CATERPILLAR®

SEBU8087-09
July 2007

# Operation and Maintenance Manual

## C13 and C15 On-highway Engines

**S3C1-Up (Engine)**
**LEE1-Up (Engine)**
**SDP1-Up (Engine)**
**B5R1-Up (Engine)**

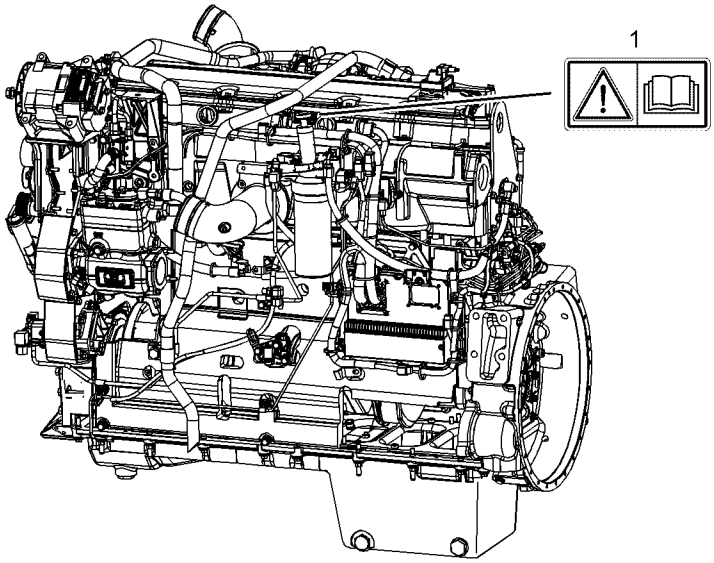


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Illustration 3

Left side of the C15 Engine

(1) The universal safety message is located on the middle of the valve cover base.

The temperature of the exhaust gas and of the exhaust system components may reach up to 650 °C (1202 °F) during regeneration. An unexpected failure of the engine or of the engine aftertreatment system may increase temperature at the diesel particulate filter (DPF) as high as 900 °C (1652 °F). Do not expose flammable material or explosive atmospheres to exhaust gas or to components of the exhaust system during regeneration.

Store fuels and lubricants in properly marked containers away from unauthorized persons. Store oily rags and any flammable materials in protective containers. Do not smoke in areas that are used for storing flammable materials.

Do not expose the engine to any flame.

Exhaust shields (if equipped) protect hot exhaust components from oil or fuel spray in case of a line, a tube, or a seal failure. Exhaust shields must be installed correctly.

Do not weld on lines or tanks that contain flammable fluids. Do not flame cut lines or tanks that contain flammable fluid. Clean any such lines or tanks thoroughly with a nonflammable solvent prior to welding or flame cutting.

Wiring must be kept in good condition. All electrical wires must be properly routed and securely attached. Check all electrical wires daily. Repair any wires that are loose or frayed before you operate the engine. Clean all electrical connections and tighten all electrical connections.

Eliminate all wiring that is unattached or unnecessary. Do not use any wires or cables that are smaller than the recommended gauge. Do not bypass any fuses and/or circuit breakers.

Arcing or sparking could cause a fire. Secure connections, recommended wiring, and properly maintained battery cables will help to prevent arcing or sparking.

Inspect all lines and hoses for wear or for deterioration. The hoses must be properly routed. The lines and hoses must have adequate support and secure clamps. Tighten all connections to the recommended torque. Leaks can cause fires.

Oil filters and fuel filters must be properly installed. The filter housings must be tightened to the proper torque.

All grounds should be tight and free of corrosion. The engine alternator must be grounded to the negative “-” battery terminal with a wire that is adequate to handle the full charging current of the alternator.

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# Engine Electronics

**SMCS Code:** 1000; 1400; 1900

**WARNING**

**Tampering with the electronic system installation or the OEM wiring installation can be dangerous and could result in personal injury or death and/or engine damage.**

**WARNING**

**Electrical Shock Hazard. The unit injector system uses 90 - 120 volts. The ECM sends this signal to the unit injectors. Do not come in contact with the unit injector harness connector while the engine is operating. Failure to follow this instruction could resulting in personal injury or death.**

This engine has a comprehensive, programmable Engine Monitoring System. The Engine Control Module (ECM) has the ability to monitor the engine operating conditions. If any of the engine parameters extend outside an allowable range, the ECM will initiate an immediate action.

The following actions are available for engine monitoring control: WARNING, DERATE, and SHUTDOWN. The DERATE and SHUTDOWN engine monitoring modes have the ability to limit engine speed and/or the engine power.

Many of the parameters that are monitored by the ECM can be programmed for the engine monitoring functions. The following parameters can be monitored as a part of the Engine Monitoring System:

- Operating Altitude
- Engine Coolant Level

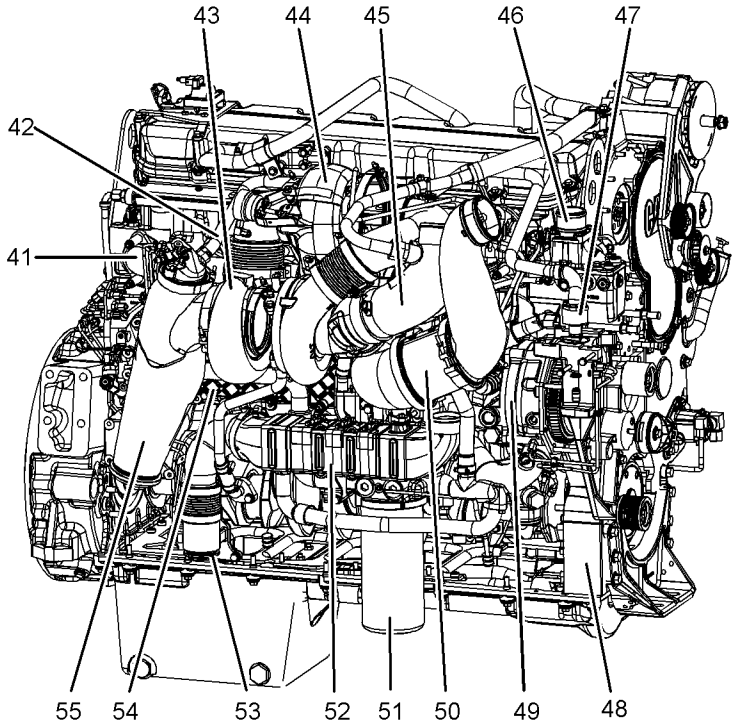


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Illustration 17

C15 Right side view

(41) Exhaust manifold
(42) Air line for combustion of exhaust gas
(43) Low pressure turbocharger
(44) High pressure turbocharger
(45) Clean gas induction (CGI) actuator
(46) Water temperature regulator
(47) Air valve for combustion of the engine aftertreatment system
(48) Engine oil pump
(49) Water pump
(50) Precooler
(51) Engine oil filter
(52) CGI cooler
(53) CGI tube
(54) Engine oil cooler
(55) Aftertreatment regeneration device (ARD)

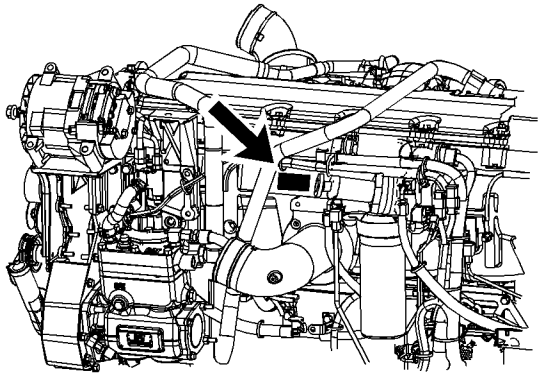

Illustration 25 g01347964

Left side view of C15 Engine

**C15** The information plate is located on the left side of the cylinder head.

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# Reference Numbers

**SMCS Code:** 1000

Information for the following items may be needed to order parts. Locate the information for your engine. Record the information on the appropriate space. Make a copy of this list for a record. Retain the information for future reference.

## Record for Reference

Chassis Serial No. _____

Engine Model _____

Engine Serial No. _____

Engine Arrangement No. _____

Modification No. _____

Engine Low Idle rpm _____

- “PTO Active Output” _____
- “PTO Switch ON Lamp” _____
- “Inlet Air Shut Off Relay Control” _____

**Fuel Tank Parameters**

- “Primary Fuel Tank Capacity” _____
- “Secondary Fuel Tank Capacity” _____

**Passwords**

- “Customer Password #1” _____
- “Customer Password #2” _____

**Data Link Parameters**

- “Powertrain Data Link” _____

## Optional Lamps

**DPF Lamp –** This lamp provides a general indication of the soot load. The lamp is off when the soot load is low. This lamp is on when an active regeneration or stationary regeneration is required in order to reduce the soot load. The lamp flashes when the soot load has increased to a very high level. The lamp also flashes whenever the ARD disable switch is activated.

**High Exhaust System Temperature Lamp (HEST) –** This lamp is illuminated when the exhaust temperature is greater than 450 °C (842 °F) and the vehicle speed is less than 8 km/h (5 mph).

**Red Stop Lamp –** This lamp indicates that the soot load is very high.

**Aftertreatment Disable Lamp –** This lamp is illuminated whenever the ARD disable switch is activated.

# Switch Inputs

The engine aftertreatment system does not require input from the operator in order to work correctly. However, the ARD can receive switch inputs in order for the operator to manually control the system. The switches are optional. A vehicle may be retrofitted with the switches.

Two switch inputs are provided. The inputs can be provided by a single switch or by two switches.

# Engine Diagnostics

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## Self-Diagnostics

**SMCS Code:** 1000; 1900; 1901; 1902

Caterpillar Electronic Engines have the capability to perform a self-diagnostics test. When the system detects an active problem, the amber warning lamp is activated. Diagnostic codes will be stored in permanent memory in the Electronic Control Module (ECM). The diagnostic codes can be retrieved by using Caterpillar electronic service tools.

**Note:** The amber warning lamp must be installed by the OEM or by the customer.

Some installations have electronic displays that provide direct readouts of the engine diagnostic codes. Refer to the manual that is provided by the OEM for more information on retrieving engine diagnostic codes.

Active codes represent problems that currently exist. These problems should be investigated first.

Logged codes represent the following items:

- Intermittent problems
- Recorded events
- Performance history

The problems may have been repaired since the logging of the code. These codes do not indicate that a repair is needed. The codes are guides or signals when a situation exists. Codes may be helpful to troubleshoot problems.

When the problems have been corrected, the corresponding logged fault codes should be cleared.

# Problems with the Wiring Harness

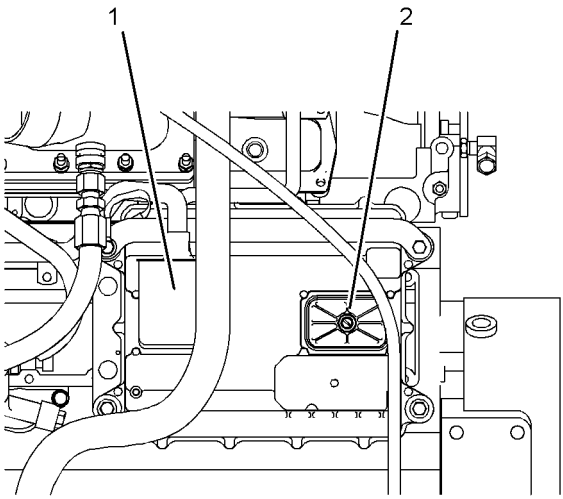


Illustration 35 g01075737

(1) Engine harness
(2) Connection for the chassis harness (vehicle OEM)

Locate the ECM. Two harness connectors are attached to the ECM. One connector is engine harness (1) and the other connector is the chassis harness. Check the connectors in order to ensure that the connectors are secure. Lightly pull each of the wires in the chassis harness.

1. Pull each wire with approximately 4.5 kg (10 lb) of force. The wire should remain in the connector.

2. If a wire is loose, push the wire back into the connector. Pull the wire again in order to ensure that the wire is secure.

3. Start the engine. If the engine does not start, consult the nearest Caterpillar dealer for assistance.

**Note:** Allowing the engine to lug below peak torque is permissible if the vehicle is cresting the top of a hill. However, extended operation at engine speeds below peak torque (1200 rpm) will raise the exhaust temperature and the cylinder pressure. This can lead to reduced engine service life.

## Downhill Operation

NOTICE
Do not exceed 2300 rpm in any situation or 2100 rpm if equipped with an auxiliary engine brake system.

On downgrades, do not coast while the clutch pedal is depressed. Do not coast with the transmission in neutral. If no engine power is needed, disengage the Cruise Control.

Select the correct gear that does not allow the engine speed (rpm) to exceed 2300 rpm. If equipped, use the auxiliary brake in order to control the speed of the vehicle. Usually, the same gear that would be used to go up a hill can be used to go down the hill. Refer to the rated rpm that is on the engine information plate.

## Reduction of Particulate Emissions

The diesel particulate filter(DPF) and the aftertreatment regeneration device (ARD) work together in order to reduce particulate emissions. The DPF collects the soot and the engine oil in the exhaust. The DPF converts the soot into a gas which is released into the atmosphere. The DPF converts the engine oil into ash. Ash from the engine oil remains in the DPF until the ash is cleaned out of the DPF. This process is called regeneration.

The temperature of the DPF must be above a particular value in order for regeneration to occur. The exhaust gas provides heat for the regeneration process. There are two types of regeneration:

**Passive Regeneration –** The engine provides sufficient exhaust gas temperature for regeneration.

**Active Regeneration –** The engine's duty cycle does not provide sufficient exhaust temperature for passive regeneration. The ARD operates in order to raise the temperature of the exhaust gas. When the regeneration process is complete, the ARD turns off.

# Cold Weather Operation

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## Fuel Related Components in Cold Weather

**SMCS Code:** 1000; 1250

### Fuel Tanks

Condensation can form in partially filled fuel tanks. Top off the fuel tanks after operating the engine.

Fuel tanks should contain some provision for draining water and sediment from the bottom of the tanks. Some fuel tanks use supply pipes that allow water and sediment to settle below the end of the fuel supply pipe.

Some fuel tanks use supply lines that take fuel directly from the bottom of the tank. If the engine is equipped with this system, regular maintenance of the fuel system filter is important.

Drain the water and sediment from any fuel storage tank at the following intervals:

- Weekly
- Oil changes
- Refueling of the fuel tank

This will help prevent water and/or sediment from being pumped from the fuel storage tank and into the engine fuel tank.

### Fuel Filters

A primary fuel filter and/or a water separator is installed between the fuel tank and the engine mounted fuel filter. The location of the primary fuel filter is important in cold weather operation. The primary fuel filter and the fuel supply line are commonly affected by cold fuel. The best location for the primary fuel filter is in the engine compartment. Here, the primary fuel filter will benefit from the radiant heat of the engine. A primary fuel filter that is mounted outside the frame rails or in any location that is exposed to wind can be a persistent problem in cold weather.

## Refill Capacities (Fuel System)

Refer to the Operation and Maintenance Manual that is provided by the OEM for capacities of the fuel system.

# Lubricating Grease

NOTICE
These recommendations are subject to change without notice. Contact your local Caterpillar dealer for the most up to date recommendations.

Caterpillar provides various greases that vary in performance from a moderate performance to an extremely high performance. These greases service the entire line of Caterpillar products in the wide variety of climates throughout the world. From this variety of Caterpillar grease products, you can find a Caterpillar grease that will meet or exceed the performance requirements of most on-highway trucks.

The performance requirements of your engine must be determined before you select any Caterpillar grease. Consult the recommendations for greases that are made by the OEM for the equipment. Then, consult with your Caterpillar dealer for a list of greases that have the performance specifications and the available sizes of containers.

**Note:** Always choose grease that meets or exceeds the recommendations that are specified by the equipment manufacturer for the application.

If it is necessary to choose a single grease to use for all of the equipment at one site, always choose a grease that meets or exceeds the requirements of the most demanding application. Remember that the products which barely meet the minimum performance requirements can be expected to barely produce the minimum lives of your parts. False economy is being used if a grease is purchased with the lowest cost as the only consideration. Instead, use the grease that yields the lowest total operating cost. This cost should be based on an analysis that includes the costs of parts, labor, downtime, and the cost of the amount of grease that is required.

**Note:** Purge all of the old grease from a joint before you change from one type of grease to another type of grease. Some greases are not chemically compatible with other greases. Consult your supplier in order to determine if the greases are compatible.

## Daily



## PM Level 1 - Every 32 000 km (20 000 miles) or 9464 L (2500 US gal) of Fuel or 300 Service Hours



## Initial 500 Hours (for New Systems, Refilled Systems, and Converted Systems)



## Every 80 500 km (50 000 miles) or 1500 Service Hours



## Every 144 800 km (90 000 mi) or 1500 Service Hours

**⚠ WARNING**

**The battery cables or the batteries should not be removed with the battery cover in place. The battery cover should be removed before any servicing is attempted.**

**Removing the battery cables or the batteries with the cover in place may cause a battery explosion resulting in personal injury.**

1. Turn the key start switch to the OFF position. Remove the key and all electrical loads.

2. Turn OFF the battery charger. Disconnect the charger.

3. The NEGATIVE “-” cable connects the NEGATIVE “-” battery terminal to the ground plane. Disconnect the cable from the NEGATIVE “-” battery terminal.

4. The POSITIVE “+” cable connects the POSITIVE “+” battery terminal to the starting motor. Disconnect the cable from the POSITIVE “+” battery terminal.

**Note:** Always recycle a battery. Never discard a battery. Return used batteries to an appropriate recycling facility.

5. Remove the used battery.

6. Install the new battery.

**Note:** Before the cables are connected, ensure that the key start switch is OFF.

7. Connect the cable from the starting motor to the POSITIVE “+” battery terminal.

8. Connect the cable from the ground plane to the NEGATIVE “-” battery terminal.

2. Open the cooling system drain valve (if equipped). If the cooling system is not equipped with a drain valve, remove one of the drain plugs.

**Note:** If equipped, be sure to drain the heater and any related supply and return lines.

Allow the coolant to drain.

NOTICE
Dispose of used engine coolant properly or recycle. Various methods have been proposed to reclaim used coolant for reuse in engine cooling systems. The full distillation procedure is the only method acceptable by Caterpillar to reclaim the used coolant.

For information regarding the disposal and the recycling of used coolant, consult your Caterpillar dealer or consult Caterpillar Dealer Service Tools Group:

Outside Illinois: 1-800-542-TOOL
Inside Illinois: 1-800-541-TOOL
Canada: 1-800-523-TOOL

## Flush

1. Flush the cooling system with clean water in order to remove any debris.

2. Close the drain valve (if equipped). Clean the drain plugs. Install the drain plugs. Refer to the Specifications Manual, SENR3130, “Torque Specifications” for more information on the proper torques.

NOTICE
Fill the cooling system no faster than 19 L (5 US gal) per minute to avoid air locks.

3. Fill the cooling system with a mixture of clean water and Caterpillar Fast Acting Cooling System Cleaner. Add 0.5 L (1 pint) of cleaner per 15 L (4 US gal) of the cooling system capacity. Install the cooling system filler cap.

4. Start and run the engine at low idle for a minimum of 30 minutes. The coolant temperature should be at least 82 °C (180 °F).

- Keep the unused sampling bottles stored in plastic bags.
- Obtain coolant samples directly from the coolant sample port. You should not obtain the samples from any other location.
- Keep the lids on empty sampling bottles until you are ready to collect the sample.
- Place the sample in the mailing tube immediately after obtaining the sample in order to avoid contamination.
- Never collect samples from expansion bottles.
- Never collect samples from the drain for a system.

NOTICE
Always use a designated pump for oil sampling, and use a separate designated pump for coolant sampling. Using the same pump for both types of samples may contaminate the samples that are being drawn. This contaminate may cause a false analysis and an incorrect interpretation that could lead to concerns by both dealers and customers.

Submit the sample for Level 1 analysis.

For additional information about coolant analysis, see this Operation and Maintenance Manual, “Refill Capacities and Recommendations” article or consult with your Caterpillar dealer.

## Exceptions to Minimum Maintenance Intervals

A number of specialty vehicle applications impose certain restraints on the locations of exhaust system components. These applications are primarily classified as medium service and heavy duty service. The Environmental Protection Agency has determined that a DPF that has a reduced size may be installed in a vehicle if the DPF is cleaned more frequently.

The EPA has issued a list of vehicle applications which may be suitable for a DPF with a reduced volume. The vehicle applications are listed below.

- Beverage truck
- Maintenance truck (with integral toolbox)
- Trash collection truck (with hydraulic packing or picking apparatus)
- Fire truck
- Airport refueling truck (with exhaust directed toward the front of the truck)
- Utility truck (with integral toolboxes and outrigger apparatus)
- Snowplow (with the plow located under the chassis)
- Dump truck
- Concrete mixer
- Car hauler (with integral open racks)
- Street sweeper
- Armored car
- Day cab truck with no rear seat (only a day cab truck for which the entire DPF is located in front of the vertical plane established by the back side of the cab)

Use which ever interval occurs first, 128750 kilometers (80000 miles) or 2400 hours, in order to determine the minimum maintenance interval for a DPF with a reduced volume. This minimum maintenance interval is only valid for engines that are built in 2007, 2008, or 2009.

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# Engine Oil Level Gauge - Calibrate

**SMCS Code:** 1326-524

## Check Calibration at the First Oil Change

The engine oil level will vary depending on the angle and the slant of the engine installation. The angle is the front to back tilt. The slant is the sideways tilt.

The oil level gauge markings must be verified in order to ensure that it is correct. Verify the oil level gauge markings at the first oil change.

Verify the “ADD” mark and verify the “FULL” mark that is on the oil level gauge. Use the following procedure.

NOTICE
The vehicle must be parked on a level surface in order to perform this maintenance procedure.

1. Operate the engine until normal operating temperature is achieved. Stop the engine. Remove the crankcase oil drain plugs. The oil drain plug from the deep portion of the oil pan should be removed. The oil drain plug from the shallow portion of the oil pan should be removed. This will allow all of the oil to drain. Drain the oil from the crankcase for 20 minutes.

2. Remove the used oil filter(s). Install the new oil filter(s). Install the oil drain plugs and tighten to 70 ± 15 N·m (50 ± 11 lb ft).

**Note:** Your engine may be equipped with auxiliary oil filters. The auxiliary oil filters require a different volume of oil. Refer to the OEM specifications for the auxiliary oil filter.

3. Refer to table 12. Pour the quantity of oil with the label “A” into the crankcase. Allow enough time for the oil to drain into the crankcase. Approximately 20 minutes should be allowed. Check the oil level. Wait for several minutes and check the oil level again. Proceed after the oil level stops changing.

Table 13

| Maximum Permissible Oil Change Intervals for C13 On-highway Engines with Standard (Deep) Sumps and Standard Ratings | | | |
|---|---|---|---|
| | **Severe Duty** | **Normal Duty** | **Light Duty** |
| **Fuel Consumption Kilometers Per Liter (Miles Per Gallon)** | Less than 2.6 km/L (6 MPG) | 2.6 km/L (6 MPG) to 3 km/L (7 MPG) | Greater than 3 km/L (7 MPG) |
| **Gross Vehicle Weight** | More than 36300 kg (80000 lb) | 36300 kg (80000 lb) or less | 36300 kg (80000 lb) or less |
| **Minimum Oil Sump Capacity**(1) | 38.5 L (41 qt) | 38.5 L (41 qt) | 38.5 L (41 qt) |
| **Idle Time** | More than 40% | 20% to 40% | Less than 20% |
| **Oil Classification** | Cat DEO-ULS (2)<br>Commercial oils that meet the performance requirements of the Caterpillar ECF-3<br>Commercial oils that meet the performance requirements of the API CJ-4 category | | |
| **Kilometers (Miles)** | 32,200 kilometers (20,000 miles) | 48,300 kilometers (30,000 miles) | 64,350 kilometers (40,000 miles) |

(1) If the oil sump capacity is greater than the oil sump capacity that is listed in Table 13, the oil change interval can be extended 1600 kilometers (1000 miles) for every 2 L (2 qt) increase in oil sump capacity.

(2) If the oil that is used is not Cat DEO-ULS, then the oil must conform to the requirements of the Caterpillar ECF-3 specification or the oil must conform to the requirements of the API CJ-4 category. Refer to this Operation and Maintenance Manual, “Refill Capacities and Recommendations” for further information.

3. Purging air from the fuel system requires the air purge fitting to be opened three full turns. Open the air purge fitting. Do not remove the fitting.

4. Continue to operate the fuel priming pump until a strong resistance is felt. Listen for an audible click from the fuel manifold. The click will indicate that the valve has opened and the fuel system is pressurized. Lock the fuel priming pump.

**Note:** The life of the injectors may be shortened if the priming valve is left in the unlocked position.

NOTICE
Do not crank the engine for more than 30 seconds. Allow the starting motor to cool for two minutes before cranking again.

5. Crank the engine. If the engine starts but the engine runs rough, continue to operate the engine at low idle until the engine runs smoothly.

**Note:** If the engine will not start, further priming is necessary. If the engine starts but the engine continues to misfire, further priming is necessary.

6. Observe the air purge fitting. When a small drop of fuel appears at the threads of the air purge fitting, close the air purge fitting . After the air purge fitting is closed, tighten the air purge fitting. Refer to Specifications, SENR3130 for the correct torque.

**Note:** Failure to tighten all fittings could result in serious fuel leaks.

7. Clean any residual fuel from the engine components.

8. Once the engine runs smoothly, stop the engine. Turn the ignition switch to the OFF position.

- Outer covering that is ballooning locally
- Flexible part of the hose that is kinked or crushed
- Armoring that is embedded in the outer covering

A constant torque hose clamp can be used in place of any standard hose clamp. Ensure that the constant torque hose clamp is the same size as the standard clamp.

Due to extreme temperature changes, the hose will heat set. Heat setting causes hose clamps to loosen. This can result in leaks. A constant torque hose clamp will help to prevent loose hose clamps.

Each installation application can be different. The differences depend on the following factors:

- Type of hose
- Type of fitting material
- Anticipated expansion and contraction of the hose
- Anticipated expansion and contraction of the fittings

## Replace the Hoses and the Clamps

**⚠ WARNING**

**Pressurized System: Hot coolant can cause serious burns. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.**

1. Stop the engine. Allow the engine to cool.
2. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap.

**Note:** Drain the coolant into a suitable, clean container. The coolant can be reused.

- Check the water separator (if equipped) for water on a daily basis. Drain any water from the water separator. If necessary, drain the water and the sediment from fuel tanks in order to ensure that only clean fuel enters the fuel system.

- Inspect the piping for the air inlet system and the elbows for cracks and for loose clamps. Ensure that hoses and tubes are not contacting other hoses, tubes, wiring harnesses, etc. Check the air cleaner service indicator (if equipped).

- Inspect the alternator belt and the accessory drive belts for cracks, breaks or other damage. Belts for multiple groove pulleys must be replaced as matched sets. If only one belt is replaced, the belt will carry more load than the belts that are not replaced. The older belts are stretched. The additional load on the new belt could cause the belt to break.

- Inspect the wiring and the wiring harnesses for loose connections and for worn wires or frayed wires.

- Inspect the ground strap for a good connection and for good condition.

- Inspect the ECM to the cylinder head ground strap for a good connection and for good condition.

- Disconnect any battery chargers that are not protected against the current drain of the starting motor. Check the condition and the electrolyte level of the batteries, unless the engine is equipped with a maintenance free battery.

- Check the condition of the gauges. Replace any gauges that are cracked. Replace any gauge that can not be calibrated.

- Costs to investigate complaints which are not caused by a defect in Caterpillar Inc. material or workmanship.
- Providing timely notice of a warrantable failure and promptly making the product available for repair.

**Limitations**

Caterpillar Inc. is not responsible for resultant damages to an emission related part or component resulting from:

- Any application or installation Caterpillar Inc. deems improper as explained in the Operation and Maintenance Manual.
- Attachments, accessory items or parts not authorized for use by Caterpillar Inc.
- Improper truck engine maintenance, repair or abuse.
- Owner's unreasonable delay in making the product available after being notified of a potential product problem.

This warranty is in addition to Caterpillar Inc. standard warranty, applicable to the truck engine product involved.

Remedies under this warranty are limited to the provision of material and services as specified herein. Caterpillar Inc. is not responsible for incidental or consequential damages such as downtime or loss-of-use of truck.

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# Emissions Warranty Information

**SMCS Code:** 1000

## Maintenance Recommendations

Caterpillar Inc. truck engines are certified by the United States Environmental Protection Agency (EPA) and the California Air Resources Board in order to comply with exhaust emission standards and gaseous emission standards that are prescribed by law at the time of manufacture.

- Special Instruction, REHS0871, “Electronic Installation Guide”.
- Special Instruction, REHS1413, “Installation and Operation of Cat Messenger for On-highway Engines”
- Special Instruction, REHS1807, “Diesel Particulate Filter Installation Guide”
- Service Manual, RENR1282, “Truck Engines Electronic PTO Installation and Applications”
- Service Manual, RENR9805, “C13 On-highway Engine (2007 Emissions)”
- Service Manual, RENR9810, “C15 On-highway Engine (2007 Emissions)”
- Special Publication, SEBF8029, “Index to Guidelines for Reusable Parts and Salvage Operations”
- Special Publication, SEBF8062, “Procedure to Inspect and Clean Air Filters”
- Special Publication, SEBU6385, “Caterpillar On-highway Diesel Engine Fluids Recommendations”
- Special Instruction, SEHS7332, “Warning Tag - Danger Do Not Operate”
- Special Instruction, SEHS7633, “Battery Test Procedure”
- Special Instruction, SEHS8622, “Using the FT-1984 Aftercooler Testing Group”
- Special Instruction, SEHS9031, “Storage Procedure for Caterpillar Products”
- Specifications, SENR3130, “Torque Specifications Module”
- Special Instruction, SMHS7001, “Assembly of Fan Drive Pulley Assemblies”
- Special Publication, “Truck Engine Application and Installation Guide” (See your Caterpillar dealer.)