

[Previous Screen](#)

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Model: NO EQUIPMENT SELECTED  
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## Operation and Maintenance Manual 3116 and 3126 Marine Engines

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### Coolant - Change

SMCS - 1350-044; 1352; 1395-044

Refer to this Operation and Maintenance Manual, "Fluid Recommendations" for the correct intervals for changing the coolant.

Clean the cooling system and flush the cooling system before the recommended maintenance interval if the following conditions exist:

- The engine overheats frequently.
- Foaming is observed.
- The oil has entered the cooling system and the coolant is contaminated.
- The fuel has entered the cooling system and the coolant is contaminated.

### Drain the Cooling System



#### **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.**

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#### **NOTICE**



**Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.**

**Refer to Special Publication, NENG2500, "Cat Dealer Service Tool Catalog" or refer to Special Publication, PECJ0003, "Cat Shop Supplies and Tools Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.**

**Dispose of all fluids according to local regulations and mandates.**

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1. Stop the engine and allow the engine to cool. Ensure that the engine will not start when the cooling system is drained.
2. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap.
3. 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.

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## **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.**

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

*Inside USA 1-800-542-TOOL*

*Inside Illinois 1-800-541-TOOL*

*Canada 1-800-523-TOOL*

*International 1-309-578-7372*

## **Flush**



## **Systems Filled with Cat ELC, Cat ELI, or a Conventional Coolant that Meets the Cat EC-1 Requirements and the Standards of ASTM D6210**

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.

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### **NOTICE**

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

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3. Fill the cooling system with clean water. Install the cooling system filler cap.
4. Start and run the engine at low idle until the temperature reaches 49 to 66 °C (120 to 150 °F).
5. Stop the engine and allow the engine to cool. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap. Open the drain valve (if equipped) or remove the cooling system drain plugs. Allow the water to drain. Flush the cooling system with clean water. 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.

## **Systems Filled with Cat DEAC, Conventional Coolant which does not Meet the Cat EC-1 Requirements, or Supplemental Coolant Additive (SCA) and Water**

3. Flush the cooling system with clean water in order to remove any debris.
4. 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.

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### **NOTICE**

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

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5. Fill the cooling system with a mixture of clean water and Cat Fast Acting Cooling System Cleaner.
6. Choose 1 of the following options.



- Add 0.5 L (1 pint) of cleaner per 15 L (4 US gal) of the cooling system capacity.
  - For cooling systems with heavy deposits or plugging, add 0.5 L (1 pint) of cleaner per 3.8 to 7.6 L (1 to 2 US gal) of the cooling system capacity.
7. Install the cooling system filler cap.
  8. Start and run the engine at low idle for a minimum of 30 minutes. For cooling systems with heavy deposits or plugging, run the engine for 90 minutes. The coolant temperature should be at least 82 °C (180 °F).

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### NOTICE

**Improper or incomplete rinsing of the cooling system can result in damage to copper and other metal components.**

**To avoid damage to the cooling system, make sure to completely flush the cooling system with clear water. Continue to flush the system until all signs of the cleaning agent are gone.**

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9. Stop the engine and allow the engine to cool. Loosen the cooling system filler cap slowly in order to relieve any pressure. Remove the cooling system filler cap. Open the drain valve (if equipped) or remove the cooling system drain plugs. Allow the water to drain. Flush the cooling system with clean water. If equipped, be sure to flush the heater and any related supply and return lines. 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.

## Fill the Cooling System

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### NOTICE

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

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1. Fill the cooling system. Refer to this Operation and Maintenance Manual, "Fluid Recommendations" for more information on cooling system specifications. Refer to this Operation and Maintenance Manual, "Refill Capacities" for information about the capacity of the cooling system. Do not install the cooling system filler cap.
2. Start and run the engine at low idle. Increase the engine rpm to high idle. Run the engine at high idle for 1 minute in order to purge the air from the cavities of the engine block. Stop the engine.



3. Check the coolant level. Maintain the coolant level within 13 mm (0.5 inch) below the bottom of the pipe for filling. Maintain the coolant level within 13 mm (0.5 inch) to the proper level on the sight glass (if equipped).
4. Clean the cooling system filler cap. Inspect the gasket that is on the cooling system filler cap. Only install the used filler cap if the gasket is not damaged. Use a **9S-8140** Pressurizing Pump to pressure test a reinstalled cooling system filler cap. The correct pressure for the cooling system filler cap is stamped on the face of the cooling system filler cap. If the cooling system filler cap does not retain the correct pressure, install a new cooling system filler cap.
5. Start the engine. Inspect the cooling system for leaks and for proper operating temperature.

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