



Operation and Maintenance Manual

CB14 Utility Compactor

DST1-Up (Machine)
DTT1-Up (Machine)

Important Safety Information

Most accidents that involve product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills and tools to perform these functions properly.

Improper operation, lubrication, maintenance or repair of this product can be dangerous and could result in injury or death.

Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to other persons.

The hazards are identified by the "Safety Alert Symbol" and followed by a "Signal Word" such as "DANGER", "WARNING" or "CAUTION". The Safety Alert "WARNING" label is shown below.



The meaning of this safety alert symbol is as follows:

Attention! Become Alert! Your Safety is Involved.

The message that appears under the warning explains the hazard and can be either written or pictorially presented.

A non-exhaustive list of operations that may cause product damage are identified by "NOTICE" labels on the product and in this publication.

Caterpillar cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product are, therefore, not all inclusive. You must not use this product in any manner different from that considered by this manual without first satisfying yourself that you have considered all safety rules and precautions applicable to the operation of the product in the location of use, including site-specific rules and precautions applicable to the worksite. If a tool, procedure, work method or operating technique that is not specifically recommended by Caterpillar is used, you must satisfy yourself that it is safe for you and for others. You should also ensure that the product will not be damaged or become unsafe by the operation, lubrication, maintenance or repair procedures that you intend to use.

The information, specifications, and illustrations in this publication are on the basis of information that was available at the time that the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service that is given to the product. Obtain the complete and most current information before you start any job. Caterpillar dealers have the most current information available.



When replacement parts are required for this product Caterpillar recommends using Caterpillar replacement parts or parts with equivalent specifications including, but not limited to, physical dimensions, type, strength and material.

Failure to heed this warning can lead to premature failures, product damage, personal injury or death.

Table of Contents

Foreword	4
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Safety Section

Safety Messages	6
General Hazard Information	10
Crushing Prevention and Cutting Prevention	12
Burn Prevention	12
Fire Prevention and Explosion Prevention	13
Fire Extinguisher Location	16
Electrical Storm Injury Prevention	16
Before Starting Engine	16
Engine Starting	17
Before Operation	17
Visibility Information	17
Operation	18
Engine Stopping	18
Parking	18
Slope Operation	19
Sound Information and Vibration Information	20

Product Information Section

General Information	23
Identification Information	24

Operation Section

Before Operation	27
Machine Operation	29
Engine Starting	39
Parking	41
Transportation Information	43
Towing Information	46
Engine Starting (Alternate Methods)	49

Maintenance Section

Maintenance Access	51
Lubricant Viscosities and Refill Capacities	52
Maintenance Support	54
Maintenance Interval Schedule	56

Reference Information Section

Reference Materials	90
---------------------------	----

Index Section

Index	91
-------------	----

Foreword

Literature Information

This manual should be stored in the operator's compartment in the literature holder or seat back literature storage area.

This manual contains safety information, operation instructions, transportation information, lubrication information and maintenance information.

Some photographs or illustrations in this publication show details or attachments that can be different from your machine. Guards and covers might have been removed for illustrative purposes.

Continuing improvement and advancement of product design might have caused changes to your machine which are not included in this publication. Read, study and keep this manual with the machine.

Whenever a question arises regarding your machine, or this publication, please consult your Caterpillar dealer for the latest available information.

Safety

The safety section lists basic safety precautions. In addition, this section identifies the text and locations of warning signs and labels used on the machine.

Read and understand the basic precautions listed in the safety section before operating or performing lubrication, maintenance and repair on this machine.

Operation

The operation section is a reference for the new operator and a refresher for the experienced operator. This section includes a discussion of gauges, switches, machine controls, attachment controls, transportation and towing information.

Photographs and illustrations guide the operator through correct procedures of checking, starting, operating and stopping the machine.

Operating techniques outlined in this publication are basic. Skill and techniques develop as the operator gains knowledge of the machine and its capabilities.

Maintenance

The maintenance section is a guide to equipment care. The Maintenance Interval Schedule (MIS) lists the items to be maintained at a specific service interval. Items without specific intervals are listed under the "When Required" service interval. The Maintenance Interval Schedule lists the page number for the step-by-step instructions required to accomplish the scheduled maintenance. Use the Maintenance Interval Schedule as an index or "one safe source" for all maintenance procedures.

Maintenance Intervals

Use the service hour meter to determine servicing intervals. Calendar intervals shown (daily, weekly, monthly, etc.) can be used instead of service hour meter intervals if they provide more convenient servicing schedules and approximate the indicated service hour meter reading. Recommended service should always be performed at the interval that occurs first.

Under extremely severe, dusty or wet operating conditions, more frequent lubrication than is specified in the maintenance intervals chart might be necessary.

Perform service on items at multiples of the original requirement. For example, at every 500 service hours or 3 months, also service those items listed under every 250 service hours or monthly and every 10 service hours or daily.

California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds. **Wash hands after handling.**

Certified Engine Maintenance

Proper maintenance and repair is essential to keep the engine and machine systems operating correctly. As the heavy duty off-road diesel engine owner, you are responsible for the performance of the required maintenance listed in the Owner Manual, Operation and Maintenance Manual, and Service Manual.

It is prohibited for any person engaged in the business of repairing, servicing, selling, leasing, or trading engines or machines to remove, alter, or render inoperative any emission related device or element of design installed on or in an engine or machine that is in compliance with the regulations (40 CFR Part 89). Certain elements of the machine and engine such as the exhaust system, fuel system, electrical system, intake air system and cooling system may be emission related and should not be altered unless approved by Caterpillar.

Machine Capacity

Additional attachments or modifications may exceed machine design capacity which can adversely affect performance characteristics. Included would be stability and system certifications such as brakes, steering, and rollover protective structures (ROPS). Contact your Caterpillar dealer for further information.

Caterpillar Product Identification Number

Effective First Quarter 2001 the Caterpillar Product Identification Number (PIN) has changed from 8 to 17 characters. In an effort to provide uniform equipment identification, Caterpillar and other construction equipment manufacturers are moving to comply with the latest version of the product identification numbering standard. Non-road machine PINs are defined by ISO 10261. The new PIN format will apply to all Caterpillar machines and generator sets. The PIN plates and frame marking will display the 17 character PIN. The new format will look like the following:

CAT 0789BG 6SL12345

The diagram shows the PIN format: *CAT 0789BG 6SL12345*. Below the characters, four vertical lines connect to circles containing the numbers 1, 2, 3, and 4. Line 1 connects to 'C', line 2 connects to '0789BG', line 3 connects to '6SL', and line 4 connects to '12345'.

Illustration 1

g00751314

Where:

1. Caterpillar's World Manufacturing Code (characters 1-3)
2. Machine Descriptor (characters 4-8)

3. Check Character (character 9)

4. Machine Indicator Section (MIS) or Product Sequence Number (characters 10-17). These were previously referred to as the Serial Number.

Machines and generator sets produced before First Quarter 2001 will maintain their 8 character PIN format.

Components such as engines, transmissions, axles, etc. and work tools will continue to use an 8 character Serial Number (S/N).

Safety Section

I03637244

Safety Messages

SMCS Code: 1000; 6700; 7000; 7405

There are several specific safety messages on this machine. The exact location of the hazards and the description of the hazards are reviewed in this section. Please become familiarized with all safety messages.

Make sure that all of the safety messages are legible. Clean the safety messages or replace the safety messages if you cannot read the words. Replace the illustrations if the illustrations are not legible. When you clean the safety messages, use a cloth, water and soap. Do not use solvent, gasoline, or other harsh chemicals to clean the safety messages. Solvents, gasoline, or harsh chemicals could loosen the adhesive that secures the safety message. Loose adhesive will allow the safety message to fall.

Replace any safety message that is damaged, or missing. If a safety message is attached to a part that is replaced, install a safety message on the replacement part. Any Caterpillar dealer can provide new safety messages.

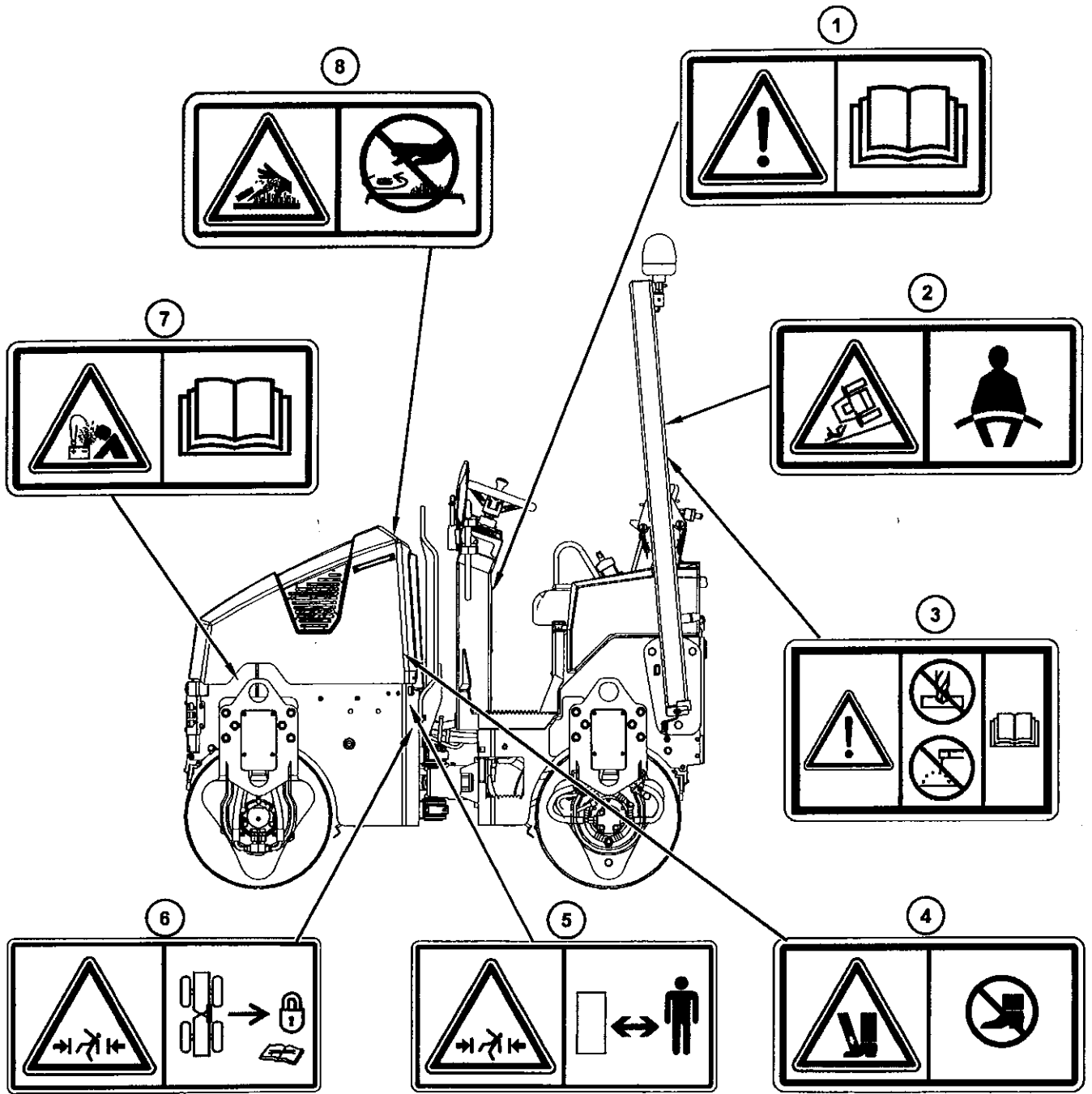
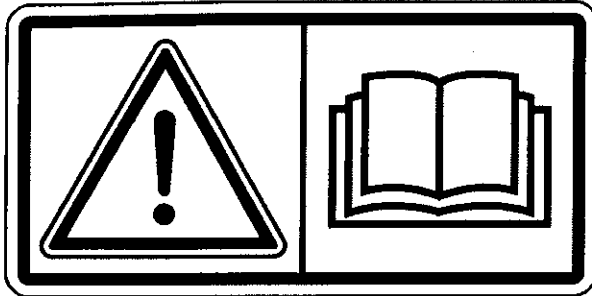


Illustration 2

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Do Not Operate (1)

This safety message is located below the steering wheel.



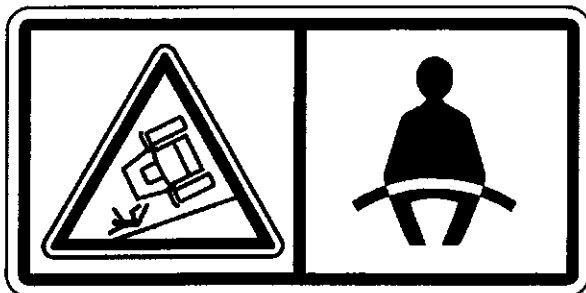
g01370904

WARNING

Do not operate or work on this machine unless you have read and understand the instructions and warnings in the Operation and Maintenance Manuals. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Caterpillar dealer for replacement manuals. Proper care is your responsibility.

Seat Belt (2) (If Equipped)

This safety message is located on the post for the ROPS.



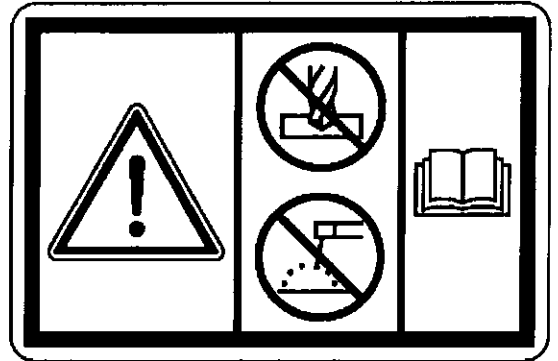
g01370908

WARNING

A seat belt should be worn at all times during machine operation to prevent serious injury or death in the event of an accident or machine overturn. Failure to wear a seat belt during machine operation may result in serious injury or death.

Do Not Weld or Drill (3) (If Equipped)

This safety message is located on the post for the ROPS (Rollover Protective Structure).



g01226901

WARNING

Structural damage, an overturn, modification, alteration, or improper repair can impair this structure's protection capability thereby voiding this certification. Do not weld on or drill holes in the structure. Consult a Caterpillar dealer to determine this structure's limitations without voiding its certification.

Crush Hazard (4)

This safety message is located on both sides of the machine at the rear of the hood.



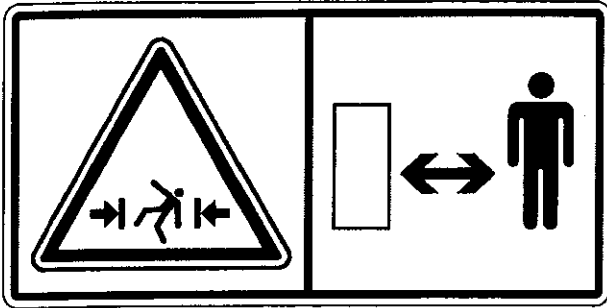
g01412530

WARNING

A crushing hazard exists between the front frame and rear frame when the machine is articulated. This can result in personal injury. Keep your feet inside the operator station.

Crush Hazard (5)

This safety message is located on both sides of the machine near the articulation joint.



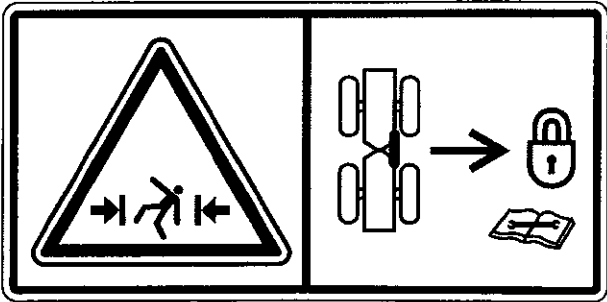
g01371644

⚠ WARNING

Stay back a safe distance. No clearance for a person in this area when the machine turns. Severe injury or death from crushing could occur.

Crush Hazard (6)

This safety message is located on both sides of the machine near the articulation joint.



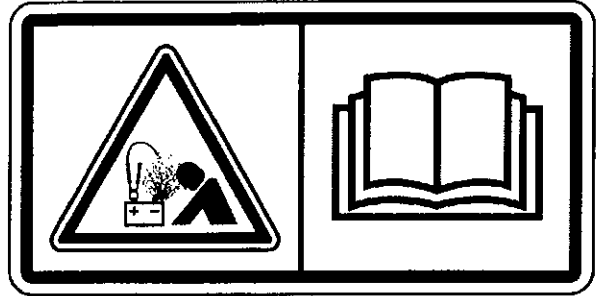
g01371647

⚠ WARNING

Connect the steering frame lock between the front and the rear frames before lifting, transporting, or servicing the machine in the articulation area. Disconnect the steering frame lock and secure the steering frame lock before resuming operation. Severe injury or death could occur.

Batteries (7)

This safety message is located on the left side of the machine above the drum.



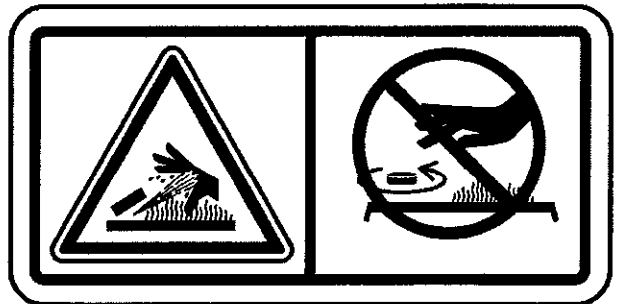
g01370909

⚠ WARNING

Explosion Hazard! Improper jumper cable connections can cause an explosion resulting in serious injury or death. Batteries may be located in separate compartments. Refer to the Operation and Maintenance Manual for the correct jump starting procedure.

Pressurized System (8)

This safety message is located in the engine compartment on top of the radiator.



g01371640

⚠ 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.

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General Hazard Information

SMCS Code: 7000

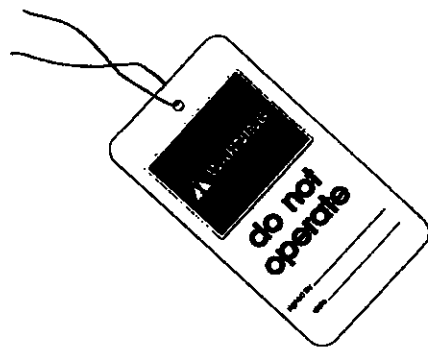


Illustration 3

g00104545

Attach a "Do Not Operate" warning tag or a similar warning tag to the start switch or to the controls before you service the equipment or before you repair the equipment. These warning tags (Special Instruction, SEHS7332) are available from your Caterpillar dealer.

Know the width of your equipment in order to maintain proper clearance when you operate the equipment near fences or near boundary obstacles.

Be aware of high voltage power lines and power cables that are buried. If the machine comes in contact with these hazards, serious injury or death may occur from electrocution.

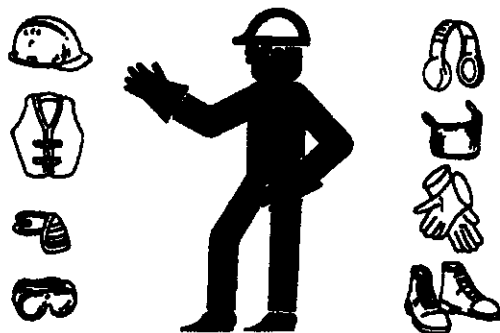


Illustration 4

g00702020

Wear a hard hat, protective glasses, and other protective equipment, as required.

Do not wear loose clothing or jewelry that can snag on controls or on other parts of the equipment.

Make sure that all protective guards and all covers are secured in place on the equipment.

Keep the equipment free from foreign material. Remove debris, oil, tools, and other items from the deck, from walkways, and from steps.

Secure all loose items such as lunch boxes, tools, and other items that are not a part of the equipment.

Know the appropriate work site hand signals and the personnel that are authorized to give the hand signals. Accept hand signals from one person only.

Do not smoke when you service an air conditioner. Also, do not smoke if refrigerant gas may be present. Inhaling the fumes that are released from a flame that contacts air conditioner refrigerant can cause bodily harm or death. Inhaling gas from air conditioner refrigerant through a lighted cigarette can cause bodily harm or death.

Never put maintenance fluids into glass containers. Drain all liquids into a suitable container.

Obey all local regulations for the disposal of liquids.

Use all cleaning solutions with care. Report all necessary repairs.

Do not allow unauthorized personnel on the equipment.

Unless you are instructed otherwise, perform maintenance with the equipment in the servicing position. Refer to Operation and Maintenance Manual for the procedure for placing the equipment in the servicing position.

When you perform maintenance above ground level use appropriate devices such as ladders or man lift machines. If equipped, use the machine anchorage points and use approved fall arrest harnesses and lanyards.

Pressurized Air and Water

Pressurized air and/or water can cause debris and/or hot water to be blown out. This could result in personal injury.

When pressurized air and/or pressurized water is used for cleaning, wear protective clothing, protective shoes, and eye protection. Eye protection includes goggles or a protective face shield.

The maximum air pressure for cleaning purposes must be reduced to 205 kPa (30 psi) when the nozzle is deadheaded and the nozzle is used with an effective chip deflector and personal protective equipment. The maximum water pressure for cleaning purposes must be below 275 kPa (40 psi).

Trapped Pressure

Pressure can be trapped in a hydraulic system. Releasing trapped pressure can cause sudden machine movement or attachment movement. Use caution if you disconnect hydraulic lines or fittings. High pressure oil that is released can cause a hose to whip. High pressure oil that is released can cause oil to spray. Fluid penetration can cause serious injury and possible death.

Fluid Penetration

Pressure can be trapped in the hydraulic circuit long after the engine has been stopped. The pressure can cause hydraulic fluid or items such as pipe plugs to escape rapidly if the pressure is not relieved correctly.

Do not remove any hydraulic components or parts until pressure has been relieved or personal injury may occur. Do not disassemble any hydraulic components or parts until pressure has been relieved or personal injury may occur. Refer to the Service Manual for any procedures that are required to relieve the hydraulic pressure.

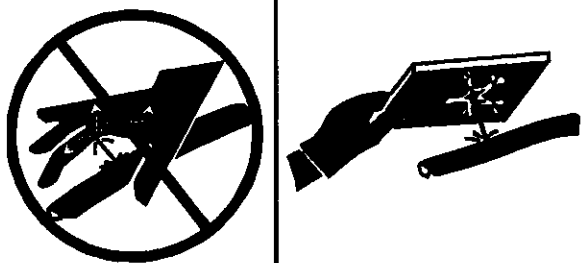


Illustration 5

g00687600

Always use a board or cardboard when you check for a leak. Leaking fluid that is under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. A pin hole leak can cause severe injury. If fluid is injected into your skin, you must get treatment immediately. Seek treatment from a doctor that is familiar with this type of injury.

Containing Fluid Spillage

Care must be taken in order to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the equipment. Prepare to collect the fluid with suitable containers before opening any compartment or disassembling any component that contains fluids.

Refer to Special Publication, NENG2500, "Caterpillar Dealer Service Tool Catalog" for the following items:

- Tools that are suitable for collecting fluids and equipment that is suitable for collecting fluids
- Tools that are suitable for containing fluids and equipment that is suitable for containing fluids

Obey all local regulations for the disposal of liquids.

Asbestos Information

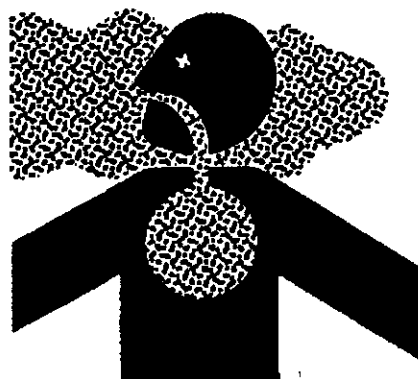


Illustration 6

g00702022

Caterpillar equipment and replacement parts that are shipped from Caterpillar are asbestos free. Caterpillar recommends the use of only genuine Caterpillar replacement parts. Use the following guidelines when you handle any replacement parts that contain asbestos or when you handle asbestos debris.

Use caution. Avoid inhaling dust that might be generated when you handle components that contain asbestos fibers. Inhaling this dust can be hazardous to your health. The components that may contain asbestos fibers are brake pads, brake bands, lining material, clutch plates, and some gaskets. The asbestos that is used in these components is usually bound in a resin or sealed in some way. Normal handling is not hazardous unless airborne dust that contains asbestos is generated.

If dust that may contain asbestos is present, there are several guidelines that should be followed:

- Never use compressed air for cleaning.
- Avoid brushing materials that contain asbestos.
- Avoid grinding materials that contain asbestos.
- Use a wet method in order to clean up asbestos materials.
- A vacuum cleaner that is equipped with a high efficiency particulate air filter (HEPA) can also be used.

- Use exhaust ventilation on permanent machining jobs.
- Wear an approved respirator if there is no other way to control the dust.
- Comply with applicable rules and regulations for the work place. In the United States, use Occupational Safety and Health Administration (OSHA) requirements. These OSHA requirements can be found in "29 CFR 1910.1001".
- Obey environmental regulations for the disposal of asbestos.
- Stay away from areas that might have asbestos particles in the air.

Dispose of Waste Properly

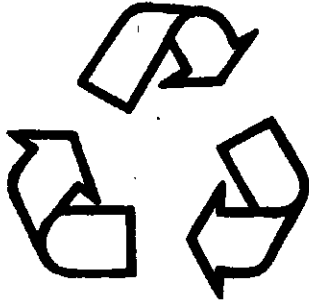


Illustration 7

g00706404

Improperly disposing of waste can threaten the environment. Potentially harmful fluids should be disposed of according to local regulations.

Always use leakproof containers when you drain fluids. Do not pour waste onto the ground, down a drain, or into any source of water.

101359664

Crushing Prevention and Cutting Prevention

SMCS Code: 7000

Support the equipment properly before you perform any work or maintenance beneath that equipment. Do not depend on the hydraulic cylinders to hold up the equipment. Equipment can fall if a control is moved, or if a hydraulic line breaks.

Do not work beneath the cab of the machine unless the cab is properly supported.

Unless you are instructed otherwise, never attempt adjustments while the machine is moving or while the engine is running.

Never jump across the starter solenoid terminals in order to start the engine. Unexpected machine movement could result.

Whenever there are equipment control linkages the clearance in the linkage area will change with the movement of the equipment or the machine. Stay clear of areas that may have a sudden change in clearance with machine movement or equipment movement.

Stay clear of all rotating and moving parts.

If it is necessary to remove guards in order to perform maintenance, always install the guards after the maintenance is performed.

Keep objects away from moving fan blades. The fan blade will throw objects or cut objects.

Do not use a kinked wire cable or a frayed wire cable. Wear gloves when you handle wire cable.

When you strike a retainer pin with force, the retainer pin can fly out. The loose retainer pin can injure personnel. Make sure that the area is clear of people when you strike a retainer pin. To avoid injury to your eyes, wear protective glasses when you strike a retainer pin.

Chips or other debris can fly off an object when you strike the object. Make sure that no one can be injured by flying debris before striking any object.

10132909

Burn Prevention

SMCS Code: 7000

Do not touch any part of an operating engine. Allow the engine to cool before any maintenance is performed on the engine. Relieve all pressure in the air system, in the oil system, in the lubrication system in the fuel system, or in the cooling system before any lines, fittings or related items are disconnected.

Coolant

When the engine is at operating temperature, the engine coolant is hot. The coolant is also under pressure. The radiator and all lines to the heaters or to the engine contain hot coolant.

Any contact with hot coolant or with steam can cause severe burns. Allow cooling system components to cool before the cooling system is drained.

Check the coolant level only after the engine has been stopped.

Ensure that the filler cap is cool before removing the filler cap. The filler cap must be cool enough to touch with a bare hand. Remove the filler cap slowly in order to relieve pressure.

Cooling system conditioner contains alkali. Alkali can cause personal injury. Do not allow alkali to contact the skin, the eyes, or the mouth.

Oils

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

Remove the hydraulic tank filler cap only after the engine has been stopped. The filler cap must be cool enough to touch with a bare hand. Follow the standard procedure in this manual in order to remove the hydraulic tank filler cap.

Batteries

Electrolyte is an acid. Electrolyte can cause personal injury. Do not allow electrolyte to contact the skin or the eyes. Always wear protective glasses for servicing batteries. Wash hands after touching the batteries and connectors. Use of gloves is recommended.

103659986

Fire Prevention and Explosion Prevention

SMCS Code: 7000



Illustration 8

g00704000

General

All fuels, most lubricants, and some coolant mixtures are flammable.

To minimize the risk of fire or explosion, Caterpillar recommends the following actions.

Always perform a Walk-Around Inspection, which may help you identify a fire hazard. Do not operate a machine when a fire hazard exists. Contact your Caterpillar dealer for service.

Understand the use of the primary exit and alternative exit on the machine. Refer to Operation and Maintenance Manual, "Alternative Exit".

Do not operate a machine with a fluid leak. Repair leaks and clean up fluids before resuming machine operation. Fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire. A fire may cause personal injury or death.

Remove flammable material such as leaves, twigs, papers, trash, etc. These items may accumulate in the engine compartment or around other hot areas and hot parts on the machine.

Keep the access doors to major machine compartments closed and access doors in working condition in order to permit the use of fire suppression equipment, in case a fire should occur.

Clean all accumulations of flammable materials such as fuel, oil and debris from the machine.

Do not operate the machine near any flame.

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

Do not weld or flame cut on tanks or lines that contain flammable fluids or flammable material. Empty and purge the lines and tanks. Then clean the lines and tanks with a nonflammable solvent prior to welding or flame cutting. Ensure that the components are properly grounded in order to avoid unwanted arcs.

Dust that is generated from repairing nonmetallic hoods or fenders may be flammable and/or explosive. Repair such components in a well ventilated area away from open flames or sparks. Use suitable Personal Protection Equipment (PPE).

Inspect all lines and hoses for wear or deterioration. Replace damaged lines and hoses. The lines and the hoses should have adequate support and secure clamps. Tighten all connections to the recommended torque. Damage to the protective cover or insulation may provide fuel for fires.

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



Illustration 9

g00704059

Use caution when you are fueling a machine. Do not smoke while you are fueling a machine. Do not fuel a machine near open flames or sparks. Always stop the engine before fueling. Fill the fuel tank outdoors. Properly clean areas of spillage.

Follow practices for safe fueling that are described in the "Operation" section of the Operation and Maintenance Manual section and follow local regulations. Never store flammable fluids in the operator compartment of the machine.

Battery and Battery Cables



Illustration 10

g00704135

Caterpillar recommends the following in order to minimize the risk of fire or an explosion related to the battery.

Do not operate a machine if battery cables or related parts show signs of wear or damage. Contact your Caterpillar dealer for service.

Follow safe procedures for engine starting with jump start cables. Improper jumper cable connections can cause an explosion that may result in injury. Refer to Operation and Maintenance Manual, "Engine Starting with Jump Start Cables" for specific instructions.

Do not charge a frozen battery. This may cause an explosion.

Gases from a battery can explode. Keep any open flames or sparks away from the top of a battery. Do not smoke in battery charging areas.

Never check the battery charge by placing a metal object across the terminal posts. Use a voltmeter in order to check the battery charge.

Daily inspect battery cables that are in areas that are visible. Inspect cables, clips, straps, and other restraints for damage. Replace any damaged parts. Check for signs of the following, which can occur over time due to use and environmental factors:

- Fraying
- Abrasion
- Cracking

- Discoloration
- Cuts on the insulation of the cable
- Fouling
- Corroded terminals, damaged terminals, and loose terminals

Replace damaged battery cable(s) and replace any related parts. Eliminate any fouling, which may have caused insulation failure or related component damage or wear. Ensure that all components are reinstalled correctly.

An exposed wire on the battery cable may cause a short to ground if the exposed area comes into contact with a grounded surface. A battery cable short produces heat from the battery current, which may be a fire hazard.

An exposed wire on the ground cable between the battery and the disconnect switch may cause the disconnect switch to be bypassed if the exposed area comes into contact with a grounded surface. This may result in an unsafe condition for servicing the machine. Repair components or replace components before servicing the machine.

WARNING

Fire on a machine can result in personal injury or death. Exposed battery cables that come into contact with a grounded connection can result in fires. Replace cables and related parts that show signs of wear or damage. Contact your Caterpillar dealer.

Wiring

Check electrical wires daily. If any of the following conditions exist, replace parts before you operate the machine.

- Fraying
- Signs of abrasion or wear
- Cracking
- Discoloration
- Cuts on insulation
- Other damage

Make sure that all clamps, guards, clips, and straps are reinstalled correctly. This will help to prevent vibration, rubbing against other parts, and excessive heat during machine operation.

Attaching electrical wiring to hoses and tubes that contain flammable fluids or combustible fluids should be avoided.

Consult your Caterpillar dealer for repair or for replacement parts.

Keep wiring and electrical connections free of debris.

Lines, Tubes and Hoses

Do not bend high pressure lines. Do not strike high pressure lines. Do not install any lines that are bent or damaged. Use the appropriate backup wrenches in order to tighten all connections to the recommended torque.

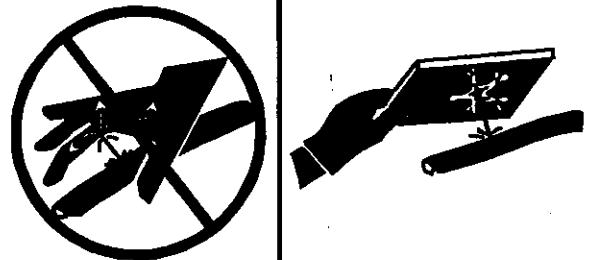


Illustration 11

g00687600

Check lines, tubes and hoses carefully. Wear Personal Protection Equipment (PPE) in order to check for leaks. Always use a board or cardboard when you check for a leak. Leaking fluid that is under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. A pin hole leak can cause severe injury. If fluid is injected into your skin, you must get treatment immediately. Seek treatment from a doctor that is familiar with this type of injury.

Replace the affected parts if any of the following conditions are present:

- End fittings are damaged or leaking.
- Outer coverings are chafed or cut.
- Wires are exposed.
- Outer coverings are swelling or ballooning.
- Flexible parts of the hoses are kinked.
- Outer covers have exposed embedded armoring.
- End fittings are displaced.

Make sure that all clamps, guards, and heat shields are installed correctly. During machine operation, this will help to prevent vibration, rubbing against other parts, excessive heat, and failure of lines, tubes and hoses.

Do not operate a machine when a fire hazard exists. Repair any lines that are corroded, loose or damaged. Leaks may provide fuel for fires. Consult your Caterpillar dealer for repair or for replacement parts. Use genuine Caterpillar parts or the equivalent, for capabilities of both the pressure limit and temperature limit.

Ether

Ether (if equipped) is commonly used in cold weather applications. Ether is flammable and poisonous.

Follow the correct cold engine starting procedures. Refer to the section in the Operation and Maintenance Manual with the label "Engine Starting".

Do not spray ether manually into an engine if the machine is equipped with a thermal starting aid for cold weather starting.

Use ether in well ventilated areas. Do not smoke while you are replacing an ether cylinder or while you are using an ether spray.

Do not store ether cylinders in living areas or in the operator compartment of a machine. Do not store ether cylinders in direct sunlight or in temperatures above 49° C (120.2° F). Keep ether cylinders away from open flames or sparks.

Dispose of used ether cylinders properly. Do not puncture an ether cylinder. Keep ether cylinders away from unauthorized personnel.

Fire Extinguisher

As an additional safety measure, keep a fire extinguisher on the machine.

Be familiar with the operation of the fire extinguisher. Inspect the fire extinguisher and service the fire extinguisher regularly. Follow the recommendations on the instruction plate.

Consider installation of an aftermarket Fire Suppression System, if the application and working conditions warrant the installation.

102680581

Fire Extinguisher Location

SMCS Code: 7000; 7419

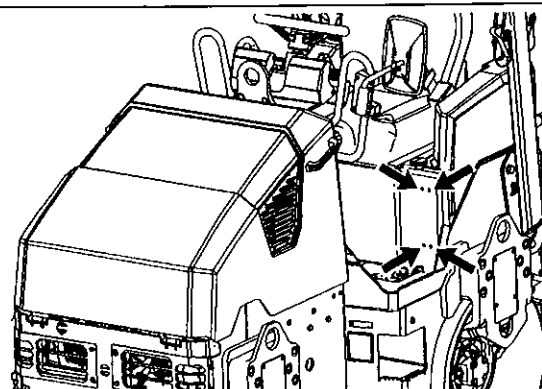


Illustration 12

g01346475

Mount the fire extinguisher on the left side of the operator station. Use the four weld nuts that are shown in Illustration 12 in order to mount the fire extinguisher. Consult your Caterpillar dealer for the proper bracket and the proper fire extinguisher.

101122596

Electrical Storm Injury Prevention

SMCS Code: 7000

When lightning is striking in the vicinity of the machine, the operator should never attempt the following procedures:

- Mount the machine.
- Dismount the machine.

If you are in the operator's station during an electrical storm, stay in the operator's station. If you are on the ground during an electrical storm, stay away from the vicinity of the machine.

103636744

Before Starting Engine

SMCS Code: 1000; 7000

Make sure that the steering frame lock link is stored in the unlocked position. The steering frame lock link must be removed in order to steer the machine. Start the engine only from the operator compartment. Never short across the starter terminals or across the batteries. Shorting could damage the electrical system by bypassing the engine neutral start system.

Inspect the condition of the seat belt and of the mounting hardware. Replace any parts that are worn or damaged. Regardless of appearance, replace the seat belt after three years of use. Do not use a seat belt extension on a retractable seat belt.

Make sure that the machine is equipped with a lighting system that is adequate for the job conditions. Make sure that all machine lights are working properly. Before you start the engine and before you move the machine, make sure that no one is underneath the machine, around the machine, or on the machine. Briefly sound the horn before you start the engine. Make sure that the area is free of personnel.

i02676850

Engine Starting

SMCS Code: 1000; 7000

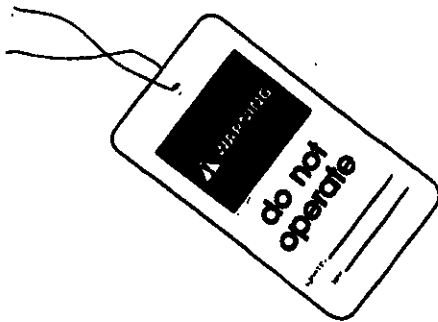


Illustration 13

g00102517

Do not start the engine or move any controls if there is a "Do Not Operate" or similar warning tag attached to the start switch or controls.

Before you start the engine, check for the presence of bystanders or maintenance personnel. Ensure that all personnel are clear of the machine. Briefly sound the forward horn before you start the engine.

Move the parking brake switch to the "ON" position.

Start the engine and operate the engine in a well ventilated area. In an enclosed area, vent the exhaust to the outside.

i01361940

Before Operation

SMCS Code: 7000

Clear all personnel from the machine and from the area.

Clear all obstacles that are in the path of the machine. Beware of hazards such as wires, ditches, etc.

Make sure that the machine horn, the backup alarm (if equipped) and all other warning devices are working properly.

Fasten the seat belt securely.

i03162317

Visibility Information

SMCS Code: 7000

Before you start the machine, perform a walk-around inspection in order to ensure that there are no hazards around the machine.

While the machine is in operation, constantly survey the area around the machine in order to identify potential hazards as hazards become visible around the machine.

Your machine may be equipped with visual aids. Some examples of visual aids are Closed Circuit Television (CCTV) and mirrors. Before operating the machine, ensure that the visual aids are in proper working condition and that the visual aids are clean. Adjust the visual aids using the procedures that are located in this Operation and Maintenance Manual. If equipped, the Work Area Vision System shall be adjusted according to Operation and Maintenance Manual, SEBU8157, "Work Area Vision System".

It may not be possible to provide direct visibility on large machines to all areas around the machine. Appropriate job site organization is required in order to minimize hazards that are caused by restricted visibility. Job site organization is a collection of rules and procedures that coordinates machines and people that work together in the same area. Examples of job site organization include the following:

- Safety instructions
- Controlled patterns of machine movement and vehicle movement
- Workers that direct traffic to move when it is safe
- Restricted areas
- Operator training
- Warning symbols or warning signs on machines or on vehicles
- A system of communication

- Communication between workers and operators prior to approaching the machine

Modifications of the machine configuration by the user that result in a restriction of visibility shall be evaluated.

I03633561

Operation

SMCS Code: 7000

Machine Operating Temperature Range. The machine must function satisfactorily in the anticipated ambient temperature limits that are encountered during operation. The minimum limits of items that will effect the safe operation of the machine to be considered are 0-100% relative humidity for -40 °C (-40 °F) to 50 °C (122 °F) temperatures unless otherwise specified in marketing functional specification.

Only operate the machine while you are in a seat. The seat belt must be fastened while you operate the machine. Only operate the controls while the engine is running.

While you operate the machine slowly in an open area, check for proper operation of all controls and all protective devices.

Make sure that no personnel will be endangered before you move the machine.

Do not allow riders on the machine unless the machine has the following equipment:

- additional seat
- additional seat belt

Never use the work tool as a work platform.

Note any needed repairs during machine operation. Report any needed repairs.

Carry attachments approximately 40 cm (15 inches) above ground level. Do not go close to the edge of a cliff, an excavation, or an overhang.

If the machine begins to sideslip downward on a grade, immediately remove the load and turn the machine downhill.

Avoid any conditions that can lead to tipping the machine. The machine can tip when you work on hills, on banks and on slopes. Also, the machine can tip when you cross ditches, ridges or other unexpected obstructions.

Avoid operating the machine across the slope. When possible, operate the machine up the slopes and down the slopes.

Maintain control of the machine. Do not overload the machine beyond the machine capacity.

Never straddle a wire cable. Never allow other personnel to straddle a wire cable.

Know the maximum dimensions of your machine.

I02624835

Engine Stopping

SMCS Code: 1000; 7000

Do not stop the engine immediately after the machine has been operated under load. This can cause overheating and accelerated wear of engine components.

After the machine is parked and the parking brake is engaged, allow the engine to run for two minutes before shutdown. This allows hot areas of the engine to cool gradually.

I03671600

Parking

SMCS Code: 7000

Park on a level surface. If you must park on a grade, chock the machine's wheels.

Move the propel control lever to the NEUTRAL position. Engage the parking brake.

Lower all attachments to the ground.

Stop the engine.

Turn the engine start switch to the OFF position and remove the engine start switch key.

Note: If you are parking the machine for an extended period of time, turn the battery disconnect switch (if equipped) to the OFF position. This will prevent drainage of the battery. A battery short circuit, any current draw from certain components, and vandalism can cause drainage of the battery.

I03647047

Slope Operation

SMCS Code: 7000

Machines that are operating safely in various applications depend on these criteria: the machine model, configuration, machine maintenance, operating speed of the machine, conditions of the terrain, fluid levels, and tire inflation pressures. The most important criteria are the skill and judgment of the operator.

A well trained operator that follows the instructions in the Operation and Maintenance Manual has the greatest impact on stability. Operator training provides a person with the following abilities: observation of working and environmental conditions, feel for the machine, identification of potential hazards, and operating the machine safely by making appropriate decisions.

When you work on side hills and when you work on slopes, consider the following important points:

Speed of travel – At higher speeds, forces of inertia tend to make the machine less stable.

Roughness of terrain or surface – The machine may be less stable with uneven terrain.

Direction of travel – Avoid operating the machine across the slope. When possible, operate the machine up the slopes and operate the machine down the slopes. In order to achieve the best compaction performance and steering control on a slope, operate a vibratory soil compactor with the drum end of the machine downhill.

Compacting with drum beyond edge of surface – Machines with solid drums can tip suddenly as the center of balance of the machine moves beyond the edge of the compacted surface. Slow down and pay close attention when operating with the drum extended beyond the edge of the compacted surface. Minimize the amount of the drum that extends beyond the edge.

Over compacting – When the material is fully compacted, and the vibratory system is activated, the drum may bounce on the compacted surface. If the machine is on an incline, this can cause the machine to move down the slope with the force of gravity. Reduce the vibratory amplitude or shut off vibration if the drum is bouncing on the compacted surface.

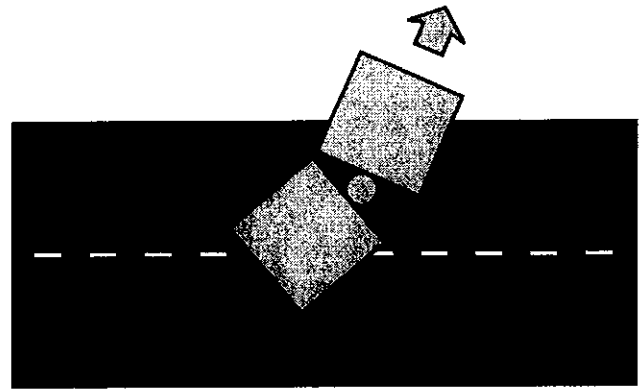


Illustration 14

g01958702

The appropriate method for driving off a compacted surface

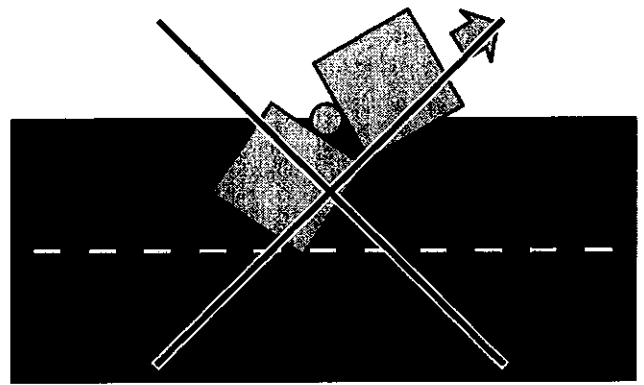


Illustration 15

g01957405

The improper method for driving off a compacted surface

Steering angle – The steering angle affects the lateral balance of an articulated machine. When the machine is driven off the compacted mat, always exit by turning the machine toward the edge. Refer to illustration 14. Do not turn away from the edge when the machine is driven off the compacted mat. Refer to illustration 15.

Mounted equipment – Balance of the machine may be impeded by the following components: equipment that is mounted on the machine, machine configuration, weights, and counterweights.

Nature of surface – Ground that has been newly filled with earth may collapse from the weight of the machine. The vibratory action of a vibratory compactor can increase the tendency of material on the edge of an incline to collapse.

Surface material – Rocks and moisture of the surface material may drastically affect the machine's traction and machine's stability. Rocky surfaces may promote side slipping of the machine.

Operated equipment – Be aware of performance features of the equipment in operation and the effects on machine stability.

Operating techniques – Keep all attachments low to the ground for optimum stability.

Machine systems have limitations on slopes – Slopes can affect the proper function and operation of the various machine systems. These machine systems are needed for machine control.

Note: Safe operation on steep slopes may require special machine maintenance. Excellent skill of the operator and proper equipment for specific applications are also required. Consult the Operation and Maintenance Manual for the proper fluid level requirements and intended use for the machine.

103670944

Sound Information and Vibration Information

SMCS Code: 7000

Sound Level Information

Hearing protection may be needed when the machine is operated with an open operator station for extended periods or in a noisy environment. Hearing protection may be needed when the machine is operated with a cab that is not properly maintained or when the doors and windows are open for extended periods or in a noisy environment.

Sound Level Information for Machines in European Union Countries and in Countries that Adopt the “EU Directives”

The operator sound pressure level is 88 dB(A). The operator sound pressure level was measured according to the static test procedures and conditions that are specified in “ISO 6394:1998”.

The sound power level that is labelled on the machine is 106 dB(A). The measurement of the sound power level was made according to the test procedures and conditions that are specified in “2000/14/EC”.

“The European Union Physical Agents (Vibration) Directive 2002/44/EC”

Vibration Data for Vibratory Asphalt Compactor

Information Concerning Hand/Arm Vibration Level

When the machine is operated according to the intended use, the hand/arm vibration of this machine is below 2.5 meter per second squared.

Information Concerning Whole Body Vibration Level

This section provides vibration data and a method for estimating the vibration level for vibratory asphalt compactors.

Note: Vibration levels are influenced by many different parameters. Many items are listed below.

- Operator training, behavior, mode, and stress
- Job site organization, preparation, environment, weather, and material
- Machine type, quality of the seat, quality of the suspension system, attachments, and condition of the equipment

It is not possible to get precise vibration levels for this machine. The expected vibration levels can be estimated with the information in Table 1 in order to calculate the daily vibration exposure. A simple evaluation of the machine application can be used.

Estimate the vibration levels for the three vibration directions. For typical operating conditions, use the average vibration levels as the estimated level. With an experienced operator and smooth terrain, subtract the Scenario Factors from the average vibration level in order to obtain the estimated vibration level. For aggressive operations and severe terrain, add the Scenario Factors to the average vibration level in order to obtain the estimated vibration level.

Note: All vibration levels are in meter per second squared.

Table 1

"ISO Reference Table A - Equivalent vibration levels of whole body vibration emission for earthmoving equipment."							
Machine Type	Typical Operating Activity	Vibration Levels			Scenario Factors		
		X axis	Y axis	Z axis	X axis	Y axis	Z axis
Vibratory Asphalt Compactor	vibration ON	0,33	0,40	0,48	0,11	0,08	0,14
	vibration OFF	0,35	0,43	0,36	0,13	0,20	0,19

Note: Refer to "ISO/TR 25398 Mechanical Vibration - Guideline for the assessment of exposure to whole body vibration of ride on operated earthmoving machines" for more information about vibration. This publication uses data that is measured by international institutes, organizations and manufacturers. This document provides information about the whole body exposure of operators of earthmoving equipment. Refer to Operation and Maintenance Manual, SEBU8257, "The European Union Physical Agents (Vibration) Directive 2002/44/EC" for more information about machine vibration levels.

The Caterpillar suspension seat meets the criteria of "ISO 7096". This represents vertical vibration level under severe operating conditions.

Guidelines for Reducing Vibration Levels on Earthmoving Equipment

Properly adjust machines. Properly maintain machines. Operate machines smoothly. Maintain the conditions of the terrain. The following guidelines can help reduce the whole body vibration level:

1. Use the right type and size of machine, equipment, and attachments.
2. Maintain machines according to the manufacturer's recommendations.
 - a. Tire pressures
 - b. Brake and steering systems
 - c. Controls, hydraulic system and linkages
3. Keep the terrain in good condition.
 - a. Remove any large rocks or obstacles.
 - b. Fill any ditches and holes.
 - c. Provide machines and schedule time in order to maintain the conditions of the terrain.
4. Use a seat that meets "ISO 7096". Keep the seat maintained and adjusted.
 - a. Adjust the seat and suspension for the weight and the size of the operator.
 - b. Inspect and maintain the seat suspension and adjustment mechanisms.
5. Perform the following operations smoothly.
 - a. Steer
 - b. Brake
 - c. Accelerate.
 - d. Shift the gears.
6. Move the attachments smoothly.
7. Adjust the machine speed and the route in order to minimize the vibration level.
 - a. Drive around obstacles and rough terrain.
 - b. Slow down when it is necessary to go over rough terrain.
8. Minimize vibrations for a long work cycle or a long travel distance.
 - a. Use machines that are equipped with suspension systems.
 - b. Use the ride control system.
 - c. If no ride control system is available, reduce speed in order to prevent bounce.
 - d. Haul the machines between workplaces.
9. Less operator comfort may be caused by other risk factors. The following guidelines can be effective in order to provide better operator comfort:
 - a. Adjust the seat and adjust the controls in order to achieve good posture.
 - b. Adjust the mirrors in order to minimize twisted posture.
 - c. Provide breaks in order to reduce long periods of sitting.

- d. Avoid jumping from the cab.
- e. Minimize repeated handling of loads and lifting of loads.
- f. Minimize any shocks and impacts during sports and leisure activities.

Sources

The vibration information and calculation procedure is based on "ISO/TR 25398 Mechanical Vibration - Guideline for the assessment of exposure to whole body vibration of ride on operated earthmoving machines". Harmonized data is measured by international institutes, organizations and manufacturers.

This literature provides information about assessing the whole body vibration exposure of operators of earthmoving equipment. The method is based on measured vibration emission under real working conditions for all machines.

You should check the original directive. This document summarizes part of the content of the applicable law. This document is not meant to substitute the original sources. Other parts of these documents are based on information from the United Kingdom Health and Safety Executive.

Refer to Operation and Maintenance Manual, SEBU8257, "The European Union Physical Agents (Vibration) Directive 2002/44/EC" for more information about vibration.

Consult your local Caterpillar dealer for more information about machine features that minimize vibration levels. Consult your local Caterpillar dealer about safe machine operation.

Use the following web site in order to find your local dealer:

Caterpillar, Inc.
www.cat.com

Product Information Section

General Information

102851814

Specifications

SMCS Code: 7000

Intended Use

This roller is a self-propelled vibratory compactor. This roller consists of metallic cylindrical bodies (drums) that are used for compaction. This roller is used to compact materials such as crushed rock, earth, asphalt or gravel through rolling and/or vibrating action of the roller.

Dimensions

Table 2

CB14 Vibratory Compactor	
Operating Machine Weight	1620 kg (3572 lb)
Maximum Length of Machine	2050 mm (6.8 ft)
Width of the Machine	960 mm (3.2 ft)
Height of the Machine with a ROPS	2395 mm (7.9 ft)
Width of Drum	800 mm (2.62 ft)

Table 3

CB14 XW (900) Vibratory Compactor	
Operating Machine Weight	1710 kg (3770 lb)
Maximum Length of Machine	2050 mm (6.8 ft)
Width of the Machine	989 mm (3.24 ft)
Height of the Machine with a ROPS	2395 mm (7.9 ft)
Width of Drum	900 mm (2.95 ft)

Table 4

CB14 XW (1000) Vibratory Compactor	
Operating Machine Weight	1840 kg (4057 lb)
Maximum Length of Machine	2050 mm (6.8 ft)
Width of the Machine	1084 mm (3.6 ft)
Height of the Machine with a ROPS	2395 mm (7.9 ft)
Width of Drum	1000 mm (3.28 ft)

Note: The following items are included in the operating machine weight: lubricants, coolant, full fuel tank, full hydraulic tank, half full water tank, and an 80 kg (176 lb) operator.

Identification Information

103637269

Plate Locations and Film Locations

SMCS Code: 1000; 7000

The Product Information Number (PIN) will be used to identify a powered machine that is designed for an operator to ride.

Caterpillar products such as engines, transmissions and major attachments that are not designed for an operator to ride are identified by Serial Numbers.

For quick reference, record the identification numbers in the spaces that are provided below the illustration.

Product Identification Number (PIN)

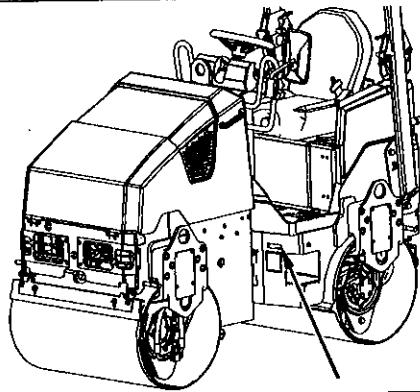


Illustration 16

g01351063

Machine PIN _____

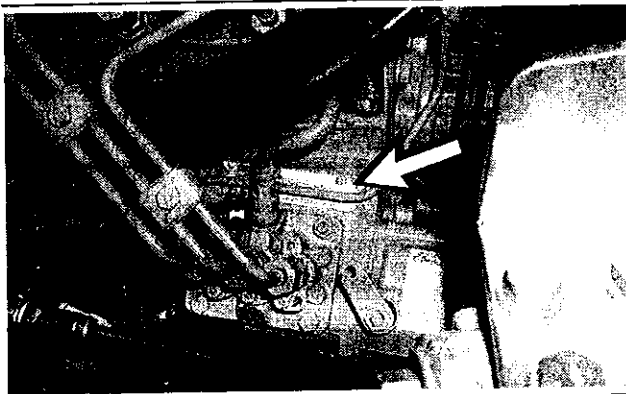


Illustration 17

g01351065

Engine Information and Serial Number Plate _____

Certification

ROPS/FOPS Structure

This message is positioned on the ROPS on the left side of the machine above the door.

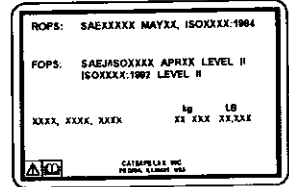
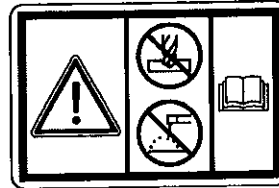


Illustration 18

g01212098

WARNING

Structural damage, an overturn, modification, alteration, or improper repair can impair this structure's protection capability thereby voiding this certification. Do not weld on or drill holes in the structure. This will void the certification. Consult a Caterpillar dealer to determine this structure's limitations without voiding its certification.

This machine has been certified to the standards that are listed on the certification film. The maximum mass of the machine, which includes the operator and the attachments without a payload, should not exceed the mass on the certification film.

Refer to Operation and Maintenance Manual, "Guards (Operator Protection)" for more information.

European Union

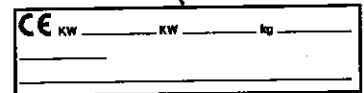
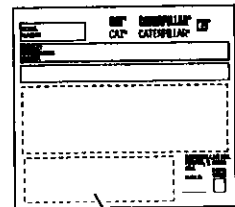


Illustration 19

g01880193

This plate is positioned on the bottom left side of the plate for the PIN.

Note: The CE plate is on machines that are certified to the European Union requirements that were effective at that time.

For machines compliant to 2006/42/EC, the following information is stamped onto the CE plate. For quick reference, record this information in the spaces that are provided below.

- Engine Power Primary Engine (kW) _____
- Engine Power for Additional Engine (If Equipped) _____
- Typical Machine Operating Weight for European Market (kg) _____
- Year of Construction _____
- Machine Type _____

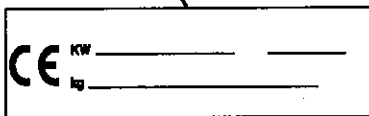
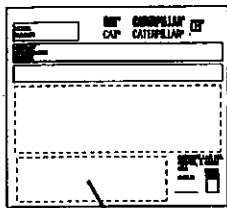


Illustration 20

g01120192

This plate is positioned on the bottom left side of the plate for the PIN.

Note: The CE plate is on machines that are certified to the European Union requirements that were effective at that time.

For machines compliant to 1998/42/EC, the following information is stamped onto the CE plate. For quick reference, record this information in the spaces that are provided below.

- Engine Power Primary Engine (kW) _____
- Typical Machine Operating Weight for European Market (kg) _____
- Year _____

For the name and address of the manufacturer, and the country of origin of the machine, refer to the PIN plate.

For manufacturer name and address and the country of origin, see the PIN plate.

Sound Certification

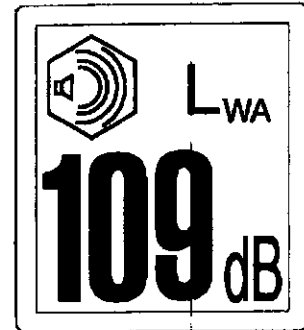


Illustration 21

g00933634

A typical example of this film is shown. Your machine may have a different value.

If equipped, the certification film is used to verify the environmental sound certification of the machine. The value that is listed on the film indicates the guaranteed sound power level. The guaranteed sound power level is measured at the time of manufacture. The guaranteed sound power level is measured according to the conditions that are specified in "ISO 6394:1998".

103638040

Emissions Certification Film

SMCS Code: 1000; 7000; 7405

Note: This information is pertinent in the United States, in Canada and in Europe.

Consult your Caterpillar dealer for an Emission Control Warranty Statement.

This label is located on the engine.

103637235

Declaration of Conformity

SMCS Code: 1000; 7000

Table 5

An EC Declaration of Conformity document was provided with the machine if it was manufactured to comply with specific requirements for the European Union. In order to determine the details of the applicable Directives, review the complete EC Declaration of Conformity provided with the machine. The extract shown below from an EC Declaration of Conformity for machines that are declared compliant to "2006/42/EC" applies only to those machines originally "CE" marked by the manufacturer listed and which have not since been modified.

EC DECLARATION OF CONFORMITY OF MACHINERY

Manufacturer: CATERPILLAR PAVING PRODUCTS INC. 9401 85th Ave. North Brooklyn Park, MN 55445 USA

Person authorized to compile the Technical File and to communicate relevant part (s) of the Technical File to the Authorities of European Union Member States on request:

Standards & Regulations Manager, Caterpillar France S.A.S 40,
Avenue Leon-Blum, B.P. 55, 38041 Grenoble Cedex 9, France

I, the undersigned, _____, hereby certify that the construction equipment specified hereunder

Description:	Generic Denomination:	Paving Equipment
	Function:	Utility Compactor
	Model/Type:	CB14
	Serial Number:	
	Commercial Name:	Caterpillar

Fulfills all the relevant provisions of the following Directives

Directives	Notified Body	Document No.
2006/42/EC	N/A	
2000/14/EC amended by 2005/88/EC, Note (1)		
2004/108/EC	N/A	

Note (1) Annex - _____ Guaranteed Sound Power Level - _____ dB (A)
 Representative Equipment Type Sound Power Level - _____ dB (A)
 Engine Power per _____ - _____ kW Rated engine speed - _____ rpm
 Technical Documentation accessible through person listed above authorized to compile the Technical File

Done at:

Signature

Date:

Name/Position

Note: The above information was correct as of August, 2009, but may be subject to change, please refer to the individual declaration of conformity issued with the machine for exact details.

Operation Section

Before Operation

I02415882

Mounting and Dismounting

SMCS Code: 7000

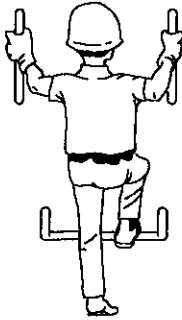


Illustration 22

g00037860

Use steps and handholds whenever you mount the machine. Use steps and handholds whenever you dismount the machine. Before you mount the machine, clean the step and the handholds. Inspect the step and handholds. Make all necessary repairs.

Face the machine whenever you mount the machine and whenever you dismount the machine. Maintain a three-point contact with the step and with handholds.

Note: Three-point contact can be two feet and one hand. Three-point contact can also be one foot and two hands.

Do not mount a moving machine. Do not dismount a moving machine. Never jump off the machine. Do not try to mount the machine when you carry tools or supplies. Do not try to dismount the machine when you are carrying tools or supplies. Use a hand line to pull equipment onto the platform. Do not use any controls as handholds when you enter the operator compartment or when you exit the operator compartment.

I02704669

Daily Inspection

SMCS Code: 1000; 7000

For a maximum service life of the machine, complete a thorough walk-around inspection before you mount the machine and before you start the engine.

Inspect the area around the machine and under the machine. Look for loose bolts, trash buildup, oil, coolant leakage, broken parts, or worn parts.

Note: Watch closely for leaks. If you observe a leak, find the source of the leak and correct the leak. If you suspect a leak or you observe a leak, check the fluid levels more frequently.

Inspect the condition of the equipment and of the hydraulic components.

Check the condition of the tires. Adjust the inflation pressure, if necessary.

Check all of the oil levels, all of the coolant levels, and all of the fuel levels.

Remove any trash buildup and debris. Make all necessary repairs before you operate the machine.

Make sure that all covers and guards are securely attached.

Adjust the mirrors for the correct rear view of the machine.

Make sure that the engine air filter service indicator is not in the red zone.

Grease all of the fittings that need to be serviced on a daily basis.

Daily, perform the procedures that are applicable to your machine:

- Backup Alarm - Test
- Beacon and Lights - Inspect
- Cooling System Level - Check
- Drum Scrapers - Inspect/Adjust/Replace
- Engine Air Filter Service Indicator - Inspect
- Engine Oil Level - Check
- Hydraulic System Oil Level - Check
- Indicators and Gauges - Test
- Neutral Start Switch - Test
- Seat Belt - Inspect
- Water Spray System Filter - Clean

i02693151

Steering Frame Lock

SMCS Code: 7506

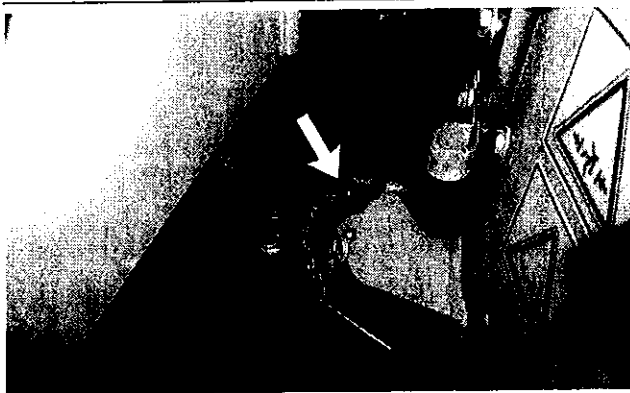


Illustration 23

g01351074

The steering frame lock is in the LOCKED position.

Install the steering frame lock link in the LOCKED position before you lift the machine and before you transport the machine on another vehicle. Also install the steering frame lock link before you perform maintenance near the center of the machine.

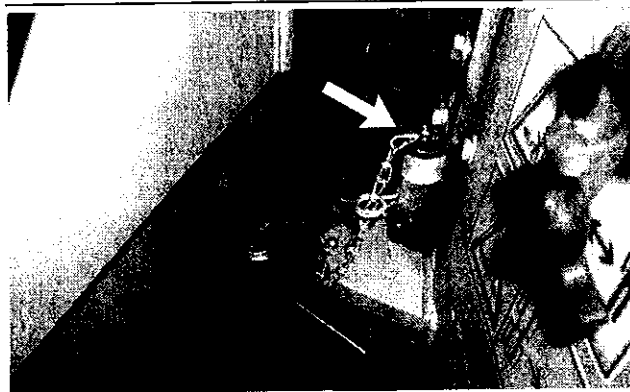


Illustration 24

g01351076

The steering frame lock is in the UNLOCKED position.

Install the steering frame lock in the UNLOCKED position before you operate the machine.

Machine Operation

i02680678

Seat (Adjustable (If Equipped))

SMCS Code: 7312; 7324

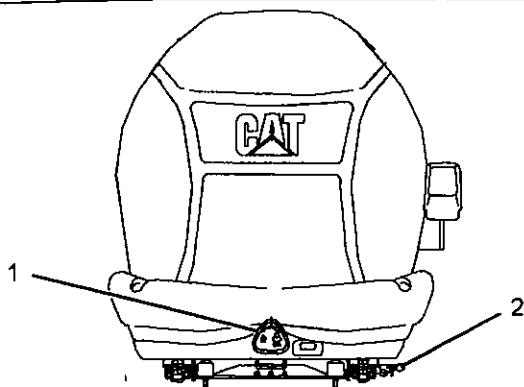


Illustration 25

g01358893

Note: Adjust the seat at the beginning of every shift. Adjust the seat when operators change.

When the operator's back is against the back of the seat, adjust the seat so that the controls can be reached.

Note: Always lock the seat in position before you operate the machine.

In order to adjust the suspension of the seat, turn knob (1). Turn knob (1) clockwise in order to increase the stiffness of the suspension of the seat. Turn knob (1) counterclockwise in order to decrease the stiffness of the suspension of the seat.

Use lever (2) in order to slide the seat forward or backward.

Note: Always lock the position of the seat before operating the machine.

i03415082

Seat Belt

SMCS Code: 7327

Note: This machine was equipped with a seat belt when the machine was shipped from Caterpillar. At the time of installation, the seat belt and the instructions for installation of the seat belt meet the SAE J386 and ISO 6683 standards. See your Caterpillar dealer for all replacement parts.

Always check the condition of the seat belt and the condition of the mounting hardware before you operate the machine.

Seat Belt Adjustment for Non-Retractable Seat Belts

Adjust both ends of the seat belt. The seat belt should be snug but comfortable.

Lengthening the Seat Belt

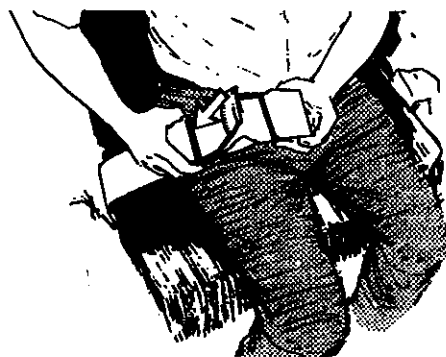


Illustration 26

g00100709

1. Unfasten the seat belt.

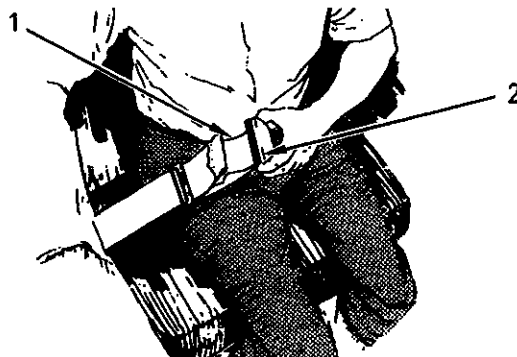


Illustration 27

g00932817

2. To remove the slack in outer loop (1), rotate buckle (2). This will free the lock bar. This permits the seat belt to move through the buckle.
3. Remove the slack from the outer belt loop by pulling on the buckle.
4. Loosen the other half of the seat belt in the same manner. If the seat belt does not fit snugly with the buckle in the center, readjust the seat belt.

Shortening the Seat Belt

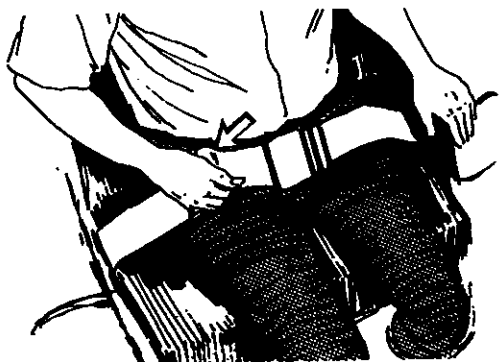


Illustration 28

g00100713

1. Fasten the seat belt. Pull out on the outer belt loop in order to tighten the seat belt.
2. Adjust the other half of the seat belt in the same manner.
3. If the seat belt does not fit snugly with the buckle in the center, readjust the seat belt.

Fastening The Seat Belt

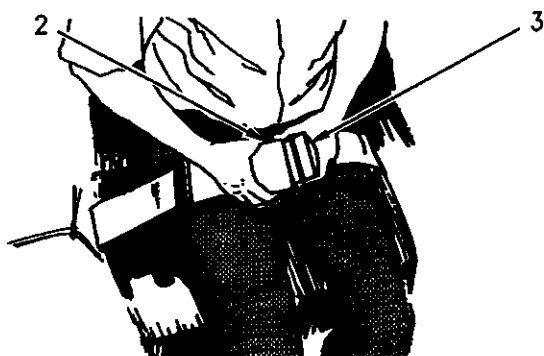


Illustration 29

g00932818

Fasten the seat belt catch (3) into the buckle (2). Make sure that the seat belt is placed low across the lap of the operator.

Releasing The Seat Belt



Illustration 30

g00100717

Pull up on the release lever. This will release the seat belt.

Seat Belt Adjustment for Retractable Seat Belts

Fastening The Seat Belt

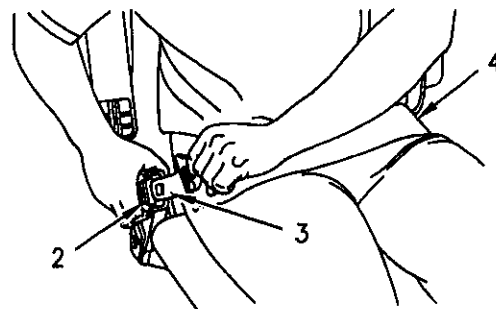


Illustration 31

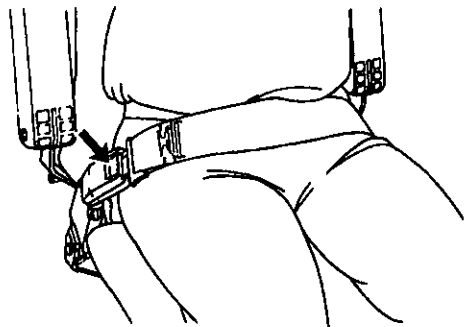
g00867598

Pull seat belt (4) out of the retractor in a continuous motion.

Fasten seat belt catch (3) into buckle (2). Make sure that the seat belt is placed low across the lap of the operator.

The retractor will adjust the belt length and the retractor will lock in place. The comfort ride sleeve will allow the operator to have limited movement.

Releasing The Seat Belt



g00039113

Illustration 32

Push the release button on the buckle in order to release the seat belt. The seat belt will automatically retract into the retractor.

Extension of the Seat Belt

WARNING

When using retractable seat belts, do not use seat belt extensions, or personal injury or death can result.

The retractor system may or may not lock up depending on the length of the extension and the size of the person. If the retractor does not lock up, the seat belt will not retain the person.

Longer, non-retractable seat belts and extensions for the non-retractable seat belts are available.

Caterpillar requires only non-retractable seat belts to be used with a seat belt extension.

Consult your Caterpillar dealer for longer seat belts and for information on extending the seat belts.

I03670961

Operator Controls

SMCS Code: 7000; 7300; 7301; 7451

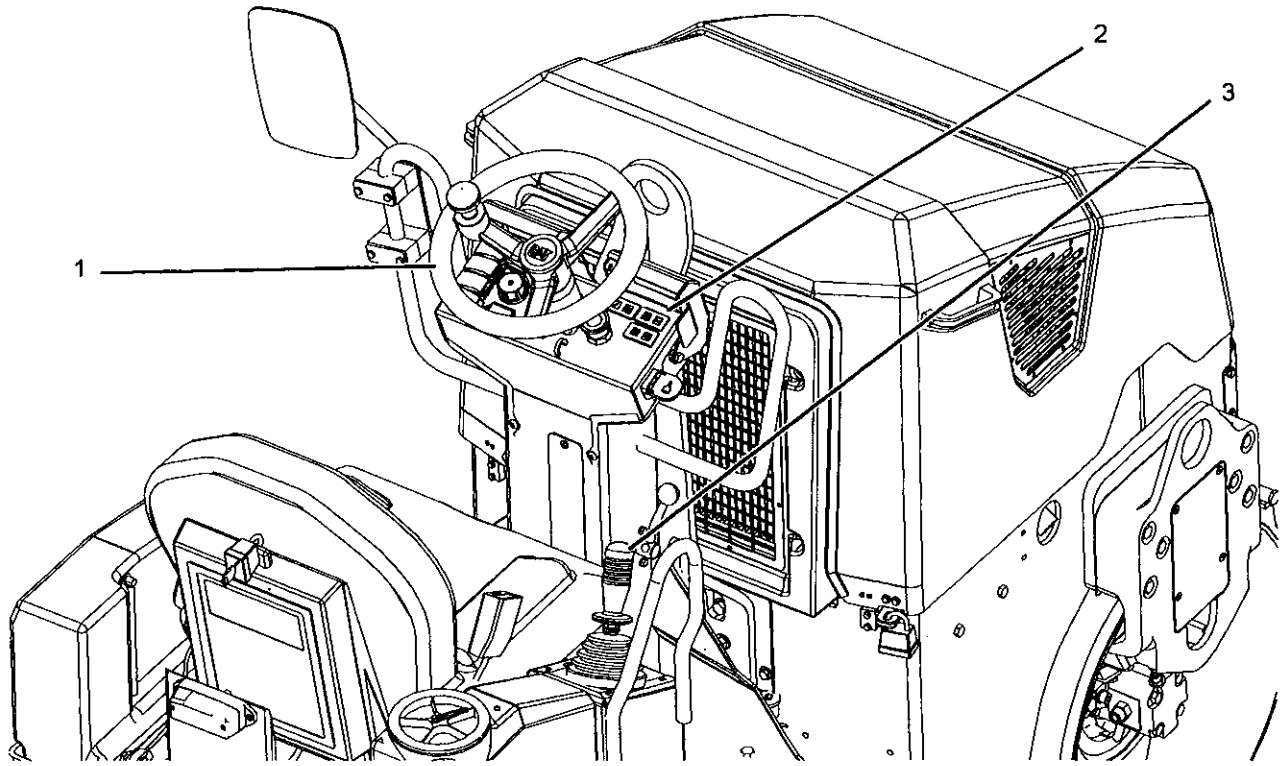


Illustration 33

(1) Steering wheel

(2) Steering console

(3) Propel control lever

g01351318

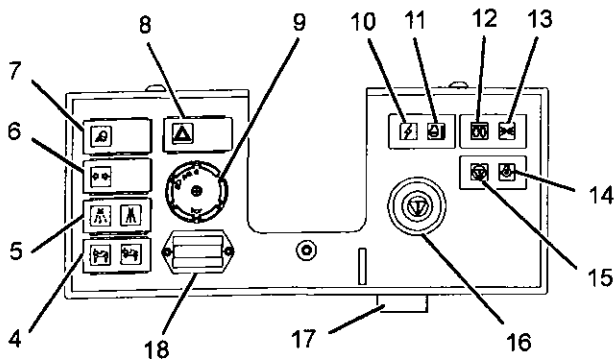


Illustration 34

g01971095

Close up view of the steering console (2)

- (4) Switch and indicator for the vibratory system
- (5) Switch and indicator for the water spray system
- (6) Switch and indicator for the turn signal (if equipped)
- (7) Switch and indicator for the working lights (if equipped)
- (8) Switch and indicator for the hazard lights (if equipped)
- (9) Switch for the lights (if equipped) and horn
- (10) Indicator for the charging system
- (11) Indicator for the engine coolant temperature
- (12) Indicator for the engine preheater
- (13) Indicator for the roading lights
- (14) Indicator for the engine oil pressure
- (15) Indicator for parking brake
- (16) Parking brake and emergency stop knob
- (17) 12V power port
- (18) Service hour meter

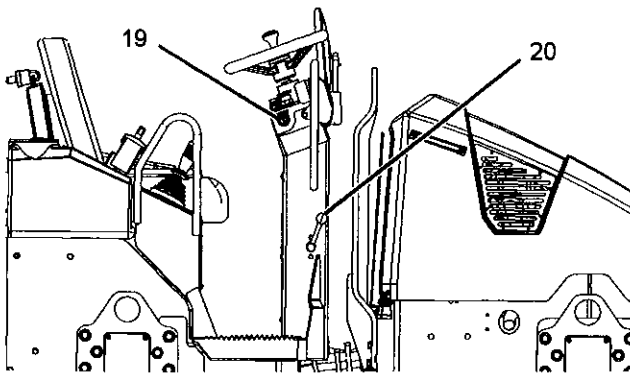


Illustration 35

g01971113

- (19) Engine start switch
- (20) Throttle control

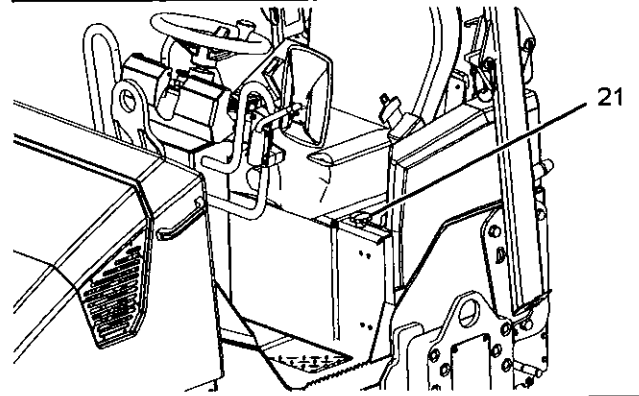


Illustration 36

g01971114

(21) Control knob for the water spray system

Propel Control Lever (3)



FORWARD – In order to move the machine forward, slowly push the propel control lever away from the center NEUTRAL position.



NEUTRAL – Move the propel control lever to the NEUTRAL position in order to stop the machine.



REVERSE – In order to move the machine in reverse, slowly pull the propel control lever away from the center NEUTRAL position.

On/Off Switch for the Vibratory System

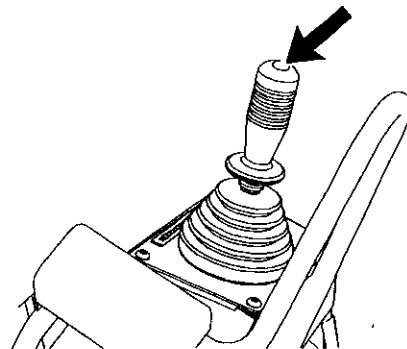


Illustration 37

g01969936



The switch on the propel lever controls the operation of the vibration system.

ON – In order to turn on the vibration system, press the switch.

OFF – In order to stop the vibration system, press the switch again.

Switch and Indicator for the Vibratory System (4)



Vibratory Control – Move the switch to the left in order to turn on the vibratory system for the front drum and the rear drum.



Vibratory Control – Move the switch to the right in order to turn on the vibratory system for the front drum only.

Switch and Indicator for the Water Spray System (5)

NOTICE

Always check the water level in the water tanks before you use the water spray system.

Contaminated water in the water tanks can cause performance problems and reliability problems in the water spray system.

NOTICE

Drain the water spray system completely when freezing conditions exist. This is done in order to avoid damage to the water spray system.



Intermittent Spray – Move the switch to the left position in order to activate the intermittent water spray system.

OFF – Move the switch to the center position in order to turn the water spray system OFF.



Continuous Spray – Move the switch to the right position in order to activate the continuous water spray system.

Switch and Indicator for the Turn Signal (6) (If Equipped)



Turn Signal – Move the switch for the turn signal to the left in order to activate the left turn signal lights. Move the switch for the turn signal to the right in order to activate the right turn signal lights.

Switch and Indicator for the Working Lights (7) (If Equipped)



Working Light – Move the switch for the working light to the left in order to activate the working light. Move the switch for the working light to the right in order to turn off the working light.

Switch and Indicator for the Hazard Lights (8) (If Equipped)



Hazard Light – Move the switch for the hazard light to the left in order to activate the hazard light. Move the switch for the hazard light to the right in order to turn off the hazard light.

Switch for the Lights (If Equipped) and the Horn (9)

OFF – Turn the knob counterclockwise in order to turn off all of the lights.



Position Lights – Turn the knob clockwise to the first position in order to turn on the position lights.



Headlights – Turn the knob clockwise to the second position in order to turn on the headlights.



Horn – Push the knob in order to activate the horn.

Indicator for the Charging System (10)



Charging System – The indicator will illuminate when the alternator is malfunctioning. If the indicator illuminates, move the machine to a safe area and stop the machine. Investigate the problem. Do not operate the machine until all of the repairs have been made.

Indicator for the Engine Coolant Temperature (11)



Engine Coolant Temperature – The indicator will illuminate when the temperature of the engine coolant is too hot. Stop the machine and investigate the problem. Do not operate the machine until all of the repairs have been made.

Indicator for the Engine Preheater (12)



Engine Preheater – The indicator will illuminate when the engine start switch is turned to the PREHEAT position. When the indicator turns off, turn the engine start switch to the START position in order to start the engine.

Indicator for the Rooding Lights (13)



Rooding Lights – The indicator will illuminate when the rooding lights are on.

Indicator for the Engine Oil Pressure (14)



Engine Oil Pressure – The indicator will illuminate when the engine oil pressure is too low. If the indicator illuminates, stop the engine and investigate the problem. Do not operate the machine until all of the repairs have been made.

Indicator for the Parking Brake (15)



Parking Brake – The indicator will illuminate when the parking brake is applied.

Parking Brake and Emergency Stop Knob (16)

NOTICE

Do not engage the parking brake while the machine is moving unless an emergency exists.

The use of the parking brake as a service brake in regular operation causes severe damage to the parking brake system.



Parking Brake – In order to apply the parking brake, push the knob downward. Pull the knob upward in order to release the parking brake.

Note: The propel control lever must be returned to the NEUTRAL position in order to allow the machine to move after releasing the parking brake.

The parking brake is also used as an emergency stop. In the event of an emergency, push the knob downward in order to stop the machine.

12V Power Port (17)



12V Power Port – The power receptacle can be used for powering automotive electrical equipment or accessories. Remove the cap before use.

Service Hour Meter (18)



Service Hour Meter – This gauge indicates the total operating hours of the engine. To determine the service hour maintenance intervals, use the service hour meter.

Engine Start Switch (19)



OFF – In order to disconnect the electrical power to the engine and to the machine, turn the switch in a counterclockwise direction to the OFF position. Turn the switch to the OFF position before trying to restart the engine. Turn the switch to the OFF position in order to stop the engine.



ON – In order to activate the machine circuits, turn the switch to the ON position. When the switch is released from the START position, the switch will return to the ON position. Turning the switch to the ON position also functions as the preheat position for the glow plugs.



START – Turn the engine start switch to the START position in order to crank the engine. Release the key as soon as the engine starts.

Note: If the engine does not start, return the switch to the OFF position before returning to the START position.

For more information, refer to the Operation and Maintenance Manual, "Engine Starting" section.

Throttle Control (20)



LOW – In order to decrease the engine speed to low speed, move the throttle control downward to the LOW position.



HIGH – In order to increase the engine speed to high speed, move the throttle control upward to the HIGH position.

Control Knob for the Water Spray System (21)

Pressurized Water Spray System – Before using the pressurized water spray system, turn the control knob counterclockwise in order to open the valve and allow water into the water spray system. Turn the control knob clockwise in order to close the valve and turn off the water spray system. Closing the valve prevents water leakage during a storage period.

Gravity Water Spray System – Turn the control knob counterclockwise in order to activate the gravity water spray system. Turn the control knob clockwise in order to turn off the gravity water spray system.

Fuel Level Gauge

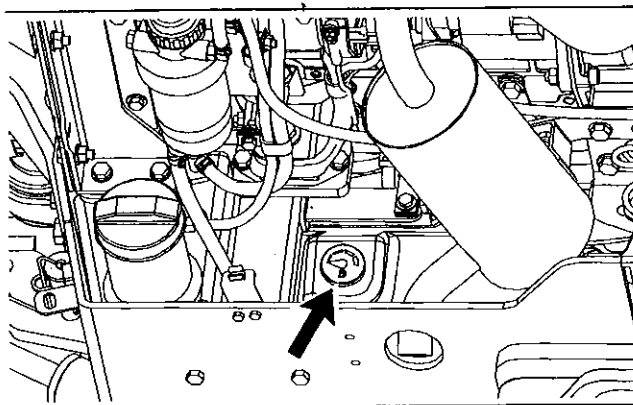


Illustration 38

g01351494



Fuel Level Gauge – The fuel level gauge is located in the engine compartment on the right side of the machine. The fuel level gauge indicates the amount of diesel fuel in the fuel tank.

Battery Disconnect Switch (If Equipped)

SMCS Code: 1411

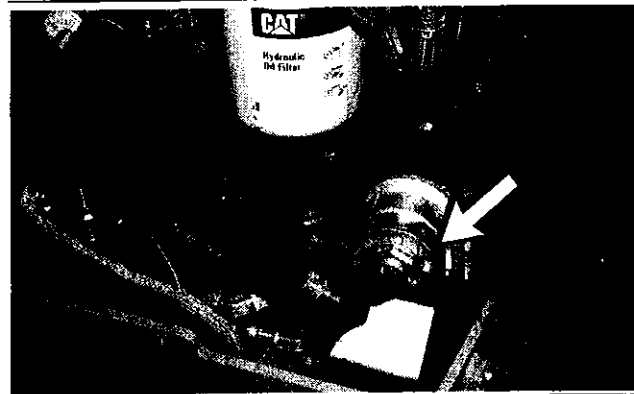


Illustration 39

g01348540



Battery Disconnect Switch – The battery disconnect switch is located on the left side of the engine compartment.



OFF – In order to deactivate the electrical system, turn the switch to the OFF position.



ON – To activate the electrical system, insert the key and turn the switch in a clockwise direction. The switch must be in the ON position in order to start the engine.

The functions of the battery disconnect switch and the engine start switch are different. When the battery disconnect switch is turned to the OFF position, the entire electrical system is disabled. When the engine start switch is turned to the OFF position, the battery remains connected to the electrical system.

Remove the key when you exit the machine for an extended period of time. Also, remove the key when you service the electrical system.

NOTICE

Never move the battery disconnect switch to the OFF position while the engine is operating. Serious damage to the electrical system could result.

To ensure that no damage to the engine occurs, verify that the engine is fully operational before cranking the engine. Do not crank an engine that is not fully operational.

Perform the following procedure in order to check the battery disconnect switch for proper operation:

1. With the battery disconnect switch in the ON position, verify that electrical components in the operator compartment are functioning. Verify that the hour meter is displaying information. Verify that the engine will crank.
2. Turn the battery disconnect switch to the OFF position.
3. Verify that the following items are not functioning: electrical components in the operator compartment, hour meter, and engine cranking. If any of the items continue to function with the battery disconnect switch in the OFF position, consult your Caterpillar dealer.

i02680608

Backup Alarm

SMCS Code: 7406

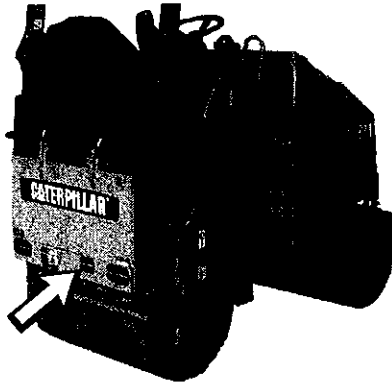


Illustration 40

g01346512

The backup alarm is located on the rear of the machine.



Backup Alarm – The backup alarm will sound when the propel lever is in the REVERSE position. The backup alarm alerts any personnel that the machine is backing up.

i02704860

Rollover Protective Structure (ROPS) (Foldable)

SMCS Code: 7323

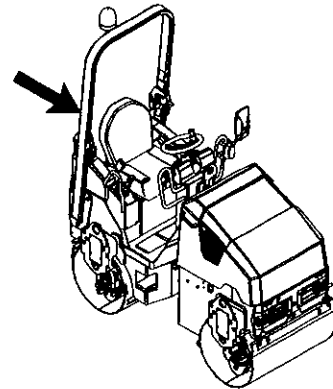


Illustration 41

g01356925

If the machine is equipped with a foldable rollover protective structure (ROPS), the ROPS must be in the raised position before you operate the machine. Before the machine is shipped, lower the ROPS in order to provide more clearance during transportation. The ROPS can be folded toward the front of the machine or toward the rear of the machine.

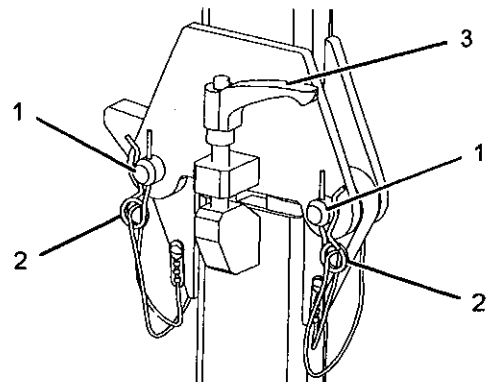


Illustration 42

g01356930

Raise

In order to raise the ROPS, perform the following steps:

1. Raise the ROPS to the full upright position.
2. Install the front locking pin if the ROPS was folded toward the rear of the machine. Install the rear locking pin if the ROPS was folded toward the front of the machine.

3. Install cotter pins (2) through locking pins (1). This will lock the locking pins in place.

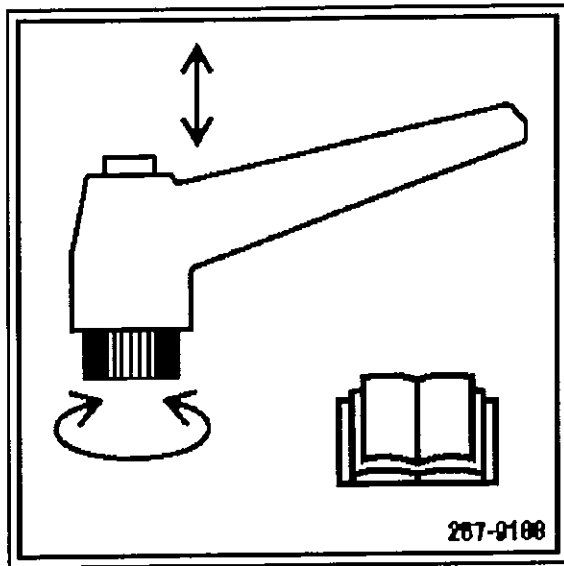


Illustration 43

g01114409

4. Tighten locking lever (3):

Note: In order to tighten the locking lever, perform the following procedure:

- a. Turn the locking lever clockwise. Turn the locking lever by one-half turn.
- b. Raise the locking lever.
- c. Turn the locking lever counterclockwise by one-half turn.
- d. Release the locking lever. This will allow the locking lever to lower.
- e. Repeat step 4.a and step 4.d until the locking lever is tight. Move the locking lever to the full counterclockwise position after the locking lever is tightened.

Lower

In order to lower the ROPS, perform the following steps:

1. Loosen locking lever (3).

Note: In order to loosen the locking lever, perform the following procedure:

- a. Raise the locking lever.
- b. Turn the locking lever clockwise by one-half turn.

- c. Release the locking lever. This will allow the locking lever to lower.
 - d. Turn the locking lever counterclockwise by one-half turn.
 - e. Repeat step 1.a and 1.d until the locking lever is loosened.
2. Remove the front cotter pin and the front locking pin in order to fold the ROPS toward the rear of the machine. Remove the rear cotter pin and the rear locking pin in order to fold the ROPS toward the front of the machine.
 3. Lower the ROPS.
 4. In order to store locking pins (1), install locking pins (1) into the holes on the ROPS post.
 5. Install cotter pins (2) through locking pins (1). This will lock the locking pins in place.

I03675300

Engine and Machine Warm-Up

SMCS Code: 1000; 7000

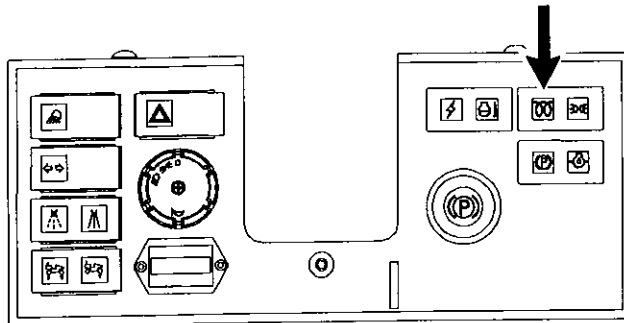


Illustration 47

g01346565

NOTICE

Keep the engine speed low until the engine oil indicator light goes out.

If the light does not go out within ten seconds, stop the engine and investigate the cause before starting again. Failure to do so, can cause engine damage.

1. Allow a cold engine to warm up at LOW idle for at least five minutes.
2. Look at the gauges and the indicator lights frequently during operation.

If the alternator indicator lamp remains illuminated after going to high idle, inspect the machine for the cause of the trouble. If the gauges do not respond properly, inspect the machine for the trouble. Before you move the machine, repair all problems.

3. Cycle all controls in order to allow warm oil to circulate through all of the lines and the cylinders.

Observe the following recommendations during the warm-up period for the engine:

- In temperatures above 0°C (32°F), the warm-up period is 15 minutes.
- In temperatures below 0°C (32°F), the warm-up period is 30 minutes or a longer period of time.
- In temperatures below -18°C (0°F), more time is required if the hydraulic controls are sluggish.

Parking

102012285

Stopping the Machine

i02694689

SMCS Code: 7000**NOTICE**

Park the machine on a level surface. If it is necessary to park on a grade, securely block the tires and the drum.

Do not apply the parking brake while the machine is moving unless an emergency exists.

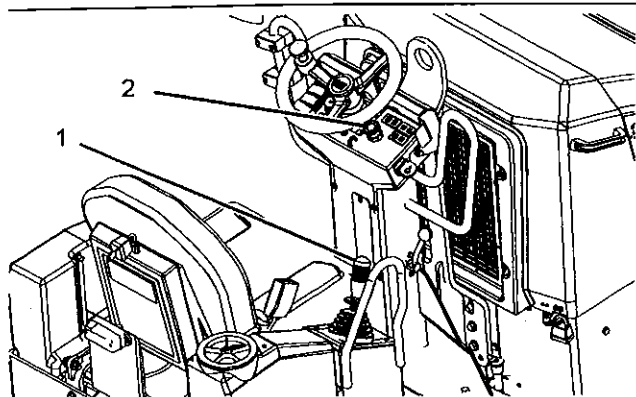


Illustration 48

g01351599

1. Move the propel control lever to the **NEUTRAL** position.
2. Apply the parking brake.

Stopping the Engine

SMCS Code: 1000; 7000**NOTICE**

Stopping the engine immediately after it has been working under load can result in overheating and accelerated wear of the engine components.

1. Before stopping the engine, allow the engine to run at low idle with no load for five minutes. This procedure allows the hot areas of the engine to cool gradually and the procedure will extend the life of the engine.
2. Turn the engine start switch to the **OFF** position. Remove the key.
3. Be sure that all of the controls are in the **OFF** position. Be sure that all of the controls are in the proper position for parking the machine.

102693174

103671778

Stopping the Engine if an Electrical Malfunction Occurs

SMCS Code: 1000; 7000

S/N: DST1-Up

Turn the engine start switch key to the OFF position. If the engine does not stop, perform the following procedure.

1. Open the engine access cover. Refer to the Operation and Maintenance Manual, "Access Doors and Covers" for more information.

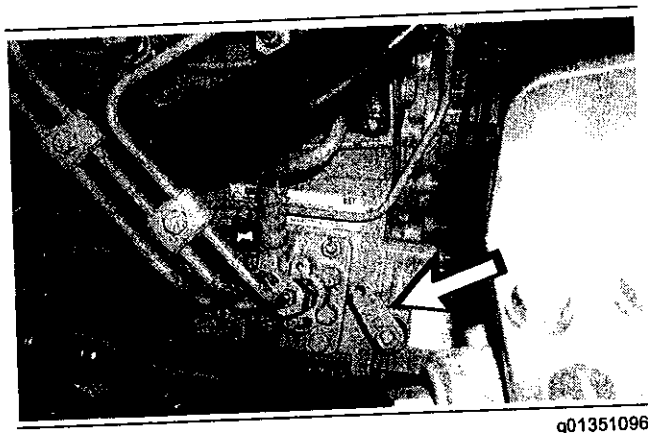


Illustration 49

g01351096

2. Rotate the lever that is on top of the fuel pump toward the engine. Hold the lever into this position until the engine stops running.

Note: Do not operate the machine until the cause of the problem is corrected.

Leaving the Machine

SMCS Code: 7000

1. Use the steps and the handholds in order to dismount the machine. Face the machine in order to dismount the machine.
2. If the machine is being parked for an extended period of time, turn the battery disconnect switch (if equipped) to the OFF position.
3. Close all access covers and doors.

Vandalism Guard

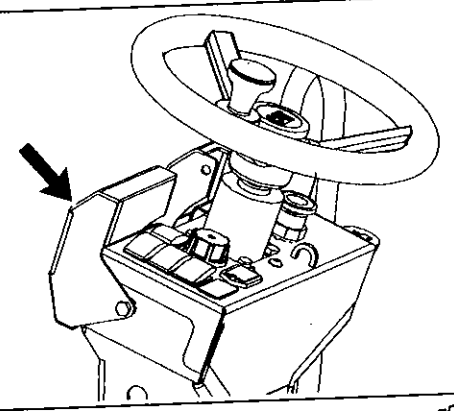


Illustration 50

g01356993

Vandalism guard in the open position

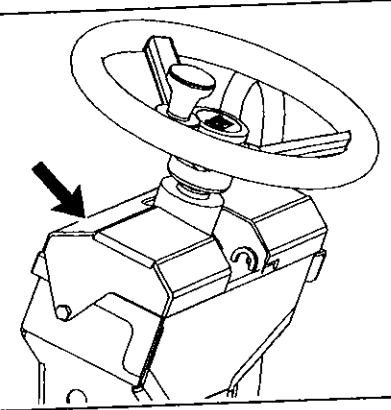


Illustration 51

g01356998

Vandalism guard in the closed position

Close and lock the vandalism guard when you leave the machine.

8 **Transportation Information**

i02693184

Shipping the Machine**SMCS Code:** 7000; 7500

Investigate the travel route for overpass clearances. Make sure that there is adequate clearance for the machine that is being transported.

Remove ice, snow, or other slippery material from the loading dock and from the truck bed before you load the machine onto the transport machine. Removing ice, snow, or other slippery material will help to prevent the machine from slipping in transit.

NOTICE

Obey all laws that govern the characteristics of a load (height, weight, width, and length). Observe all regulations that govern wide loads.

When you move the machine to a colder climate, make sure that the cooling system has the proper antifreeze.

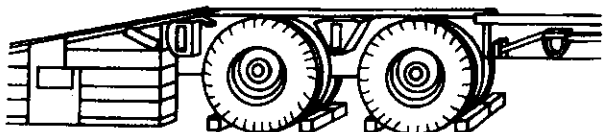


Illustration 52

g00303463

1. Before you load the machine, chock the trailer wheels or the rail car wheels, as shown.
2. Move the machine into position and engage the parking brake.

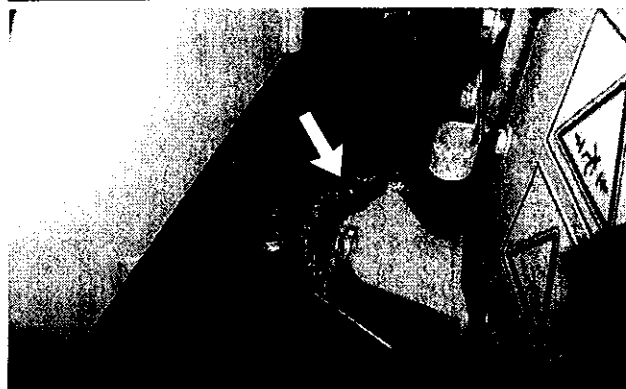


Illustration 53

g01351074

3. Stop the engine and install the steering frame lock into the LOCKED position. The pin will hold the front frame and the rear frame rigid.

Refer to the Operation and Maintenance Manual, "Steering Frame Lock" for further information.

4. Block the machine, and tie down the machine. Refer to the Operation and Maintenance Manual, "Lifting and Tying Down the Machine" for more information.
5. If your machine is equipped with a foldable rollover protective structure (ROPS), lower the ROPS. Refer to the Operation and Maintenance Manual, "Rollover Protective Structure (ROPS)" for further information on the ROPS.
6. Lock the doors and the access covers. Attach any vandalism protection. Install the cover on the console. Cover the operator seat.
7. To protect the cooling systems, mix the solution of antifreeze and water. The solution should provide protection to the lowest expected outside temperature. Drain the excess coolant into a suitable container.
8. Perform a walk-around inspection and measure the fluid levels in the various compartments.
9. Travel at a moderate speed. Observe all speed limitations when you are roading the machine.

Consult your Caterpillar dealer for shipping instructions for your machine.

102676621

Lifting and Tying Down the Machine

SMCS Code: 7000; 7500

WARNING

Improper lifting or tie-downs can allow load to shift and cause injury and damage.

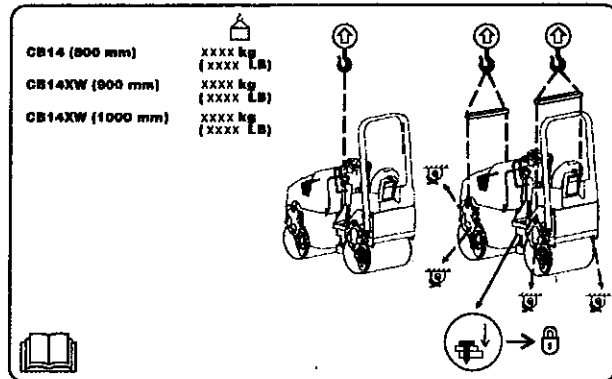


Illustration 54

g01345163

This film is located below the seat.

For the specifications of the machine, refer to Operation and Maintenance Manual, "Specifications".

For specifications of any work tools, refer to the Operation and Maintenance Manual for the specific work tool.



Lifting Mass – The lifting mass indicates the maximum weight of the machine without any work tools.



Steering Frame Lock – The steering frame lock is used to secure the front frame and the rear frame from articulation.



Lock – Place all necessary locks in the locked position.



Lifting Point – In order to lift the machine, attach the lifting devices to the lifting points.



Tie Down Point – In order to tie down the machine, attach the tie-downs to the tie down points.

Lifting the Machine

Use properly rated cables and properly rated slings in order to lift the machine.

Position the crane or the lifting device in order to lift the machine in a level position.

1. Move the machine into position.
2. Apply the parking brake.
3. Turn the engine start switch key to the OFF position. Remove the key.
4. Install the steering frame lock pin.

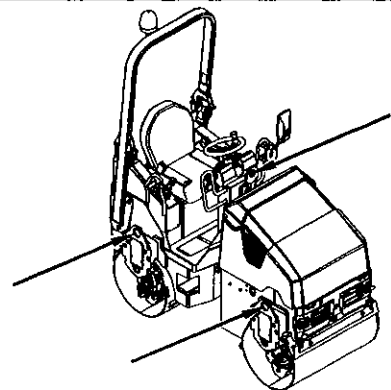


Illustration 55

g01357001

5. Attach lifting cables to the lifting eyes. The lifting eyes are identified on the machine by labels. There are two lifting eyes on each side of the machine and one optional lifting eye on top of the machine.
6. Lift the machine slowly in order to make sure that the machine stays level. Move the machine to the desired position.

Tying Down the Machine

Do not tie down the machine over the operator's platform. This will reduce the life of the drum mounts and the isolation mounts for the platform.

Do not tie down the machine over the articulation hitch. This will reduce the life of the articulation bearings.

1. Move the machine into position.
2. Apply the parking brake.
3. Turn the engine start switch key to the OFF position. Remove the key.
4. Install the steering frame lock pin.

5. Place blocks under the front and the rear frames.
This will reduce the stress on the rubber isolation
blocks.

6. Chock the front drum and the rear drum.

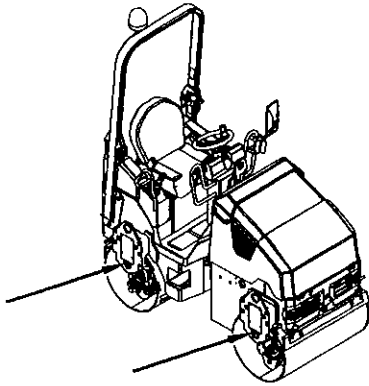


Illustration 56

g01357008

7. Use the tie-down positions in order to secure the
machine. The tie-down positions are identified on
the machine by labels. There are two tie-down
positions on each side of the machine.

Refer to Operation and Maintenance Manual,
"Shipping the Machine" for shipping instructions.

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5. Place blocks under the front and the rear frames.
This will reduce the stress on the rubber isolation blocks.

6. Chock the front drum and the rear drum.

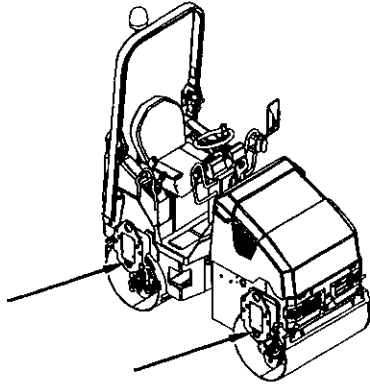


Illustration 56

g01357008

7. Use the tie-down positions in order to secure the machine. The tie-down positions are identified on the machine by labels. There are two tie-down positions on each side of the machine.

Refer to Operation and Maintenance Manual, "Shipping the Machine" for shipping instructions.

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Towing Information

102693970

Towing the Machine

SMCS Code: 7000

WARNING

Improper hookup and towing is dangerous and could result in injury or death to yourself or others.

The towing connection must be rigid, or towing must be done by two machines of the same size as the towed machine. If two machines are used, connect a machine on each end of the towed machine.

If only one machine is used for towing, that machine must be larger than the towed machine.

Be sure that all necessary repairs and adjustments have been made before a machine that has been towed to a service area is put back into operation.

These towing instructions are for moving a disabled machine for a short distance at low speed. Move the machine at a speed of 2 km/h (1.2 mph) or less to a convenient location for repair. These instructions are only for emergencies. Always haul the machine if long distance moving is required.

Shielding must be provided on both machines. This will protect the operator if the tow line or the tow bar breaks.

Do not allow an operator to be on the machine that is being towed unless the operator can control the steering and/or the braking.

Before towing, make sure that the tow line or the tow bar is in good condition. Make sure that the tow line or the tow bar has enough strength for the towing procedure that is involved. The strength of the towing line or of the tow bar should be at least 150 percent of the gross weight of the towing machine. This is true for a disabled machine that is stuck in the mud and for towing on a grade.

Keep the tow line angle to a minimum. Do not exceed a 30 degree angle from the straight ahead position.

Quick machine movement could overload the tow line or the tow bar. This could cause the tow line or the tow bar to break. Gradual, steady machine movement will be more effective.

Normally, the towing machine should be as large as the disabled machine. Make sure that the towing machine has enough brake capacity, enough weight, and enough power. The towing machine must be able to control both machines for the grade that is involved and for the distance that is involved.

You must provide sufficient control and sufficient braking when you are moving a disabled machine downhill. This may require a larger towing machine or additional machines that are connected to the rear. This will prevent the machine from rolling away out of control.

All situation requirements cannot be listed. Minimal towing machine capacity is required on smooth, level surfaces. On inclines in poor condition or on surfaces in poor condition, maximum towing machine capacity is required.

Attach the towing device and the machine before you release the brakes.

Consult your Caterpillar dealer for towing a disabled machine.

Running Engine

If the engine is running, the machine can be towed a short distance under certain conditions. The power train and the steering system must be operable.

The operator must steer the machine that is towed the direction of the tow line.

Ensure that all instructions in this section are followed carefully. Ensure that all instructions in this section are followed exactly.

Stopped Engine

WARNING

Shutting off the engine will result in the loss of machine steering.

When the engine is stopped, additional steps may be required before the machine is towed. In order to avoid damaging the power train, the steering system and the brakes, which may be inoperable, additional steps may be required.

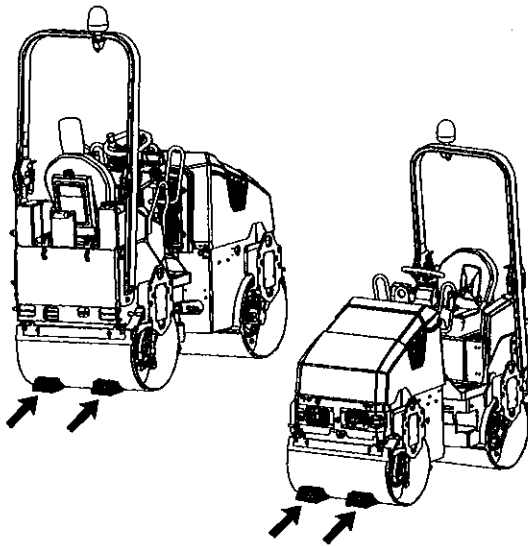


Illustration 57

g01351219

1. Block the drum securely in order to prevent the movement of the machine. Do not remove the blocking until the tow vehicle has been positioned and the tow lines are in place.
2. Manually release the parking brake. Refer to the Operation and Maintenance Manual, "Parking Brake Manual Release" for more information.

NOTICE

Release the parking brake to prevent excessive wear and damage to the braking system when towing.

The procedure for manual release of the parking brake is outlined in the Operation and Maintenance Manual, "Parking Brake Manual Release".



Illustration 58

g01351227

3. Turn the bypass valve for two full turns in the counterclockwise direction.

Note: Do not turn the bypass valve further than two turns. When the bypass valve is turned further than two turns, oil will leak past the bypass valve.

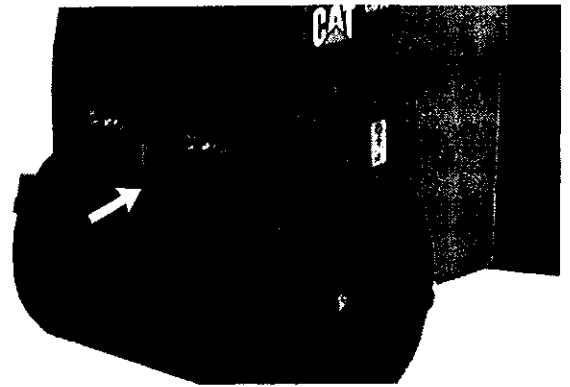


Illustration 59

g01351236

Front tow point

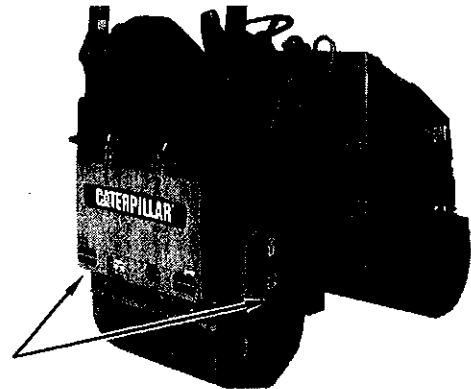


Illustration 60

g01351241

Rear tow points

4. Attach the tow line to the machine at the tow points.
5. Attach the tow line to the vehicle that is used to tow the disabled machine.
6. Remove blocks from the drum or from the tires.
7. Tow the disabled vehicle at a slow rate of speed to the desired location.
8. Once the machine is at the desired location, securely block the drum or block the tires. This will prevent movement of the machine.
9. Turn the bypass valve clockwise in order to tighten the bypass valve.
10. Engage the parking brake.
11. Detach the tow lines.

ID2693390

Parking Brake Manual Release

SMCS Code: 4267; 4354

WARNING

Personal injury or death can result from a brake malfunction. Do not operate the machine if the brake was applied due to a malfunction of the brake system.

Correct any problem before attempting to operate the machine.

There are two parking brakes on the CB14 and the CB14 XW machines. There is a parking brake in the front drum propel motor and there is a parking brake in the rear drum propel motor.

To manually release the parking brake on the drum propel motors, perform the following procedure:

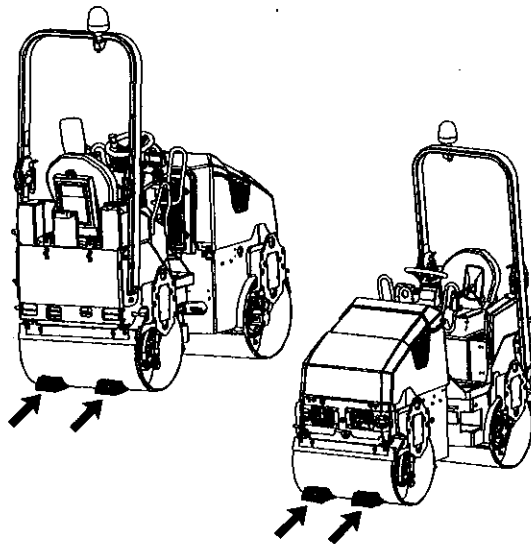


Illustration 61

g01351219

1. In order to prevent the machine from moving, block the drums securely.

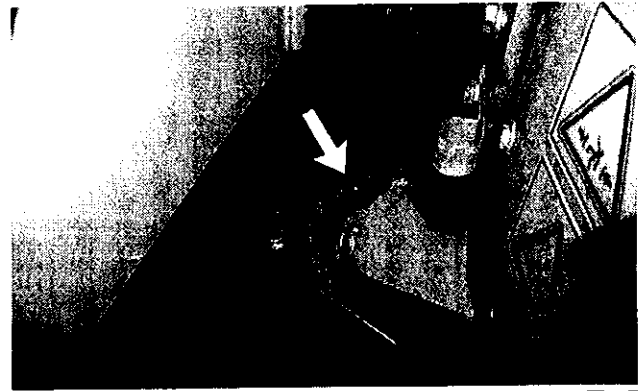


Illustration 62

g01351074

2. In order to hold the front frame and the rear frame rigid, install the steering frame lock into the LOCKED position.

Note: Refer to the Operation and Maintenance Manual, "Steering Frame Lock" for further information.

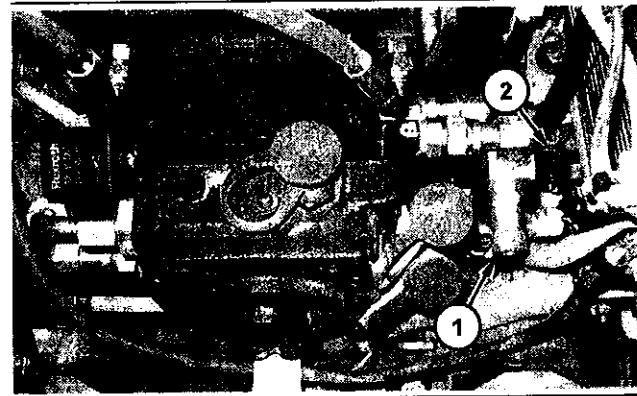


Illustration 63

g01351183

3. Open the hood.
 4. Close valve (1) by turning the valve in the clockwise direction.
 5. Connect nipple fitting (2) to a manual pump and then pressurize the oil to approximately 15 to 23 bar (218 to 333 psi). Keep the pressure applied.
- Note:** Contact your Caterpillar dealer for more information regarding the proper manual pump for this procedure.
6. The front and rear brakes are now released.
 7. To reapply the brakes, remove the manual pump and open valve (1) by turning the valve in the counterclockwise direction.

Engine Starting (Alternate Methods)

I03650200

Engine Starting with Jump Start Cables

SMCS Code: 1000; 7000



WARNING

Failure to properly service the batteries may cause personal injury.

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

Do not smoke when checking battery electrolyte levels.

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

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

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

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

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

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

NOTICE

When starting from another machine, make sure that the machines do not touch. This could prevent damage to engine bearings and electrical circuits.

Severely discharged maintenance free batteries do not fully recharge from the alternator after jump starting. The batteries must be charged to proper voltage with a battery charger. Many batteries thought to be unusable are still rechargeable.

This machine has a 12 volt starting system. Use only the same voltage for jump starting. Use of a welder or higher voltage damages the electrical system.

Refer to Special Instruction, Battery Test Procedure, SEHS7633, available from your Caterpillar dealer, for complete testing and charging information.

Use of Jump Start Cables

When the auxiliary start receptacles are not available, use the following procedure.

1. Make the initial determination of the machine's failure to crank. The procedure is applicable even if the machine does not have a diagnostic connector.
2. Move the propel control lever of the stalled machine into the NEUTRAL position. Engage the parking brake.
3. Turn the engine start switch on the stalled machine to the OFF position. Turn off all accessories.
4. Move the machine that is being used as a power source so that the jump start cables can reach the stalled machine. **DO NOT ALLOW THE MACHINES TO CONTACT EACH OTHER.**
5. Stop the engine on the machine that is being used as a power source. If you are using an auxiliary power source, turn off the charging system.
6. Check the battery caps for correct placement and for correct tightness. Make these checks on both machines. Make sure that the batteries in the stalled machine are not frozen. Check the batteries for low electrolyte.
7. Connect the positive jump start cable to the positive battery terminal on the stalled machine.

Do not allow positive cable clamps to contact any metal except for the positive remote jump start terminal.

8. Connect the positive jump start cable to the positive terminal of the boost source.
9. Connect one end of the negative jump start cable to the negative terminal of the electrical source.
10. Make the final connection. Connect the negative cable to the frame of the stalled machine. Make this connection away from the battery, the fuel, the hydraulic lines, or moving parts.
11. Start the engine on the machine that is being used as a power source. If you are using an auxiliary power source, energize the charging system on the auxiliary power source.
12. Wait for a minimum of two minutes while the batteries in the stalled machine partially charge.
13. Attempt to start the stalled engine. Refer to Operation and Maintenance Manual, "Engine Starting".
14. Immediately after you start the stalled engine, disconnect the jump start cable from the machine that is being used as a power source. Disconnect the negative battery cable first, and then disconnect the positive battery cable.
15. Disconnect the other end of the jump start cable from the stalled machine.
16. When the engine is running and the charging system is in operation, conclude the failure analysis on the starting charging system of the stalled machine, as required.

Maintenance Section

Maintenance Access

I02680710

Access Doors and Covers

SMCS Code: 7251; 7263; 7273-572; 7273-573; 7273

Engine Compartment

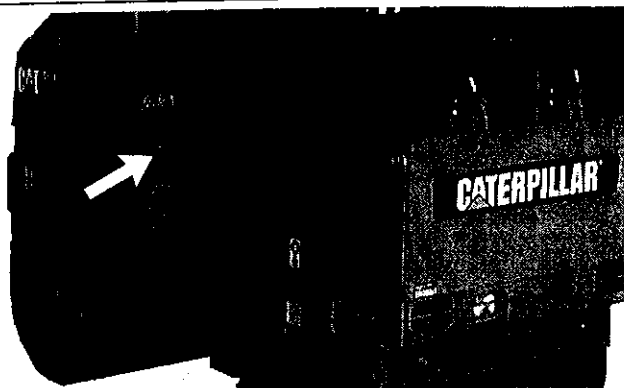


Illustration 64

g01346592

Left Latch

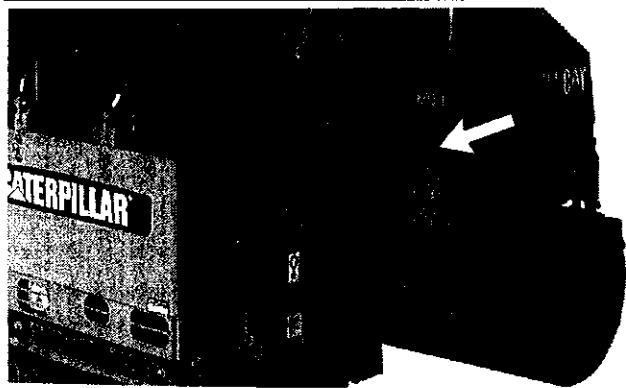


Illustration 65

g01346593

Right Latch

Fuse Box

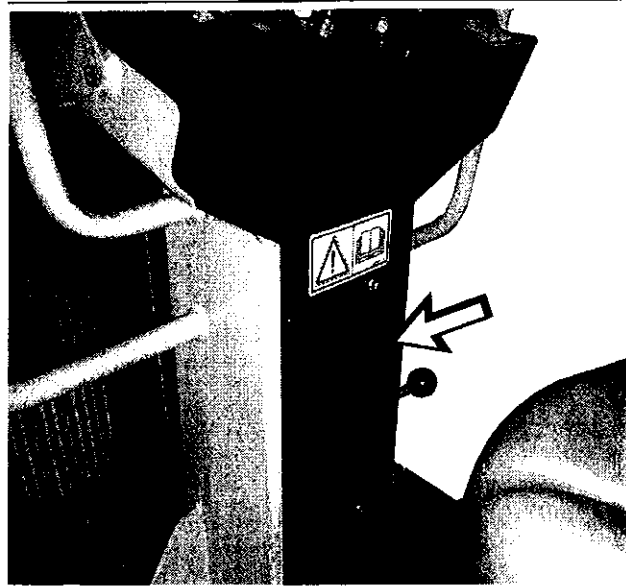


Illustration 66

g01350450

The fuse panel is located behind the cover plate. Remove the two screws that are holding the cover plate in place in order to gain access to the fuse panel.

Lubricant Viscosities and Refill Capacities

103637233

Lubricant Viscosities

SMCS Code: 1000; 7000; 7581

Table 6

Lubricant Viscosities for Ambient Temperatures						
Compartment or System	Oil Type and Classification	Oil Viscosities	°C		°F	
			Min	Max	Min	Max
Engine Crankcase	Caterpillar Multigrade DEO API CG-4 API CF-4	SAE 0W20	-40	10	-40	50
		SAE 0W30	-40	30	-40	86
		SAE 5W30	-30	30	-22	86
		SAE 5W40	-30	40	-22	104
		SAE 10W30	-20	40	-4	104
		SAE 15W40	-15	50	5	122
Hydraulic Systems	Cat HYDO Advanced 10 Cat HYDO Cat DEO Cat TDTO Cat MTO API CG-4 API CF-4 API CF Cat TO-4	SAE 0W20	-40	40	-40	104
		SAE 0W30	-40	40	-40	104
		SAE 5W30	-30	40	-22	104
		SAE 5W40	-30	40	-22	104
		SAE 10W	-20	40	-4	104
		SAE 30	10	50	50	122
		SAE 10W30	-20	40	-4	104
		SAE 15W40	-15	50	5	122
		Caterpillar MTO	-25	50	5	104
BIO HYDO-HEES ⁽¹⁾	-25	43	-13	110		
Eccentric Weight Housing	Synthetic ISO 220	4C-6767 Synthetic Oil ⁽²⁾	-20	50	-4	122

(1) For BIO HYDO HEES oil, tank temperatures should not exceed 100°C (212°F). Do not use BIO HYDO HEES oil in hydraulic systems with clutches or brakes.

(2) 4C-6767 Synthetic Oil is a premium synthetic gear and bearing lubricant with no viscosity improvers. This lubricant has an ISO Viscosity Grade of 220, and a minimum viscosity index of 150.

Table 7

Standard Factory Fill Fluids ⁽¹⁾					
Compartment or System	Oil Viscosities	°C		°F	
		Min	Max	Min	Max
Engine Crankcase	SAE 15W40	-15	50	5	122
Hydraulic Systems	Cat HYDO Advanced 10	-20	40	-4	104
	Cat BIO HYDO (HEES)	-40	43	-40	110
Eccentric Weight Housing	synthetic ISO 220 ⁽²⁾	-20	50	-4	122

(1) The machine is delivered from the factory with the designated fluids.

(2) Do not use API GL-5 or API GL-4 Gear Oils for the Vibratory support, the Final Drive Planetary (Drum), or the Eccentric Weight Housing. 4C-6767 (189-4759) Synthetic Oil is a premium PAO (Polyalphaolefin) synthetic gear and bearing lubricant with no viscosity improvers. This lubricant has an ISO viscosity grade of 220, and a minimum viscosity index of 152. Commercial oil selected for this application should have a full synthetic base stock with no viscosity improvers, an ISO viscosity grade of 220, and a minimum viscosity index of 150.

Commercial Oils

If Caterpillar oils can not be used, the following commercial classifications can be used in hydraulic systems and in hydrostatic transmission systems.

- Engine oils that meet the Caterpillar ECF-1 specification and have a minimum zinc additive of 0.09 percent (900 ppm)
- API CG-4 engine oils that have a minimum zinc additive of 0.09 percent (900 ppm)
- API CF engine oils that have a minimum zinc additive of 0.09 percent (900 ppm)
- TO-4 Oils, or Oils that meet Caterpillar's TO-4 Oil specification, that have a minimum zinc additive of 0.09 percent (900 ppm)

Note: Industrial hydraulic oils are not recommended for use in Caterpillar machine hydraulic systems.

102680448

Capacities (Refill)

SMCS Code: 1000; 6320; 7000; 7560

Table 8

Refill Capacities Approximate			
Compartment or System	Liters	US Gallon	Imperial Gallon
Fuel Tank	30	7.9	6.6
Engine Oil	4.9	1.3	1.1
Hydraulic Tank Oil	28	7.4	6.2
Water Spray Tank	150	39.6	33.1
Coolant	4.1	1.1	0.9

Table 9

Vibrator Housing			
	Liters	US Gallon	Imperial Gallon
CB14 800	4.2	1.1	0.9
CB14 Full Flush	4.2	1.1	0.9
CB14 XW 900	5.9	1.6	1.3
CB14 XW 1000	7.6	2.0	1.7

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S-O-S Information

SMCS Code: 1348; 3080; 4070; 4250; 4300; 5050; 7542

S-O-S Services is a highly recommended process for Caterpillar customers to use in order to minimize owning and operating cost. Customers provide oil samples, coolant samples, and other machine information. The dealer uses the data in order to provide the customer with recommendations for management of the equipment. In addition, S-O-S Services can help determine the cause of an existing product problem.

Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluid Recommendations" for detailed information concerning S-O-S Services.

Refer to the Operation and Maintenance Manual, "Maintenance Interval Schedule" for a specific sampling location and a service hour maintenance interval.

Consult your Caterpillar dealer for complete information and assistance in establishing an S-O-S program for your equipment.

Maintenance Support

102965260

System Pressure Release

SMCS Code: 1250-553-PX; 1300-553-PX;
1350-553-PX; 3000-553-PX; 4250-553-PX;
4300-553-PX; 5050-553-PX; 5612-553-PX;
7540-553-PX

WARNING

Personal injury or death can result from sudden machine movement.

Sudden movement of the machine can cause injury to persons on or near the machine.

To prevent injury or death, make sure that the area around the machine is clear of personnel and obstructions before operating the machine.

Coolant System

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.

To relieve the pressure from the coolant system, turn off the machine. Allow the cooling system pressure cap to cool. Remove the cooling system pressure cap slowly in order to relieve pressure.

Hydraulic System

WARNING

Personal injury can result from hydraulic oil pressure and hot oil.

Hydraulic oil pressure can remain in the hydraulic system after the engine has been stopped. Serious injury can be caused if this pressure is not released before any service is done on the hydraulic system.

Make sure all of the attachments have been lowered, oil is cool before removing any components or lines. Remove the oil filler cap only when the engine is stopped, and the filler cap is cool enough to touch with your bare hand.

1. Shut off the engine. --
2. Slowly loosen the filler cap in order to release the pressure in the hydraulic tank.
3. Tighten the filler cap.
4. The pressure in the hydraulic system has been released. Lines and components can be removed.

1036362

Welding on Machines and Engines with Electronic Controls

SMCS Code: 1000; 7000

Do not weld on any protective structure. If it is necessary to repair a protective structure, contact your Caterpillar dealer.

Proper welding procedures are necessary in order to avoid damage to the electronic controls and to the bearings. When possible, remove the component that must be welded from the machine or the engine and then weld the component. If you must weld near an electronic control on the machine or the engine, temporarily remove the electronic control in order to prevent heat related damage. The following steps should be followed in order to weld on a machine or an engine with electronic controls.

1. Turn off the engine. Place the engine start switch in the OFF position.
2. If equipped, turn the battery disconnect switch to the OFF position. If there is no battery disconnect switch, remove the negative battery cable at the battery.

NOTICE

Do NOT use electrical components (ECM or ECM sensors) or electronic component grounding points grounding the welder.

3. Clamp the ground cable from the welder to the component that will be welded. Place the clamp as close as possible to the weld. Make sure that the electrical path from the ground cable to the component does not go through any bearing. Use this procedure in order to reduce the possibility of damage to the following components:
 - Bearings of the drive train
 - Hydraulic components
 - Electrical components

- Other components of the machine
- 3 4. Protect any wiring harnesses and components from the debris and the spatter which is created from welding.
 - d. 5. Use standard welding procedures in order to weld the materials together.

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Maintenance Interval Schedule

SMCS Code: 1000; 7000

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

The user is responsible for the performance of maintenance, 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

Battery - Recycle	58
Battery or Battery Cable - Inspect/Replace	59
Circuit Breakers - Reset	60
Engine Air Filter Primary Element - Clean/ Replace	69
Engine Air Filter Secondary Element - Replace ...	71
Fuel System - Prime	76
Fuses - Replace	78
Oil Filter - Inspect	83
Radiator Core - Clean	83
Water Spray Nozzles - Clean	86
Water Spray System - Drain	87
Water Spray System - Drain	88

Every 10 Service Hours or Daily

Backup Alarm - Test	58
Cooling System Coolant Level - Check	64
Drum Scrapers - Inspect/Adjust/Replace	67
Engine Air Filter Service Indicator - Inspect	71
Engine Oil Level - Check	73
Hydraulic System Oil Level - Check	81
Indicators and Gauges - Test	82
Seat Belt - Inspect	85
Water Spray System Filter - Clean	88

Every 100 Service Hours or 2 Weeks

Fuel Tank Water and Sediment - Drain	78
Throttle Control - Lubricate	86
Water Tank Strainer - Clean and Inspect	89

Every 250 Service Hours

Cooling System Coolant Sample (Level 1) - Obtain	6
Engine Oil Sample - Obtain	7

Every 250 Service Hours or 6 Months

Articulating and Oscillating Bearings - Lubricate ..	5
Belts - Inspect/Adjust/Replace	5
Eccentric Weight Housing Oil Level - Check	6
Steering Cylinder Ends - Lubricate	8

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

Cooling System Coolant Sample (Level 2) - Obtain	
---	--

Every 500 Service Hours or 1 Year

Braking System - Test	
Engine Oil and Filter - Change	
Fuel System Water Separator Element - Replace ..	
Fuel Tank Cap and Strainer - Clean	
Hydraulic System Oil Filter - Replace	
Hydraulic System Oil Sample - Obtain	
Isolation Mounts - Inspect	

Every 1000 Service Hours or 1 Year

Battery - Clean/Check	
Cooling System Coolant Sample (Level 2) - Obtain	
Cooling System Pressure Cap - Clean/Replace ..	
Hydraulic System Oil - Change	
Hydraulic Tank Breather - Clean	
Hydraulic Tank Strainer - Clean	
Propel Control Tension - Adjust	
Rollover Protective Structure (ROPS) - Inspect ..	

Every 1000 Service Hours or 2 Years

Engine Mounts - Inspect	
Engine Valve Lash - Check	

Every 2000 Service Hours

Engine Crankcase Breather - Clean/Replace	
---	--

Every Year

Cooling System Coolant Sample (Level 2) - Obtain	
---	--

Every 3000 Service Hours

Eccentric Weight Housing Oil - Change	
Engine Water Pump - Inspect	
Fuel Injector - Test/Change	

Every 3000 Service Hours or 2 Years

Cooling System Water Temperature Regulator -
Replace 66

64
73

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

Seat Belt - Replace 85

58
59

Every 6000 Service Hours or 3 Years

Cooling System Coolant Extender (ELC) - Add 62

68
86

Every 12 000 Service Hours or 6 Years

Cooling System Coolant (ELC) - Change 61

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I02686006

Articulating and Oscillating Bearings - Lubricate

SMCS Code: 7051-086-BD; 7057-086-BD;
7113-086-BD

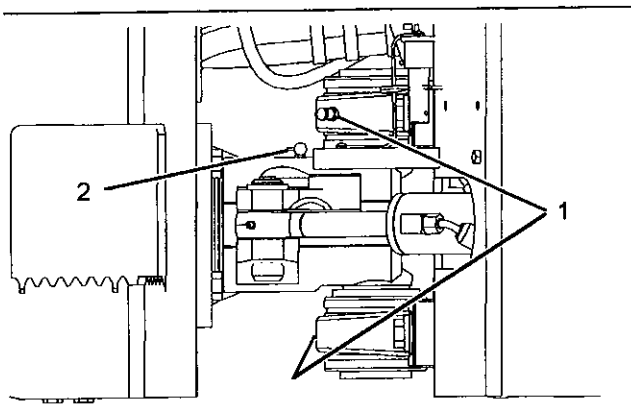


Illustration 67

g01349347

- (1) Articulating Bearings
- (2) Oscillating Bearing

The hitch is located in the center pivot area.

Lubricate the Articulation Bearings

1. Clean all caps before servicing.
2. Clean all fittings before servicing.
3. Lubricate the fittings for the articulation bearings (1) with ten strokes from a hand grease pump (16 to 20 cubic centimeters per fitting).

Note: Excess grease can cause seal damage.

4. Install all caps after servicing.

Lubricate the Oscillating Bearing

1. Clean the cap before servicing.
2. Clean the fitting before servicing.
3. Lubricate the fitting for the oscillation bearing (2) until grease comes out of the casting.
4. Install the cap after servicing.

I02686153

Backup Alarm - Test

SMCS Code: 7406-081

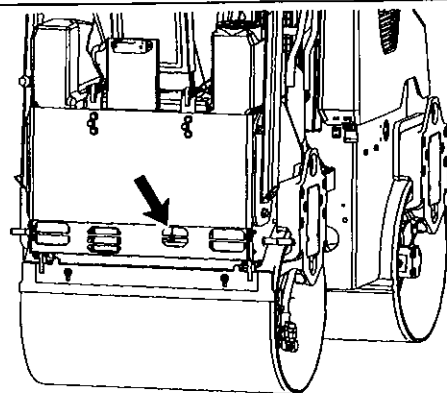


Illustration 68

g01349407

The back up alarm is located at the rear of the machine.

1. Engage the parking brake.
2. Start the engine.
3. Move the propel control lever to the REVERSE position. The backup alarm should sound immediately. The backup alarm will continue to sound until the propel control lever is moved to the NEUTRAL position or to the FORWARD position.
4. If the back up alarm does not sound, make the necessary repairs before operating the machine. Consult your Caterpillar dealer.

I01930685

Battery - Clean/Check

SMCS Code: 1401-070; 1401-535; 1402-070;
1402-535

1. Clean the top of the batteries with a clean cloth.
2. Clean the battery terminals. Coat the battery terminals with petroleum jelly, if necessary.
3. Check the battery cables. Tighten any loose connections.

I00993589

Battery - Recycle

SMCS Code: 1401-561

Always recycle a battery. Never discard a battery.

153 Always return used batteries to one of the following locations:

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

i02710384

Battery or Battery Cable - Inspect/Replace

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

1. Turn the engine start switch to the OFF position. Turn all switches to the OFF position.
2. Open the engine compartment. Refer to Operation and Maintenance Manual, "Access Doors and Covers". The battery is located on the left side of the engine compartment.
3. Disconnect the negative battery cable at the battery.
4. Disconnect the positive battery cable from the battery.
5. Remove the cable from the engine starter.
6. Perform the necessary repairs. Replace the cables or the battery, as needed.
7. Reverse the above steps in order to reconnect the battery.
8. Close the engine compartment.

i02694196

Belts - Inspect/Adjust/Replace

SMCS Code: 1357-025; 1357-040; 1357-510

3589 Your engine is equipped with a belt that operates the fan, the alternator, and the water pump. For maximum engine performance and maximum utilization of your engine, inspect the belts for wear and for cracking. Check the tension of the belt. Adjust the tension of the belt in order to minimize belt slippage. Belt slippage will decrease the belt life. Belt slippage will also cause poor performance.

If a new belt is installed, recheck the belt adjustment after 30 minutes of operation.

Alternator Belt and Water Pump Belt

1. Open the engine compartment. Refer to Operation and Maintenance Manual, "Access Doors and Covers".

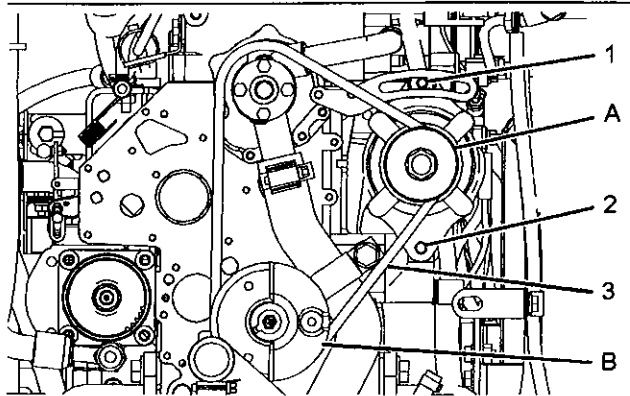


Illustration 69

g01351297

2. To check the belt tension, apply 110 N (25 lb) of force midway between pulley (A) and pulley (B). Correctly adjusted belts will deflect 6 to 10 mm (8/32 to 12/32 inch).
 3. In order to adjust alternator belt (3), loosen mounting bolts (1) and (2).
 4. To achieve the correct adjustment, move the alternator inward or move the alternator outward, as required.
 5. Tighten mounting bolts (1) and (2).
- Note:** The alternator shaft nut must be tightened to a torque of 50 ± 5 N·m (37 ± 4 lb ft).
6. If new belts are installed, check the belt adjustment again after 30 minutes of engine operation at the rated speed.
 7. Close the engine compartment.

i02686271

Braking System - Test

SMCS Code: 4250-081; 4267-081

Note: If the machine configuration changes, the parking brakes need to be tested.

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

Put the steering frame lock in the UNLOCKED position.

Fasten the seat belt before checking the parking brake.

The following tests are used to determine if the parking brake is functional on a specified grade or a specified slope. These tests are not intended to measure the maximum brake holding effort. Read all of the steps before you perform the following procedure.

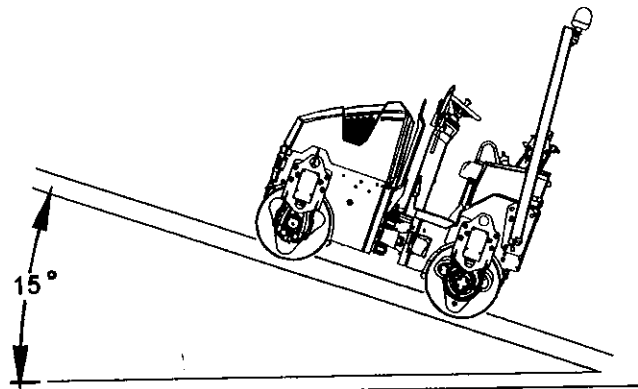


Illustration 70

g01349483

Position the machine on the incline of the slope, but near the base of the slope in order to check the parking brake. The test position should be 26 percent or a 15 degree slope.

1. Start the engine. Refer to the Operation and Maintenance Manual, "Engine Starting" for information on starting the engine.
2. Move the machine into the test position.
3. Place the throttle control into the LOW IDLE position.
4. Engage the parking brake.

The machine should not move under the following conditions.

- The engine is at low idle.
- The parking brake is applied.
- The machine is positioned on the specified slope.

⚠ WARNING

Personal injury can result if the machine moves while testing.

If the machine begins to move, release the parking brake and use the propel lever in order to move the machine to a level surface.

5. Park the machine on a level surface.
6. Stop the engine.

NOTICE

If the machine moved during the brake test, consult your Caterpillar dealer.

The dealer must inspect the brake system and make any necessary repairs before the machine is returned to operation.

1027105

Circuit Breakers - Reset

SMCS Code: 1420-529

The circuit breaker is located in the engine compartment above the battery.

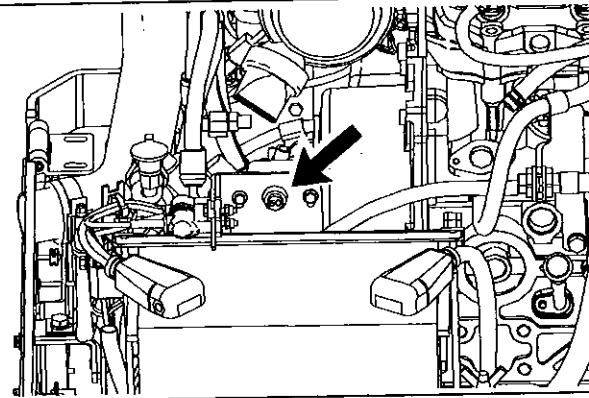


Illustration 71

g013603



Circuit Breaker/Reset – Push in the button in order to reset the circuit breaker. If the electrical system is functioning properly, the button will remain depressed. If the button does not remain depressed, check the appropriate electrical circuit. Repair the electrical circuit, if necessary.

102686289

Cooling System Coolant (ELC) - Change

SMCS Code: 1395-044-NL

WARNING

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

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

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

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

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

NOTICE

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

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

Dispose of all fluids according to local regulations and mandates.

NOTICE

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

NOTICE

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

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

Drain the coolant whenever the coolant is dirty. Drain the coolant when foam is observed.

1. Stop the engine. Allow the cooling system to cool completely.
2. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

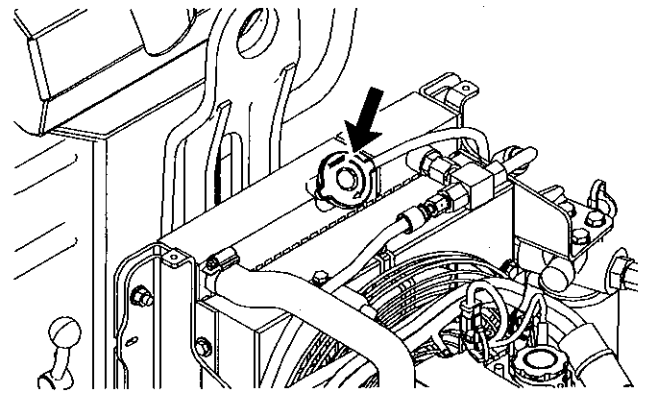


Illustration 72

g01349492

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

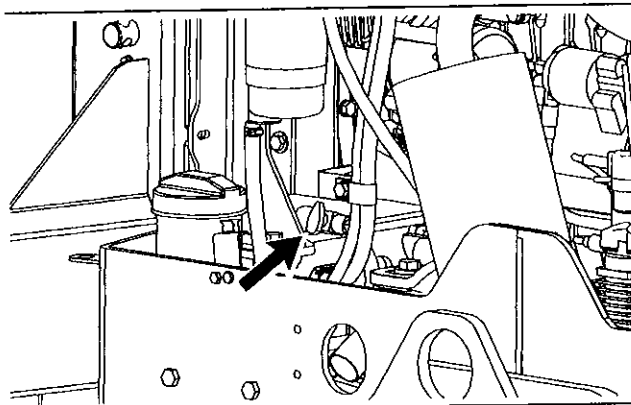


Illustration 73

g01360279

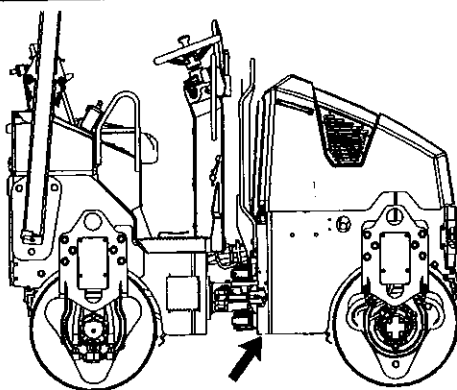


Illustration 74

g01350149

4. Open the drain valve that is located at the bottom right corner of the radiator. Allow the coolant to drain into a suitable container by using the drain hose.
5. Close the drain valve. Fill the cooling system with clean water and with a 6 to 10% concentration of cooling system cleaner.
6. Install the cooling system pressure cap.
7. Close the engine compartment.
8. Start the engine. Run the engine for 90 minutes.
9. Stop the engine. Allow the cooling system to completely cool.
10. Open the engine compartment.
11. Remove the cooling system pressure cap.
12. Open the drain valve and drain the cleaning solution.
13. While the engine is stopped, flush the cooling system with water until the draining water is transparent.

14. Close the drain valve.

15. Add the recommended amount of extender to the coolant system. Refer to Operation and Maintenance Manual, "Capacities (Refill)" for proper amount.

Note: If you are using Caterpillar Long Life Coolant that contains some additive, do not add any supplemental coolant additive at this time. Also, do not change the coolant conditioner element if you are using Caterpillar Long Life Coolant that contains some additive.

16. Start the engine and run the engine. Leave the cap off until the thermostat opens and the coolant level stabilizes.

17. Maintain the coolant level to 1 cm of the bottom of the fill pipe.

18. Inspect the gasket on the cooling system pressure cap. Replace the cooling system pressure cap if the gasket is damaged.

19. Install the cooling system pressure cap.

20. Close the engine compartment.

Cooling System Coolant Extender (ELC) - Add

SMCS Code: 1352-544-NL

WARNING

At operating temperature, the engine coolant is hot and under pressure.

Steam can cause personal injury.

Check the coolant level only after the engine has been stopped and the fill cap is cool enough to touch with your bare hand.

Remove the fill cap slowly to relieve pressure.

Cooling system conditioner contains alkali. Avoid contact with the skin and eyes to prevent personal injury.

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.

When a Caterpillar Extended Life Coolant (ELC) is used, an Extender must be added to the cooling system. For additional information about the addition of Extender, see the Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" or consult your Caterpillar dealer.

Use a 8T-5296 Coolant Test Kit to check the concentration of the coolant.

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.

1. Stop the engine. Allow the cooling system to completely cool.
2. Open the engine compartment.

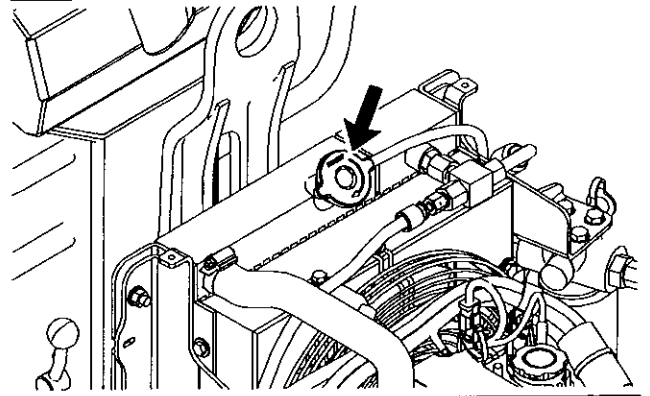


Illustration 75

g01349492

3. Slowly loosen the cooling system pressure cap in order to relieve system pressure. Remove the cooling system pressure cap.
4. If necessary, drain enough coolant from the radiator in order to allow the addition of the Extender.
5. Add the recommended amount of extender to the coolant system. Refer to the Special Publication, SEBU6250, "Extended Life Coolant (ELC)" for the proper amount.
6. Maintain the coolant level to 1 cm of the bottom of the fill pipe.
7. Inspect the gasket on the cooling system pressure cap. Replace the cooling system pressure cap if the gasket is damaged.
8. Install the cooling system pressure cap.
9. Close the engine compartment.

For additional information on the addition of extender, see Special Publication, SEBU6250, "Coolant Recommendations" or consult your Caterpillar dealer.

i02886324

i024255

Cooling System Coolant Level - Check

SMCS Code: 1350-535-FLV

WARNING

At operating temperature, the engine coolant is hot and under pressure.

Steam can cause personal injury.

Check the coolant level only after the engine has been stopped and the fill cap is cool enough to touch with your bare hand.

Remove the fill cap slowly to relieve pressure.

Cooling system conditioner contains alkali. Avoid contact with the skin and eyes to prevent personal injury.

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

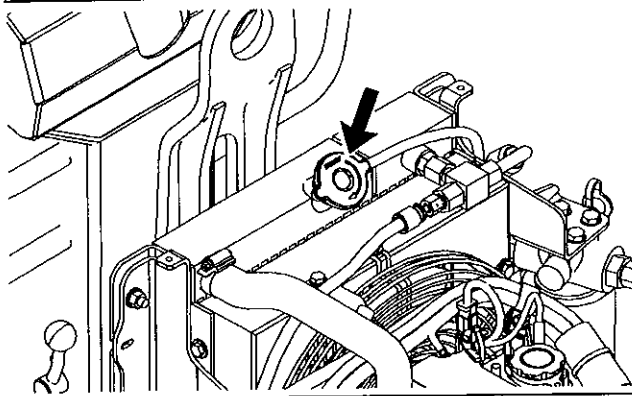


Illustration 76

g01349492

2. Loosen the radiator filler cap slowly in order to relieve pressure. After pressure is relieved, remove the radiator cap.
3. Maintain the coolant level to 1 cm of the bottom of the fill pipe.
4. Inspect the radiator filler cap and the radiator cap seal for damage. Clean the cap with a clean cloth or replace the cap.
5. Install the cap.
6. Close the engine compartment.

Cooling System Coolant Sample (Level 1) - Obtain

SMCS Code: 1350-008; 1395-008; 1395-554; 7542-008; 7542

Note: It is not necessary to obtain a Coolant Sample (Level 1) if the cooling system is filled with Cat ELC (Extended Life Coolant). Cooling systems that are filled with Cat ELC should have a Coolant Sample (Level 2) that is obtained at the recommended interval that is stated in the Maintenance Interval Schedule.

Note: Obtain a Coolant Sample (Level 1) if the cooling system is filled with any other coolant instead of Cat ELC. This includes the following types of coolants.

- Commercial long life coolants that meet the Caterpillar Engine Coolant Specification -1 (Caterpillar EC-1)
- Cat Diesel Engine Antifreeze/Coolant (DEAC)
- Commercial heavy-duty antifreeze/coolant solutions

NOTICE

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

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

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.

Obtain the sample of the coolant as close as possible to the recommended sampling interval. The recommended sampling interval for Level 1 Coolant Analysis is every 250 service hours. 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.
- 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.

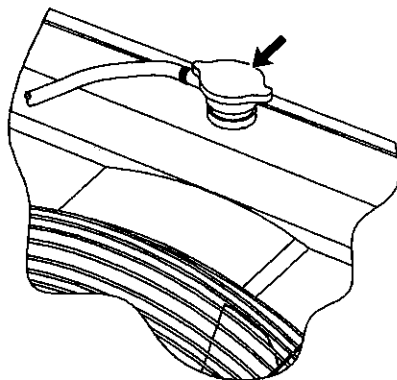


Illustration 77

g00544510

⚠ WARNING

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

1. The machine needs to be operated in order to circulate the coolant. Collect the sample after a normal workday. Collect the samples from one to two hours after the engine has been shut off.

2. Start the engine momentarily in order to circulate the coolant again.
3. Shut off the engine.
4. Carefully remove the radiator cap.
5. Use a vacuum pump and draw the sample. Do not allow dirt or other contaminants to enter the sampling bottle. Fill the sampling bottle three-fourths from the top. Do not fill the bottle completely.
6. Place the sampling bottle with the completed label into the mailing tube.
7. Install the radiator cap.

102049802

Cooling System Coolant Sample (Level 2) - Obtain

SMCS Code: 1350-008; 1395-008; 1395-554; 7542-008; 7542

Reference: Refer to Operation and Maintenance Manual, "Cooling System Coolant Sample (Level 1) - Obtain" for the guidelines for proper sampling of the coolant.

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.

i02686336

Cooling System Pressure Cap - Clean/Replace

SMCS Code: 1382-070; 1382-510

WARNING

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

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

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

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

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

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

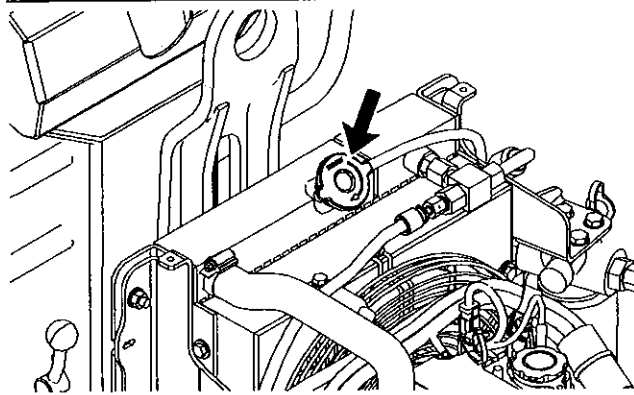


Illustration 78

g01349492

2. Remove the cooling system pressure cap slowly in order to relieve pressure.
3. Inspect the cooling system pressure cap for foreign material, for deposits, and for damage. Clean the cooling system pressure cap with a clean cloth. If the cooling system pressure cap is damaged, replace the cooling system pressure cap.
4. Install the cooling system pressure cap.

5. Close the engine compartment.

i02686336

Cooling System Water Temperature Regulator - Replace

SMCS Code: 1355-510; 1393-010

WARNING

At operating temperature, the engine coolant is hot and under pressure.

Steam can cause personal injury.

Check the coolant level only after the engine has been stopped and the fill cap is cool enough to touch with your bare hand.

Remove the fill cap slowly to relieve pressure.

Cooling system conditioner contains alkali. Avoid contact with the skin and eyes to prevent personal injury.

Replace the water temperature regulator on a regularly scheduled basis in order to reduce the chance of unscheduled downtime and of problems with the cooling system.

The water temperature regulator should be replaced after the cooling system has been cleaned. Replace the water temperature regulator while the cooling system is completely drained. Replace the water temperature regulator while the cooling system coolant is drained to a level below the water temperature regulator housing.

NOTICE

Failure to replace the engine's water temperature regulator on a regularly scheduled basis could cause severe engine damage.

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

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

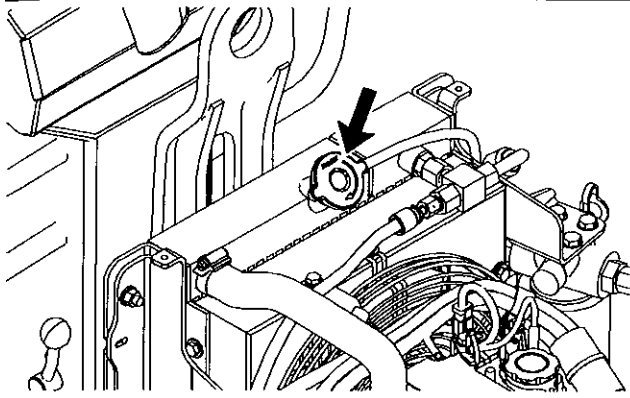


Illustration 79

g01349492

2. Remove the cooling system pressure cap in order to relieve the pressure in the cooling system.

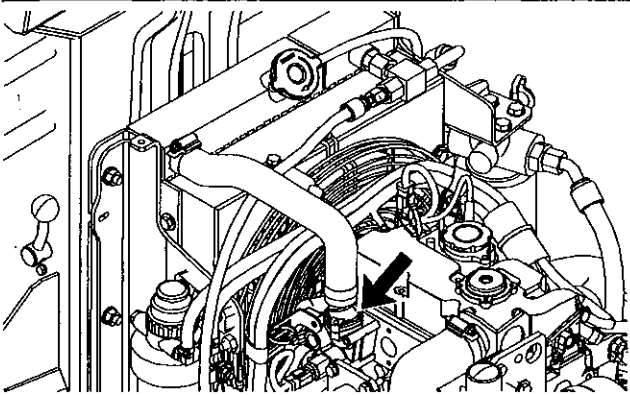


Illustration 80

g01349541

3. Remove the housing for the water temperature regulator.
4. Remove the gasket and remove the water temperature regulator.

NOTICE

The water temperature regulators may be reused if the water temperature regulators are within test specifications, are not damaged, and do not have excessive buildup of deposits.

NOTICE

Since Caterpillar engines incorporate a shunt design cooling system, it is mandatory to always operate the engine with a water temperature regulator.

Depending on load, failure to operate with a water temperature regulator could result in either an overheating or an overcooling condition.

NOTICE

If the water temperature regulator is installed incorrectly, it will cause the engine to overheat.

5. Install a new water temperature regulator and install a new gasket.
6. Install the housing for the water temperature regulator.
7. Add the cooling system coolant. Maintain the level of the coolant to 1 cm from the bottom of the fill pipe.
8. Inspect cooling system pressure cap and the gasket for damage. Replace the pressure cap if the pressure cap or the gasket are damaged.
9. Install the cooling system pressure cap.
10. Close the engine compartment.

I03671200

Drum Scrapers - Inspect/Adjust/Replace

SMCS Code: 6607-025; 6607-040; 6607-510

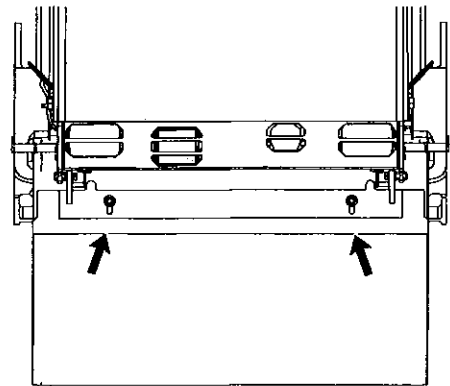


Illustration 81

g01349553

Inspect Scrapers

1. Remove dirt and debris from scrapers.
2. The drum scraper should be adjusted in order to touch the width of the drum.
3. Move the scraper down using the adjustment slots that are provided on the support for the scraper in order to maintain the original angle of the scraper. If no adjustment remains in the slot, replace the scraper.

Replace Scrapers

1. Loosen the bolts and remove the damaged scraper.
2. Install the new scraper and tighten the bolts. The recommended torque for the bolts is 55 ± 10 N·m (41 ± 7 lb ft).
3. The drum scraper should be adjusted in order to touch the width of the drum.
4. Install the drum scraper so that the bolts are at the top of the adjustment slots in the support for the scraper.

Eccentric Weight Housing Oil - Change

102686408

SMCS Code: 6606-044-OC

Plugs for the eccentric weight housing are located on the left side of the front drum and on the right side of the rear drum.

Note: If the machine is equipped with a non-vibratory front drum then there will be only one eccentric weight housing, which will be located on the rear drum.

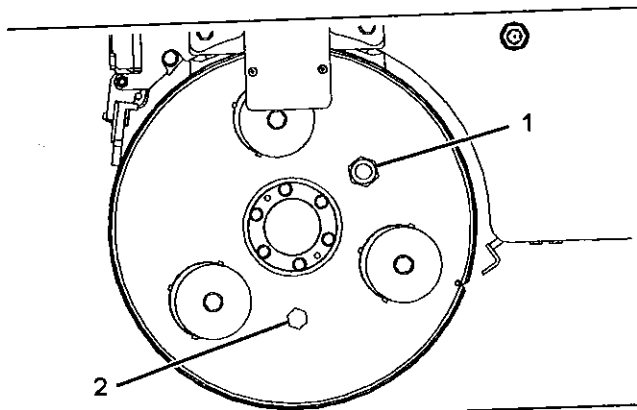


Illustration 82

g01349572

1. Drive the machine onto a smooth, horizontal surface.
2. Position the drum with fill/drain plug (2) at the bottom of the drum.
3. Remove plug (2) and drain the oil into a suitable container.

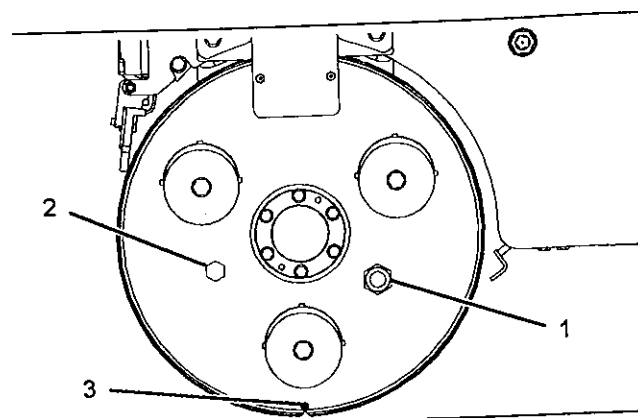


Illustration 83

g01349579

4. Move the machine so the weld seam of the drum (3) is positioned at the bottom of the drum. This will place the sight gauge (1) in the correct position.
5. Add oil until the level is in the middle of the sight gauge (1). Refer to Operation and Maintenance Manual, "Lubricant Viscosities" for information on the proper lubricant.
6. Close fill/drain plug (2).

102694033

Eccentric Weight Housing Oil Level - Check

SMCS Code: 6606-535-FLV

Plugs for the eccentric weight housing are located on the left side of the front drum and on the right side of the rear drum.

Note: If the machine is equipped with a non-vibratory front drum then there will be only one eccentric weight housing, which will be located on the rear drum.

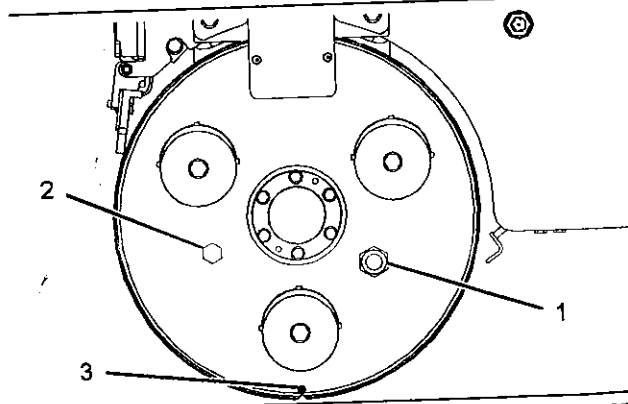


Illustration 84

g013495

1. Drive the machine onto a smooth, horizontal surface.

2. Move the machine so the weld seam of the drum (3) is positioned at the bottom of the drum. This will place the sight gauge (1) in the correct position.
3. Observe the level of oil in sight gauge (1). The oil level should be visible in the center of the sight gauge.
4. If the lubricant level is low, remove fill/drain plug (2).
5. Maintain the level of the oil to the middle of sight gauge (1). Refer to Operation and Maintenance Manual, "Lubricant Viscosities" for information on the proper lubricant.
6. Clean fill/drain plug (2). Install fill/drain plug (2).

Note: Do not overfill the eccentric weight housing.

I02713556

Engine Air Filter Primary Element - Clean/Replace

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

NOTICE

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

Service the air cleaner filter element when the engine air filter service indicator turns red. Refer to Operation and Maintenance Manual, "Engine Air Filter Service Indicator - Inspect".

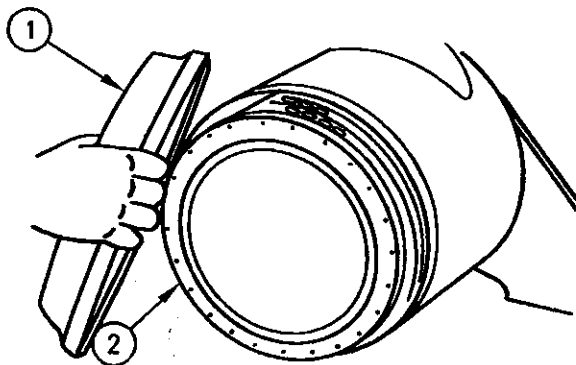


Illustration 85

g00102316

1. Remove cover (1) for the air filter housing.
2. Remove primary filter element (2) from the air filter housing.
3. Clean the inside of the air filter housing.

4. If the machine is equipped with a vacuator valve, clean the vacuator valve on the cover for the air filter housing.
 5. Install a clean primary air filter element. Install the cover for the air filter housing.
- Note:** Refer to "Cleaning Primary Air Filter Elements".
6. Reset the engine air filter service indicator.
 7. Close the access door.

After cleaning the primary filter element, if the indicator turns red after starting the engine or the exhaust smoke is still black, install a new primary filter element. If the piston remains in the red zone replace the secondary element.

Cleaning Primary Air Filter Elements

NOTICE

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

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

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

Do not wash the filter element.

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

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

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

NOTICE

Do not clean the air filter elements by bumping or tapping. This could damage the seals. Do not use elements with damaged pleats, gaskets, or seals. Damaged elements will allow dirt to pass through. Engine damage could result.

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

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

- Pressurized air
- Vacuum cleaning

Pressurized Air

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

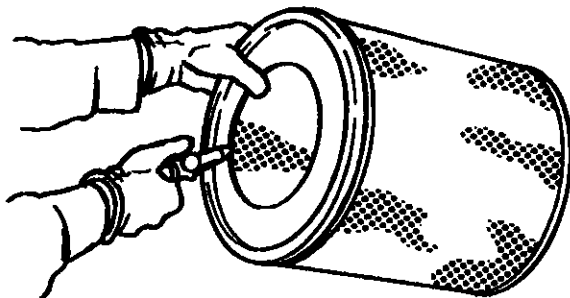


Illustration 86

g00281692

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

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

Vacuum Cleaning

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

Inspecting the Primary Air Filter Elements

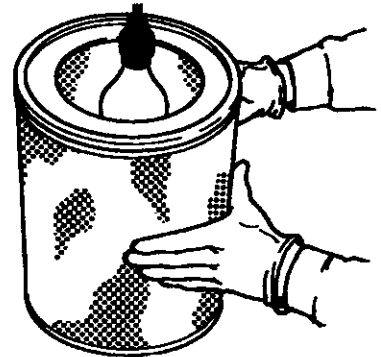


Illustration 87

Inspect the clean, dry primary air filter element with a 60 watt blue light in a dark room or in a similar facility. Place the blue light in the primary air filter element. Rotate the primary air filter element. Inspect the primary air filter element for tears and/or holes. Inspect the primary air filter element for light that shows through the filter material. If it is necessary in order to confirm the result, compare the primary air filter element to a new primary air filter element. The primary air filter element must have the same part number.

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

Storing Primary Air Filter Elements

If a primary air filter element that passes inspection will not be used, the primary air filter element must be stored for future use.

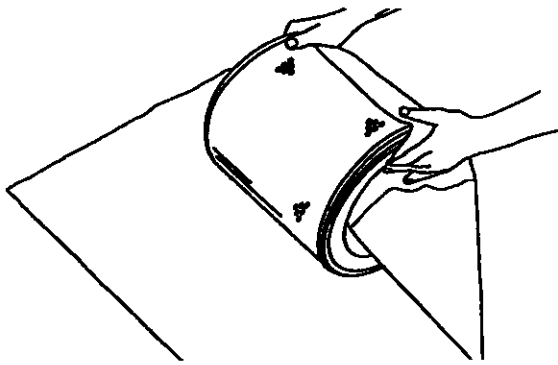


Illustration 88

g00281694

Do not use paint, a waterproof cover, or plastic as a protective covering for storage. An air flow restriction may result. To protect against dirt and damage, wrap the primary air filter elements in Volatile Corrosion Inhibited (VCI) paper.

Place the primary air filter element into a box for storage. For identification, mark the outside of the box and mark the primary air filter element. Include the following information:

- Date of cleaning
- Number of cleanings

Store the box in a dry location.

i02711443

Engine Air Filter Secondary Element - Replace

SMCS Code: 1054-510-SE

NOTICE

Always replace the secondary filter element. Never attempt to reuse the secondary filter element by cleaning the element.

When the primary filter element is replaced, the secondary filter element should be replaced.

The secondary filter element should also be replaced if the exhaust smoke is still black.

1. Open the engine access door.
2. See Operation and Maintenance Manual, "Engine Air Filter Primary Element - Clean/Replace". Remove the air cleaner cover from the air cleaner housing. Remove the primary filter element from the air cleaner housing.

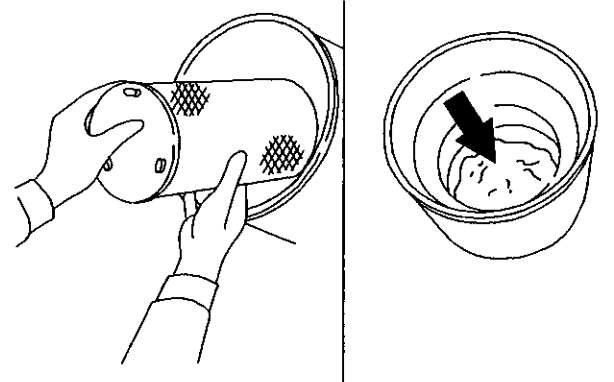


Illustration 89

g00101451

3. Remove the secondary filter element.
4. Cover the air inlet opening. Clean the inside of the air cleaner housing.
5. Remove the cover from the air inlet opening.
6. Install the new secondary filter element.
7. Install the primary filter element.
8. Install the air cleaner cover and close the latches securely.
9. Close the engine access door.

i02686963

Engine Air Filter Service Indicator - Inspect

SMCS Code: 7452-040

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".
2. Start the engine.
3. Run the engine at high idle.



Illustration 90

g01349751

- 4. If the piston in the engine air filter service indicator turns red, service the air cleaner.
 - 5. Stop the engine.
- 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. Close the engine compartment.

i02166542

Engine Crankcase Breather - Clean/Replace

SMCS Code: 1317-070; 1317-510

NOTICE

Keep all parts clean from contaminants.

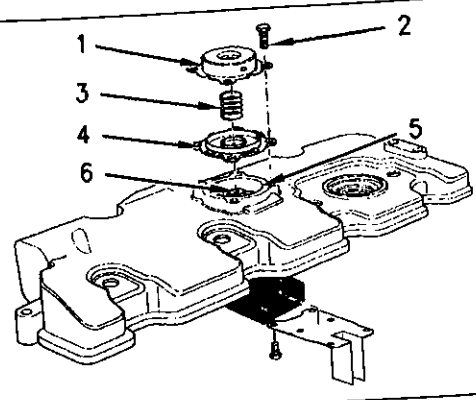
Contaminants may cause rapid wear and shortened component life.

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.



g00827682

Illustration 91

Typical example

- (1) Breather cover
- (2) Bolts for breather cover
- (3) Spring
- (4) Diaphragm and plate
- (5) Cavity
- (6) Vent hole

- 1. Loosen bolts (2) and remove breather cover (1) from the valve mechanism cover.
- 2. Remove spring (3). Remove the diaphragm and plate (4).
- 3. Clean vent hole (6). Clean cavity (5) for the breather assembly in the valve mechanism cover.

NOTICE

Make sure that the components of the breather assembly are installed correctly. Engine damage may occur if the breather assembly is not working properly.

- 4. Install a new diaphragm and plate (4) for the breather assembly. Install a new spring (3). Install breather assembly into cavity (5) of the valve mechanism cover.
- 5. Install breather cover (1) and four bolts (2). Tighten the bolts.

i02689008

Engine Mounts - Inspect

SMCS Code: 1152-040

Open the engine compartment.

There are four engine mounts. There are two engine mounts on the right side of the engine and there are two engine mounts on the left side of the engine.

Engine vibration can be caused by improper mounting of the engine. Engine vibration can be caused by loose engine mounts or deteriorated engine mounts.

- Inspect the engine mounts for deterioration.
- Replace any engine mount that is deteriorated.
- Inspect the engine mounts for correct bolt torque.
- Tighten the mounts if the mounts are loose.
- Close the engine compartment.

102689154

Engine Oil Level - Check

SMCS Code: 1348-535-FLV

NOTICE

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

Stop the engine in order to check the oil level. **DO NOT** check the oil level when the engine is running.

1. Park the machine on a level surface, and stop the engine.
2. Allow the oil to drain back to the sump for a minimum of ten minutes.
3. Open the engine compartment.

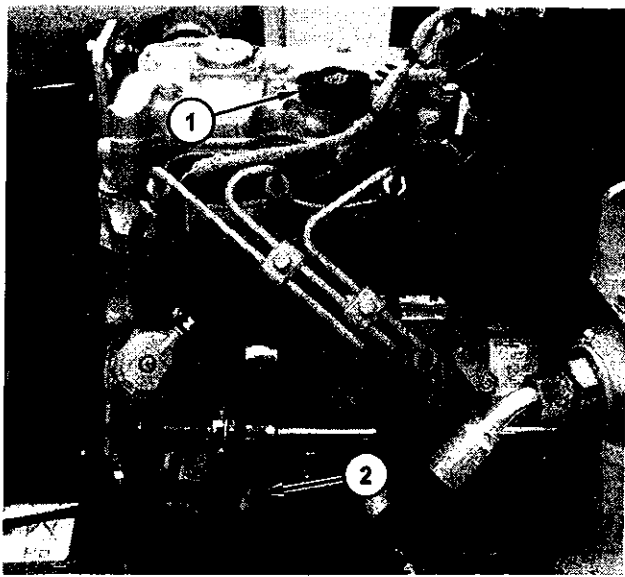


Illustration 92

g01350096

4. Remove dipstick (2). Wipe the dipstick with a clean cloth. Insert the dipstick. Remove the dipstick and note the oil level. Insert the dipstick.

Note: Refer to the Operation and Maintenance Manual, "Lubricant Viscosities" and Operation and Maintenance Manual, "Capacities (Refill)" for the correct amount of oil that is used when the oil is changed. The correct amount of oil determines the correct level of the oil in the FULL range on the dipstick.

NOTICE

Do not overfill the crankcase. The oil level must not reach the top of the FULL range mark or above the FULL range mark.

5. Maintain the oil level on the dipstick between the MINIMUM mark and the MAXIMUM mark. Add oil if the oil level is too low. If the oil level is correct, close the engine compartment.

Note: Operating your engine with the oil level above the FULL mark in the FULL Range could cause the crankshaft to dip into the oil. This could result in excessively high operating temperatures. The high operating temperatures could result in reduced lubricating characteristics of the oil. This could cause damage to the bearings and loss of engine power.

Add The Engine Oil

1. Open the engine compartment.
2. Remove oil filler cap (1).
3. Add the oil.
4. Clean oil filler cap (1). Install oil filler cap (1).
5. Close the engine compartment.

101175145

Engine Oil Sample - Obtain

SMCS Code: 1000-008

WARNING

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

Obtain the Sample and the Analysis

In addition to a good preventive maintenance program, Caterpillar recommends using S-O-S oil analysis at regular scheduled intervals in order to monitor the condition of the engine and the maintenance requirements of the engine.

74
Maintenance Section
Engine Oil and Filter - Change

Each oil sample should be taken when the oil is warm and when the oil is well mixed. The sample should be taken at this time in order to ensure that the sample is representative of the oil in the crankcase.

Obtain the S-O-S Sample

Use the following method in order to obtain an S-O-S sample:

- Use a 1U-5718 Vacuum Pump or use an equivalent pump that is inserted into the sump.

To avoid contamination of the oil samples, the tools and the supplies that are used for obtaining oil samples must be clean.

Consult your Caterpillar dealer for complete information and assistance in establishing an S-O-S program for your engine.

If you fill the engine too fast with oil, the oil may saturate the engine breather. If the breather is saturated with oil, oil will blow out of the breather hose until the breather is free of oil. Add the engine oil at a rate of 2 L/min (0.5283 US gpm). This will help prevent saturating the breather with oil.

102689209

Engine Oil and Filter - Change

SMCS Code: 1318-510

Run the engine in order to warm up the oil. Stop the engine before you drain the oil. When the oil is warm the waste particles are suspended in the oil. The waste particles will be removed when the oil is drained.

As the oil cools, the waste particles settle to the bottom of the oil pan. The waste particles will not be removed if the oil is too cool.

The waste particles can recirculate through the engine lubrication system if the recommended procedure is not followed.

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

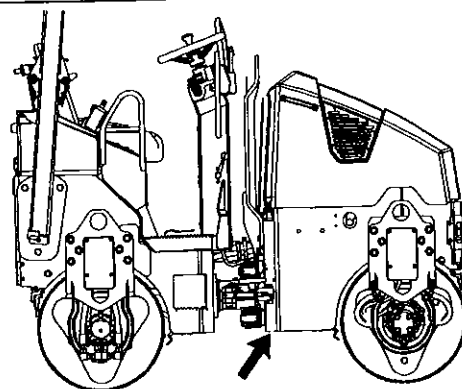


Illustration 93

g01350149

2. Place a suitable container under the drain hose. The drain hose is located below the front frame. Open the drain valve which is located on the left side of the engine crankcase. Refer to the Operation and Maintenance Manual, "General Hazard Information" for information that pertains to containing fluid spillage.
3. Allow the oil to completely drain.
4. Close the drain valve.

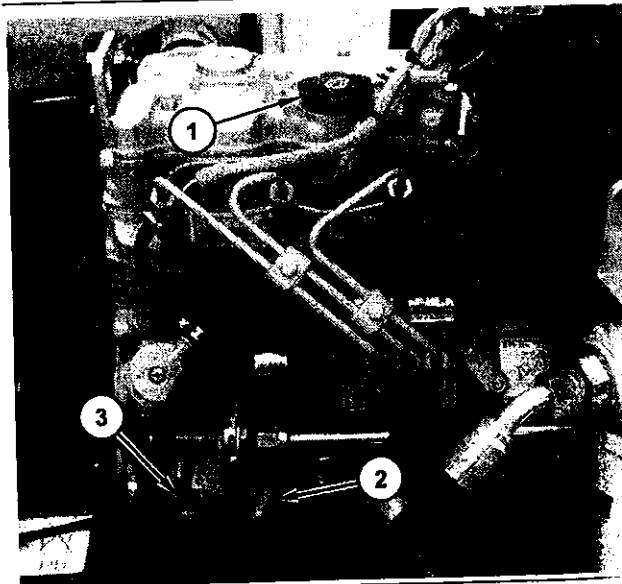


Illustration 94

g01350

5. Remove filter element (3).

Note: Discard the used filter element according to local regulations.

6. Clean the filter housing base. All of the old filter seal must be removed from the filter housing base.
7. Apply a thin coat of engine oil to the seal of the new filter element.

8. Install the new filter by hand. When the gasket contacts the filter base, tighten the filter element for an additional 3/4 turn. This will tighten the filter sufficiently.

Every new oil filter has rotation index marks that are spaced at 90 degree increments. Use the rotation index marks as a guide for tightening the oil filter.

9. Remove oil filler cap (1). Fill the crankcase with new oil. See Operation and Maintenance Manual, "Lubricant Viscosities" and Operation and Maintenance Manual, "Capacities (Refill)" for further information. Clean the oil filler cap and install the oil filler cap.

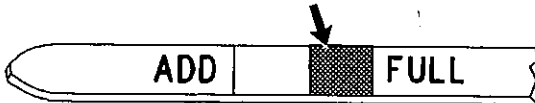


Illustration 95

g00857506

10. Before you start the engine, check the oil level on dipstick (2). The oil level must be within the FULL RANGE on the dipstick.
11. Start the engine. Run the engine for two minutes. Inspect the machine for leaks. Stop the machine.
12. Wait for ten minutes in order to allow the oil to drain back into the crankcase. Check the oil level. Maintain the oil level within the FULL RANGE on the dipstick.
13. Close the engine compartment.

i01633611

Engine Valve Lash - Check

SMCS Code: 1105-535

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

NOTICE

Only qualified service personnel should perform this maintenance. Refer to the Service Manual or your Caterpillar dealer for the complete valve lash adjustment procedure.

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

i02712308

Engine Water Pump - Inspect

SMCS Code: 1361-040

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

- Cracks in the cylinder head
- Piston seizure
- Other potential engine damage

Open the engine compartment.

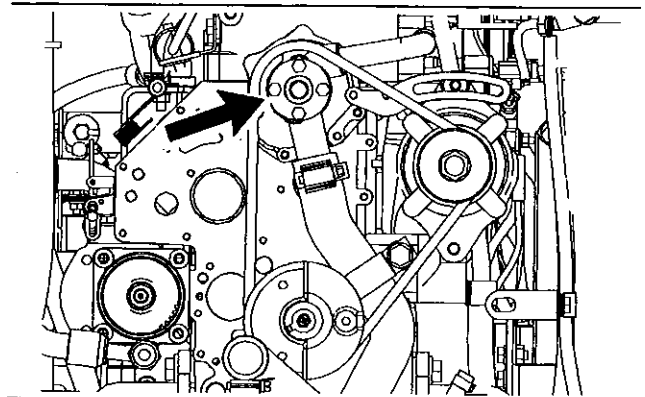


Illustration 96

g01361901

Water pump (1) is located on the engine block at the front of the engine.

Visually inspect the water pump for leaks. If leaks are found, all the seals must be replaced. If there is an excessive leakage of coolant, replace the water pump.

102712447

Fuel Injector - Test/Change

SMCS Code: 1254-081; 1254-510

Refer to Engine Systems Operation/Testing and Adjusting, KENR6745 in order to perform the complete procedure for testing and changing of the fuel injectors.

102166043

Fuel System - Prime

SMCS Code: 1250-548

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.

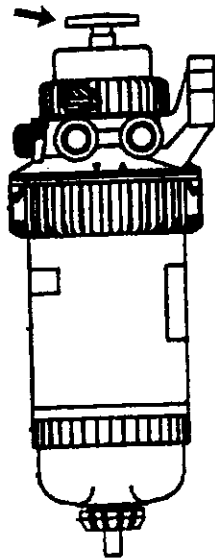


Illustration 97

g01098216

1. Operate the fuel priming pump plunger in order to fill the new filter element with fuel. Continue to pump until a resistance is felt. This resistance will indicate that the filter element is full of fuel.

2. Start the engine. If the engine will not start, further priming is necessary. If the engine starts but the engine continues to misfire, further priming is necessary. If the engine starts but the engine continues to emit smoke, further priming is necessary.

3. If the engine starts but the engine runs rough, continue to run the engine at low idle. Continue to run the engine at low idle until the engine runs smoothly.

102694

Fuel System Water Separator Element - Replace

SMCS Code: 1263-510; 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 Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Caterpillar products.

Dispose of all fluids according to local regulations and mandates.

Note: This unit has a dual purpose. The element serves as a water separator and a fuel filter.

1. Open the engine access door. Refer to Operation and Maintenance Manual, "Access Doors and Covers".

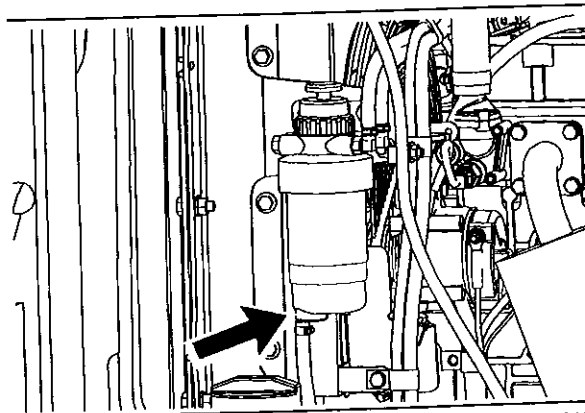


Illustration 98

g01098216

2. The water separator is located in the engine compartment on the right side of the machine.

102690598

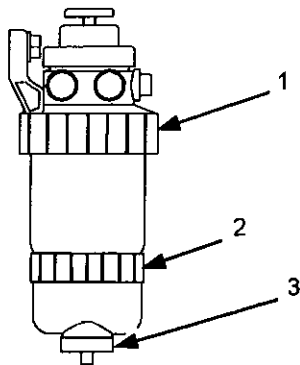


Illustration 99

g01017292

3. Open the drain on the fuel filter/water separator (3). Allow the water and fuel to drain into a suitable container.
4. Close the drain valve by hand. Do not tighten the drain valve with a tool. Damage to the valve or to the seals may occur.
5. Support the fuel filter/water separator and rotate the locking ring (1) counterclockwise. Remove the fuel filter/water separator.
6. Rotate the locking ring (2) counterclockwise. Remove the bowl assembly.
7. Clean the mounting base for the fuel filter/water separator.
8. Clean the bowl assembly for the fuel/water separator.
9. Install the bowl assembly onto the new fuel/water separator and rotate the locking ring clockwise.
10. Install the new fuel filter/water separator onto the mounting base. Rotate the locking ring clockwise in order to fasten the fuel filter/water separator to the mounting base.
11. Prime the fuel system in order to fill the fuel filter/water separator with fuel. Refer to Operation and Maintenance Manual, "Fuel System - Prime".
12. Close the engine access door.

Fuel Tank Cap and Strainer - Clean

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

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

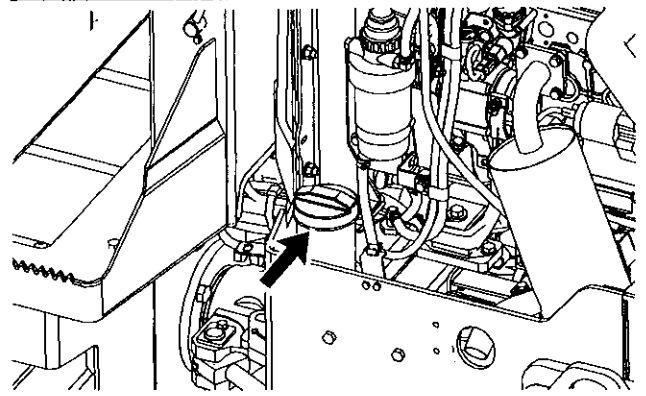


Illustration 100

g01350424

2. Remove fuel tank cap.
3. Remove the filler screen.
4. Wash the filler screen in clean, nonflammable solvent. Dry the filler screen with pressure air.
5. Inspect the cap and the filler screen. Replace the cap if the cap is damaged. Replace the filler screen if the filler screen is damaged.
6. Install the filler screen.
7. Apply a thin film of fuel to the gasket of the fuel tank cap.
8. Install fuel tank cap.
9. Close the engine compartment.

Fuel Tank Water and Sediment - Drain

SMCS Code: 1273-543-M&S

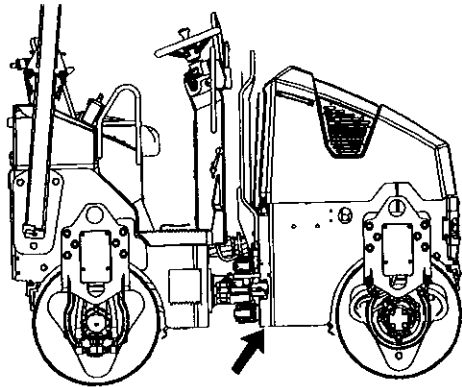


Illustration 101

g01350149

1. The drain plug is located under the right front side of the front frame.

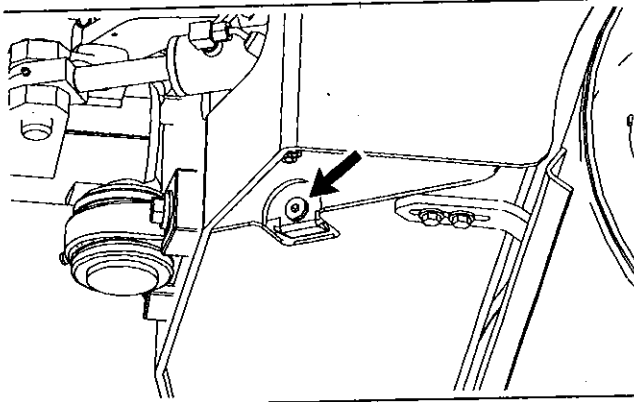


Illustration 102

g01350440

2. Remove the drain plug. Allow the water and sediment to drain into a suitable container.
3. Install the drain plug.

Note: Dispose of all fluids according to local regulations.

Fuses - Replace

SMCS Code: 1417-510



Fuse – The fuses protect the electrical system from damage that is caused by overloaded circuits. Change the fuse if the element separates. If the element of the new fuse separates, check the circuit. Repair the problem before you operate the machine.

NOTICE

Replace fuses with the same type and size. Improper use of fuses could result in electrical damage. Frequent replacement of fuses may indicate another type of electrical problem. Contact your Caterpillar dealer.

The compartment for the fuses is located below the operator controls. There are two screws that hold the cover on the compartment.

In order to access the compartment for the fuses, remove the two screws. Remove the cover.

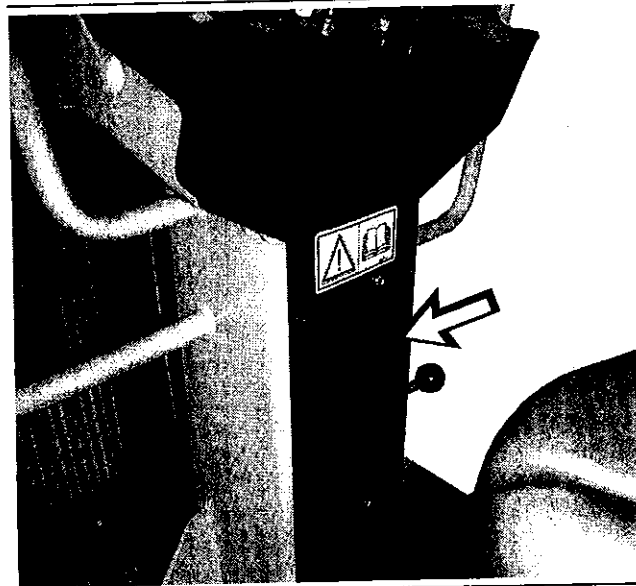


Illustration 103

g01350450

Fuel Tank Water and Sediment - Drain

SMCS Code: 1273-543-M&S

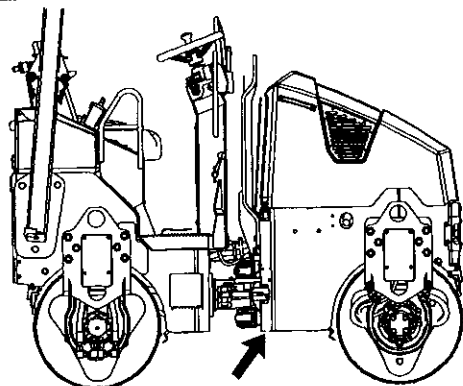


Illustration 101

g01350149

1. The drain plug is located under the right front side of the front frame.

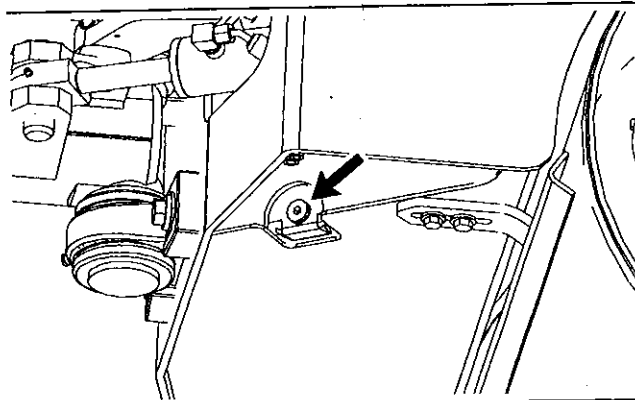


Illustration 102

g01350440

2. Remove the drain plug. Allow the water and sediment to drain into a suitable container.
3. Install the drain plug.

Note: Dispose of all fluids according to local regulations.

Fuses - Replace

SMCS Code: 1417-510



Fuse – The fuses protect the electrical system from damage that is caused by overloaded circuits. Change the fuse if the element separates. If the element of the new fuse separates, check the circuit. Repair the problem before you operate the machine.

NOTICE

Replace fuses with the same type and size. Improper use of fuses could result in electrical damage. Frequent replacement of fuses may indicate another type of electrical problem. Contact your Caterpillar dealer.

The compartment for the fuses is located below the operator controls. There are two screws that hold the cover on the compartment.

In order to access the compartment for the fuses, remove the two screws. Remove the cover.

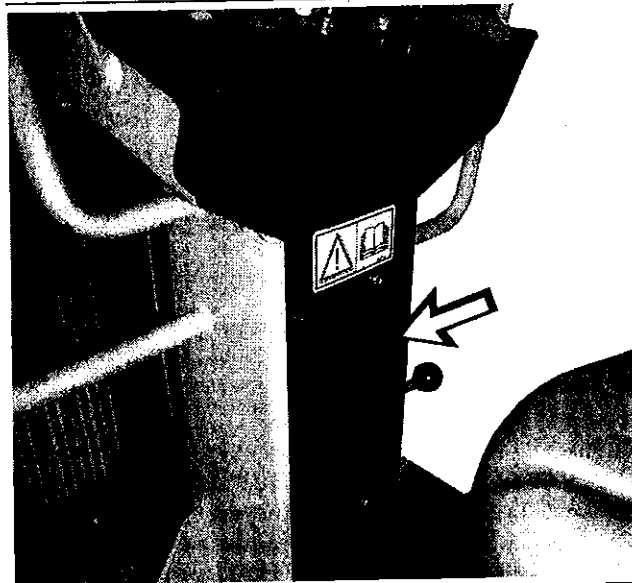


Illustration 103

g01350450

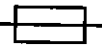






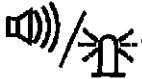
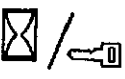
	1	2	3
A	 10A		
B	12V 10A	 10A	 10A
C	 10A	 10A	 10A
D	 10A	 10A	 10A

Illustration 104

g01971175

Table 10

Fuse Panel			
	1	2	3
A	Spare 10A		
B	12V Power Port 10A	Vibratory System 10A	Horn 10A
C	Brake and Neutralizer 10A	Gauges 10A	Flashers 10A
D	Water Spray System 10A	Backup Alarm and Beacon Light 10A	Preheater and Keyswitch 10A

102690835

Hydraulic System Oil - Change

SMCS Code: 5050-044; 5095-044

NOTICE

Take extreme care to insure the cleanliness of the hydraulic oil. Keep the hydraulic oil clean in order to extend the component life and assure the maximum performance.

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

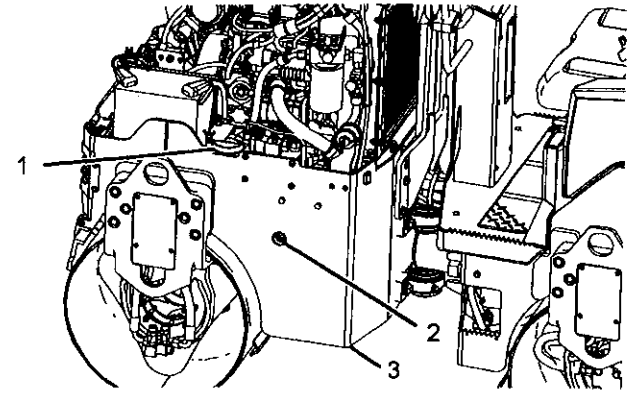


Illustration 105

g01350491

2. Remove hydraulic tank filler cap (1).
3. Remove the screen from the filler tube of the hydraulic tank.
4. Wash hydraulic tank filler cap (1) in clean, nonflammable solvent. Wash the screen in clean, nonflammable solvent. Clean the vent.

Note: The drain for the hydraulic tank (3) is located on the bottom of the front frame of the machine.

5. Open the drain for the hydraulic tank (3) in order to drain the oil. Drain the oil in a suitable container.

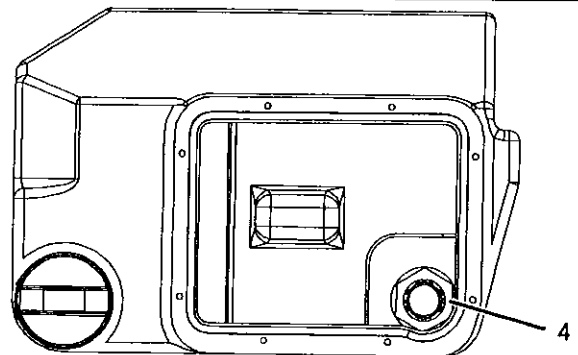


Illustration 106

g01361196

Top view of the hydraulic tank with the cover removed.

6. Remove the suction strainer (4) inside the hydraulic tank. Install a new suction strainer in the hydraulic tank.
7. Close the drain for the hydraulic tank (3).
8. Install the screen in the filler tube of the hydraulic tank.

9. Refill the hydraulic tank with clean, filtered hydraulic oil. Refer to the Operation and Maintenance Manual, "Capacities (Refill)" and Operation and Maintenance Manual, "Lubricant Viscosities".
10. Park the machine on level ground. Check the hydraulic oil level. The oil level should be visible in the sight gauge (2).

Refer to Operation and Maintenance Manual, "Hydraulic System Oil Level - Check".

11. Install hydraulic tank filler cap (1).
12. Close the engine compartment.

102690866

Hydraulic System Oil Filter - Replace

SMCS Code: 5068-510

WARNING

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

NOTICE

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

Refer to Special Publication, NENG2500, Caterpillar 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

Take extreme care to insure the cleanliness of the hydraulic oil. Keep the hydraulic oil clean in order to extend the component life and assure the maximum performance.

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

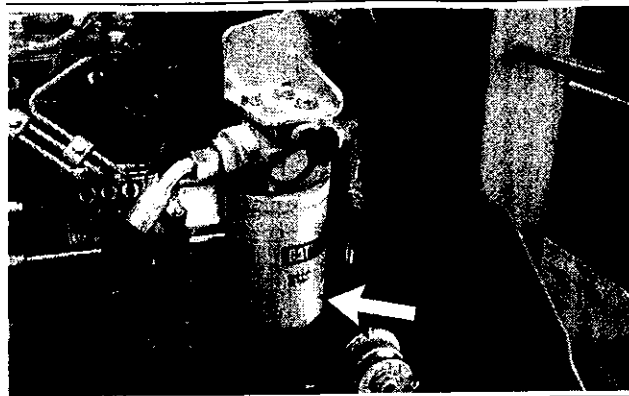


Illustration 107

g01350501

2. Clean the hydraulic oil filter location.
3. In order to catch any oil that spills, place a suitable container under the filter.
4. Remove the filter with a strap type wrench.
5. Clean the filter housing base. Remove any existing gasket material.
6. Apply a light coat of hydraulic oil to the gasket on the new filter.
7. Use your hand to install the new filter. When the seal contacts the base, tighten the filter element for an additional three quarters of a turn.

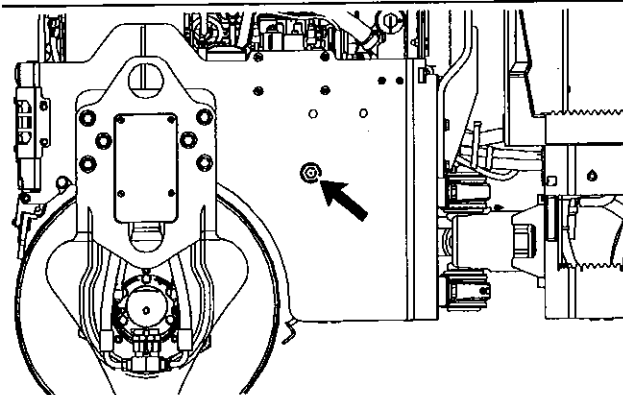


Illustration 108

g01350502

8. With the machine on level ground, check the hydraulic oil level in the sight gauge. The oil level should be visible in the sight gauge. Refer to the Operation and Maintenance Manual, "Hydraulic System Oil Level - Check".
9. Add required oil.
10. Close the engine compartment.

i02690888

Hydraulic System Oil Level - Check

SMCS Code: 5056-535-FLV; 5095-535-FLV

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".

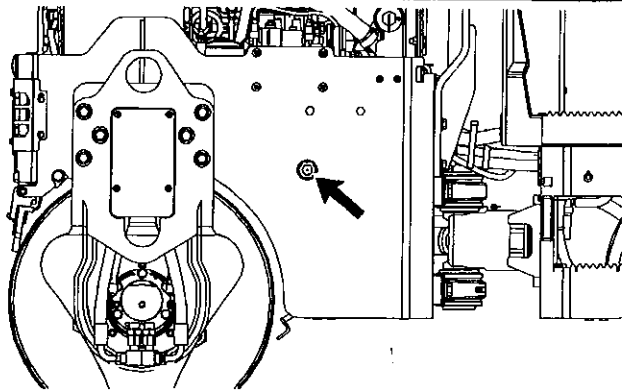


Illustration 109

g01350502

2. Observe the level of the hydraulic oil in the sight gauge when the oil is warm. Maintain the oil level to the mark on the sight gauge.
3. If necessary, add oil.

Refer to the Operation and Maintenance Manual, "Capacities (Refill)" and Operation and Maintenance Manual, "Lubricant Viscosities".

4. Close the engine compartment.

i02690890

Hydraulic System Oil Sample - Obtain

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

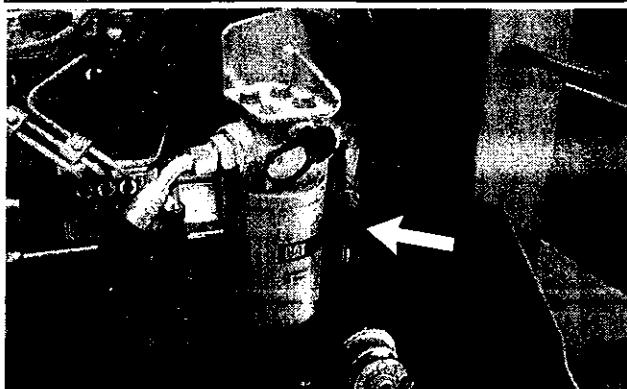


Illustration 110

g01350516

Use the sampling valve for the hydraulic oil in order to obtain the oil sample. Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for further information on obtaining an oil sample.

i02713501

Hydraulic Tank Breather - Clean

SMCS Code: 5056-070-BRE

Open the engine compartment. Refer to Operation and Maintenance Manual, "Access Doors and Covers".

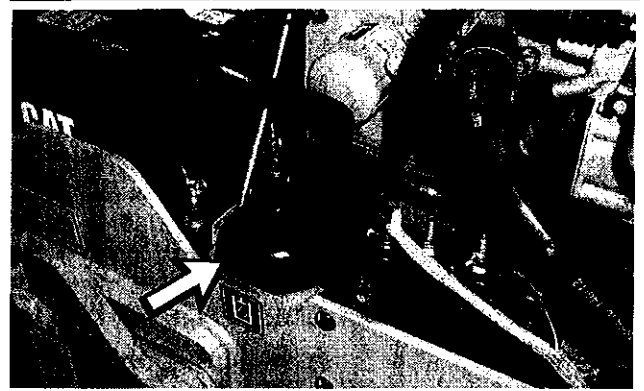


Illustration 111

g01350526

The vent is located on the hydraulic tank cap. Remove the hydraulic tank cap.

Clean the vent in clean, nonflammable solvent.

Dry the vent with compressed air.

Install the vent.

Close the engine compartment.

i02072906

Hydraulic Tank Strainer - Clean

SMCS Code: 5056-070-STR

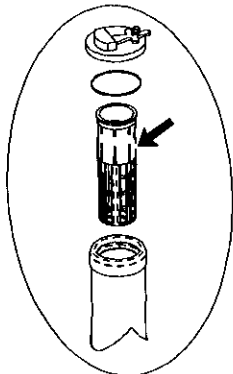


Illustration 112

g01059072

1. Remove the filler cap for the hydraulic tank.
2. Pull the strainer for the hydraulic tank out of the filler tube.
3. Clean the strainer in clean, nonflammable solvent. Dry the strainer with compressed air.
4. Install the strainer and the filler cap.

i02690922

Indicators and Gauges - Test

SMCS Code: 7450-081

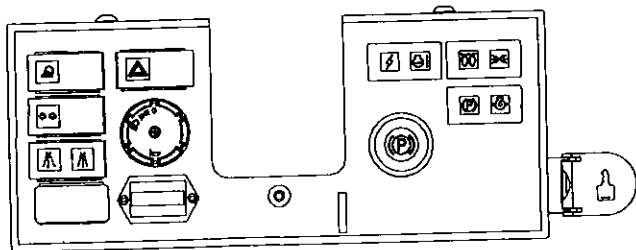


Illustration 113

g01350535

1. Look for broken lenses on the gauges, broken indicator lights, broken switches, and other broken components in the operator station.
2. Start the engine.
3. Look for inoperative gauges.

4. Turn on all machine lights (if equipped). Check for proper operation.
5. Stop the engine.

Note: When the engine is stopped and the engine start switch key is turned to the ON position, all of the indicator lights should illuminate. If the indicator lights do not illuminate, replace the lights.

6. Make any repairs that are required before operating the machine.

i02690955

Isolation Mounts - Inspect

SMCS Code: 5654-040

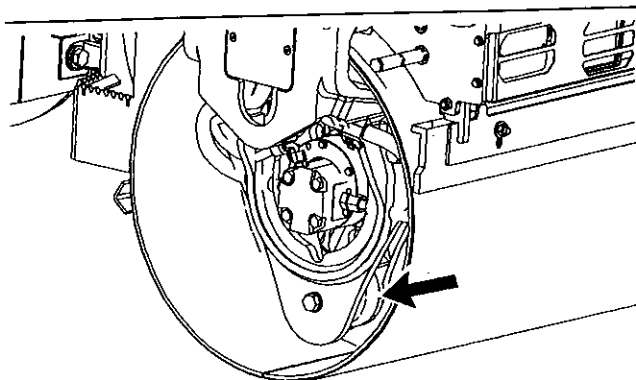


Illustration 114

g01350549

There are three isolation mounts on each side of both drums.

Inspect the isolation mounts for damage, cracking, or splitting. If an isolation mount is damaged, replace the mount. If two or more of the isolation mounts are damaged, replace all of the isolation mounts. Refer to the Disassembly and Assembly Manual for your machine for further information on removing and installing the isolation mounts.

i02072806

Hydraulic Tank Strainer - Clean

SMCS Code: 5056-070-STR

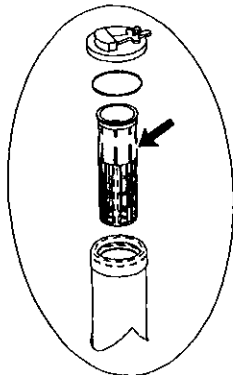


Illustration 112

g01059072

1. Remove the filler cap for the hydraulic tank.
2. Pull the strainer for the hydraulic tank out of the filler tube.
3. Clean the strainer in clean, nonflammable solvent. Dry the strainer with compressed air.
4. Install the strainer and the filler cap.

i02690922

Indicators and Gauges - Test

SMCS Code: 7450-081

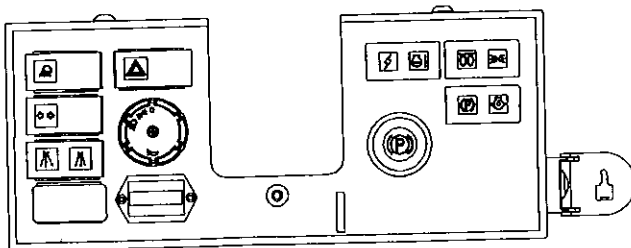


Illustration 113

g01350535

1. Look for broken lenses on the gauges, broken indicator lights, broken switches, and other broken components in the operator station.
2. Start the engine.
3. Look for inoperative gauges.

4. Turn on all machine lights (if equipped). Check for proper operation.

5. Stop the engine.

Note: When the engine is stopped and the engine start switch key is turned to the ON position, all of the indicator lights should illuminate. If the indicator lights do not illuminate, replace the lights.

6. Make any repairs that are required before operating the machine.

i02690955

Isolation Mounts - Inspect

SMCS Code: 5654-040

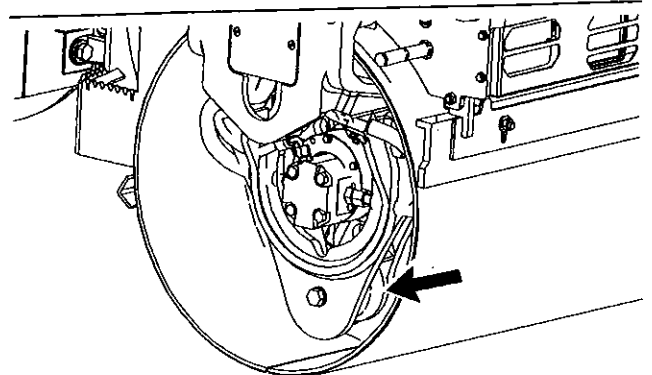


Illustration 114

g01350549

There are three isolation mounts on each side of both drums.

Inspect the isolation mounts for damage, cracking, or splitting. If an isolation mount is damaged, replace the mount. If two or more of the isolation mounts are damaged, replace all of the isolation mounts. Refer to the Disassembly and Assembly Manual for your machine for further information on removing and installing the isolation mounts.

i02711976

Oil Filter - Inspect

SMCS Code: 1308-507; 3004-507; 3067-507;
5068-507

Inspect a Used Filter for Debris

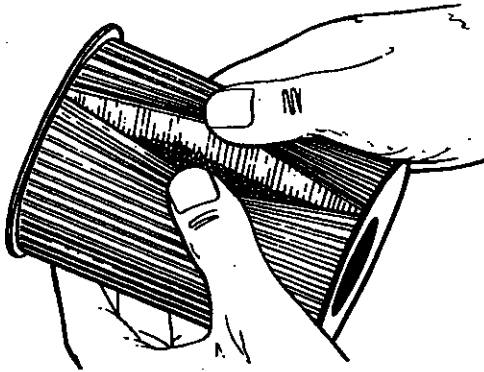


Illustration 115

g00100013

The element is shown with debris.

Use a 4C-5084 Filter Cutter or a 175-7546 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, or rod 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.

i02711990

Propel Control Tension - Adjust

SMCS Code: 3209-025



Illustration 116

g01361661

The tension of the propel control lever can be adjusted per operator complaints. The tension of the propel control lever can be adjusted in order to change the amount of force that is required to move the lever.

If the propel control lever is too hard or too easy to operate, consult your Caterpillar dealer for instruction.

Note: In any case, when the propel control lever is released in the forward position or the reverse position the lever should remain in that position.

i02690958

Radiator Core - Clean

SMCS Code: 1353-070-KO

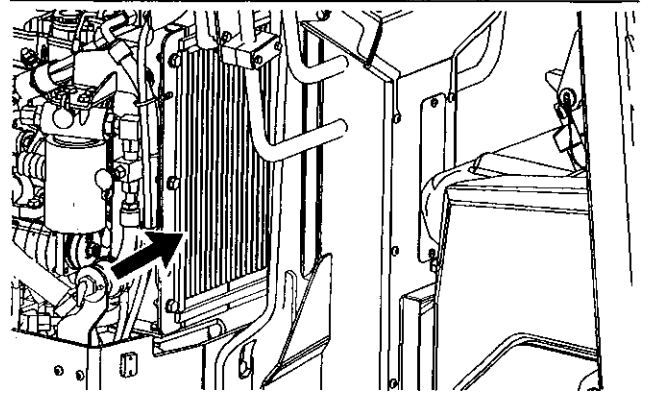


Illustration 117

g01350553

Open the engine compartment.

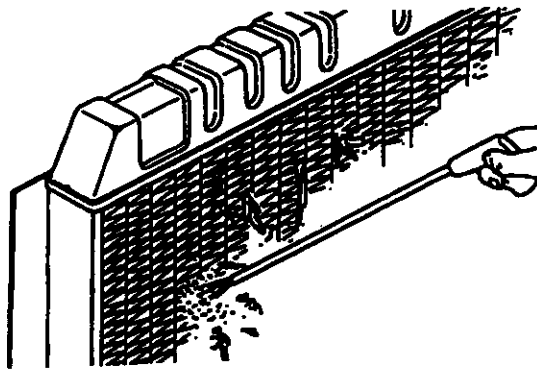


Illustration 118

g00101939

Inspect the radiator core for debris. If necessary, clean the radiator.

Compressed air is preferred, but high pressure water or steam can be used to remove dust and general debris from a radiator. Clean the radiator according to the condition of the radiator.

Note: High pressure water can bend the oil cooler and the radiator fins.

See Special Publication, SEBD0518, "Know Your Cooling System" for more information about cleaning radiator fins.

Close the engine compartment.

102712135
Rollover Protective Structure (ROPS) - Inspect

SMCS Code: 7323-040

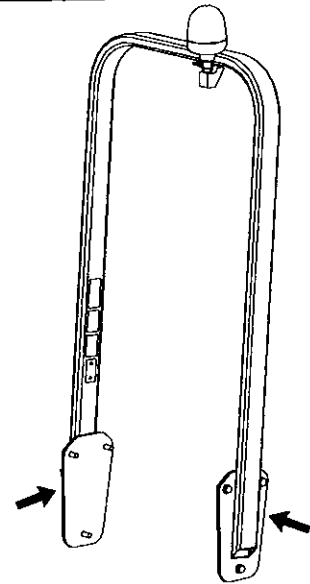


Illustration 119
Standard ROPS

g01361795

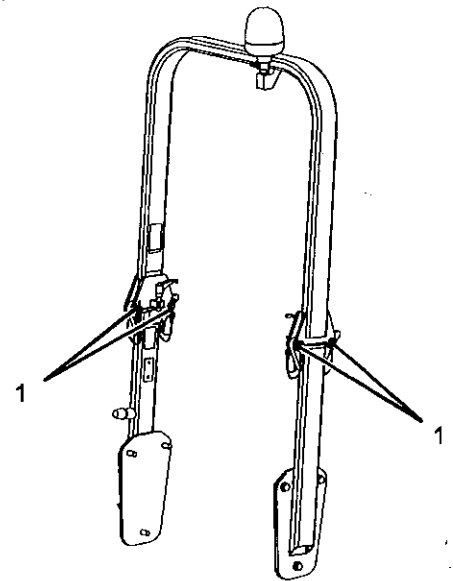


Illustration 120
Foldable ROPS

g01361796

Inspect the rollover protective structure (ROPS) for cracks. Inspect the ROPS for any loose bolts or damaged bolts. Replace the damaged bolts with original equipment parts only.

Note: If your machine is equipped with a foldable ROPS, inspect locking pins (1) for wear or damage.

Note: Apply oil to all ROPS bolt threads before you install the bolts. Failure to apply the oil to the threads can result in an improper bolt torque.

Do not straighten the ROPS or repair the ROPS by welding reinforcement plates to the ROPS.

Consult your Caterpillar dealer for the repair 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.

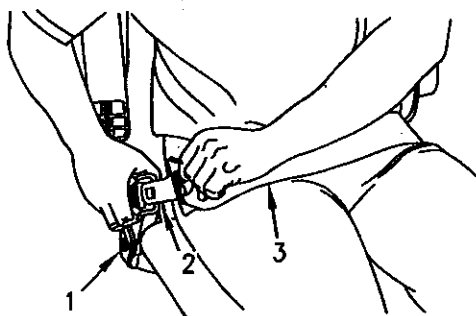


Illustration 121
Typical example

g00932801

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.

i02429584

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.

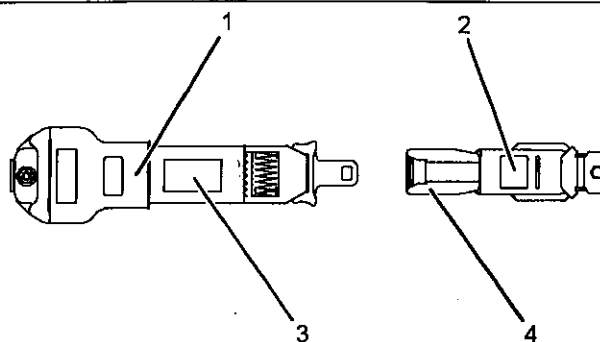


Illustration 122

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.

i02691053

Steering Cylinder Ends - Lubricate

SMCS Code: 4303-086-BD

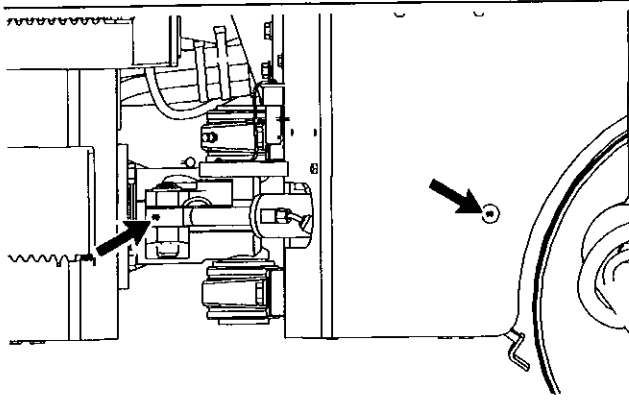


Illustration 123

g01350567

The steering cylinder is located in the pivot area. The steering cylinder is on the right side of the engine compartment. Lubricate the fitting at each end of the steering cylinder.

Note: Wipe all of the fittings before you lubricate the fittings.

i01978079

Throttle Control - Lubricate

SMCS Code: 1265-086

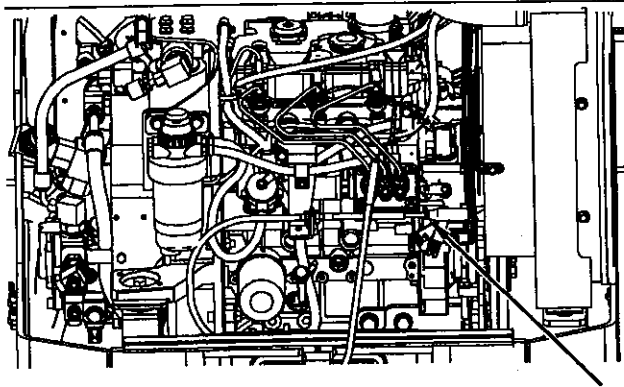


Illustration 124

g01035231

1. Open the engine compartment. Refer to the Operation and Maintenance Manual, "Access Doors and Covers".
2. Clean the throttle control linkage with a clean rag.
3. Lubricate the throttle control linkage with engine oil.

4. Close the engine compartment.

i02691148

Water Spray Nozzles - Clean

SMCS Code: 6609-070

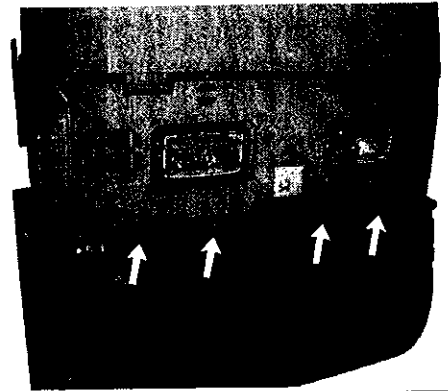


Illustration 125

g01350591

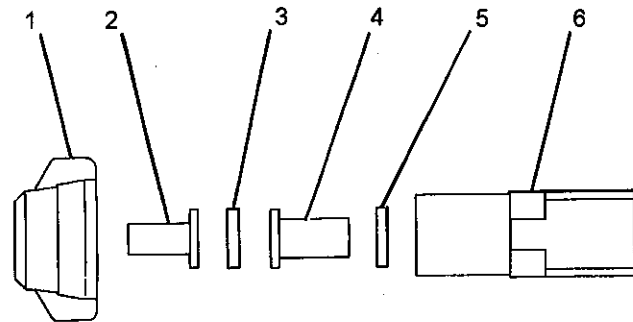


Illustration 126

g01381862

1. Remove cap (1).
2. Remove spray nozzle (2).
3. Remove rubber washer (3).
4. Remove screen assembly (4).
5. Wash nozzle (2) and screen assembly (4) in a clean, nonflammable solvent.

If screen assembly (4) is in a really dirty condition use the following procedure for further disassembly and cleaning.

I02857493

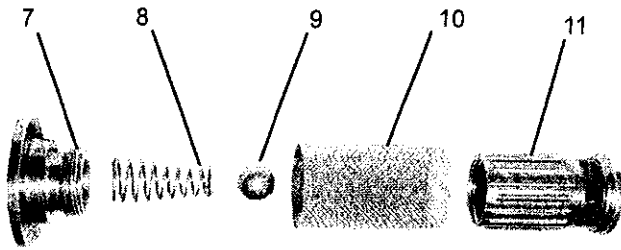


Illustration 127

g01361847

- a. Use two standard screwdrivers in order to unscrew the screen assembly. Use one screwdriver on end cap (7) and use one screwdriver on end (11).
 - b. Remove end cap (7).
 - c. Remove spring (8).
 - d. Remove ball bearing (9).
 - e. Remove screen (10).
 - f. Wash each piece of the screen assembly in a clean nonflammable solvent.
 - g. Install screen (10).
 - h. Install ball bearing (9).
 - i. Install spring (8).
 - j. Install end cap (7) and screw the assembly together.
6. Install screen (4) and rubber washer (5) into nozzle body (6).
 7. Install rubber washer (3).
 8. Install nozzle (2).
 9. Install cap (1).

Note: Rotation of the nozzle may be required in order to establish a correct spray pattern.

Water Spray System - Drain (Pressurized Water Spray System)

SMCS Code: 5612-543

The water system must be drained prior to frost or freezing conditions.

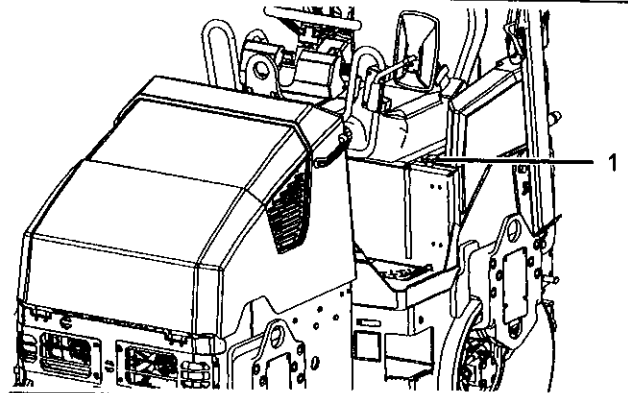


Illustration 128

g01350609

1. Open the water spray system by turning handle (1) that is located on the left side of the operator's platform.

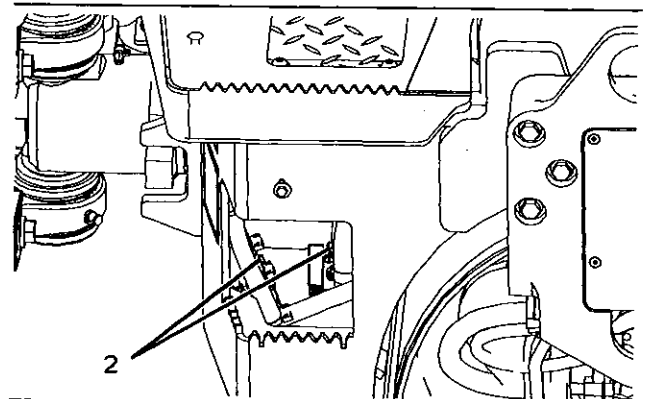


Illustration 129

g01423613

2. Open the two drain valves (2) in order to drain the water lines and the water tank.

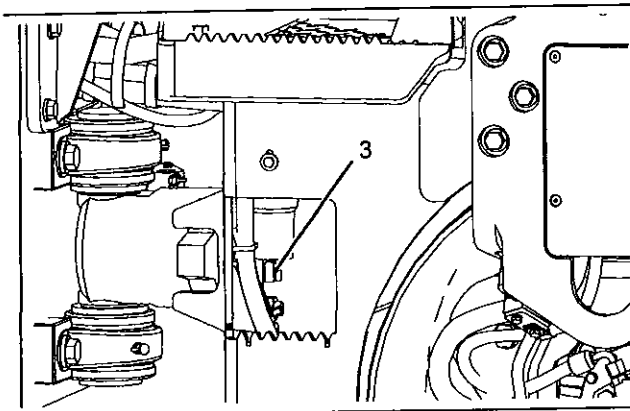


Illustration 130

g01423617

3. Open the filter drain valve (3) that is located on the bottom of the filter housing.
4. When the spraying system is completely drained turn on the water spray system on continuous spray for 10 seconds. For information on turning on the water spray system refer to Operation and Maintenance Manual, "Operator Controls".
5. Close the two drain valves (2) and close the filter drain valve (3) when the spraying system is completely drained.
6. Loosen the locking collar on the spray nozzle and allow the water to drain from the nozzle. Tighten the locking collar and ensure that the nozzle is pointed toward the drum. Repeat for each nozzle.

102691174

Water Spray System - Drain (Gravity Water Spray System)

SMCS Code: 5612-543

The water spray system must be drained prior to frost or freezing conditions.

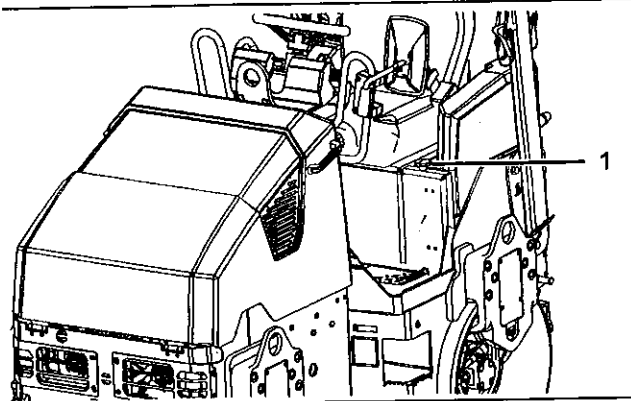


Illustration 131

g01350609

1. Turn on the gravity water spray system by using handle (1) that is located on the left side of the operator platform.

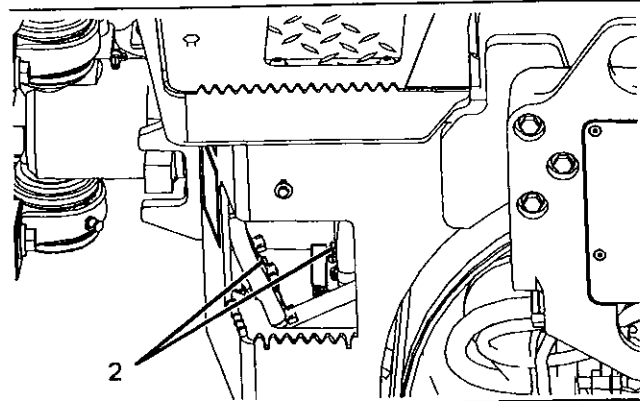


Illustration 132

g01350611

2. Open the two drain valves (2) in order to drain the water lines and the water tank.
3. Turn off the two drain valves (2) and turn off handle (1) on the operator platform when the spraying system is completely drained.

102691246

Water Spray System Filter - Clean (Pressurized Water Spray System)

SMCS Code: 5612-070-FI

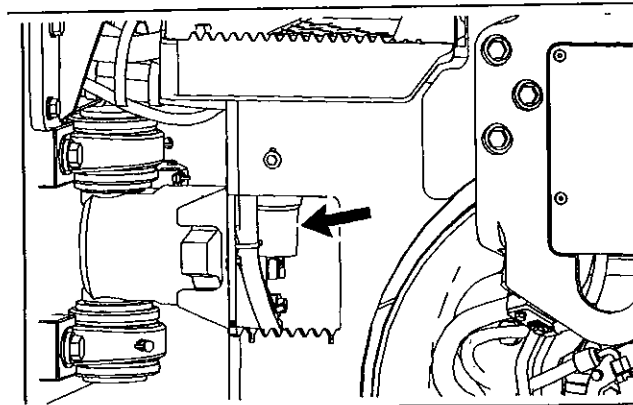


Illustration 133

g01350706

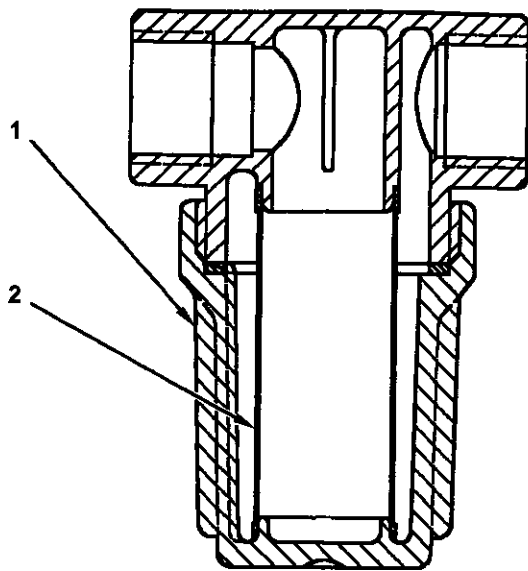


Illustration 134
 Water Filter

g01037635

1. Remove filter bowl (1). Remove screen (2).
2. Clean filter bowl (1) with water or compressed air.
3. Clean screen (2) with water or compressed air.
4. Install filter (2) into filter bowl (1).
5. Install filter bowl (3).

i02691260

Water Tank Strainer - Clean and Inspect

SMCS Code: 5613-571-STR

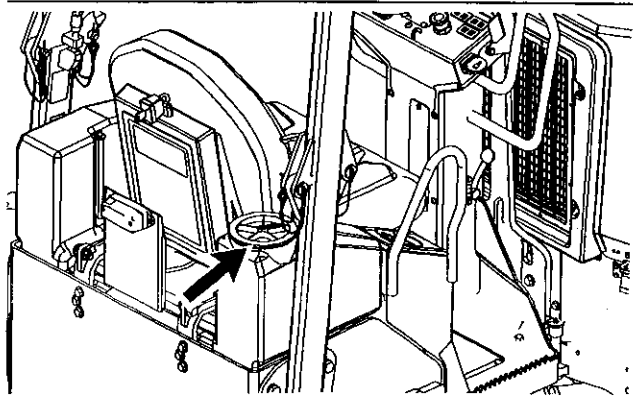


Illustration 135

g01350749

1. Remove the filler cap.
2. Remove the strainer.

3. Clean the filler cap with clean water or compressed air.
4. Clean the strainer with clean water or compressed air.
5. Install the strainer.
6. Fill the tank with clean water.
7. Install the filler cap.

Reference Information Section

Reference Materials

103044924

Reference Material

SMCS Code: 1000; 7000

The following literature can be obtained from any Caterpillar dealer:

Special Publication, SEBD0518, "Know Your Cooling System"

Special Publication, SEBD0970, "Coolant and Your Engine"

Special Publication, SEBD0717, "Diesel Fuels and Your Engine"

Special Instruction, SEHS9031, "Storage Procedure for Caterpillar Products"

Special Publication, SEBU5898, "Cold Weather Recommendations"

Special Publication, SEBD0640, "Oil and Your Engine"

Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations"

Special Publication, SEBU6981, "Emissions Control Warranty Information"

Special Publication, SEBF8029, "Guideline For Reusable Parts and Salvage Operations"

Operation and Maintenance Manual, SEBU8257, "The European Union Physical Agents (Vibration) Directive "2002/44/EC""

Service Manual, SENR5664, "Air Conditioning and Heating with R-134A (All Caterpillar Machines)"

Special Instruction, REHS0354, "Charging System Troubleshooting"

Special Instruction, REHS1642, "Operation of the Product Link System"

Special Publication, NENG2500, "Caterpillar Dealer Service Tool Catalog"

Service Magazine, SEBD1587, "What ROPS/FOPS Certification Means"

Service Magazine, SEHS6929, "Inspection, Maintenance and Repair of ROPS and Attachment Installation Guidelines"

Specifications, SENR3130, "Torque Specifications"

Operation and Maintenance Manuals are available in other languages. Consult your Caterpillar dealer for information about obtaining these Operation and Maintenance Manuals.

Additional Reference Material

ASTM D2896, "TBN Measurements" This can normally be obtained from your local technological society, from your local library, or from your local college.

SAE J313, "Diesel Fuels" This can be found in the SAE handbook. Also, this publication can be obtained from your local technological society, from your local library, or from your local college.

SAE J754, "Nomenclature" This can normally be found in the SAE handbook.

SAE J183, "Classification" This can normally be found in the SAE handbook.

Engine Manufacturers Association, "Engine Fluids Data Book"

Engine Manufacturers Association
Two North LaSalle Street, Suite 2200
Chicago, Illinois, USA 60602
E-mail: ema@enginemanufacturers.org
(312) 827-8700
Facsimile: (312) 827-8737

103645566

Decommissioning and Disposal

SMCS Code: 1000; 7000

When the product is removed from service, local regulations for the product decommissioning will vary. Disposal of the product will vary with local regulations. Consult the nearest Caterpillar dealer for additional information.

Index

- A**
- Access Doors and Covers 51
 - Engine Compartment 51
 - Fuse Box 51
 - Articulating and Oscillating Bearings - Lubricate ... 58
 - Lubricate the Articulation Bearings 58
 - Lubricate the Oscillating Bearing 58
- B**
- Backup Alarm 37
 - Backup Alarm - Test 58
 - Battery - Clean/Check 58
 - Battery - Recycle 58
 - Battery Disconnect Switch (If Equipped) 36
 - Battery or Battery Cable - Inspect/Replace 59
 - Before Operation 17, 27
 - Before Starting Engine 16
 - Belts - Inspect/Adjust/Replace 59
 - Alternator Belt and Water Pump Belt 59
 - Braking System - Test 59
 - Burn Prevention 12
 - Batteries 13
 - Coolant 12
 - Oils 13
- C**
- Capacities (Refill) 53
 - Circuit Breakers - Reset 60
 - Cooling System Coolant (ELC) - Change 61
 - Cooling System Coolant Extender (ELC) - Add 62
 - Cooling System Coolant Level - Check 64
 - Cooling System Coolant Sample (Level 1) - Obtain 64
 - Cooling System Coolant Sample (Level 2) - Obtain 65
 - Cooling System Pressure Cap - Clean/Replace ... 66
 - Cooling System Water Temperature Regulator - Replace 66
 - Crushing Prevention and Cutting Prevention 12
- D**
- Daily Inspection 27
 - Declaration of Conformity 26
 - Decommissioning and Disposal 90
 - Drum Scrapers - Inspect/Adjust/Replace 67
 - Inspect Scrapers 67
 - Replace Scrapers 68
- E**
- Eccentric Weight Housing Oil - Change 68
 - Eccentric Weight Housing Oil Level - Check 68
 - Electrical Storm Injury Prevention 16
 - Emissions Certification Film 25
 - Engine Air Filter Primary Element - Clean/Replace 69
 - Cleaning Primary Air Filter Elements 69
 - Inspecting the Primary Air Filter Elements 70
 - Engine Air Filter Secondary Element - Replace 71
 - Engine Air Filter Service Indicator - Inspect 71
 - Engine and Machine Warm-Up 40
 - Engine Crankcase Breather - Clean/Replace 72
 - Engine Mounts - Inspect 72
 - Engine Oil and Filter - Change 74
 - Engine Oil Level - Check 73
 - Add The Engine Oil 73
 - Engine Oil Sample - Obtain 73
 - Obtain the Sample and the Analysis 73
 - Engine Starting 17, 39
 - Engine Starting (Alternate Methods) 49
 - Engine Starting with Jump Start Cables 49
 - Use of Jump Start Cables 49
 - Engine Stopping 18
 - Engine Valve Lash - Check 75
 - Engine Water Pump - Inspect 75
- F**
- Fire Extinguisher Location 16
 - Fire Prevention and Explosion Prevention 13
 - Battery and Battery Cables 14
 - Ether 16
 - Fire Extinguisher 16
 - General 13
 - Lines, Tubes and Hoses 15
 - Wiring 15
 - Foreword 5
 - California Proposition 65 Warning 4
 - Caterpillar Product Identification Number 5
 - Certified Engine Maintenance 4
 - Literature Information 4
 - Machine Capacity 5
 - Maintenance 4
 - Operation 4
 - Safety 4
 - Fuel Injector - Test/Change 76
 - Fuel System - Prime 76
 - Fuel System Water Separator Element - Replace .. 76
 - Fuel Tank Cap and Strainer - Clean 77
 - Fuel Tank Water and Sediment - Drain 78
 - Fuses - Replace 78

G		Operator Controls	32
General Hazard Information	10	12V Power Port (17)	35
Asbestos Information	11	Control Knob for the Water Spray System (21)..	36
Containing Fluid Spillage	11	Engine Start Switch (19)	35
Dispose of Waste Properly	12	Fuel Level Gauge.....	36
Fluid Penetration.....	11	Indicator for the Charging System (10).....	34
Pressurized Air and Water	10	Indicator for the Engine Coolant Temperature	
Trapped Pressure	11	(11).....	34
General Information	23	Indicator for the Engine Oil Pressure (14).....	35
H		Indicator for the Engine Preheater (12).....	35
Hydraulic System Oil - Change	79	Indicator for the Parking Brake (15).....	35
Hydraulic System Oil Filter - Replace.....	80	Indicator for the Rooding Lights (13).....	35
Hydraulic System Oil Level - Check	81	Parking Brake and Emergency Stop Knob (16)..	35
Hydraulic System Oil Sample - Obtain	81	Propel Control Lever (3).....	33
Hydraulic Tank Breather - Clean.....	81	Service Hour Meter (18).....	35
Hydraulic Tank Strainer - Clean.....	82	Switch and Indicator for the Hazard Lights (8) (If	
I		Equipped).....	34
Identification Information	24	Switch and Indicator for the Turn Signal (6) (If	
Important Safety Information	2	Equipped).....	34
Indicators and Gauges - Test.....	82	Switch and Indicator for the Vibratory System	
Isolation Mounts - Inspect.....	82	(4).....	34
L		Switch and Indicator for the Water Spray System	
Leaving the Machine	42	(5).....	34
Vandalism Guard	42	Switch and Indicator for the Working Lights (7) (If	
Lifting and Tying Down the Machine.....	44	Equipped).....	34
Lifting the Machine.....	44	Switch for the Lights (If Equipped) and the Horn	
Tying Down the Machine.....	44	(9).....	34
Lubricant Viscosities.....	52	Throttle Control (20).....	35
Commercial Oils.....	53	P	
Lubricant Viscosities and Refill Capacities	52	Parking	18, 41
M		Parking Brake Manual Release	48
Machine Operation	29	Plate Locations and Film Locations.....	24
Maintenance Access	51	Certification.....	24
Maintenance Interval Schedule	56	Product Identification Number (PIN)	24
Maintenance Section.....	51	Product Information Section	23
Maintenance Support	54	Propel Control Tension - Adjust.....	83
Mounting and Dismounting	27	R	
O		Radiator Core - Clean.....	83
Oil Filter - Inspect	83	Reference Information Section	90
Inspect a Used Filter for Debris	83	Reference Material	90
Operation	18	Additional Reference Material.....	90
Operation Section.....	27	Reference Materials	90
S		Rollover Protective Structure (ROPS) - Inspect	84
S-O-S Information	53	Rollover Protective Structure (ROPS) (Foldable)..	37
Safety Messages	6	Lower	38
Safety Section	6	Raise.....	37
Seat (Adjustable (If Equipped))	29	S	

Seat Belt.....	29
Extension of the Seat Belt	31
Seat Belt Adjustment for Non-Retractable Seat Belts	29
Seat Belt Adjustment for Retractable Seat Belts	30
Seat Belt - Inspect	85
Seat Belt - Replace.....	85
Shipping the Machine	43
Slope Operation.....	19
Sound Information and Vibration Information	20
Sound Level Information	20
Sound Level Information for Machines in European Union Countries and in Countries that Adopt the "EU Directives"	20
Sources.....	22
"The European Union Physical Agents (Vibration) Directive 2002/44/EC"	20
Specifications	23
Dimensions	23
Intended Use.....	23
Steering Cylinder Ends - Lubricate.....	86
Steering Frame Lock	28
Stopping the Engine	41
Stopping the Engine if an Electrical Malfunction Occurs	42
Stopping the Machine.....	41
System Pressure Release	54
Coolant System.....	54
Hydraulic System.....	54

T

Table of Contents.....	3
Throttle Control - Lubricate.....	86
Towing Information	46
Towing the Machine.....	46
Running Engine	46
Stopped Engine	46
Transportation Information	43

V

Visibility Information.....	17
-----------------------------	----

W

Water Spray Nozzles - Clean	86
Water Spray System - Drain (Gravity Water Spray System).....	88
Water Spray System - Drain (Pressurized Water Spray System)	87
Water Spray System Filter - Clean (Pressurized Water Spray System).....	88
Water Tank Strainer - Clean and Inspect.....	89
Welding on Machines and Engines with Electronic Controls	54

Product and Dealer Information

Note: For product identification plate locations, see the section "Product Identification Information" in the Operation and Maintenance Manual.

Delivery Date: _____

Product Information

Model: _____

Product Identification Number: _____

Engine Serial Number: _____

Transmission Serial Number: _____

Generator Serial Number: _____

Attachment Serial Numbers: _____

Attachment Information: _____

Customer Equipment Number: _____

Dealer Equipment Number: _____

Dealer Information

Name: _____ Branch: _____

Address: _____

Dealer Contact

Phone Number

Hours

Sales: _____

Parts: _____

Service: _____

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