removal of the Engine Coolant Thermostat and Seal". Verify repair.

4 Low Engine Coolant Temperature

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.

Check as follows:

NOTE: In extremely cold ambient temperatures, it may take longer than 20 minutes of driving to reach operating temperature. In these cases, performing a Parked Regeneration is preferred.

NOTE: Use DiagnosticLink ® to monitor engine coolant temperature.

1. Verify the complaint by driving the vehicle for 20 minutes or performing a Parked Regeneration. Does the engine coolant temperature reach and maintain a minimum of 83°C (181°F)?
    a. Yes; the vehicle is performing as intended, no further troubleshooting is required. Shut down the engine.
    b. No; shut down the engine. Go to step 2.

NOTE: If there is no heat in the cab but the engine temperature does rise to normal operating temperature, diagnose the Heating Ventilation and Air Conditioning (HVAC) system.

2. Check engine coolant fan operation. Does the fan function and cycle correctly?
    a. Yes; Go to step 3.
    b. No; diagnose the engine fan operation.
3. Inspect the vehicle for aftermarket cooling system components plumbed into the engine cooling system. Are any aftermarket cooling system components present?
    a. Yes; Go to step 4.
    b. No; Go to step 5.

NOTE: Use DiagnosticLink ® to monitor engine coolant temperature.

4. Bypass the aftermarket cooling system component and verify the complaint by driving the vehicle for 20 minutes or performing a Parked Regeneration. Does the engine coolant temperature reach and maintain a minimum of 83°C (181°F)?
    a. Yes; no further engine troubleshooting is required. Shut down the engine. Troubleshoot the aftermarket cooling system component.
    b. No; Go to step 5.
5. Remove the thermostat. Refer to section "Removal of the Coolant Thermostat".
6. Inspect the thermostat. Refer to section "Inspection of the Coolant Thermostat". Is the thermostat faulty or damaged?
    a. Yes; replace the thermostat. Refer to section "Removal of the Coolant Thermostat". Verify repair.
    b. No; review the results of the above troubleshooting steps to see if all results are consistent and accurate. Replace the thermostat. Refer to section "Removal of the Coolant Thermostat". Verify repair.

5 Low Engine Coolant Temperature

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.

Check as follows:

NOTE: In extremely cold ambient temperatures, it may take longer than 20 minutes of driving to reach operating temperature. In these cases, performing a Parked Regeneration is preferred.

NOTE: Use DiagnosticLink ® to monitor engine coolant temperature.

1. Verify the complaint by driving the vehicle for 20 minutes or performing a Parked Regeneration. Does the engine coolant temperature reach and maintain a minimum of 83°C (181°F)?
    a. Yes; the vehicle is performing as intended, no further troubleshooting is required. Shut down the engine.
    b. No; shut down the engine. Go to step 2.

NOTE: If there is no heat in the cab but the engine temperature does rise to normal operating temperature, diagnose the Heating Ventilation and Air Conditioning (HVAC) system.

2. Check engine coolant fan operation. Does the fan function and cycle correctly?
    a. Yes; Go to step 3.
    b. No; diagnose the engine fan operation.
3. Inspect the vehicle for aftermarket cooling system components plumbed into the engine cooling system. Are any aftermarket cooling system components present?
    a. Yes; Go to step 4.
    b. No; Go to step 5.

NOTE: Use DiagnosticLink ® to monitor engine coolant temperature.

4. Bypass the aftermarket cooling system component and verify the complaint by driving the vehicle for 20 minutes or performing a Parked Regeneration. Does the engine coolant temperature reach and maintain a minimum of 83°C (181°F)?
    a. Yes; no further troubleshooting is required. Shut down the engine. Troubleshoot the aftermarket cooling system component.
    b. No; Go to step 5.
5. Remove the thermostat. Refer to section "Removal of the Coolant Thermostat".
6. Inspect thermostat for correct operation. Refer to section "Inspection of the Coolant Thermostat". Is the thermostat faulty or damaged?
    a. Yes; replace the thermostat. Refer to section "Removal of the Coolant Thermostat". Verify repair.

b. No; review the results of the above troubleshooting steps to see if all results are consistent and accurate. Replace the thermostat. Refer to section "Removal of the Coolant Thermostat". Verify repair.

