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MAINTENANCE INTERVALS

Operation and Maintenance
Manual Excerpt

CATERPILLAR®

CATERPILLAR®

SEBU8417-01
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Operation and Maintenance Manual

797F Off-Highway Truck

LAJ1-Up (Machine)

i03912428

Maintenance Interval Schedule

SMCS Code: 1000; 7000

Ensure that all safety information, warnings, and instructions are read and understood before any operation or any maintenance procedures are performed.

The user is responsible for the performance of maintenance. All adjustments, the use of proper lubricants, fluids, filters, and the replacement of components due to normal wear and aging are included. Failure to adhere to proper maintenance intervals and procedures may result in diminished performance of the product and/or accelerated wear of components.

Use mileage, fuel consumption, service hours, or calendar time, WHICH EVER OCCURS FIRST, in order to determine the maintenance intervals. Products that operate in severe operating conditions may require more frequent maintenance. Refer to the maintenance procedure for any other exceptions that may change the maintenance intervals.

Note: The aftertreatment system can be expected to function properly for the useful life of the engine (emissions durability period), as defined by regulation. All prescribed maintenance requirements must be followed.

Note: Before each consecutive interval is performed, all maintenance from the previous interval must be performed.

Note: If Cat HYDO Advanced hydraulic oils are used, the hydraulic oil change interval is extended to 3000 hours. S·O·S services may extend the oil change even longer. Consult your Cat dealer for details.

When Required

Every 10 Service Hours or Daily

Every 10 Service Hours

Initial 50 Service Hours

Initial 250 Service Hours

Every 250 Service Hours or Monthly

Every 500 Service Hours

Every 500 Service Hours or 3 Months

Every 1000 Service Hours or 6 Months

Every 2000 Service Hours or 1 Year

Every Year

Every 2 Years

Every 3000 Service Hours or 2 Years

Every 3 Years After Date of Installation or Every 5 Years After Date of Manufacture

Every 4000 Service Hours

Every 4000 Service Hours or 1 Year

Every 6000 Service Hours or 4 Years

Every 12 000 Service Hours or 6 Years

Every 15 000 Service Hours

Every 2 840 000 L (750 000 US gal) of Fuel or 10 000 Service Hours

Every 5 110 000 L (1 350 000 US gal) of Fuel or 18 000 Service Hours

i03702882

Air Conditioner Filter - Clean

SMCS Code: 7320

If a reduction in air circulation is noticed, clean the radial seal air filter for the air conditioner.

The air filter element for the air conditioner is located behind the access door on the left rear of the cab.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

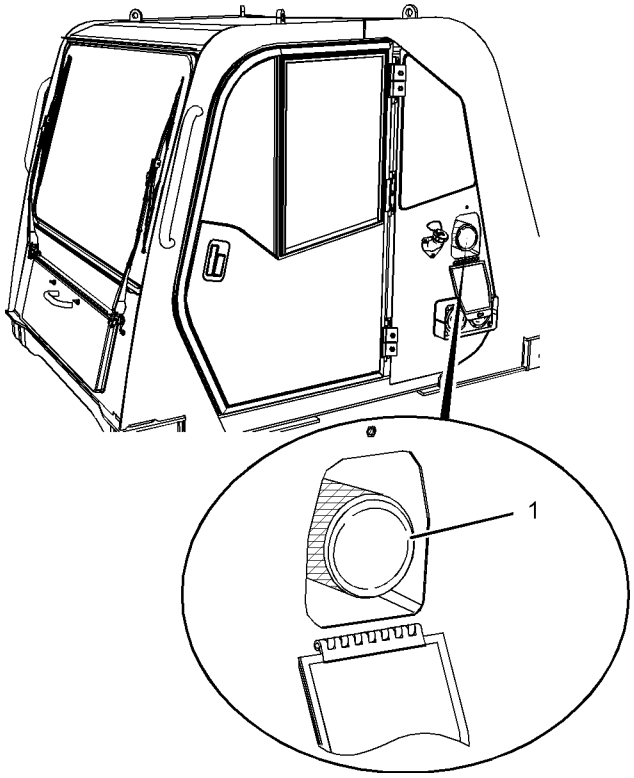


Illustration 138 g01993019

2. Open the access door and remove air filter element (1).

3. Visually inspect the air filter element before cleaning. Inspect the air filter element for damage to the seal, the pleats, and the outer cover. Replace a damaged air filter element with a new air filter element.

4. Use low pressure compressed air in order to remove the dust from the dirty air filter element. Air pressure must not exceed 207 kPa (30 psi). Direct the air flow up the pleats and down the pleats from the inside of the filter element. Take extreme care in order to avoid damage to the pleats.

5. Install the clean air filter element and close the access door.

i03702921

Air Dryer - Check (If Equipped with Air Start)

SMCS Code: 4285

WARNING

Personal injury or death can occur if personnel are trapped between the wheel and the frame.

The steering system is hydraulically controlled and wheels can crush personnel during movement.

Use caution when working between the wheels and the frame. If the wheels must be turned, ensure that all personnel are clear of the machine before any movement.

WARNING

The air lines to and from the air dryer must be at atmospheric pressure. If the air lines are not at atmospheric pressure, personal injury could result. Release the air pressure from the air system completely before performing maintenance.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Drain the air tanks. Refer to Operation and Maintenance Manual, “Air Tank Moisture and Sediment - Drain” for the proper procedure.

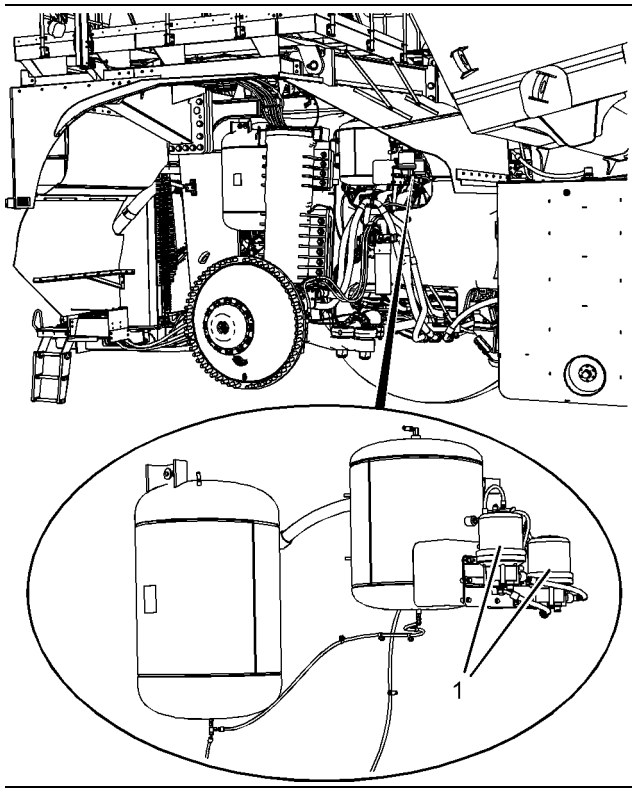


Illustration 139 g01993057

The tire and the wheel are removed for ease of viewing.

3. If there is moisture in the air tanks, replace the desiccant cartridges for each dryer (1). Consult your Caterpillar dealer for information about replacing the desiccant cartridge.

Note: Small amounts of moisture may be in the system due to condensation in the system.

Note: For more information on the air dryers, refer to Systems Operation/Testing and Adjusting, KENR8374, “797F Off-Highway Truck Air System and Brakes”, “Air Dryer”.

i03703245

Air Dryer Desiccant - Replace (If Equipped with Air Start)

SMCS Code: 4285

WARNING

Personal injury or death can occur if personnel are trapped between the wheel and the frame.

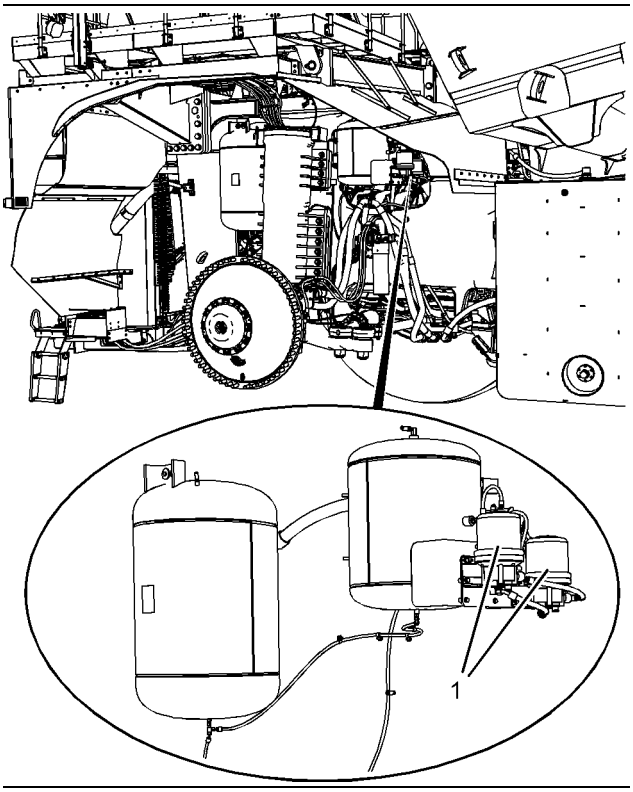
The steering system is hydraulically controlled and wheels can crush personnel during movement.

Use caution when working between the wheels and the frame. If the wheels must be turned, ensure that all personnel are clear of the machine before any movement.

WARNING

Air lines to and from the air dryer must be at atmospheric pressure. Release the air pressure from the air system completely before performing maintenance.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.



g01993057

Illustration 140

The tire and the wheel are removed for ease of viewing.

2. Replace the desiccant cartridge in each air dryer (1) if water cannot be absorbed. In order to replace the desiccant cartridge, refer to Disassembly and Assembly, KENR8382, “797F Off-Highway Truck Machine Systems”, “Air Dryer - Disassemble” and, “Air Dryer - Assemble” or consult your Caterpillar dealer.

i02133209

Air Inlet System - Test/Inspect

SMCS Code: 1051; 1054; 1071

An air inlet system that is free of air leaks is essential to the health of the engine. Air leaks in the air inlet system can allow contaminants to enter the engine. The air inlet system requires periodic inspections. By reducing the amount of dust that goes into the engine, the service life can be increased.

This procedure goes beyond simply checking for torn hoses or for loose clamps. This procedure detects the location of leaks by blocking the air intake ducts, pressurizing the system, and spraying a soap solution. Bubbles will form at the location of leaks.

Recommended Schedule for Inspection of the Air Inlet System

Use this procedure to inspect the air inlet system if any of the following events occur:

- Assembly of the new machine
- Installation or removal of an engine
- Elevated levels of iron, of chrome, or of silicon in the S·O·S report
- Removal of components of the air inlet system
- Installation of components of the air inlet system
- Damage to the air cleaner group or damage to the air inlet system
- Every 2000 service hours or 1 year

Recommendations for Maintenance of the Air Inlet System

- Install the required number of clamps on all joints.
- Install the clamps parallel to the tube and to the hose.
- Ensure that the hoses are even at each joint. This will enable proper installation of the clamps.
- Ensure that the hoses are properly positioned over each tube.
- Replace all hoses and all hose clamps whenever an engine component is replaced.
- Ensure that all support brackets for the air inlet system are properly installed.
- Replace any components of the air inlet system that are broken or missing.
- Check the seals of the air cleaners for entry of dust and for damage.
- Check the filter media for damage.

Procedure to Test the Air Inlet System

Reference: Refer to the Power Train Testing and Adjusting, “Air Inlet System Test/Inspect”.

i02444297

Air Tank - Inspect

SMCS Code: 4272; 5505; 7428

When laws in the machine's operating location require the inspection of air tanks, refer to Special Instruction, REHS2398, “Air Tank Inspection for the Off-Highway Truck 769 - 797”.

i03703448

Air Tank Moisture and Sediment - Drain (If Equipped with Air Start)

SMCS Code: 4272

⚠ WARNING

Personal injury or death can occur if personnel are trapped between the wheel and the frame.

The steering system is hydraulically controlled and wheels can crush personnel during movement.

Use caution when working between the wheels and the frame. If the wheels must be turned, ensure that all personnel are clear of the machine before any movement.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

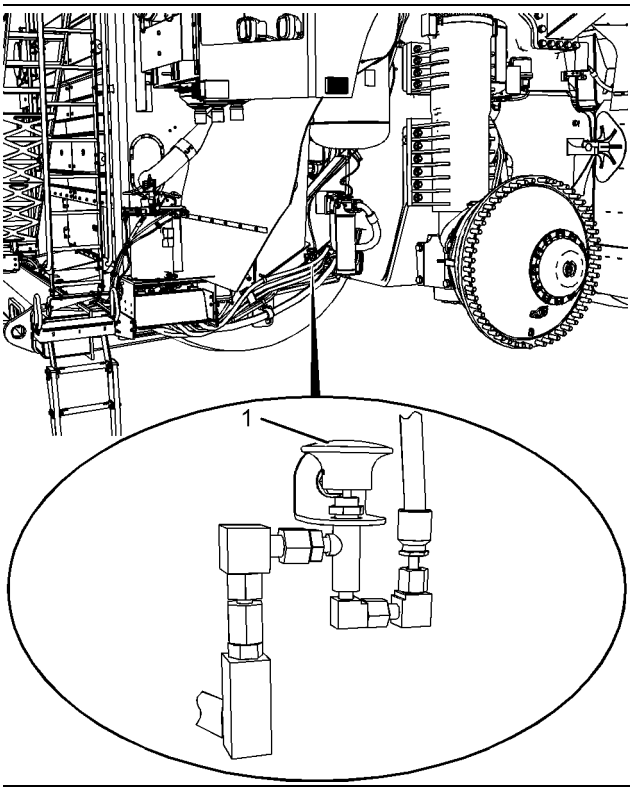


Illustration 141 g01993254

The wheel and the tire are removed for ease of viewing.

Air tank drain valve (1) is located on the outside frame rail in front of the left front suspension cylinder.

2. Depress knob (1) in order to open the drain valve for the air tank.

3. Check for moisture and sediment in the air tank. Drain the moisture and sediment from the air tank into a suitable container.

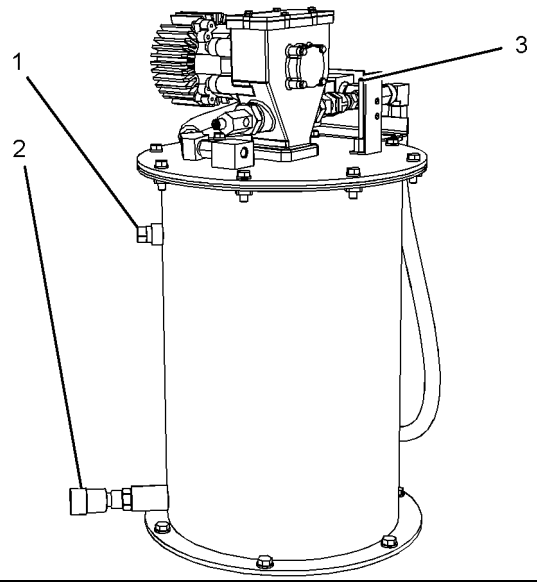
4. Release the knob in order to close the drain valve for the air tank.

i03770671

Automatic Lubrication Reservoir - Fill

SMCS Code: 7540

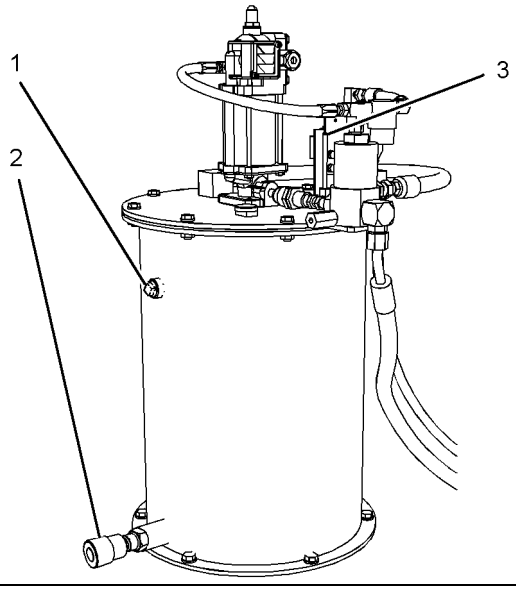
1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.



g02042673

Illustration 142

Machines that are equipped with the electric start use an electric motor on the automatic lubrication pump.



g02042676

Illustration 143

Machines that are equipped with the air start use an air motor on the automatic lubrication pump.

2. Remove plug (1) for the vent port if the reservoir is not equipped with a permanent vent.

Note: If the reservoir is not properly vented, pressure will cause the wiper seal on the follower assembly inside the reservoir to fail when the reservoir is filled. Grease on the top side of the follower assembly may prevent the autolube system from functioning properly. Also, grease on the top side of the follower assembly may cause damage to the autolube system.

3. Fill the autolube reservoir through fast fill port (2).

4. Fill the reservoir until grease appears at the outlet for the vent port.

Note: Level indicator (3) can also be used in order to determine when the reservoir is full.

Note: The bulk capacity of the grease reservoir is 27 kg (60 lb).

5. Install the plug in the vent port if the reservoir is not equipped with a permanent vent.

The automatic lubrication reservoir provides lubrication for many components. There are five banks of injectors on the machine.

If any of the remote lines become damaged, install a fitting in place of the remote line. Lubricate the item at the fittings until the remote line can be replaced.

i03652288

Backup Alarm - Test

SMCS Code: 7406

The backup alarm alerts the personnel behind the machine that the machine is backing up. The backup alarm is located at the rear of the machine.

1. Park the machine on a level surface and stop the engine.

2. Make sure that the area behind the machine is clear of personnel and clear of obstacles.

3. Turn the engine start switch to the ON position.

Note: Do not start the engine.

4. Turn the fan speed switch to the OFF position and turn off the entertainment radio (if equipped). Open a door or a window.

5. Apply the service brakes.

6. Move the transmission control to the R position and listen for the backup alarm. The backup alarm should sound immediately. The backup alarm should continue to sound until the transmission control is moved out of the R position.

7. Move the transmission control to the P position and release the service brake.

8. If the backup alarm did not function, or if the backup alarm did not function properly, contact your Caterpillar dealer.

i00993589

Battery - Recycle

SMCS Code: 1401

Always recycle a battery. Never discard a battery.

Always return used batteries to one of the following locations:

- A battery supplier
- An authorized battery collection facility
- Recycling facility

i03703722

Battery or Battery Cable - Inspect/Replace

SMCS Code: 1401-040; 1401-510; 1402-040; 1402-510

⚠ WARNING

Failure to properly service the batteries may cause peronal injury.

Prevent sparks near the batteries. They could cause vapors to explode. Do not allow the jump start cable ends to contact each other or the machine.

Do not smoke when checking battery electrolyte levels.

Electrolyte is an acid and can cause personal injury if it contacts skin or eyes.

Always wear eye protection when starting a machine with jump start cables.

Improper jump start procedures can cause an explosion resulting in personal injury.

Always connect the battery positive (+) to battery positive (+) and the battery negative (−) to battery negative (−).

Jump start only with an energy source with the same voltage as the stalled machine.

Turn off all lights and accessories on the stalled machine. Otherwise, they will operate when the energy source is connected.

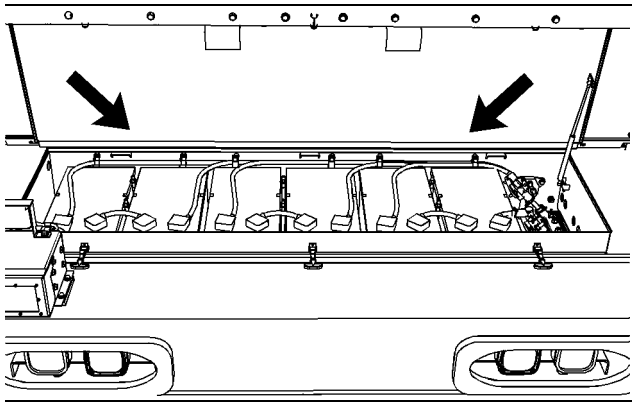


Illustration 144 g01990799

Location of the batteries

Note: When the batteries are replaced, always use the same type of battery. This machine requires Maintenance Free batteries or Low Maintenance High Output batteries.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Turn the engine start switch to the OFF position. Turn all of the switches to the OFF position.
3. Turn the battery disconnect switch to the OFF position. Lock out the battery disconnect switch.
4. Remove the battery access covers.
5. Disconnect the negative end “−” of the battery cable from the frame near the battery disconnect switch.

Note: Do not allow the disconnected battery cable to contact the battery disconnect switch.

6. Disconnect the negative end “−” of the battery cable from the battery.
7. Disconnect the positive end “+” of the battery cable from the battery.
8. Replace the battery or make all necessary repairs to the battery.
9. Connect the positive end “+” of the battery cable to the battery.
10. Connect the negative end “−” of the battery cable to the battery.
11. Connect the negative end “−” of the battery cable to the frame near the battery disconnect switch.
12. Install the battery access covers.

13. Remove the lockout for the battery disconnect switch. Turn the battery disconnect switch to the ON position.

i04151201

Belts - Inspect/Replace

SMCS Code: 1397-040; 1397-510

Note: In order to access the belts, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

Refrigerant Compressor

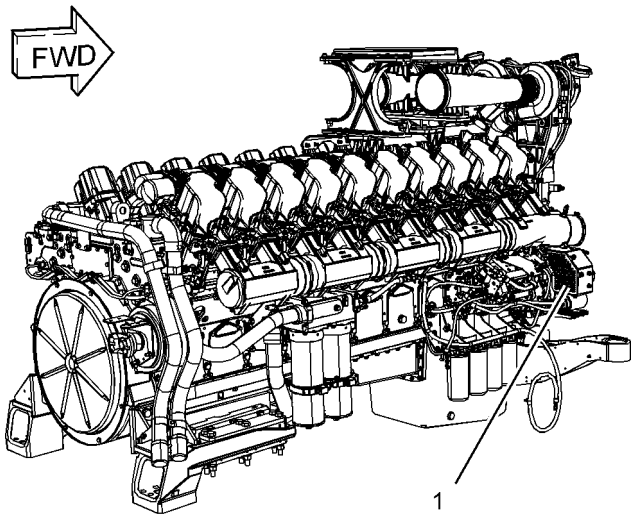


Illustration 145 g01993456

(1) Belt Guard

Inspection

1. Remove the belt guard.

2. Inspect the belt for the following conditions: cracks, wear, stretch, frayed areas, and missing pieces. Replace the belt, if necessary.

3. Check the belt tension. This engine is equipped with a belt tensioner that automatically adjusts the belt to the correct tension. Make sure that the belt tensioner is between the stops in order to allow proper tension on the belt. If the tensioner is against one of the stops, replace the belt.

Note: The tensioner for the belt cannot be adjusted.

4. If replacement of the belt is not necessary, install the belt guard.

Replacement

1. Remove the belt guard.

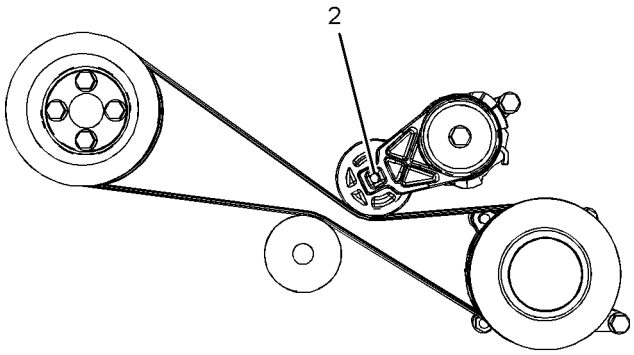


Illustration 146 g01993455

2. In order to release the tension on the belt, Insert a 12.7 mm (0.50 inch) ratchet into square hole (2) in the belt tensioner, and pry the belt tensioner in a clockwise direction.

3. Remove the old belt and install the new belt. Remove the tooling.

4. The belt tensioner should be between the stops in order to allow proper tension on the belt.

Note: If the belt has been replaced and the belt tensioner is against one of the stops, the belt tensioner may need to be replaced.

5. Check the belt tension on a new belt after 30 minutes of operation.

Note: The break-in period for the belt is considered to be 30 minutes.

6. Install the belt guard.

Refer to Disassembly and Assembly, KENR8384, “797F Engine Supplement”, “Belt Tightener - Remove and Install” for more information on replacement of the belt tensioner.

Alternator

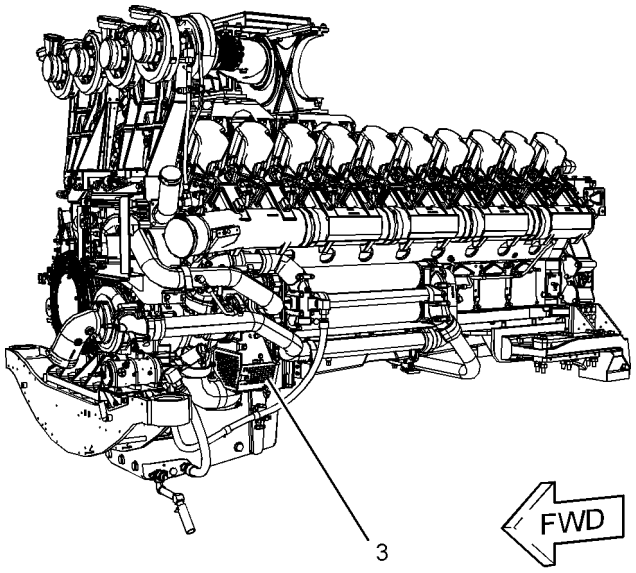


Illustration 147 g01993454

(3) Belt Guard

Inspection

1. Remove the belt guard.
2. Inspect the belt for the following conditions: cracks, wear, stretch, frayed areas, and missing pieces. Replace the belt, if necessary.
3. Check the belt tension. This engine is equipped with a belt tensioner that automatically adjusts the belt to the correct tension. Make sure that the belt tensioner is between the stops in order to allow proper tension on the belt. If the tensioner is against one of the stops, replace the belt.

Note: The tensioner for the belt cannot be adjusted.

4. If replacement of the belt is not necessary, install the belt guard.

Replacement

1. Remove the belt guard.

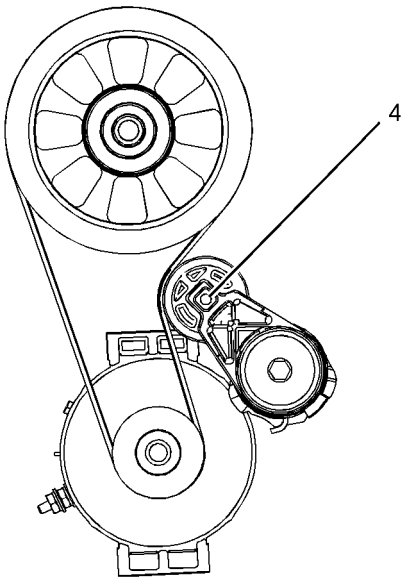


Illustration 148 g01993457

2. In order to release the tension on the belt, Insert a 12.7 mm (0.50 inch) ratchet into square hole (4) in the belt tensioner, and pry the belt tensioner in a clockwise direction.
3. Remove the old belt and install the new belt. Remove the tooling.
4. The belt tensioner should be between the stops in order to allow proper tension on the belt.

Note: If the belt has been replaced and the belt tensioner is against one of the stops, the belt tensioner may need to be replaced.

5. Check the belt tension on a new belt after 30 minutes of operation.

Note: The break-in period for the belt is considered to be 30 minutes.

6. Install the belt guard.

Refer to Disassembly and Assembly, KENR8384, “797F Engine Supplement”, “Belt Tightener - Remove and Install” for more information on replacement of the belt tensioner.

i03709641

Brake Accumulator - Check

SMCS Code: 4263

WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

WARNING

Hydraulic accumulator contains gas and oil under high pressure. Improper removal or repair procedures could cause severe injury. To remove or repair, instructions in the service manual must be followed. Special equipment is required for testing and charging.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

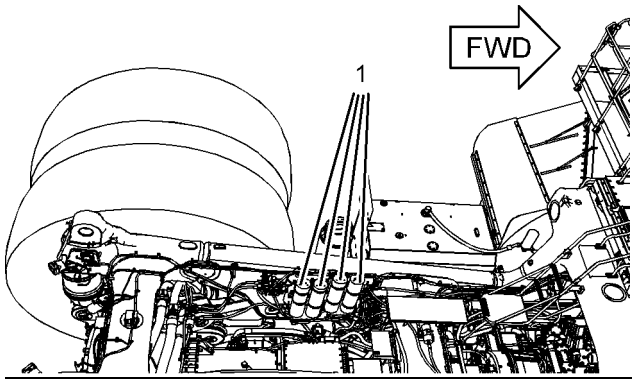


Illustration 149 g01996937

The machine is shown without the dump body for ease of viewing.

2. Visually inspect the accumulators for leaks. make any necessary repairs.

3. For more information on the brake accumulators, refer to System Operation, Testing and Adjusting, KENR8374, “797F Off-Highway Truck Braking System”, or consult your Caterpillar dealer.

4. Remove the truck body retaining cables and lower the body.

i03704468

Brake Oil Cooler Screen - Clean

SMCS Code: 4295

WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Clean the brake oil cooler screen(s) whenever there is a failure in the brake circuit.

1. Prepare the machine for maintenance. If the machine is equipped with the standard retarding configuration, raise the dump body to the fully raised position and install the truck body retaining cables to the rear tow point pins. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

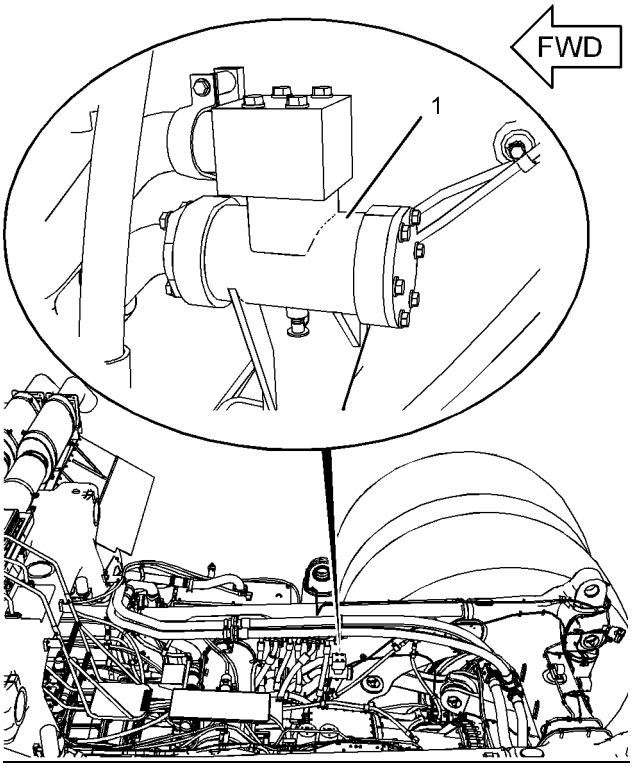


Illustration 150 g01994194

The machine is shown without the dump body for ease of viewing.

(1) Housing for the brake oil cooler screen on machines with standard retarding

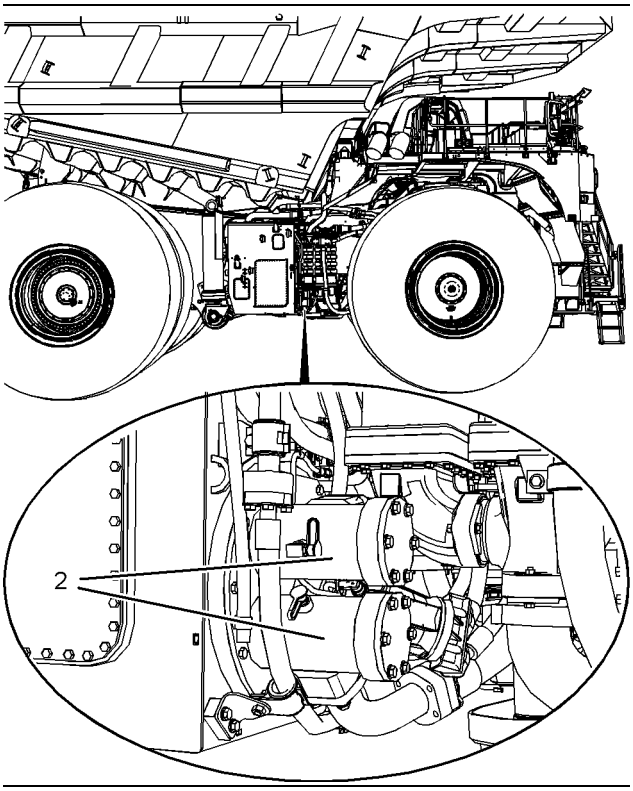


Illustration 151 g01994213

(2) Housings for the brake oil cooler screens on machines with additional retarding

2. Remove the drain plug and drain the oil into a suitable container. Remove the cover from the screen housing .

3. Remove the spring and remove the screen from the housing. Clean the screen in clean nonflammable solvent.

4. Inspect the seal in the housing. If the seal is damaged, replace the seal with a new seal.

5. Install the clean screen and the spring. Install the cover.

6. If this machine is equipped with additional retarding, repeat step 2 through 5 for the other brake oil cooler screen.

7. Start the engine and operate the engine at an idle. Check for leaks and make any necessary repairs.

8. Check the oil level in the hoist/brake tank. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Hoist and Brake Tank Oil Level - Check”.

9. If the dump body was raised to perform this procedure, remove the truck body retaining cable and lower the body. Refer to Operations and Maintenance Manual, “Cable (Truck Body Retaining)”.

i03450700

Braking System - Test

SMCS Code: 4250

⚠ WARNING

Personal injury can result if the machine moves during testing. If the machine begins to move during testing, reduce the engine speed immediately and place the transmission control in the P position in order to engage the parking brake.

The following tests are used to determine if the service brake system, the secondary brake system, and the parking brake system are functional. These tests are not intended to measure the maximum brake holding effort. The brake holding effort that is required to sustain a machine at a specific engine rpm varies depending on the machine. The variations are the differences in the engine setting, in the power train efficiency, and in the brake holding ability, etc.

During the test of the brakes, compare the previous engine rpm and the recent engine rpm. This will determine the system deterioration.

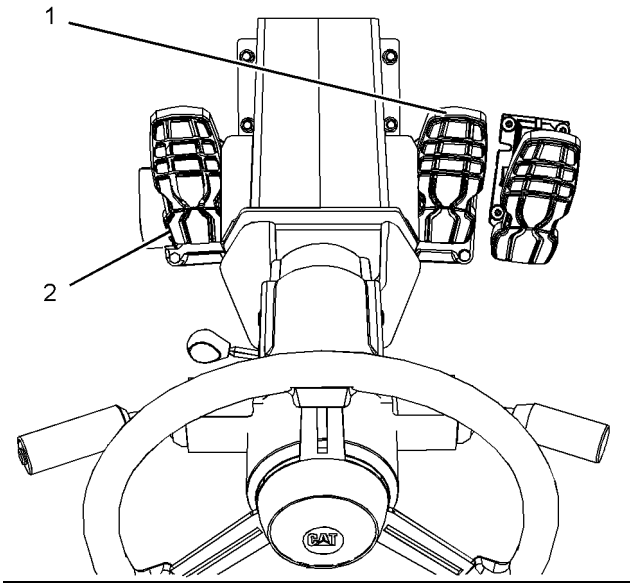


Illustration 152 g01961534

Service Brake Holding Ability Test

1. Fasten the seat belt before you test the brakes.

2. Check the area around the machine. Make sure that the machine is clear of personnel and clear of obstacles.

3. Test the brakes on a dry, level surface.

4. Start the engine.

5. Depress service brake control (1) in order to apply the service brakes.

6. Move the transmission control to the D position.

7. Gradually increase the engine speed to 1300 rpm. The machine should not move.

8. Reduce the engine speed to an idle. Move the transmission control to the P position. Stop the engine.

NOTICE

If the machine moved while testing the brakes, contact your Caterpillar dealer.

Have the dealer inspect and, if necessary, repair the service brake before returning the machine to operation.

Secondary Brake Holding Ability Test

1. Fasten the seat belt before you test the brakes.

2. Check the area around the machine. Make sure that the machine is clear of personnel and clear of obstacles.

3. Test the brakes on a dry, level surface.

4. Start the engine.

5. Depress secondary brake control (2) in order to apply the secondary brakes.

6. Move the transmission control to the D position.

7. Gradually increase the engine speed to 1300 rpm. The machine should not move.

8. Reduce the engine speed to an idle. Move the transmission control to the P position. Stop the engine.

NOTICE
If the machine moved while testing the brakes, contact your Caterpillar dealer.

Have the Caterpillar dealer inspect and, if necessary, repair the parking/secondary brakes before returning the machine to operation.

Parking Brake Holding Ability Test

1. Fasten the seat belt before you test the brakes.
2. Check the area around the machine. Make sure that the machine is clear of personnel and clear of obstacles.
3. Test the brakes on a dry, level surface.
4. Start the engine.

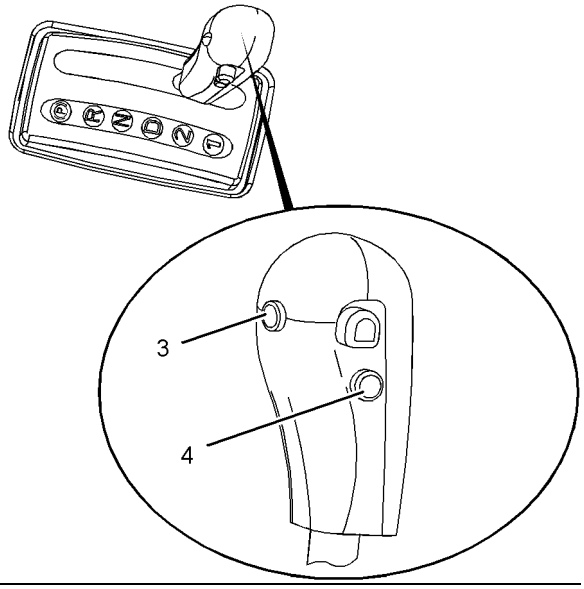


Illustration 153 g01519336

5. When the transmission control is in the P position, depress button (3) for the high gear limit RAISE and depress button (4) for the high gear limit LOWER at the same time.
6. While both buttons are depressed, Move the transmission control to the D position.

Note: The buttons can now be released and the parking brake will remain on.

7. Gradually increase the engine speed to 1300 rpm. The machine should not move.
8. Reduce the engine speed to an idle. Move the transmission control to the P position. Stop the engine.

NOTICE
If the machine moved while testing the brakes, contact your Caterpillar dealer.

Have the Caterpillar dealer inspect and, if necessary, repair the parking/secondary brakes before returning the machine to operation.

i03705640

Breather (Differential and Final Drive) - Replace

SMCS Code: 3258-510-BRE; 4050-510-BRE

Note: In order to access the breather, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

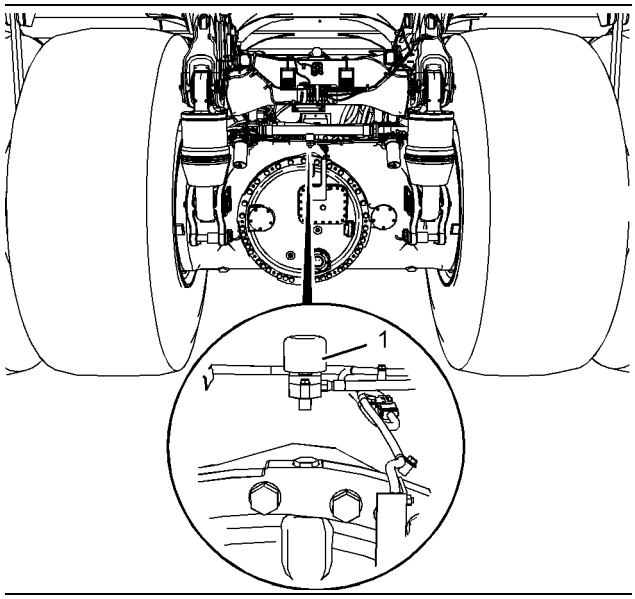


Illustration 154 g01994473

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Remove final drive breather (1).
3. Install a new final drive breather.

i03706876

Breather (Front Axle) - Replace

SMCS Code: 3282-510-BRE; 4251-510-BRE

⚠ WARNING

Personal injury or death can occur if personnel are trapped between the wheel and the frame.

The steering system is hydraulically controlled and wheels can crush personnel during movement.

Use caution when working between the wheels and the frame. If the wheels must be turned, ensure that all personnel are clear of the machine before any movement.

Note: In order to access the breather, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

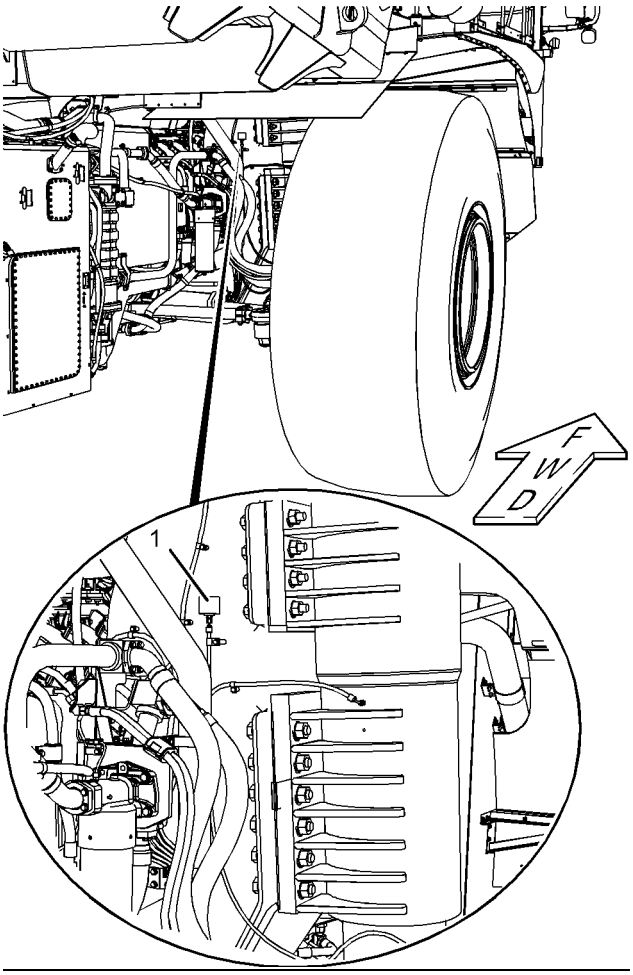


Illustration 155 g01995535

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Remove breather (1) from each front wheel.
3. Install a new breather on each front wheel.

i03706745

Breather (Fuel Tank) - Replace

SMCS Code: 1273-510-BRE

⚠ WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

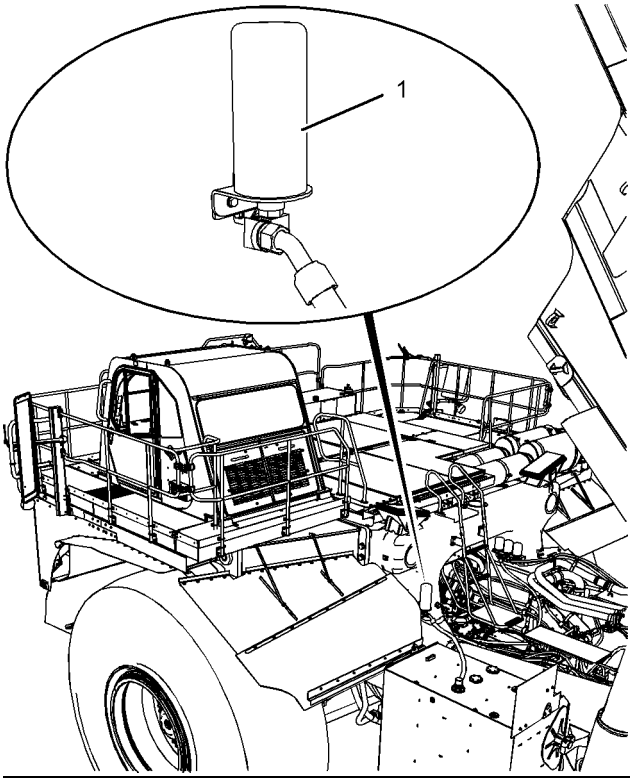


Illustration 156 g01995333

2. Remove fuel tank breather (1).

3. Install a new fuel tank breather.

4. Remove the truck body retaining cables and lower the body.

i03708120

Breather (Hoist and Brake Tank) - Replace

SMCS Code: 5056-510-BRE; 5057-510-BRE

WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Stop the engine.

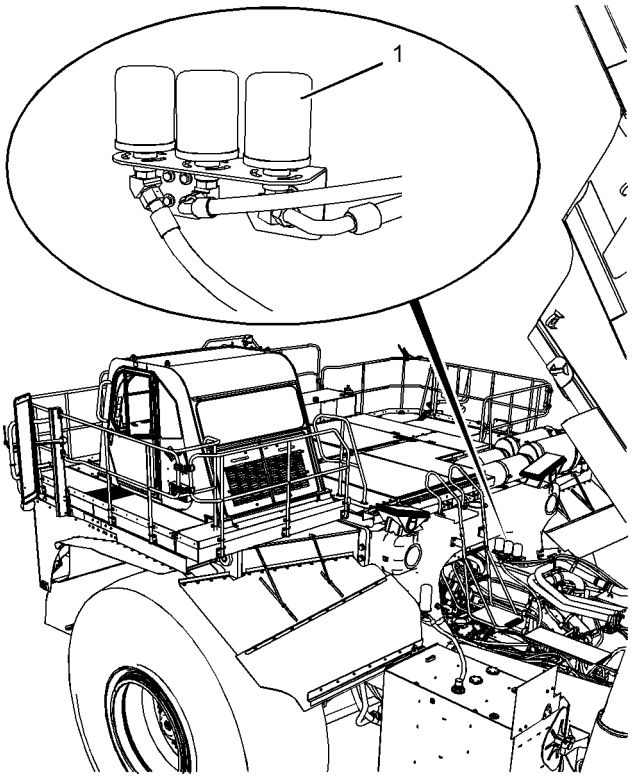


Illustration 157 g01995693

3. Remove breather (1) for the hoist/brake tank.

4. Install a new breather for the hoist/brake tank.

5. Remove the truck body retaining cable and lower the body.

6. Remove the truck body retaining cables and lower the body.

i03708107

Breather (Steering Tank) - Replace

SMCS Code: 4332-510-BRE

WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

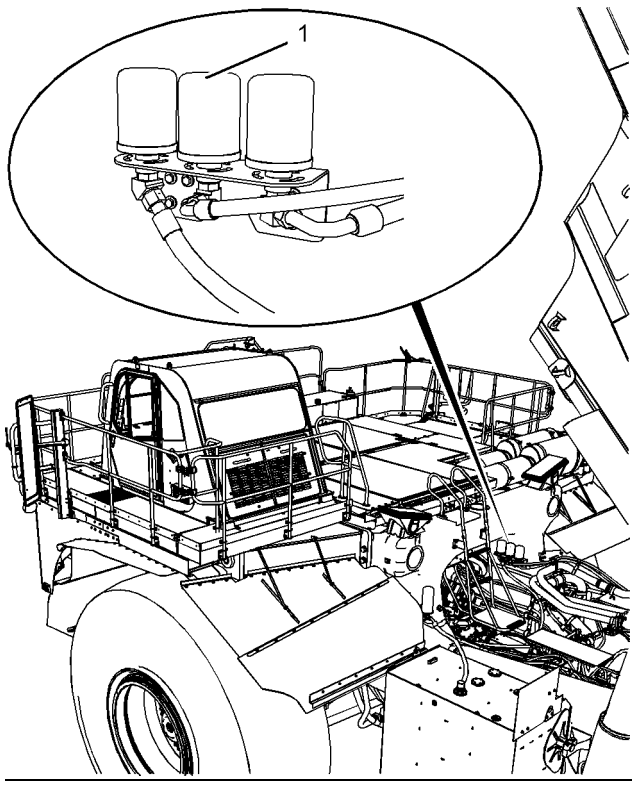


Illustration 158 g01995673

2. Remove steering tank breather (1).
3. Install a new steering tank breather.
4. Remove the truck body retaining cables and lower the body.

i03708121

Breather (Torque Converter and Transmission) - Replace

SMCS Code: 3030-510-BRE; 3101-510-BRE

⚠ WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

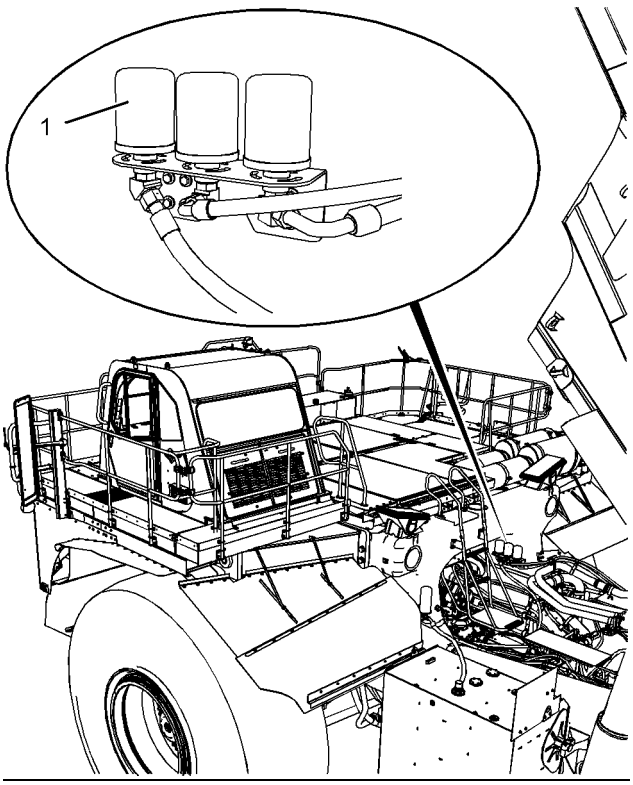


Illustration 159 g01995694

2. Remove torque converter and transmission breather (1).
3. Install a new torque converter and transmission breather.
4. Remove the truck body retaining cables and lower the body.

i03855636

Cab Air Filter - Clean/Replace

SMCS Code: 7311; 7342

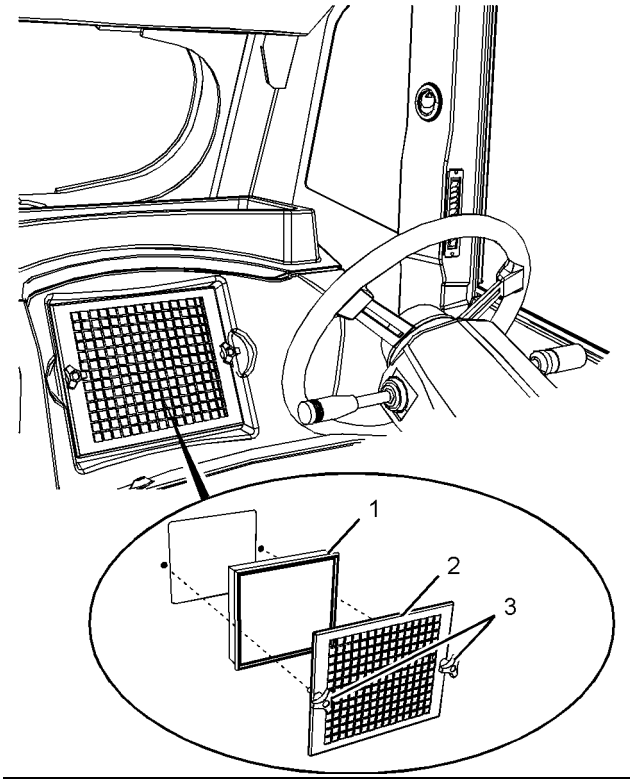


Illustration 160 g02100201

The filter element for the cab is located inside the operator station. The operator's seat has been removed for ease of viewing.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Loosen retaining screws (3). Remove cover (2) and filter element (1).
3. Wash the filter element in a nonsudsing detergent.
4. Rinse the filter element in clean water. Allow the filter element to air dry.
5. Install the clean filter element and the cover. Tighten the retaining screws.

Note: When rips or tears are noticed in the filter element, install a new filter element. When a reduction of air circulation is noticed in the cab after cleaning the filter element, install a new filter element.

i03655302

Cable (Truck Body Retaining) - Inspect

SMCS Code: 5154-040; 7258

⚠ WARNING

A raised body (bed) may fall unexpectedly if a damaged cable is used. Use of a damaged cable could result in personal injury or death.

Inspect the cable for damage and do not use a cable that is damaged.

Wear gloves when handling the cable.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Inspect the retaining cable for any of the following conditions:
   - Reduction in the diameter
   - Broken wires
   - Worn wires
   - Corroded wires
   - Loose strands or loose wires
   - Loose cable ends or separation between the cable and the cable end
   - Kinks
   - Cuts
   - Flat spots
3. Inspect the retaining cable ends and the cable connection for the truck body for any of the following conditions:
   - Distortion such as bends or twists
   - Wear
   - Corrosion
   - Cracks or gouges
4. Inspect the retaining pins and locking hardware for any of the following conditions:
   - Distortion such as bends or twists

- Wear
- Corrosion
- Cracks or gouges

If any of the above conditions exist, replace the appropriate parts. , Consult your Caterpillar dealer for proper replacement parts.

i04149388

Cooling System Coolant (ELC) - Change

SMCS Code: 1353; 1395

⚠ WARNING

Personal injury can result from hot coolant, steam and alkali.

At operating temperature, engine coolant is hot and under pressure. The radiator and all lines to heaters or the engine contain hot coolant or steam. Any contact can cause severe burns.

Remove cooling system pressure cap slowly to relieve pressure only when engine is stopped and cooling system pressure cap is cool enough to touch with your bare hand.

Do not attempt to tighten hose connections when the coolant is hot, the hose can come off causing burns.

Cooling System Coolant Additive contains alkali. Avoid contact with skin and eyes.

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, “Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

NOTICE
Do not change the coolant until you read and understand the material in the Cooling System Specifications section.

NOTICE
Mixing Cat Extended Life Coolant (ELC) with other products reduces the effectiveness of the coolant and shortens coolant life. Use only Caterpillar products or commercial products that have passed the Caterpillar EC-1 specifications for premixed or concentrate coolants. Use only Cat Extender with Cat ELC. Failure to follow these recommendations could result in damage to the cooling systems components.

If ELC cooling system contamination occurs, refer to Operation and Maintenance, “Extended Life Coolant (ELC)” under the topic ELC Cooling System Contamination.

This machine was factory filled with Cat Extended Life Coolant.

Change the coolant whenever the coolant is dirty or whenever foaming is observed. Change the coolant during scheduled maintenance intervals.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

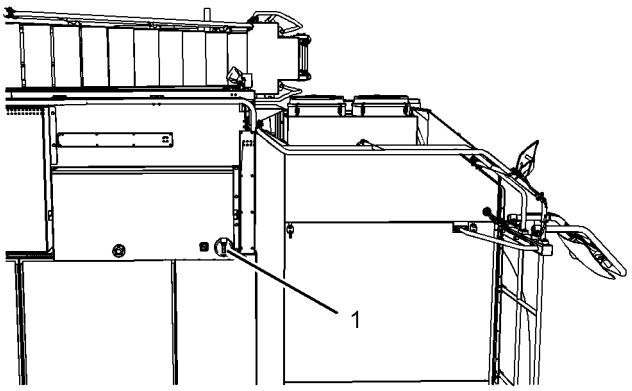


Illustration 161 g01995733
Right front corner of the platform (top view)

2. Slowly loosen filler cap (1). This will relieve system pressure. Remove the filler cap.

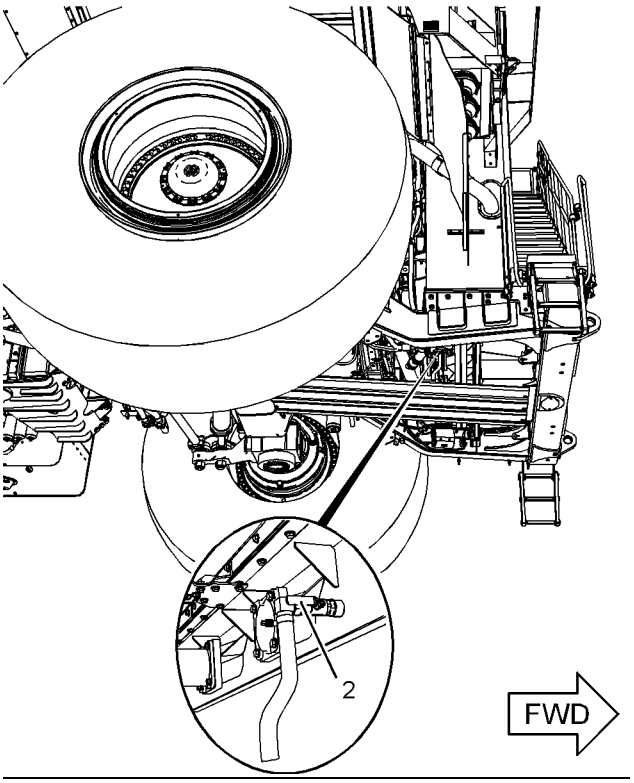


Illustration 162 g01995734

3. Open drain valve (2). Drain the coolant into a suitable container. Close the drain valve.

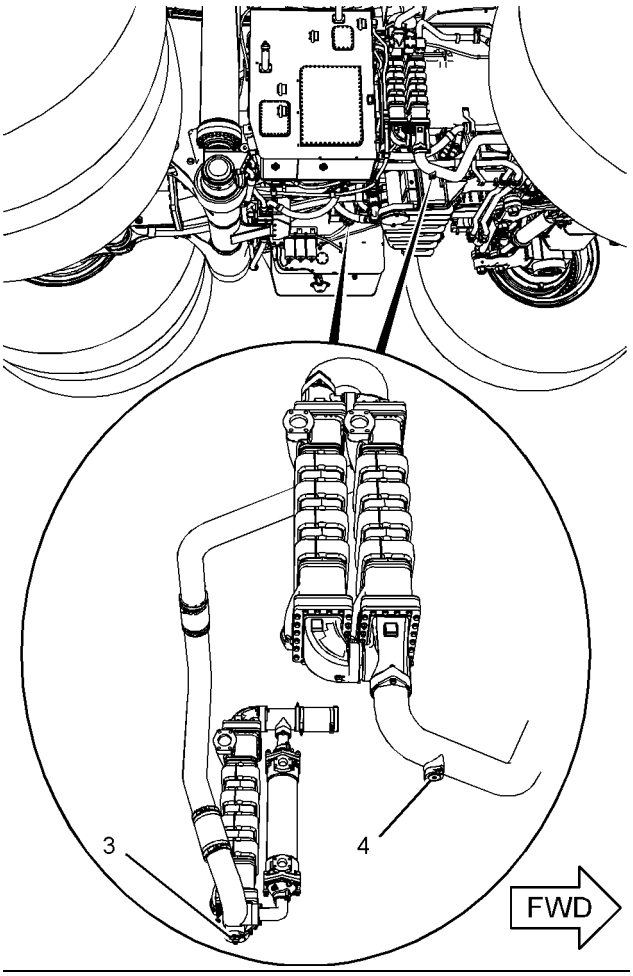


Illustration 163 g02346338

Standard retarding arrangement shown.

4. Remove drain valve plugs (3) and (4) on the lower coolant lines for the oil coolers. Install a 88.0 mm (3.50 inch) long NPT pipe nipple in order to open the internal drain valves. The outer diameter of the NPT pipe nipple should be 25 mm (1 inch).

5. Drain the coolant into a suitable container. Remove the pipe nipples. Clean the drain plugs and install the drain plugs.

6. Fill the system with clean water and a 6 to 10% concentration of cooling system cleaner.

7. Start the engine and operate the engine for 90 minutes. Stop the engine and drain the cleaning solution into a suitable container.

8. When the engine is stopped, flush the system with water until the draining water is clear. Flush the water into a suitable container.

9. Close the drain valves.

10. Add the coolant solution.

- Special Publication, SEBU6250, “Cooling System Specifications”
- Operation and Maintenance Manual, “Capacities (Refill)”

Note: If you are using Caterpillar antifreeze, do not add the supplemental coolant additive at this time and/or change the element at this time.

11. After the cooling system has been filled, perform the following procedures during initial start-up:

a. Start the engine without the filler cap.

b. Run the engine at low idle for 10 minutes.

c. Then, increase the engine speed to a high idle until the thermostat is open and the coolant level is stabilized.

d. Maintain the coolant at the proper level as the thermostat opens and air is purged from the system. Refer to Operation and Maintenance Manual, “Cooling System Coolant Level - Check”.

12. Install the filler cap.

i03708206

Cooling System Coolant Extender (ELC) - Add

SMCS Code: 1353; 1395

⚠ WARNING

Personal injury can result from hot coolant, steam and alkali.

At operating temperature, engine coolant is hot and under pressure. The radiator and all lines to heaters or the engine contain hot coolant or steam. Any contact can cause severe burns.

Remove cooling system pressure cap slowly to relieve pressure only when engine is stopped and cooling system pressure cap is cool enough to touch with your bare hand.

Do not attempt to tighten hose connections when the coolant is hot, the hose can come off causing burns.

Cooling System Coolant Additive contains alkali. Avoid contact with skin and eyes.

NOTICE
Adding coolant to an overheated engine could result in damage to the engine. Allow the engine to cool before adding coolant.

If the machine is to be stored in, or shipped to, an area with freezing temperatures, the cooling system must be protected to the lowest outside (ambient) temperature.

The engine cooling system is normally protected to a minimum of−29°C (−20°F) with Caterpillar Antifreeze, when shipped from the factory unless special requirements are defined.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

NOTICE
Excessive additive (greater than the recommended 6% initial fill) together with concentrations of antifreeze greater than 60% cause deposits to form and can result in radiator tube blockage and overheating.

NOTICE
Mixing Cat Extended Life Coolant (ELC) with other products reduces the effectiveness of the coolant and shortens coolant life. Use only Caterpillar products or commercial products that have passed the Caterpillar EC-1 specifications for premixed or concentrate coolants. Use only Cat Extender with Cat ELC. Failure to follow these recommendations could result in damage to the cooling systems components.

If ELC cooling system contamination occurs, refer to Operation and Maintenance, “Extended Life Coolant (ELC)” under the topic ELC Cooling System Contamination.

This machine was factory filled with Cat Extended Life Coolant.

Refer to Special Publication, SEBU6250, “Cooling System Specification” for the cooling system requirements.

Use 8T-5296 Test Kit in order to check the concentration.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

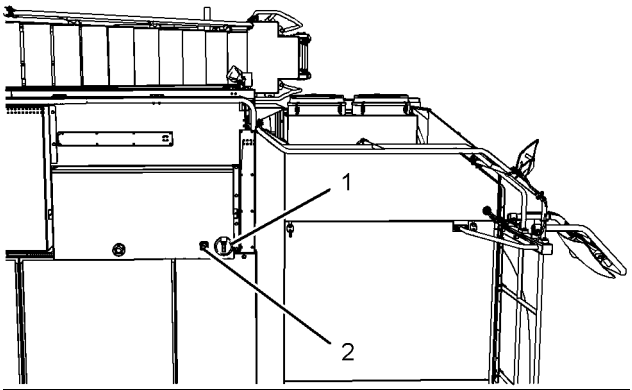


Illustration 164 g01995774

Right front corner of the platform (top view)

2. Loosen filler cap (1) slowly in order to relieve pressure. Remove the filler cap.

3. Check coolant level gauge (2). If necessary, drain enough coolant in order to allow the addition of the liquid coolant additive.

Note: Make sure that the coolant is drained into a suitable container.

4. Refer to the table in Special Publication, SEBU6250, “Extended Life Coolant (ELC)”. This table lists the correct amount of Caterpillar Extended Life Coolant (ELC) extender that should be added to the cooling system.

5. Clean the filler cap and inspect the filler cap. Install the filler cap.

6. Start the engine and check for leaks. Allow the coolant level to stabilize.

7. If necessary, add premixed coolant in order to bring the coolant in the green range on the coolant level gauge.

i03708208

Cooling System Coolant Level - Check

SMCS Code: 1353; 1395

⚠ WARNING

Personal injury can result from hot coolant, steam and alkali.

At operating temperature, engine coolant is hot and under pressure. The radiator and all lines to heaters or the engine contain hot coolant or steam. Any contact can cause severe burns.

Remove cooling system pressure cap slowly to relieve pressure only when engine is stopped and cooling system pressure cap is cool enough to touch with your bare hand.

Do not attempt to tighten hose connections when the coolant is hot, the hose can come off causing burns.

Cooling System Coolant Additive contains alkali. Avoid contact with skin and eyes.

NOTICE

Adding coolant to an overheated engine could result in damage to the engine. Allow the engine to cool before adding coolant.

If the machine is to be stored in, or shipped to, an area with freezing temperatures, the cooling system must be protected to the lowest outside (ambient) temperature.

The engine cooling system is normally protected to a minimum of−29°C (−20°F) with Caterpillar Antifreeze, when shipped from the factory unless special requirements are defined.

NOTICE
Mixing Cat Extended Life Coolant (ELC) with other products reduces the effectiveness of the coolant and shortens coolant life. Use only Caterpillar products or commercial products that have passed the Caterpillar EC-1 specifications for premixed or concentrate coolants. Use only Cat Extender with Cat ELC. Failure to follow these recommendations could result in damage to the cooling systems components.

If ELC cooling system contamination occurs, refer to Operation and Maintenance, “Extended Life Coolant (ELC)” under the topic ELC Cooling System Contamination.

This machine was factory filled with Cat Extended Life Coolant.

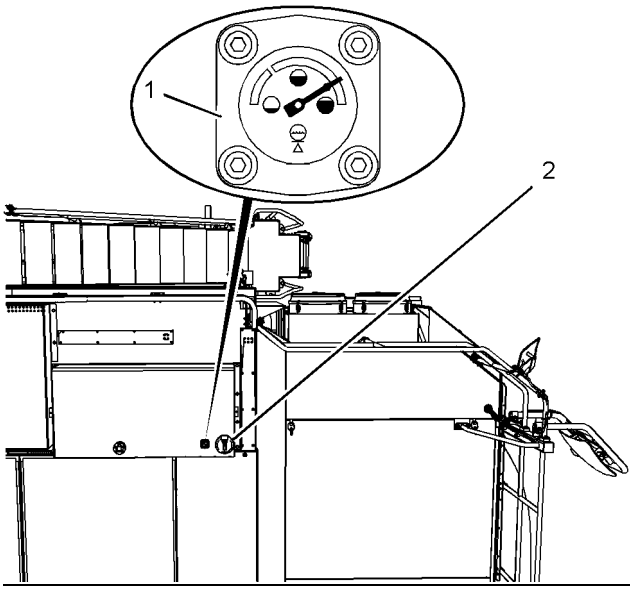


Illustration 165 g01995777
Right front corner of the platform (top view)

If coolant needs to be added daily, check for leaks.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Use coolant level gauge (1) in order to check the coolant levels. The needle should be in the green range.

3. If the gauge indicator is in the red range, allow the engine to cool and loosen filler cap (2) slowly. Then add premixed coolant in order to bring the coolant in the green range on the coolant level gauge.

Refer to Operation and Maintenance Manual, “Cooling System Coolant Extender (ELC) - Add” for more information.

i03708678

Cooling System Coolant Sample (Level 1) - Obtain

SMCS Code: 1395-008; 1395-554

⚠ WARNING

At operating temperature, engine coolant is hot and under pressure. Hot coolant and hot components can cause severe burns. Do not allow hot coolant or hot components to contact the skin.

Note: In order to access the sampling valve, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

Obtain S·O·S samples as close as possible to the recommended sampling interval. In order to receive the full effect of S·O·S analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent samplings that are evenly spaced. Supplies for collecting samples can be obtained from your Caterpillar dealer.

Note: Level 1 results may indicate a need for Level 2 Analysis.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

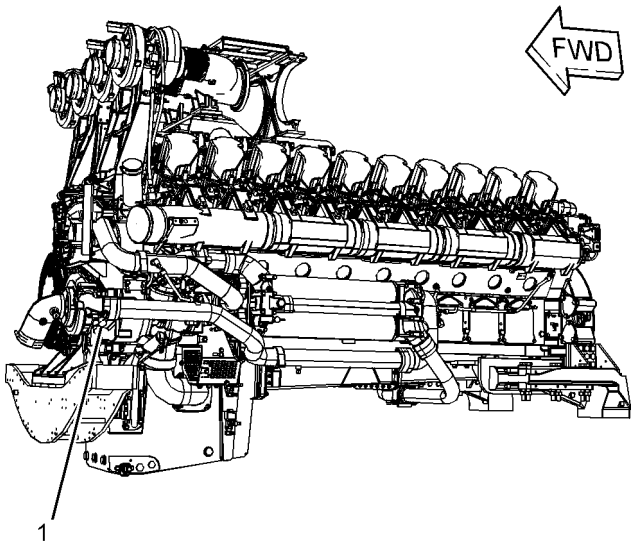


Illustration 166 g01996113

2. Obtain a coolant sample through sampling valve (1). Take the oil sample when the engine is cool and when the engine is operating at low idle.

3. Submit the sample for Level 1 S·O·S analysis.

Refer to the following publications for S·O·S information:

- Operation and Maintenance Manual, “S·O·S Information”
- Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Services Analysis”
- Special Publication, PEGJ0047, “How to Take a Good S·O·S Sample”
- Special Publication, PEGJ0046, “S·O·S Services: Understanding Your Results”
- Special Publication, PEHJ0191, “S·O·S Fluid Analysis”

i03708900

Cooling System Coolant Sample (Level 2) - Obtain

SMCS Code: 1395-008; 1395-554

⚠ WARNING

At operating temperature, engine coolant is hot and under pressure. Hot coolant and hot components can cause severe burns. Do not allow hot coolant or hot components to contact the skin.

Note: In order to access the sampling valve, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

Obtain S·O·S samples as close as possible to the recommended sampling interval. In order to receive the full effect of S·O·S analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent samplings that are evenly spaced. Supplies for collecting samples can be obtained from your Caterpillar dealer.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

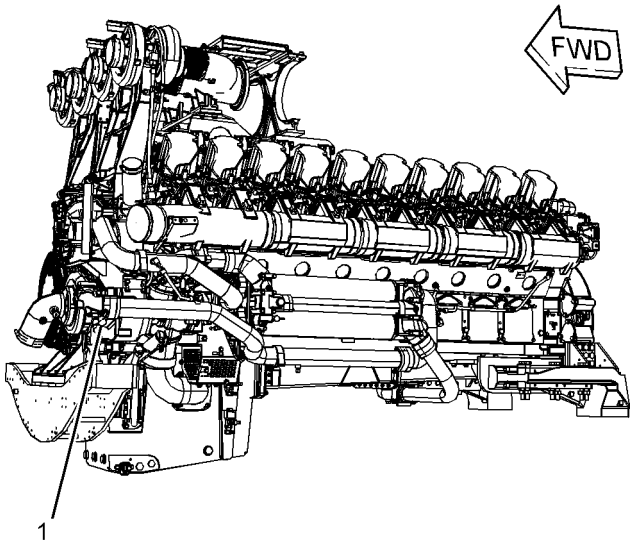


Illustration 167 g01996113

2. Obtain a coolant sample through sampling valve (1). Take the oil sample when the engine is cool and when the engine is operating at low idle.

3. Submit the sample for Level 2 S·O·S analysis.

Refer to the following publications for S·O·S information:

- Operation and Maintenance Manual, “S·O·S Information”
- Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Services Analysis”
- Special Publication, PEGJ0047, “How to Take a Good S·O·S Sample”
- Special Publication, PEGJ0046, “S·O·S Services: Understanding Your Results”
- Special Publication, PEHJ0191, “S·O·S Fluid Analysis”

i03708905

Cooling System Pressure Cap - Clean/Replace

SMCS Code: 1382

⚠ WARNING

Personal injury can result from hot coolant, steam and alkali.

At operating temperature, engine coolant is hot and under pressure. The radiator and all lines to heaters or the engine contain hot coolant or steam. Any contact can cause severe burns.

Remove cooling system pressure cap slowly to relieve pressure only when engine is stopped and cooling system pressure cap is cool enough to touch with your bare hand.

Do not attempt to tighten hose connections when the coolant is hot, the hose can come off causing burns.

Cooling System Coolant Additive contains alkali. Avoid contact with skin and eyes.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

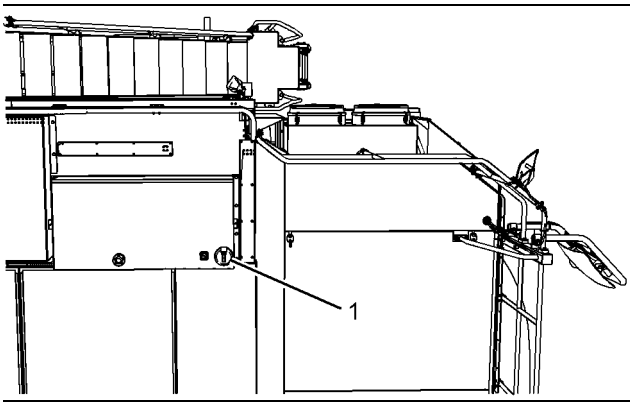


Illustration 168 g01996136

Right front corner of the platform (top view)

2. Remove filler cap (1) slowly in order to relieve the pressure.
3. Inspect the filler cap for damage, for foreign material, and for deposits.
4. Clean the filler cap with a clean cloth or replace the filler cap, if necessary.
5. Install the filler cap.

i03708907

Cooling System Relief Valve - Clean

SMCS Code: 1370

⚠ WARNING

Personal injury can result from hot coolant, steam and alkali.

At operating temperature, engine coolant is hot and under pressure. The radiator and all lines to heaters or the engine contain hot coolant or steam. Any contact can cause severe burns.

Remove cooling system pressure cap slowly to relieve pressure only when engine is stopped and cooling system pressure cap is cool enough to touch with your bare hand.

Do not attempt to tighten hose connections when the coolant is hot, the hose can come off causing burns.

Cooling System Coolant Additive contains alkali. Avoid contact with skin and eyes.

If the system overheats or if coolant is leaking, clean the relief valves or replace the relief valves.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

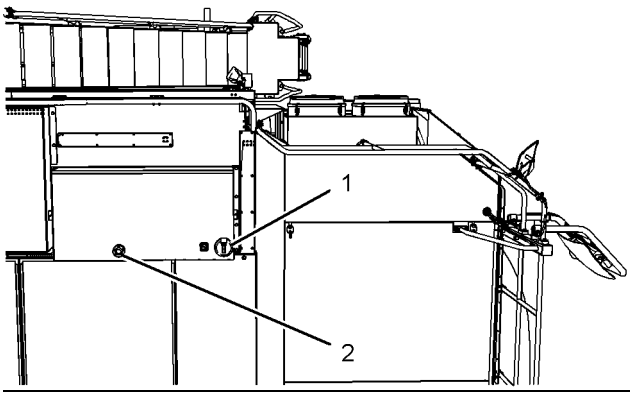


Illustration 169 g01996137

Right front corner of the platform (top view)

2. Remove filler cap (1) slowly in order to relieve the pressure.

3. Remove the mounting bolts from relief valve assembly (2) and remove the relief valve assembly.

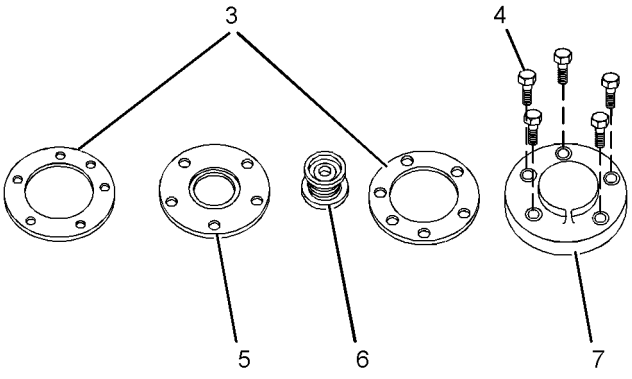


Illustration 170 g01428758

(3) Gaskets
(4) Mounting bolts
(5) Seal
(6) Relief valve
(7) Cover plate

4. Clean all debris and deposits from the following: gaskets, mounting bolts, seal, relief valve, and cover plate.

5. Inspect the following: gaskets, mounting bolts, seal, relief valve, and cover plate. If necessary, replace any damaged parts.

6. Install the relief valve assembly.

7. Install the filler cap.

i03656917

Differential and Final Drive Oil - Inspect

SMCS Code: 4208

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Inspect the differential and final drive oil for any of the following symptoms that may indicate a mechanical failure:

   - Discoloration and change in viscosity
   - A high amount of metal on the magnetic plug
   - Oil leaks in the area around the drive wheel bearings
   - Review the latest results and trends from the S·O·S samples

The rear wheel bearings do not need to be adjusted or inspected until the scheduled overhaul. Unless a symptom of an obvious failure appears, do not adjust or inspect the rear wheel bearings. If the differential and final drive oil has any of the above symptoms, the rear wheel bearings may need to be inspected.

Consult your Caterpillar dealer for more information.

i03711741

Differential and Final Drive Oil Filter - Replace

SMCS Code: 3004-510; 4070-510

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: In order to access the differential oil filter and the final drive oil filter, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

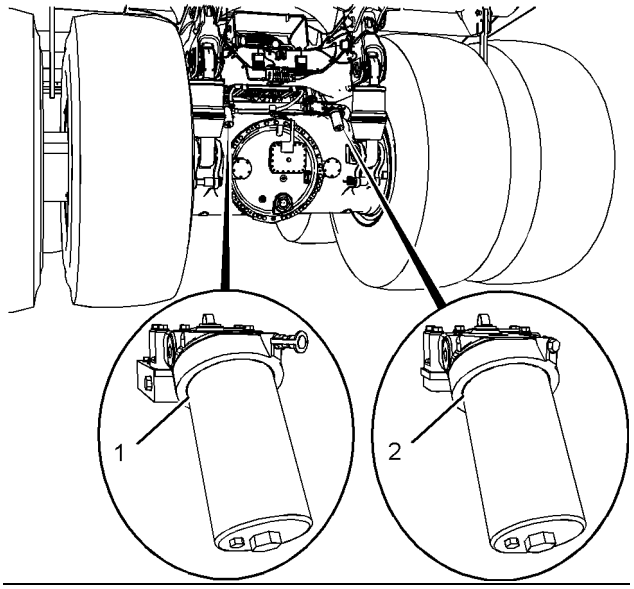


Illustration 171 g01998637

(1) Oil filter for the final drive
(2) Oil filter for the differential

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Remove the drain plug from the bottom of housing for the final drive oil filter (1). Drain the oil into a suitable container. Clean the area around the drain plug. Clean the drain plug and install the drain plug.

Note: Removing the drain plug from the bottom of the filter housing may not drain all of the oil from the filter housing.

3. Remove the filter housing and the filter element. Discard the used filter element.

4. Wash the filter housing in clean nonflammable solvent.

5. Inspect the seals in the filter base. If the seals are damaged, replace the seals with new seals.

6. Install the new filter element in the filter housing. Install the filter housing.

7. Repeat Step 2 through Step 6 for differential oil filter (2).

8. Operate the machine on level ground for a few minutes.

Note: The lubrication pump for the rear axle will not operate with the oil temperature below −4° C (25° F) and the lubrication pump for the rear axle will not operate if the machine is not moving for five minutes. The lubrication pump for the rear axle will not operate when the engine is off.

9. Park the machine according to the guidelines in Operation and Maintenance Manual, “Prepare the Machine for Maintenance”. Check for leaks and make any necessary repairs.

10. Check the oil level in the differential and final drive. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Differential and Final Drive Oil - Check”.

Note: Correct oil levels are critical in the differential and final drives. Check the oil level after repairs and after maintenance.

Note: The differential and final drive oil level needs to be checked and maintained at operating temperature. If the oil level is checked cold, adjustment of the oil level may be necessary when the truck reaches operating temperature.

i03711280

Differential and Final Drive Oil Level - Check

SMCS Code: 3258; 4050

Correct oil levels are critical in the differential and final drives. Failure to fill the final drives to the proper level and the differential to the proper level could damage the machine. Check the oil level after repairs and after maintenance. Check the oil level prior to operation.

The differential and final drive oil level needs to be checked and maintained at operating temperature. If the oil level is checked cold, adjustment of the oil level may be necessary when the truck reaches operating temperature.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

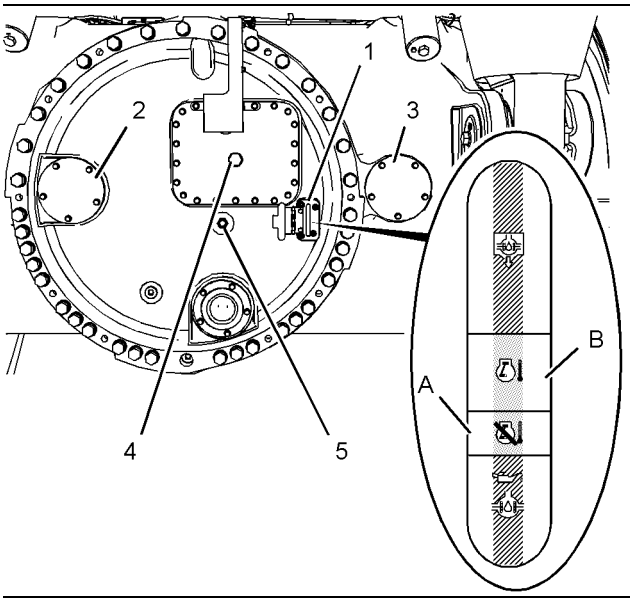


Illustration 172 g01998339

2. Use sight gauge (1) to check the oil level for the differential and final drives.

   a. If the rear axle lubrication pump is off, and the oil is at ambient temperature, maintain the oil level within green range (A) of the sight gauge.

   b. If the rear axle lubrication pump is on and the oil is at operating temperature, maintain the oil level within green range (B) of sight gauge.

Note: The lubrication pump for the rear axle will not operate with the oil temperature below −4° C (25° F) and the lubrication pump for the rear axle will not operate if the machine is not moving for five minutes. The lubrication pump for the rear axle will not operate when the engine is off.

3. If necessary, add oil. Allow sufficient time for the oil to fill all of the compartments before rechecking the oil level.

   a. Remove cover plate (2) or cover plate (3) and add oil through the opening.

   b. Inspect the seal for the cover plate. Replace any damaged seals. Clean the cover plate and clean the area around the opening. Install the cover.

4. The following alternate differential filler plug and level indicator can also be used:

   a. Remove differential filler plug (4). Add oil through the filler plug opening until oil is seen in sight glass (5). Clean the differential filler plug and the area around the filler plug opening. Install the differential filler plug.

Note: Overfilling the differential and final drives will cause overheating and foaming of the oil in long hauling applications and high speed applications. A reduction of the life of components may be the result of overheating and foaming of the oil.

i03711860

Differential and Final Drive Oil Sample - Obtain

SMCS Code: 3258-008; 4050-008

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

Note: In order to access the sampling valve for the differential and final drive oil, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

Obtain S·O·S samples as close as possible to the recommended sampling interval. In order to receive the full effect of S·O·S analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent samplings that are evenly spaced. Supplies for collecting samples can be obtained from your Caterpillar dealer.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

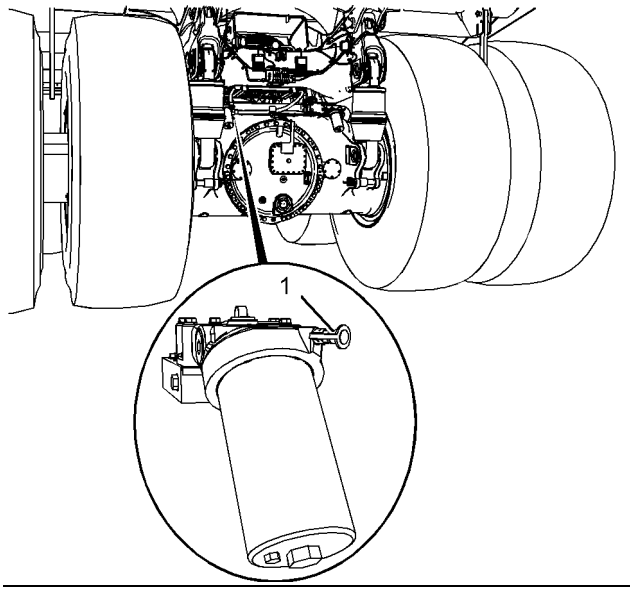


Illustration 173 g01998721

2. Obtain the differential and final drive oil sample through sampling valve (1) that is located on the base of the final drive oil filter. Take the oil sample when the lubrication pump for the rear axle is operating.

3. Submit the sample for S·O·S analysis.

Refer to the following publications for S·O·S information:

- Operation and Maintenance Manual, “S·O·S Information”
- Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Services Analysis”
- Special Publication, PEGJ0047, “How to Take a Good S·O·S Sample”
- Special Publication, PEGJ0046, “S·O·S Services: Understanding Your Results”
- Special Publication, PEHJ0191, “S·O·S Fluid Analysis”

i04151071

Differential and Final Drive Oil and Screens - Change/Clean

SMCS Code: 3258; 4050

The oil change interval for the differential and final drives can be monitored with a S·O·S (Scheduled Oil Sampling) program. For more information on S·O·S services, refer to Operation and Maintenance Manual, “S·O·S Information”. **When an S·O·S program is used, the oil change interval is based on the following:**

- The condition of the oil
- The S·O·S recommendation

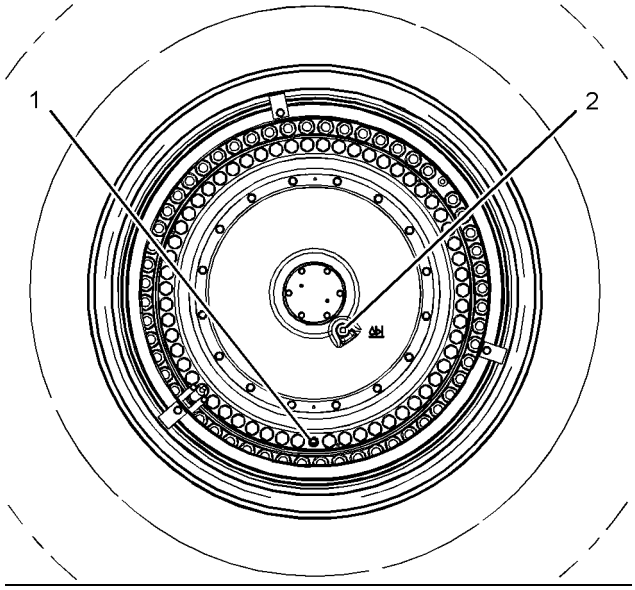


Illustration 174 g01997573

1. Rotate the wheels so that drain plug (1) is in the lowest position on the rear wheel.

2. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

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, “Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

3. Remove magnetic drain plug (1) for the final drive. Drain the oil into a suitable container.

4. Inspect the magnetic drain plug for the final drive. If any abnormal particles are found, consult your Caterpillar dealer.

5. Clean the area around the drain plug. Clean the drain plug. Install the drain plug.

6. Repeat Step 1 through Step 5 for the other final drive.

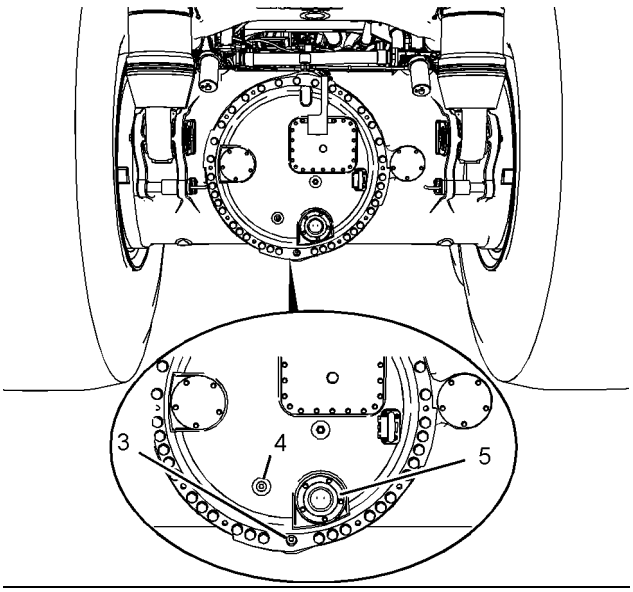


Illustration 175 g01997593

7. Remove magnetic drain plug (3) and allow the oil from the differential to drain into a suitable container.

8. Check the magnetic drain plug and magnetic plug (4) for the differential. If any abnormal particles are found, consult your Caterpillar dealer.

9. Clean the area around the drain plug. Clean the drain plug. Install the drain plug.

10. Remove lower screen cover (5) and the screen.

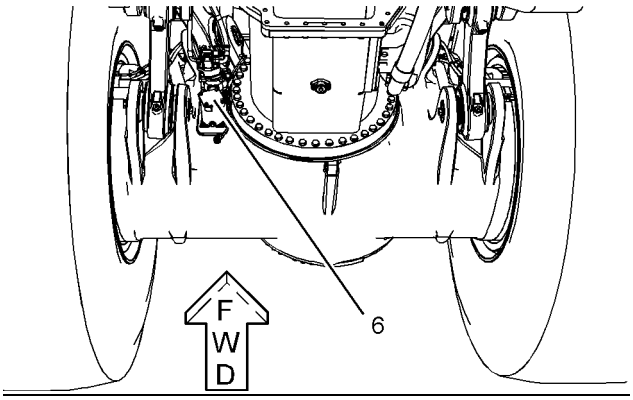


Illustration 176 g01997613

11. Remove upper screen cover (6) and the screen.

12. Wash the screens and the screen covers in a clean, nonflammable solvent. Do not crush the screens.

13. Inspect the seals for the screen covers. Replace any damaged seals.

14. Install the screens and the screen covers.

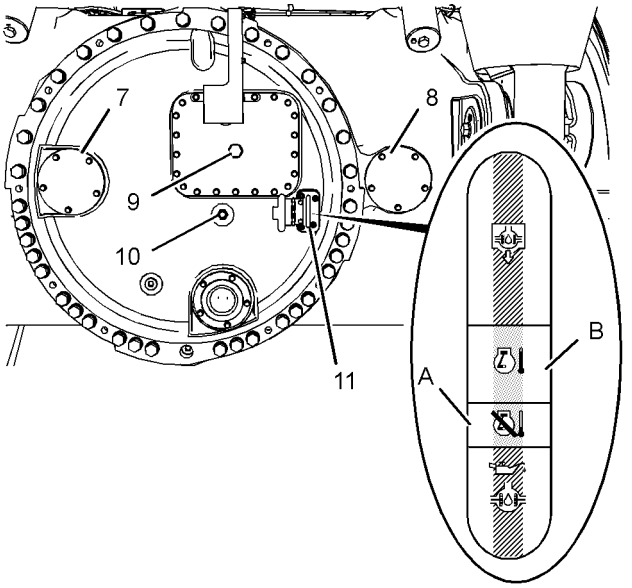


Illustration 177 g01997653

15. Before the differential and final drives are filled, refer to Operation and Maintenance Manual, “Lubricant Viscosities” and Operation and Maintenance Manual, “Capacities (Refill)”.

16. Remove cover plate (7) or cover plate (8) and fill the differential through the opening. Add oil until the level is within green range (A) of sight gauge (11).

Note: Never remove the cover plates when the lubrication pump for the rear axle is on.

Note: The lubrication pump for the rear axle will not operate with the oil temperature below −4° C (25° F) and the lubrication pump for the rear axle will not operate if the machine is not moving for five minutes. The lubrication pump for the rear axle will not operate when the engine is off.

17. Inspect the seal for the cover plate. Replace any damaged seals. Clean the cover plate and clean the area around the opening. Install the cover.

18. The following alternate differential filler plug and level indicator can also be used:

a. Remove differential filler plug (9). Add oil through the filler plug opening until oil is seen in sight glass (10). Clean the differential filler plug and the area around the filler plug opening. Install the differential filler plug.

19. Remove magnetic filler plugs (2) for the final drives. Refer to illustration 174. Fill each final drive to the bottom of the filler plug opening. When the final drive drain plug is in the lowest position, the final drive filler plug will be at the correct oil level.

Note: The final drives may need to be repositioned in order to place the final drive drain plug in the lowest position.

Note: Inspect the magnetic filler plugs for the final drives. If any abnormal particles are found, consult your Caterpillar dealer. Inspect the used oil. Refer to Operation and Maintenance Manual, “Differential and Final Drive Oil - Inspect” for further information.

Note: Allow sufficient time for the oil to fill all of the compartments. Correct oil levels are critical in the differential and final drives. Failure to fill the final drives to the proper level and the differential to the proper level could damage the machine.

20. Clean the final drive filler plugs and the area around the filler plug opening. Install the final drive filler plugs.

21. Operate the machine on level ground for a few minutes and check the system for leaks.

Note: The differential and final drive oil level needs to be checked and maintained at operating temperature. After the oil has been changed in the differential and final drives, adjustment of the oil level may be necessary when the truck reaches operating temperature.

22. Park the machine according to the guidelines in Operation and Maintenance Manual, “Prepare the Machine for Maintenance”. Check for leaks and make any necessary repairs.

23. Check the oil level. For the proper procedure, refer to Operation and Maintenance Manual, “Differential and Final Drive Oil - Check”. If necessary, adjust the oil level to the bottom of the sight gauge.

Note: The differential and final drive oil level needs to be checked and maintained at operating temperature. After the oil has been changed in the differential and final drives, adjustment of the oil level may be necessary when the truck reaches operating temperature. When the differential and final drive oil is at operating temperature, and the lubrication pump for the rear axle is on, the oil level should be within green range (B) of sight gauge (10). refer to illustration 177.

Note: Overfilling the differential and final drives will cause overheating and foaming of the oil in long hauling applications and high speed applications. A reduction of the life of components may be the result of overheating and foaming of the oil.

i04148649

Display and Camera - Clean (If Equipped)

SMCS Code: 7347-070; 7348-070

The Work Area Vision System (WAVS) and the Cat Integrated Object Detection System both utilize multiple cameras and a display.

In order to maintain sufficient vision, keep the camera lens and the display clean.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

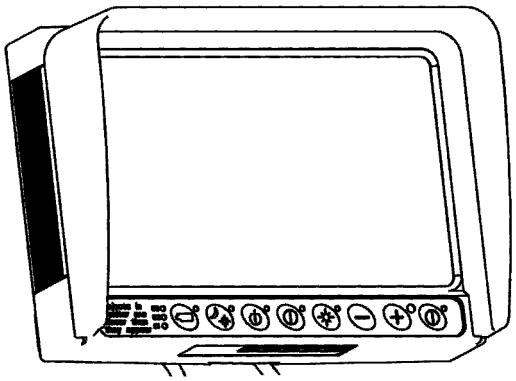


Illustration 178 g01223034

WAVS display

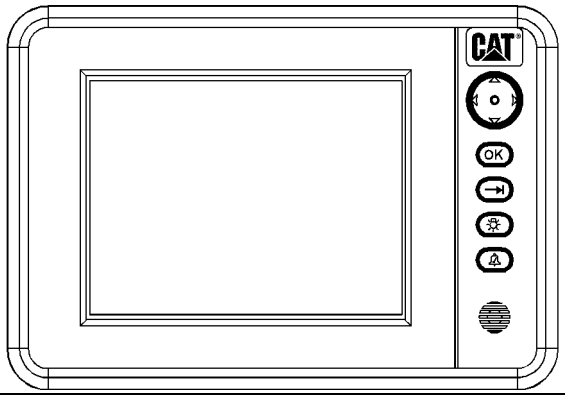


Illustration 179 g02217954

Cat Integrated Object Detection System display

2. Use a soft, damp cloth in order to clean the display. The display has a soft plastic surface that can be easily damaged by an abrasive material. **The display is not sealed. Do not immerse the display with liquid.**

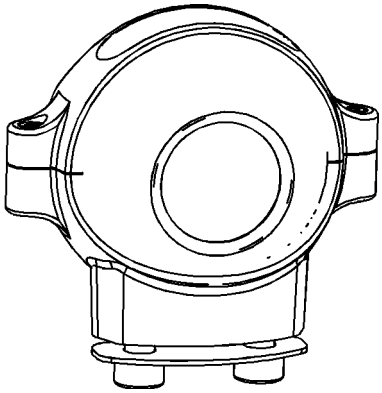


Illustration 180 g01223051

The camera for WAVS and the Cat Integrated Object Detection System .

3. Use a damp cloth or water spray in order to clean the camera lens. The camera is a sealed unit. The camera is not affected by high-pressure spray.

Note: The camera is equipped with an internal heater to help counteract the effects of condensation, snow, or ice.

For more information on WAVS, refer to Operation and Maintenance Manual, “Camera”.

For more information on Cat Integrated Object Detection System, refer to Operation and Maintenance Manual, “Cat Integrated Object Detection System”.

i03829310

Electric Drive Pump (Powered Stairway) Oil - Change (If Equipped)

SMCS Code: 5713-044-OC

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

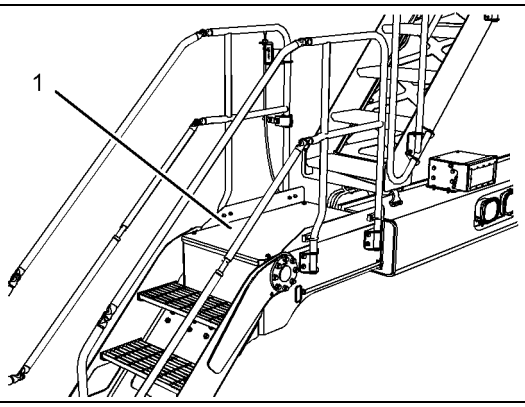


Illustration 181 g02078415

2. Remove tread plate (1) from the platform of the powered stairway.

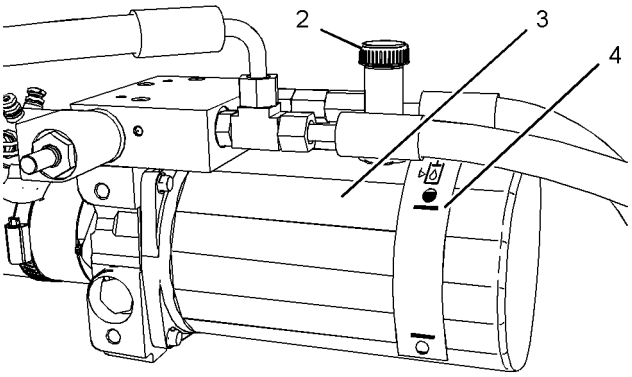


Illustration 182 g02079313

3. Remove filler cap (2) for the reservoir.

4. Use a suction device in order to extract the oil through the filler neck.

5. The oil level for the powered stairway is visible through the clear plastic oil reservoir (3).

6. Fill the reservoir for the powered stairway to full level (4). Refer to Operation And Maintenance Manual, “Lubricant Viscosities”. Refer to Operation And Maintenance Manual, “Capacities (Refill)”.

i03828309

Electric Drive Pump (Powered Stairway) Oil Level - Check (If Equipped)

SMCS Code: 5713-535-FLV

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

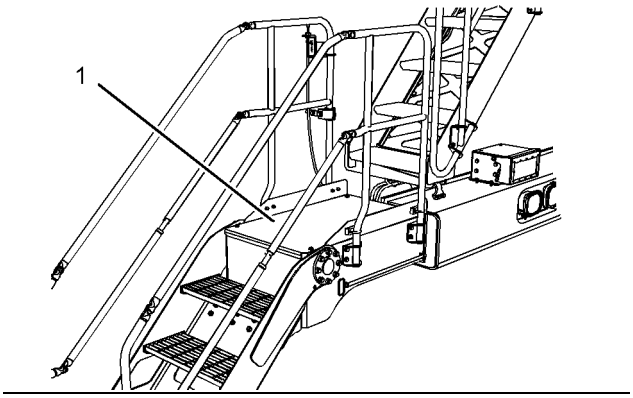


Illustration 183 g02078415

2. Remove tread plate (1) from the platform of the powered stairway.

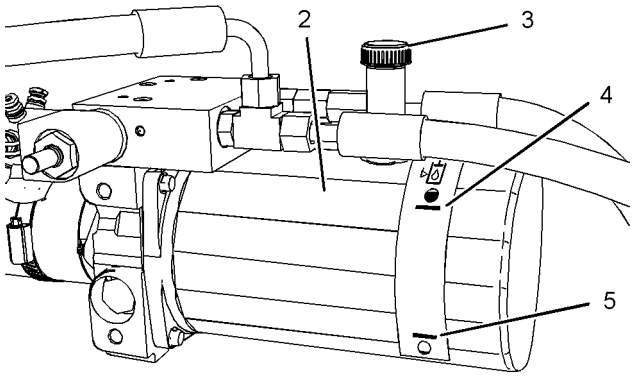


Illustration 184 g02078418

3. The oil level for the powered stairway is visible through the clear plastic oil reservoir (2).

4. Maintain the oil volume at the full level (4).

Note: Do not operate the powered stairway when the oil volume is below minimum level (5).

5. If necessary, remove filler cap (3) and add oil.

i04151066

Engine Air Filter Primary Element - Clean/Replace

SMCS Code: 1051; 1054

NOTICE
Service the air cleaner only with the engine stopped. Engine damage could result.

Service the primary air filter elements when the engine fault indicator is activated. The engine fault indicator is located inside the cab. The engine fault indicator will activate when there is an inlet air restriction, and the Advisor display will provide a message regarding the specific problem. Refer to Operation and Maintenance Manual, “Monitoring System” for further information.

Note: In order to access the air filter elements, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

Wear the proper personal protection equipment when pressurized air is used.

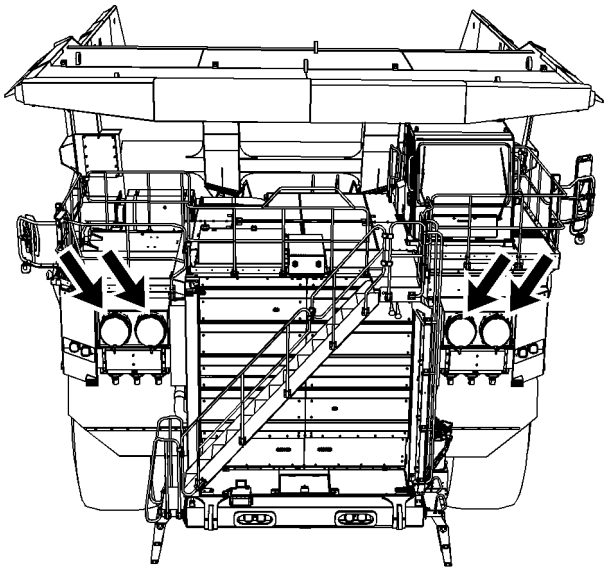


Illustration 185 g01998736

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

Note: This machine is equipped with ultra high efficiency (primary) air filter elements.

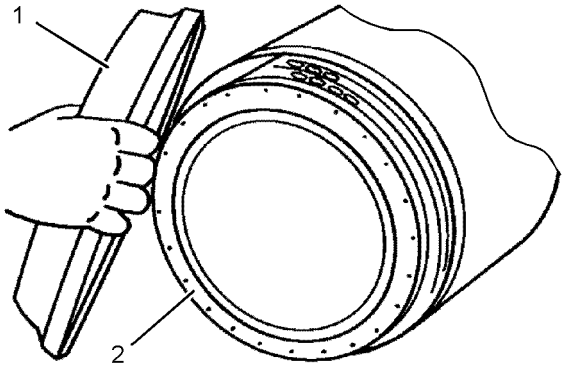


Illustration 186 g01217472

2. Remove covers (1) for the air filter housings.

3. Remove primary filter elements (2) from the air filter housings.

4. Clean the inside of the air filter housings.

5. Clean the dust valves on the bottom for the air filter housings.

6. Install clean primary air filter elements. Install the covers for the air filter housings.

Cleaning Primary Air Filter Elements

NOTICE
Caterpillar recommends certified air filter cleaning services available at participating Caterpillar dealers. The Caterpillar cleaning process uses proven procedures to assure consistent quality and sufficient filter life.

Observe the following guidelines if you attempt to clean the filter element:

Do not tap or strike the filter element in order to remove dust.

Do not wash the filter element.

Use low pressure compressed air in order to remove the dust from the filter element. Air pressure must not exceed 207 kPa (30 psi). Direct the air flow up the pleats and down the pleats from the inside of the filter element. Take extreme care in order to avoid damage to the pleats.

Do not use air filters with damaged pleats, gaskets, or seals. Dirt entering the engine will cause damage to engine components.

The primary air filter element can be used up to six times if the element is properly cleaned and the element is properly inspected. When the primary air filter element is cleaned, check for rips or tears in the filter material. The primary air filter element should be replaced at least one time per year. This replacement should be performed regardless of the number of cleanings.

Visually inspect the primary air filter elements before cleaning. Inspect the air filter elements for damage to the seal, the gaskets, and the outer cover.

There are two common methods that are used to clean primary air filter elements:

- Pressurized air
- Vacuum cleaning

Pressurized Air

Pressurized air can be used to clean primary air filter elements that have not been cleaned more than two times. Pressurized air will not remove deposits of carbon and oil. Use filtered, dry air with a maximum pressure of 207 kPa (30 psi).

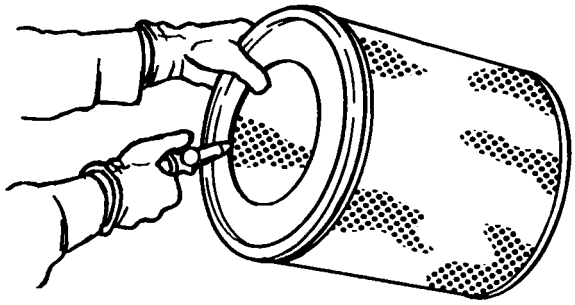


Illustration 187 g00281692

Note: When the primary air filter elements are cleaned, always begin with the clean side (inside) in order to force dirt particles toward the dirty side (outside).

Aim the hose so that the air flows inside the element along the length of the filter in order to help prevent damage to the paper pleats. Do not aim the stream of air directly at the primary air filter element. Dirt could be forced further into the pleats.

Vacuum Cleaning

Vacuum cleaning is another method for cleaning primary air filter elements which require daily cleaning because of a dry, dusty environment. Cleaning with pressurized air is recommended prior to vacuum cleaning. Vacuum cleaning will not remove deposits of carbon and oil.

Inspecting the Primary Air Filter Elements

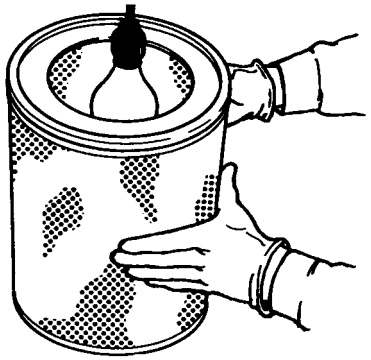


Illustration 188 g00281693

Inspect the clean, dry primary air filter element. Use a 60 watt blue light in a dark room or in a similar facility. Place the blue light in the primary air filter element. Rotate the primary air filter element. Inspect the primary air filter element for tears and/or holes. Inspect the primary air filter element for light that may show through the filter material. If necessary to confirm the result, compare the primary air filter element to a new primary air filter element that has the same part number.

Do not use a primary air filter element that has any tears and/or holes in the filter material. Do not use a primary air filter element with damaged pleats, gaskets, or seals. Discard damaged primary air filter elements.

i03574580

Engine Air Filter Secondary Element - Replace

SMCS Code: 1051; 1054

NOTICE
Always replace the secondary element. Do not attempt to reuse it by cleaning. Engine damage could result.

Note: Replace the engine air filter secondary elements when you service the engine air filter primary elements for the third time. Replace the secondary filter elements if the exhaust smoke remains black and the clean primary filter elements have been installed.

Note: In order to access the air filter elements, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Remove the air filter covers and remove the primary filter elements from the air filter housings.

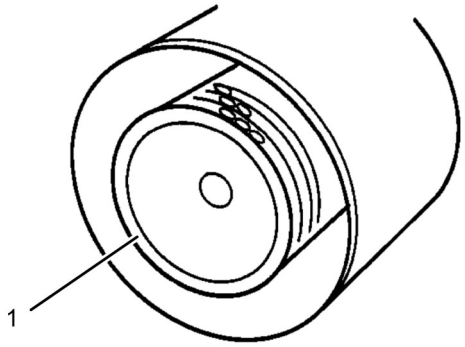


Illustration 189 g01903515

(1) Secondary filter element

3. Remove secondary filter elements (1) and properly discard the secondary elements.

4. Cover the air inlet openings. Clean the inside of the air cleaner housings.

5. Uncover the air inlet openings. Install the new secondary filter elements.

6. Install the primary filter elements and install the air filter covers.

i03712020

Engine Air Precleaner - Clean

SMCS Code: 1055-070

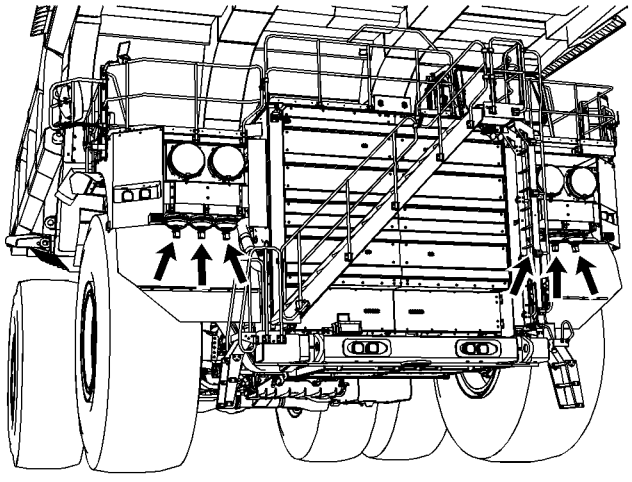


Illustration 190 g01998753

Note: In order to access the engine air precleaners, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

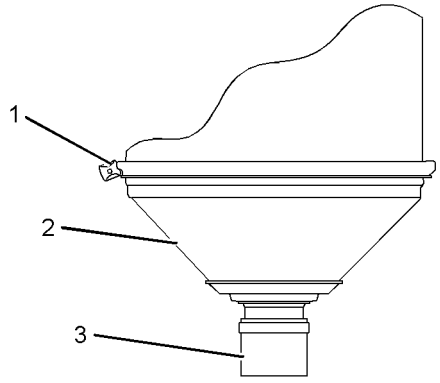


Illustration 191 g01180274

Note: Do not paint dust valves (3). Paint will cause the rubber to harden and the rubber may not seal properly.

Perform the following procedure for each engine air precleaner.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Loosen clamp (1) on the precleaner and remove lower precleaner bowl (2) and dust valve (3).

3. Clean the lower precleaner bowl and the dust valve with air pressure.

4. Make sure that all of the tubes within the precleaner are free of dirt. Clean the tubes, if necessary.

5. Install the clean lower precleaner bowl, and the clean dust valve and tighten the clamp on the precleaner.

6. Repeat steps 2 through 5 for each precleaner.

NOTICE

Do not operate the machine with the dust valves removed. Engine damage can occur.

i03994010

Engine Components - Clean/Inspect, Rebuild/Install Reman, Install New

SMCS Code: 1000-012-IC, NW; 1000-022-MC; 1000-571-IC; 1000

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Refer to the Disassembly and Assembly manual and the Disassembly and Assembly supplement for the removal and installation of engine components.

Caterpillar recommends this additional maintenance for the following engine components. Consult your Caterpillar dealer for further information.

The quantity of burned fuel that is shown with the service hours assumes a load factor of 40 percent. If the load factor is higher than 40 percent, the number of service hours for the overhaul interval will be lower. If the load factor is lower than 40 percent, the number of service hours for the overhaul interval will be higher. The quantity of consumed fuel is a better indicator for the overhaul interval than service hours.

Install New Components

- All Seals, Gaskets, and O-rings
- Camshaft Bearings
- Engine Mounts
- Engine Software
- Oil Pressure Regulating Valve
- Fuel Pressure Regulating Valve
- Fuel Priming Pump
- Gear Train Bushings, Bearings, and Thrust Plates
- Main Bearings, Rod Bearings, and Crankshaft Thrust Plates
- Piston Rings
- Wiring Harness
- Coolant Hoses
- High Pressure Fuel Pump

Rebuild Components and/or Install Remanufactured Components

- Cylinder Heads
- Turbochargers
- Oil Cooler Cores
- Oil Pump
- Scavenge Oil Pump
- Water Pumps
- Starter(s)
- Refrigerant Compressor
- Wastegate (High Altitude Arrangement) (C175-20 797F Only)
- Injectors
- Air Compressor (If Equipped)

Clean Components and Inspect Components for Reusability

- Aftercooler
- Camshaft
- Camshaft Lifters
- Connecting Rods
- Crankshaft
- Cylinder Block
- Cylinder Liners
- Damper
- Gear Train
- Piston Crowns and Piston Skirts
- Piston Pins
- Spacer Plates

i03723461

Engine Components - Rebuild/Install Reman

SMCS Code: 1000-022-MC; 1000

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Refer to the Disassembly and Assembly manual and the Disassembly and Assembly supplement for the removal and installation of engine components.

Caterpillar recommends this additional maintenance for the following engine components. Consult your Caterpillar dealer for further information.

The quantity of burned fuel that is shown with the service hours assumes a load factor of 40 percent. If the load factor is higher than 40 percent, the number of service hours for the mid-life service interval will be lower. If the load factor is lower than 40 percent, the number of service hours for the mid-life service interval will be higher. The quantity of consumed fuel is a better indicator for the mid-life service interval than service hours.

- Air Compressor (If Equipped)
- Starter(s)
- Alternator
- High Pressure Fuel Pump
- Fuel Priming Pump
- Fuel Transfer Pump
- Injectors
- Refrigerant Compressor
- Wastegate (High Altitude Arrangement)
- Water Pumps
- Coolant Hoses

i03708141

Engine Crankcase Breather - Clean

SMCS Code: 1000-070-BRE

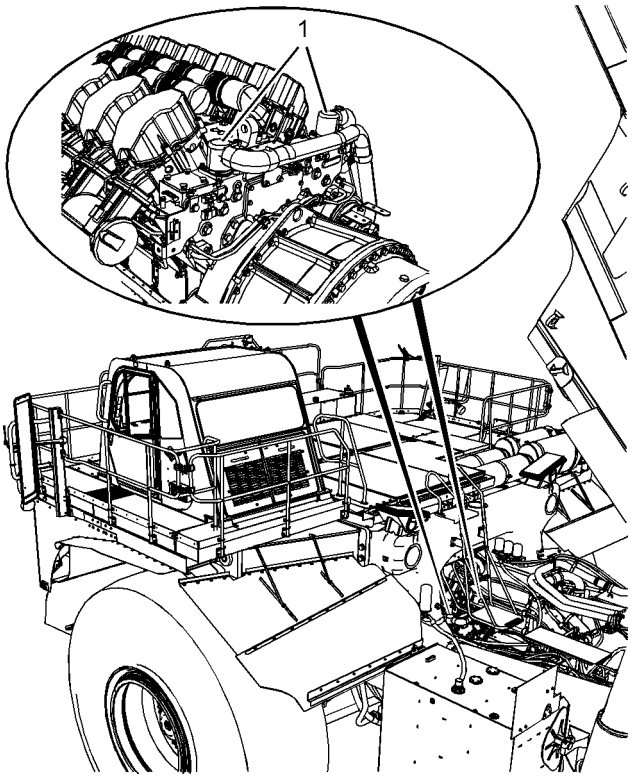


Illustration 192 g01995714

The engine in this machine is equipped with two engine crankcase breathers (1) at the rear of the engine. One breather is on the right side of the flywheel housing and one breather is on the left side of the flywheel housing.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Remove bolts from the clamps at the base of the breathers. Loosen the hose clamps.

3. Remove the breathers from the hoses.

4. Wash the breathers in clean nonflammable solvent.

5. Install the hoses and hose clamps on the breathers. Install the clamps at the base of the breathers.

6. Tighten all of the clamps.

7. Remove the truck body retaining cables and lower the body.

i04150950

Engine Oil and Filter - Change

SMCS Code: 1318

Note: If your machine is equipped with the Oil Renewal System (ORS), engine oil is blended into the fuel supply of the machine. This oil will be consumed in the engine during the process of combustion. Continually adding new oil will allow the life of the oil to be extended. An S·O·S Oil Analysis will determine if the oil needs to be changed. **The recommended replacement interval for the engine oil filters remains at 500 hours.** In order to change the engine oil filters only, refer to Operation and Maintenance Manual, “Engine Oil Filter (Oil Renewal System) - Change”. For more information on the Oil Renewal System, refer to Operation and Maintenance Manual, “Engine Oil Level (Oil Renewal System) - Check” and Systems Operation, RENR2223, “Oil Renewal System”.

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

Note: The oil change intervals are determined by close monitoring of the oil condition and engine wear metals. Caterpillar prefers S·O·S sampling as the proper method of checking engine wear metals.

Consult your Caterpillar dealer for the latest oil recommendations.

Note: In order to access the oil filler tube and the oil filters, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

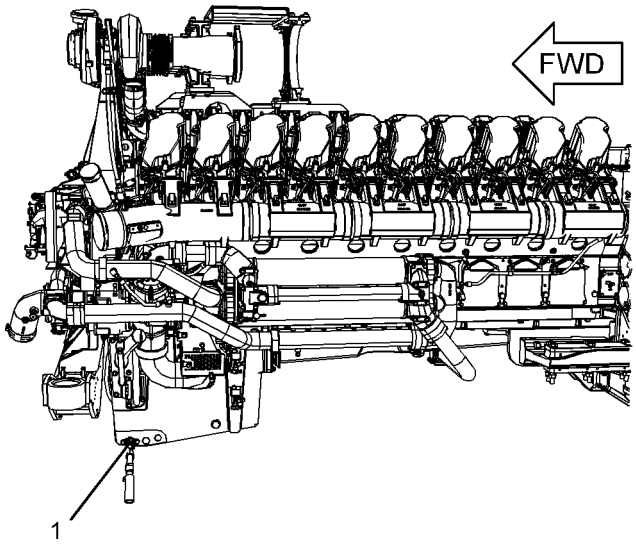


Illustration 193 g02000013

2. Drain the engine crankcase with the oil warm. open drain valve (1) and drain the oil into a suitable container. Close the drain valve after the oil is drained.

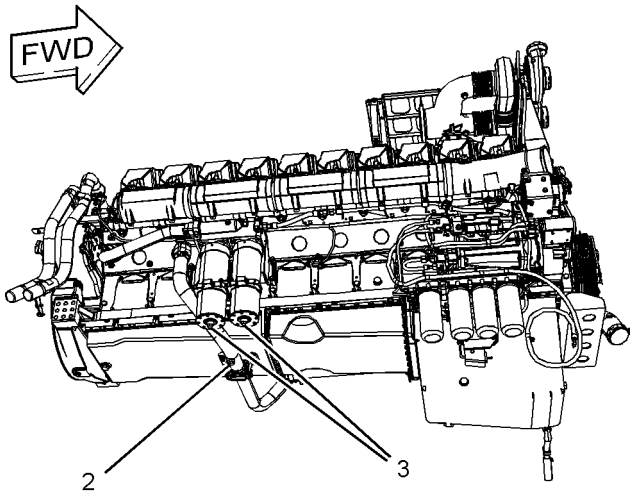


Illustration 194 g02347397

3. Remove drain plug (2) from the bottom of the crossover tube. Drain the oil into a suitable container. Inspect the seal for the drain plug. Replace a damaged seal with a new seal. Wash the drain plug with clean nonflammable solvent and install the drain plug.

4. Remove the drain plug from the bottom of filter housings (3). Drain the oil into a suitable container.

5. Inspect the seals for the drain plugs. Replace any damaged seals with new seals. Wash the drain plugs in clean nonflammable solvent and install the drain plugs.

6. Remove the covers from the bottom of the filter housings.

7. Remove the filter elements from the filter housings. Properly discard the used filter element.

8. Inspect the seals for the housing cover. Replace any damaged seals with new seals. Wash the housing cover in clean nonflammable solvent.

NOTICE

Caterpillar oil filters are built to Caterpillar specifications. Use of an oil filter not recommended by Caterpillar could result in severe engine damage to the engine bearings, crankshaft, etc., as a result of the larger waste particles from unfiltered oil entering the engine lubricating system. Only use oil filters recommended by Caterpillar.

9. In order to install the filter elements, align the collapsible package to the opening of each housing. Press each filter element upward into the housing until the element seats. Follow the instructions on the package of the filter element.

Note: Do not touch the filter elements. Do not allow contaminants to contact the filter elements.

10. Install the housing covers.

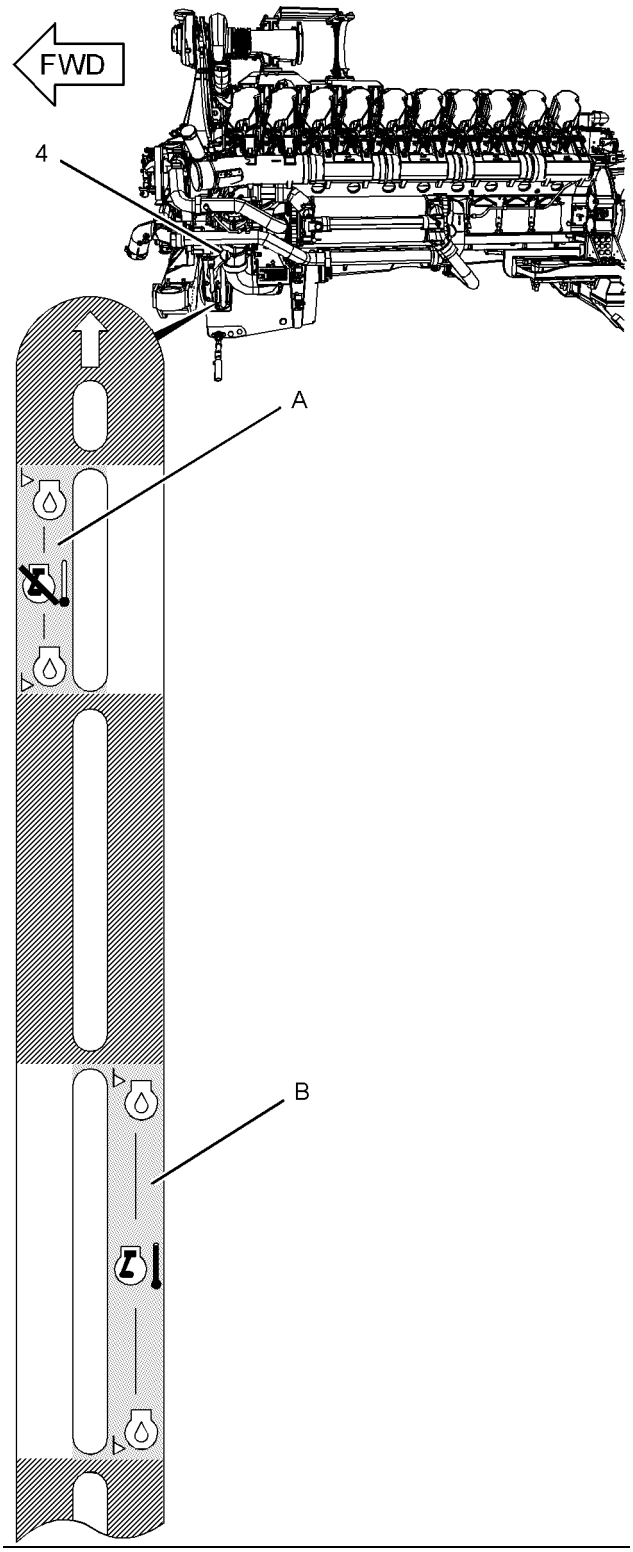


Illustration 195 g02347457

11. Remove the filler cap (4) in order to fill the crankcase with oil. install the filler cap after the oil is at the proper level. Refer to Operation and Maintenance Manual, “Lubricant Viscosities” for the type of oil. Refer to Operation and Maintenance Manual, “Capacities (Refill)” for the amount of oil.

12. Start the engine and operate the engine at an idle for five minutes. Inspect the engine oil filters for leaks. Make any necessary repairs.

13. Maintain the oil level within the green range on the sight gauge.

a. If the engine is stopped and the oil is cold, maintain the oil level in green range (A).

b. If the engine is running at low idle and the oil is at operating temperature, maintain the oil level in green range (B).

Engine Oil Fill with Wiggins Fast Fill Service Center (If Equipped)

Refer to Operation and Maintenance Manual, “Fast Fill Service Center” for more information.

i03723522

Engine Oil Filter (Oil Renewal System) - Change

SMCS Code: 1318; 1348; 1349

Note: If your machine is equipped with the Oil Renewal System (ORS), engine oil is blended into the fuel supply of the machine. This oil will be consumed in the engine during the process of combustion. Continually adding new oil will allow the life of the oil to be extended. An S·O·S Oil Analysis will determine if the oil needs to be changed. **The recommended replacement interval for the engine oil filters remains at 500 hours.** For more information on the Oil Renewal System, refer to Operation and Maintenance Manual, “Engine Oil Level (Oil Renewal System) - Check” and Systems Operation, RENR2223, “Oil Renewal System”.

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: In order to access the oil filters and the oil filler tube, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

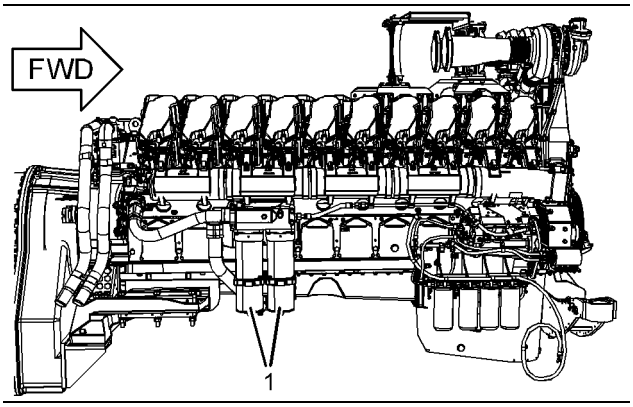


Illustration 196 g02007234

2. Remove the drain plug from the bottom of filter housings (1). Drain the oil into a suitable container.

3. Inspect the seals for the drain plugs. Replace any damaged seals with new seals. Wash the drain plugs in clean nonflammable solvent and install the drain plugs.

4. Remove the covers from the bottom of the filter housings.

5. Remove the filter elements from the filter housings. Properly discard the used filter element.

6. Inspect the seals for the housing cover. Replace any damaged seals with new seals. Wash the housing cover in clean nonflammable solvent.

NOTICE
Caterpillar oil filters are built to Caterpillar specifications. Use of an oil filter not recommended by Caterpillar could result in severe engine damage to the engine bearings, crankshaft, etc., as a result of the larger waste particles from unfiltered oil entering the engine lubricating system. Only use oil filters recommended by Caterpillar.

7. In order to install the filter elements, align the collapsible package to the opening of each housing. Press each filter element upward into the housing until the element seats. Follow the instructions on the package of the filter element.

Note: Do not touch the filter elements. Do not allow contaminants to contact the filter elements.

8. Install the housing covers.

9. Start the engine and operate the engine at an idle for five minutes. Inspect the oil filters for leaks. Make any necessary repairs.

10. Check the engine oil level. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Engine Oil Level - Check”.

i03712140

Engine Oil Level - Check

SMCS Code: 1302; 1318; 1326

NOTICE
Do not under fill or overfill engine crankcase with oil. Either condition can cause engine damage.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

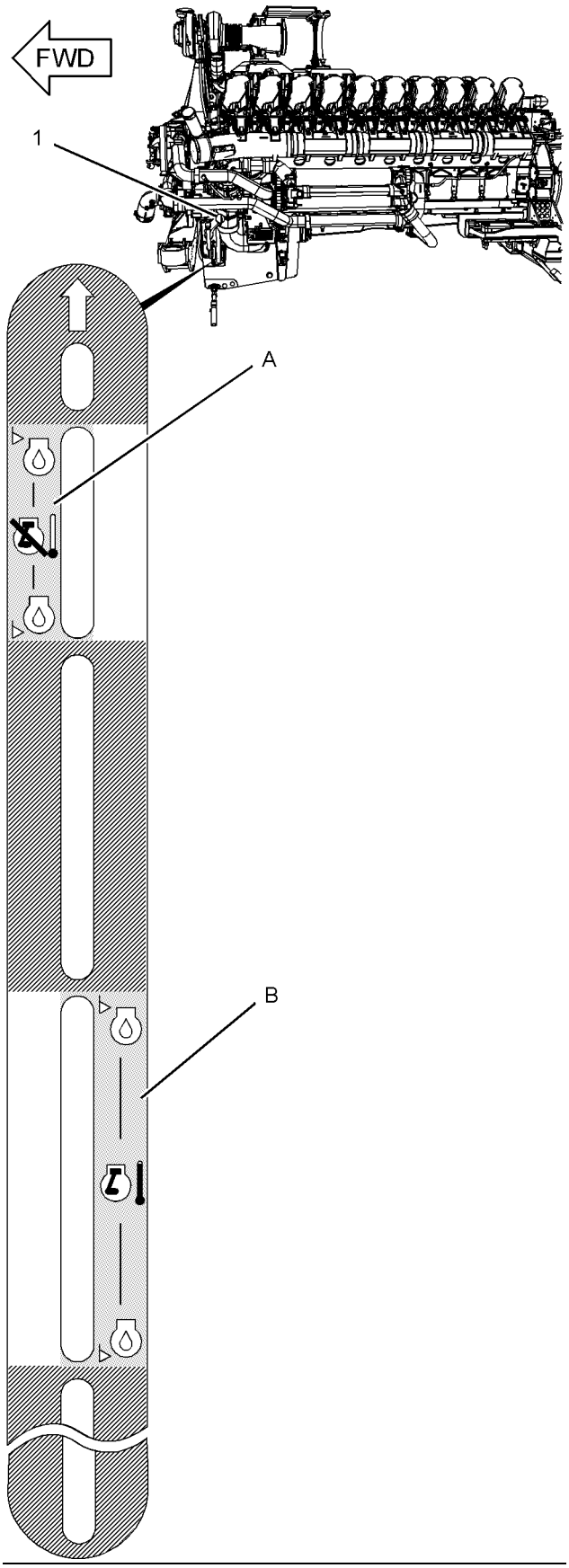


Illustration 197 g01998853

2. Maintain the oil level within the green range on the sight gauge.

   a. If the engine is stopped and the oil is cold, maintain the oil level in green range (A).

   b. If the engine is running at an idle and the oil is at operating temperature, maintain the oil level in green range (B).

3. If necessary, remove oil filler cap (1) and add oil.

4. Clean the filler cap and install the filler cap.

Oil Renewal System (If Equipped)

The Oil Renewal System (ORS) meters engine oil that is blended into the fuel supply. This oil will be consumed by the engine during the process of combustion. Normal operation will continually lower the oil level in the crankcase. Oil will need to be added to the engine crankcase on a regular basis in order to maintain the proper oil level.

The engine ECM will disable the ORS when the oil level is below the trigger point for the ORS.

Note: Keeping a daily maintenance log of all the additions of oil is necessary for determining whether the ORS is working properly. Refer to Operation and Maintenance Manual, “Engine Oil Level - Log Additions” for more information.

ORS Reservoir

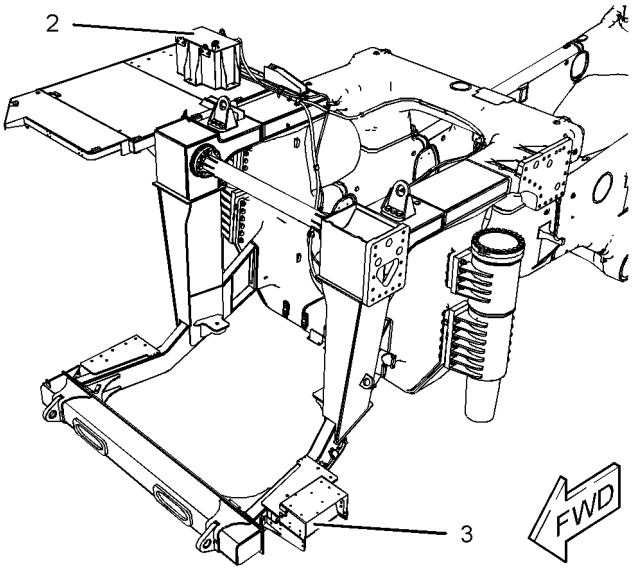


Illustration 198 g02006353

The ORS reservoir (2) is a reservoir that will replenish the oil that is removed from the engine crankcase by the ORS.

A fast fill port in fast fill service center (3) will fill the ORS reservoir first. The ORS reservoir is equipped with an overflow that will then continue to fill up the oil pan. The sight gauge in the oil pan will indicate the oil level.

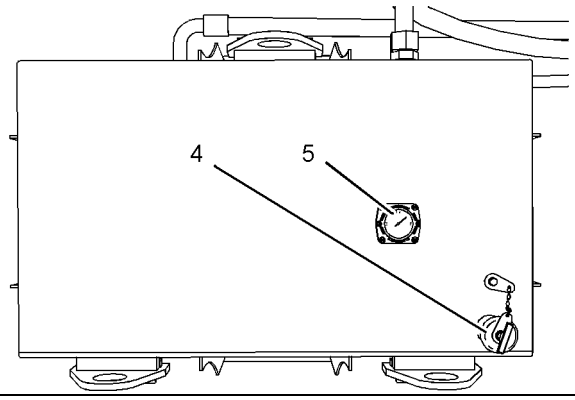


Illustration 199 g02006354

The ORS reservoir can also be filled at location (4).

Gauge (5) will indicate the oil level in the ORS reservoir.

If necessary, fill the ORS reservoir with engine oil.

For more information on the oil renewal system, refer to Systems Operation, RENR2223, “Oil Renewal System for Off-Highway Trucks/Tractors”.

For more information on the fast fill service center, refer to Operation and Maintenance Manual, “Fast Fill Service Center”.

i02449978

Engine Oil Level - Log Additions (If Equipped with the Oil Renewal System)

SMCS Code: 1348

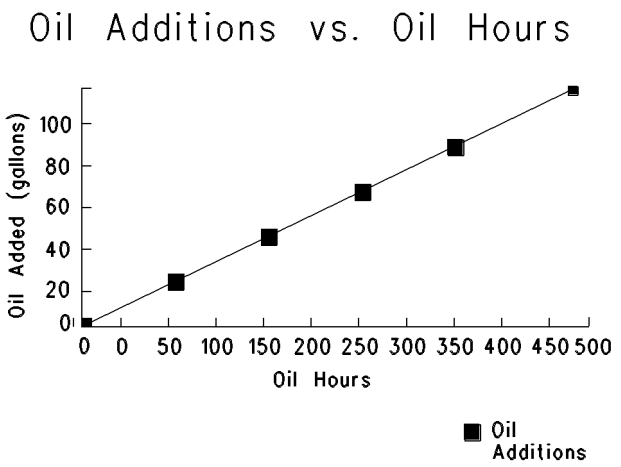


Illustration 200 g00408438

The Oil Renewal System (ORS) meters engine oil that is blended into the fuel supply. This oil will be consumed by the engine during the process of combustion. Normal operation will continually lower the oil level in the crankcase. Continually adding new engine oil will allow the life of the oil to be extended. An S·O·S analysis will determine if the oil needs to be changed.

The graph in Illustration 200 plots the quantity of added oil against the service hours during a 500 hour period. This data can be used to determine if the Oil Renewal System is working properly. Keeping a daily maintenance log of all of the additions of oil is necessary for the accuracy of this data. The daily maintenance log is also necessary for adjustment of the metering rate. The daily maintenance log will also indicate the total amount of oil that has been added since the last oil change. This information is needed at the time of each S·O·S analysis.

Note: Log the additions of engine oil to the crankcase and the additions of engine oil to the makeup oil tank.

i03713403

Engine Oil Pan Sump Screen - Inspect/Clean

SMCS Code: 1302; 1318

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Drain the engine oil from the engine. Refer to Operation and Maintenance Manual, “Engine Oil and Filter - Change” for the correct procedure.
3. Remove the secondary fuel filters. Refer to Operation and Maintenance Manual, “Fuel System Seconary Filter - Replace”.

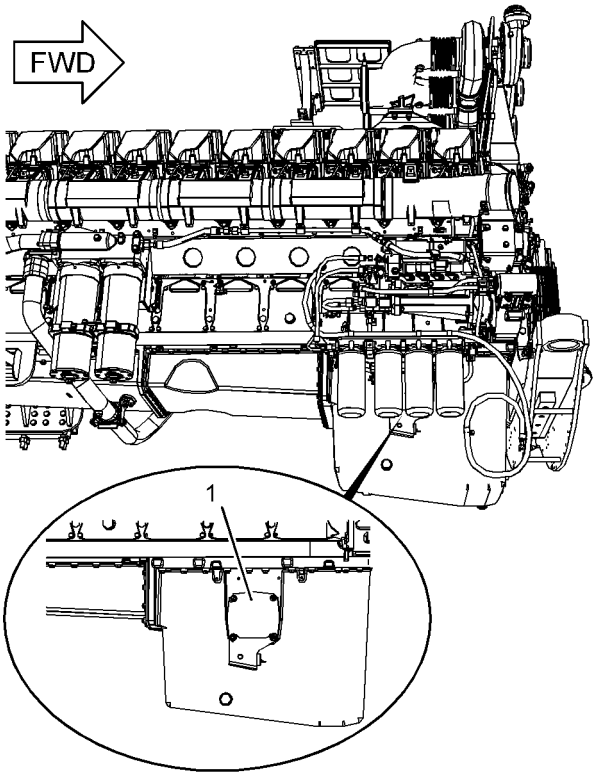


Illustration 201 g02000413

4. Remove cover plate (1) for the oil pan sump screen.
5. Remove the sump screen from the screen housing.
6. Wash the sump screen in a clean, nonflammable solvent.
7. Inspect the sump screen. If necessary, replace the sump screen. Inspect all of the seals and replace any damaged seals.

Note: Verify that all of the components are clean and free of foreign material prior to installation.

8. Install the sump screen in the screen housing.

9. Install the cover plate for the oil pan sump screen.

10. Fill the crankcase with oil. Refer to Operation and Maintenance Manual, “Engine Oil and Filter - Change” for the correct procedure.

i03713602

Engine Oil Sample - Obtain

SMCS Code: 1348-008; 1348-554-SM; 7542-008; 7542-554-OC, SM

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

Obtain S·O·S samples as close as possible to the recommended sampling interval. In order to receive the full effect of S·O·S analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent samplings that are evenly spaced. Supplies for collecting samples can be obtained from your Caterpillar dealer.

Note: In order to access the sampling valve, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

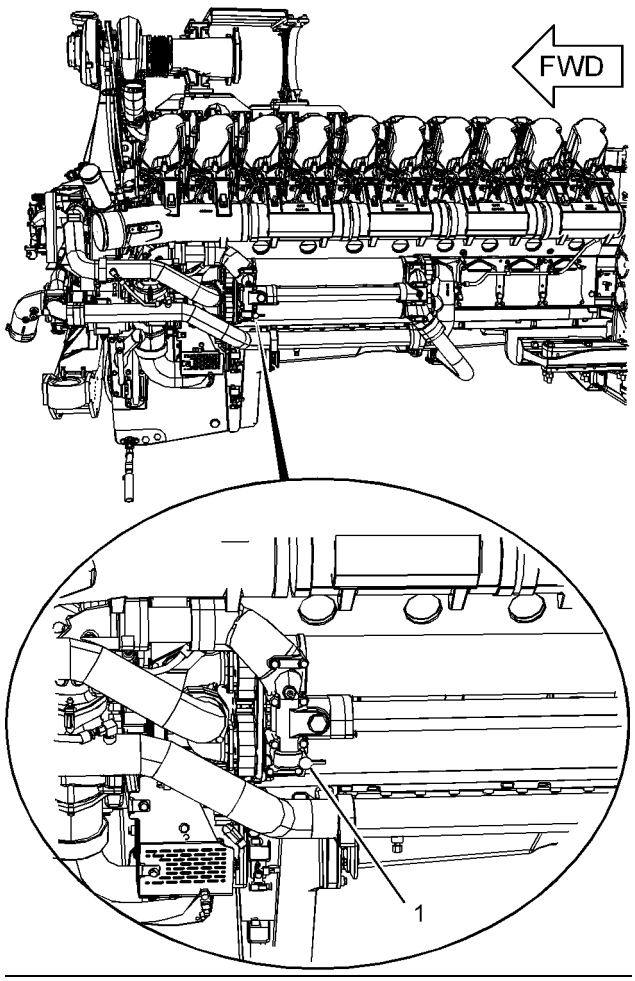


Illustration 202 g02000317

2. Obtain the engine oil sample through sampling valve (1) that is located on the oil lines on the left side of the engine. Take the oil sample when the engine is operating at low idle.

3. Submit the sample for S·O·S analysis.

Refer to the following publications for S·O·S information:

- Operation and Maintenance Manual, “S·O·S Information”
- Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Services Analysis”
- Special Publication, PEGJ0047, “How to Take a Good S·O·S Sample”
- Special Publication, PEGJ0046, “S·O·S Services: Understanding Your Results”
- Special Publication, PEHJ0191, “S·O·S Fluid Analysis”

i03578240

Engine Valve Lash - Check/Adjust

SMCS Code: 1102-025; 1102-535; 1102; 1105-025; 1105-535

⚠ WARNING

Ensure that the engine can not be started while this maintenance is being performed. To help prevent possible injury, do not use the starting motor to turn the flywheel.

Hot engine components can cause burns. Allow additional time for the engine to cool before measuring/adjusting valve lash clearance.

⚠ WARNING

Electrical shock hazard. The electronic unit injector system uses 90-120 volts.

NOTICE

Only qualified service personnel should perform this maintenance. Refer to the Systems Operation/Testing and Adjusting Manual, “Valve Lash and Valve Bridge Adjustment” article or consult your Caterpillar dealer for the complete valve lash adjustment procedure.

Operation of Caterpillar engines with improper valve adjustments can reduce engine efficiency. This reduced efficiency could result in excessive fuel usage and/or shortened engine component life.

This procedure is recommended by Caterpillar as part of a preventive maintenance schedule in order to help provide maximum engine life.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. For information on checking the engine valve lash, refer to Systems Operation, Testing and Adjusting, KENR5397, “C175-16 and C175-20 Engines” or consult your Caterpillar dealer.

i03713660

Engine Water Pump - Inspect

SMCS Code: 1361

Note: In order to inspect the water pump, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

A water pump that has failed might cause severe overheating. The overheating could result in the following problems:

- Cracks in the cylinder head
- Damage to the oil coolers
- Piston seizure
- Other potential engine damage

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

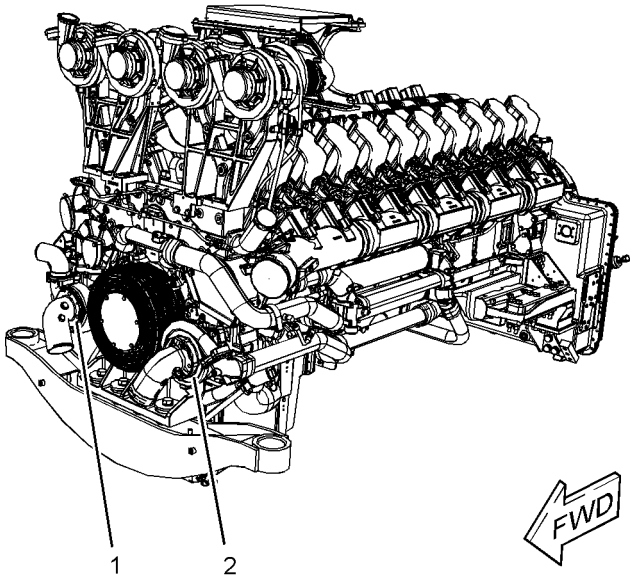


Illustration 203 g02000433

2. Visually inspect water pump (2) for leaks. If leaks are found, replace the seals.

Note: If the machine is equipped with the additional retarding (configuration), a second water pump will be installed on the engine.

3. If equipped, visually inspect water pump (1) for leaks. If leaks are found, replace the seals.

4. For the replacement of the water pump or the water pump seals, refer to Disassembly and Assembly, KENR8384, “797F Engine Supplement”.

i03713680

Ether Starting Aid Cylinder - Replace

SMCS Code: 1456

⚠ WARNING

Breathing ether vapors or repeated contact of ether with skin can cause personal injury. Personal injury may occur from failure to adhere to the following procedures.

Use ether only in well ventilated areas.

Do not smoke while changing ether cylinders.

Use ether with care to avoid fires.

Do not store replacement ether cylinders in living areas or in the operator's compartment.

Do not store ether cylinders in direct sunlight or at temperatures above 49 °C (120 °F).

Discard cylinders in a safe place. Do not puncture or burn cylinders.

Keep ether cylinders out of the reach of unauthorized personnel.

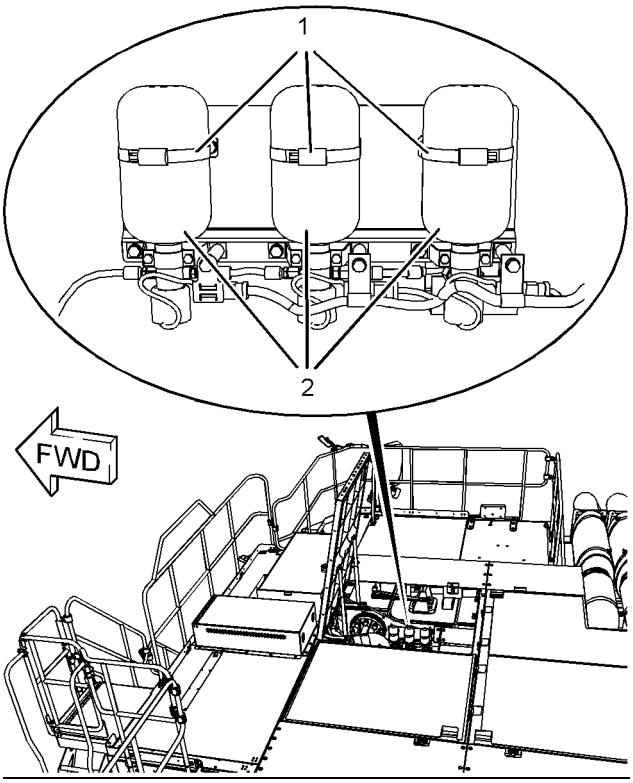


Illustration 204 g02000434

Three ether starting aid cylinders are located under the front hood panel.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Open the rear hood panel.

3. Loosen the clamps (1) and unscrew the ether starting aid cylinders (2).

4. Remove the used gasket for each ether starting aid cylinder and install the new gasket that is provided for each ether starting aid cylinder.

5. Install the new ether starting aid cylinders. Tighten the clamps. Close the rear hood panel.

i03997106

Film (Product Identification) - Clean

SMCS Code: 7405-070; 7557-070

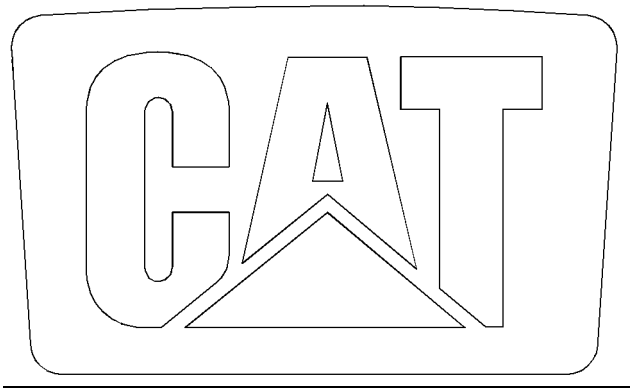


Illustration 205 g02174985

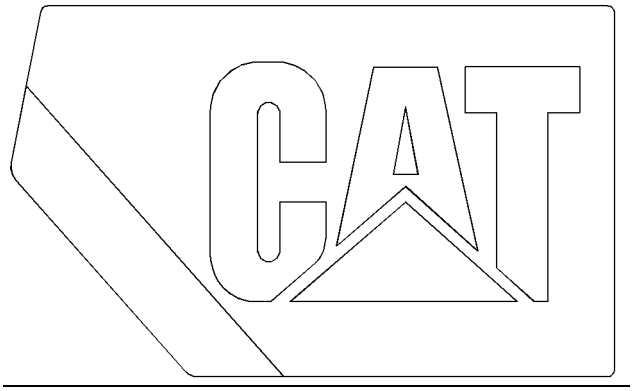


Illustration 206 g02175297

Typical example of the Product Identification Films.

Cleaning of the Films

Make sure that all of the product identification films are legible. Make sure that the recommended procedures are used in order to clean the product identification films. Ensure that all the product identification films are not damaged or missing. Clean the product identification films or replace the films.

Hand Washing

Use a wet solution with no abrasive material that contains no solvents and no alcohol. Use a wet solution with a “pH” value between 3 and 11. Use a soft brush, a rag, or a sponge in order to clean the product identification films. Avoid wearing down the surface of the product identification films with unnecessary scrubbing. Ensure that the surface of the product identification films is flushed with clean water and allow the product identification films to air dry.

Power Washing

Power washing or washing with pressure may be used in order to clean product identification films. However, aggressive washing can damage the product identification films.

Excessive pressure during power washing can damage the product identification films by forcing water underneath the product identification films. Water lessens the adhesion of the product identification film to the product, allowing the product identification film to lift or curl. These problems are magnified by wind. These problems are critical for the perforated film on windows.

To avoid lifting of the edge or other damage to the product identification films, follow these important steps:

- Use a spray nozzle with a wide spray pattern.
- A maximum pressure of 83 bar (1200 psi)
- A maximum water temperature of 50° C (120° F)
- Hold the nozzle perpendicular to the product identification film at a minimum distance of 305 mm (12 inch).
- Do not direct a stream of water at a sharp angle to the edge of the product identification film.

i03714622

Frame - Clean/Inspect

SMCS Code: 7051

Note: The graphics that are shown are for illustrative purposes. This is an in-chassis inspection.

⚠ WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

Note: In order to access areas of the frame, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

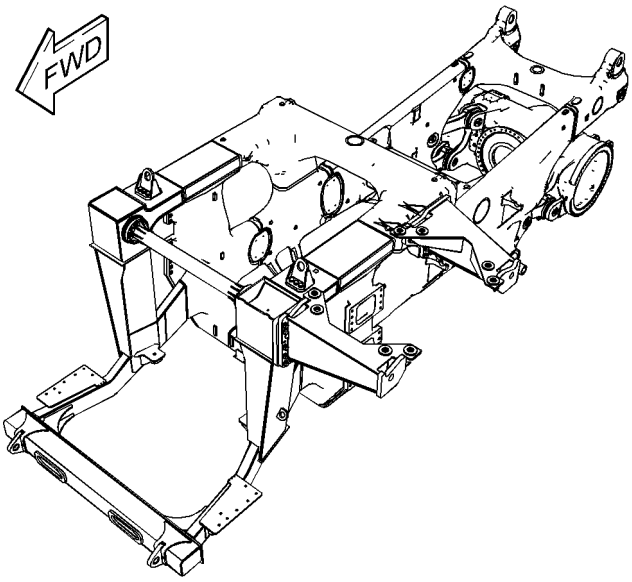


Illustration 207 g02001115

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Stop the engine.
3. Clean the frame with a high pressure washer.
4. Inspect the frame for damage and for cracks. If you find cracks or damage, consult your Caterpillar dealer for specific repair procedures. Do not operate the machine until the necessary repairs have been made.
5. Remove the truck body retaining cables and lower the body.

i03714782

Frame and Body - Inspect

SMCS Code: 7258

Note: The graphics that are shown are for illustrative purposes. This is an in-chassis inspection.

⚠ WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

Note: In order to access the body and areas of the frame, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Stop the engine.

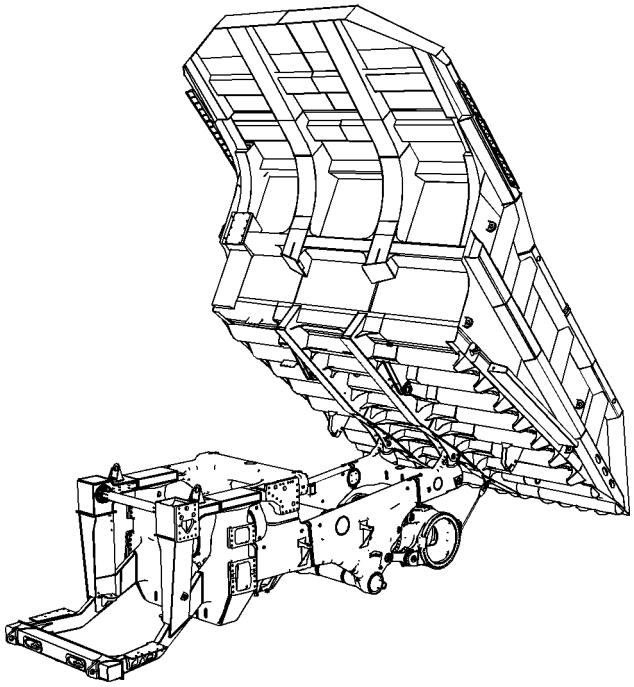


Illustration 208 g02001236

3. Clean the frame and the body. Inspect the dump body. If the frame is damaged or worn, consult your Caterpillar dealer for repair procedures.
4. Clean the dump body with a wire brush or a scraper. Inspect the dump body. If the dump body is damaged or worn, consult your Caterpillar dealer for repair procedures.
5. Remove the truck body retaining cables and lower the body.

i03714831

Frame and Body Support Pads - Clean/Inspect

SMCS Code: 7258

Note: The graphics that are shown are for illustrative purposes. This is an in-chassis inspection.

⚠ WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

Note: In order to access the body support pads and areas of the frame, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. Stop the engine.

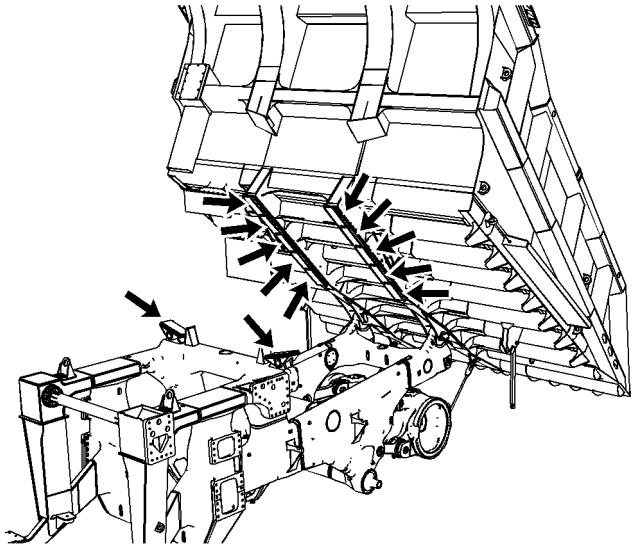


Illustration 209 g02001301

3. Clean the body support pads.
4. Remove the truck body retaining cables and lower the dump body. For the proper procedure, refer to Operations and Maintenance Manual, “Cable (Truck Body Retaining)”.
5. Visually inspect each of the body support pads. Look for damage or uneven wear of the body support pads. Look for gaps between the body support pads and the mating surfaces. If problems are found, consult your Caterpillar dealer for more information or for specific repair procedures.
6. Remove the truck body retaining cables and lower the body.

i03579481

Front Wheel Oil - Change

SMCS Code: 4006

Note: The oil change interval for the front wheel bearing can be monitored with the S·O·S scheduled oil sampling program. The interval is based on the condition of the oil. If the S·O·S scheduled oil sampling program is not used, the oil change for the front wheel bearing should be performed at 500 service hours or 3 months.

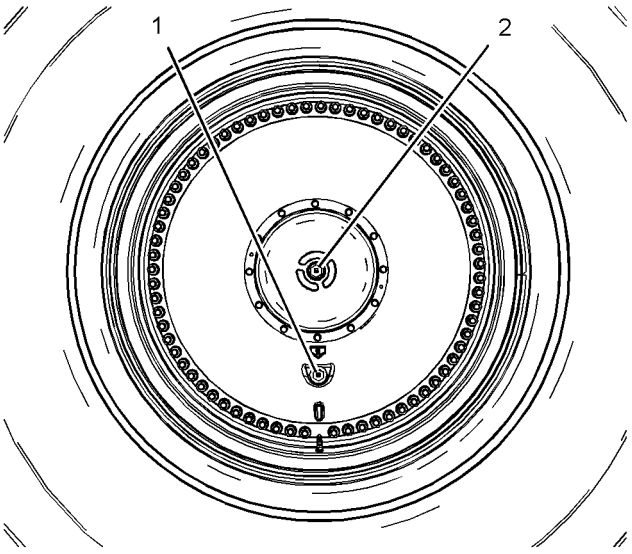


Illustration 210 g01579113

1. Position the front wheel so that drain plug (1) is facing downward.
2. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

3. Remove the drain plug.
4. Inspect the magnetic drain plug. If any abnormal particles are found, consult your Caterpillar dealer.
5. Allow the oil to drain into a suitable container.
6. Clean the drain plug and install the drain plug.
7. Remove the filler plug (2).
8. Fill the oil compartment to the bottom of the opening for the filler plug. Refer to Operation and Maintenance Manual, “Lubricant Viscosities”. Refer to Operation and Maintenance Manual, “Capacities (Refill)”.
9. Clean the filler plug and install the filler plug. Use the same procedure for the other front wheel.

i03579820

Front Wheel Oil Level - Check

SMCS Code: 4201-535-OC

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

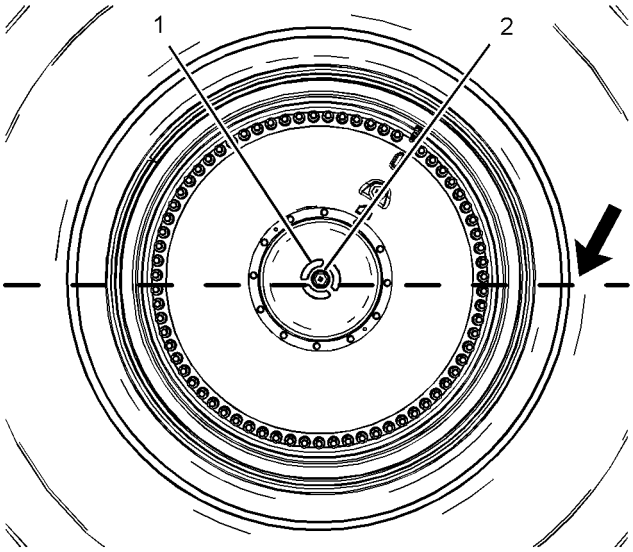


Illustration 211 g01578653

2. Use sight gauges (1) in order to check the oil level in each front wheel.
3. Maintain the oil level to the bottom of filler plug (2).
   a. If the oil level is excessive, inspect the oil for water contamination.
4. If necessary, remove the filler plug and add oil.
   a. if the oil level is low, inspect the area around the wheel spindle for leaks and inspect the magnetic plug.

i03657373

Front Wheel Oil Sample - Obtain

SMCS Code: 4201-008-OC

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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.

Obtain S·O·S samples as close as possible to the recommended sampling interval. In order to receive the full effect of S·O·S analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent samplings that are evenly spaced. Supplies for collecting samples can be obtained from your Caterpillar dealer.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

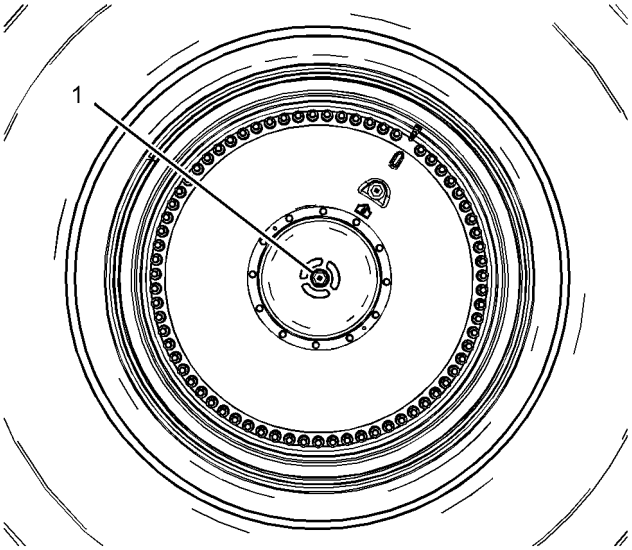


Illustration 212 g01962287

2. Remove filler plug (1) for the front wheel and obtain an oil sample through the filler plug opening.

3. Submit the sample for S·O·S analysis.

Refer to the following publications for S·O·S information:

- Operation and Maintenance Manual, “S·O·S Information”
- Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Services Analysis”
- Special Publication, PEGJ0047, “How to Take a Good S·O·S Sample”
- Special Publication, PEGJ0046, “S·O·S Services: Understanding Your Results”
- Special Publication, PEHJ0191, “S·O·S Fluid Analysis”

i03714884

Fuel System - Fill (Fast Fill Fuel Adapter)

SMCS Code: 1250-544

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

Dispose of all fluids according to local regulations and mandates.

NOTICE
Use only a Caterpillar approved fast fill system to fuel machines. Over pressurization may cause tank deformation and fuel spillage.

Contact your Cat dealer for fast fill system availability.

Refer to Operation and Maintenance Manual, “Capacities (Refill)” for available fuel tank capacities.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

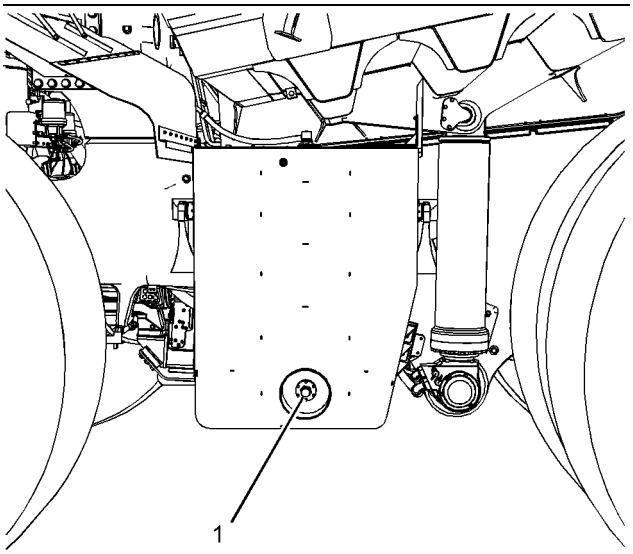


Illustration 213 g02001356

2. Remove dust cover (1) and clean the fast fill fuel adapter.

3. Clean the fuel nozzle adapter on the bulk fuel supply.

Note: The maximum fuel flow rate for the fast fill fuel adapter group is 375 L/min (100 US gpm).

4. Fill the fuel tank through the fast fill fuel adapter.

5. An ultrasonic level indicator is located in the fuel tank in order to send data to a fuel gauge on the filler. Observe the fuel gauge in order to prevent overfilling.

6. Clean the fast fill fuel adapter and the dust cover. Install the dust cover on the adapter.

i03714265

Fuel System - Prime

SMCS Code: 1258

⚠ WARNING

Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire. Clean up fuel spills immediately.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Move the engine start switch to the ON position.

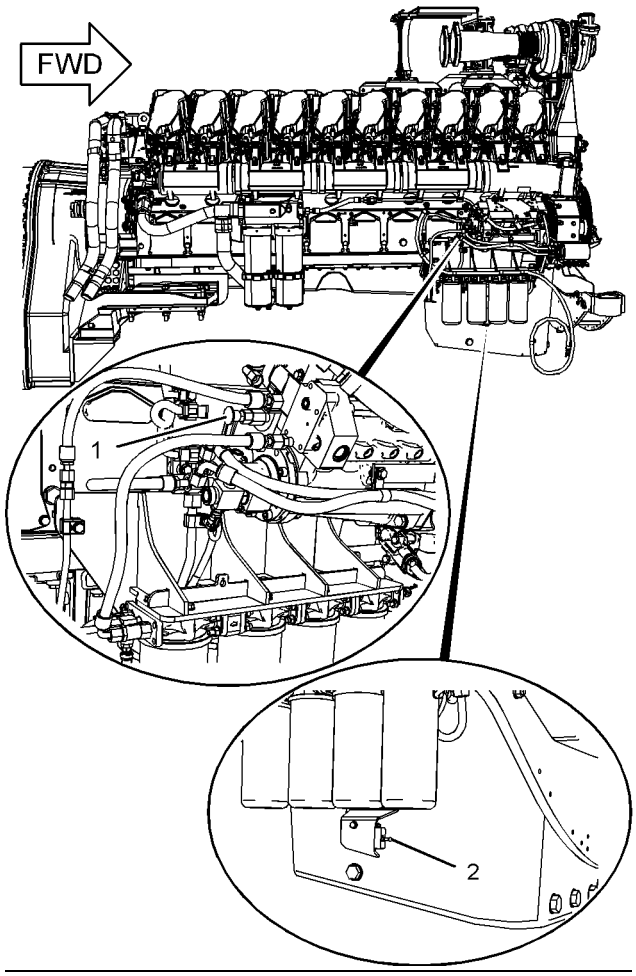


Illustration 214 g02000922

3. Connect a hose to quick connect port (1). Place the other end of the hose into a suitable container in order to collect fuel that is purged from the fuel system. Immediately clean up any spilled fuel.

4. Hold switch (2) upward in order to activate the electric fuel priming pump. The priming pump will fill the engine fuel lines and the fuel filters with fuel.

5. The trapped air is purged through the hose that is attached to the quick connect port. As the air is purged, the fuel will become a steady stream that is free of air. When the fuel becomes a steady stream, release the switch. Do not operate the priming pump for more than three minutes.

6. Disconnect the hose from the quick connect port.

7. Start the engine. Extended engine cranking may be required in order for the high pressure fuel lines to build adequate fuel pressure.

8. If the engine starts but the engine runs rough, continue to run the engine at an idle until the engine runs smoothly. Observe the Advisor display for messages.

9. If the engine does not start after several attempts, consult your Caterpillar dealer.

i03715300

Fuel System Primary Filter (Water Separator) - Drain

SMCS Code: 1261-543; 1263-543; 1263

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

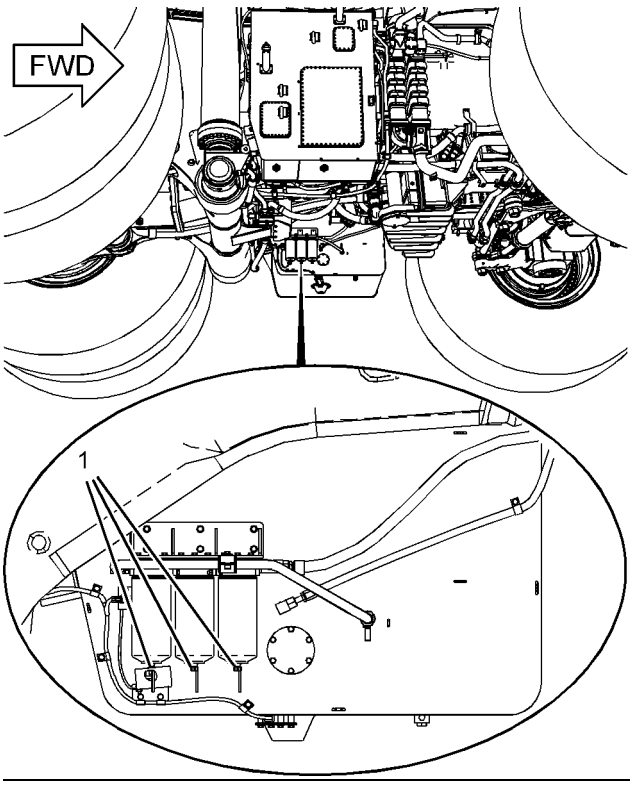


Illustration 215 g02001814

The primary fuel filters (water separator) are located behind the fuel tank.

2. Open drain valves (1) on the bottom of the fuel/water separator elements and drain the water into a suitable container.

3. Close the drain valves when all of the water has been drained.

i03715301

Fuel System Primary Filter (Water Separator) - Replace

SMCS Code: 1261-510; 1263-070; 1263-510

Replace the fuel/water separator elements when the engine has a loss of power or when the exhaust smoke is black.

⚠ WARNING

Personal injury or death can result if spilled fuel ignites. Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire.

To help prevent possible injury, turn the battery disconnect switch to the OFF position when changing fuel filters or water separator elements. Clean up fuel spills immediately.

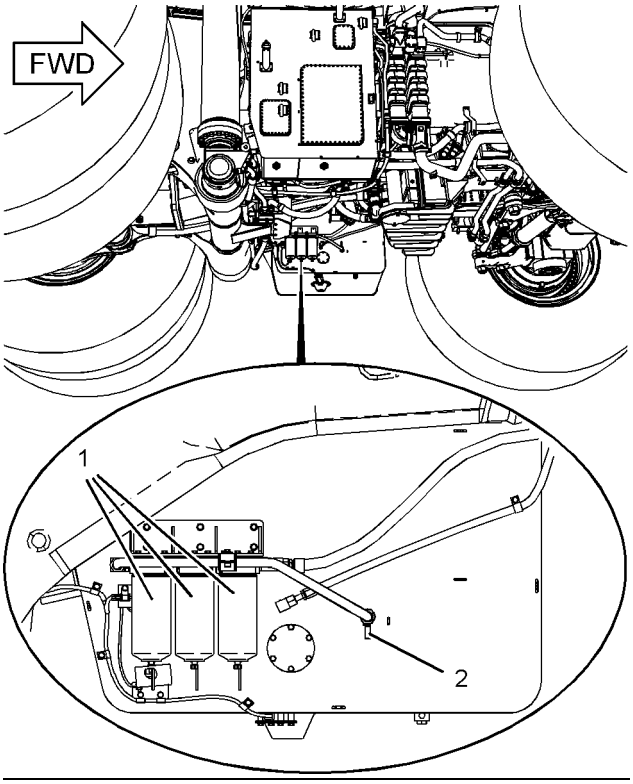
NOTICE
Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

NOTICE
Do not fill fuel filters with fuel before installing them. The fuel will not be filtered and could be contaminated. Contaminated fuel will cause accelerated wear to fuel system parts. The fuel system should be primed prior to starting the engine.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.



g02001815

Illustration 216

View of the back side of the fuel tank

2. Close fuel shutoff valve (2).

3. Drain fuel/water separator elements (1) into a suitable container.

4. Remove the fuel/water separator elements. Properly discard the used elements.

5. Clean the mounting base. Make sure that both of the old seals are removed.

6. Lubricate the seals of the new elements with clean diesel fuel.

7. Install the new elements by hand until the seal contacts the mounting base. Note the position of the index marks on the elements in relation to a fixed point on the mounting base.

Note: There are rotation index marks on each filter that is spaced 90 degrees (1/4 turn) away from each other. When you tighten the elements, use the rotation index marks as a guide.

8. Tighten all filters according to the instructions that are printed on the filter.

Note: You may need to use a strap type wrench or a suitable tool in order to turn the filters to the amount that is required for final installation. Make sure that the installation tool does not damage the filters.

9. Open the fuel shutoff valve.

10. Prime the fuel system.

    For information on priming the fuel system, refer to the Operation and Maintenance Manual, “Fuel System - Prime”.

11. Start the engine and inspect the filter for leaks. Make any necessary repairs. If the engine has a loss of power or the exhaust smoke is still black, replace the secondary filters.

i03715220

Fuel System Secondary Filter - Replace

SMCS Code: 1261

⚠ WARNING

Personal injury or death can result if spilled fuel ignites. Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire.

To help prevent possible injury, turn the battery disconnect switch to the OFF position when changing fuel filters or water separator elements. Clean up fuel spills immediately.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

NOTICE
Do not fill fuel filters with fuel before installing them. The fuel will not be filtered and could be contaminated. Contaminated fuel will cause accelerated wear to fuel system parts. The fuel system should be primed prior to starting the engine.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

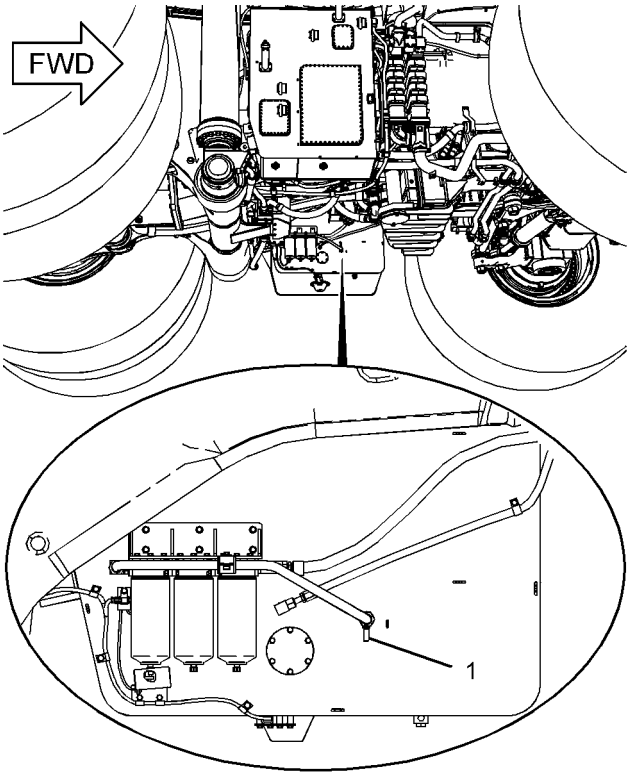


Illustration 217 g02001753
View of the back side of the fuel tank

2. Close fuel shutoff valve (1).

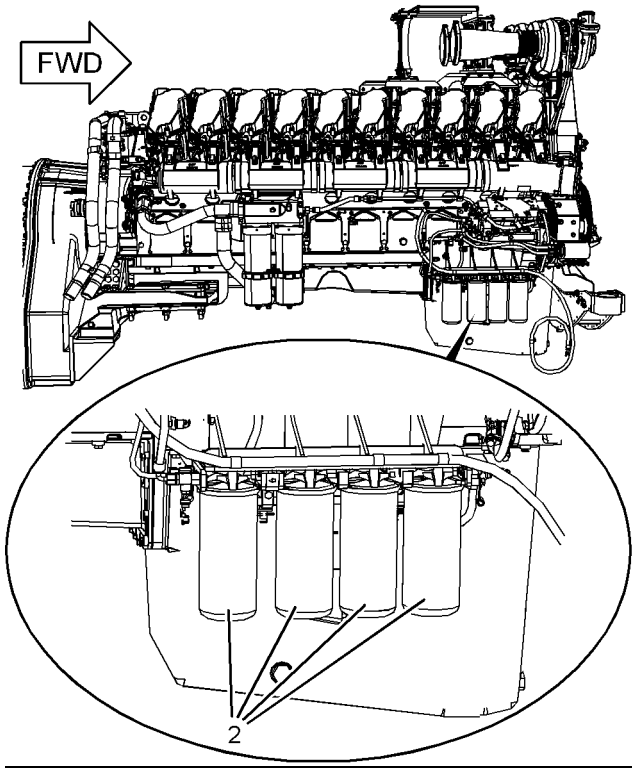


Illustration 218 g02001734

3. Secondary fuel filters (2) are located on the right side of the engine. Remove the filter elements from the base. Discard the used elements.

4. Clean the filter mounting bases. Make sure that all of the former seals are removed.

5. Lubricate the seals of the new elements with clean diesel fuel.

6. Install the new elements by hand until the seal contacts the mounting base. Note the position of the index marks on the elements in relation to a fixed point on the mounting base.

Note: There are rotation index marks on each filter that is spaced 90 degrees (1/4 turn) away from each other. When you tighten the elements, use the rotation index marks as a guide.

7. Tighten all filters according to the instructions that are printed on the filter.

Note: You may need to use a strap type wrench or a suitable tool in order to turn the filters to the amount that is required for final installation. Make sure that the installation tool does not damage the filters.

8. Open the fuel shutoff valve.

9. Prime the fuel system.

For information on priming the fuel system, refer to the Operation and Maintenance Manual, “Fuel System - Prime”.

10. Start the engine and inspect the filter for leaks. Make any necessary repairs.

i03580480

Fuel Tank Water and Sediment - Drain

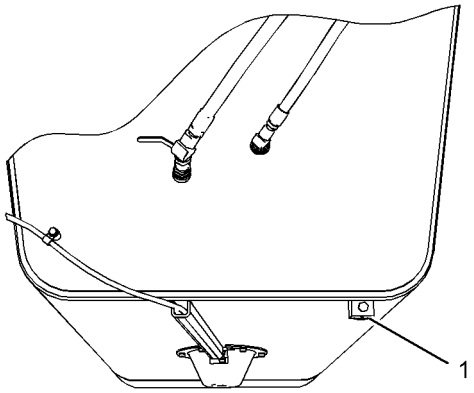
SMCS Code: 1273

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.



g01167012

Illustration 219

View of the back side of the fuel tank

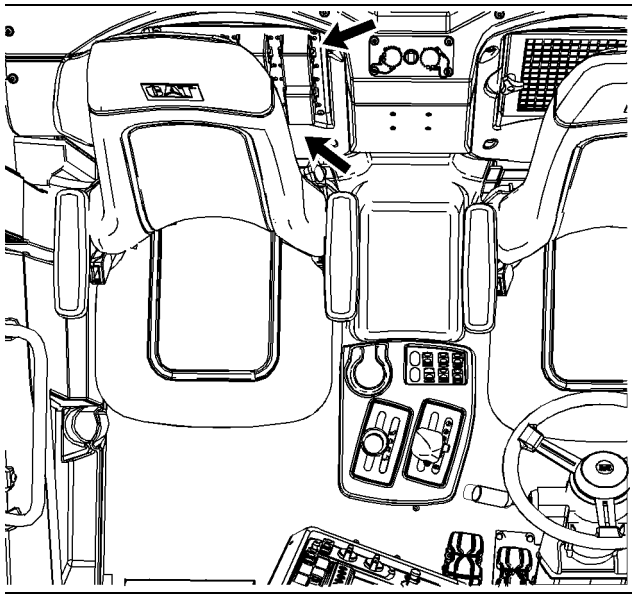
2. Open fuel tank drain valve (1) and allow the moisture and the sediment to drain into a suitable container.

3. Close the drain valve.

i03593377

Fuses, Circuit Breakers and Relays - Replace/Reset

SMCS Code: 1417-510; 1420-510; 1422-510



g01962341

Illustration 220

Location of the electrical panel or the fuses, the circuit breakers, and the relays

The electrical panel for the fuses, the circuit breakers, and the relays is positioned behind the seat on the right rear of the operator station.

Fuses

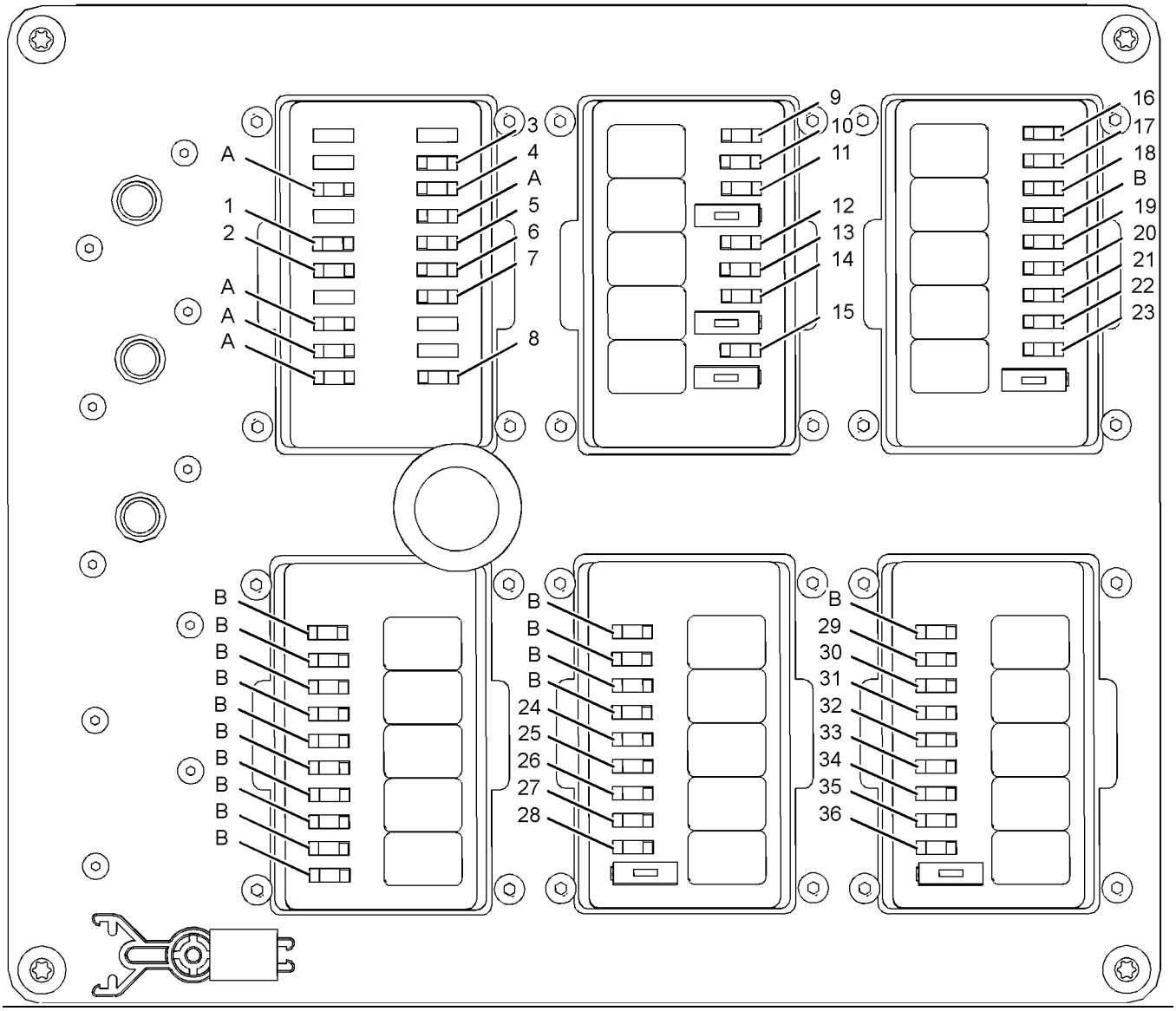


Illustration 221 g01919410

NOTICE
If it is necessary to replace fuses frequently, an electrical problem may exist.

Contact your Caterpillar dealer.

NOTICE
Always replace fuses with the same type and capacity fuse that was removed. Otherwise, electrical damage could result.

Fuses protect the electrical system from damage that is caused by overloaded electrical circuits. Replace a fuse if the element separates. If the fuse of a particular electrical system requires frequent replacement, check the electrical circuit. Repair the electrical circuit, if necessary. Use the tool that is stored on the electrical panel in order to remove the fuses.

12 Volt Fuses

Spare Fuse (A) – 12 V with connector

Radio (1) – 20 Amp

MineStar (2) – 15 Amp

12 Volt Power Port (3) – 15 Amp (Dash panel)

12 Volt Power Port (4) – 15 Amp (Rear panel)

Communication Radio (5) – 20 Amp (Prewired harness in the headliner)

Cigar Lighter (6) – 15 Amp

CB Radio (7) – 15 Amp (Prewired Harness in the rear panel)

Entertainment Radio (Memory) (8) – 15 Amp

24 Volt Fuses

Spare Fuse (B) – 24 V with connector

Window Washer and Wiper (9) – 20 Amp

Air Dryer (10) – 15 Amp

Air Start System (11) – 20 Amp

Air Seat (12) – 20 Amp (Operator)

Work Lights (13) – 15 Amp

Heated Mirror (14) – 20 Amp (Right mirror and front mirror)

Air Seat (15) – 20 Amp (Passenger)

Cab Air Cleaner (16) – 20 Amp

Heated Mirror (17) – 20 Amp (Left mirror)

Autolube System (18) – 20 Amp

Chassis Power (19) – 10 Amp

Fog Lights (20) – 20 Amp

Electronic Engine Thermostat (21) – 15 Amp

Camera Lights (22) – 20 Amp

WAVS (23) – 15 Amp

VIMS 3G (24) – 15 Amp

Product Link (25) – 15 Amp

Brake ECM (26) – 20 Amp

Engine ECM (27) – 20 Amp

Keyswitch (28) – 10 Amp

HVAC Water Valve (29) – 20 Amp

Stairway Access Lights (30) – 20 Amp

Horn (31) – 10 Amp

Chassis ECM (32) – 20 Amp

24 Volt to 12 Volt Converter (33) – 20 Amp

Drive Train ECM (34) – 20 Amp

Gauge Cluster, Advisor Display, Retarder Lever Sensor (35) – 10 Amp

Interior Service Tool Port (36) – 15 Amp

Circuit Breakers

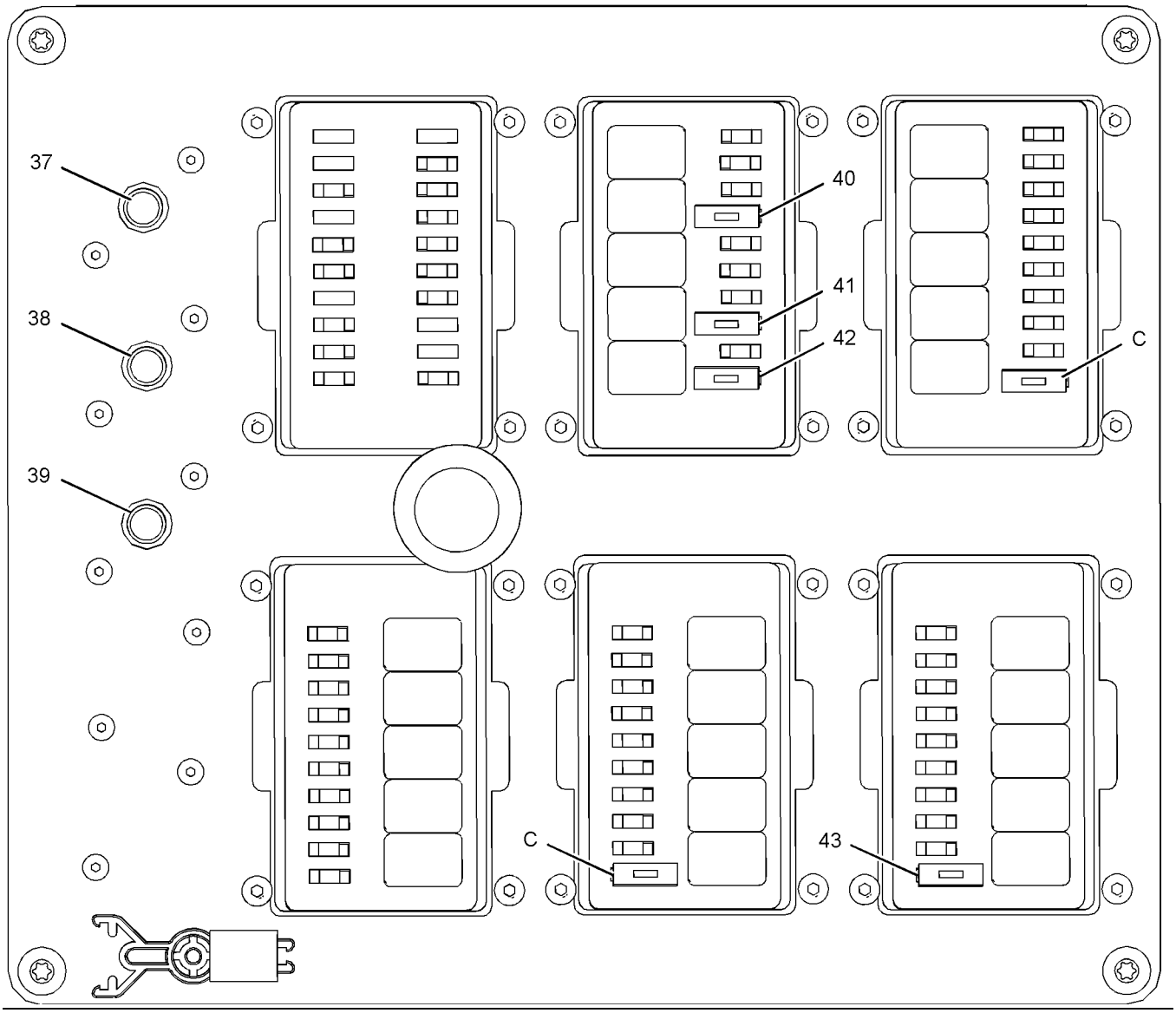


Illustration 222 g01919409

Push in the button in order to reset the circuit breaker. If the electrical system is working properly, the button will remain depressed. If the button does not remain depressed, check the appropriate electrical circuit. Repair the electrical circuit, if necessary. Use the tool that is stored on the electrical panel in order to remove the circuit breakers.

Note: The circuit breakers for the low beam headlights, the high beam headlights, and the fog lights are automatic reset circuit breakers.

Spare Circuit Breaker (C) – 24 V with connector

Brake Retraction Motor (37) – 20 Amp

High Speed Blower (38) – 20 Amp

Headlights (39) – 15 amp

Air Conditioner Compressor (40) – 20 Amp

Power Window (Left) (41) – 20 Amp

Power Window (Right) (42) – 20 Amp

Fuel Priming Pump / Fuel Control Valve (43) – 15 Amp

Relays

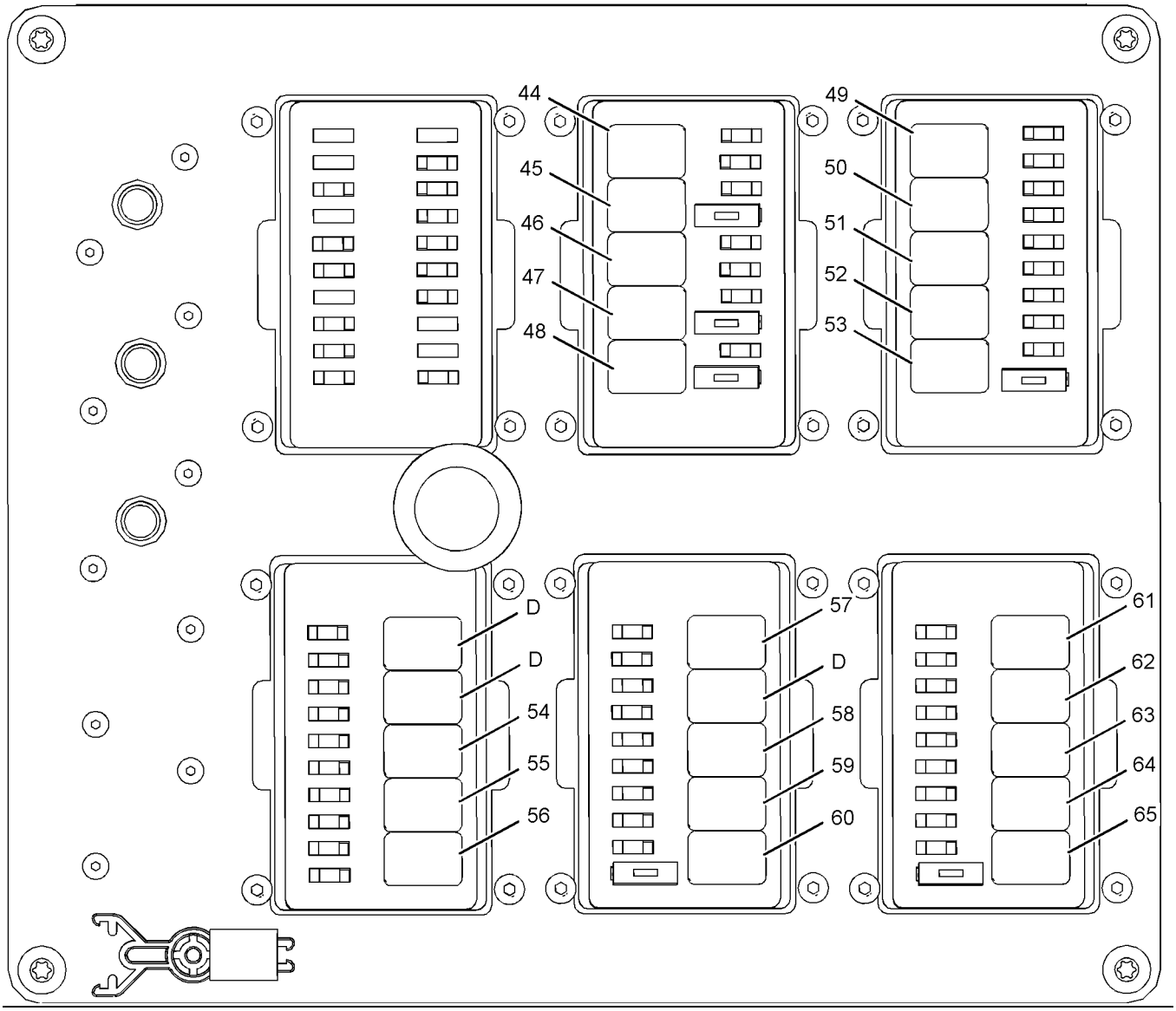


Illustration 223 g01919407

A relay is an electrical switch that opens and closes under the control of another electrical circuit. Use the tool that is stored on the electrical panel in order to remove the relays.

Spare Relay (D) – 24 V with connector

Drive Train Lamp (44)

Stop Lamp (45)

Headlight (46)

Autolube (47)

Idle Shutdown Timer (48)

VIMS Green Lamp (49) – Payload

VIMS Red Lamp (50) – Payload

Horn (51)

Rear Camera Lights (52)

Engine Lockout (53)

Window Wiper (54) – Slow/Intermittent

Window Wiper (55) – High

Window Washer (56)

Cab Air Cleaner (57)

Fuel Priming Pump / Fuel Control Valve (58)

Engine Prelube (59)

VIMS Blue Lamp (60) – Service Light

Rear Window Wiper (61)

Engine Lockout Lamp (62)

Front Camera (63) – WAVS

Air Conditioner Clutch (64)

Backup Alarm (65)

i02245859

High Intensity Discharge Lamp (HID) - Replace (If Equipped)

SMCS Code: 1434-510

⚠ WARNING

HID lamps operate at very high voltages. To avoid electrical shock and personal injury, disconnect power before servicing HID lamps.

⚠ WARNING

HID bulbs become very hot during operation. Before servicing, remove power from lamp for at least five minutes to ensure lamp is cool.

NOTICE

Although HID bulb materials may change over time, HID bulbs produced at the time of the printing of this manual contain mercury. When disposing of this component, or any waste that contains mercury, please use caution and comply with any applicable laws.

1. Remove the electrical power from the high intensity discharge lamp (HID). The electrical power must be removed from the HID lamp for at least five minutes, in order to ensure that the bulb is cool.

2. Disassemble the housing for the HID lamp in order to have access to the bulb.

Note: On some HID lamps, the bulb is an integral part of the lens assembly. The bulb is not removed separately from the lens assembly. Replace the entire lens assembly on these HID lamps.

3. Remove the bulb from the HID lamp.

4. Install the replacement bulb in the HID lamp.

   If the bulb is an integral part of the lens assembly, install the replacement lens assembly in the HID lamp.

Note: In order to avoid failure to the bulb that is premature, avoid touching the bulb's surface with your bare hands. Clean any fingerprints from the bulb with alcohol prior to operation.

5. Reassemble the housing for the HID lamp. Ensure that any printing on the lens is oriented correctly with respect to the HID lamp's mounting position on the machine.

6. Reattach the electrical power to the HID lamp.

7. Check the HID lamp for proper operation.

Note: Consult your Caterpillar dealer for additional information on HID lamps.

i03715180

Hoist Screens - Clean

SMCS Code: 5068

⚠ WARNING

When it is necessary to work under the machine with the body (bed) raised, attach the body (bed) retaining cables to the rear tow points. Install the rear tow point pins through the ends of the retaining cables.

Failure to properly secure the body (bed) may result in personal injury or death.

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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.

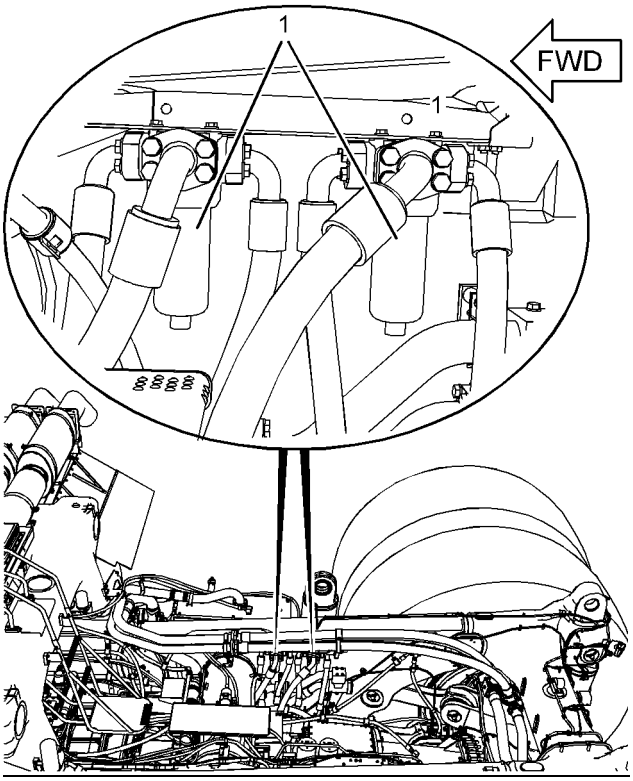
Refer to Special Publication, NENG2500, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Clean the screens whenever there is a failure of the brakes, hoist cylinders, or hoist pumps.

1. Secure the dump body in the fully raised position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Use the Advisor display in order to verify that the hoist/brake system is relieved of any hydraulic pressure.



g02001813

Illustration 224

The machine is shown without the dump body for ease of viewing.

3. Remove the drain plug from the bottom of each screen housing (1) and drain the oil into a suitable container. Clean the drain plug and install the drain plug.

Note: Removing the drain plug from the bottom of the screen housing may not drain all of the oil from the screen.

4. Remove the screen housings. Remove the screens. Clean the screen housings and the hoist screens in clean nonflammable solvent.

5. Inspect the seal in the base of the screen housings. Replace any damaged seals with a new seal.

6. Install the clean hoist screens in the screen housings. Install the screen housings.

7. Start the engine and operate the engine at an idle. Check for leaks and make any necessary repairs.

8. Remove the truck body retaining cables and lower the body.

9. Check the oil level in the hoist/brake tank. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Hoist and Brake Tank Oil Level - Check”.

i03855189

Hoses and Clamps - Inspect/Replace

SMCS Code: 1000; 7554-040; 7554-510

Hoses and clamps for the engine must be inspected periodically in order to ensure safe operation and continuous operation of the engine. A hose for the engine may include the following: coolant hose, fuel hose, oil hose, and air hose (compressed air or intake air).

Note: Take proper safety precautions before inspecting or replacing hoses and clamps. Always use a board or cardboard when the engine components are checked for leaks. Leaking fluid that is under pressure can cause serious injury or possible death. Refer to Operation and Maintenance Manual, “General Hazard Information” for more information.

Inspecting Hoses and Clamps

Inspect all hoses for the following conditions:

- Hoses which are cracked
- Hoses which are soft
- Outer covering that is chafed or cut
- Exposed wire that is used for reinforcement
- Outer covering that is ballooning locally
- Flexible part of the hose that is kinked or crushed
- Armoring that is embedded in the outer covering
- Hoses which exhibit signs of leakage which are not the result of loose couplings or clamps

Replace any hoses that exhibit any of the above conditions.

Inspect all clamps for the following conditions:

- Cracking
- Looseness
- Damage

Replace any clamps that exhibit any of the above conditions.

Inspect all couplings for leaks. Replace any coupling which exhibits signs of leaks.

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

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.

Replacing Hoses and Clamps

⚠ WARNING

At operating temperature, engine coolant is hot and under pressure. Hot coolant and hot components can cause severe burns. Do not allow hot coolant or hot components to contact the skin.

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

⚠ WARNING

Personal injury can result from removing hoses or fittings in a pressure system.

Failure to relieve pressure can cause personal injury.

Do not disconnect or remove hoses or fittings until all pressure in the system has been relieved.

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, “Caterpillar Dealer Service Tool Catalog” or refer to Special Publication, PECJ0003, “Caterpillar Shop Supplies and Tools Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Prepare the machine for maintenance and allow the engine to cool. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.
2. If a coolant hose needs to be replaced, drain the coolant to a level that is below the hose. Drain the coolant into a suitable clean container. The coolant can be reused.
3. Replace any damaged hoses. Replace any damaged clamps.

Note: Refer to Specifications, SENR3130, “Torque Specifications”, “Hose Clamps” for information about selecting and installing the proper hose clamps.

4. Fill the affected system to the proper fluid level.
5. Start the engine and operate the engine at low idle. Check for leaks and make necessary repairs.

i03717743

Hydraulic System Oil Sample - Obtain (Steering System)

SMCS Code: 5050-008; 5056-008; 5095-008

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

Note: The steering system and the hydraulic fan drive motor for the engine share common hydraulic oil.

Obtain S·O·S samples as close as possible to the recommended sampling interval. In order to receive the full effect of S·O·S analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent samplings that are evenly spaced. Supplies for collecting samples can be obtained from your Caterpillar dealer.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

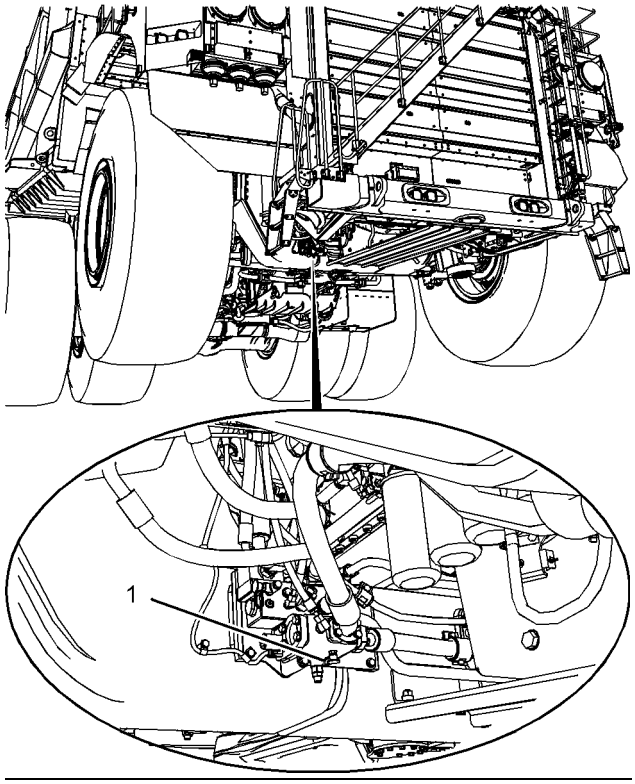


Illustration 225 g02003067

2. Obtain a sample of the steering system oil through sampling valve (1). Take the oil sample when the engine is operating at low idle.

3. Submit the sample for S·O·S analysis.

Refer to the following publications for S·O·S information:

- Operation and Maintenance Manual, “S·O·S Information”
- Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Services Analysis”
- Special Publication, PEGJ0047, “How to Take a Good S·O·S Sample”
- Special Publication, PEGJ0046, “S·O·S Services: Understanding Your Results”
- Special Publication, PEHJ0191, “S·O·S Fluid Analysis”

i03717340

Hydraulic System Oil Sample - Obtain (Hoist and Brake System)

SMCS Code: 5050-008; 5056-008; 5095-008

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

Obtain S·O·S samples as close as possible to the recommended sampling interval. In order to receive the full effect of S·O·S analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent samplings that are evenly spaced. Supplies for collecting samples can be obtained from your Caterpillar dealer.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

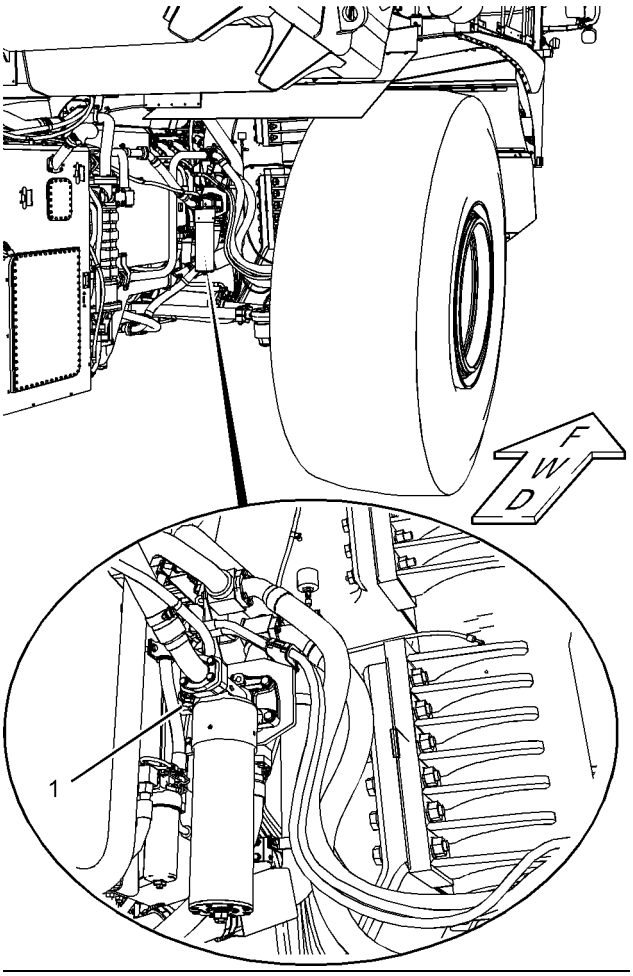


Illustration 226 g02002773

2. Obtain a sample of the hoist and brake oil through sampling valve (1). Take the oil sample when the engine is operating at low idle.

3. Submit the sample for S·O·S analysis.

Refer to the following publications for S·O·S information:

- Operation and Maintenance Manual, “S·O·S Information”
- Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Services Analysis”
- Special Publication, PEGJ0047, “How to Take a Good S·O·S Sample”
- Special Publication, PEGJ0046, “S·O·S Services: Understanding Your Results”
- Special Publication, PEHJ0191, “S·O·S Fluid Analysis”

i03718075

Hydraulic Oil Filter - Replace (Hydraulic Pump Case Drain - Fan System)

SMCS Code: 5068-510

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: The steering system and the hydraulic fan drive motor for the engine share common hydraulic oil.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

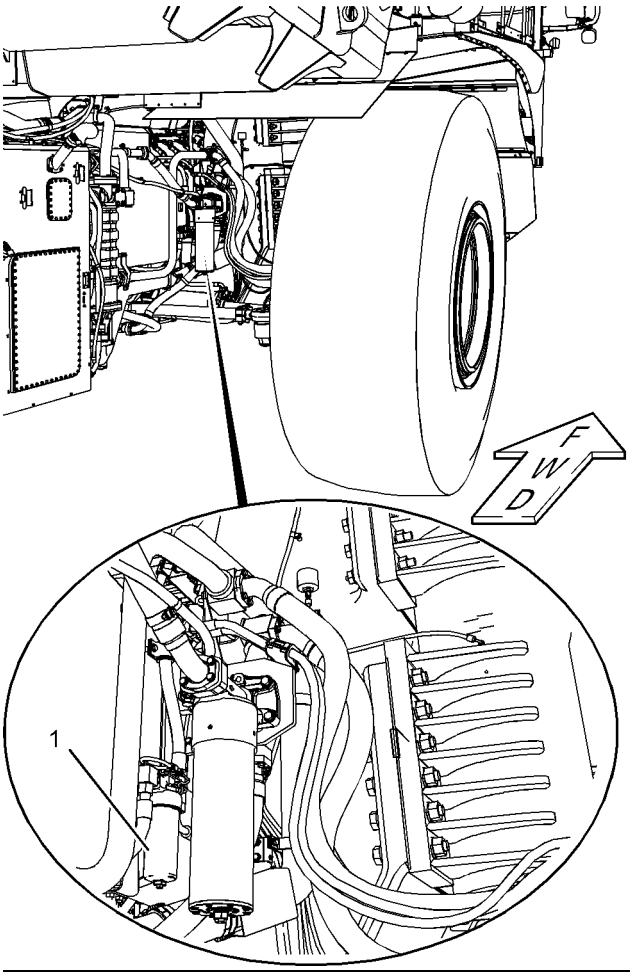


Illustration 227 g02003345

2. Remove the drain plug from the bottom of filter housing (1). Drain the oil into a suitable container.

3. Inspect the seal for the drain plug. Replace a damaged seal with a new seal. Wash the drain plug in clean nonflammable solvent and install the drain plug.

4. Remove the filter housing.

5. Remove the filter element. Properly discard the used filter element.

6. Inspect the seal for the filter housing. Replace a damaged seal with a new seal. Wash the filter housing in clean nonflammable solvent.

7. Install the new filter element. Install the filter housing.

8. Start the engine and operate the engine at an idle for five minutes. Inspect the oil filter for leaks. Make any necessary repairs.

9. Check the oil level in the steering system. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Hydraulic Tank Oil Level - Check (Steering System)”.

i03718129

Hydraulic Oil Filter - Replace (Steering and Fan System Oil Return)

SMCS Code: 5068-510

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: The steering system and the hydraulic fan drive motor for the engine share common hydraulic oil.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

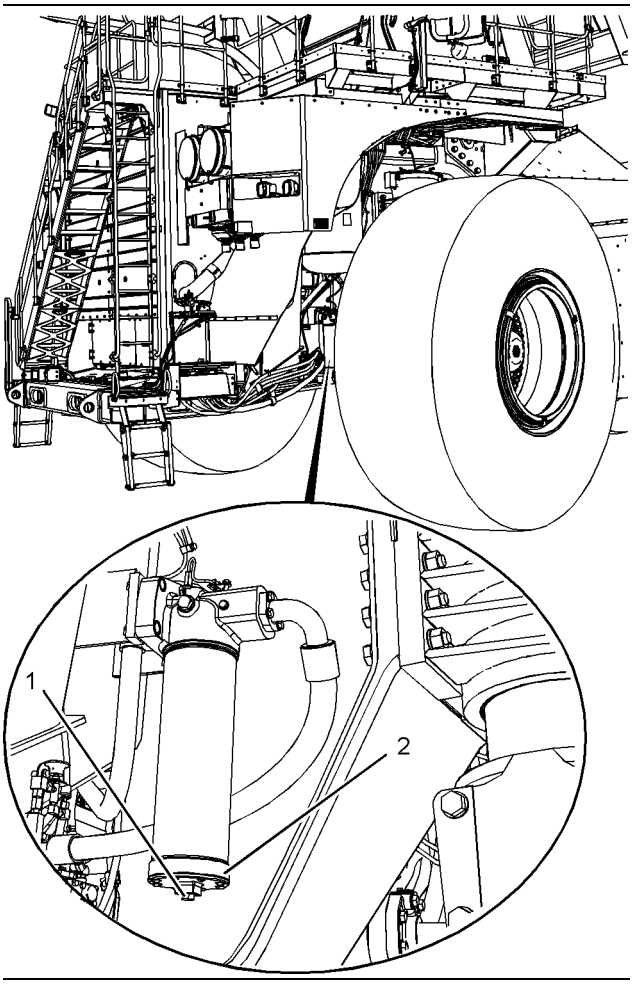


Illustration 228 g02003416

2. Remove drain plug (1) from end cap (2). Drain the oil into a suitable container.

3. Inspect the seal for the drain plug. Replace a damaged seal with a new seal. Wash the drain plug in clean nonflammable solvent and install the drain plug.

4. Remove the end cap from the filter housing.

5. Remove the filter element. Properly discard the used filter element.

6. Inspect the seal for the end cap. Replace a damaged seal with a new seal. Wash the end cap in clean nonflammable solvent.

7. Install the new filter element. Install the end cap on the filter housing.

8. Start the engine and operate the engine at an idle for five minutes. Inspect the oil filter for leaks. Make any necessary repairs.

9. Check the oil level in the steering system. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Hydraulic Tank Oil Level - Check (Steering System)”.

i03718024

Hydraulic Oil Filter - Replace (Brake Pump Charge Filter)

SMCS Code: 5068-510

WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: The hoist system and the brake system share common oil.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

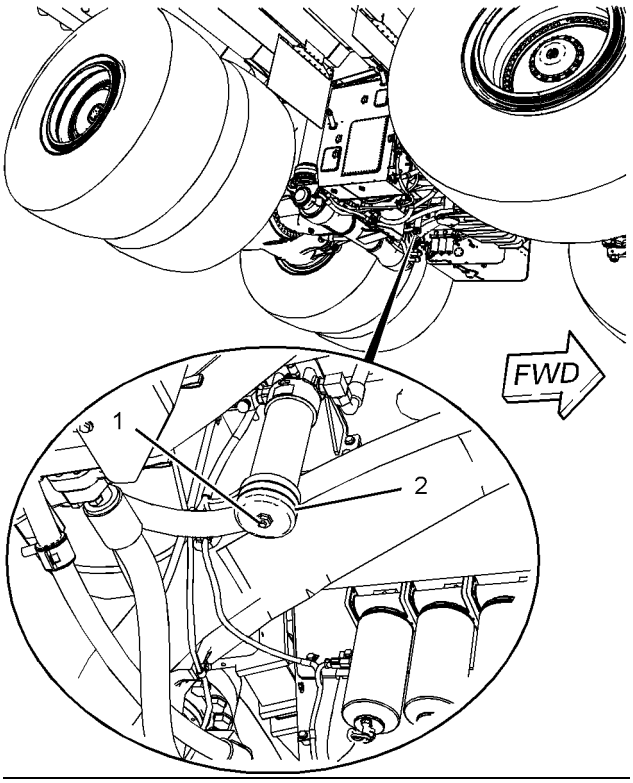


Illustration 229 g02003256

2. Remove drain plug (1) from end cap (2). Drain the oil into a suitable container.

3. Inspect the seal for the drain plug. Replace a damaged seal with a new seal. Wash the drain plug in clean nonflammable solvent and install the drain plug.

4. Remove the end cap from the filter housing.

5. Remove the filter element. Properly discard the used filter element.

6. Inspect the seal for the end cap. Replace a damaged seal with a new seal. Wash the end cap in clean nonflammable solvent.

7. Install the new filter element. Install the end cap on the filter housing.

8. Start the engine and operate the engine at an idle for five minutes. Inspect the oil filter for leaks. Make any necessary repairs.

9. Check the oil level in the hoist/brake tank. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Hydraulic Tank Oil Level - Check (Hoist and Brake System)”.

i03717260

Hydraulic Oil Filter - Replace (Brake Cooling Filter)

SMCS Code: 5068-510

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: The hoist system and the brake system share common oil.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

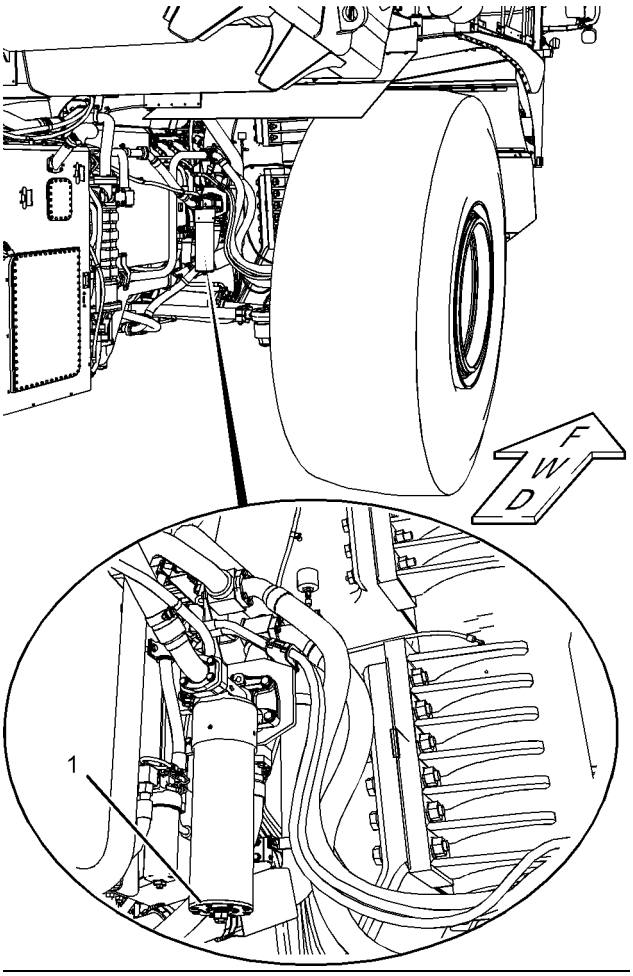


Illustration 230 g02002673

The brake cooling oil filter is located on the outside frame rail behind the right front suspension cylinder.

2. Remove the drain plug from end cap (1). Drain the oil into a suitable container.

3. Inspect the seal for the drain plug. Replace a damaged seal with a new seal. Wash the drain plug in clean nonflammable solvent and install the drain plug.

4. Remove the end cap from the filter housing.

5. Remove the filter element. Properly discard the used filter element.

6. Inspect the seal for the end cap. Replace a damaged seal with a new seal. Wash the end cap in clean nonflammable solvent.

7. Install the new filter element. Install the end cap on the filter housing.

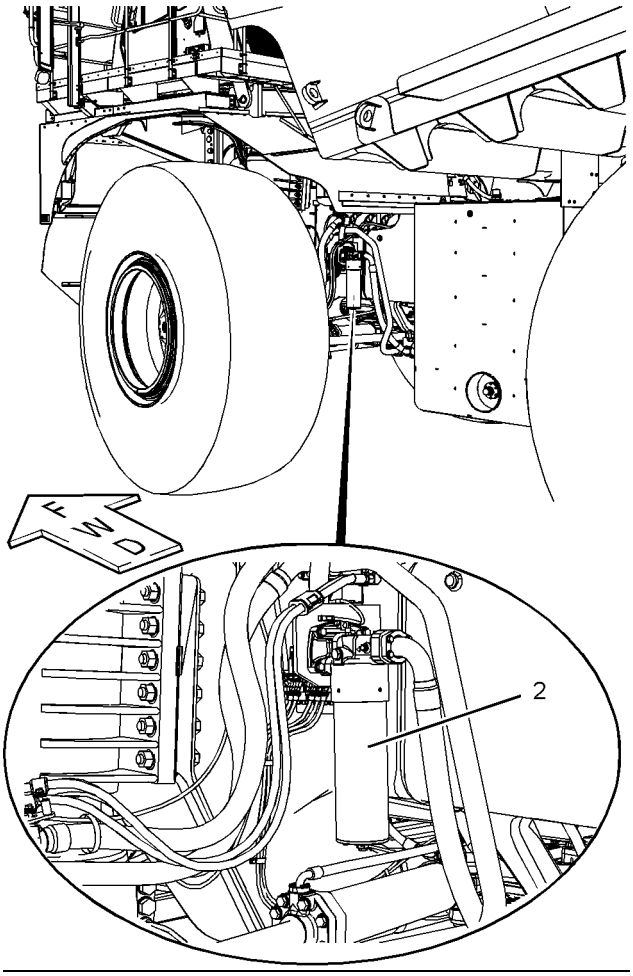


Illustration 231 g02002693

8. If the machine is equipped with the additional retarding (configuration) perform the following: Repeat steps 2 through 8 for filter (2) that is located on the outside frame rail behind the left front suspension cylinder.

9. Start the engine and operate the engine at an idle for five minutes. Inspect the oil filter(s) for leaks. Make any necessary repairs.

10. Check the oil level in the hoist/brake tank. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Hydraulic Tank Oil Level - Check (Hoist and Brake System)”.

i03718076

Hydraulic Oil Filter - Replace (Hydraulic Pump Case Drain - Steering System)

SMCS Code: 5068-510

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: The steering system and the hydraulic fan drive motor for the engine share common hydraulic oil.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

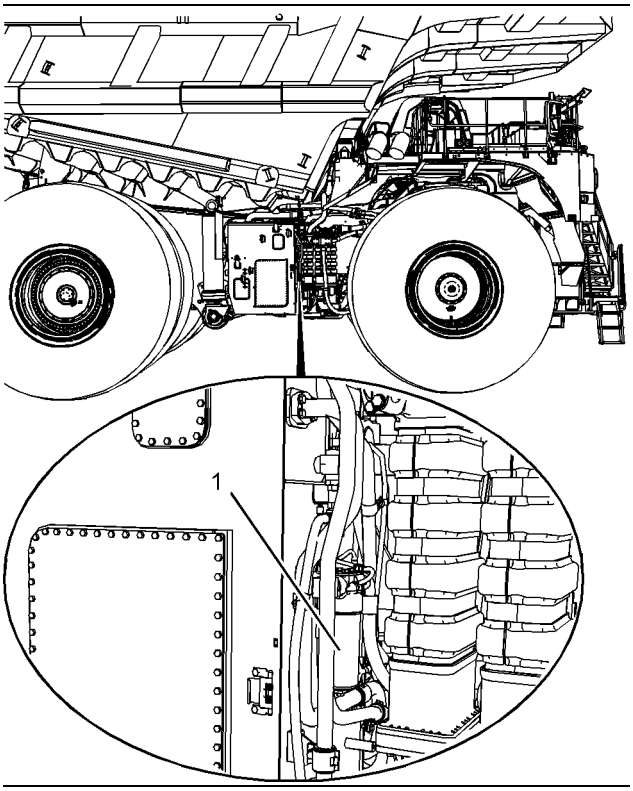


Illustration 232 g02003378

2. Remove the drain plug from the bottom of filter housing (1). Drain the oil into a suitable container.

3. Inspect the seal for the drain plug. Replace a damaged seal with a new seal. Wash the drain plug in clean nonflammable solvent and install the drain plug.

4. Remove the filter housing.

5. Remove the filter element. Properly discard the used filter element.

6. Inspect the seal for the filter housing. Replace a damaged seal with a new seal. Wash the filter housing in clean nonflammable solvent.

7. Install the new filter element. Install the filter housing.

8. Start the engine and operate the engine at an idle for five minutes. Inspect the oil filter for leaks. Make any necessary repairs.

9. Check the oil level in the steering system. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Hydraulic Tank Oil Level - Check (Steering System)”.

i03718334

Hydraulic Tank Oil - Change (Steering System)

SMCS Code: 5056

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: The steering system and the hydraulic fan drive motor for the engine share common hydraulic oil.

Note: In order to access the filler cap, the filler tube, the filler strainer, and the sight gauges, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

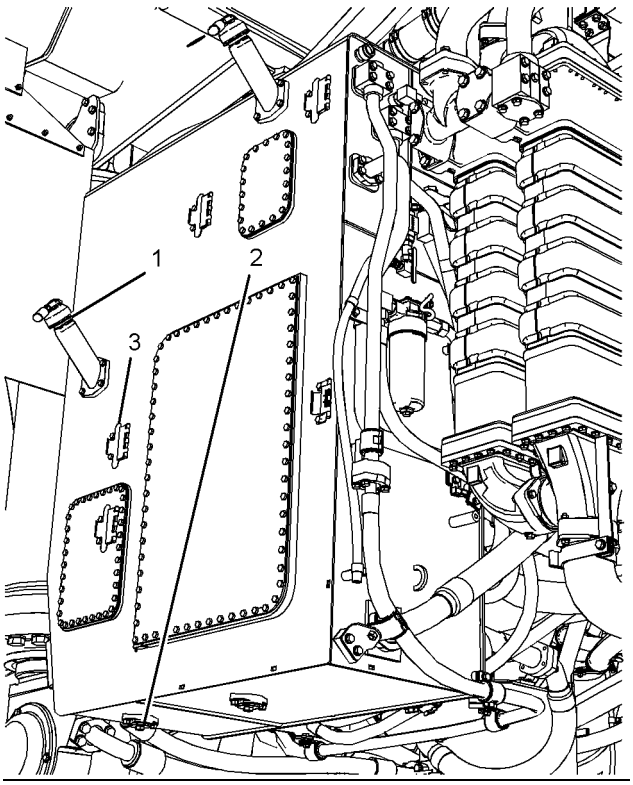


Illustration 233 g02003913

2. Remove filler cap (1) in order to prevent a vacuum in the tank.

3. Remove tank drain valve plug (2). Install a 88.0 mm (3.50 inch) long NPT pipe nipple in order to open the internal drain valve. The outer diameter of the NPT pipe nipple should be 25 mm (1 inch). Drain the oil into a suitable container.

4. Remove the pipe nipple. Clean the drain plug and install the drain plug.

5. Remove the filler strainer. Wash the cap and the strainer in clean, nonflammable solvent. Allow the cap and the strainer to dry. Install the strainer.

6. Inspect the cap seal. Use a new seal if the used seal is damaged.

7. Clean the screens inside the steering tank. Refer to Operation and Maintenance Manual, “Hydraulic Tank Screen - Clean”.

8. Fill the steering hydraulic tank within the green range of upper sight gauge (3). Refer to Operation And Maintenance Manual, “Lubricant Viscosities”. Refer to Operation And Maintenance Manual, “Capacities (Refill)”.

9. Install the filler cap.

10. Start the engine and operate the engine at an idle for five minutes. Check for leaks and make any necessary repairs.

11. Stop the engine and check the oil level in the steering tank. For information on the oil level for the steering system, refer to Operation and Maintenance Manual, “Hydraulic Tank Oil Level - Check (Steering System)”.

i03718331

Hydraulic Tank Oil - Change (Hoist and Brake System)

SMCS Code: 5056

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: In order to access the filler cap, the filler strainer, the drain valve, and the sight gauges, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

1. Move the dump body to the down position and prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

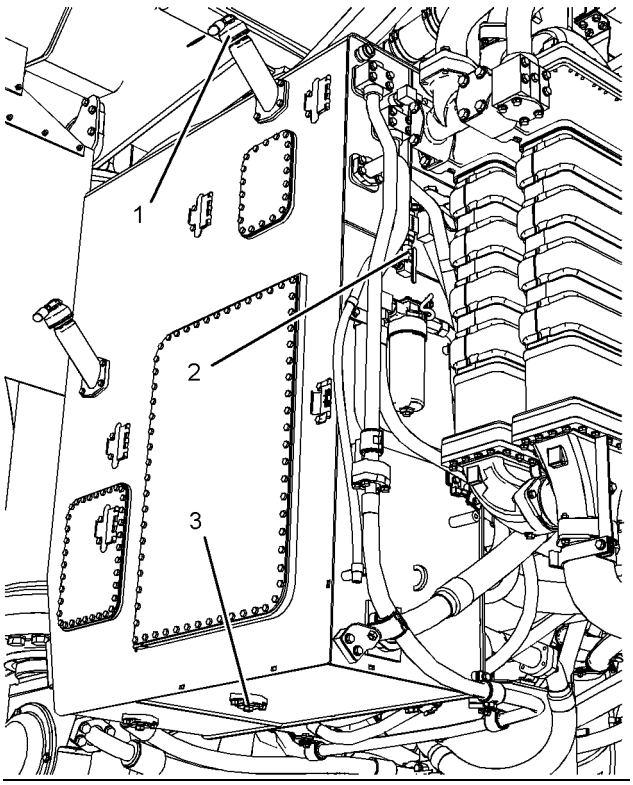


Illustration 234 g02003794

2. Remove filler cap (1) in order to prevent a vacuum in the tank.

3. Remove drain valve plug (3). Install a 88.0 mm (3.50 inch) long NPT pipe nipple in order to open the internal drain valve. The outer diameter of the NPT pipe nipple should be 25 mm (1 inch). Drain the oil into a suitable container.

4. Remove the pipe nipple. Clean the drain plug and install the drain plug.

5. Open drain valve (2). Drain the oil into a suitable container. Close the drain valve.

6. Remove the filler strainer. Wash the cap and the strainer in clean, nonflammable solvent. Allow the cap and the strainer to dry. Install the strainer.

7. Inspect the cap seal. Use a new seal if the used seal is damaged.

8. Clean the screens inside the hoist/brake tank. Refer to Operation and Maintenance Manual, “Hydraulic Tank Screen - Clean”.

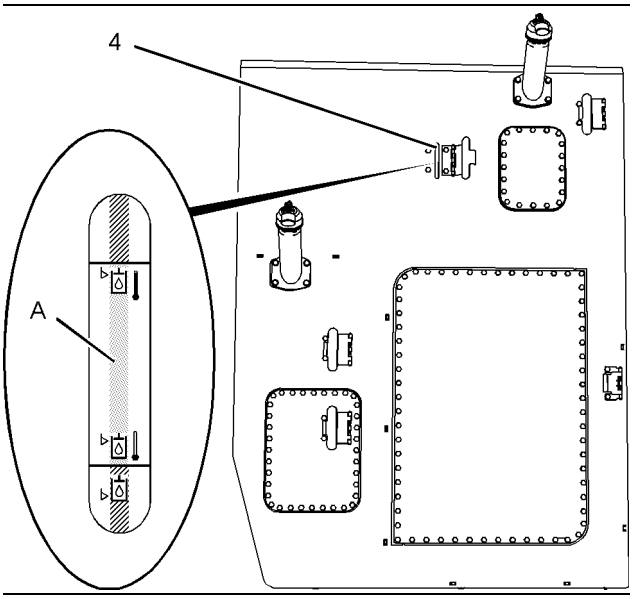


Illustration 235 g02003894

9. Fill the hoist/brake tank within green range (A) of upper sight gauge (4). Refer to Operation And Maintenance Manual, “Lubricant Viscosities”. Refer to Operation And Maintenance Manual, “Capacities (Refill)”.

Note: The hoist reservoir and the brake reservoir are separated by a baffle. When the hoist/brake tank is filled, the brake reservoir will fill first. After the brake reservoir is at the proper level, the oil will flow into the hoist reservoir. Refer to Operation and Maintenance Manual, “Hydraulic Tank Oil Level - Check (Hoist and Brake Oil)” for more information.

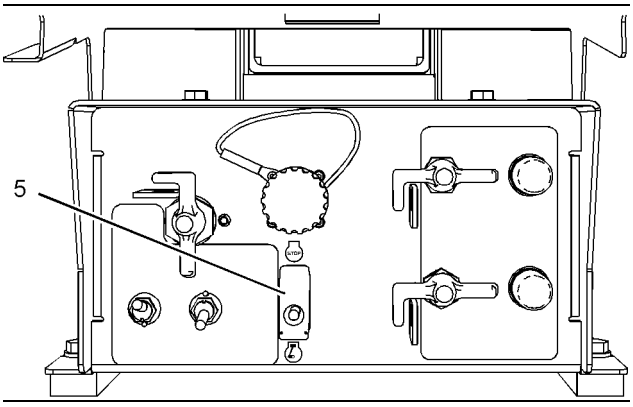


Illustration 236 g02003896

The engine shutdown switch is located on the front bumper.

10. Use engine shutdown switch (5) to prevent the engine from starting. Crank the engine for approximately 15 seconds. The oil level will decrease as oil fills the system.

11. Add oil to the tank in order to raise the oil within the green range of the upper sight gauge.

12. Repeat Step 10 and Step 11 until the oil level stabilizes within the green range of the upper sight gauge.

13. Lower the guard on the engine shutdown switch. Start the engine and operate the engine at an idle.

14. Raise the truck body until the hoist cylinders are extended halfway. Lower the truck body and add oil, if necessary.

15. Raise the truck body until the hoist cylinders are fully extended. Lower the truck body and add oil, if necessary.

16. Repeat Step 14 and Step 15 until the oil level stabilizes within the green range of the upper sight gauge.

17. Inspect the hoist/brake tank for leaks and make any necessary repairs.

18. Check oil level in the hoist/brake tank. Refer to Operation and Maintenance Manual, “Hydraulic Tank Oil Level - Check (Hoist and Brake System)”.

i03718560

Hydraulic Tank Oil Level - Check (Steering System)

SMCS Code: 5056

Note: The steering system and the hydraulic fan drive motor for the engine share common hydraulic oil.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

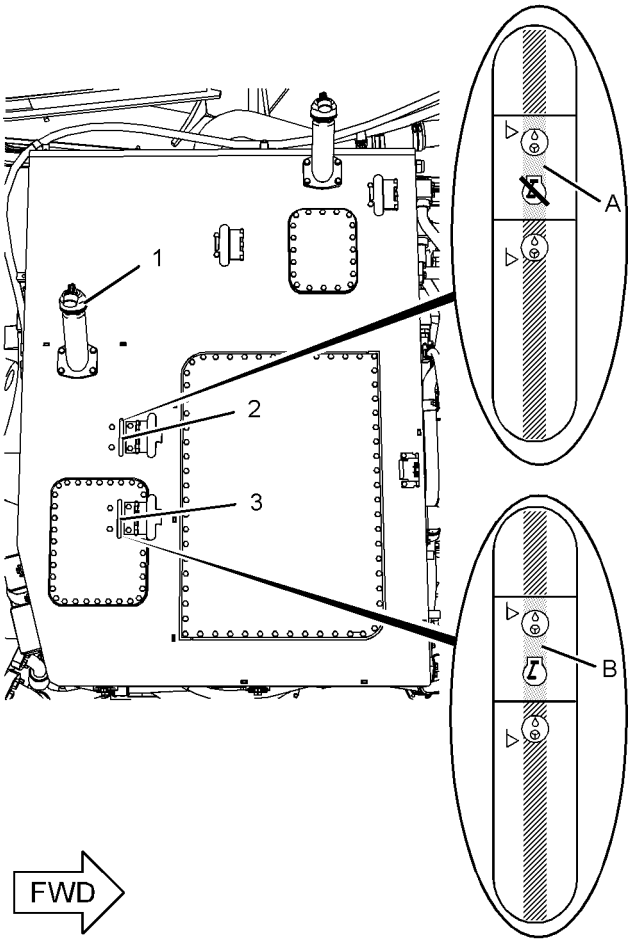


Illustration 237 g02003916

2. Use the reading from upper sight gauge (2) to maintain the steering oil level. The oil level in the upper sight gauge should be within green range (A) with the engine stopped.

3. If necessary, remove filler cap (1) and add oil.

NOTICE
Do not fill the steering hydraulic tank when the engine is running. Discharge from the secondary steering accumulators could overfill the tank when the engine is stopped.

Note: When the engine is running, use the reading from lower sight gauge (3) to maintain the steering oil level. The oil level in the lower sight gauge should be within green range (B). If the oil level in the lower sight gauge is low, check the secondary steering. See Operation And Maintenance Manual, “Secondary Steering - Check” for additional information.

i03718581

Hydraulic Tank Oil Level - Check (Hoist and Brake System)

SMCS Code: 5056

Note: In order to access the sight gauges, and the filler cap, it may be necessary to use a portable access system (ladder, stair assembly, man lift, or other portable access system) that is suitable and compliant to local regulations.

Check the oil level in the hoist/brake system with the dump body in the DOWN position.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

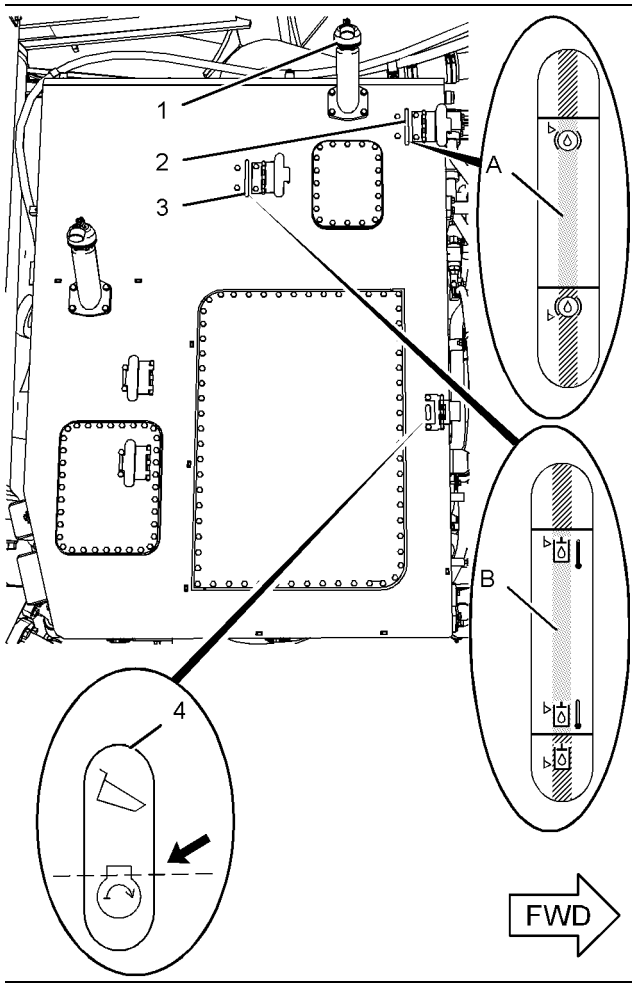


Illustration 238 g02003974

2. Use sight gauge (2) in order to check the oil level in the brake reservoir. The oil level must be within green range (A) on the sight gauge.

3. Use sight gauge (3) in order to check the oil level in the hoist reservoir. The oil level must be within green range (B) on the sight gauge.

Note: The hoist reservoir and the brake reservoir are separated by a baffle. When the hoist/brake tank is filled, the brake reservoir will fill first. After the brake reservoir is at the proper level, the oil will flow into the hoist reservoir.

4. If necessary, remove filler cap (1) and add oil. If the system has been drained, see this Operation and Maintenance Manual, “Hydraulic Tank Oil - Change (Hoist and Brake Oil)” for the proper filling procedure.

Note: If the oil level must be checked with the truck body in the RAISED position, the minimum oil level must be within sight gauge (4) with the engine on.

i03718600

Hydraulic Tank Screen - Clean

SMCS Code: 5056-070-Z3

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

Return Screens for the Hoist/Brake Hydraulic Tank

There are four return screens in the hoist/brake hydraulic tank. Clean all the screens in order to remove the debris if there is a failure of the hoist/brake system.

1. Make sure that the dump body is in the down position.

2. Drain the oil from the hoist/brake hydraulic tank. Refer to Operation and Maintenance Manual, “Hydraulic Tank Oil - Change (Hoist and Brake System)”.

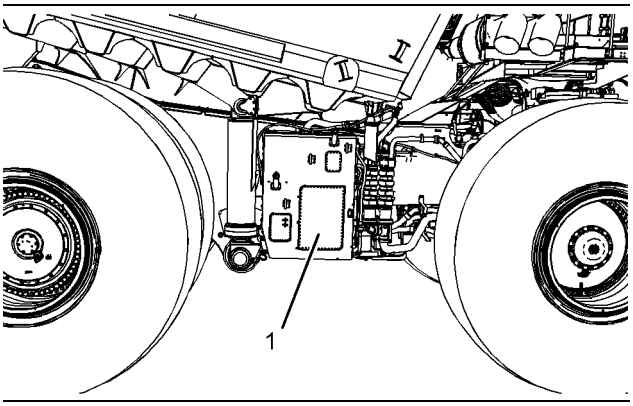


Illustration 239 g02003993

3. Remove cover (1) from the hoist/brake hydraulic tank.

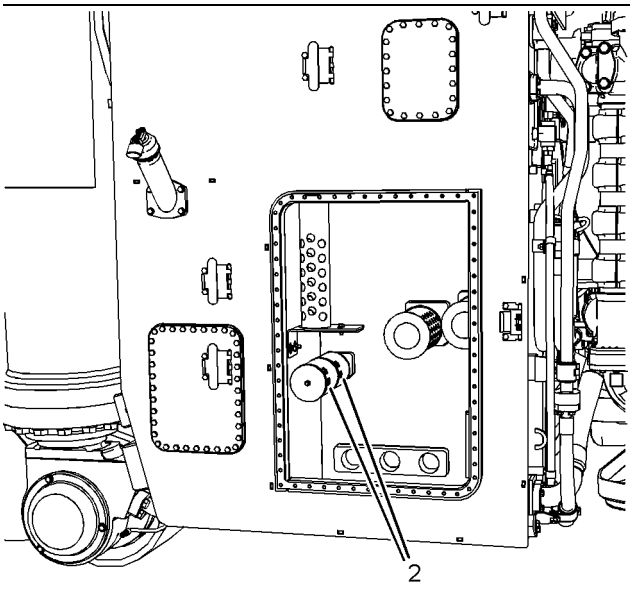


Illustration 240 g02003994

4. Remove two outer screens (2) and remove the two inner screens from the inside of the hoist/brake tank.

5. Clean the debris from the tank.

6. Clean the screens, the bolts, and the cover in clean, nonflammable solvent. Inspect the gasket for the cover. If the gasket is damaged, replace the gasket.

7. Install the clean inner screens and install the clean outer screens. Install the cover.

8. Fill the hoist/brake system with oil. Refer to Operation and Maintenance Manual, “Hydraulic Tank Oil - Change (Hoist and Brake System)”.

Return Screens for the Steering Hydraulic Tank

There are two return screens in the steering hydraulic tank. Clean all the screens in order to remove the debris if there is a failure of the steering system.

1. Drain the oil from the steering hydraulic tank. Refer to Operation and Maintenance Manual, “Hydraulic Tank Oil - Change (Steering System)”.

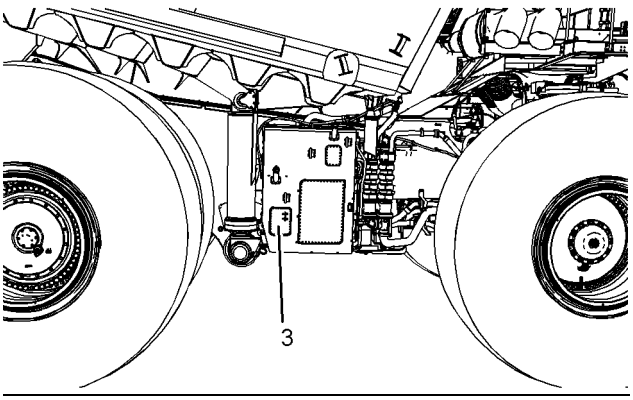


Illustration 241 g02004013

2. Remove cover (3) from the steering hydraulic tank.

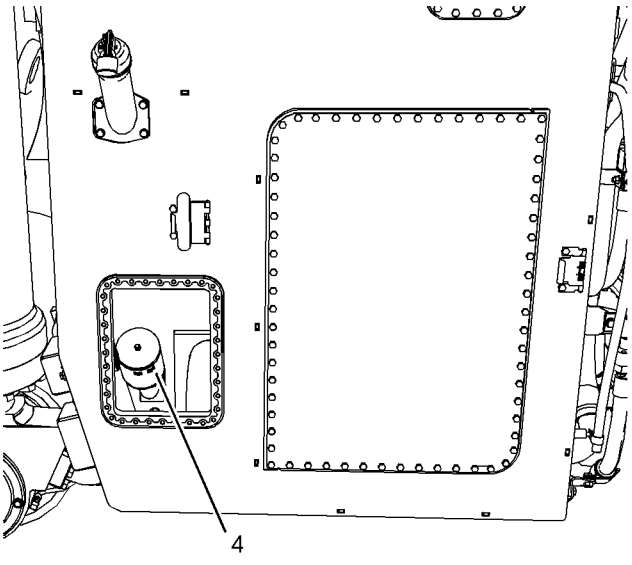


Illustration 242 g02004014

3. Remove outer screen (4) and remove the inner screen from the inside of the steering hydraulic tank.

4. Clean the debris from the tank.

5. Clean the screens, the bolts, and the cover in clean, nonflammable solvent. Inspect the gasket for the cover. If the gasket is damaged, replace the gasket.

6. Install the clean inner screen and install the clean outer screen. Install the cover.

7. Fill the steering system with oil. Refer to Operation and Maintenance Manual, “Hydraulic Tank Oil - Change (Steering System)”.

i03657085

Indicators and Gauges - Test

SMCS Code: 7000-081; 7450-081; 7490-081

1. Turn the engine start switch from the OFF position to the ON position. This will initiate a functional test of the monitoring system. The functional test will test the gauges, indicators, alarms, and display. Observe the functional test in order to determine the proper operation of the monitoring system. For more information, refer to Operation and Maintenance Manual, “Monitoring System”.

2. Check for broken lenses on the gauges, broken indicator lights, broken switches, and other broken components in the operator station.

3. Sound the horn. Listen for proper operation.

4. Turn the engine start switch to the OFF position.

5. Make any necessary repairs before machine operation. Consult your Caterpillar dealer for more information.

i03715761

Link and Rear Cylinder (Suspension) - Check

SMCS Code: 7200; 7213; 7230

Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

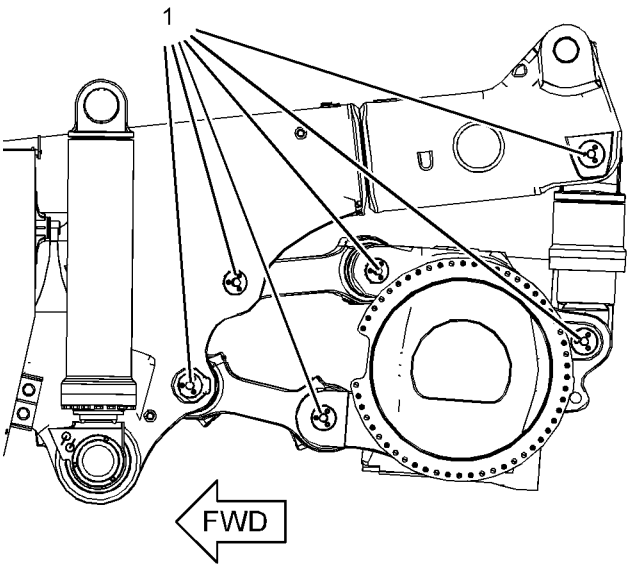


Illustration 243 g02002653

Torque

Check the torque for twenty-four bolts (1). Tighten the bolts to 1800 ± 200 N·m (1325 ± 150 lb ft).

Note: There are twelve pins with two bolts per pin.

Oil Level

Check The Oil Level For Bearings On The Suspension Links

1. Use the following procedure to check the oil level for the bearings in all four suspension links.

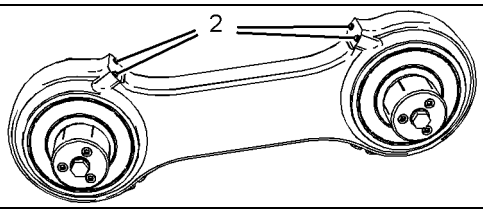


Illustration 244 g02002654

2. Remove setscrews (2) on one of the suspension links.

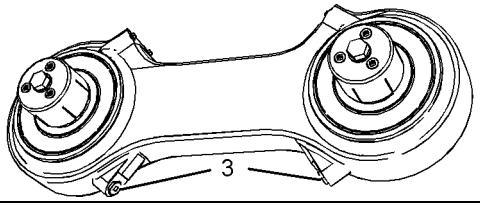


Illustration 245 g02002655

3. Remove plugs (3) on one of the suspension links.

Note: Use SAE 90 gear oil for normal operating conditions. Use SAE 75W-90 gear lubricant for arctic conditions.

4. Use a grease gun or use another lubrication system to add oil at the grease fitting behind plugs (3). Add oil or add grease until oil or grease comes out of the vent holes for setscrews (2).

Note: Do not overfill the joint by adding oil when setscrews (2) are installed. Excess oil may force the seal out of the proper position and the seal will fail. If a seal is leaking at a time that is not convenient to service the machine, fill the joint with grease. Properly fix the seal when the machine is stopped for maintenance. After you fix the seal refill the joint with the proper oil. Do not operate the machine if the seal is out of the position. Without lubrication, the bearing will fail.

5. Apply a coat of 5P-3931 Anti-Seize Compound to the threads of setscrews (2) prior to assembly. Install setscrews (2) below the surface of the link.

6. Install plugs (3).

7. Repeat Step 2 through Step 6 for each of the four suspension links.

Check The Oil Level For Bearings On The Rear Suspension Cylinders

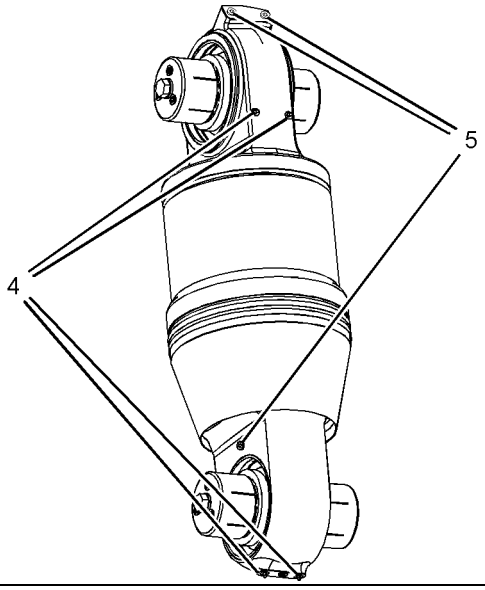


Illustration 246 g02002656

1. Check the oil level for the bearings on each rear suspension cylinder.

2. Remove setscrews (5) on each rear suspension cylinder.

3. Use a grease gun or use another lubrication system to add oil at the grease fittings (4). Add oil or add grease until oil or grease comes out of the vent holes for setscrews (5).

Note: Use SAE 90 gear oil for normal operating conditions. Use SAE 75W-90 gear lubricant for arctic conditions.

Note: Do not overfill the joint by adding oil when the setscrews are installed. Excess oil may force the seal out of the proper position and the seal will fail. If a seal is leaking at a time that is not convenient to service the machine, fill the joint with grease. Properly fix the seal when the machine is stopped for maintenance. Do not operate the machine if the seal is out of the position. Without lubrication, the bearing will fail.

4. Apply a coat of 5P-3931 Anti-Seize Compound to the threads of the setscrews prior to assembly. Install setscrews (5) below the surface of the link.

5. Repeat Step 2 through Step 4 for each of the rear suspension cylinders.

Checking for Fatigue and Cracks

Refer to Guideline For Reusable Parts and Salvage Operations, SEBF8772, “797 Off-Highway Truck Rear Link Reusability” for more information on checking for fatigue and cracks.

i03718640

Magnetic Plug (Wheels) - Check

SMCS Code: 0663

1. Stop the machine on a level surface and position one of the wheels so that the magnetic plug is above the center line of the wheel.

2. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

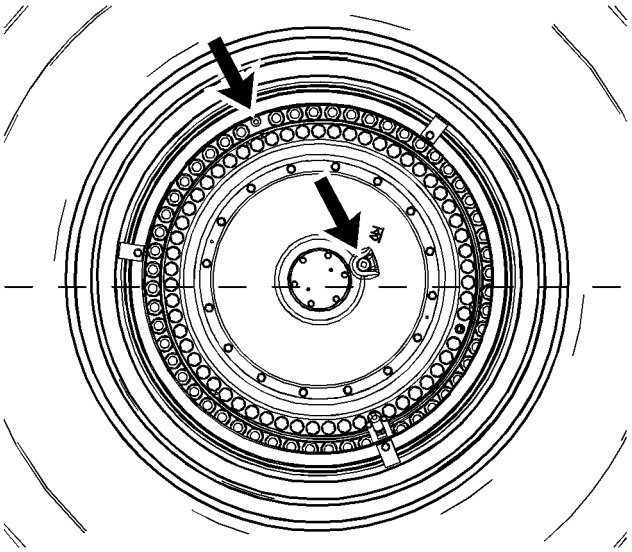


Illustration 247 g02004035

Magnetic plugs for the rear wheel

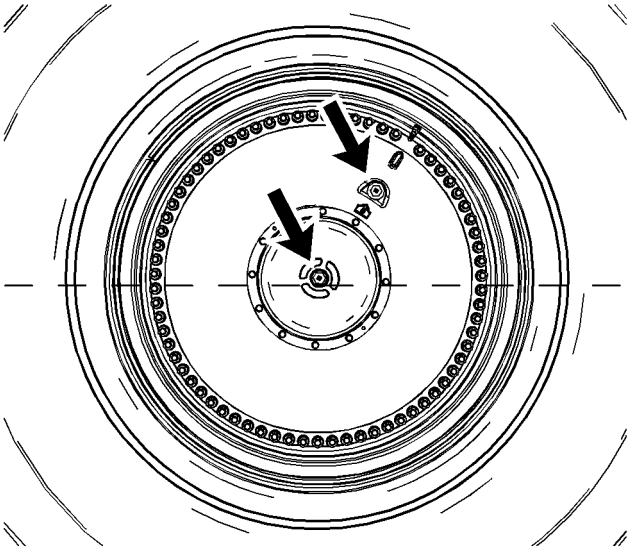


Illustration 248 g02004033

Magnetic plugs for the front wheel

3. Check the magnetic plugs.

4. Repeat step 1 through step 3 for each wheel.

All of the wheels have magnetic plugs. The magnetic plugs will attract metal from the oil. A bearing failure is indicated by an increased amount of metal on the magnetic plug.

If any abnormal particles are found, consult your Caterpillar dealer.

After you correct a failure that produces debris, clean the compartments before you add any oil.

i02106227

Oil Filter - Inspect

SMCS Code: 1318; 3067; 5068; 7528

Inspect a Used Filter for Debris

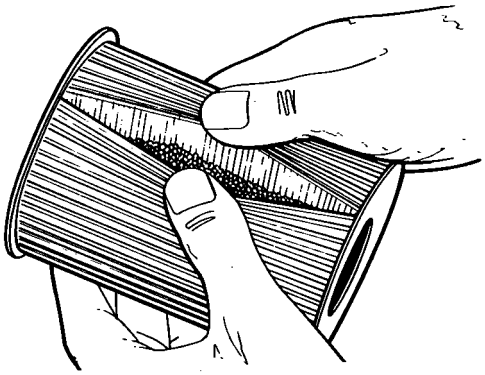


Illustration 249 g00100013

The element is shown with debris.

Use a filter cutter to cut the filter element open. Spread apart the pleats and inspect the element for metal and for other debris. An excessive amount of debris in the filter element can indicate a possible failure.

If metals are found in the filter element, a magnet can be used to differentiate between ferrous metals and nonferrous metals.

Ferrous metals can indicate wear on steel parts and on cast iron parts.

Nonferrous metals can indicate wear on the aluminum parts of the engine such as main bearings, rod bearings, or turbocharger bearings.

Small amounts of debris may be found in the filter element. This could be caused by friction and by normal wear. Consult your Caterpillar dealer in order to arrange for further analysis if an excessive amount of debris is found.

Using an oil filter element that is not recommended by Caterpillar can result in severe engine damage to engine bearings, to the crankshaft, and to other parts. This can result in larger particles in unfiltered oil. The particles could enter the lubricating system and the particles could cause damage.

i03829762

Platform (Powered Stairway) - Lubricate (If Equipped)

SMCS Code: 7254-086

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

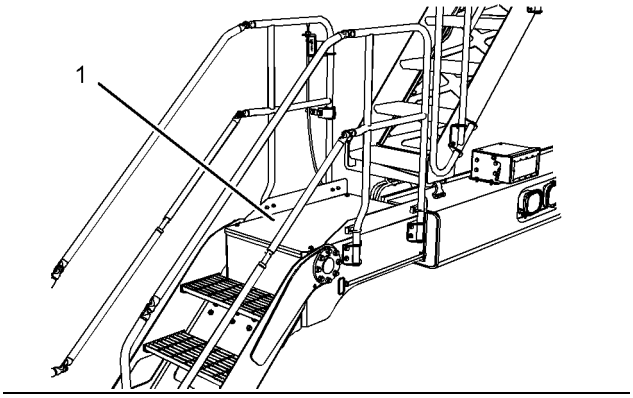


Illustration 250 g02078415

2. Remove tread plate (1) from the platform of the powered stairway.

3. Wipe off the fittings before any lubricant is applied.

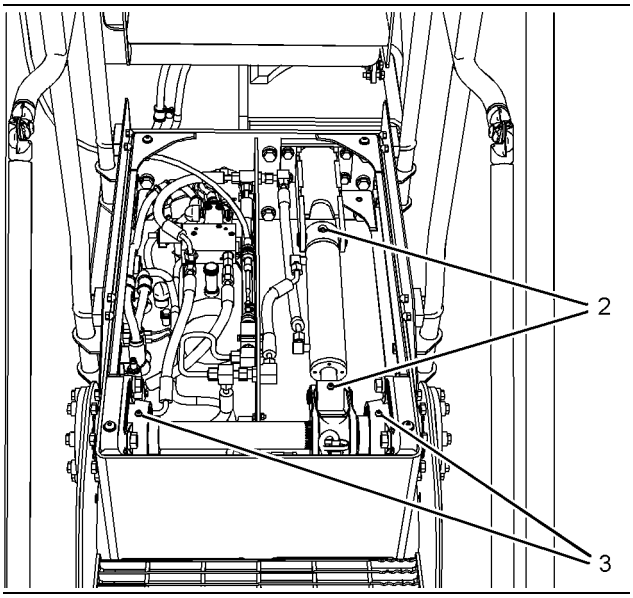


Illustration 251 g02079553

4. Lubricate fittings (2) for the hydraulic cylinder.

5. Lubricate fittings (3) for the shaft bearings.

i03720138

Pump Drive Return Screen - Clean (Transmission and Torque Converter System)

SMCS Code: 3016-070-Z3; 3154-070-Z3

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Drain the oil from the transmission and the torque converter. Refer to Operation and Maintenance Manual, “Torque Converter and Transmission Oil - Change”.

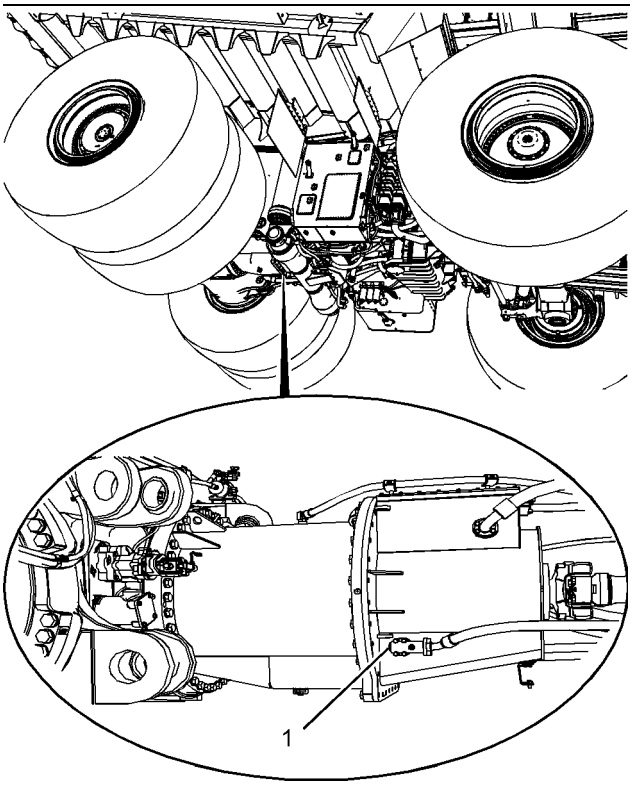


Illustration 252 g02004596

3. Remove plug (1) and the seal.

4. Remove the screen from behind the plug.

5. Wash the screen in clean, nonflammable solvent. Install the screen.

6. Inspect the seal on the plug. If necessary, replace the seal. Install the plug.

7. Fill the transmission and torque converter system with oil. Refer to Operation and Maintenance Manual, “Torque Converter and Transmission Oil - Change”.

i03720162

Radiator, Aftercooler and Air Conditioner Condenser - Clean

SMCS Code: 1064-070; 1353-070-KO; 1805-070; 1805; 7320-070

NOTICE
High water pressure water and high water volume can damage the fins on the radiator, the aftercooler, and the air conditioner condenser.

Use a water spray nozzle that will disperse the water.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

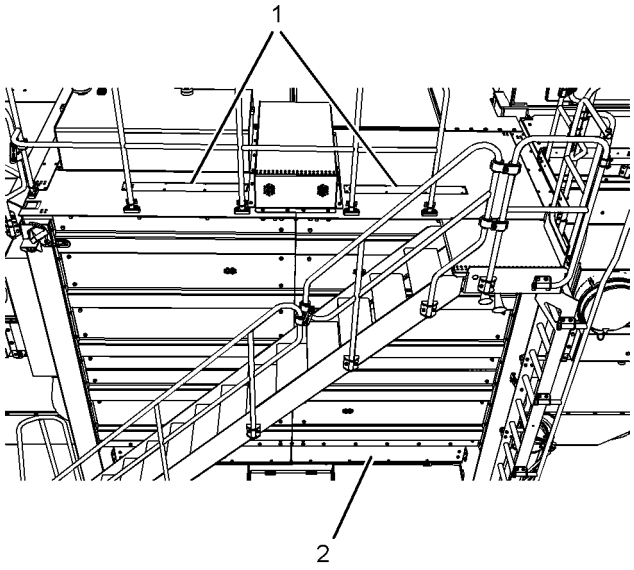


Illustration 253 g02004694

2. Remove access panels (1) on the top of the cowl in order to access the radiator and the aftercooler.

3. Remove grill panel (2) on the lower left of the cowl in order to access the air conditioner condenser.

4. Clean the radiator, the aftercooler, and the air conditioner condenser.

   Use compressed air, high pressure water, or steam to remove dust and other debris from the radiator, the aftercooler, and the air conditioner condenser.

5. Install the access panels and the grill panel.

Note: Excessive amounts of accumulated debris may require the removal of the stair assembly and the grill panels in order to effectively clean the radiator, the aftercooler, and the air conditioner condenser.

i03662161

Receiver Dryer (Refrigerant) - Replace

SMCS Code: 7322-510; 7322-710

⚠ WARNING

Personal injury can result from contact with refrigerant.

Contact with refrigerant can cause frost bite. Keep face and hands away to help prevent injury.

Protective goggles must always be worn when refrigerant lines are opened, even if the gauges indicate the system is empty of refrigerant.

Always use precaution when a fitting is removed. Slowly loosen the fitting. If the system is still under pressure, release it slowly in a well ventilated area.

Personal injury or death can result from inhaling refrigerant through a lit cigarette.

Inhaling air conditioner refrigerant gas through a lit cigarette or other smoking method or inhaling fumes released from a flame contacting air conditioner refrigerant gas, can cause bodily harm or death.

Do not smoke when servicing air conditioners or wherever refrigerant gas may be present.

Use a certified recovery and recycling cart to properly remove the refrigerant from the air conditioning system.

NOTICE

If the refrigerant system has been open to the outside air (without being plugged) for more than 30 minutes, the receiver-dryer must be replaced. Moisture will enter an open refrigerant system and cause corrosion which will lead to component failure.

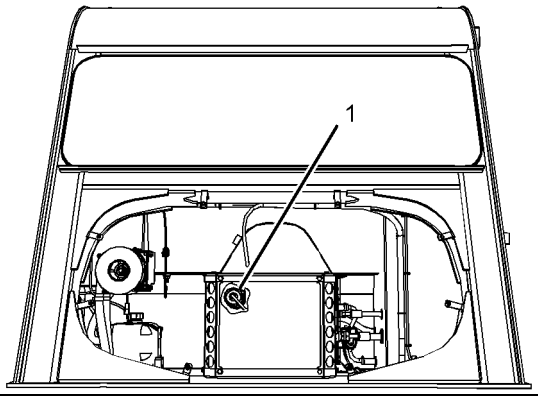


Illustration 254 g01964773

Refrigerant dryer receiver (1) is located inside the air conditioner group at the rear of the cab.

Cutaway view of the air conditioner group

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Refer to Service Manual, SENR5664, “Air Conditioning and Heating R-134a for All Caterpillar Machines” for the proper procedure to change the receiver-dryer assembly and for the procedure to reclaim the refrigerant gas.

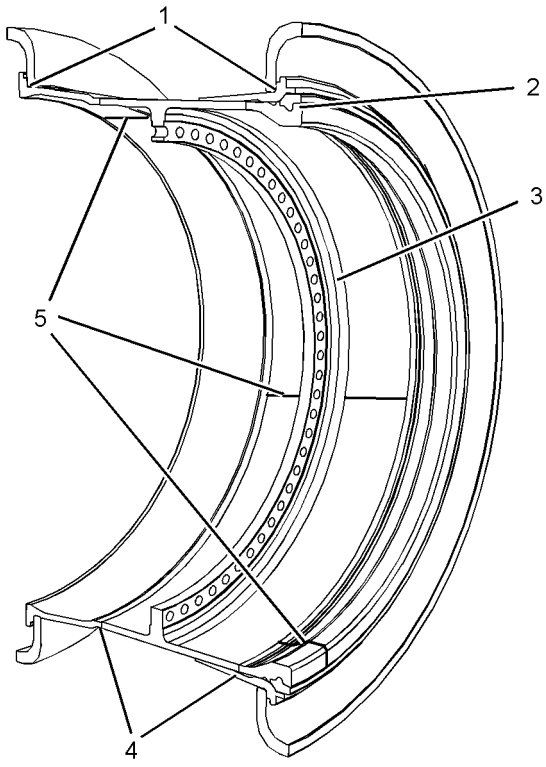
i03657420

Rim - Inspect

SMCS Code: 4209-040

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Consult your tire dealer for dismounting the tires from the rims.



g01331173

Illustration 255

Typical example

Cutaway view of the rim assembly

3. Perform a magnetic particle inspection of the following high stress areas of the rim:

- (1) Areas of contact with flanges
- (2) Contact areas with the lock ring and the groove for the lock ring
- (3) Welds on the rim disc
- (4) Welds around the circumference of the rim base
- (5) Butt welds

For more information on magnetic particle inspection, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8148, “General Salvage and Reconditioning Techniques” or consult your Caterpillar dealer.

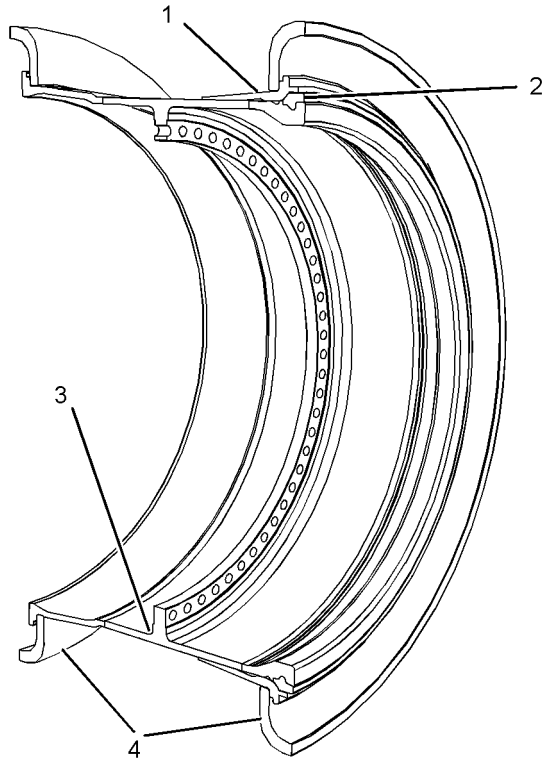
Do not reuse rim components that are cracked, worn, damaged, or pitted from corrosion. For more information on the reusability of the rim components, consult your Caterpillar dealer.

i02650497

Rim - Inspect

SMCS Code: 4209-040

Inspect the rim whenever a tire is dismounted.



g01330970

Illustration 256

Typical example

Cutaway view of the rim assembly

Inspect the following components of the rim assembly:

Bead Seat Band (1) – Inspect the bead seat band for the following: wear, corrosion, and cracks.

Lock Ring (2) – Inspect the lock ring for the following: wear, corrosion, cracks, flat spots, and warping. When the lock ring is not assembled, the two ends of the lock ring must overlap each other.

Rim Base (3) – Inspect the rim base for the following: wear, corrosion, cracks, and fretting.

Flanges (4) – Inspect the flanges for the following: wear, corrosion, cracks, and fretting.

Do not reuse rim components that are cracked, worn, damaged, or pitted from corrosion. For more information on the reusability of the rim components, consult your Caterpillar dealer.

i03720194

Rollover Protective Structure (ROPS) - Inspect

SMCS Code: 7325

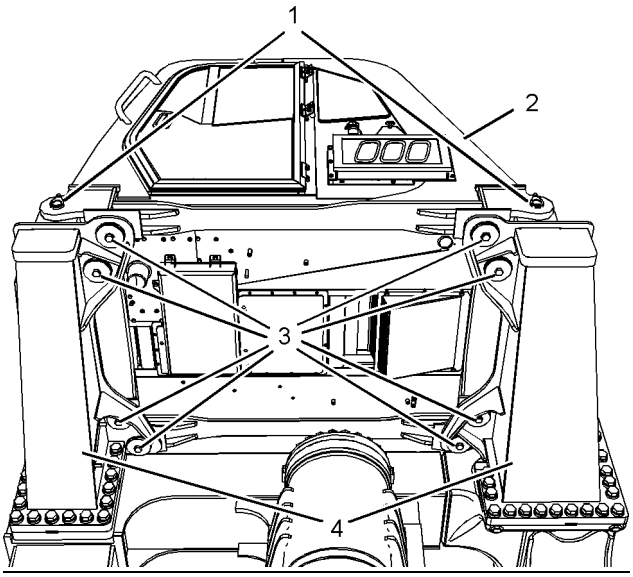


Illustration 257 g01944114

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Inspect the Rollover Protective Structure (ROPS) for mounting bolts (3) that are loose or damaged. Replace any damaged mounting bolts and any missing mounting bolts with original replacement parts only. Tighten the mounting bolts to a torque of 800 ± 100 N·m (590 ± 74 lb ft).

Note: Apply oil to all bolt threads for the ROPS before you install the bolts. Improper bolt torque can result if you do not apply oil to the threads.

Note: Do not reuse a bolt after the bolt has been removed.

3. Inspect the ROPS for pins (1) that are loose or damaged. Replace any damaged pins and any missing pins with original replacement parts only. Tighten loose bolts that retain the pins. There is a pin on each corner of the cab.

4. Inspect ROPS (2) for any cracks in the welds, cracks in the castings, or cracks in any metal section.

Note: Do not weld reinforcement plates to the ROPS in order to straighten the ROPS. Do not weld reinforcement plates to the ROPS in order to repair the ROPS.

5. Inspect ROPS mounting supports (4) for loose bolts. Tighten any loose bolts for the ROPS mounting supports.

Note: Do not weld on the ROPS mounting supports.

Refer to Special Instruction, SEHS6929, “Inspection, Maintenance, and Repair of ROPS and Attachment Installation Guidelines” or consult your Caterpillar dealer for more information.

For bolts with a torque specification that is not stated, refer to Specifications, SENR3130, “Torque Specifications”.

i03608760

Seat Belt - Inspect

SMCS Code: 7327

Always check the condition of the seat belt and the condition of the seat belt mounting hardware before you operate the machine. Replace any parts that are damaged or worn before you operate the machine.

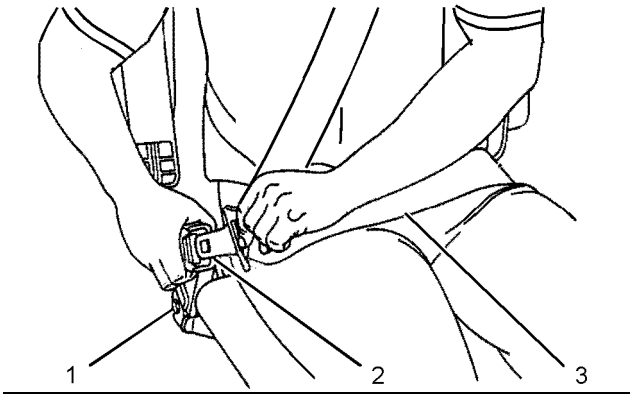


Illustration 258 g01933953

Typical examples

(1) Seat belt mounting hardware
(2) Seat belt buckle
(3) Webbing

Check all of the seat belt mounting hardware for wear or for damage. Replace any mounting hardware that is worn or damaged. Make sure that all of the mounting bolts are tight.

Check the seat belt buckle for wear or for damage. If the buckle is worn or damaged, replace the seat belt.

Inspect the seat belt for webbing that is worn or frayed. Replace the seat belt if the webbing is worn or frayed.

Consult your Caterpillar dealer for the replacement of the seat belt and the mounting hardware.

Note: Within three years of the date of installation or within five years of the date of manufacture, replace the seat belt. Replace the seat belt at the date which occurs first. A date label for determining the age of the seat belt is attached to the seat belt, the seat belt buckle, and the seat belt retractor.

If your machine is equipped with a seat belt extension, also perform this inspection procedure for the seat belt extension.

i02429594

Seat Belt - Replace

SMCS Code: 7327-510

Within three years of the date of installation or within five years of the date of manufacture, replace the seat belt . Replace the seat belt at the date which occurs first. A date label for determining the age of the seat belt is attached to the seat belt, the seat belt buckle, and the seat belt retractor.

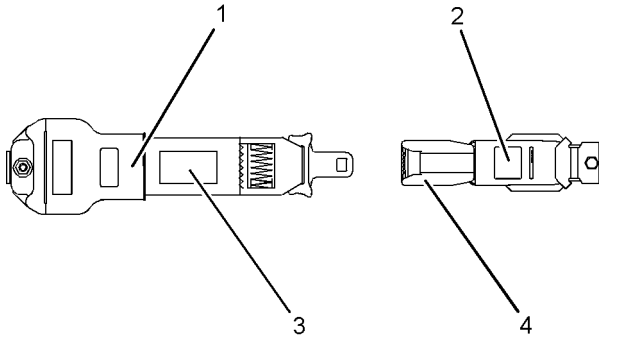


Illustration 259 g01152685

(1) Date of installation (retractor)
(2) Date of installation (buckle)
(3) Date of manufacture (tag) (fully extended web)
(4) Date of manufacture (underside) (buckle)

Consult your Caterpillar dealer for the replacement of the seat belt and the mounting hardware.

If your machine is equipped with a seat belt extension, also perform this replacement procedure for the seat belt extension.

i03662115

Seat Suspension - Inspect/Lubricate

SMCS Code: 7307; 7324

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

Inspect

Seat Suspension

2. Inspect the seat suspension for excessive looseness and wear. If excessive looseness or wear is detected, refer to Systems Operation, Testing and Adjusting, Disassembly and Assembly, RENR8391, “Caterpillar Comfort Series Seat with three point operator restraint”, “Troubleshooting Chart”.

Lubricate

Seat Suspension

3. Adjust the seat fully rearward and apply a dry lubricant to the front of the seat slide mechanism. Adjust the seat fully forward and apply a dry lubricant to the rear of the seat slide mechanism. Move the seat rearward and forward several times in order to distribute the lubricant.

Armrest (Seat)

4. Pivot the armrest to the vertical position. Apply dry lubricant or silicone lubricant between the parts in the mechanism for the armrest assembly.

i03720262

Secondary Steering - Check

SMCS Code: 4300-535-SST; 4324-535; 4331-535-SST

WARNING

Hydraulic accumulator contains gas and oil under high pressure. Improper removal or repair procedures could cause severe injury. To remove or repair, instructions in the service manual must be followed. Special equipment is required for testing and charging.

WARNING

Personal injury or death can occur if steering is lost completely during operation.

Do not continue to operate the machine using the secondary steering.

If the secondary steering activates during operation, immediately park the machine in a safe location. Inspect the machine and correct the condition which made the use of the secondary steering necessary.

This machine is equipped with a secondary steering system. The hydraulic steering accumulators provide a limited amount of stored hydraulic pressure for steering if the power source for the normal steering system fails or the engine stops. The secondary steering system will only provide steering until the stored hydraulic pressure is exhausted from steering action by the operator.

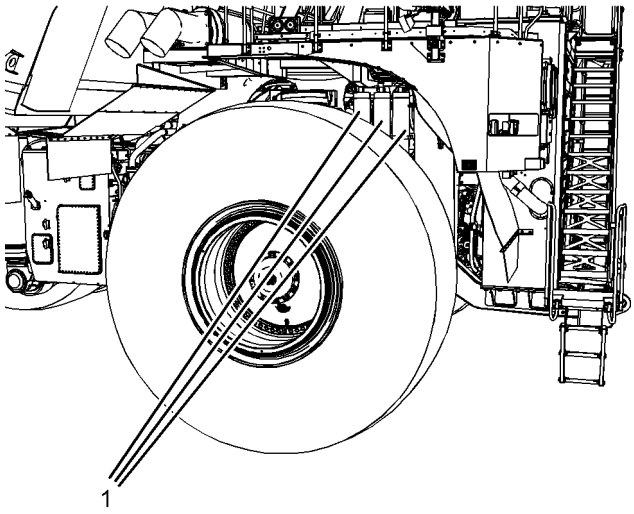


Illustration 260 g02004735

(1) Steering accumulators

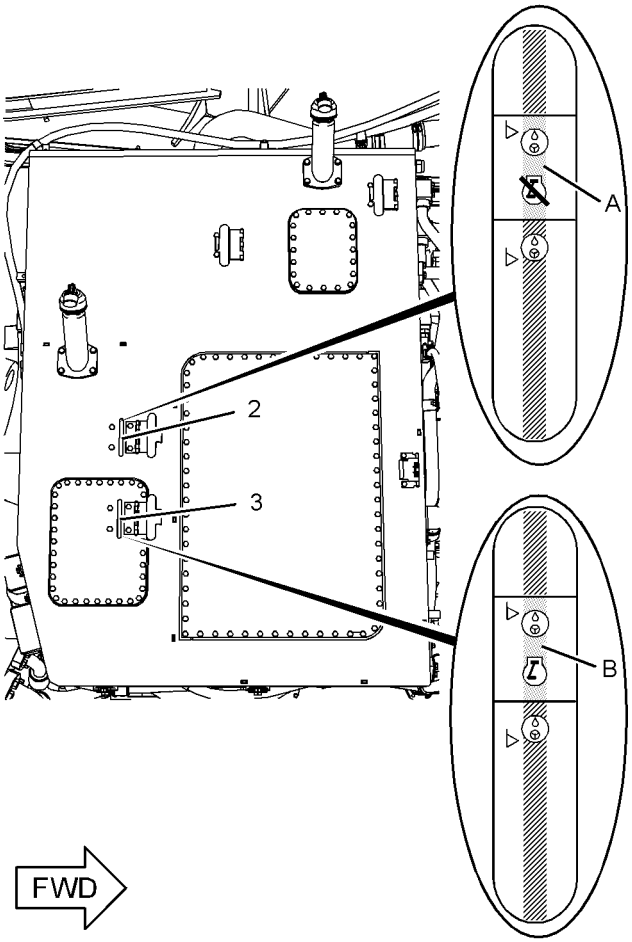


Illustration 261 g02004715

Perform the following field test in order to verify that the secondary steering system is functional. Perform the test when the dump body is empty.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. When the engine is stopped with the engine start switch, check the steering hydraulic oil level. Maintain the oil within green range (A) of upper sight gauge (2).

3. After engine start-up, check the oil level.

   a. If the oil level within green range (B) of lower sight gauge (3) is proportional to the oil level within the green range of the upper sight gauge level in step 2, the accumulators are properly charged.

b. If the oil level is below the green range in the lower sight gauge, check accumulator charge before proceeding to the next step. Refer to System Operation, Testing and Adjusting, KENR8574, “793F Off-Highway Truck Steering System”, “Accumulator (Steering) - Test and Charge” or consult your Caterpillar dealer.

4. Turn the front wheels to the straight ahead position.

5. Chock the rear wheels and move the transmission control in the N position.

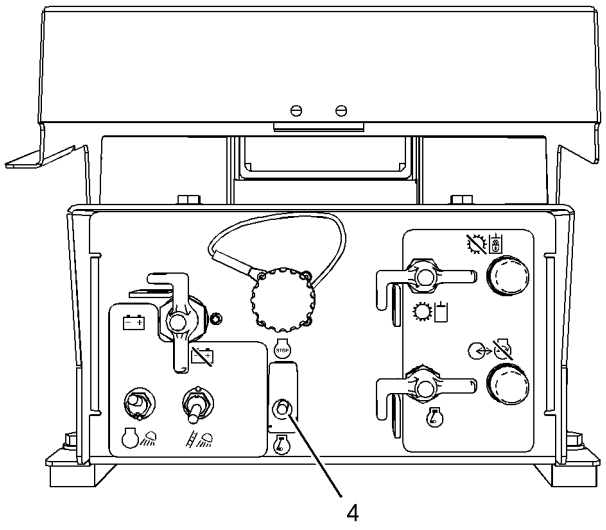


Illustration 262 g01926207

6. Stop the engine with ground level shutdown switch (4). This permits the accumulators to stay charged in order to provide stored energy for the secondary steering system when the engine is stopped.

7. Visually confirm the following:

a. Verify that the front wheels turn left as the steering wheel is turned left.

b. Verify that the front wheels turn right as the steering wheel is turned right.

If the secondary steering system is unable to comply with any portion of this field test, consult your Caterpillar dealer.

i03720311

Service Brakes - Inspect

SMCS Code: 4251

Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

Brake Discs

1. If the machine is equipped with brake wear indicators, record the initial measurement when the machine is new or when the brakes are rebuilt. Compare subsequent measurements to the initial measurement in order to determine the amount of wear.

2. Inspect the front brakes for wear and inspect the brake system for leakage.

3. Inspect the rear brakes for wear and inspect the rear brakes for system leakage.

For information on the proper inspection procedures, refer to Systems Operation, Testing and Adjusting, KENR8374, “797F Off-Highway Truck Braking System”, “Service Brake Discs - Check”.

Note: Refer to Guideline for Reusable Parts and Salvage Operations, SEBF8095, “Service Brakes for Off-Highway Trucks and Tractors” when you rebuild the brakes.

Brake Pressure

Test the system pressure for the service brakes and retarder.

For more information on the proper procedures, refer to Systems Operation, Testing and Adjusting, KENR8374, “797F Off-Highway Truck Braking System”, “Service Brakes and Retarder System Pressure - Test” or contact your Caterpillar dealer.

i03657827

Steering Ball Stud - Inspect

SMCS Code: 4303; 4305

The inspection procedure for the ball studs uses a straight beam examination. The inspection procedure does not require the ball studs to be removed from the machine. The inspection procedure is used to identify any damage that has developed during the operation of the machine. The ball studs can develop cracks that may cause the ball stud to fail, and lead to the loss of steering. The inspection procedure references ASTM E114-95 and ASTM E1901-97.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Refer to Special Instruction, REHS4420, “Steering Ball Stud Inspection for Off- Highway Trucks” in order to perform the proper inspection procedure for the ball studs.

i03657828

Steering Ball Stud - Replace

SMCS Code: 4303; 4305

The recommended replacement interval for the steering cylinder and steering linkage ball studs is between 12000 operating hours and 15000 operating hours or at the planned component rebuild of the steering cylinder. For the replacement procedure, refer to the Disassembly and Assembly, “Off-Highway Truck Machine Systems” manual for your machine or consult your Caterpillar dealer.

The replacement interval may vary and the replacement interval is heavily dependent on the haul cycle conditions. These conditions include the following considerations: haul road condition, length of hauls, number of turns per cycle, load, and grade of the haul road.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Inspect the condition of the tapered steering bore whenever a ball stud is replaced. Refer to Reuse and Salvage Guidelines, SEBF8271, “Salvage of Steering Arm and Steering Arm (T-Bar) Tapers on 785, 789, 793, and 797 Off-Highway Trucks” or consult your Caterpillar dealer in order to determine whether the tapered bore can be reused or machined to an oversized dimension.

If the tapered bore is out of the specification and the tapered bore is able to be salvaged, then an oversize ball stud may be used. If the taper is too far out of the specification, then an oversize ball stud cannot be used. In this case, either the steering arm or the steering box must be scrapped and replaced.

i03657829

Steering Linkage - Inspect

SMCS Code: 4305

Inspect the horizontal wear limits for the ball studs in the steering linkage. At the same time, inspect the outer bearing race. Also, inspect the grease fittings and the seals.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

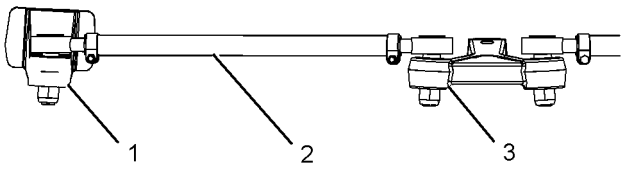


Illustration 263 g01442892

Typical example

(1) Steering arm
(2) Steering link assembly
(3) Center arm

2. Attach the magnetic base of a 8T-5096 Dial Indicator Group to steering link (2). This will allow the horizontal movement of the ball stud to be measured.

3. To measure the horizontal wear of the ball studs and of the outer bearing races on the steering cylinders, place the dial indicator against the side of steering arm (1).

4. Set the dial indicator to zero.

5. Steer the front wheels in both directions. Record the amount of horizontal play on the indicator dial. This indicates the amount of wear in the ball studs and the outer bearing races.

6. To measure the horizontal wear of the ball studs and of the outer bearing races on the other ball studs and outer bearing races, place the dial indicator against the side of center arm (3).

7. Set the dial indicator to zero.

8. Steer the front wheels in both directions. Record the amount of horizontal play on the indicator dial.

Note: Repeat this procedure in order to measure all of the ball studs and outer bearing races.

9. The maximum amount of horizontal wear is 1.02 mm (0.040 inch). If any of the measurements exceed this limit, replace the worn ball studs and the outer bearing races.

10. Inspect all of the covers for the ball studs. Inspect all grease fittings and seals. Replace any worn components and any damaged components.

Note: Properly lubricate the steering linkage in order to ensure the durability of components. The steering linkage must be free of contaminants in order to ensure the durability of components.

i03588400

Suspension Cylinder - Check

SMCS Code: 7201

Note: All of the suspension cylinders that are shipped from the factory receive a preliminary charge of nitrogen and a preliminary charge of oil. During field assembly, the suspension cylinders must be charged with nitrogen.

1. Check the suspension cylinders when the dump body is empty.

2. Stop the machine gradually on a level surface without using the brakes.

3. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

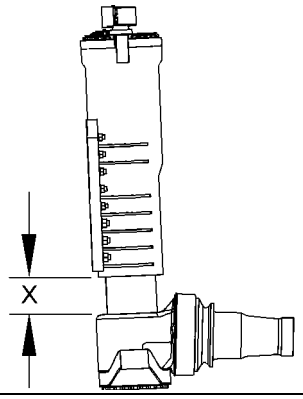


Illustration 264 g01583894

Front Suspension Cylinder

(X) Distance of exposed finished surface

4. Measure the distance of exposed finished surface (X) for the front suspension cylinders. Compare the present distance to the distance from the previous time. If those dimensions are not available, check the charge pressure.

Note: There are two relief valves for the grease on the forward side of the front suspension cylinder. These relief valves are located 180 degrees from the lubrication fitting. Do not plug the grease passage of the relief valves.

5. If necessary, perform the charging procedure on the front suspension cylinders.

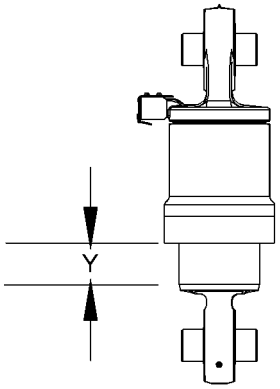


Illustration 265 g01964614

Rear Suspension Cylinder

(Y) Distance of exposed finished surface

6. Measure the distance of exposed finished surface (Y) for the front suspension cylinders. Compare the present distance to the distance from the previous time. If those dimensions are not available, check the charge pressure.

Note: When the rear suspension cylinders are properly charged, the left rear suspension cylinder will not show as much finished surface as the right rear suspension cylinder. This is due to the rigid frame and to the weight of the cab.

7. If necessary, perform the charging procedure on the rear suspension cylinders.

Refer to Special Instruction, SEHS9411, “Servicing the Suspension Cylinders for Off-Highway Trucks” for any information concerning suspension cylinders. The Special Instruction includes tooling, pressures, and the correct procedures for purging (oil and nitrogen) and charging (oil and nitrogen), that are used on all off-highway truck suspension cylinders.

i03657830

Tire Inflation - Check

SMCS Code: 4203

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Measure the tire pressure on each tire. Adjust the tire pressure, if necessary. Consult your tire supplier for the correct tire operating pressures and load ratings.

See Operation and Maintenance Manual, “Tire Inflation Information” for more tire information.

i03721947

Torque Converter and Transmission Oil Sample - Obtain

SMCS Code: 3030-008; 3080-008; 3101-008-OC; 3101-008; 7542-008; 7542-008-OC; 7542

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

Obtain S·O·S samples as close as possible to the recommended sampling interval. In order to receive the full effect of S·O·S analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent samplings that are evenly spaced. Supplies for collecting samples can be obtained from your Caterpillar dealer.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

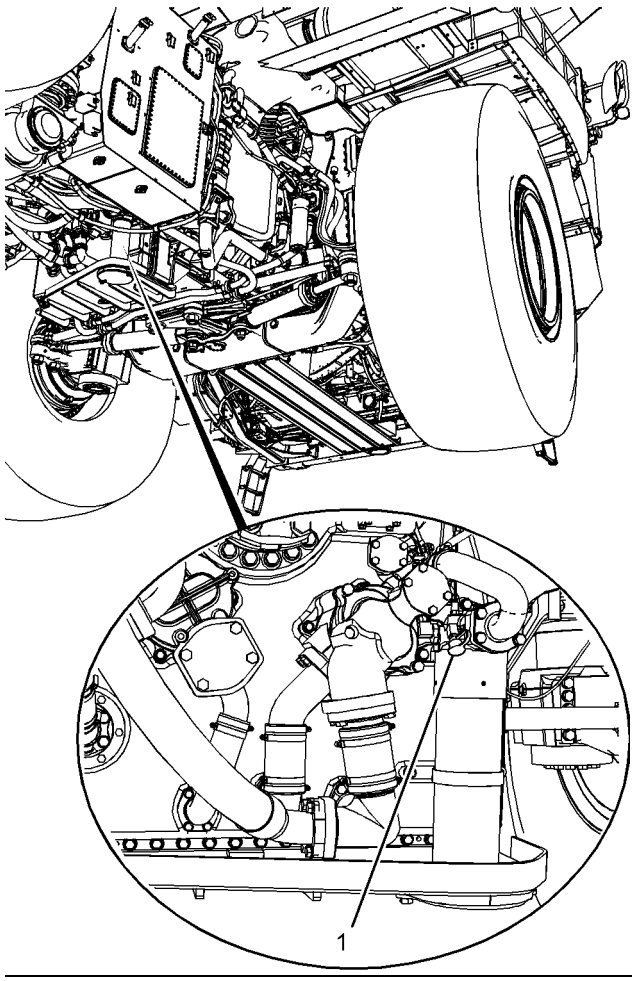


Illustration 266 g02006193

2. Obtain a sample of the transmission and torque converter oil through sampling valve (1). Take the oil sample when the engine is operating at an idle.

3. Submit the sample for S·O·S analysis.

Refer to the following publications for S·O·S information:

- Operation and Maintenance Manual, “S·O·S Information”
- Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Services Analysis”
- Special Publication, PEGJ0047, “How to Take a Good S·O·S Sample”
- Special Publication, PEGJ0046, “S·O·S Services: Understanding Your Results”
- Special Publication, PEHJ0191, “S·O·S Fluid Analysis”

i03720600

Torque Converter Oil Filter - Replace

SMCS Code: 3103

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: The torque converter and the transmission share common oil.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

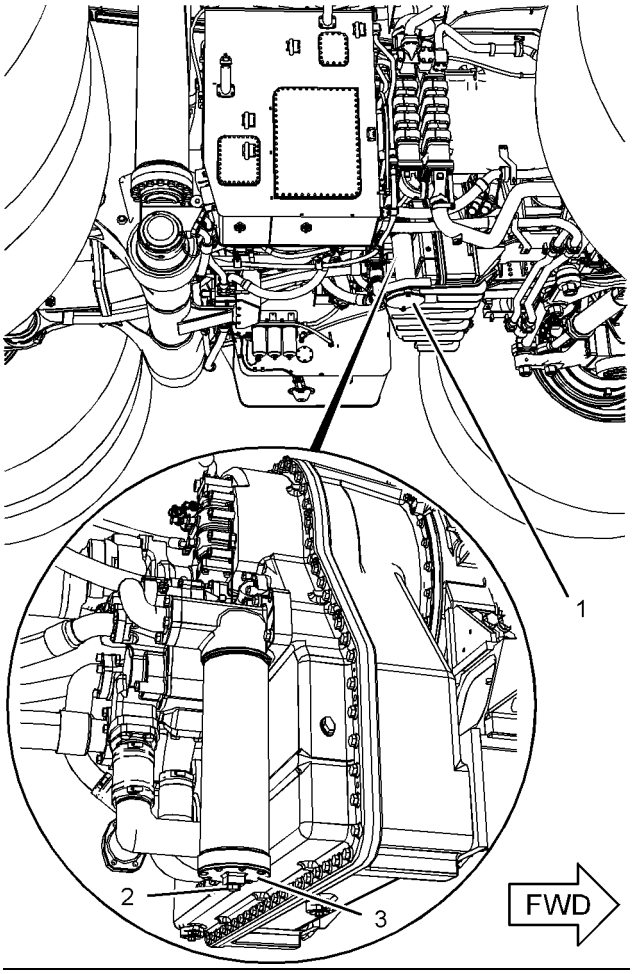


Illustration 267 g02005114

2. Remove access cover (1) from the bottom of the guard for the torque converter.

3. Remove drain plug (2) from end cap (3). Drain the oil into a suitable container.

4. Inspect the seal for the drain plug. Replace a damaged seal with a new seal. Wash the drain plug in clean nonflammable solvent and install the drain plug.

5. Remove the end cap from the filter housing.

6. Remove the filter element. Properly discard the used filter element.

7. Inspect the seal for the end cap. Replace a damaged seal with a new seal. Wash the end cap in clean nonflammable solvent.

8. Install the new filter element. Install the end cap on the filter housing.

9. Start the engine and operate the engine at an idle for five minutes. Inspect the oil filter for leaks. Make any necessary repairs.

10. Check the oil level in the torque converter sump. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Torque Converter Sump Oil Level - Check”.

i03721366

Torque Converter Outlet and Sump Screens - Clean

SMCS Code: 3103

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

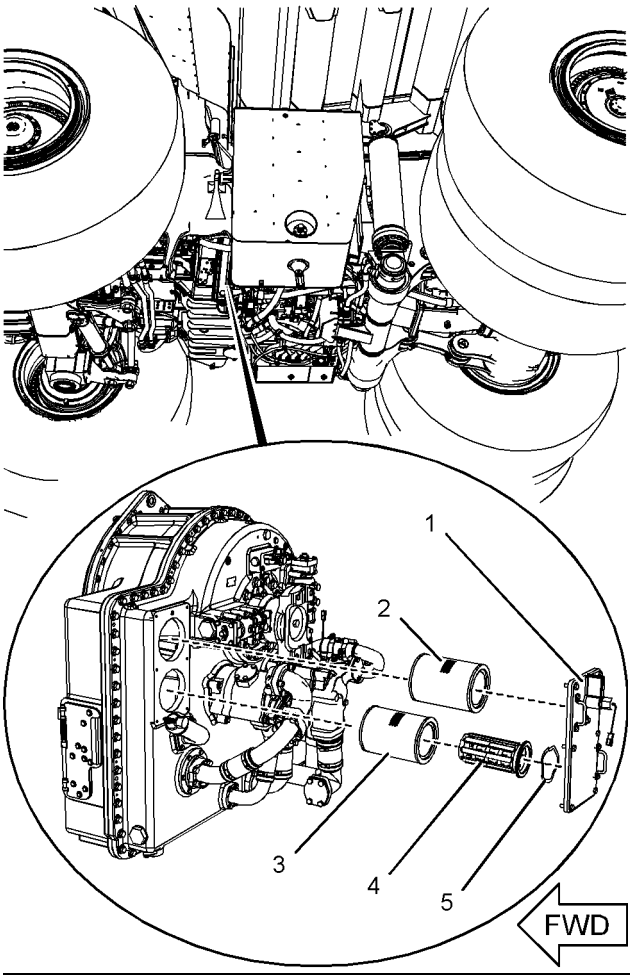


Illustration 268 g02005753

2. Remove screen cover (1) from the torque converter housing.

Note: Some oil may be trapped behind the screen cover. Prepare a suitable container to collect any trapped oil.

3. Remove outlet screen (2).

4. Remove wave washer (5), magnetic tube assembly (4), and sump screen (3).

5. Wash the outlet screen, the sump screen and the magnetic tube assembly in clean, nonflammable solvent. Clean the magnets with a cloth, a stiff bristle brush or air pressure.

6. Install the clean magnetic tube assembly, the clean sump screen, and the wave washer.

7. Install the clean outlet screen.

8. Inspect the seals in the screen cover. If a seal is damaged, replace the seal.

9. Install the screen cover.

10. Start the engine and operate the engine at an idle. Check for leaks and make any necessary repairs.

11. Check the oil level in the torque converter sump. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Torque Converter Sump Oil Level - Check”.

i03838632

Torque Converter Sump Oil Level - Check

SMCS Code: 3101

Note: The oil level in the transmission is supplied by the torque converter sump.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

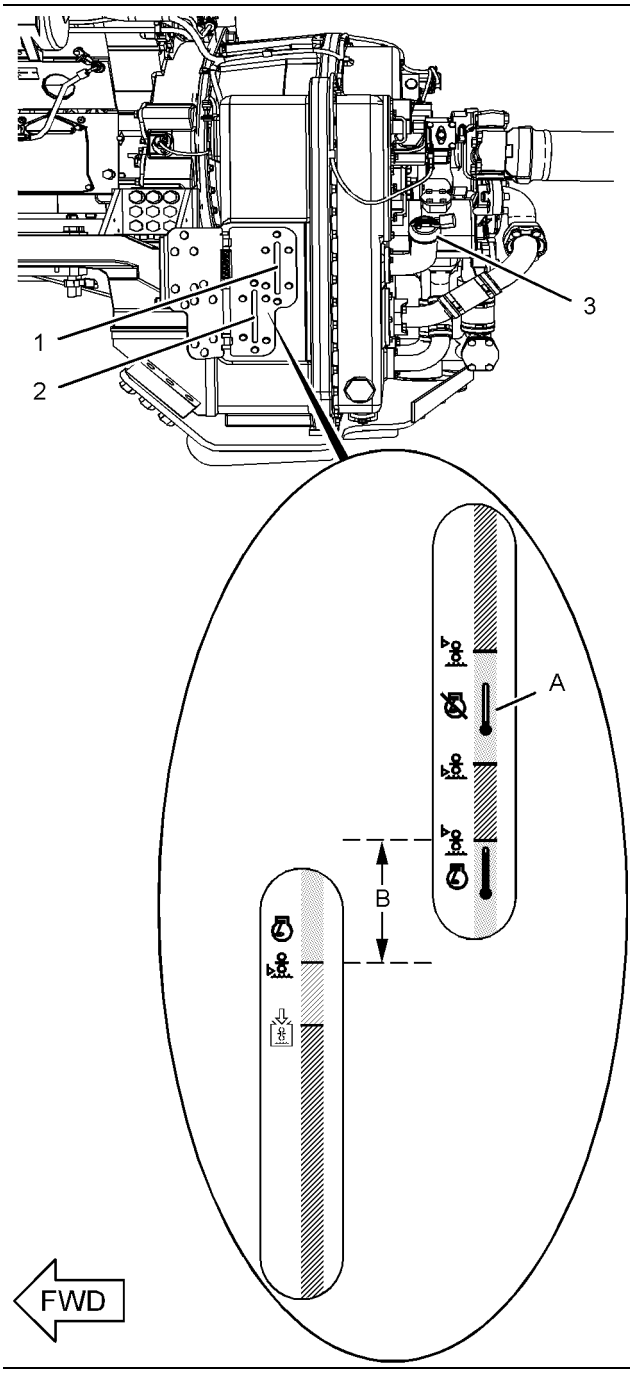


Illustration 269 g02006293

2. Check the oil level in the torque converter sump.

a. When the engine is off and the oil for the transmission and torque converter system is at ambient temperature (cold), maintain the oil level within the green range (A) of upper sight gauge (1).

b. When the engine is running at an idle and the oil for the transmission and torque converter system is at operating temperature (hot), maintain the oil level within the green range (B) of upper sight gauge (1) and green range (B) of lower sight gauge (2).

3. If necessary, add oil. The torque converter oil and transmission oil is added at filler cap (3).

i03720585

Torque Converter and Transmission Oil - Change

SMCS Code: 3030; 3101

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

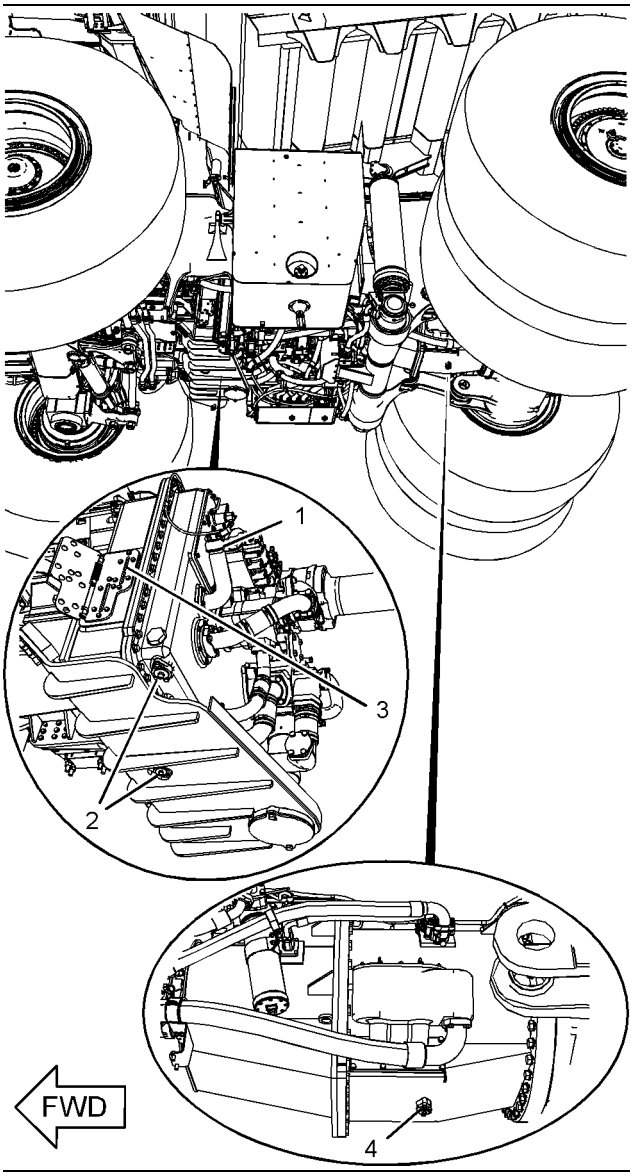


Illustration 270 g02005093

2. Remove filler cap (1) in order to prevent a vacuum in the sump.

3. Remove drain plugs (2) on the torque converter sump. Install two100 mm (4 inch) long pipe nipples in order to open the internal drain valves. The outer diameter of the nipples should be 38.0 mm (1.50 inch). Drain the oil into a suitable container.

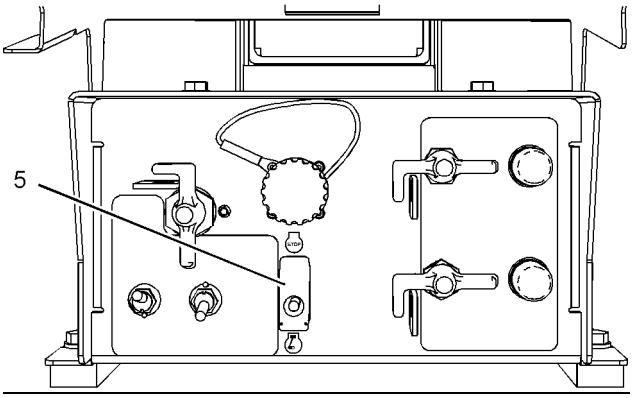
4. Remove drain plug (4) from the transmission housing. Install a 100 mm (4 inch) long pipe nipple in order to open the internal drain valve. The outer diameter of the nipple should be 38.0 mm (1.50 inch). Drain the oil into a suitable container.

5. Remove the pipe nipples. Clean the drain plugs and install the drain plugs.

6. Remove the filler strainer. Wash the cap and the strainer in clean, nonflammable solvent. Allow the cap and the strainer to dry. Install the strainer.

7. Inspect the cap seal. Use a new seal if the used seal is damaged.

8. Fill the torque converter sump to the top of the green range of upper sight gauge (3). Refer to Operation And Maintenance Manual, “Lubricant Viscosities”. Refer to Operation And Maintenance Manual, “Capacities (Refill)”.



g02003896

Illustration 271

The engine shutdown switch is located on the front bumper.

9. Use engine shutdown switch (5) to prevent the engine from starting. Crank the engine for approximately 15 seconds. The oil level will decrease as oil fills the system.

10. Add oil to the tank in order to raise the oil within the green range of the upper sight gauge.

11. Repeat Step 9 and Step 10 until the oil level stabilizes within the green range of the upper sight gauge.

12. Lower the guard on the engine shutdown switch. Start the engine and operate the engine at an idle.

13. Add oil to the torque converter sump with the engine at an idle in order to bring the transmission and torque converter oil to the proper level. Refer to Operation and Maintenance Manual, “Torque Converter Sump Oil Level - Check”.

14. Inspect the transmission and torque converter system for leaks. Make any necessary repairs.

i03720443

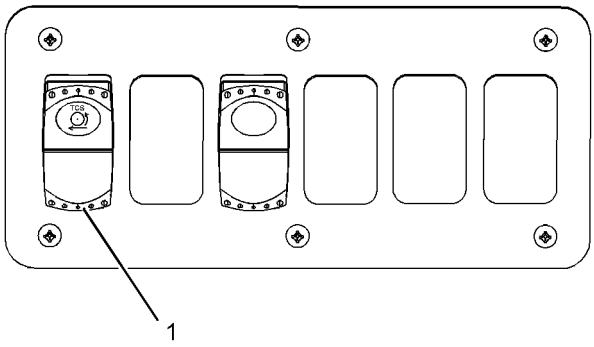
Traction Control System (TCS) - Test

SMCS Code: 3288; 4801

Note: This procedure determines if the Traction Control System (TCS) is functioning. This procedure also determines if the left rear brake and the right rear brake activate at the correct time.

1. Find a clear area and a level area that is large enough to turn the machine in a complete circle. Start the machine and move the transmission control to the 1 position.

2. Turn the steering wheel all the way to the left. With the engine at an idle, slowly drive forward in a complete circle.



g02004873

Illustration 272

The TCS test switch is located in the overhead controls in the operator station.

3. Continue to turn the machine and push the top half of TCS test switch (1). Hold the test switch down. This will begin the test.

4. The machine will gradually slow down.

5. Release the test switch. The test will end and the machine will increase speed.

6. Turn the steering wheel all the way to the right. With the engine at an idle, slowly drive forward in a complete circle.

7. Continue to turn the machine and push the top half of the TCS test switch. Hold the test switch down. This will begin the test.

8. The machine will gradually slow down.

9. Release the test switch. The test will end and the machine will increase speed.

10. If the TCS did not function properly, consult your Caterpillar dealer for information and service.

i03720583

Transmission Magnetic Screen - Clean

SMCS Code: 3030-070-MGS; 3030-535-MGS; 3030; 3159-070-MGS; 7528

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

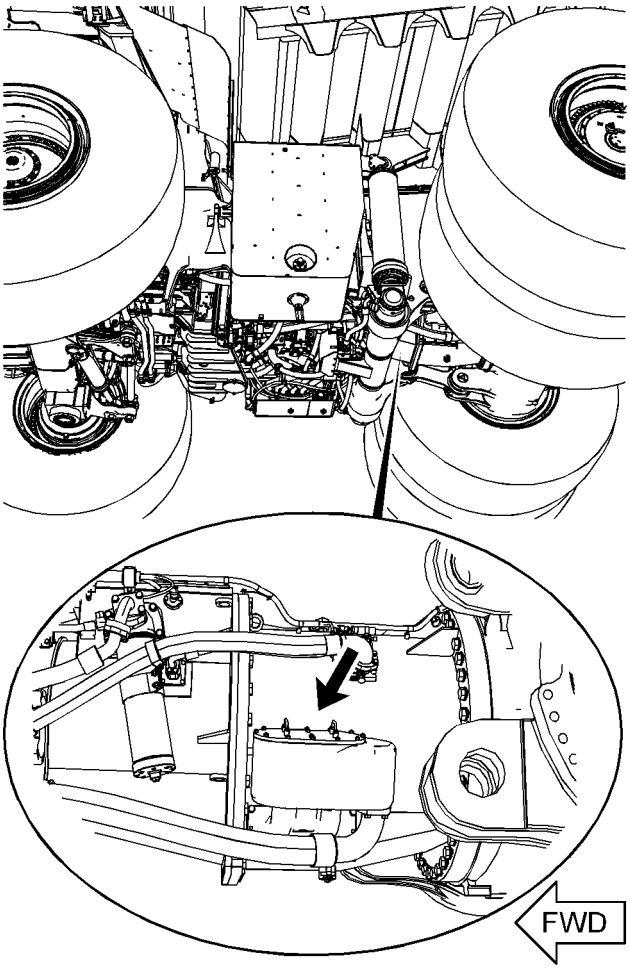


Illustration 273 g02005060

Location of the magnetic screens for the transmission

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

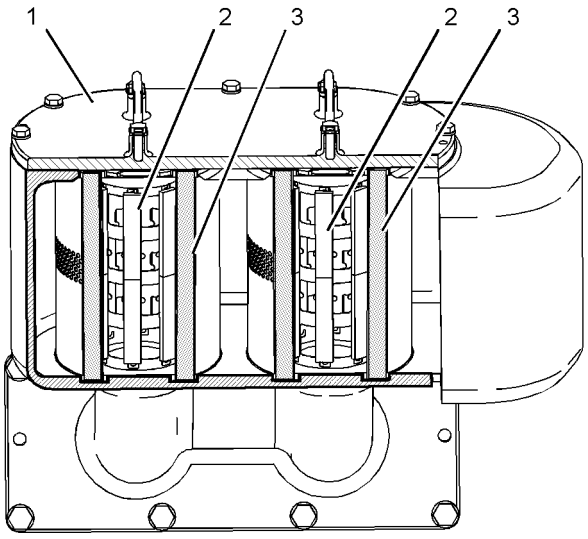


Illustration 274 g02005061

2. Remove cover (1), magnetic tube assembly (2), and screen (3).

NOTICE
Do not drop or rap the magnets against any hard objects. Replace any damaged magnets.

3. Remove the magnet from the tube assembly.

NOTICE
Do not drop or rap the magnets against any hard objects. Replace any damaged magnets.

4. Wash the magnet, the screen and the magnetic tube assembly in clean, nonflammable solvent. Clean the magnets with a cloth, a stiff bristle brush or air pressure.

5. Install the clean magnet, the tube assembly, the screen and the wave washer.

6. Inspect the seal in the housing. If the seal is damaged, replace the seal.

7. Install the cover.

8. Start the engine and operate the engine at an idle for five minutes. Check for leaks and make any necessary repairs.

Note: The oil level in the transmission is supplied by the torque converter sump.

9. Check the oil level in the torque converter sump. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Torque Converter Sump Oil Level - Check”.

i03720582

Transmission Oil Filter - Replace

SMCS Code: 3067

⚠ WARNING

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

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, “Caterpillar Dealer Service Tool Catalog” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

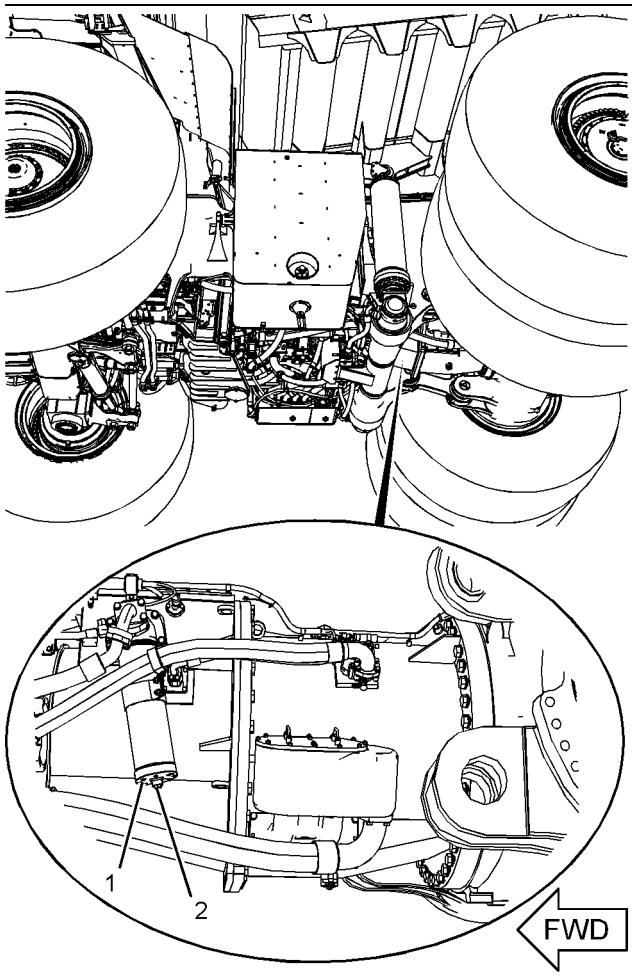


Illustration 275 g02005054

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Remove drain plug (2) from end cap (1). Drain the oil into a suitable container.

3. Inspect the seal for the drain plug. Replace a damaged seal with a new seal. Wash the drain plug in clean nonflammable solvent and install the drain plug.

4. Remove the end cap from the filter housing.

5. Remove the filter element. Properly discard the used filter element.

6. Inspect the seal for the end cap. Replace a damaged seal with a new seal. Wash the end cap in clean nonflammable solvent.

7. Install the new filter element. Install the end cap on the filter housing.

8. Start the engine and operate the engine at an idle for five minutes. Inspect the oil filter for leaks. Make any necessary repairs.

9. The oil level in the transmission is supplied by the torque converter sump. Check the oil level in the torque converter sump. If necessary, add oil. For the proper procedure, refer to Operation and Maintenance Manual, “Torque Converter Sump Oil Level - Check”.

i03661540

Window - Clean

SMCS Code: 7310; 7340

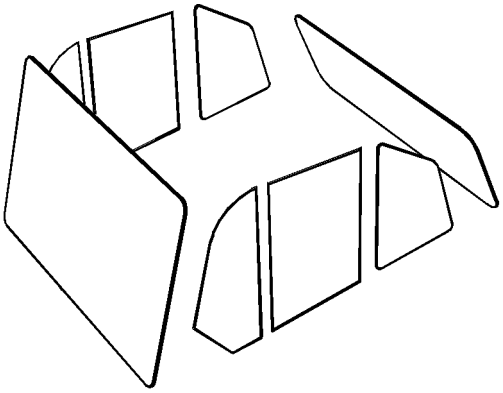


Illustration 276 g01589433

Cab windows

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Clean the windows with a commercially available window cleaning solution. Only clean the windows when handholds are available.

i03661560

Window Washer Bottle - Fill

SMCS Code: 7306

NOTICE
When operating in freezing temperatures, use Caterpillar nonfreezing window washer solvent or equivalent. System damage can result from freezing.

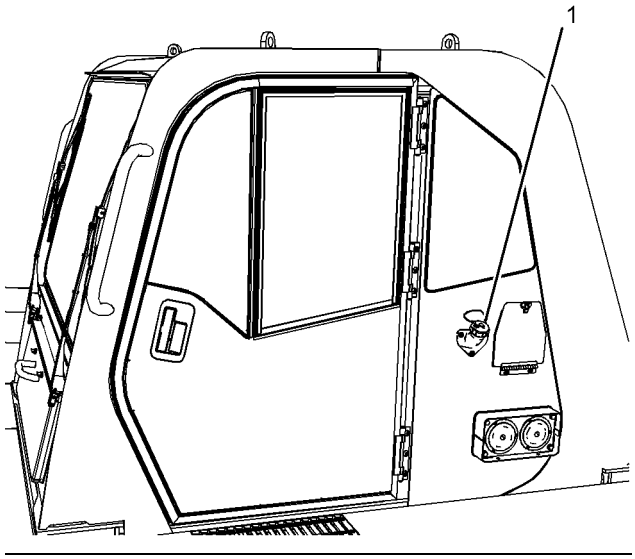


Illustration 277 g01964354

The filler spout for the washer fluid bottle is located on the left rear of the cab.

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Remove filler cap (1) in order to fill the bottle with window washer solvent.

i03661541

Window Wiper - Inspect/Replace

SMCS Code: 7305

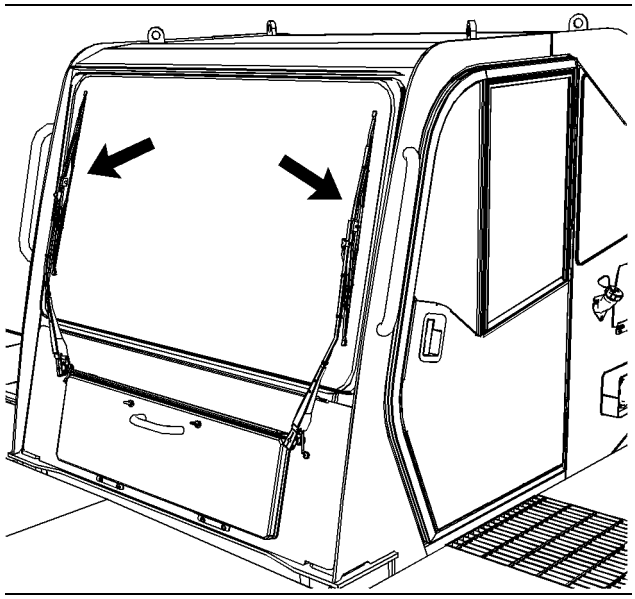


Illustration 278 g01588854

1. Prepare the machine for maintenance. Refer to Operation and Maintenance Manual, “Prepare the Machine for Maintenance”.

2. Inspect the window wiper blades.

3. Replace the window wiper blades if the wiper blades are worn or damaged. Replace any window wiper blade that streaks the window.