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MAINTENANCE INTERVALS

Operation and Maintenance
Manual Excerpt

CATERPILLAR®

CATERPILLAR®

SEBU7546-03
March 2007

Operation and Maintenance Manual

816F Landfill Compactor, 815F Soil Compactor and 814F Wheel Dozer

BGF1-Up (Machine)
BKL1-Up (Machine)
BMR1-Up (Machine)

i02711921

Maintenance Interval Schedule

SMCS Code: 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, including all adjustments, the use of proper lubricants, fluids, filters, and the replacement of components due to normal wear and aging. 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.

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

When Required

Daily

Every 10 Service Hours or Daily

Every 50 Service Hours or Weekly

Every 100 Service Hours or 2 Weeks

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

Every 2000 Service Hours or 1 Year

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 or 2 Years

Every 6000 Service Hours or 4 Years

Every 6000 Service Hours or 6 Years

i01514904

Articulation Bearings - Lubricate

SMCS Code: 7057-086-BD; 7065-086-BD; 7066-086-BD

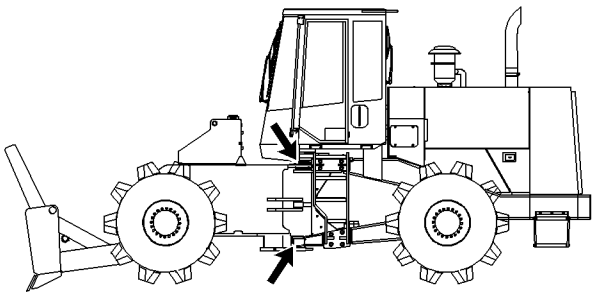


Illustration 79 g00786065

Wipe all fittings before lubricant is applied.

Apply grease to two fittings for the articulation bearings.

i01517222

Axle Oscillation Bearings - Lubricate

SMCS Code: 3268-086-BD; 3278-086-BD

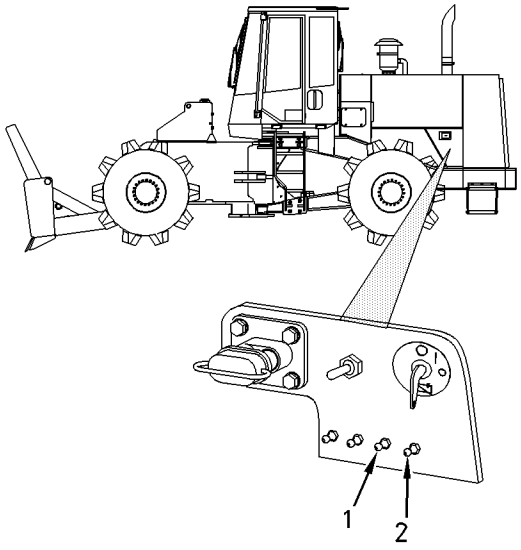


Illustration 80 g00787242

The oscillation bearings are lubricated by using two remote grease fittings. These fittings are located behind the small access door on the left side of the machine.

Wipe all fittings before any lubricant is applied.

Fitting (1) lubricates the front oscillation bearing of the rear axle. Fitting (2) lubricates the rear oscillation bearing of the rear axle.

i01713195

Backup Alarm - Test

SMCS Code: 7406-081

1. Turn the engine start switch key to the ON position in order to perform the test.

2. Apply the service brake.

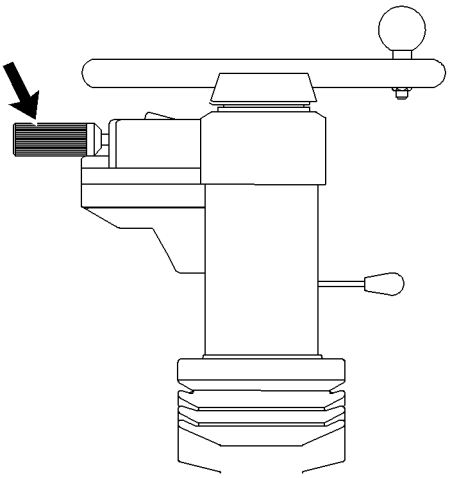


Illustration 81 g00783907

3. Move the transmission direction control lever to the REVERSE position.

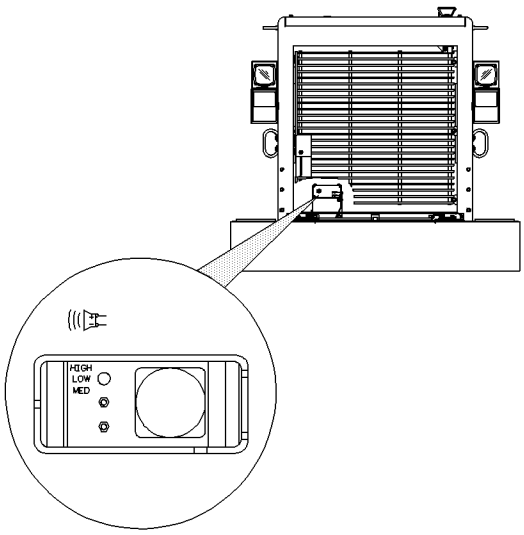


Illustration 82 g00782208

The alarm should start to sound immediately. The alarm will continue to sound until the transmission direction control lever is moved to the NEUTRAL position or to the FORWARD position.

Reference: For more information, refer to Operation and Maintenance Manual, “Backup Alarm”.

i01517509

Battery - Clean

SMCS Code: 1401-070

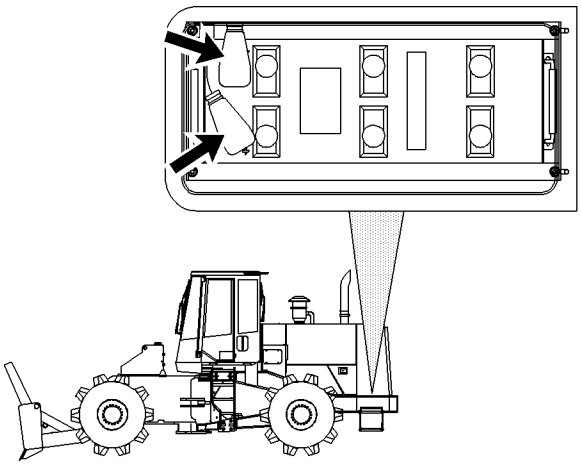


Illustration 83 g00787365

One battery is located on each side of the machine under the access door. Clean the battery terminals and the surfaces of the batteries with a clean cloth. Coat the battery terminals with petroleum jelly. Make sure that the battery cables are installed securely.

i00993589

Battery - Recycle

SMCS Code: 1401-561

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

i01517613

Battery Hold-Down - Tighten

SMCS Code: 7257-527

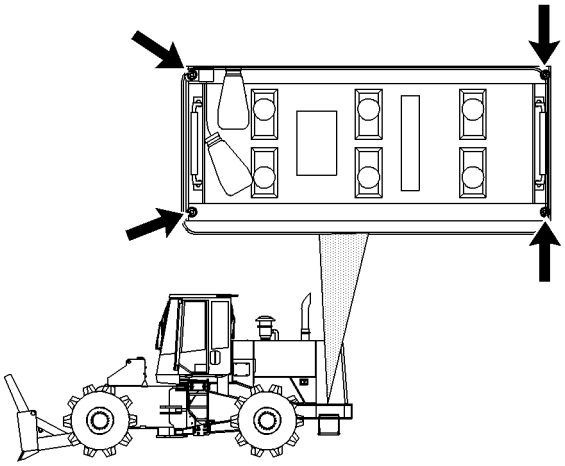


Illustration 84 g00787432

Open the battery compartment on both sides of the machine.

Over time, the vibration of an operating machine can cause the battery hold-downs to loosen. To help to prevent loose batteries and the possibility of loose cable connections, tighten the eight nuts on the two hold-downs to a torque of 12 ± 3 N·m (8.9 ± 2.2 lb ft).

i02517652

Battery or Battery Cable - Inspect/Replace

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

⚠ WARNING

Personal injury may occur from failure to properly service the batteries.

Batteries give off flammable fumes that can explode. Electrolyte is an acid and can cause personal injury if it contacts the skin or eyes.

Prevent sparks near the batteries. Sparks could cause vapors to explode. Do not allow jumper cable ends to contact each other or the engine. Improper jumper cable connections can cause an explosion.

Always wear protective glasses when working with batteries.

1. Turn the engine start switch key OFF. Turn all of the switches OFF.
2. Turn the battery disconnect switch OFF. Remove the key.
3. Disconnect the negative battery cable from the disconnect switch.

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

4. Disconnect the negative battery cable at the battery.
5. Disconnect the positive battery cable at the battery.
6. Inspect the battery terminals for corrosion. Inspect the battery cables for wear or damage.
7. Make any necessary repairs. If necessary, replace the battery cables or the battery.
8. Connect the positive battery cable at the battery.
9. Connect the negative battery cable at the battery.
10. Connect the battery cable at the battery disconnect switch.
11. Install the key and turn the battery disconnect switch ON.

i01520294

Belt - Inspect/Adjust/Replace

SMCS Code: 1397-025; 1397-040; 1397-510

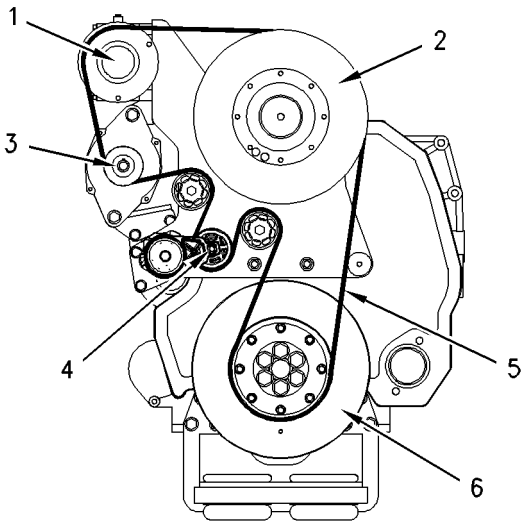


Illustration 85 g00789533

(1) Compressor. (2) Fan Pulley. (3) Alternator. (4) Tensioner. (5) Belt. (6) Drive Pulley.

Your machine is equipped with a serpentine belt. Inspect the belt for damage. Replace the belt, if necessary.

Insert a ratchet with a square drive into the square hole that is located in the tensioner (4). Rotate the tensioner counterclockwise in order to relieve tension on the belt. Remove the belt.

Install the new belt correctly, as shown. The correct tension will automatically be applied. Be sure that the belt is fully seated on the pulleys.

i01517741

Brake Accumulator - Check

SMCS Code: 4263-535

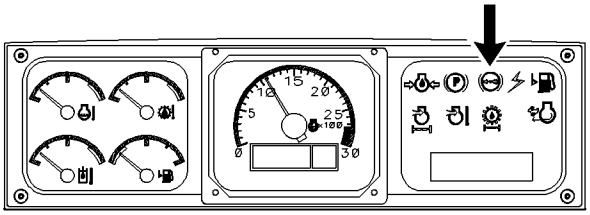


Illustration 86 g00787525

1. Turn the engine start switch to the ON position. The alert indicator for brake oil pressure should come on if the braking system is not at normal operating pressure.
2. Start the engine. Run the engine at half speed for two minutes in order to increase the accumulator pressure. The alert indicator for brake oil pressure should go off.
3. Stop the engine. Apply the service brake pedal and release the service brake pedal until the alert indicator for brake oil pressure comes on. This will decrease the accumulator pressure. A minimum of five applications of the service brake pedal are required.
4. If the alert indicator comes on after less than five applications of the brake, measure the accumulator precharge pressure. An authorized Caterpillar dealer can measure the nitrogen gas pressure in the accumulator. Use only dry nitrogen gas for recharging.

i01690577

Brake Discs - Check

SMCS Code: 4255-535

Reference: For information about checking the thickness of the brake discs, refer to Systems Operation/Testing and Adjusting, SENR1316, “814F Wheel Tractor, 815F Soil Compactor, and 816F Landfill Compactor Braking System” or consult your Caterpillar dealer.

i01520405

Braking System - Test

SMCS Code: 4251-081; 4267-081

- Park the machine on a hard, dry, level surface.
- Check the area around the machine. Make sure that the machine is clear of personnel and clear of obstacles.
- Make sure that the steering frame lock is in the unlocked position.
- Fasten the seat belt before you test the brakes.

The following tests are used to determine whether the braking system is functional. These tests are not intended to measure the maximum brake holding effort. The required brake holding effort for sustaining a machine at a specific engine rpm varies from one machine to another machine. The variations include differences in the engine setting, the power train efficiency, the brake holding ability, etc.

Service Brake Holding Ability Test

⚠ WARNING

Personal injury can result if the machine moves while testing.

If the machine begins to move during test, reduce the engine speed immediately and engage the parking brake.

1. Start the engine. Raise the implement slightly. Apply the service brake. Release the parking brake.
2. Move the transmission control to SECOND SPEED FORWARD while the service brakes are applied.
3. Gradually increase the engine speed to high idle. The machine should not move.
4. Reduce the engine speed to low idle. Move the transmission direction control to the NEUTRAL position. Engage the parking brake. Lower the implement to the ground. Stop the engine.

If the machine moved during the test, consult your Caterpillar dealer for a brake inspection. Make any necessary repairs before the machine is returned to operation.

Parking Brake Holding Ability Test

⚠ WARNING

Personal injury can result if the machine moves while testing.

If the machine begins to move, reduce the engine speed immediately and apply the service brake pedal.

This test is performed when the parking brake is engaged. If the machine begins to move, compare the engine rpm to the engine rpm of a prior test. This will indicate the amount of system deterioration.

1. Start the engine. Raise the implement slightly. Engage the parking brake.
2. Move the transmission control to SECOND SPEED REVERSE. Make sure that the autoshift control is in the OFF position.

   The parking brake indicator light should come on.
3. Gradually increase the engine speed to high idle. The machine should not move.
4. Reduce the engine speed to low idle. Move the transmission direction control to the NEUTRAL position. Lower the implement to the ground. Stop the engine.

If the machine moved during the test, consult your Caterpillar dealer for a brake inspection. Make any necessary repairs before the machine is returned to operation.

i01521227

Bulldozer Stabilizer - Lubricate

SMCS Code: 6071-086-BD

S/N: BGF1-Up

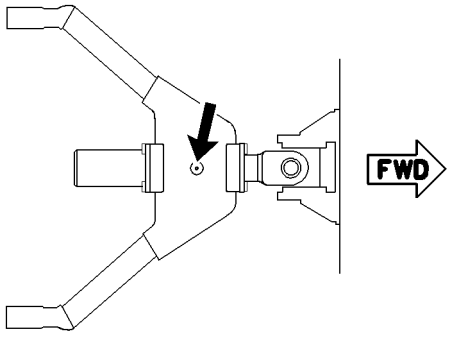


Illustration 87 g00790037

Wipe all fittings before you apply lubricant. One fitting is located on the stabilizer. Apply lubricant to this fitting.

i01521741

Cab Air Filter - Clean/Replace

SMCS Code: 7342-070; 7342-510

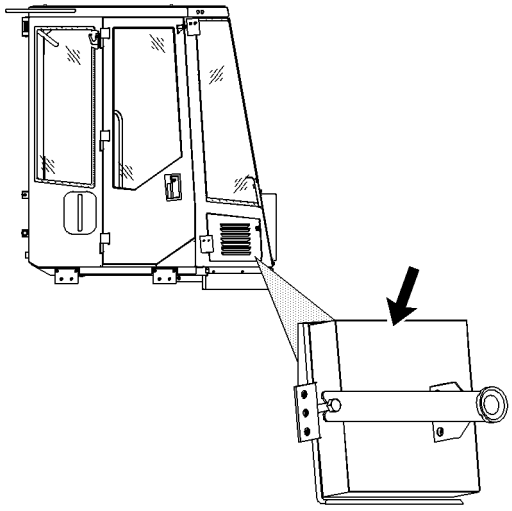


Illustration 88 g00790441

Open the access door that is located on both sides of the cab. Remove the two air filters.

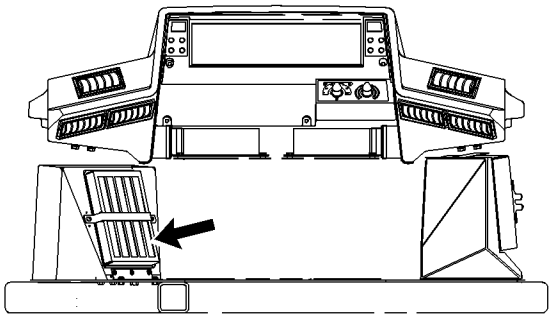


Illustration 89 g00790464

Remove the air filter that is located on the inside of the cab.

Clean the filter elements with pressure air or wash the filter elements in warm water with a nonsudsing household detergent. If water and detergent are used to clean the filter elements, rinse the filter elements in clean water and allow the filter elements to air dry thoroughly.

Note: If either filter element is damaged, install a new filter element.

Install the filter elements. Install the filter covers and close the access doors.

i01708323

Circuit Breakers - Reset

SMCS Code: 1420-529

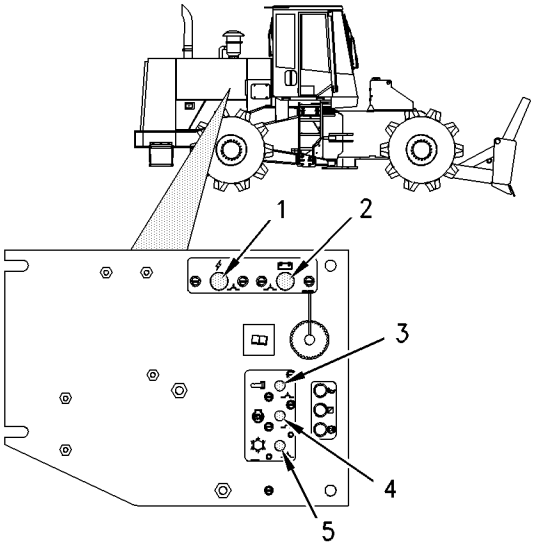


Illustration 90 g00790613

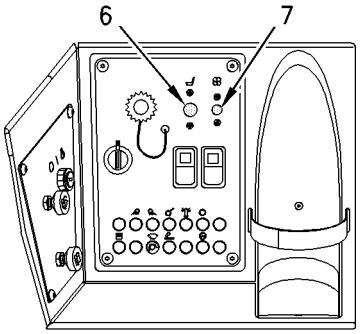


Illustration 91 g00879293

Circuit Breaker Reset – Depress the button in order to reset the circuit breakers. If the circuit is functioning properly, the button will remain depressed. If the button will not remain depressed, check the appropriate electrical circuit.

Circuit breakers are located in the engine compartment on the right side of the machine. Circuit breakers are also located in the operator's compartment.

Main Circuit (1) – 80 Amperes

Alternator (2) – 80 Amperes

Ignition Key (3) – 10 Amperes

Engine Control (4) – 15 Amperes

Running Lights(5) – 15 Amperes

Seat Air Compressor (6) – 15 amp

Fan Motor (7) – 15 amp

i02580074

Cleaner Bar - Check/Adjust

SMCS Code: 7160-025; 7160-535

S/N: BKL1-Up

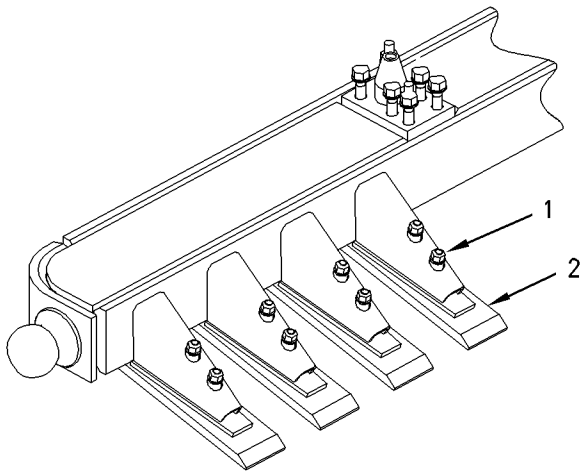


Illustration 92 g00771661

1. Measure the clearance between the ends of the scraper tips and the wheel drum. The correct clearance is between 12 mm (0.5 inch) to 25 mm (1.0 inch).
2. If the clearance is greater than 25 mm (1.0 inch), loosen the two nuts (1) and slide the scraper arm (2) back to the proper clearance.
3. Tighten the nuts to a torque of 370 ± 50 N·m (270 ± 35 lb ft). After a few hours of operation, tighten the nuts again.

i02580075

Cleaner Bar Tips - Replace

SMCS Code: 7160-510-TIP

S/N: BKL1-Up

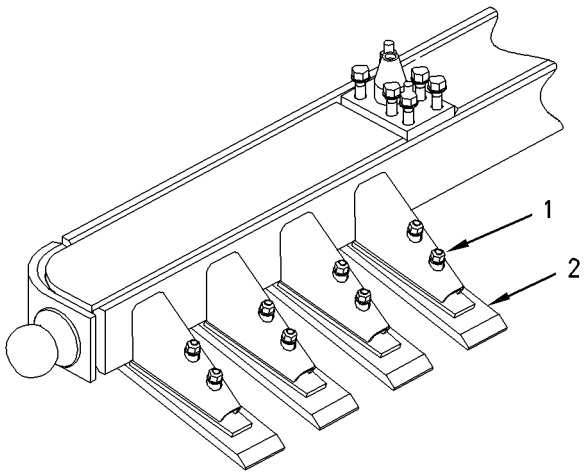


Illustration 93 g00771661

1. Remove two nuts (1) , two bolts and the scraper arm (2) from the cleaner bar.
2. Drive the pin out of the tip from the retainer side of the tip. Remove the tip from the retainer.
3. Clean the adapter, the pin and the retainer.
4. Install the retainer in the groove in the side of the adapter.
5. Install a new tip over the retainer. Install the pin.
6. Install the scraper arm, two bolts and two nuts on the cleaner bar. Slide the scraper arm so that the clearance between the tip and the wheel drum is between 12 mm (0.5 inch) to 25 mm (1.0 inch).

   Reference: For more information, refer to Operation and Maintenance Manual, “Cleaner Bar - Check/Adjust”.
7. Tighten the nuts to a torque of 370 ± 50 N·m (270 ± 35 lb ft). After a few hours of operation, tighten the nuts again.

i02087257

Compactor Wheel Chopper Blades - Inspect/Replace

SMCS Code: 4206-040-BG; 4206-510-BG

S/N: BMR1-Up

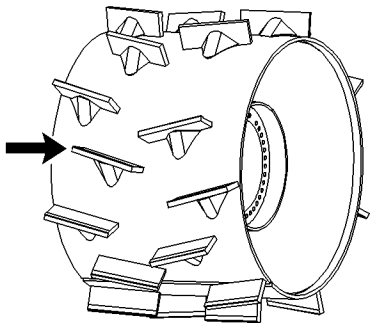


Illustration 94 g00772408

Inspect all of the chopper blades frequently. Replace any chopper blade before wear on the gusset occurs.

i02087334

Compactor Wheel Plus Tips - Inspect/Replace

SMCS Code: 6806-040; 6806-510

S/N: BMR1-Up

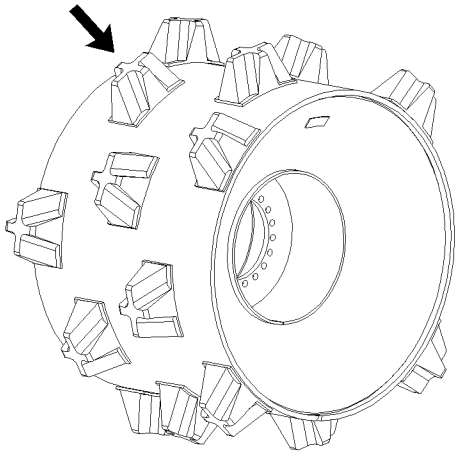


Illustration 95 g00880067

Inspect the plus tips. Replace the plus tips, if necessary.

Reference: Refer to Special Instruction, SEHS9442-01, “8E1849 Plus Tip Wear Guage Procedure” for the correct procedure for the inspection of the plus tips. Refer to Special Instruction, SEHS9325-02, “Plus Tips Wheel Pattern Template” for the correct procedure for the replacement of the plus tips.

i02087314

Compactor Wheel Tamping Tips - Inspect/Replace

SMCS Code: 6806-040; 6806-510

S/N: BKL1-Up

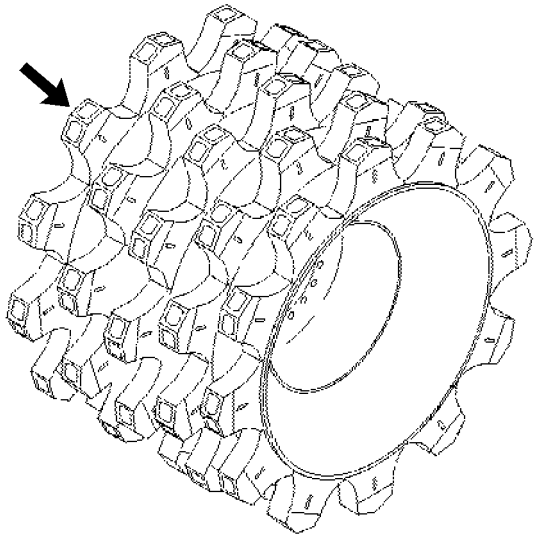


Illustration 96 g00790724

Inspect all of the tamping tips. Replace any tamping tips that are worn to the wear cavity.

i01707789

Cooling System Coolant (ELC) - Change

SMCS Code: 1350-044-NL

⚠ WARNING

Pressurized system: Hot coolant can cause serious burn. To open cap, stop engine, wait until radiator is cool. Then loosen cap slowly to relieve the pressure.

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

NOTICE
Topping off or mixing Cat ELC with other products that do not meet Caterpillar EC-1 specifications reduces the effectiveness of the coolant and shortens coolant service life.

Use only Caterpillar products or commercial products that have passed the Caterpillar EC-1 specification for pre-mixed or concentrate coolants. Use only Extender with Cat ELC.

Failure to follow these recommendations can result in shortened cooling system component life.

Reference: For information about adding Extender to your cooling system, refer to Operation and Maintenance Manual, “Cooling System Coolant Extender (ELC) - Add” or consult your Caterpillar dealer.

If an Extended Life Coolant was previously used, flush the cooling system with clean water. No other cleaning agents are required. Use the following procedure to change the Extended Life Coolant.

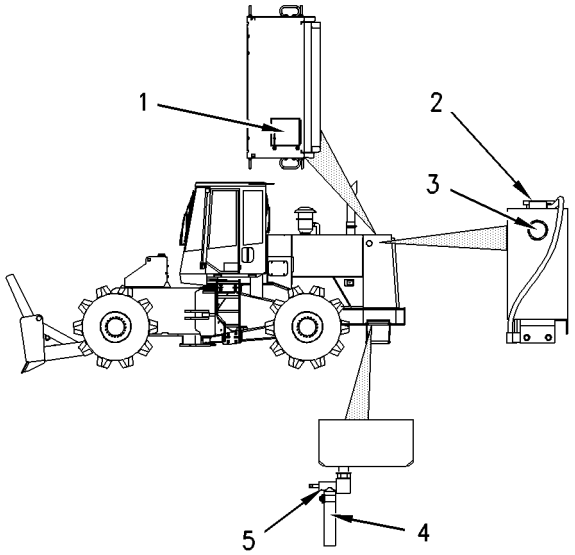


Illustration 97 g00792796

The cooling system pressure cap (2) is located under the access door (1) at the top rear of the machine.

1. Slowly loosen the cooling system pressure cap in order to relieve system pressure. Remove the cooling system pressure cap.

2. Place the drain hose (4) into a suitable container. Open the drain valve (5) on the bottom of the radiator. Allow the coolant to drain into a suitable container.

Note: The Landfill Compactor is equipped with bottom guards. The radiator guard needs to be lowered in order to access the drain valve.

3. Flush the cooling system with clean water until the draining water is clean. Close the drain valve.

4. Replace the water temperature regulator.

   Reference: Refer to Operation and Maintenance Manual, “Cooling System Water Temperature Regulator - Replace” for the correct procedure.

5. Add the Extended Life Coolant.

   Reference: Refer to Operation and Maintenance Manual, “Capacities (Refill)” for the refill capacity of the cooling system.

6. Start the engine. Run the engine without the cooling system pressure cap until the water temperature regulator opens and the coolant level stabilizes.

7. Maintain the coolant level in the sight gauge (3) on the upper right side of the radiator tank. Open the left rear access door in order to access the sight gauge.

8. Install the cooling system pressure cap. Close the engine hood.

i01708325

Cooling System Coolant Extender (ELC) - Add

SMCS Code: 1352-544-NL

⚠ WARNING

Pressurized system: Hot coolant can cause serious burn. To open cap, stop engine, wait until radiator is cool. Then loosen cap slowly to relieve the pressure.

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

NOTICE

Topping off or mixing Cat ELC with other products that do not meet Caterpillar EC-1 specifications reduces the effectiveness of the coolant and shortens coolant service life.

Use only Caterpillar products or commercial products that have passed the Caterpillar EC-1 specification for pre-mixed or concentrate coolants. Use only Extender with Cat ELC.

Failure to follow these recommendations can result in shortened cooling system component life.

Reference: For information about adding Extender to your cooling system, refer to Operation and Maintenance Manual, “Cooling System Coolant Extender (ELC) - Add” or consult your Caterpillar dealer.

If an Extended Life Coolant was previously used, flush the cooling system with clean water. No other cleaning agents are required. Use the following procedure to change the Extended Life Coolant.

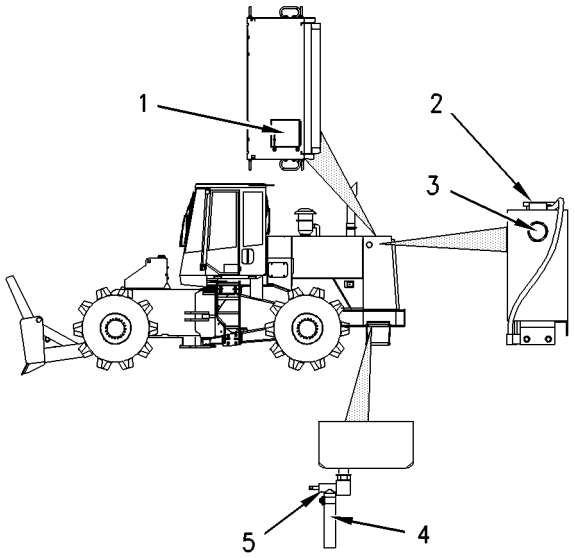


Illustration 98 g00792796

The cooling system pressure cap (2) is located under the access door (1) at the top rear of the machine.

1. Slowly loosen the cooling system pressure cap in order to relieve system pressure. Remove the cooling system pressure cap.

2. Place the drain hose (4) into a suitable container. Open the drain valve (5) on the bottom of the radiator. Allow the coolant to drain into a suitable container.

Note: The Landfill Compactor is equipped with bottom guards. The radiator guard needs to be lowered in order to access the drain valve.

3. Flush the cooling system with clean water until the draining water is clean. Close the drain valve.

4. Replace the water temperature regulator.

   Reference: Refer to Operation and Maintenance Manual, “Cooling System Water Temperature Regulator - Replace” for the correct procedure.

5. Add the Extended Life Coolant.

   Reference: Refer to Operation and Maintenance Manual, “Capacities (Refill)” for the refill capacity of the cooling system.

6. Start the engine. Run the engine without the cooling system pressure cap until the water temperature regulator opens and the coolant level stabilizes.

7. Maintain the coolant level in the sight gauge (3) on the upper right side of the radiator tank. Open the left rear access door in order to access the sight gauge.

8. Install the cooling system pressure cap. Close the engine hood.

i02086041

Cooling System Coolant Level - Check

SMCS Code: 1350-535-FLV

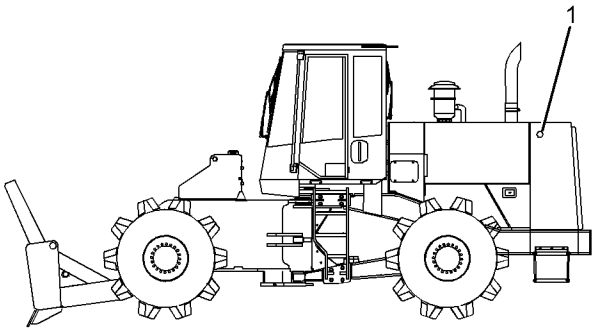


Illustration 99 g01063851

The coolant level sight gauge (1) is located on the left side of the machine. Maintain the coolant level within the sight gauge. Add coolant, if necessary.

Note: If it is necessary to add coolant daily, inspect the cooling system for leaks.

i02088268

Cooling System Coolant Sample (Level 1) - Obtain

SMCS Code: 1350-008; 1395-008; 7542

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

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

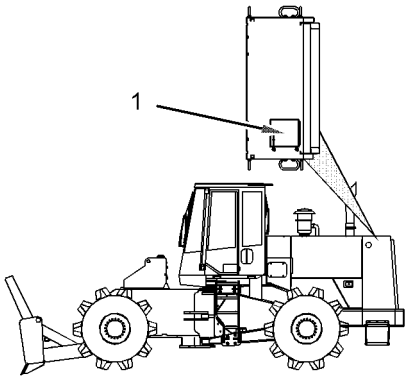


Illustration 100 g01064443

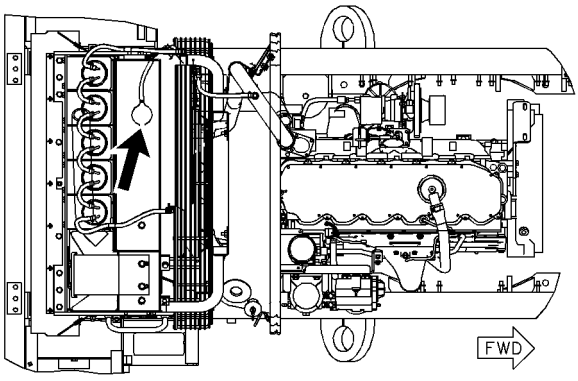


Illustration 101 g01063878

The cooling system pressure cap (2) is located under the access door (1) at the top rear of the machine.

Obtain the sample of the coolant 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.

Use the following guidelines for proper sampling of the coolant:

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

Submit the sample for Level 1 analysis.

For additional information about coolant analysis, see Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations” or consult your Caterpillar dealer.

i02086165

Cooling System Coolant Sample (Level 2) - Obtain

SMCS Code: 1350-008; 1395-008; 7542

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

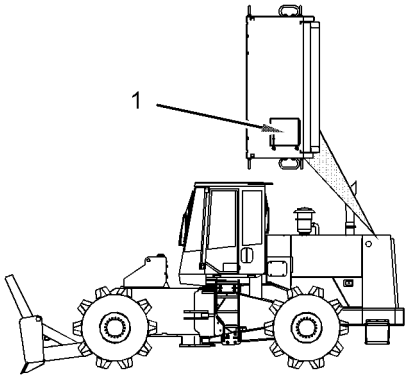


Illustration 102 g01064443

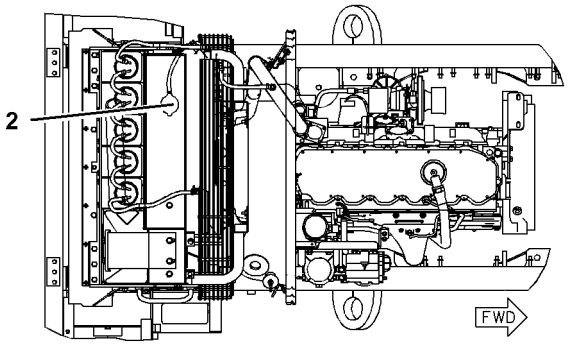


Illustration 103 g01064448

The cooling system pressure cap (2) is located under the access door (1) at the top rear of the machine.

Obtain the sample of the coolant as close as possible to the recommended sampling interval. Supplies for collecting samples can be obtained from your Caterpillar dealer.

Submit the sample for Level 2 analysis.

Reference: For additional information about coolant analysis, refer to Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations” or consult your Caterpillar dealer.

i01526355

Cooling System Water Temperature Regulator - Replace

SMCS Code: 1355-510; 1393-010

⚠ WARNING

Pressurized system: Hot coolant can cause serious burn. To open cap, stop engine, wait until radiator is cool. Then loosen cap slowly to relieve the pressure.

NOTICE
Failure to replace the engine’s thermostat on a regularly scheduled basis could cause severe engine damage.

NOTICE
Caterpillar engines incorporate a shunt design cooling system and require operating the engine with a thermostat installed.

If the thermostat is installed wrong, it will cause the engine to overheat. Inspect gaskets before assembly and replace if worn or damaged.

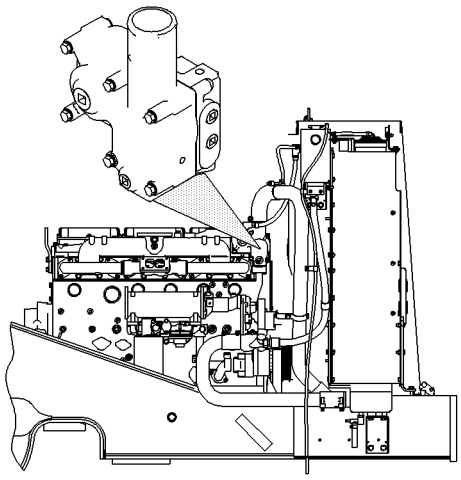


Illustration 104 g00792854

Replace the water temperature regulator in order to reduce the chance of problems with the cooling system.

Replace the water temperature regulator and the seals while the cooling system is completely drained or while the coolant is drained to a level that is below the water temperature regulator housing.

Note: If you are only replacing the water temperature regulator, drain the coolant to a level that is below the water temperature regulator housing.

Reference: Refer to the Disassembly and Assembly Manual for the correct procedure for replacing the water temperature regulator.

i01936280

Cutting Edges and End Bits - Inspect/Replace

SMCS Code: 6801-040; 6801-510; 6804-040; 6804-510

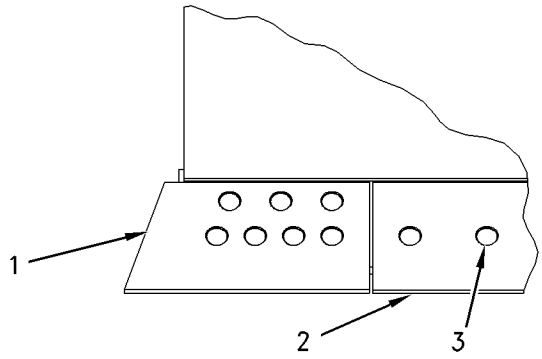


Illustration 105 g00771980

Check the cutting edges and the end bits for wear and for damage. Use the following procedure to service the cutting edges and the end bits, if necessary.

1. Raise the blade and place blocking under the blade. Lower the blade onto the blocking. Stop the engine.
2. Remove bolts (3), cutting edges (2) and end bits (1).
3. Clean all contact surfaces.
4. If the opposite side of the cutting edge is not worn, use the opposite side of the cutting edge. The end bits are not reversible.

   If both sides are worn, install a new cutting edge.
5. Install bolts (3). Tighten the bolts to the specified torque.

   Reference: Refer to Specifications, SENR3130, “Torque Specifications”.
6. Strike the bolt heads with a hammer. Tighten the bolts again to the specified torque.
7. Start the engine. Raise the blade and remove the blocking. Lower the blade to the ground.
8. After a few hours of operation, check the bolts for proper torque.

i02086258

Differential and Final Drive Oil - Change

SMCS Code: 3278-044; 4011-044

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

814F Wheel Tractor and 815F Soil Compactor

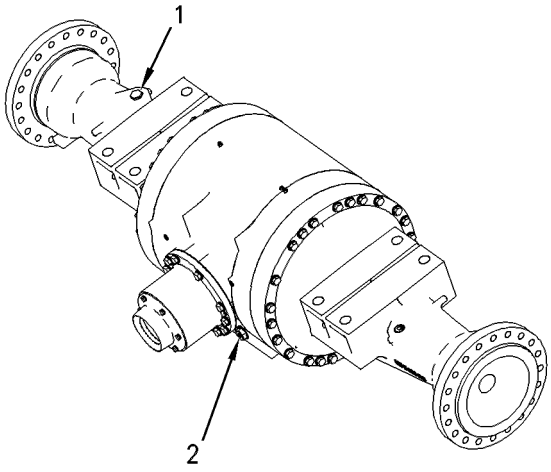


Illustration 106 g00287529

Location of filler plug (1) and drain plug (2) for the front axle differential for the 814F Wheel Tractor and the 815F Soil Compactor.

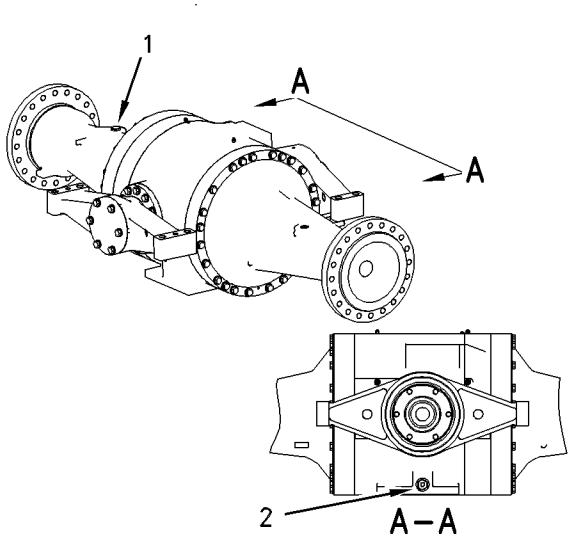


Illustration 107 g00287531

Location of filler plug (1) and drain plug (2) for the rear axle differential for the 814F Wheel Tractor and the 815F Soil Compactor.

Note: The axle housings are equipped with ecology drain valves.

1. Remove drain plugs (2). Attach a hose to a 126-7914 Oil Drain Coupling. Install the threaded end of the coupling into the drain valve. Allow the oil to drain into a suitable container.
2. Clean drain plugs (2) and install drain plugs (2).
3. Wipe off filler plugs (1) and the surfaces around filler plugs (1).
4. Remove filler plugs (1). Fill the axles with oil.

   Reference: Refer to Operation and Maintenance Manual, “Lubricant Viscosities and Refill Capacities” for the type of lubricant and quantity of lubricant for the refill capacity.
5. Clean filler plugs (1) and install filler plugs (1) to a torque of 45 ± 6 N·m (33 ± 4 lb ft).

816F Landfill Compactor

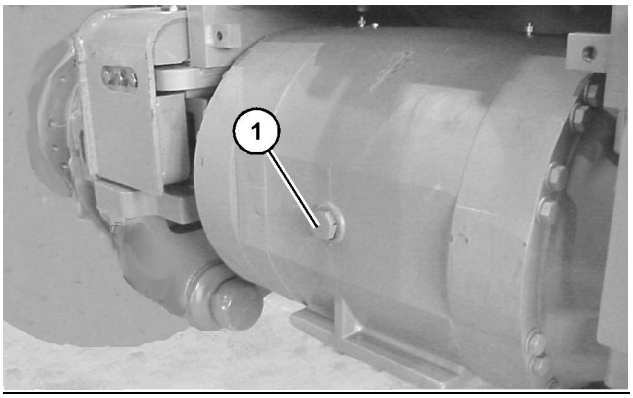


Illustration 108 g01063707

Location of filler plug (1) for the front axle differential for the 816F Landfill Compactor

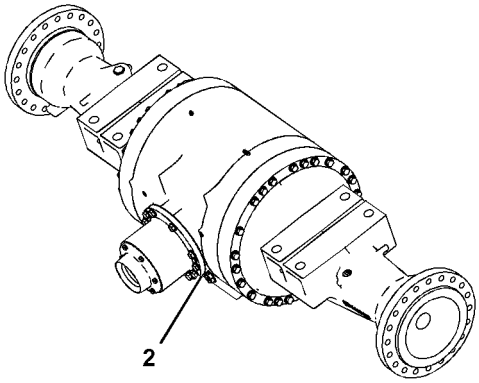


Illustration 109 g01063943

Location of drain plug (2) for the front axle differential for the 816F Landfill Compactor

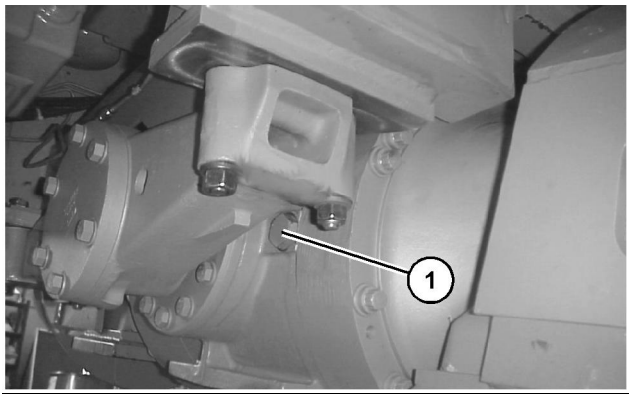


Illustration 110 g01063938

Location of filler plug (1) for the rear axle differential for the 816F Landfill Compactor

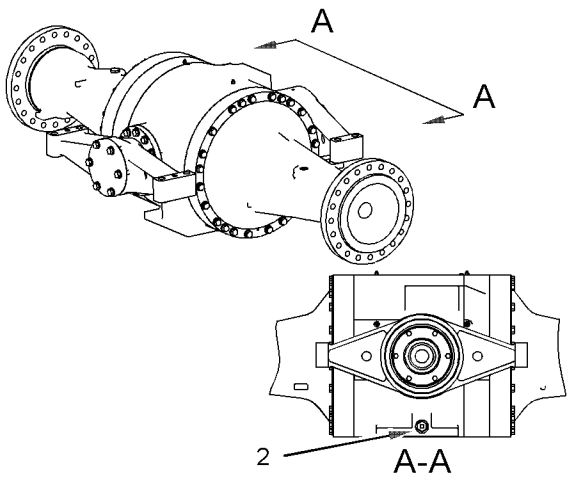


Illustration 111 g01063940

Location of drain plug (2) for the rear axle differential for the 816F Landfill Compactor

1. Repeat steps 1 through 5 in order to change the differential and final drive oil in the front axle differential and the rear axle differential for the 816F Landfill Compactor.

i02088246

Differential and Final Drive Oil Level - Check

SMCS Code: 3278-535-FLV; 4011-535-FLV

Note: Before you measure the oil level, operate the machine for a few minutes in order to equalize the oil level.

Front Axle

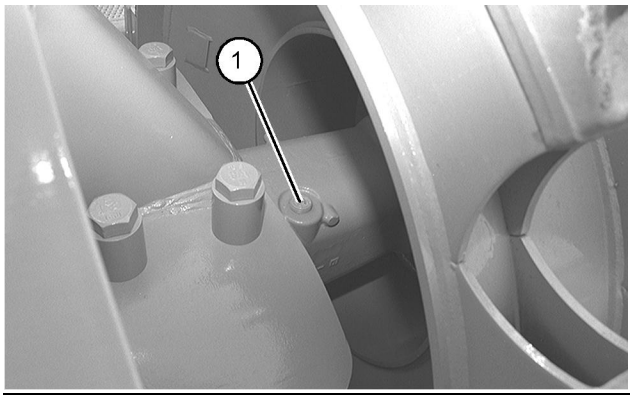


Illustration 112 g01063905

The location of the filler plug (1) for the front axle differential for the 814F Wheel Tractor and the 815F Soil Compactor

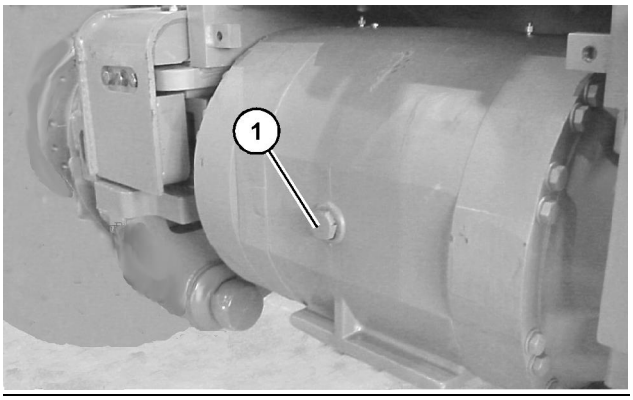


Illustration 113 g01063707

The location of the filler plug (1) for the front axle differential for the 816F Landfill Compactor

1. Remove the front differential filler plug (1). The positions of the plugs are shown in the above illustrations.

2. Fill the front axle with oil and maintain the oil level to the bottom of the filler plug. Refer to Operation and Maintenance Manual, SEBU7546-02, “Capacities (Refill)” for information on the capacities of the axles.

3. Install the front differential filler plug (1). Tighten to a torque of 45 ± 6 N·m (33 ± 4 lb ft).

Rear Axle

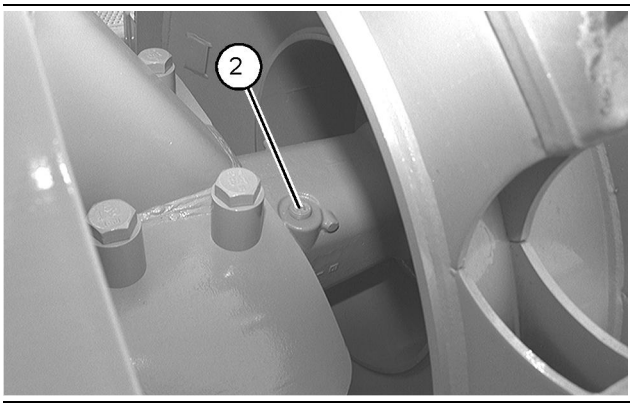


Illustration 114 g01063913

The location of the filler plug (1) for the rear axle differential for the 814F Wheel Tractor and the 815F Soil Compactor

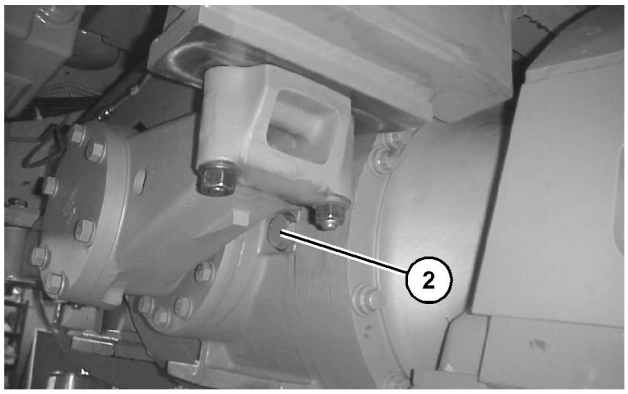


Illustration 115 g01063709

The location of the filler plug (2) for the rear axle differential for the 816F Landfill Compactor

1. Remove the rear differential filler plug (2). The positions of the plug is shown in the above illustrations.

2. Fill the rear axle with oil and maintain the oil level to the bottom of the filler plug. Refer to Operation and Maintenance Manual, SEBU7546-02, “Capacities (Refill)” for information on the capacities of the axles.

3. Install the front differential filler plug (1). Tighten to a torque of 45 ± 6 N·m (33 ± 4 lb ft).

i02086018

Differential and Final Drive Oil Sample - Obtain

SMCS Code: 3278-008; 4011-008; 4070-008; 7542

Front Axle

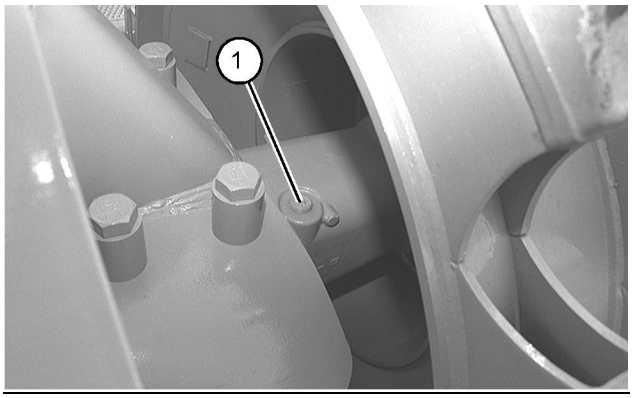


Illustration 116 g01063905

The location of filler plug (1) for the front axle differential for the 814F Wheel Tractor and the 815F Soil Compactor

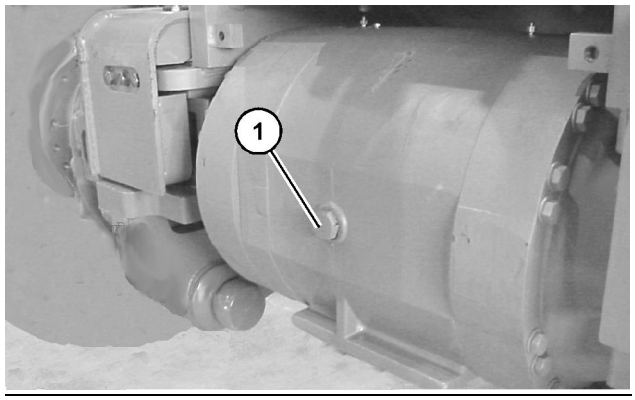


Illustration 117 g01063707

The location of filler plug (1) for the front axle differential for the 816F Landfill Compactor

Rear Axle

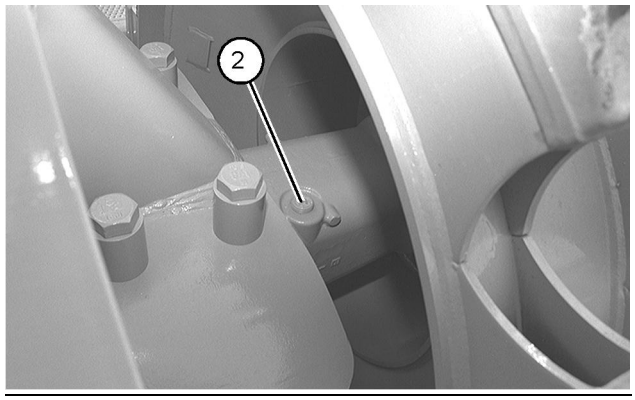


Illustration 118 g01063913

The location of filler plug (1) for the rear axle differential for the 814F Wheel Tractor and the 815F Soil Compactor

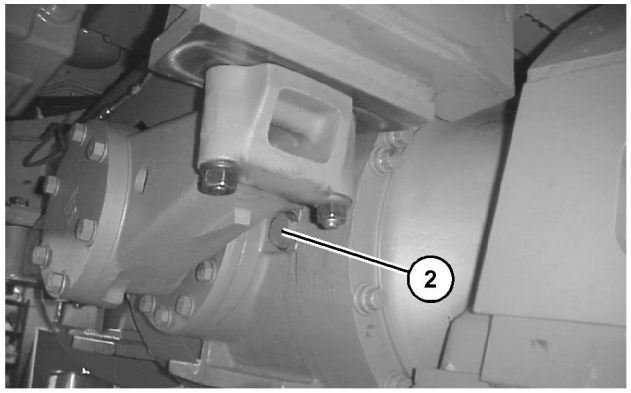


Illustration 119 g01063709

The location of filler plug (2) for the rear axle differential for the 816F Landfill Compactor

The axles are not equipped with sampling valves. Obtaining a sample of the differential and final drive oil will require a vacuum pump or an equivalent. Withdraw the oil through filler plug opening (1) on the front axle and through filler plug opening (2) on the rear axle.

Reference: Refer to Special Publications, SEBU6250, “Caterpillar Machine Fluid Recommendations” for more information about obtaining a fluid sample.

i01522600

Drive Shaft Spline (Center) - Lubricate

SMCS Code: 3253-086-SN

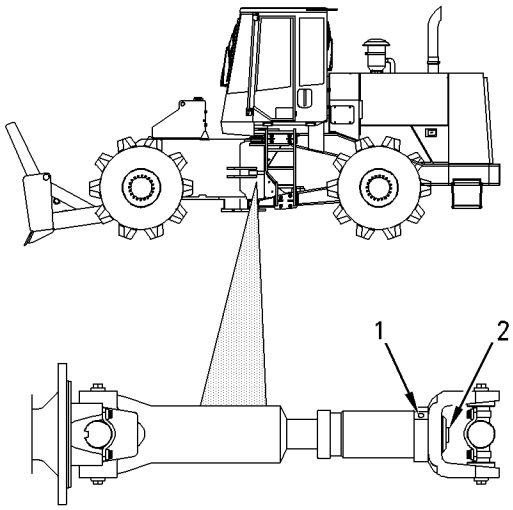


Illustration 120 g00790972

Wipe all fittings before lubricant is applied. Apply lubricant to fitting (1) until the lubricant is expelled from fitting (2).

i01522681

Drive Shaft Support Bearing - Lubricate

SMCS Code: 3267-086-BD

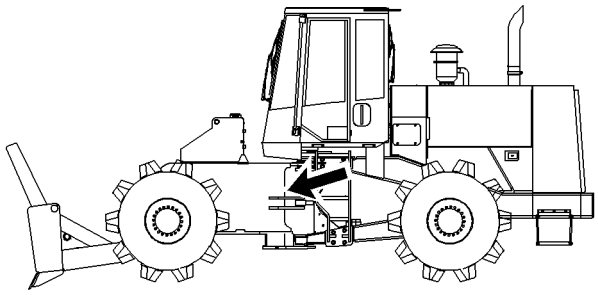


Illustration 121 g00791051

Wipe all fittings before lubricant is applied.

The support bearing is lubricated by a remote grease fitting that is located near the center hitch above the drive shaft in the non-engine end frame of the machine. Apply grease to this fitting.

i02061807

Electronic Unit Injector - Inspect/Adjust

SMCS Code: 1251-025; 1251-040; 1290-025; 1290-040

⚠ WARNING

The Electronic Control module produces high voltage. To prevent personal injury make sure the Electronic Control Module is not powered and the unit injector solenoids are disconnected.

NOTICE

The camshafts must be correctly timed with the crankshaft before an adjustment of the unit injector lash is made. The timing pins must be removed from the camshafts before the crankshaft is turned or damage to the cylinder block will be the result.

The operation of Caterpillar engines with improper adjustments of the electronic unit injector can reduce engine efficiency. This reduced efficiency could result in excessive fuel usage and/or shortened engine component life.

Adjust the electronic unit injector at the same interval as the valve lash adjustment.

Refer to your machine's Service Manual or your Caterpillar dealer for the complete adjustment procedure.

i01690224

Engine Air Filter Primary Element - Clean/Replace

SMCS Code: 1054-070-PY; 1054-510-PY

NOTICE
Caterpillar recommends certified air filter cleaning services that are available at 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.

Clean the engine air filter primary element when the clogged air filter indicator is displayed on the Caterpillar controller. Clean the engine air filter primary element as soon as convenient.

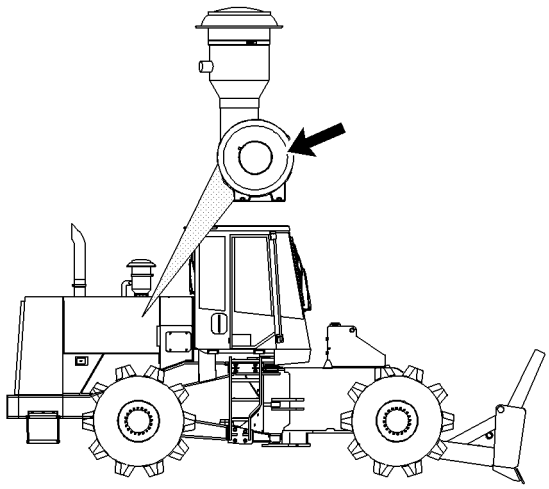


Illustration 122 g00792297

1. Open the engine hood. Access the air cleaner from the left side of the machine.

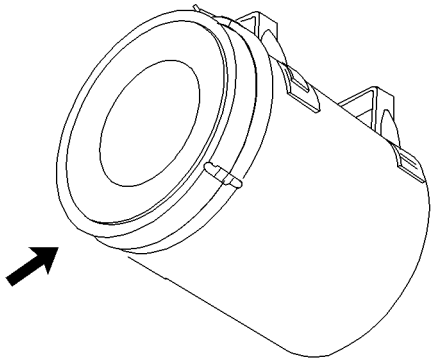


Illustration 123 g00845360

2. Loosen the four cover latches and remove the air cleaner cover.

Note: The latches for the air cleaner housing may snap open when you release the latches.

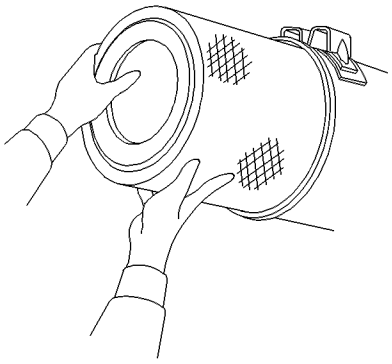


Illustration 124 g00101415

3. Remove the primary filter element from the air cleaner housing. In order to remove the engine air filter primary element, pull the element outward. While you pull the element outward, rock the element.

   Use Steps 4 **through** 6 **in order to clean the primary element:**

4. Inspect the primary element. If the pleats, the gaskets, or the seals are damaged, discard the element. Replace a damaged primary element with a clean primary element.

⚠ WARNING

To avoid personal injury, always wear eye and face protection when using pressurized air.

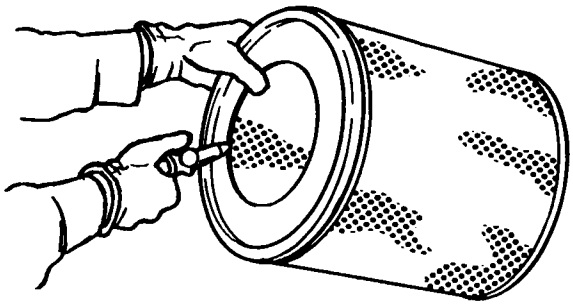


Illustration 125 g00328468

5. If the primary element is not damaged, clean the primary element.

   Pressurized air can be used to clean a primary element that has not been cleaned more than two times. Use filtered, dry air at a maximum pressure of 207 kPa (30 psi).

Note: Pressurized air will not remove deposits of carbon and oil.

6. When you clean the primary element, always begin in the inside of the element (clean side). This will force dirt particles toward the outside of the element (dirty side).

   Direct the air along the length (inside) of the filter. This will help prevent damage to the paper pleats.

Note: Do not aim the stream of air directly at the primary element. Dirt could be forced further into the pleats.

Use Steps 7 **through** 10 **in order to inspect the primary element:**

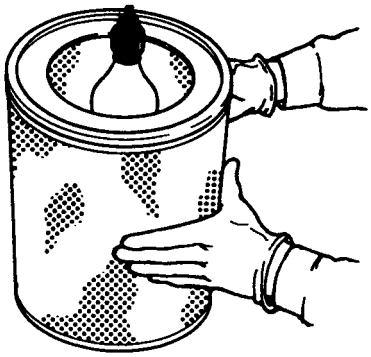


Illustration 126 g00328470

7. Place a light bulb inside the filter element. Use a 60 watt blue light in a dark room or in a similar facility. Inspect the primary element for light that may show through the filter material.

8. Inspect the primary element while you rotate the element. Inspect the primary element for tears and/or holes. Do not use a primary element that has any tears and/or holes in the filter material. Do not use a primary element with damaged pleats, gaskets, or seals.

9. If it is necessary, compare the primary element to a new primary element. Use a new primary element that has the same part number. This may be necessary in order to confirm the results of the inspection.

10. Discard a damaged primary element.

    Use Steps 11 **through** 13 **to install a clean primary element:**

NOTICE

Do not use a filter if the pleats, the gaskets or the seals are damaged.

11. Install a clean primary filter element over the engine air filter secondary element. Apply firm pressure to the end of the primary element as you gently rock the filter element. This seats the primary element.

12. Clean the cover for the air cleaner housing. Align the slot on the cover with the pin on the air cleaner housing. Install the cover.

13. Close the engine hood.

i01693619

Engine Air Filter Secondary Element - Replace

SMCS Code: 1054-510-SE

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

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

Note: Replace the secondary element when you service the primary element for the third time. If a clean primary element has been installed and a warning for the air filter still occurs, replace the secondary element. Also if the exhaust smoke remains black and a clean primary element has been installed, replace the secondary element.

1. Remove the primary element.

Reference: Refer to Operation and Maintenance Manual, “Engine Air Filter Primary Element - Clean/Replace” for the correct procedure.

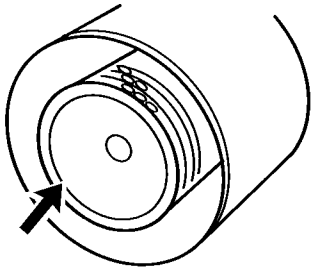


Illustration 127 g00864077

2. Remove the secondary element.

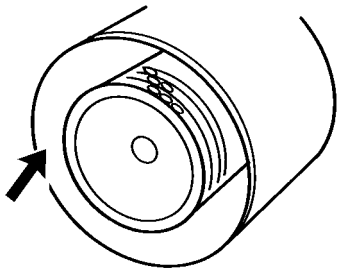


Illustration 128 g00864079

3. Cover the air inlet opening. Clean the inside of the air cleaner housing.

4. Inspect the gasket between the air inlet pipe and the air cleaner housing. Replace the gasket if the gasket is damaged.

5. Uncover the air inlet opening. Install a new secondary element.

6. Install a clean primary element and the cover for the air cleaner housing.

7. Close the access door.

8. Repeat the procedure for the other air cleaner.

i02086463

Engine Air Filter Service Indicator - Inspect

SMCS Code: 7452-040

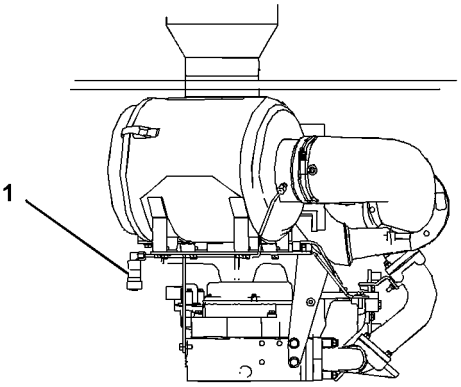


Illustration 129 g01063447

The location of air filter service indicator (1) from the rear view of the engine.

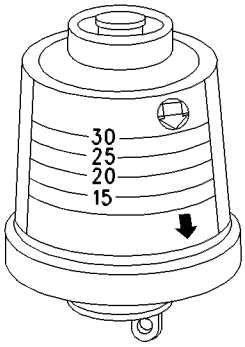


Illustration 130 g00103777

Typical Service Indicator

The air filter service indicator (1) is located on the left side of the machine beneath the engine air precleaner.

Observe the service indicator (1). The air cleaner element should be cleaned or replaced when the yellow diaphragm enters the red zone or the red piston locks in the visible position. If the service indicator (1) appears red at any time, clean the air cleaner element or install a new air cleaner element.

Test the Service Indicator

Service indicators are important instruments.

- Check for ease of resetting. The service indicator should reset in less than three pushes.
- Check the movement of the yellow core when the engine is accelerated to the engine rated rpm. The yellow core should latch approximately at the greatest vacuum that is attained.

If the service indicator does not reset easily, or if the yellow core does not latch at the greatest vacuum, the service indicator should be replaced. If the new service indicator will not reset, the hole for the service indicator may be plugged.

The service indicator may need to be replaced frequently in environments that are severely dusty. Replace the service indicator annually regardless of the operating conditions. Replace the service indicator when the engine is overhauled, and whenever major engine components are replaced.

Note: When a new service indicator is installed, excessive force may crack the top of the service indicator. Tighten the service indicator to a torque of 2 N·m (18 lb in).

i02084827

Engine Air Filter Service Indicator - Inspect/Replace

SMCS Code: 7452-040; 7452-510

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

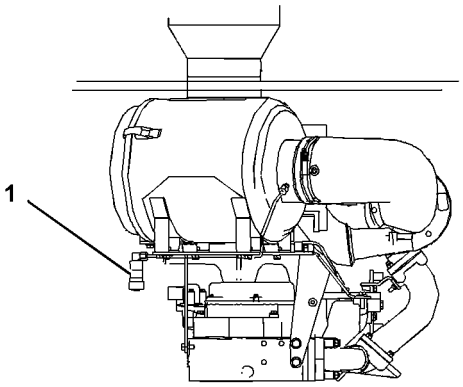


Illustration 131 g01063447

The location of the air filter service indicator (1) from the rear view of the engine.

Engine air filter service indicator (1) is located on the left side of the machine beneath the engine air precleaner.

1. Start the engine.
2. Run the engine at high idle.
3. Stop the engine.
4. Open the engine access door on the left side of the machine.
5. Inspect the engine air filter service indicator. If the yellow piston in the filter service indicator enters the red zone, service the air cleaner.

Note: See the Operation and Maintenance Manual, “Engine Air Filter Primary Element - Clean/Replace”. See the Operation and Maintenance Manual, “Engine Air Filter Secondary Element - Replace”.

6. Reset the engine air filter service indicator.
7. Close the engine access door.

i01522826

Engine Air Precleaner - Clean

SMCS Code: 1055-070

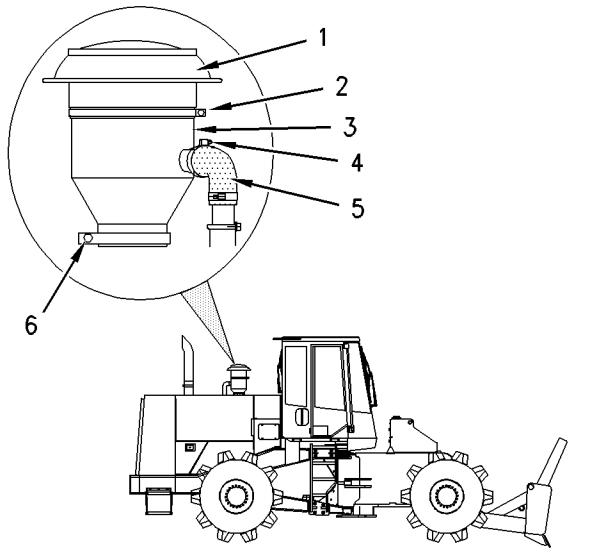


Illustration 132 g00791212

1. Loosen the bolt on clamp (2). Remove hood assembly (1).
2. Loosen hose clamp (4). Remove hose (5) from the hood assembly.
3. Loosen clamp (6). Remove body assembly (3).
4. Clean all of the parts with compressed air or wash all of the parts in warm water. Allow all of the parts to dry.
5. Install body assembly (3). Tighten the bolt on clamp (6) to a torque of 24 ± 7 N·m (18 ± 5 lb ft).
6. Install hose (5) and tighten clamp (4).
7. Install hood assembly (1). Tighten the bolt on clamp (2).

i01720842

Engine Crankcase Breather - Clean

SMCS Code: 1317-070

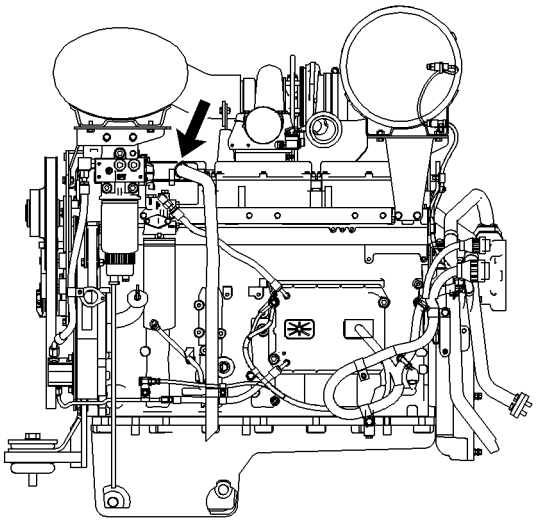


Illustration 133 g00791169

The crankcase breather is located on the top of the engine on the right side.

1. Remove the four bolts that hold the breather onto the cover. Remove the breather.
2. Check the condition of the cover seal. Replace the seal if the seal is damaged.
3. Wash the breather and the filter element in a clean nonflammable solvent.
4. Shake the breather or use pressure air in order to dry the breather.
5. Inspect the hose for damage. Replace the hose if it is necessary.
6. Install the breather assembly. Install the hose and install the hose clamp.
7. Close the access door.

i02094192

Engine Oil (High Speed) and Oil Filter - Change (If Equipped)

SMCS Code: 1318-510-HZ

Selection of the Oil Change Interval

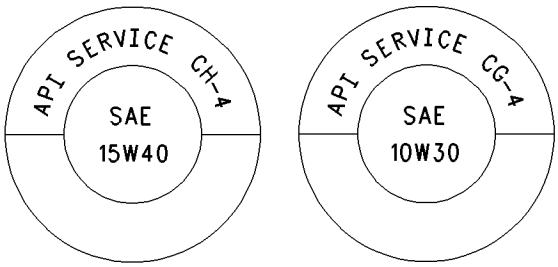
NOTICE

This machine is equipped with an engine that meets EPA Tier 2, Euro Stage II, or MOC Step 2 emission regulations. A 500 hour engine oil change interval is available, provided that operating conditions and recommended multigrade oil types are met. When these requirements are not met, shorten the oil change interval to 250 hours, or use an S·O·S oil sampling and analysis program to determine an acceptable oil change interval.

If you select an interval for oil and filter change that is too long, you may damage the engine.

Caterpillar oil filters are recommended.

Recommended multigrade oil types are listed in Table 8 and Table 9. Do not use single grade oils.



g00753767

Illustration 134

API Trademark

Commercial oils that are licensed by the American Petroleum Institute (API) bear this trademark. Commercial oils that do not bear this trademark are not licensed and these oils are not recommended. Oils that are not listed in Table 8 and in Table 9 are not recommended.

Abnormally harsh operating cycles or harsh environments can shorten the service life of the engine oil. Arctic temperatures, corrosive environments, or extremely dusty conditions may require a reduction in the engine oil change interval from the recommendations in Table 8 and in Table 9. Also refer to Manual, SEBU5898, “Cold Weather Recommendations”. Poor maintenance of air filters or of fuel filters requires reduced oil change intervals. See your Caterpillar dealer for more information if this product will experience abnormally harsh operating cycles or harsh environments.

Table 8

814F Wheel Tractor Engine Oil Change Interval[1]				
Multigrade Oil Type	**Operating Conditions**			
			Severe	
	Normal[2]	**High Load Factor[3] above 40 L (11 US gal) per hr of fuel**	**Fuel Sulfur from 0.3% to 0.5% [4]**	**Altitude above 1830 m (6000 ft)**
Cat DEO Preferred	500 hr	500 hr	500 hr	250 hr[6]
API CH-4 11.0 minimum TBN[4] Preferred	500 hr	500 hr	500 hr	250 hr[6]
API CH-4 TBN[4] below 11.0	500 hr	500 hr	250 hr[5]	250 hr[6]
API CG-4	500 hr	250 hr[5]	250 hr[5]	250 hr[6]
API CF-4	250 hr[5]	250 hr[6]	250 hr[6]	250 hr[6]

(1) The traditional oil change interval for engines is 250 hours. The standard oil change interval in this machine is 500 hours, if the operating conditions and recommended oil types that are listed in this table are met. Improvements in the engine allow this engine oil change interval. This new standard interval is not permitted for other machines. Refer to the applicable Operation and Maintenance Manuals for the other machines.

(2) Normal conditions include these factors: Fuel sulfur below 0.3%, altitude below 1830 m (6000 ft), and good air filter and fuel filter maintenance. Normal conditions do not include high load factor, harsh operating cycles, or harsh environments.

(3) High load factors can shorten the service life of your engine oil. Continuous heavy load cycles and very little idle time result in increased fuel consumption and oil contamination. These factors deplete the oil additives more rapidly. If the average fuel consumption of your 814F Wheel Tractor exceeds 40 L (11 US gal) per hour, follow the “High Load Factor” recommendations in Table 8. To determine average fuel consumption, measure average fuel consumption for a period of 50 to 100 hours. If the application of the machine is changed, the average fuel consumption may change.

(4) For sulfur content above 0.5%, refer to Operation and Maintenance Manual, SEBU6250, “Total Base Number (TBN) and Fuel Sulfur Levels for Direct Injection (DI) Diesel Engines”.

(5) In order to verify an oil change interval of 500 hours, refer to “Program A” below.

(6) Use “Program B” below to determine an appropriate interval.

Table 9

815F Soil Compactor 816F Landfill Compactor Engine Oil Change Interval[1]				
Multigrade Oil Type	**Operating Conditions**			
			Severe	
	Normal[2]	**High Load Factor[3] above 47 L (12 US gal) per hr of fuel**	**Fuel Sulfur from 0.3% to 0.5%[4]**	**Altitude above 1830 m (6000 ft)**
Cat DEO Preferred	500 hr	500 hr	500 hr	250 hr[6]
API CH-4 11.0 minimum TBN[4] Preferred	500 hr	500 hr	500 hr	250 hr[6]
API CH-4 TBN[4] below 11.0	500 hr	500 hr	250 hr[5]	250 hr[6]
API CG-4	500 hr	250 hr[5]	250 hr[5]	250 hr[6]
API CF-4	250 hr[5]	250 hr[6]	250 hr[6]	250 hr[6]

(1) The traditional oil change interval for engines is 250 hours. The standard oil change interval in this machine is 500 hours, if the operating conditions and recommended oil types that are listed in this table are met. Improvements in the engine allow this engine oil change interval. This new standard interval is not permitted for other machines. Refer to the applicable Operation and Maintenance Manuals for the other machines.

(2) Normal conditions include these factors: Fuel sulfur below 0.3%, altitude below 1830 m (6000 ft), and good air filter and fuel filter maintenance. Normal conditions do not include high load factor, harsh operating cycles, or harsh environments.

(3) High load factors can shorten the service life of your engine oil. Continuous heavy load cycles and very little idle time result in increased fuel consumption and oil contamination. These factors deplete the oil additives more rapidly. If the average fuel consumption of your 815F Soil Compactor or 816F Landfill Compactor exceeds 47 L (12 US gal) per hour, follow the “High Load Factor” recommendations in Table 9. To determine average fuel consumption, measure average fuel consumption for a period of 50 to 100 hours. If the application of the machine is changed, the average fuel consumption may change.

(4) For sulfur content above 0.5%, refer to Operation and Maintenance Manual, SEBU6250, “Total Base Number (TBN) and Fuel Sulfur Levels for Direct Injection (DI) Diesel Engines”.

(5) In order to verify an oil change interval of 500 hours, refer to “Program A” below.

(6) Use “Program B” below to determine an appropriate interval.

Adjustment of the Oil Change Interval

Note: Your Caterpillar dealer has additional information on these programs.

Program A

Verification for an Oil Change Interval of 500 Hours

This program consists of three oil change intervals of 500 hours. Oil sampling and analysis is done at 250 hours and 500 hours for each of the three intervals for a total of six oil samples. The analysis includes oil viscosity and infrared (IR) analysis of the oil. If all of the results are satisfactory, the 500 hour oil change interval is acceptable for the machine in that application. Repeat Program A if you change the application of the machine.

If a sample does not pass the oil analysis, take one of these actions:

- Shorten the oil change interval to 250 hours.
- Proceed to Program B.
- Change to a preferred oil type that is listed in Table 8 and 9.

Program B

Optimizing Oil Change Intervals

Begin with a 250 hour oil change interval. The oil change intervals are adjusted by increments. Each increment is an additional 50 hours. Periodic oil sampling and analysis is done during each interval. The analysis includes oil viscosity and infrared (IR) analysis of the oil. Repeat Program B if you change the application of the machine.

If an oil sample does not pass the analysis, shorten the oil change interval, or change to a preferred multigrade oil type in the listing above.

References

Reference: Form, PEDP7035, “Optimizing Oil Change Intervals”

Reference: Form, PEDP7036, “S·O·S Fluid Analysis”

Reference: Form, PEDP7076, “Understanding the S·O·S Oil Analysis Tests”

Procedure for Changing the Engine Oil and Filter

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

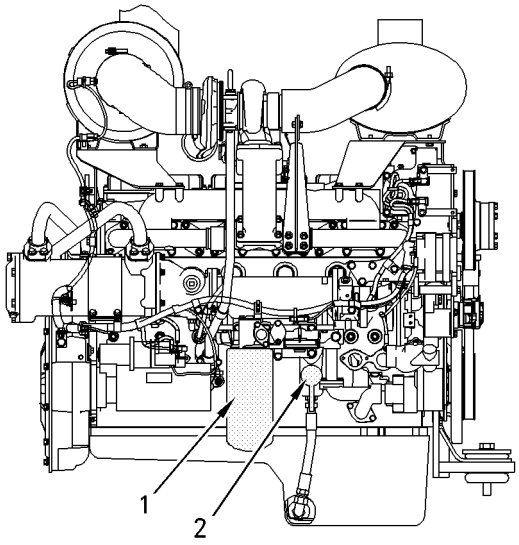


Illustration 135 g00791274

Your machine may be equipped with a high speed arrangement for changing the engine oil. The high speed arrangement allows service personnel to change the oil from the engine access door on the right side of the machine. The high speed arrangement allows the oil to be changed faster than conventional methods.

1. The high speed arrangement is located on the right side of the engine.
2. Remove the cap (2) that protects the male coupler. Connect an oil pump to the fitting. The fitting on the machine is a male coupler.
3. Turn on the oil pump and withdraw the engine oil from the engine oil pan.

4. Use a strap type wrench to remove the filter element (1). Inspect the filter.

   Reference: Refer to Operation and Maintenance Manual, “Oil Filter - Inspect”.

5. Clean the filter mounting base with a clean cloth. Make sure that the used filter gasket has been completely removed.

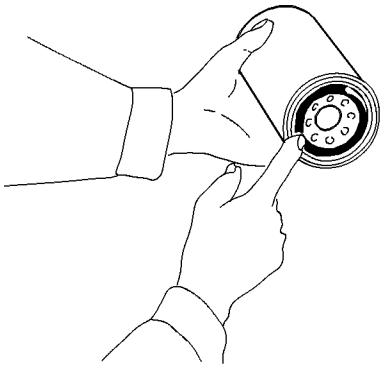


Illustration 136 g00101318

6. Apply a thin film of clean engine oil to the sealing surface of the new filter element.

Note: There are rotation index marks on each engine oil filter that are spaced 90 degrees or 1/4 turn away from each other. Note the position of the marks on the filter in relation to a fixed point on the filter base.

7. Install the engine oil filter element (1) hand tight until the seal of the engine oil filter element (1) contacts the oil filter base.

Note: Note the position of the index marks on the filter in relation to a fixed point on the filter base.

8. Tighten the filter according to the instructions that are printed on the filter. Use the index marks as a guide.

9. Connect an oil pump to the male coupler for the high speed arrangement. Fill the crankcase with new oil.

   Reference: Refer to Operation and Maintenance Manual, “Lubricant Viscosities and Refill Capacities” for the correct type of oil and for the correct amount of oil.

10. Clean the end of the male coupler. Clean the cap that covers the male coupler and install the cap.

11. Start the engine and allow the oil to warm. Check the machine for oil leaks.

12. Check the engine oil level.

    Reference: Refer to Operation and Maintenance Manual, “Engine Oil Level - Check” for the correct procedure.

13. Stop the engine. Close the engine access door and the engine hood.

i02709400

Engine Oil Level - Check

SMCS Code: 1000-535-FLV

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

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.

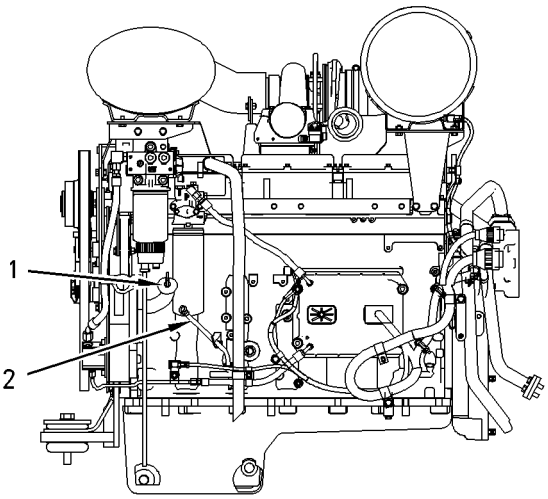


Illustration 137 g00791374

1. Open the engine access door on the right rear side of the machine. The engine oil dipstick is located on the right side of the engine near the engine oil filter.

2. Remove engine oil dipstick (2) and wipe the dipstick with a clean cloth. Then, insert the dipstick and remove the dipstick again. This will ensure a more accurate measurement of the engine oil level.

3. While the engine is stopped, check the “ENGINE STOPPED” side of engine oil dipstick (2). Maintain the oil level between the marks on the dipstick.

4. If necessary, remove oil filler plug (1) and add oil through the oil filler tube.

5. Clean the oil filler plug and install the oil filler plug.

6. Close the engine access door.

i02094193

Engine Oil and Filter - Change

SMCS Code: 1318-510

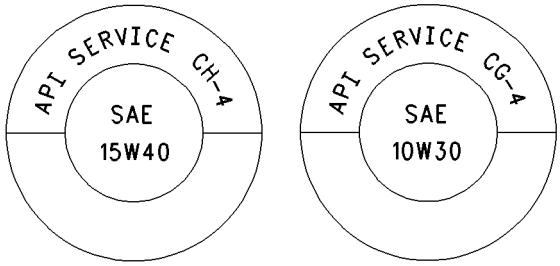
Selection of the Oil Change Interval

NOTICE
This machine is equipped with an engine that meets EPA Tier 2, Euro Stage II, or MOC Step 2 emission regulations. A 500 hour engine oil change interval is available, provided that operating conditions and recommended multigrade oil types are met. When these requirements are not met, shorten the oil change interval to 250 hours, or use an S·O·S oil sampling and analysis program to determine an acceptable oil change interval.

If you select an interval for oil and filter change that is too long, you may damage the engine.

Caterpillar oil filters are recommended.

Recommended multigrade oil types are listed in Table 10 and in Table 11.



g00753767

Illustration 138

API Trademark

Commercial oils that are licensed by the American Petroleum Institute (API) bear this trademark. Commercial oils that do not bear this trademark are not licensed and these oils are not recommended. Oils that are not listed in Table 10 and in Table 11 are not recommended.

Abnormally harsh operating cycles or harsh environments can shorten the service life of the engine oil. Arctic temperatures, corrosive environment, or extremely dusty conditions may require a reduction in engine oil change intervals from the recommendations in Table 10 and in Table 11. Also refer to Manual, SEBU5898, “Cold Weather Recommendations”. Poor maintenance of air filters or of fuel filters requires reduced oil change intervals. See your Caterpillar dealer for more information if this product will experience abnormally harsh operating cycles or harsh environments.

Table 10

814F Wheel Tractor Engine Oil Change Interval[1]				
Multigrade Oil Type	Operating Conditions			
	Normal[2]	High Load Factor[3] above 40 L (11 US gal) per hr of fuel	Severe	
			Fuel Sulfur from 0.3% to 0.5%[4]	Altitude above 1830 m (6000 ft)
Cat DEO Preferred	500 hr	500 hr	500 hr	250 hr[6]
API CH-4 11.0 minimum TBN[4] Preferred	500 hr	500 hr	500 hr	250 hr[6]
API CH-4 TBN[4] below 11.0	500 hr	500 hr	250 hr[5]	250 hr[6]
API CG-4	500 hr	250 hr[5]	250 hr[5]	250 hr[6]
API CF-4	250 hr[5]	250 hr[6]	250 hr[6]	250 hr[6]

(1) The traditional oil change interval for engines is 250 hours. The standard oil change interval in this machine is 500 hours, if the operating conditions and recommended oil types that are listed in this table are met. Improvements in the engine allow this engine oil change interval. This new standard interval is not permitted for other machines. Refer to the applicable Operation and Maintenance Manuals for the other machines.

(2) Normal conditions include these factors: Fuel sulfur below 0.3%, altitude below 1830 m (6000 ft), and good air filter and fuel filter maintenance. Normal conditions do not include high load factor, harsh operating cycles, or harsh environments.

(3) High load factors can shorten the service life of your engine oil. Continuous heavy load cycles and very little idle time result in increased fuel consumption and oil contamination. These factors deplete the oil additives more rapidly. If the average fuel consumption of your 814F Wheel Tractor exceeds 40 L (11 US gal) per hour, follow the “High Load Factor” recommendations in Table 10. To determine average fuel consumption, measure average fuel consumption for a period of 50 to 100 hours. If the application of the machine is changed, the average fuel consumption may change.

(4) For sulfur content above 0.5%, refer to Operation and Maintenance Manual, SEBU6250, “Total Base Number (TBN) and Fuel Sulfur Levels for Direct Injection (DI) Diesel Engines”.

(5) In order to verify an oil change interval of 500 hours, refer to “Program A” below.

(6) Use “Program B” below to determine an appropriate interval.

Table 11

815F Soil Compactor 816F Landfill Compactor Engine Oil Change Interval[1]				
Multigrade Oil Type	Operating Conditions			
	Normal[2]	High Load Factor[3] above 47 L (12 US gal) per hr of fuel	Severe	
			Fuel Sulfur from 0.3% to 0.5%[4]	Altitude above 1830 m (6000 ft)
Cat DEO Preferred	500 hr	500 hr	500 hr	250 hr[6]
API CH-4 11.0 minimum TBN[4] Preferred	500 hr	500 hr	500 hr	250 hr[6]
API CH-4 TBN[4] below 11.0	500 hr	500 hr	250 hr[5]	250 hr[6]
API CG-4	500 hr	250 hr[5]	250 hr[5]	250 hr[6]
API CF-4	250 hr[5]	250 hr[6]	250 hr[6]	250 hr[6]

(1) The traditional oil change interval for engines is 250 hours. The standard oil change interval in this machine is 500 hours, if the operating conditions and recommended oil types that are listed in this table are met. Improvements in the engine allow this engine oil change interval. This new standard interval is not permitted for other machines. Refer to the applicable Operation and Maintenance Manuals for the other machines.

(2) Normal conditions include these factors: Fuel sulfur below 0.3%, altitude below 1830 m (6000 ft), and good air filter and fuel filter maintenance. Normal conditions do not include high load factor, harsh operating cycles, or harsh environments.

(3) High load factors can shorten the service life of your engine oil. Continuous heavy load cycles and very little idle time result in increased fuel consumption and oil contamination. These factors deplete the oil additives more rapidly. If the average fuel consumption of your 815F Soil Compactor or 816F Landfill Compactor exceeds 47 L (12 US gal) per hour, follow the “High Load Factor” recommendations in Table 11. To determine average fuel consumption, measure average fuel consumption for a period of 50 to 100 hours. If the application of the machine is changed, the average fuel consumption may change.

(4) For sulfur content above 0.5%, refer to Operation and Maintenance Manual, SEBU6250, “Total Base Number (TBN) and Fuel Sulfur Levels for Direct Injection (DI) Diesel Engines”.

(5) In order to verify an oil change interval of 500 hours, refer to “Program A” below.

(6) Use “Program B” below to determine an appropriate interval.

Adjustment of the Oil Change Interval

Note: Your Caterpillar dealer has additional information on these programs.

Program A

Verification for an Oil Change Interval of 500 Hours

This program consists of three oil change intervals of 500 hours. Oil sampling and analysis is done at 250 hours and 500 hours for each of the three intervals for a total of six oil samples. The analysis includes oil viscosity and infrared (IR) analysis of the oil. If all of the results are satisfactory, the 500 hour oil change interval is acceptable for the machine in that application. Repeat Program A if you change the application of the machine.

If a sample does not pass the oil analysis, take one of these actions:

- Shorten the oil change interval to 250 hours.
- Proceed to Program B.
- Change to a preferred oil type in Table 10.

Program B

Optimizing Oil Change Intervals

Begin with a 250 hour oil change interval. The oil change intervals are adjusted by increments. Each increment is an additional 50 hours. Periodic oil sampling and analysis is done during each interval. The analysis includes oil viscosity and infrared (IR) analysis of the oil. Repeat Program B if you change the application of the machine.

If an oil sample does not pass the analysis, shorten the oil change interval, or change to a preferred multigrade oil type in the listing above.

References

Reference: Form, PEDP7035, “Optimizing Oil Change Intervals”

Reference: Form, PEDP7036, “S·O·S Fluid Analysis”

Reference: Form, PEDP7076, “Understanding the S·O·S Oil Analysis Tests”

Procedure for Changing the Engine Oil and Filter

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Open the access door that is located on the left side of the machine.

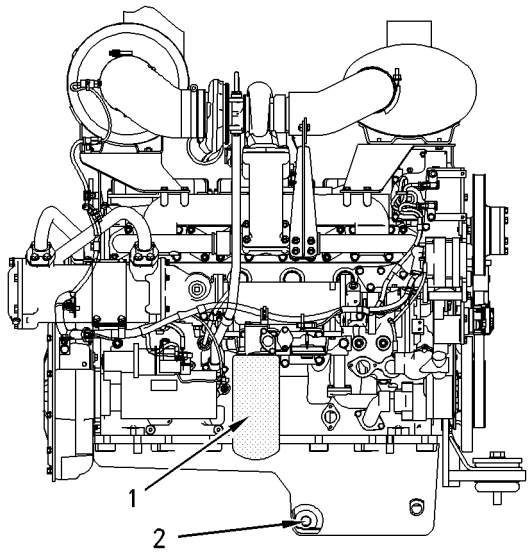


Illustration 139 g00791382

2. Remove the filter element (1) with a strap type wrench. Inspect the filter.

   Reference: Refer to Operation and Maintenance Manual, “Oil Filter - Inspect”.

3. Clean the filter mounting base with a clean cloth. Make sure that the used filter gasket has been completely removed.

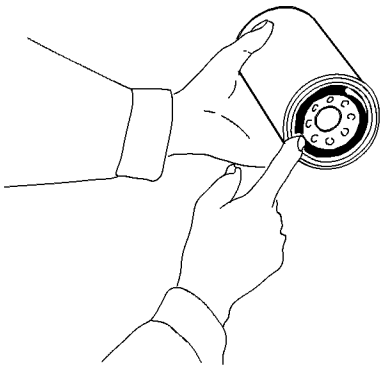


Illustration 140 g00101318

4. Apply a thin film of clean engine oil to the sealing surface of the new filter element.

Note: There are rotation index marks on each engine oil filter that are spaced 90 degrees or 1/4 of a turn away from each other. When you tighten engine oil filters, use the rotation index marks as a guide.

5. Install the engine oil filter element (1) hand tight until the seal of the engine oil filter contacts the base.

6. Tighten the oil filter element (1) according to the instructions that are printed on the filter. Use the index marks as a guide.

7. Open the crankcase drain valve (2). Allow the oil to drain into a suitable container. Close the crankcase drain valve.

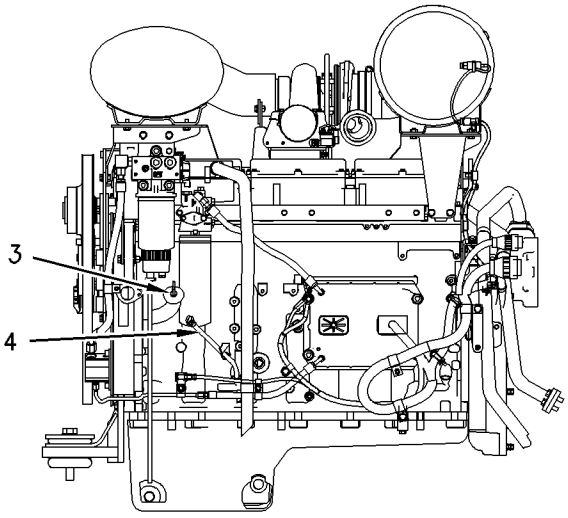


Illustration 141 g00791396

8. Open the access door that is located on the right side of the machine. Remove oil filler plug (3). Fill the crankcase with new oil.

   Reference: Refer to Operation and Maintenance Manual, “Lubricant Viscosities” and Operation and Maintenance Manual, “Capacities (Refill)”.

9. Clean the oil filler plug and install the oil filler plug.

10. Start the engine and allow the oil to warm. Check for leaks.

11. Check the engine oil level in dipstick (4).

    Reference: Refer to Operation and Maintenance Manual, “Engine Oil Level - Check” for the correct procedure.

12. Stop the engine. Close the engine access doors.

i01181536

Engine Valve Lash - Check

SMCS Code: 1105-535

For the correct procedure, refer to the appropriate Service Manual module for your machine’s engine or consult your Caterpillar dealer.

Note: A qualified mechanic should adjust the engine valve lash because special tools and training are required.

i01935374

Engine Valve Rotators - Inspect

SMCS Code: 1109-040

⚠ WARNING

When inspecting the valve rotators, protective glasses or face shield and protective clothing must be worn, to prevent being burned by hot oil or spray.

Caterpillar recommends replacing valve rotators that are operating improperly. An improperly operating valve rotator will shorten valve life because of accelerated wear on the valves. Also, metal particles from a damaged valve rotator could fall into the cylinder and damage to the piston head and to the cylinder head may result.

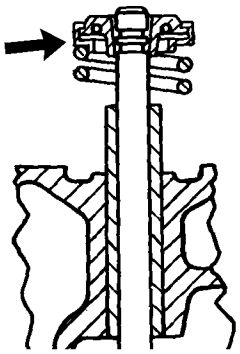


Illustration 142 g00882731

Start the engine and run the engine at low idle. Watch the top surface of each valve rotator. Whenever an inlet valve closes or an exhaust valve closes, each valve rotator should turn.

If a valve rotator fails to turn, consult your Caterpillar dealer for service.

i01524144

Ether Starting Aid Cylinder - Replace

SMCS Code: 1456-510-CD

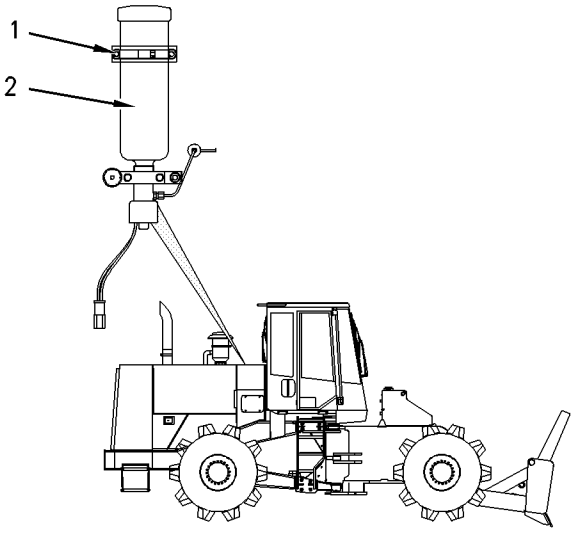


Illustration 143 g00791745

1. Open the access door. The ether starting aid cylinder is mounted on the right side of the machine.
2. Loosen retaining clamp (1) and unscrew ether starting aid cylinder (2).
3. Remove the gasket. Install the new gasket that is provided with each new ether starting aid cylinder.
4. Install new ether starting aid cylinder (2) hand tight. Tighten retaining clamp (1) securely.
5. Close the engine hood.

i01523459

Fan Drive Bearing - Lubricate

SMCS Code: 1359-086-BD

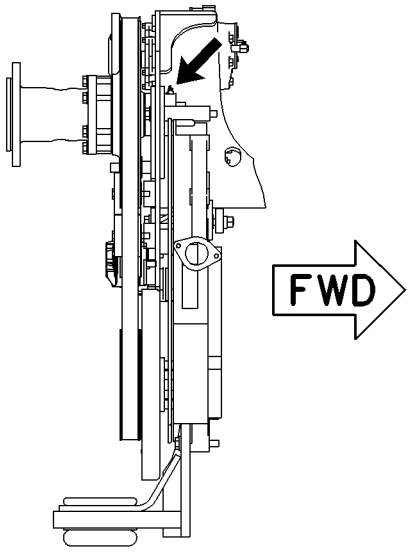


Illustration 144 g00791507

Wipe all bearings before lubrication. The fan drive bearing is lubricated by a fitting that is located near the serpentine belt. Apply grease to this fitting.

i01524005

Fuel System - Prime

SMCS Code: 1250-548

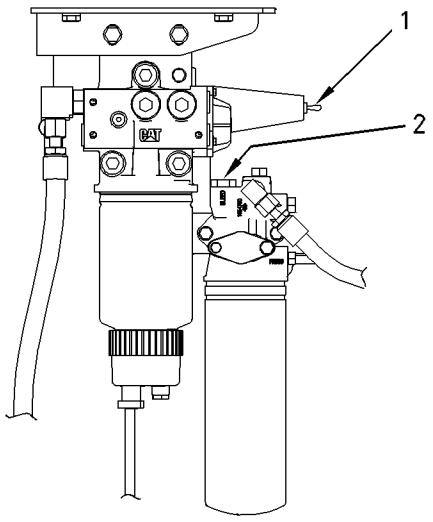


Illustration 145 g00791684

The priming pump is located on the right side of the machine in the engine compartment.

1. Your machine is equipped with an electric fuel pump. The toggle switch (1) for the electric fuel pump is located near the fuel filter on the right side of the engine.

2. A plug (2) is located on the secondary filter. The plug is used in order to purge air from the fuel lines.

3. Use the toggle switch in order to operate the electric fuel pump. Open the plug. Operate the fuel priming pump until no air bubbles are present from the plug.

4. Tighten the plug when air bubbles are no longer present. Turn off the fuel priming pump.

   If the engine does not start or the engine misfires, further priming is necessary.

i01524346

Fuel System Primary Filter (Water Separator) - Drain

SMCS Code: 1263-543

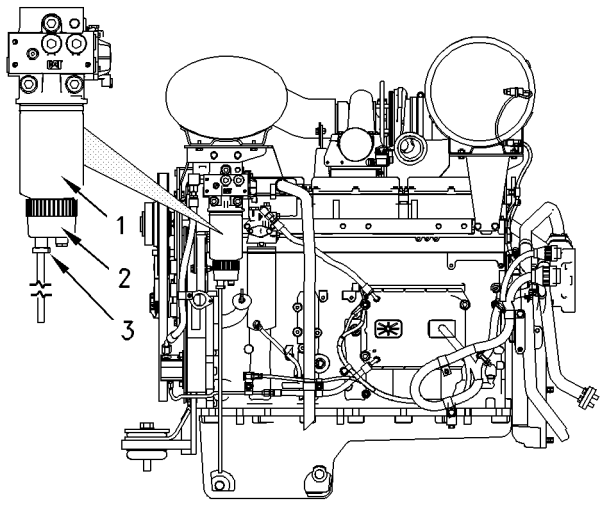


Illustration 146 g00791863

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. The fuel filters are located on the right side of the machine in the engine compartment. The water separator bowl (1) is located on the bottom of the primary fuel filter. Attach a hose (3) to the bottom of the drain valve in order to catch the fuel. Open the drain valve (2) on the bottom of the water separator bowl. Allow the water and the fuel to drain into a suitable container.

2. Close the drain valve.

Note: The water separator is under suction during normal engine operation. Tighten the drain valve securely in order to prevent air leakage into the fuel system.

i01524402

Fuel System Primary Filter (Water Separator) Element - Replace

SMCS Code: 1260-510; 1263-510-FQ

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 Tools and Shop Products Guide” 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. Contaminated fuel will cause accelerated wear to fuel system parts. Fuel system should be primed prior to starting the engine.

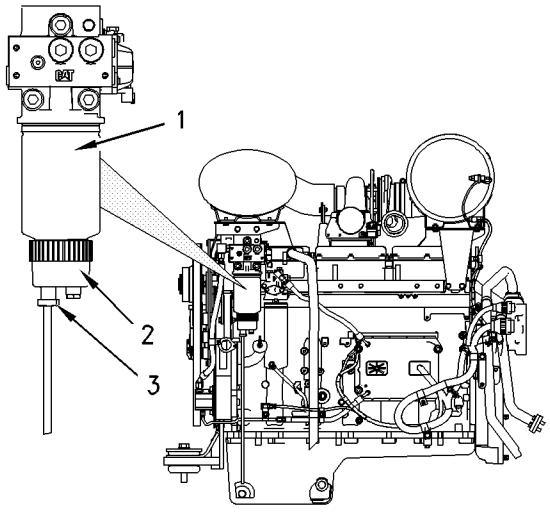


Illustration 147 g00791902

1. The water separator bowl (2) is located on the bottom of the primary fuel filter (1). Open the drain valve (3) on the water separator bowl. Allow the water and the fuel to drain into a suitable container.

2. Use a strap type wrench to remove the filter from the filter mounting base.

3. Remove the water separator bowl from the filter element. Clean the water separator bowl and the O-ring groove.

Note: The water separator bowl is reusable. Do not discard the water separator bowl.

4. Inspect the O-ring seal in the water separator bowl for damage. Replace the O-ring seal, if necessary.

5. Lubricate the O-ring seal with clean diesel fuel or with engine oil. Place the O-ring seal in the water separator bowl.

6. Install the water separator bowl onto the new filter element by hand. Do not use tools to tighten the water separator bowl.

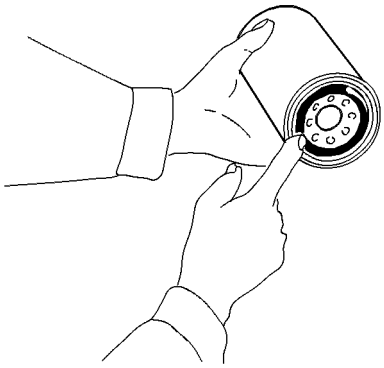


Illustration 148 g00101318

7. Lubricate the gasket of the new filter element with clean diesel fuel.

8. Install the new filter on the filter mounting base. When the filter gasket contacts the filter mounting base, tighten the filter by an additional 3/4 turn.

9. Tighten the drain valve on the water separator bowl.

Note: The water separator element is under suction during normal engine operation. The drain valve must be tightened in order to prevent air leakage into the fuel system.

10. Prime the fuel system in order to fill the filter element with fuel.

    Reference: Refer to Operation and Maintenance Manual, “Fuel System Prime” for the correct procedure.

i01524455

Fuel System Secondary Filter - Replace

SMCS Code: 1261-510-SE

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 Tools and Shop Products Guide” 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. Contaminated fuel will cause accelerated wear to fuel system parts. Fuel system should be primed prior to starting the engine.

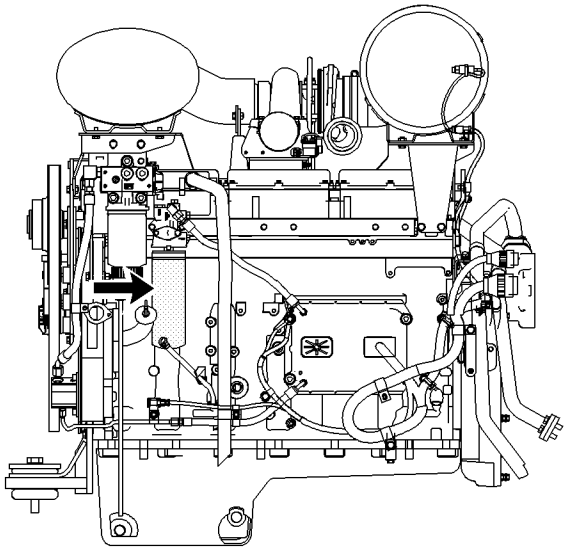


Illustration 149 g00791919

1. Use a strap type wrench to remove the secondary fuel filter. The secondary fuel filter is located on the right side of the machine in the engine compartment. Dispose of the used filter properly.

2. Clean the filter mounting base. Remove all of the used seal from the filter mounting base.

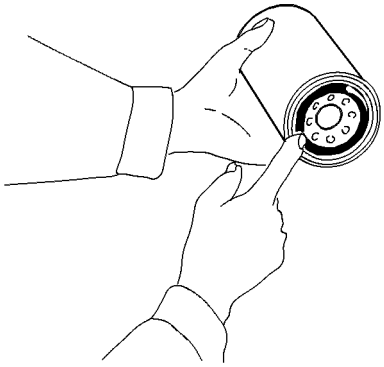


Illustration 150 g00101318

3. Lubricate the seal of the new secondary fuel filter with clean diesel fuel.

4. Install the new secondary fuel filter by hand. When the seal contacts the filter mounting base, tighten the filter by an additional 3/4 turn.

5. Prime the fuel filters.

   Reference: Refer to Operation and Maintenance Manual, “Fuel System - Prime” for the proper procedure.

i01524264

Fuel Tank Cap and Strainer - Clean

SMCS Code: 1273-070-STR; 1273-070-Z2

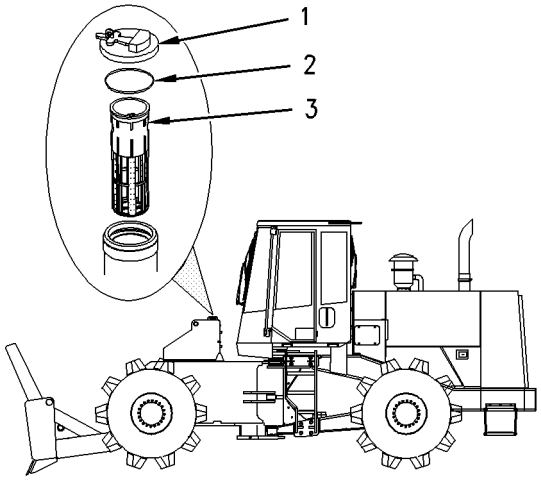


Illustration 151 g00791803

The fuel tank cap is located on the non-engine end frame of the machine.

1. Remove fuel tank cap (1) and strainer (3) from the fuel tank. Remove seal (2) from the cap.
2. Wash the strainer and the fuel tank cap in a clean, nonflammable solvent.
3. Install the strainer into the filler opening.
4. Inspect the seal for damage. Replace the seal, if necessary. Install the fuel tank cap.

i01524470

Fuel Tank Water and Sediment - Drain

SMCS Code: 1273-543-M&S

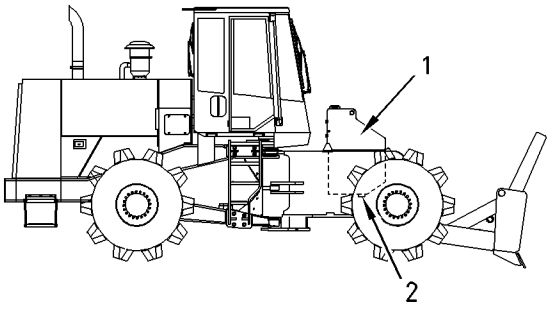


Illustration 152 g00791926

The drain valve is located on the bottom right side of the fuel tank. The drain valve is located in the non-engine end frame of the machine.

Open the drain valve. Allow the sediment to drain into a suitable container. Close the fuel tank drain valve.

i01524559

Fuses - Replace

SMCS Code: 1417-510

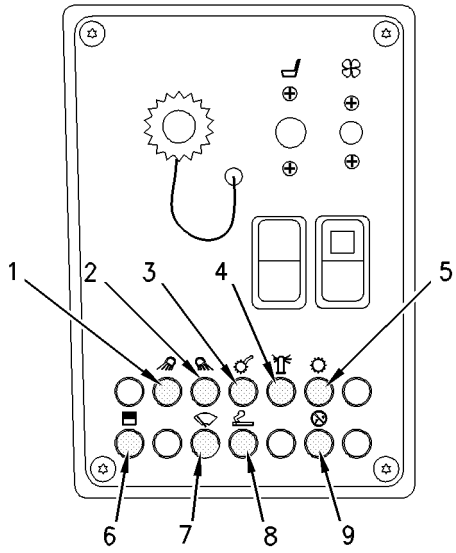


Illustration 153 g00792012

These fuses are located in the operator compartment.

Flood Lights (Front) (1) – 10 Amperes

Flood Lights (Rear) (2) – 10 Amperes

Transmission Shift Control (3) – 10 Amperes

Rotating Beacon (4) – 10 Amperes

Autoshift (5) – 10 Amperes

Monitoring System (6) – 10 Amperes

Window Wiper (7) – 10 Amperes

Lighter (8) – 10 Amperes

Lift Kickout (9) – 10 Amperes

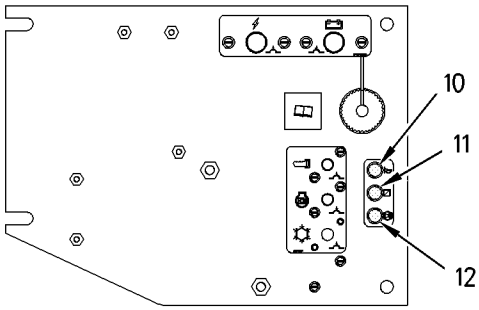


Illustration 154 g00792039

These fuses are located in the engine compartment.

Horn (10) – 10 Amperes

Tail Lights (12) – 10 Amperes

i01690342

Hydraulic System Oil - Change

SMCS Code: 5056-044

Selection of the Oil Change Interval

Your machine may be able to use a 4000 hour interval for the hydraulic oil. The hydraulic oil is in the system that is not integral to the service brakes, the clutches, the final drives, or the differentials. The standard change interval is 2000 hours. The oil should be monitored during intervals of 500 hours. The extended 4000 hour interval can be used if the following criteria are met.

Oil Filters

Caterpillar oil filters are recommended. The interval for changing the oil filter should be 500 hours.

Oil

The 4000 hour interval for changing the oil is for the following oil types.

- Caterpillar Hydraulic Oil HYDO
- Caterpillar Transmission and Drive Train Oil (TDTO)
- Caterpillar TDTO (TMS)
- Caterpillar Diesel Engine Oil
- Caterpillar Biodegradable Hydraulic Oils HEES
- Caterpillar Multipurpose Tractor Oil (MTO)
- Heavy duty diesel engine oil with a minimum zinc content of 900 ppm

Use heavy duty oils with the following classification: CF, CF-4, CG-4, and CH-4

Note: Industrial hydraulic oils are not recommended in Caterpillar hydraulic systems. These oils are more likely to cause corrosion and excessive wear.

Monitoring the Condition of the Oil

The oil should be monitored during intervals of 500 hours. Caterpillar's standard S·O·S Fluids Analysis or an equivalent oil sampling program should be used.

The current guidelines for cleanliness of the oil should be observed. Refer to "Measured Data".

If an oil sampling program is not available, the standard 2000 oil change interval should be used.

Measured Data

The following information should be monitored by using a program for sampling the oil.

- Significant changes in wear metals should be monitored. These metals include iron, copper, chromium, lead, aluminum, and tin.
- Significant changes in additives should be monitored. These metals zinc, calcium, magnesium, and phosphorus.
- Contaminants should not be present. These contaminants include fuel and antifreeze. Water content should be .5 percent or less.
- The silicon level should not exceed 15 parts per million for new oil. The particle counts should be monitored.

- The recommended level of cleanliness for Caterpillar machines that are operated in the field is ISO 18/15 or cleaner. The cleanliness should be monitored by particle count analysis. Contamination levels should not exceed normal levels by more than two ISO codes. Action should be taken in order to determine the cause of the contamination. The system should be returned to the original levels of contamination.
- There should not be significant changes in sodium, silicon, copper, and potassium.
- The allowable level of oxidation is 40 percent (0.12 Abs units).
- The kinematic viscosity at 100 °C (212 °F) should not exceed 2 cSt.

Procedure for Changing the Hydraulic Oil

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Operate the machine for a few minutes in order to warm the hydraulic oil.

Park the machine on level ground. Lower the blade to the ground and apply slight downward pressure. Engage the parking brake and stop the engine.

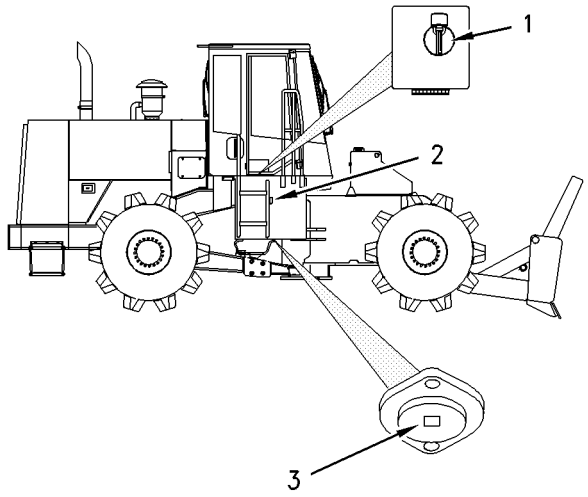


Illustration 155 g00792101

The hydraulic tank is located on the right side of the machine. Open the access door that is located on the platform on the right side of the cab. Slowly remove the hydraulic tank filler cap (1) in order to relieve system pressure.

1. Remove hydraulic tank filler cap and the filler strainer. Wash the filler cap and the strainer in a clean, nonflammable solvent. Install the strainer.
2. Inspect the gasket on the filler cap for damage. Replace the gasket, if necessary.
3. Remove the drain plug (3) from the bottom of the hydraulic tank. Wash the drain plug in a clean, nonflammable solvent.
4. Your machine is equipped with an ecology drain valve. Install a 6B-3156 Pipe Nipple with a hose in order to unseat the internal drain valve. Allow the hydraulic oil to drain into a suitable container.

NOTICE
Never start the engine while the hydraulic oil tank is being drained or while the hydraulic oil tank is empty. Excessive wear and damage to the hydraulic components can occur.

5. Remove the pipe nipple in order to close the drain valve. Install the drain plug.
6. Replace the hydraulic oil filter.

   Reference: Refer to Operation and Maintenance Manual, “Hydraulic System Oil Filter - Replace” for the correct procedure.

7. Fill the hydraulic tank with clean oil. Make sure that the oil level is at the “FULL” mark on the sight gauge (2). Install the filler cap.

   Reference: Refer to Operation and Maintenance Manual, “Lubricant Viscosities and Refill Capacities” for the correct type of oil and for the correct amount of oil.

8. Start the engine and run the engine for at least ten seconds. Then, stop the engine and add hydraulic oil to the tank until the oil level is at the “FULL” mark on the sight gauge. Install the filler cap.

9. Start the engine and run the engine at low idle. Cycle the implements so that all hydraulic systems are filled with oil.

Note: If the alert indicator for a low oil level comes on, stop the engine and immediately add oil to the hydraulic tank. The oil level should not be below the suction ports in the hydraulic tank while the engine is running.

10. Add hydraulic oil to the tank until the oil level is at the “FULL” mark on the sight gauge.

11. Stop the engine. Top off the hydraulic tank so that the oil level is at the “FULL” mark on the sight gauge. Install the filler cap.

Note: The oil must be free of air bubbles. If air bubbles are present in the hydraulic oil, air is entering the hydraulic system. Inspect the hydraulic suction line and the hose clamps.

i02084372

Hydraulic System Oil Filter - Replace

SMCS Code: 5068-510

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

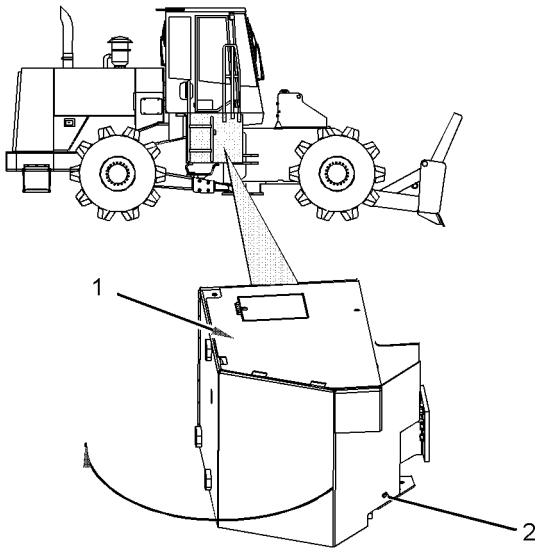


Illustration 156 g01063216

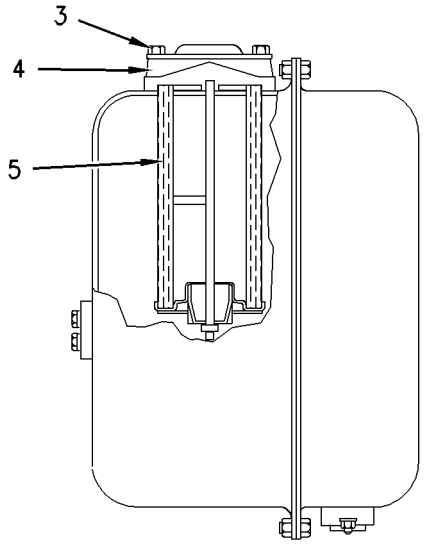


Illustration 157 g00792496

The hydraulic oil filters are located in the hydraulic oil tank. The hydraulic oil tank is located behind the platform on the right side of the machine.

1. Remove the bolt (2) and swing the platform (1) away from the machine.

2. Remove the four bolts (3) from each of the covers (4). Remove both of the covers.

3. Remove the filter elements. Discard the old elements.

4. Clean the covers. Inspect the condition of the seals. Replace the seals, if necessary.

5. Install new filter elements and install the covers. Tighten the bolts to 58 ± 4 N·m (42.8 ± 2.9 lb ft).

6. Check the level of the hydraulic oil tank. Add oil, if necessary.

7. Close the platform and install the bolt.

i01525484

Hydraulic System Oil Level - Check

SMCS Code: 5056-535-FLV

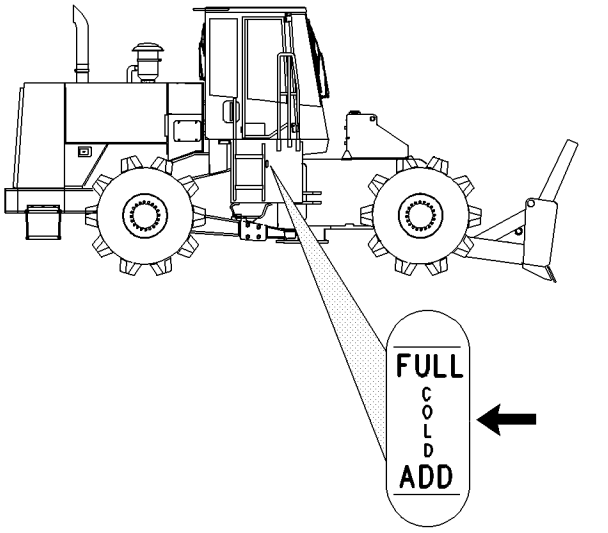


Illustration 158 g00792457

The hydraulic oil tank is located on the right side of the machine.

The sight glass is located on the side of the hydraulic oil tank. Check the level of the hydraulic oil tank when the engine is not running and the oil is cold. Maintain the oil above the “ADD” mark. Add oil, if necessary.

i02084311

Hydraulic System Oil Sample - Obtain

SMCS Code: 5050-008; 5056-008; 7542

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Operate the machine for a few minutes before obtaining the oil sample. Operate the hydraulic controls. This will thoroughly mix the hydraulic oil for a more accurate sample.

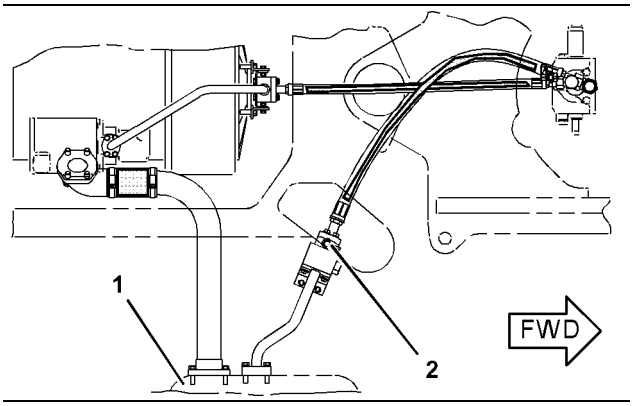


Illustration 159 g01063190

2. The hydraulic oil sampling valve (2) is located in the return line near the hydraulic oil tank (1).

3. Use the hydraulic oil sampling valve (2) in order to obtain a sample of the hydraulic oil.

Reference: For more information, refer to Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Oil Analysis” and Special Publication, PEHP6001, “How To Take A Good Oil Sample”.

i01526478

Lift Cylinder Upper Bearings - Lubricate

SMCS Code: 5102-086-BD

S/N: BGF1-Up

S/N: BMR1-Up

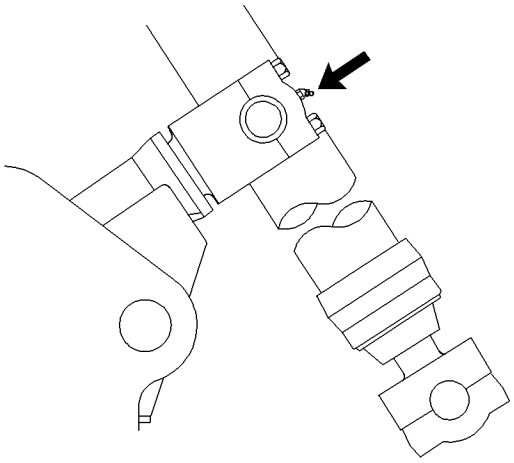


Illustration 160 g00792956

Wipe all fittings before lubrication. There is one fitting on each side of the lift cylinder. Lubricate both fittings.

i02106227

Oil Filter - Inspect

SMCS Code: 1308-507; 3067-507; 5068-507

Inspect a Used Filter for Debris

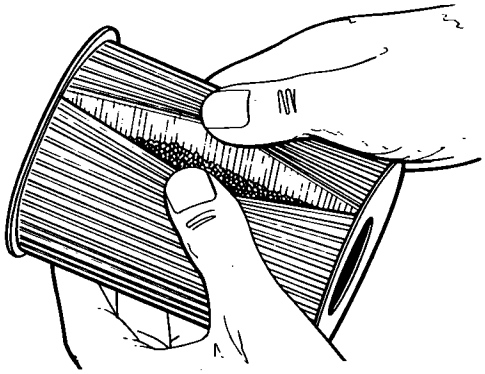


Illustration 161 g00100013

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.

i01527940

Radiator Core - Clean

SMCS Code: 1353-070-KO

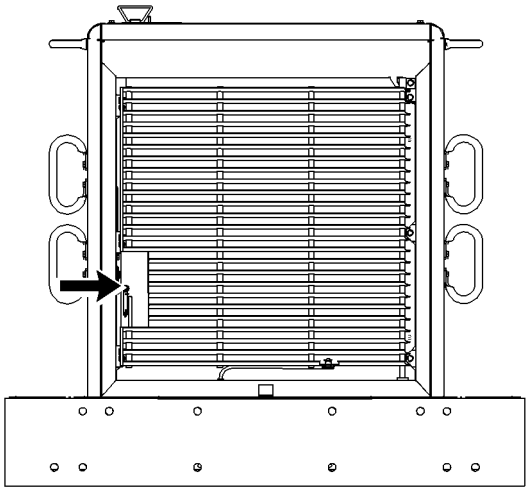


Illustration 162 g00793362

1. Press the button and open the radiator guard.

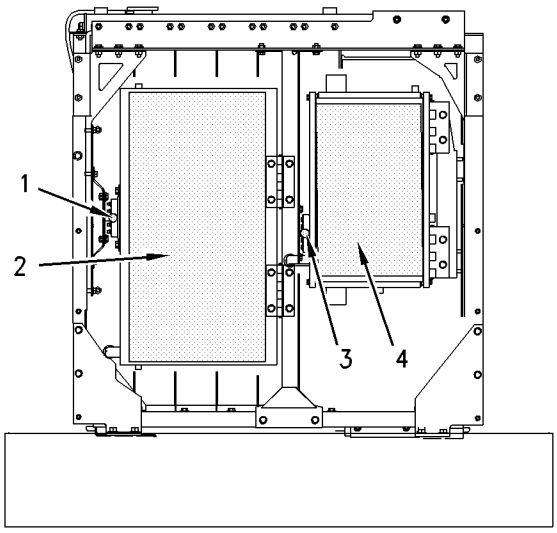


Illustration 163 g00793380

2. Lift up on the control knobs (1) and (3). Open the oil cooler (4) and condenser (2).

3. You can use compressed air, high pressure water, or steam in order to remove dirt and debris from the radiator fins. The use of compressed air is preferred.

4. Close the cooler and the condenser. Close the radiator guard.

Reference: Refer to Special Publication, SEBD0518, “Know Your Cooling System” for more information.

i02711933

Refrigerant Dryer - Replace

SMCS Code: 7322-510

⚠ 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.

Refer to Service Manual, SENR5664, “Air Conditioning and Heating System with R-134a Refrigerant for All Caterpillar Machines” for the proper procedure to change the receiver-dryer assembly and for the procedure to reclaim the refrigerant gas.

i01528092

Rollover Protective Structure (ROPS) - Inspect

SMCS Code: 7323-040; 7325-040

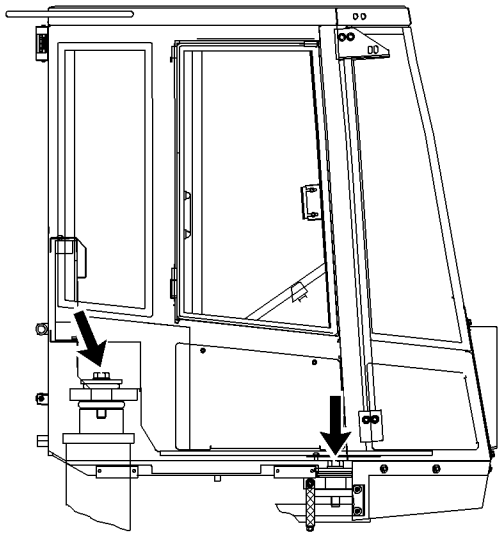


Illustration 164 g00793150

Inspect the ROPS for bolts that are loose or damaged. Use original equipment parts only to replace bolts that are damaged or missing. Tighten the four cab mounting bolts to a torque of 850 ± 100 N·m (629 ± 74 lb ft).

Note: Apply oil to all bolt threads before installation. Failure to apply oil can result in improper bolt torque.

Do not repair the ROPS by welding reinforcement plates to the ROPS. Consult your Caterpillar dealer for repair of cracks in any welds, in any castings, or in any metal section of the ROPS.

i02429589

Seat Belt - Inspect

SMCS Code: 7327-040

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.

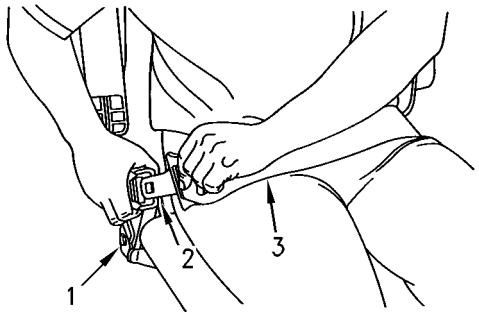


Illustration 165 g00932801

Typical example

Check the seat belt mounting hardware (1) for wear or for damage. Replace any mounting hardware that is worn or damaged. Make sure that the mounting bolts are tight.

Check buckle (2) for wear or for damage. If the buckle is worn or damaged, replace the seat belt.

Inspect the seat belt (3) for webbing that is worn or frayed. Replace the seat belt if the seat belt 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.

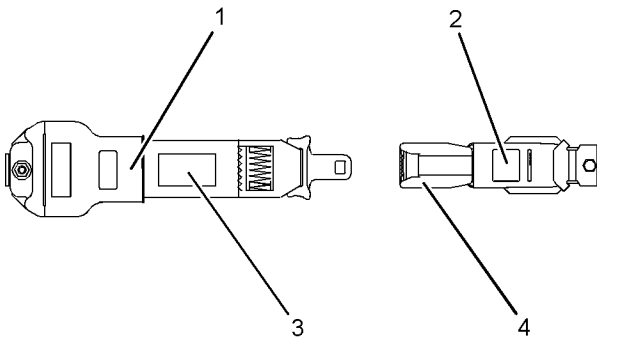


Illustration 166 g01152685

(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.

i01528271

Steering Cylinder Bearings - Lubricate

SMCS Code: 4303-086-BD

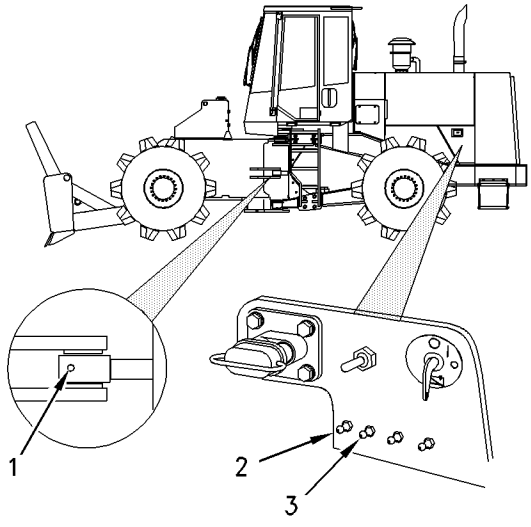


Illustration 167 g00793224

Wipe all fittings before lubrication.

The rod end of the steering cylinders are lubricated by using a grease fitting that is located on the cylinder.

The head end of the steering cylinders are lubricated by using remote grease fittings. These fittings (2) and (3) are located on the left side of the machine.

There is a total of four fittings.

i02305841

Tire Inflation - Check

SMCS Code: 4203-535-AI

S/N: BGF1-Up

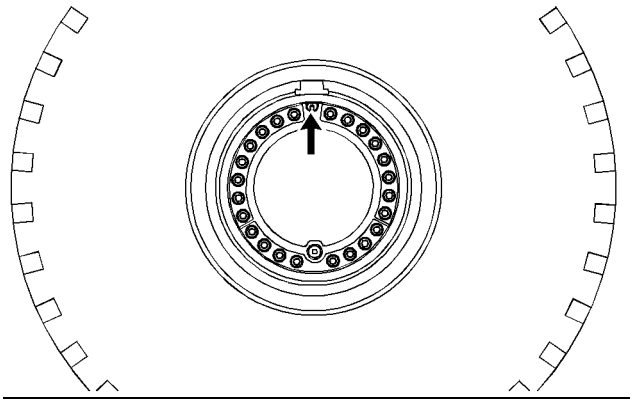


Illustration 168 g01160201

Always obtain proper tire inflation pressures and maintenance recommendations for the tires on your machine from your tire supplier. Measure the tire pressure on each tire.

Inflate the tires with nitrogen , if necessary.

Reference: Refer to the “Tire Inflation Information” section of the Operation and Maintenance Manual for more information.

i01709890

Transmission Oil - Change

SMCS Code: 3030-044

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Operate the machine for a few minutes in order to warm the transmission oil.

2. Park the machine on a level surface. Lower the attachment to the ground and apply slight downward pressure. Engage the parking brake and stop the engine.

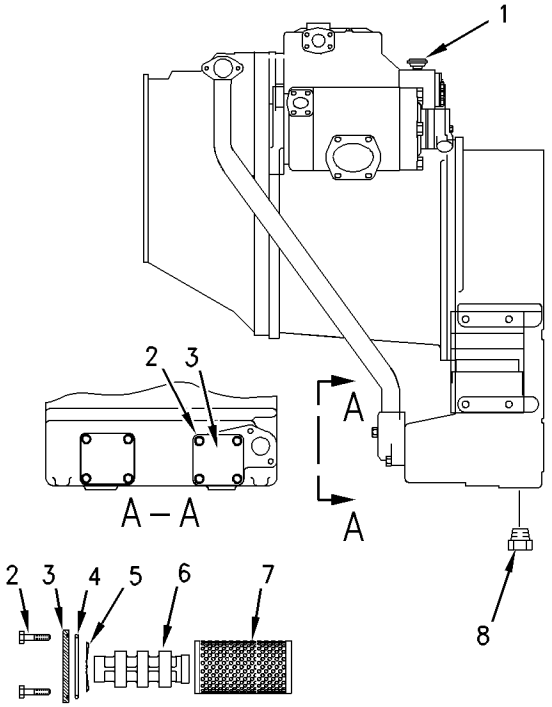


Illustration 169 g00793448

(1) Breather. (2) Bolts. (3) Cover. (4) Seal. (5) Washer. (6) Magnetic Tube Assembly. (7) Screen. (8) Drain Plug.

Note: Remove the transmission guard from the bottom of the machine in order to access the magnetic screen assembly.

3. Remove transmission oil drain plug (8). Allow the transmission oil to drain into a suitable container. Clean the drain plug and install the drain plug.

4. Change the transmission oil filter.

   Reference: For the correct procedure, refer to Operation and Maintenance Manual, “Transmission Oil Filter - Replace”.

5. Remove bolts (2) and cover (3) from the front left side of the transmission case.

6. Remove magnetic screen tube assembly (6) and screen (7) from the housing. Remove three magnets from the magnetic screen tube assembly.

7. Wash the magnetic screen tube assembly and the screen in a clean, nonflammable solvent.

NOTICE
Do not drop or rap the magnets against any hard objects. Replace any damaged magnets.

8. Use a cloth, a stiff bristle brush or pressure air to clean the magnets.

9. Clean cover (3) and inspect seal (4). Replace the seal if the seal is damaged.

10. Install three magnets on magnetic screen tube assembly. Insert the suction screen and the magnetic screen tube assembly in the housing.

11. Install cover (3) and four bolts (2).

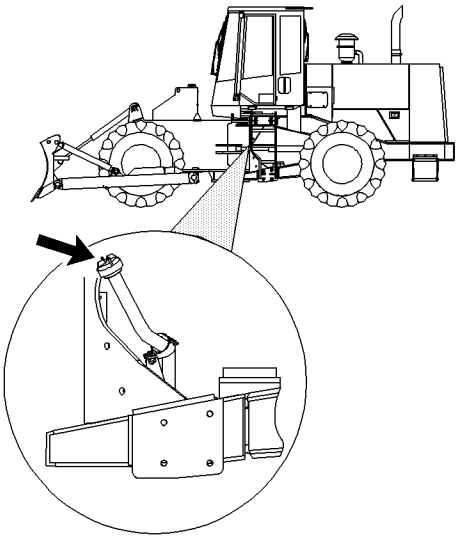


Illustration 170 g00793947

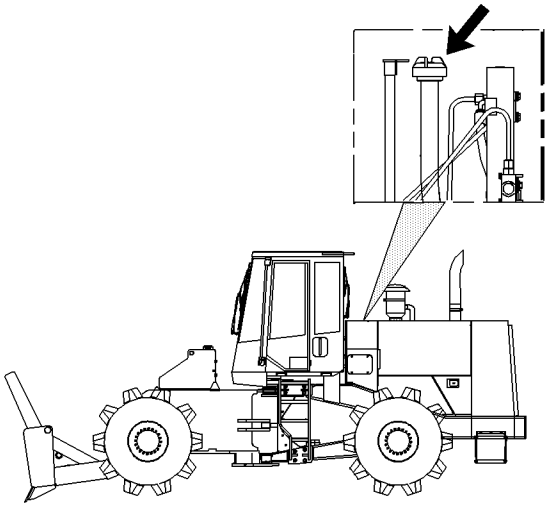


Illustration 171 g00793970

Landfill Compactor

12. Remove transmission oil filler cap on the left side of the machine. Fill the transmission with oil through the transmission oil filler tube. The Landfill Compactor filler tube is located behind the operator's cab.

Reference: For more information, refer to Operation and Maintenance Manual, "Lubricant Viscosities" and Operation and Maintenance Manual, "Capacities (Refill)".

13. Clean the filler cap and install the filler cap.

14. Remove transmission breather (1) from the top of the transmission. Wash the transmission breather in a clean, nonflammable solvent. Allow the transmission breather to dry. Then, install the transmission breather.

15. Start the engine and run the engine at low idle. Apply the service brake. Slowly operate the transmission controls in order to circulate the oil.

16. Move the transmission control to the NEUTRAL position. Engage the parking brake and stop the engine. Inspect the transmission for leaks.

17. Check the transmission oil level.

Reference: For more information, refer to Operation and Maintenance Manual, "Transmission Oil Level - Check".

i01528362

Transmission Oil Filter - Replace

SMCS Code: 3067-510

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 Tools and Shop Products Guide" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Park the machine on a hard, level surface. Lower the bucket to the ground with a slight downward pressure. Engage the parking brake and stop the engine.

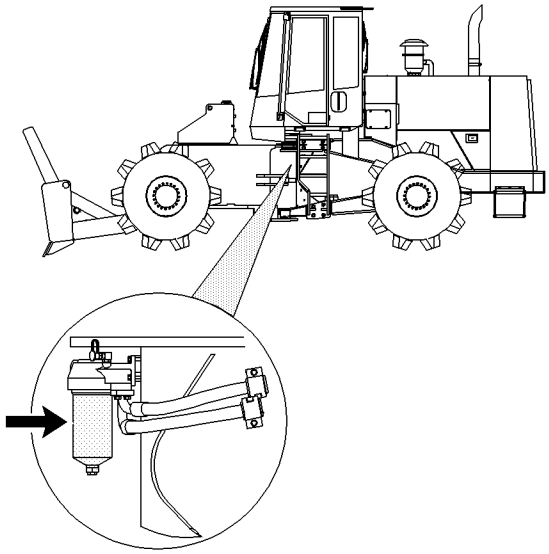


Illustration 172 g00793312

2. The transmission oil filter is located on the left side of the machine near the articulation joint. Use a strap type wrench to remove the transmission oil filter. Dispose of the used oil filter properly.

3. Clean the filter mounting base. Remove all of the used filter gasket from the filter mounting base.

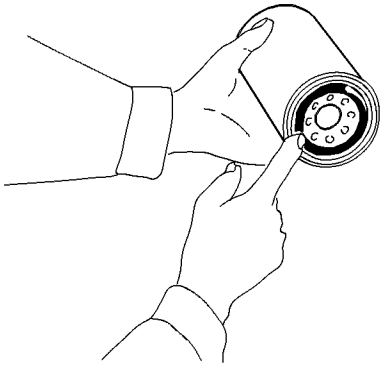


Illustration 173 g00101318

4. Apply a thin coat of clean transmission oil to the gasket of the new filter element. Install the new filter element by hand. When the gasket contacts the filter mounting base, tighten the transmission oil filter by an additional 3/4 turn.

5. Start the engine. Slowly operate the transmission controls in order to circulate the transmission oil.

6. Move the transmission control to the NEUTRAL position. Inspect the transmission oil filter for leaks.

7. Check the transmission oil level.

Reference: Refer to Operation and Maintenance Manual, “Transmission Oil Level - Check” for the correct procedure.

i01528752

Transmission Oil Level - Check

SMCS Code: 3030-535-FLV

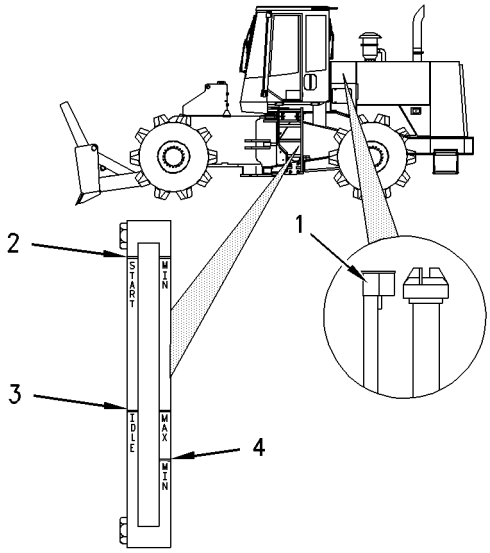


Illustration 174 g00793593

The oil level sight gauge is located near the center hitch of the machine.

Maintain the oil above the “MIN” mark (2) on the sight gauge when the engine is off.

Maintain the oil between the “MAX” mark (3) and the “MIN” mark (4) when the engine is at idle.

Landfill Compactors are also equipped with an oil level dipstick (1) that is located behind the operator’s cab. Maintain the oil level within the “LOW” and “FULL” marks when the engine is at low idle and the oil is warm.

i02084671

Transmission Oil Sample - Obtain

SMCS Code: 3080-008; 7542

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 Tools and Shop Products Guide” for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

1. Operate the machine for a few minutes before obtaining the oil sample. Operate the hydraulic controls. This will thoroughly mix the hydraulic oil for a more accurate sample.

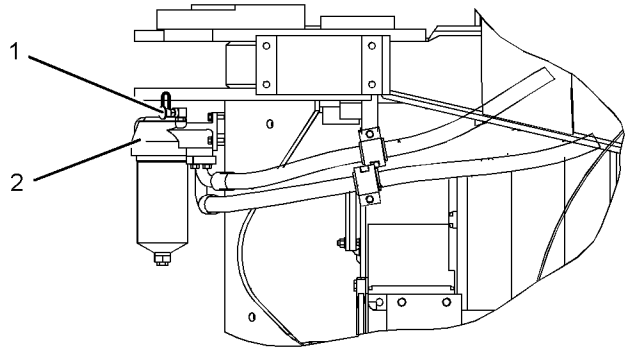


Illustration 175 g01063364

2. The sampling valve for the transmission oil (1) is located on the transmission oil filter base (2).

3. Use the sampling valve for the transmission oil (1) in order to obtain a sample of the transmission oil.

Reference: For more information, refer to Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”, “S·O·S Oil Analysis” and Special Publication, PEHP6001, “How To Take A Good Oil Sample”.

i01528989

Window Washer Reservoir - Fill

SMCS Code: 7306-544

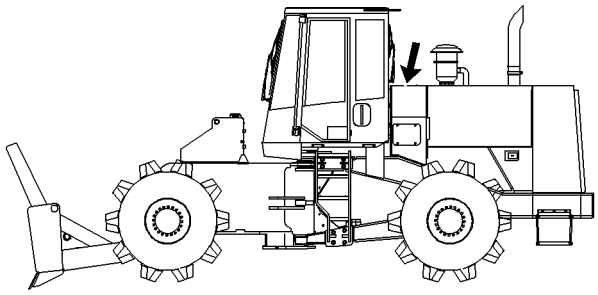


Illustration 176 g00793722

The window washer reservoir is located behind the operator compartment on the firewall. Open the cover in order to access the reservoir.

i01529015

Window Wiper - Inspect/Replace

SMCS Code: 7305-040; 7305-510

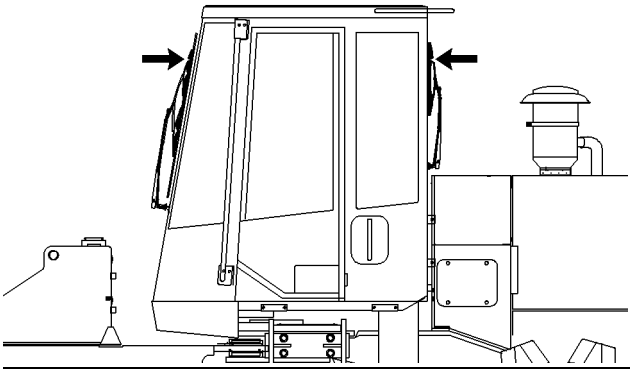


Illustration 177 g00793752

Inspect the condition of the wiper blades. Replace the wiper blades if the blades are worn or damaged.

i00037755

Windows - Clean

SMCS Code: 7310-070

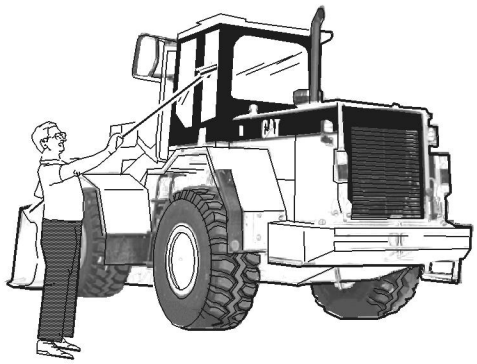


Illustration 178 g00038949

Use commercially available window cleaning solutions in order to clean the windows. Clean the outside windows from the ground unless handholds are available.