



Operation and Maintenance Manual

307.5, 308 CR, 308.5, 309 CR, and 310 Mini Hydraulic Excavators

GW7 1-UP (307.5)
GG8 1-UP (308 CR)
GW8 1-UP (308 CR)
GZ8 1-UP (308.5)
GG9 1-UP (309 CR)
GW9 1-UP (309 CR)
GWT 1-UP (310)

Language: Original Instructions



Scan to access the latest service information, purchase additional media, and buy genuine Cat® parts.



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, including human factors that can affect safety. 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 verify that you are authorized to perform this work, and 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 you are authorized to perform this work, and 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. Cat dealers have the most current information available.

NOTICE

When replacement parts are required for this product Caterpillar recommends using original Caterpillar® replacement parts.

Other parts may not meet certain original equipment specifications.

When replacement parts are installed, the machine owner/user should ensure that the machine remains in compliance with all applicable requirements.

In the United States, the maintenance, replacement, or repair of the emission control devices and systems may be performed by any repair establishment or individual of the owner's choosing.

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Foreword

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.



WARNING – This product can expose you to chemicals including ethylene glycol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to:

www.P65Warnings.ca.gov

Do not ingest this chemical. Wash hands after handling to avoid incidental ingestion.



WARNING – This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information go to:

www.P65Warnings.ca.gov

Wash hands after handling components that may contain lead.

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 Cat 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 the calendar intervals provide more convenient servicing schedules and approximate the indicated service hour meter reading. Perform the recommended service at the interval that occurs first.

Under 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.

Certified Engine Maintenance

Proper maintenance and repair are 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 to render inoperative, any emission-related device or element of design installed on or in an engine or machine that is in compliance with all applicable regulations of the intended country to which it has been shipped. 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 Cat dealer for further information.

Product Identification Number

Effective First Quarter 2001 the Product Identification Number (PIN) has changed from 8 to 17 characters. To provide uniform equipment identification, 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 machines and generator sets. The PIN plates and frame marking will display the 17 character PIN. The new format will look like the following:

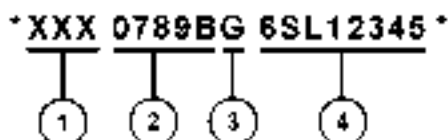


Illustration 1

g03891925

Where:

1. 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, and work tools will continue to use an 8 character Serial Number (S/N).

Safety Section

i07786931

Safety Messages

SMCS Code: 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 familiar with all safety messages.

Make sure that all the safety messages are legible. Clean the safety messages or replace the safety messages if you cannot read the words. Clean the safety messages or replace the safety messages 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 detach from the machine. 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 Cat dealer can provide new safety messages.

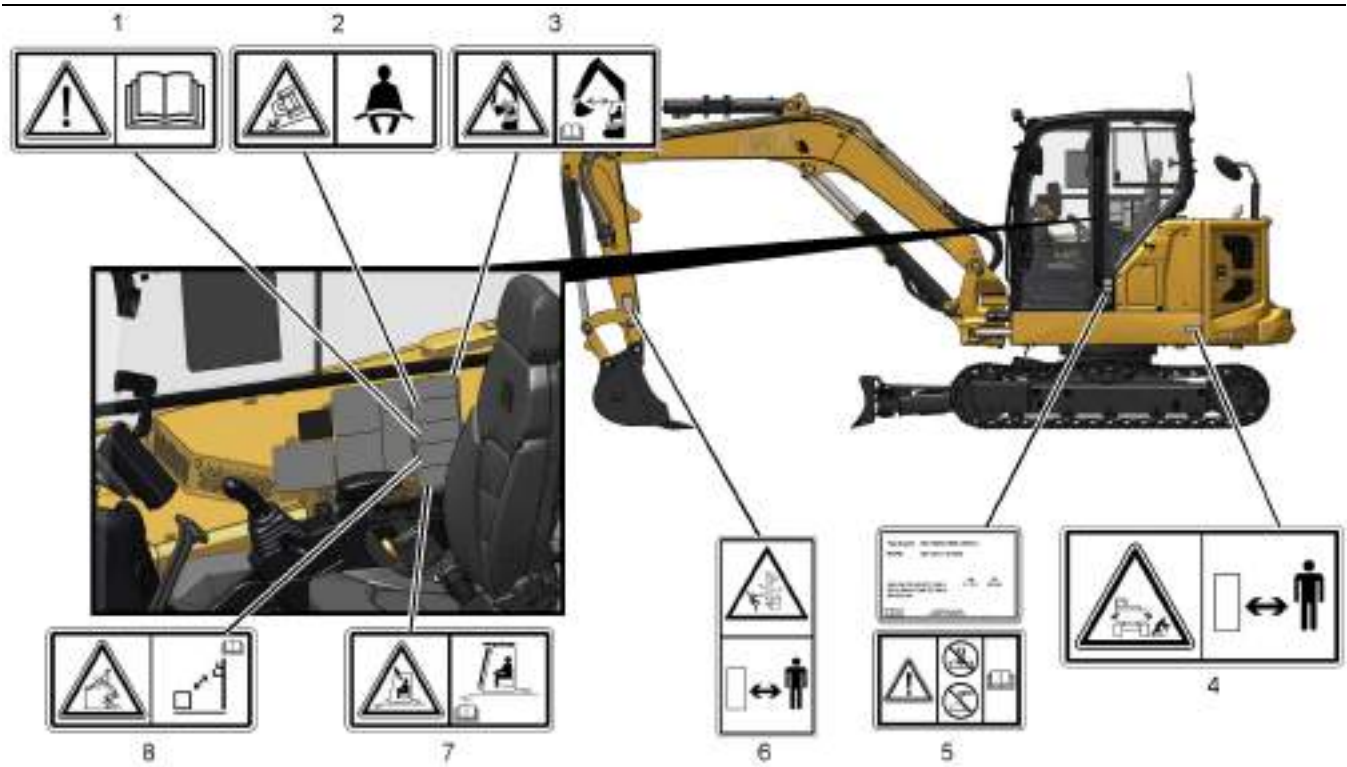


Illustration 2

g06344381

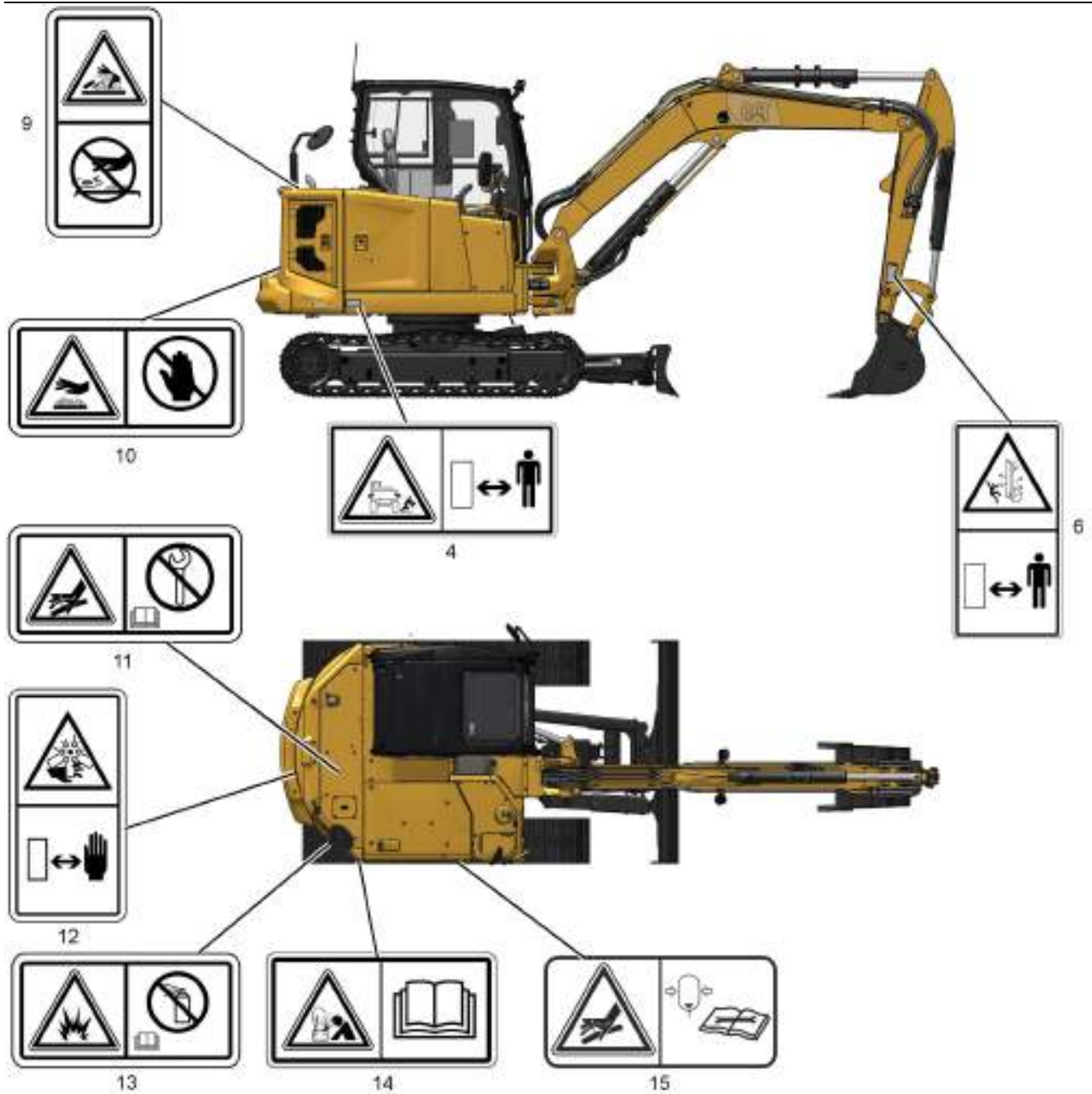


Illustration 3

g06344384

Do Not Operate (1)

This safety message is located in the cab on the right side window.



Illustration 4

g01370904

 **WARNING**

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

Seat Belt (2)

This safety message is located in the cab on the right side window.



Illustration 5

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.

Crushing Hazard (3)

This safety message is located in the cab on the right side window.



Illustration 6

g01373971

WARNING

Crushing Hazard! Certain machine front linkage combinations (boom, stick, quick coupler, work tool) may require keeping the work tool away from the cab during operation. Personal injury or death may result if the work tool contacts the cab during operation.

Crushing Hazard (4)

This safety message is on the rear of each side of the machine.

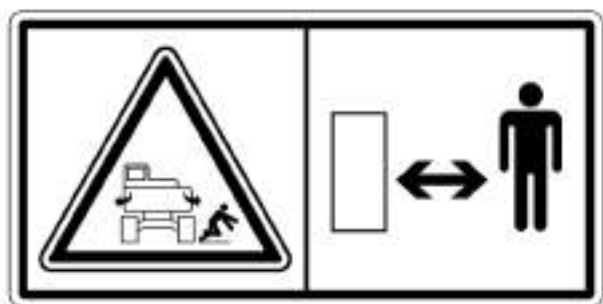


Illustration 7

g01374060

WARNING

Machine swings. Stay back. Crushing hazard could cause serious injury or death.

Do Not Weld or Drill (ROPS) (5)

This safety message is on the left side of the machine near the cab door.



Illustration 8

g06344390

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 your Cat 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, "Plate Locations and Film Locations" for further information.

Crushing Hazard (6)

This safety message is on both sides of the stick.

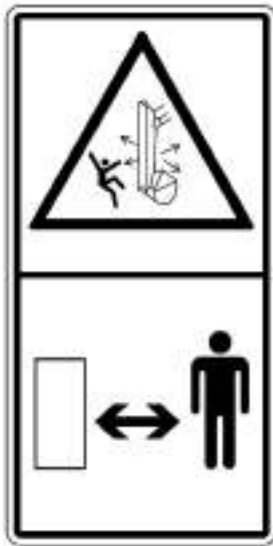


Illustration 9

g01385579

WARNING

A crushing hazard exists when the stick and boom are in motion and when the machine is being used in object handling applications. Failure to stay clear of the stick and boom when the machine is in operation can result in personal injury or death. Stay clear of the stick and boom when the machine is in operation.

Crushing Hazard (7)

This safety message is located in the cab on the right side window.



Illustration 10

g01374048

WARNING

The impact from objects that strike the front of the cab or the top of the cab could result in a crushing hazard with the potential for personal injury or death.

The front guard and the top guard should be installed on the cab for applications where the hazard of falling objects exist. Read the Operation and Maintenance Manual.

Refer to Operation and Maintenance Manual, "Guards" for further information.

Electrical Power Lines (8)

This safety message is located in the cab on the right side window.

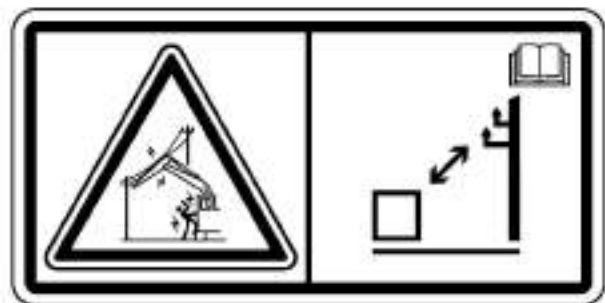


Illustration 11

g01374045

DANGER

Electrocution Hazard! Keep the machine and attachments a safe distance from electrical power. Stay clear 3 m (10 ft) plus twice the line insulator length. Read and understand the instructions and warnings in the Operation and Maintenance Manual. Failure to follow the instructions and warnings will cause serious injury or death

Refer to Operation and Maintenance Manual, "Specifications" for further information.

Pressurized System (9)

This safety message is on the radiator cap access cover at the right rear corner of the machine.



Illustration 12

g01378799

WARNING

Pressurized system! Hot coolant can cause serious burns, injury or death. 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. Read and understand the Operation and Maintenance Manual before performing any cooling system maintenance.

Refer to Operation and Maintenance Manual, "Cooling System Coolant Level - Check" for further information.

Hot Surface (10)

This safety message is located bottom rear door of counterweight.



Illustration 13

g01372256

WARNING

Hot parts or hot components can cause burns or personal injury. Do not allow hot parts or components to contact your skin. Use protective clothing or protective equipment to protect your skin.

High-Pressure Fuel Lines (11)

If equipped, this safety message is installed at the fuel line.



Illustration 14

g01381180

WARNING

Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

Rotating Fan (12)

This safety message is located near the engine fan.



Illustration 15

g02793868

WARNING

Cutting Hazard! Keep hands clear of fan while engine is running. May cause serious injury or death.

Aerosol Starting Aid (13)

This safety message is on the air cleaner housing.



Illustration 16

g01372254

WARNING

Explosion hazard! Do not use ether! This machine is equipped with an air inlet heater. Using ether can create explosions or fires that can cause personal injury or death. Read and follow the starting procedure in the Operation and Maintenance Manual.

Refer to Operation and Maintenance Manual, "Engine Starting" for further information.

Improper Connections For Jump-Start Cables (14)

This safety message is located next to the battery.

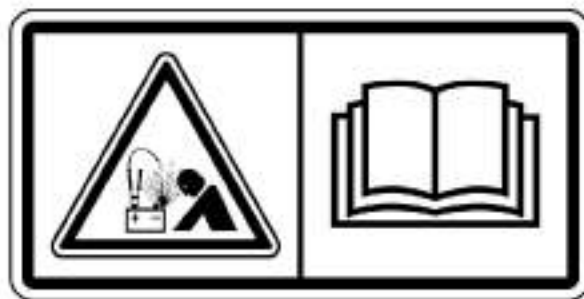


Illustration 17

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.

Refer to Operation and Maintenance Manual, "Engine Starting with Jump Start Cables" for further information.

High-Pressure Gas (15)

This safety message is on the accumulator.

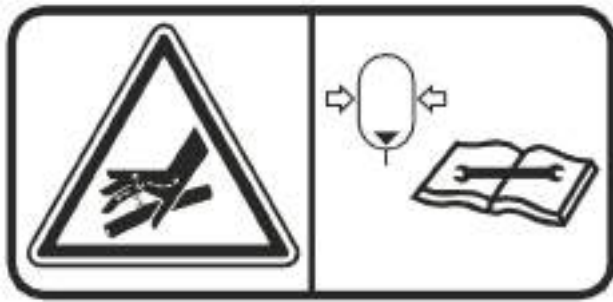


Illustration 18

g06275274

⚠ WARNING

This system contains high pressure gas. Failure to follow the instructions and warnings could cause an explosion, resulting in possible injury or death.

Do not expose to fire. Do not weld. Do not drill. Relieve pressure before discharging.

See Operation and Maintenance Manual for charging and discharging. See your Caterpillar Dealer for tools and detailed information.

Refer to Operation and Maintenance Manual, "Equipment Lowering with Engine Stopped" for further information.

i08509264

Additional Messages

SMCS Code: 7000; 7405

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

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

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

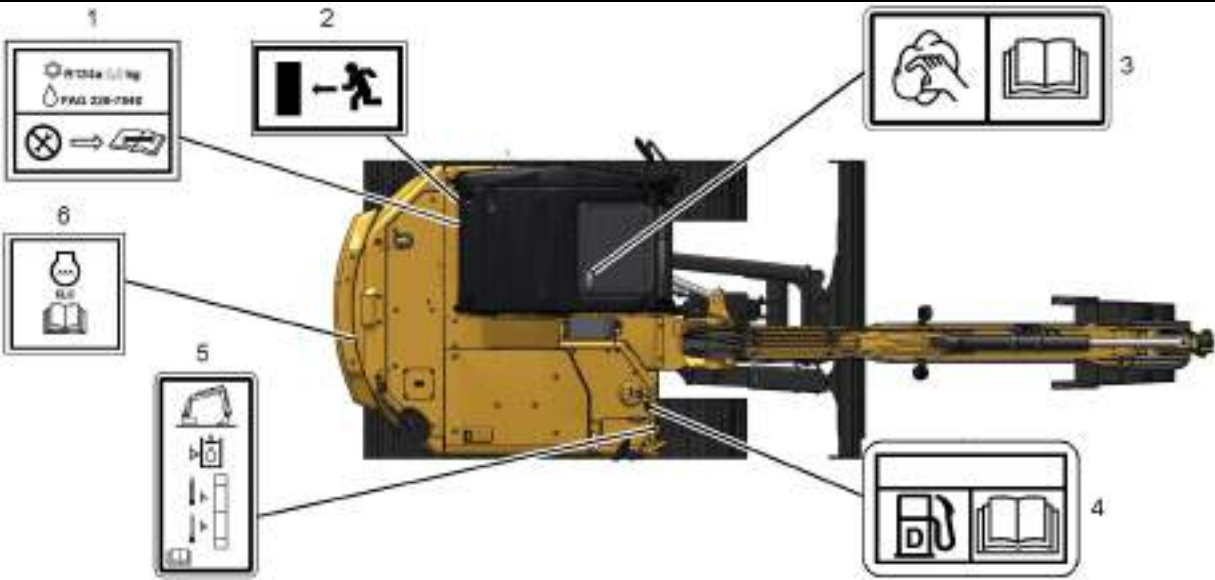


Illustration 19

g06344405

Air Conditioner (1)

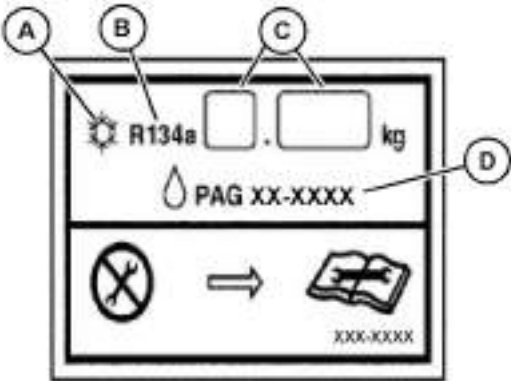


Illustration 20

g06650123

- (A) Air conditioning symbol
(B) R134a (Refrigerant type common name)
(C) Refrigerant quantity
(D) PAG (polyalkylene glycol) lubricating oil part number

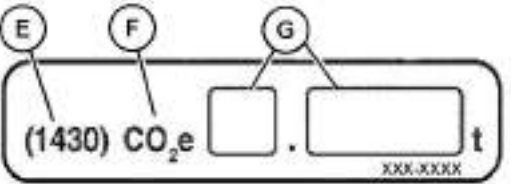


Illustration 21

g06650124

If equipped, this plate provides the below additional greenhouse gas information.

- (E) (1430) - This value is the Global Warming Potential of R134a
(F) CO₂ equivalent
(G) CO₂ equivalent in metric tonne based on quantity of charged R134a



Illustration 22

g06685232

- (H) If equipped, this film provides the required language translations of the text "Contains fluorinated greenhouse gases"

These messages are located on the left door behind the cab.

These messages for the air conditioner system have the appropriate information for the following services: the air conditioner lubricant, the refrigerant charge, and the refrigerant capacity. Refer to "Air Conditioning and Heating Control" for more information.

Alternate Exit (2)

This message is on the rear window in the cab.

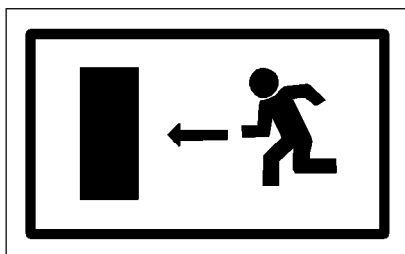


Illustration 23

g01002993

If the primary exits are blocked, the rear window serves as the alternate exit. Exit the machine through the window. For more information, refer to Operation and Maintenance Manual, "Alternate Exit"

Cleaning Windows (3)

This message is located in the cab on the polycarbonate skylight.

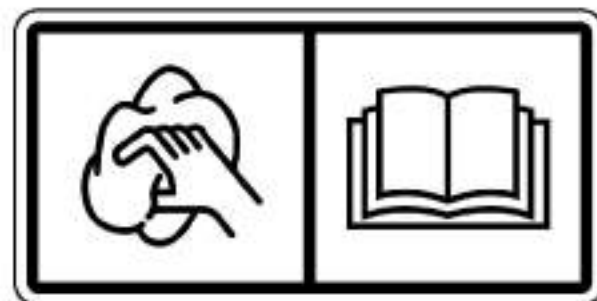


Illustration 24

g01134495

NOTICE

Clean windows with a wet cloth or sponge. Dry cloth or sponge may scratch window material.

Diesel Fuel Requirements (4)

One of these messages will be on the top cover of the fuel tank.

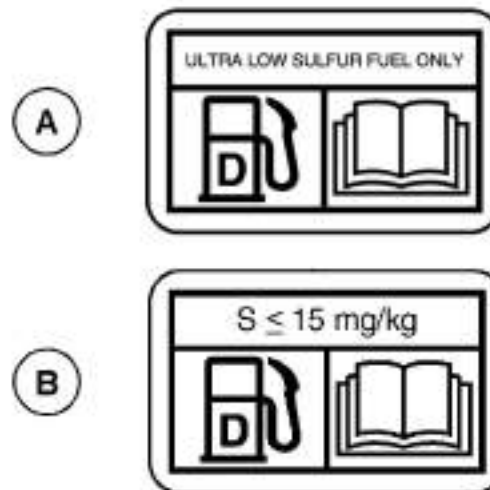


Illustration 25

g06343463

(A) NACD film
(B) EAME film

Refer to Operation and Maintenance Manual, "Lubricant Viscosities".

Hydraulic Oil Level Check (5)

This message is on the front of the right access compartment next to the sight gauge for the hydraulic oil.

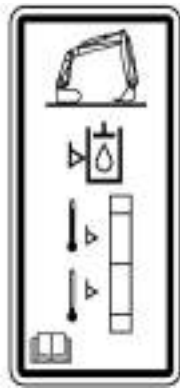


Illustration 26

g06344412

Check hydraulic oil level daily. See Operation and Maintenance Manual, "Hydraulic System Oil Level - Check" for details.

Cat[®] Extended Life Coolant (ELC) (6)

This message is on the bottom rear counterweight door surface near the coolant reservoir tank.

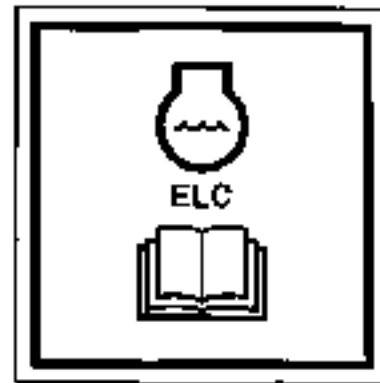


Illustration 27

g01132922

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

i08313103

General Hazard Information

SMCS Code: 7000

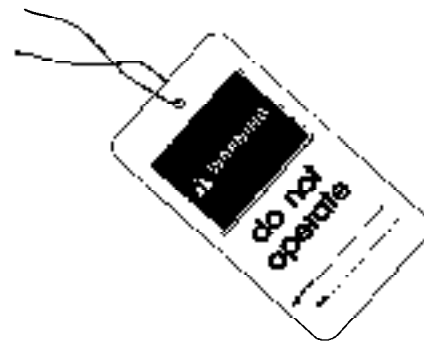


Illustration 28

g00104545

Typical example

Attach a "Do Not Operate" warning tag or a similar warning tag to the start switch or to the controls. Attach the warning tag before you service the equipment or before you repair the equipment. Warning tag SEHS7332 is available from your Cat dealer.



Operating the machine while distracted can result in the loss of machine control. Use extreme caution when using any device while operating the machine. Operating the machine while distracted can result in personal injury or death.

Know the width of your equipment 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.

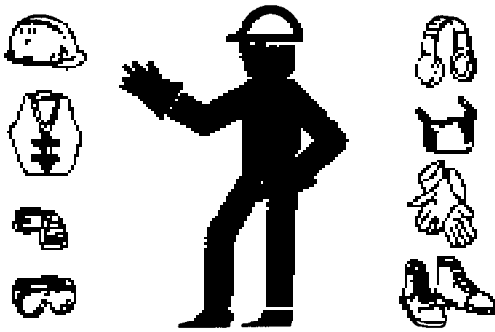


Illustration 29

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. The debris and/or hot water 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).

Avoid direct spraying of water on electrical connectors, connections, and components. When using air for cleaning, allow the machine to cool to reduce the possibility of fine debris igniting when re-deposited on hot surfaces.

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 machine 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.

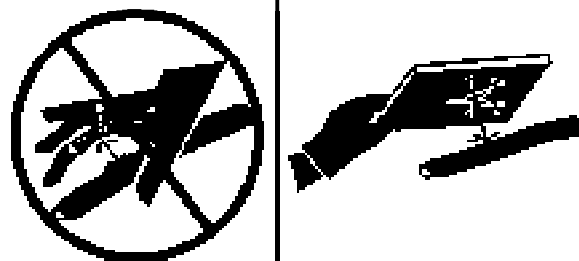


Illustration 30

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, "Cat 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.

Inhalation



Illustration 31

g02159053

Exhaust

Use caution. Exhaust fumes can be hazardous to your health. If you operate the machine in an enclosed area, adequate ventilation is necessary.

Asbestos Information

Cat equipment and replacement parts that are shipped from Caterpillar are asbestos free. Caterpillar recommends the use of only genuine Cat 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 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”. In Japan, use the requirements found in the “Ordinance on Prevention of Health Impairment due to Asbestos” in addition to the requirements of the Industrial Safety and Health Act.
- Obey environmental regulations for the disposal of asbestos.
- Stay away from areas that might have asbestos particles in the air.

Hexavalent Chromium Information

Cat equipment and replacement parts comply with applicable regulations and requirements where originally sold. Caterpillar recommends the use of only genuine Cat replacement parts.

Hexavalent chromium has occasionally been detected on exhaust and heat shield systems on Cat engines. Although lab testing is the only accurate way to know if hexavalent chromium is, in fact, present, the presence of a yellow deposit in areas of high heat (for example, exhaust system components or exhaust insulation) may be an indication of the presence of hexavalent chromium.

Use caution if you suspect the presence of hexavalent chromium. Avoid skin contact when handling items that you suspect may contain hexavalent chromium, and avoid inhalation of any dust in the suspect area. Inhalation of, or skin contact with, hexavalent chromium dust may be hazardous to your health.

If such yellow deposits are found on the engine, engine component parts, or associated equipment or packages, Caterpillar recommends following local health and safety regulations and guidelines, utilizing good hygiene, and adhering to safe work practices when handling the equipment or parts. Caterpillar also recommends the following:

- Wear appropriate personal protective equipment (PPE).
- Wash your hands and face with soap and water prior to eating, drinking, or smoking, and also during rest room breaks, to prevent ingestion of any yellow powder.
- Never use compressed air for cleaning areas suspected of containing hexavalent chromium.

- Avoid brushing, grinding, or cutting materials suspected of containing hexavalent chromium.
- Obey environmental regulations for the disposal of all materials that may contain or have come into contact with hexavalent chromium.
- Stay away from areas that might have hexavalent chromium particles in the air.

Dispose of Waste Properly

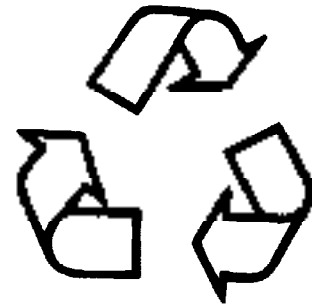


Illustration 32

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.

i01359664

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.

i07746334

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 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 to remove the hydraulic tank filler cap.

Batteries

The liquid in a battery is an electrolyte. Electrolyte is an acid that can cause personal injury. Do not allow electrolyte to contact the skin or the eyes.

Do not smoke while checking the battery electrolyte levels. Batteries give off flammable fumes which can explode.

Always wear protective glasses when you work with batteries. Wash hands after touching batteries. The use of gloves is recommended.

i07746336

Fire Prevention and Explosion Prevention

SMCS Code: 7000



Illustration 33

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 Cat 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, and so on. 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 34

g03839130

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. Do not use cell phones or other electronic devices while you are refueling. Always stop the engine before fueling. Fill the fuel tank outdoors. Properly clean areas of spillage.

Avoid static electricity risk when fueling. Ultra low sulfur diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations with a higher sulfur content. Avoid death or serious injury from fire or explosion. Consult with your fuel or fuel system supplier to ensure that the delivery system is in compliance with fueling standards for proper grounding and bonding practices.

Never store flammable fluids in the operator compartment of the machine.

Battery and Battery Cables



Illustration 35

g03839133

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 Cat 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. Do not use cell phones or other electronic devices 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 Cat 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 Cat 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.

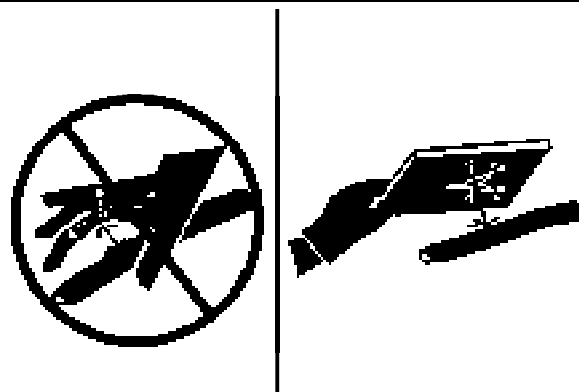


Illustration 36

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 Cat dealer for repair or for replacement parts. Use genuine Cat 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.

Only use approved Ether canisters for the Ether dispensing system fitted to your machine, do not spray Ether manually into an engine, follow the correct cold engine starting procedures. Refer to the section in the Operation and Maintenance Manual with the label "Engine Starting".

Use ether in ventilated areas. Do not smoke while you are replacing an ether cylinder.

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.

i05505230

i07946707

Fire Extinguisher Location

SMCS Code: 7000; 7419



Illustration 37

g06286985

Make sure that a fire extinguisher is available. Be familiar with the operation of the fire extinguisher. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instruction plate.

The recommended location for mounting the fire extinguisher is on the rear of the cab, on the left-hand side.

Note: Fire extinguisher cannot exceed 10 kg (22 lb).

i01329108

Track Information

SMCS Code: 4170; 7000

Track adjusting systems use either grease or oil under high pressure to keep the track under tension.

Grease or oil under high pressure coming out of the relief valve can penetrate the body causing injury or death. Do not watch the relief valve to see if grease or oil is escaping. Watch the track or track adjustment cylinder to see if the track is being loosened.

The pins and bushings in a dry track pin joint can become very hot. It is possible to burn the fingers if there is more than brief contact with these components.

High Pressure Fuel Lines

SMCS Code: 1000; 1274; 7000



Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

The high-pressure fuel lines are the fuel lines that are between the high-pressure fuel pump and the high-pressure fuel manifold and the fuel lines that are between the fuel manifold and cylinder head. These fuel lines are different from fuel lines on other fuel systems.

This is because of the following differences:

- The high-pressure fuel lines are constantly charged with high pressure.
- The internal pressures of the high-pressure fuel lines are higher than other types of fuel system.
- The high-pressure fuel lines are formed to shape and then strengthened by a special process.

Do not step on the high-pressure fuel lines. Do not deflect the high-pressure fuel lines. Do not bend or strike the high-pressure fuel lines. Deformation or damage of the high-pressure fuel lines may cause a point of weakness and potential failure.

Do not check the high-pressure fuel lines with the engine or the starting motor in operation. After the engine has stopped, allow 5 minutes to pass in order to allow the pressure to be purged before any service or repair is performed on the engine fuel lines.

Do not loosen the high-pressure fuel lines in order to remove air from the fuel system. This procedure is not required.

Visually inspect the high-pressure fuel lines before the engine is started. This inspection should be each day.

If you inspect the engine in operation, always use the proper inspection procedure in order to avoid a fluid penetration hazard. Refer to Operation and Maintenance Manual, "General hazard Information".

- Inspect the high-pressure fuel lines for damage, deformation, a nick, a cut, a crease, or a dent.
- Do not operate the engine with a fuel leak. If there is a leak, do not tighten the connection in order to stop the leak. The connection must only be tightened to the recommended torque. Refer to Disassembly and Assembly for your engine.

- If the high-pressure fuel lines are torqued correctly, and the high-pressure fuel lines are leaking, the high-pressure fuel lines must be replaced.
- Ensure that all clips on the high-pressure fuel lines are in place. Do not operate the engine with clips that are damaged, missing, or loose.
- Do not attach any other item to the high-pressure fuel lines.
- Loosened high-pressure fuel lines must be replaced. Also removed high-pressure fuel lines must be replaced. Refer to Disassembly and Assembly for your engine.

i01122596

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.

i01186721

Before Starting Engine

SMCS Code: 1000; 7000

Start the engine only from the operator's compartment. Do not short across the battery terminals and do not short across the battery. Bypassing the engine neutral start system can damage the electrical system.

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

Adjust the seat so that full pedal travel can be achieved. Adjust the seat so that full lever travel can be achieved. Make sure that your back is against the back of the seat.

Make sure that the machine is equipped with a lighting system that is adequate for the job conditions. Make sure that all lights are working properly.

Make sure that the hydraulic control console is in the RAISED position. When the hydraulic control console is in the RAISED position, the hydraulic controls will be deactivated.

WARNING

Deactivation of the hydraulic controls does not prevent the blade, boom swing, or auxiliary circuit functions from moving under gravity or other external forces. Gravity or other external forces can move the blade, boom swing, or auxiliary circuit functions suddenly if a hydraulic control lever is moved.

Personal injury or death may occur from sudden machine movement.

Put the cover on the control pedal for the swinging boom. Put the cover on the auxiliary hydraulic control.

Before you start the engine and before you move the machine, make sure that no personnel are underneath the machine, around the machine, or on the machine. Make sure that the area is free of personnel.

i08473852

Visibility Information

SMCS Code: 7000

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

While the machine is in operation, constantly survey the area around the machine 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. Shut down the machine until damaged or nonfunctional visual aid(s) are repaired (if applicable) or until appropriate job site organization is used to minimize hazards that are caused by any resulting restricted visibility. 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". If equipped, the Cat Detect Object Detection shall be adjusted according to the Operation and Maintenance Manual, "Cat Detect Object Detection" for your machine.

Safety Section

Restricted Visibility

It may not be possible to provide direct visibility on large machines to all areas around the machine. Appropriate job site organization is required 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 safe movement of traffic
- 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.

i08437151

Restricted Visibility

SMCS Code: 7000

The size and the configuration of this machine may result in areas that cannot be seen when the operator is seated. For restricted visibility areas, an appropriate job site organization must be utilized to minimize hazards of this restricted visibility. For more information regarding job site organization refer to Operation and Maintenance Manual, "Visibility Information".

Illustrations in this section provide an approximate visual indication of the areas at ground level inside a radius of 12 m (39 ft) from the operator of significant restricted visibility for various machine configurations. Refer to the correct illustrations for your machine configuration. All restricted visibility areas less than 300 mm (1 ft) wide may not be shown. These illustrations do not indicate areas of restricted visibility for distances outside of the shown radius. The areas of restricted visibility shown in the illustrations are with the track and work tool of the machine in the travel position. Illustration 38 shows the position of the work tool in the travel position. The Caterpillar authorized work tool that resulted in the largest visibility restriction was used.



Illustration 38

g06371881

307.5 Machines

The following illustrations indicate restricted visibility areas at ground level inside the shown radius from the operator.

Note: The shaded areas indicate the approximate location of areas with significant restricted visibility.



Illustration 39

g06371883

Top view of the machine

Ground level visibility with available counter-weight mirror, cab mirror, and rear view camera.

(A) 12 m (39 ft)



Illustration 40

g06371886

Top view of the machine

Ground level visibility with available counter-weight mirror and cab mirror.

(A) 12 m (39 ft)

Note: The shaded areas indicate the approximate location of areas with significant restricted visibility.

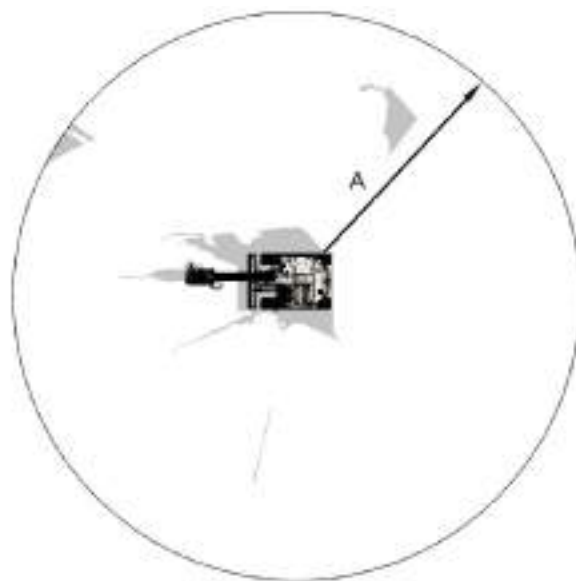


Illustration 42

g06371892

Top view of the machine

Ground level visibility with available counter-weight mirror, cab mirror, and rear view camera.

(A) 12 m (39 ft)

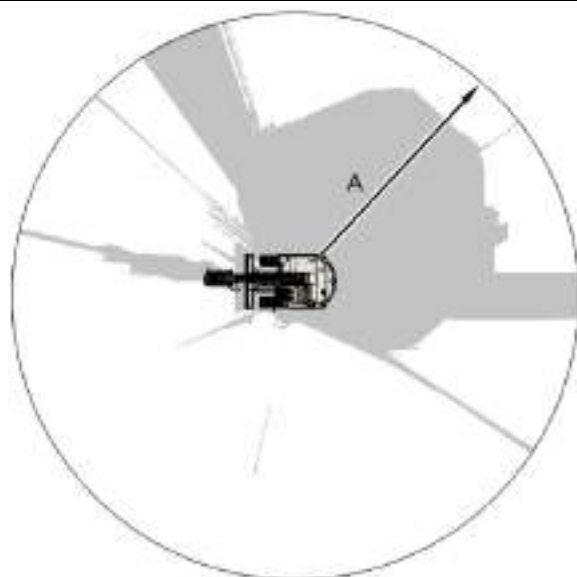


Illustration 41

g06371888

Top view of the machine

Ground level visibility with no visual aids.

(A) 12 m (39 ft)

308 CR Machines

The following illustrations indicate restricted visibility areas at ground level inside the shown radius from the operator.

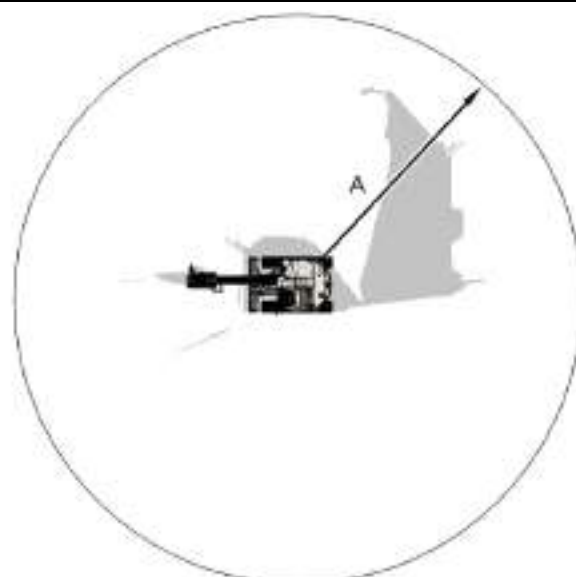


Illustration 43

g06371893

Top view of the machine

Ground level visibility with available counter-weight mirror and cab mirror.

(A) 12 m (39 ft)

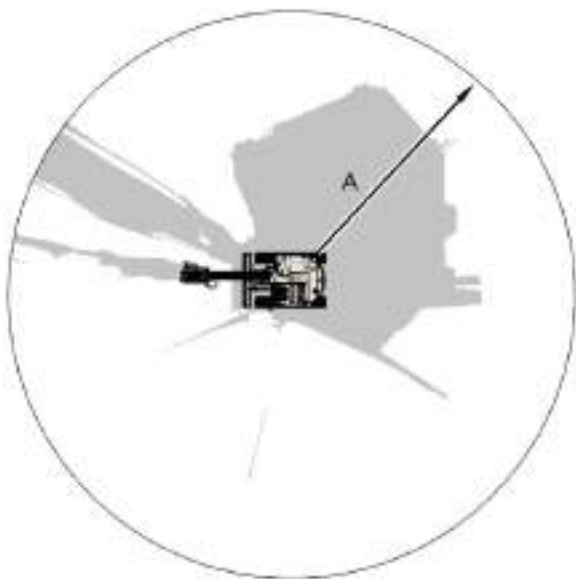


Illustration 44

g06371895

Top view of the machine

Ground level visibility with no visual aids.

(A) 12 m (39 ft)

309 CR Machines

The following illustrations indicate restricted visibility areas at ground level inside the shown radius from the operator.

Note: The shaded areas indicate the approximate location of areas with significant restricted visibility.

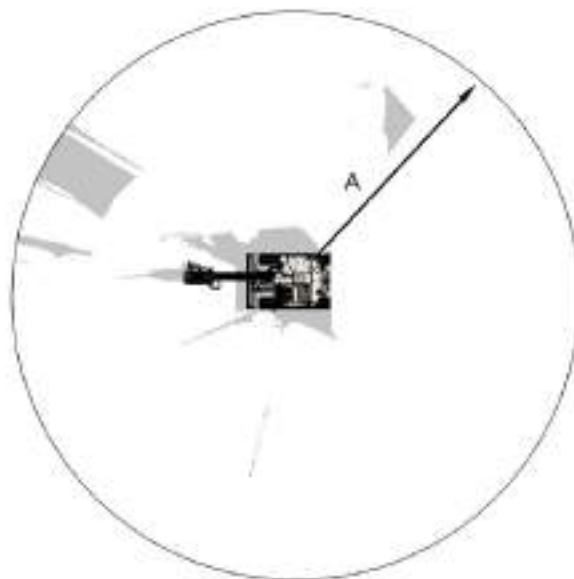


Illustration 45

g06371896

Top view of the machine

Ground level visibility with available counter-weight mirror, cab mirror, and rear view camera.

(A) 12 m (39 ft)

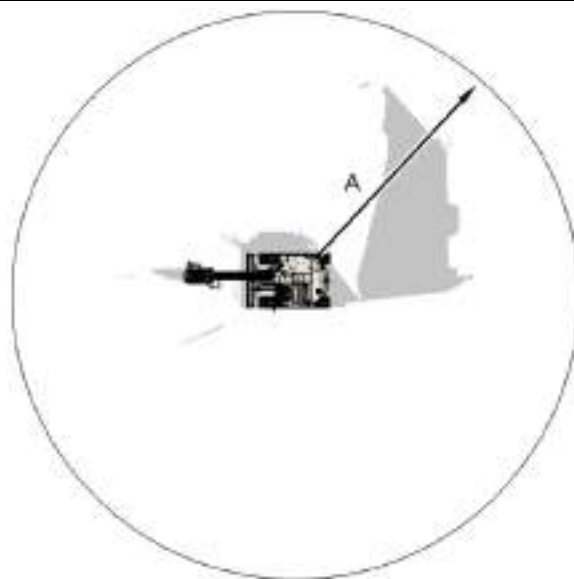


Illustration 46

g06371898

Top view of the machine

Ground level visibility with available counter-weight mirror and cab mirror.

(A) 12 m (39 ft)

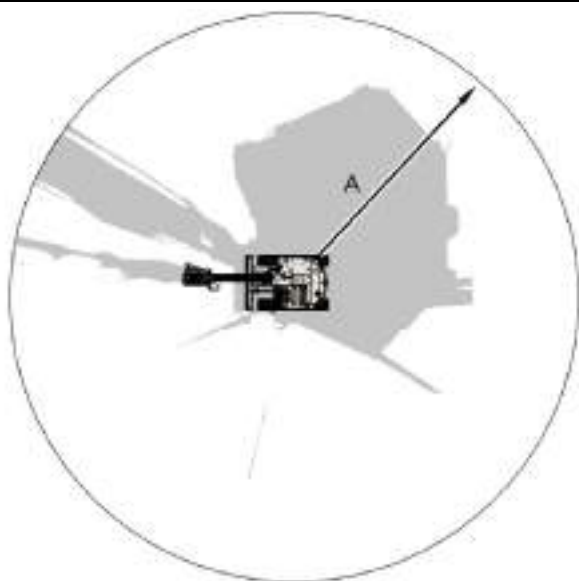


Illustration 47

g06371899

Top view of the machine

Ground level visibility with no visual aids.

(A) 12 m (39 ft)

310 Machines

The following illustrations indicate restricted visibility areas at ground level inside the shown radius from the operator.

Note: The shaded areas indicate the approximate location of areas with significant restricted visibility.

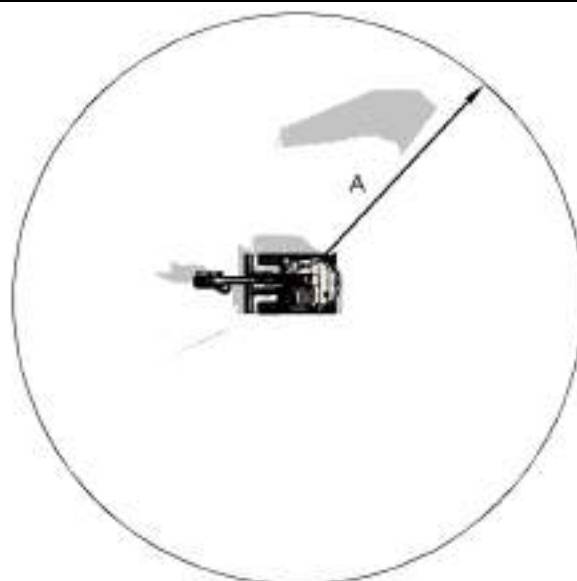


Illustration 48

g06373529

Top view of the machine

Ground level visibility with available counter-weight mirror, cab mirror, and rear view camera.

(A) 12 m (39 ft)

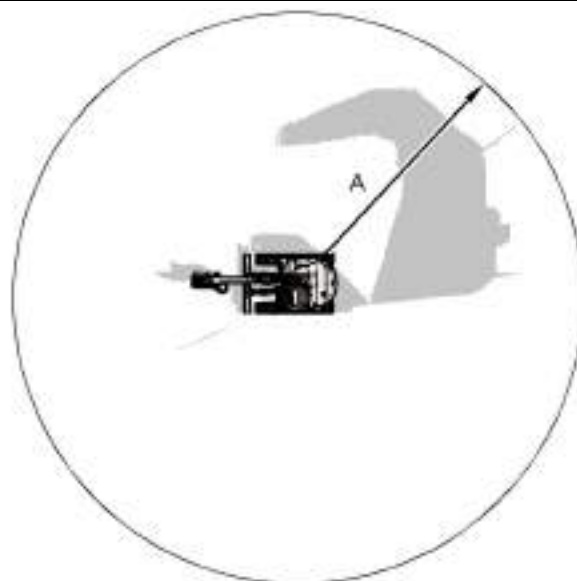


Illustration 49

g06373531

Top view of the machine

Ground level visibility with available counter-weight mirror and cab mirror.

(A) 12 m (39 ft)

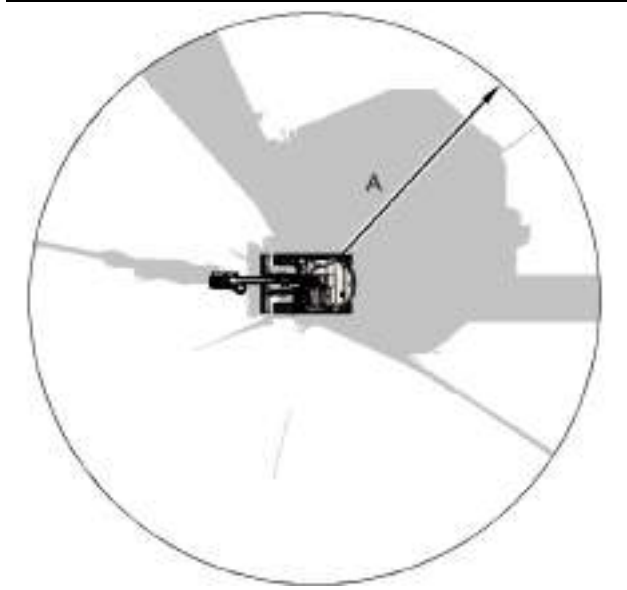


Illustration 50

g06373532

Top view of the machine

Ground level visibility with no visual aids.

(A) 12 m (39 ft)

i03562260

Engine Starting

SMCS Code: 1000; 7000

If a warning tag is attached to the engine start switch or to the controls, do not start the engine. Also, do not move any controls.

Make sure that you are seated before you start the engine.

Move all hydraulic controls to the HOLD position before you start the engine. Move the hydraulic lockout control to the LOCKED position. For further details on this procedure, refer to Operation and Maintenance Manual, "Operator Controls".

Diesel engine exhaust contains products of combustion which can be harmful to your health. Always run the engine in a well ventilated area. If you are in an enclosed area, vent the exhaust to the outside.

Briefly sound the horn before you start the engine.

i01340061

Before Operation

SMCS Code: 7000

Clear all personnel from the machine and from the area.

Clear all obstacles from the machine's path. Beware of hazards (wires, ditches, etc).

Be sure that all windows are clean. Secure the doors and the windows in the open position or in the shut position.

Adjust the rearview mirrors (if equipped) for the best visibility close to the machine. Make sure that the horn, the travel alarm (if equipped), and all other warning devices are working properly.

Fasten the seat belt securely.

Warm up the engine and the hydraulic oil before operating the machine.

Before moving the machine, check the position of the undercarriage. The normal travel position is with the idler wheels to the front under the cab and the drive sprockets to the rear. When the undercarriage is in the reversed position, the directional controls must be operated in opposite directions.

i04159629

Work Tools

SMCS Code: 6700

Only use work tools that are recommended by Caterpillar for use on Cat machines.

Use of work tools, including buckets, which are outside of Caterpillar's recommendations or specifications for weight, dimensions, flows, pressures, and so on, may result in less-than-optimal vehicle performance, including but not limited to reductions in production, stability, reliability, and component durability. Caterpillar recommends appropriate work tools for our machines to maximize the value our customers receive from our products. Caterpillar understands that special circumstances may lead a customer to use tools outside of our specifications. In these cases, customers must be aware that such choices can reduce vehicle performance and will affect their ability to claim warranty in the event of what a customer may perceive as a premature failure.

Work tools and work tool control systems, that are compatible with your Cat machine, are required for safe machine operation and/or reliable machine operation. If you are in doubt about the compatibility of a particular work tool with your machine, consult your Cat dealer.

Make sure that all necessary guarding is in place on the host machine and on the work tool.

Keep all windows and doors closed on the host machine. A polycarbonate shield must be used when the host machine is not equipped with windows and when a work tool could throw debris.

Do not exceed the maximum operating weight that is listed on the ROPS certification.

If your machine is equipped with an extendable stick, install the transport pin when you are using the following work tools: hydraulic hammers, augers and compactors

Always wear protective glasses. Always wear the protective equipment that is recommended in the operation manual for the work tool. Wear any other protective equipment that is required for the operating environment.

To prevent personnel from being struck by flying objects, ensure that all personnel are out of the work area.

While you are performing any maintenance, any testing, or any adjustments to the work tool stay clear of the following areas: cutting edges, pinching surfaces and crushing surfaces.

Never use the work tool for a work platform.

i08481684

Operation

SMCS Code: 7000

Sound the horn and allow adequate time for bystanders to clear the area before moving the machine into a restricted visibility area. Follow local practices for your machine application. For more information refer to Operation and Maintenance Manual, Restricted Visibility.

Machine Operating Temperature Range

The machine must function satisfactorily in the anticipated ambient temperature limits that are encountered during operation. The standard machine configuration is intended for use within an ambient temperature range of -18 °C (0 °F) to 43 °C (109 °F). Special configurations for different ambient temperatures may be available. Consult your Cat dealer for additional information on special configurations of your machine.

Limiting Conditions and Criteria

Limiting conditions are immediate issues with this machine that must be addressed prior to continuing operation.

The Operation and Maintenance Manual, Safety Section describes limiting condition criteria for replacing items such as safety messages, seat belt and mounting hardware, lines, tubes, hoses, battery cables and related parts, electrical wires, and repairing any fluid leak.

The Operation and Maintenance Manual, Maintenance Interval Schedule describes limiting condition criteria that require repair or replacement for items (if equipped) such as alarms, horns, braking system, steering system, and rollover protective structures.

The Operation and Maintenance Manual, Monitoring System (if equipped) provides information on limiting condition criteria, including a Warning Category 3 that requires immediate shutdown of the engine.

Critical Failures

The following table provides summary information on several limiting conditions found in this Operation and Maintenance Manual. The table provides criteria and required action for the limiting conditions listed. Each System or Component in this table, together with the respective limiting condition, describes a potential critical failure that must be addressed. Not addressing limiting conditions with required actions may, in conjunction with other factors or circumstances, result in a risk of personal injury or death. If an accident occurs, notify emergency personnel and provide location and description of accident.

Safety Section
Operation

Table 1

System or Component Name	Limiting Condition	Criteria for Action	Required Action
Line, tubes, and hoses	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.	Visible corrosion, loose, or damaged lines, tubes, or hoses. Visible fluid leaks.	Immediately repair any lines, tubes, or hoses that are corroded, loose, or damaged. Immediately repair any leaks as these may provide fuel for fires.
Electrical Wiring	Signs of fraying, abrasion, cracking, discoloration, cuts on the insulation	Visible damage to electrical wiring	Immediately replace damaged wiring
Battery cable(s)	Signs of fraying, abrasion, cracking, discoloration, cuts on the insulation of the cable, fouling, corroded terminals, damaged terminals, and loose terminals	Visible damage to battery cable(s)	Immediately replace damaged battery cables
Operator Protective Structure	Structures that are bent, cracked, or loose. Loose, missing, or damaged bolts.	Visible damage to structure. Loose, missing, or damaged bolts.	Do not operate machine with damaged structure or loose, missing, or damaged bolts. Contact your Cat dealer for inspection and repair or replacement options.
Seat Belt	Worn or damaged seat belt or mounting hardware	Visible wear or damage	Immediately replace parts that are worn or damaged.
Seat Belt	Age of seat belt	Three years after date of installation	Replace seat belt three years after date of installation
Safety Messages	Appearance of safety message	Damage to safety messages making them illegible	Replace the illustrations if illegible.
Audible Warning Device(s) (if equipped)	Sound level of audible warning	Reduced or no audible warning present	Immediately repair or replace audible warning devices not working properly.
Camera(s) (if equipped)	Dirt or debris on camera lens	Dirt or debris obstructing camera view	Clean camera before operating machine.
Cab Windows (if equipped)	Dirt, debris, or damaged windows	Dirt or debris obstructing operator visibility. Any damaged windows.	Clean windows before operating machine. Repair or replace damaged windows before operating machine.
Mirrors (if equipped)	Dirt, debris, or damaged mirror	Dirt or debris obstructing operator visibility. Any damaged mirrors.	Clean mirrors before operating machine. Repair or replace damaged mirrors before operating machine.
Braking System	Inadequate braking performance	System does not pass Braking System - Test(s) included in Maintenance Section or in the Testing and Adjusting Manual	Contact your Cat dealer to inspect and, if necessary, repair the brake system.
Cooling System	The coolant temperature is too high.	Monitoring System displays Warning Category 3	Stop the engine immediately. Check the coolant level and check the radiator for debris. Refer to Operation and Maintenance Manual, Cooling System Coolant Level - Check. Check the fan drive belts for the water pump. Refer to Operation and Maintenance Manual, Belts - Inspect/Adjust/ Replace. Make any necessary repairs.
Engine Oil System	A problem has been detected with the engine oil pressure.	Monitoring System displays Warning Category 3	If the warning stays on during low idle, stop the engine and check the engine oil level. Perform any necessary repairs as soon as possible.
Engine system	An engine fault has been detected by the engine ECM.	Monitoring System displays Warning Category 3	Stop the engine immediately. Contact your Cat dealer for service.
Fuel System	A problem has been detected with the fuel system.	Monitoring System displays Warning Category 3	Stop the engine. Determine the cause of the fault and perform any necessary repairs.
Hydraulic Oil System	The hydraulic oil temperature is too high.	Monitoring System displays Warning Category 3	Stop the engine immediately. Check the hydraulic oil level and check the hydraulic oil cooler for debris. Perform any necessary repairs as soon as possible.

(continued)

(Table 1, contd)

System or Component Name	Limiting Condition	Criteria for Action	Required Action
Steering System	A problem has been detected with the steering system. (If equipped with steering system monitoring.)	Monitoring System displays Warning Category 3	Move machine to a safe location and stop the engine immediately. Contact your Cat dealer to inspect and, if necessary, repair the steering system.
Overall Machine	Machine service is required.	Monitoring System displays Warning Category 3	Stop the engine immediately. Contact your Cat dealer for service.

Machine Operation

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.

Check for proper operation of all controls and of all protective devices while you operate the machine slowly in an open area.

When the machine is moving watch the clearance of the boom. Uneven ground can cause the boom to move in all directions.

Make sure that no personnel will be endangered before you move the machine. Do not allow riders on the machine unless the machine has an additional seat with a seat belt.

Report any machine damage that was noted during machine operation. Make any necessary repairs.

Never use the work tool for a work platform.

Hold attachments approximately 40 cm (15 inches) above ground level while you drive the machine. Do not drive the machine close to an overhang, to the edge of a cliff, or to the edge of an excavation.

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

Be careful to avoid any ground condition which could cause the machine to tip. Tipping can occur when you work on hills, on banks, or on slopes. Tipping can also occur when you cross ditches, ridges, or other unexpected obstructions.

When possible, operate the machine up slopes and down slopes with the final drive sprockets facing down the slope. Avoid operating the machine across the slope. Place the heaviest end of the machine uphill when you are working on an incline.

Keep the machine under control. Do not overload the machine beyond capacity.

Avoid changing the direction of travel on a slope. Changing the direction of travel on a slope could result in tipping or side slipping of the machine.

Bring the load close to the machine before traveling any distances.

Bring the load close to the machine before swinging the load.

Lifting capacity decreases as the load is moved further from the machine.

Make sure that the towing eyes and the towing devices are adequate for your needs.

Only connect trailing equipment to a drawbar or to a hitch.

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

When you maneuver in order to connect the equipment, make sure that no personnel are between the machine and trailing equipment. Block up the hitch of the trailing equipment in order to align the equipment with the drawbar.

Check the local regulations, state codes, and/or directives of the job site for a specific minimum distance from obstacles.

Before you operate the machine, check with local utilities for the locations of underground pipes and for the locations of buried cables.

Know the maximum dimensions of your machine.

Watch the load at all times.

Do not operate the machine without the counterweight. The machine can tip when the boom is over the side.

The clamshell, the grapple, or the magnet can swing in all directions. Move the joysticks in a continuous motion. Failure to move the joysticks in a continuous motion can cause the clamshell, the grapple, or the magnet to swing into the cab or into a person in the work area. This will result in personal injury.

Certain machine front linkage combinations (boom, stick, quick coupler, work tool) can allow the work tool to contact the machine undercarriage, swing frame, boom, boom hydraulic cylinder and or the cab. Be aware of the position of the work tool while you operate the machine.

Shut down the machine until damaged or non-functioning visibility aid(s) is repaired (if applicable) or until appropriate job site organization is used to minimize hazards that are caused by any resulting restricted visibility.

Machine Operation when the Machine is not Completely Assembled



Illustration 51

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Attach the tag to the controls of the machine. When the tag is attached to the controls, operate the machine as described below.

If the machine needs to be operated without the boom, stick, and/or counterweight being installed, the machine should be operated slowly on flat, stable ground or pavement by qualified operators. Avoid any machine operations which could affect machine stability, including the swing function. The ROPS structural certification depends on the support of the boom, stick, and counterweight in the event of a machine tip over or a machine rollover incident.

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Engine Stopping

SMCS Code: 1000; 7000

Do not stop the engine immediately after the machine has been operated under load. Stopping the engine immediately 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 at low idle for 5 minutes before shutdown. Running the engine allows hot areas of the engine to cool gradually.

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Lifting Objects

SMCS Code: 7000

There may be local regulations and/or government regulations that govern the use of machines which lift heavy objects. Obey all local and government regulations.

Regional regulations may require the use of an overload warning device and boom and stick lowering control valves when used to lift objects.

If this machine is used to lift objects within Japan, Japanese regulations require the machine to be equipped with a shovel crane configuration.

Contact your Cat dealer for additional information.

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Demolition

SMCS Code: 6700

There maybe local regulations and/or government regulations that govern the use of machines which are designed and used as demolition machinery.

Note: Obey all local and government regulations.

Demolition machinery is designed for demolishing by pushing or pulling, or fragmenting. Demolition is done by crushing or shearing, buildings and/or other civil engineering structures and component parts and/or separating the resultant debris.

If this machine is used for demolition, regional regulations may require the machine to be equipped with:

- Rollover Protective Structure (ROPS, not required for demolition excavators)
- Boom Lowering Control Valve (BLCV) / Stick Lowering Control Valve (SLCV)
- Top Guard / Front Guard
- Bottom / Motor / Swivel Guard
- EN 356 class P5A front window glass
- If a roof window is used to provide visibility to the working area, then roof window shall be equipped with motorized windscreen wipers and washers.

Demolition applications may generate flying debris. Ensure that there are no personnel in the area around the machine where flying debris may travel.

Demolition applications may generate airborne dust that can be hazardous to your health. If you operate the machine in a dust generating applications, use appropriate safeguarding or adequate ventilation to minimize risk.

i07318756

Parking

SMCS Code: 7000

The hydraulic system controls remain pressurized if the accumulator is charged. This condition is true even when the engine is not running. The hydraulic control system pressure should decrease in a short time (approximately 1 minute). While the hydraulic controls maintain a charge, the hydraulic work tools and machine controls remain functional.

There can be residual pressure within the hydraulic system even when the accumulator is empty. Refer to this Operation and Maintenance Manual, "System Pressure Relief" before any service is performed to the hydraulic system.

Machine movement that is sudden and unexpected will occur if any of the controls are moved. Machine movement that is sudden and unexpected, can cause personal injury or death.

Always move the hydraulic lockout control to the LOCKED position before you shut off the engine or immediately after the engine stops running.

Park the machine on a hard, level surface. If you must park the machine on a grade, chock the tracks of the machine.



Illustration 52

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Place the machine in the servicing position.

Note: Make sure that all work tools are in the recommended servicing position before servicing the machine.

Stop the engine.

Turn the engine start switch to the OFF position.

Turn the battery disconnect switch to the OFF position, if you do not intend on operating the machine for an extended period. This practice will prevent drainage of the battery. A battery short circuit, any current draw from certain components, and vandalism can cause drainage of the battery.

Note: Do not turn off the battery disconnect switch until 5 seconds have elapsed after turning the engine start switch to the OFF position. Do not turn off the battery disconnect switch while the "Lock Security?" screen is displayed on the monitor.

Install barriers or lighting as required to prevent interference in road traffic.

Select places free of danger by flooding and other water damage.

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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. Place the heaviest end of the machine uphill when you are working on an incline.

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.

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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.

Slippage due to excessive loads – This may cause downhill tracks or downhill tires to dig into the ground, which will increase the angle of the machine.

Width of tracks or tires – Narrower tracks or narrower tires further increase the digging into the ground which causes the machine to be less stable.

Implements attached to the drawbar – This may decrease the weight on the uphill tracks. This may also decrease the weight on the uphill tires. The decreased weight will cause the machine to be less stable.

Height of the working load of the machine – When the working loads are in higher positions, the stability of the machine is reduced.

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

Operating techniques – Keep all attachments or pulled loads 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: Operators with lots of experience and proper equipment for specific applications are also required. Safe operation on steep slopes may also require special machine maintenance. Refer to Lubricant Viscosities and Refill Capacities in this manual for the proper fluid level requirements and intended machine use. Fluids must be at the correct levels to ensure that systems will operate properly on a slope.

Equipment Lowering with Engine Stopped

SMCS Code: 7000-II

Before lowering any equipment with the engine stopped, clear the area around the equipment of all personnel. The procedure to use will vary with the type of equipment to be lowered. Keep in mind most systems use a high pressure fluid or air to raise or lower equipment. The procedure will cause high pressure air, hydraulic, or some other media to be released in order to lower the equipment. Wear appropriate personal protective equipment and follow the established procedure in the Operation and Maintenance Manual, "Equipment Lowering with Engine Stopped" in the Operation Section of the manual.

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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.

Table 2

Sound Level		Test Method
Declared Operator Sound Pressure Level	72 dB(A)	"ISO 6396:2008" (1)
Declared Exterior Sound Power Level	99 dB(A)	"ISO 6395:2008" (2)

- (1) The measurement was conducted at 70% of the maximum engine cooling fan speed. The sound level may vary at different engine cooling fan speeds. The measurement was conducted with the cab doors and the cab windows closed. The cab was properly installed and maintained.
- (2) The measurement was conducted at 70% of the maximum engine cooling fan speed. The sound level may vary at different engine cooling fan speeds.

The declared sound levels listed above include both measurement uncertainty and uncertainty due to production variation.

Sound Level Information for Machines Required by the Applicable Regional Regulations

- European Union Countries

- **United Kingdom**
- **Eurasian Economic Union Countries**
- **Ukraine**
- **Countries that Adopt the “EU Directives”**

The information below applies to only the machine configurations that contain regional product marking on or near the Product Identification Plate noted in the “Regional Product Marking” section of this manual.

Table 3

Declared Dynamic Operator Sound Pressure Level		
Region	Sound Level	Test Method
European Union	72 dB(A)	“ISO 6396:2008” (1)
United Kingdom	72 dB(A)	“ISO 6396:2008” (1)
Eurasian Economic Union	72 dB(A)	“ISO 6396:2008” (1)

(1) The measurement was conducted at 70% of the maximum engine cooling fan speed. The sound level may vary at different engine cooling fan speeds. The measurement was conducted with the cab doors and the cab windows closed. The cab was properly installed and maintained.

Table 4

Declared Exterior Sound Power Level		
Region	Sound Level	Test Method
European Union	99 dB(A)	“ISO 6395:1988” (1)
United Kingdom	99 dB(A)	“ISO 6395:1988” (1)
Eurasian Economic Union	99 dB(A)	“ISO 6395:2008” (1)
Ukraine	99 dB(A)	“ISO 6395:1988” (1)

(1) The measurement was conducted at 70% of the maximum engine cooling fan speed. The sound level may vary at different engine cooling fan speeds.

The declared sound levels listed above include both measurement uncertainty and uncertainty due to production variation.

The machine sound power level meets the criteria that are specified in the applicable regional regulation. For example:

- “European Directive 2000/14 EC” amended by “2005/88/EC”
- “United Kingdom 2001 No. 1701” amended by “2005 No. 3525”
- “Ukraine Technical Regulation of the Noise Emission in the Environment by Equipment for Use Outdoors”

The criteria are specified on the certificate of the conformance and the accompanying labels.

Vibration Information Applicable to Regional Regulations

Vibration Data for Excavator

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 track type excavators.

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 5 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 to obtain the estimated vibration level. For aggressive operations and severe terrain, add the Scenario Factors to the average vibration level to obtain the estimated vibration level.

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

Table 5

"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
Track Type Excavators	excavating	0.44	0.27	0.30	0.24	0.16	0.17
	hydraulic breaker application	0.53	0.31	0.55	0.30	0.18	0.28
	mining application	0.65	0.42	0.61	0.21	0.15	0.32
	transfer	0.48	0.32	0.79	0.19	0.20	0.23

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.

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 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 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 to minimize the vibration level.
 - a. Drive around obstacles and rough terrain.
 - b. Slow down when driving 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 on track type excavators.
 - c. If no ride control system is available, reduce speed 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 to provide better operator comfort:
 - a. Adjust the seat and adjust the controls to achieve good posture.
 - b. Adjust the mirrors to minimize twisted posture.
 - c. Provide breaks 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 the calculation procedure are 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.

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.

Consult your local Cat[®] dealer for more information about machine features that minimize vibration levels. Consult your local Cat dealer about safe machine operation.

Use the following web site to find your local dealer:

Caterpillar, Inc.
www.cat.com

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Operator Station

SMCS Code: 7300; 7301; 7325

Any modifications to the inside of the operator station should not project into the operator space or into the space for the companion seat (if equipped). The addition of a radio, fire extinguisher, and other equipment must be installed so that the defined operator space and the space for the companion seat (if equipped) is maintained. Any item that is brought into the cab should not project into the defined operator space or the space for the companion seat (if equipped). A lunch box or other loose items must be secured. Objects must not pose an impact hazard in rough terrain or in the event of a rollover.

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Guards (Operator Protection)

SMCS Code: 7000; 7150

There are different types of guards that are used to protect the operator. The machine and the machine application determine the type of guard that should be used.

A daily inspection of the guards is required in order to check for structures that are bent, cracked, or loose. Never operate a machine with a damaged structure.

The operator becomes exposed to a hazardous situation if the machine is used improperly or if poor operating techniques are used. This situation can occur even though a machine is equipped with an appropriate protective guard. Follow the established operating procedures that are recommended for your machine.

Rollover Protective Structure (ROPS), Falling Object Protective Structure (FOPS) or Tip Over Protection Structure (TOPS)

The ROPS/FOPS Structure (if equipped) on your machine is specifically designed, tested and certified for that machine. Any alteration or any modification to the ROPS/FOPS Structure could weaken the structure. This places the operator into an unprotected environment. Modifications or attachments that cause the machine to exceed the weight that is stamped on the certification plate also place the operator into an unprotected environment. Excessive weight may inhibit the brake performance, the steering performance and the ROPS. The protection that is offered by the ROPS/FOPS Structure will be impaired if the ROPS/FOPS Structure has structural damage. Damage to the structure can be caused by an overturn, a falling object, a collision, etc.

Do not mount items (fire extinguishers, first aid kits, work lights, etc) by welding brackets to the ROPS/FOPS Structure or by drilling holes in the ROPS/FOPS Structure. Welding brackets or drilling holes in the ROPS/FOPS Structures can weaken the structures. Consult your Cat dealer for mounting guidelines.

The Tip Over Protection Structure (TOPS) is another type of guard that is used on mini hydraulic excavators. This structure protects the operator in the event of a tipover. The same guidelines for the inspection, the maintenance and the modification of the ROPS/FOPS Structure are required for the Tip Over Protection Structure.

Other Guards (If Equipped)

Protection from flying objects and/or falling objects is required for special applications. Logging applications and demolition applications are two examples that require special protection.

A front guard needs to be installed when a work tool that creates flying objects is used. Mesh front guards that are approved by Caterpillar or polycarbonate front guards that are approved by Caterpillar are available for machines with a cab or an open canopy. On machines that are equipped with cabs, the windows should also be closed. Safety glasses are recommended when flying hazards exist for machines with cabs and machines with open canopies.

If the work material extends above the cab, top guards and front guards should be used. Typical examples of this type of application are listed below:

- Demolition applications
- Rock quarries
- Forestry products

Additional guards may be required for specific applications or work tools. The Operation and Maintenance Manual for your machine or your work tool will provide specific requirements for the guards. Refer to Operation Maintenance manual, "Demolition" for additional information. Consult your Cat dealer for additional information.

Product Information Section

General Information

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Specifications

SMCS Code: 7000

Intended Use

The intended use of this machine is for excavating with a bucket or working with approved work tools. The machine should be operated with the undercarriage in a stationary position since the upper structure is normally capable of 360 degree swing with mounted equipment. This machine can be used in object handling applications that are within the lift capacity of the machine. When this machine is used in object handling applications, ensure that the machine is properly configured and operated properly. Obey any local governmental regulations and regional governmental regulations. Only lift objects from approved lifting points and with approved lifting devices.

Expected Life

The expected life, defined as total machine hours, of this machine is dependent upon many factors including the machine owner's desire to rebuild the machine back to factory specifications. The expected life interval of this machine is 8,000 service hours. The expected life interval corresponds to the service hours to engine overhaul or replacement. Service hours to engine overhaul or replacement may vary based on overall machine duty cycle. At the expected life interval, remove the machine from operation and consult your Cat dealer for inspect, repair, rebuild, install remanufactured, install new components, or disposal options and to establish a new expected life interval. If a decision is made to remove this machine from service, refer to Operation and Maintenance Manual, "Decommissioning and Disposal". The following items are required to obtain an economical expected life of this machine:

- Perform regular preventive maintenance procedures as described in the Operation and Maintenance Manual.
- Perform machine inspections as described in the Operation and Maintenance Manual and correct any problems discovered.
- Perform system testing as described in the Operation and Maintenance Manual and correct any problems discovered.

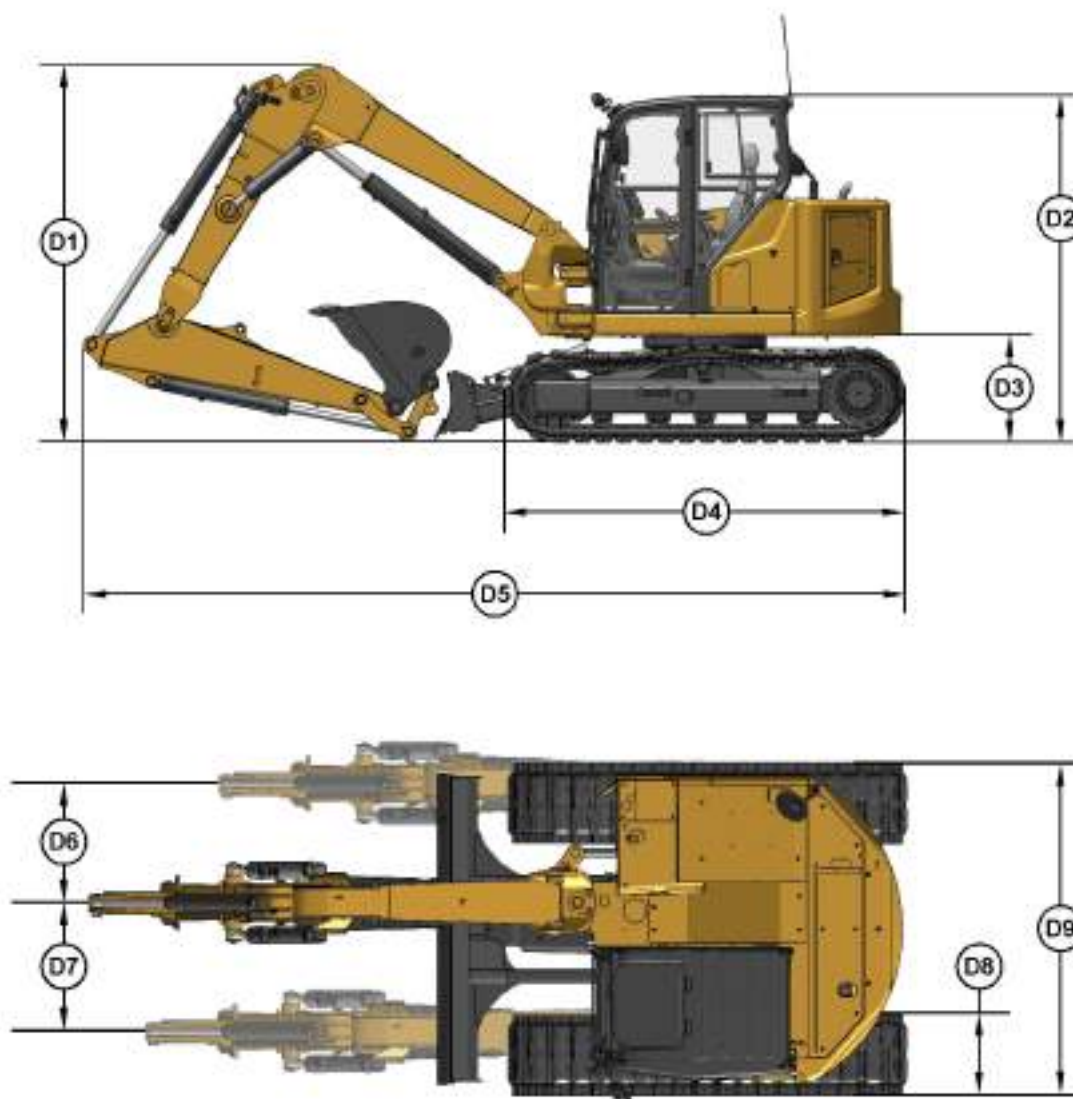
- Ensure that machine application conditions comply with Caterpillar recommendations.
- Ensure that the operating weight does not exceed limits set by manufacturer.

- Ensure that all frame cracks are identified, inspected, and repaired to prevent further development.

Application/Configuration Restrictions

The maximum travel operating slope for machine lubrication is 30 degrees.

Specification Data



307.5 Excavator

Table 6

307.5 Excavator					
				China Market Machines (High-Clearance Undercarriage) ⁽¹⁾	
Boom		Fixed Boom		Fixed Boom	
Stick		Standard Stick 1665 mm (5 ft 5.5 in)	Long Stick 2208 mm (7 ft 3 in)	Standard Stick 1665 mm (5 ft 5.5 in)	Long Stick 2208 mm (7 ft 3 in)
(D1)	Boom Height in Working Position	2730 mm (8 ft 10 in)	3150 mm (10 ft 4 in)	2735 mm (8 ft 10 in)	3160 mm (10 ft 4 in)
	Boom Height in Shipping Position	2669 mm (8 ft 8in)	2720 mm (8 ft 10 in)	2669 mm (8 ft 8 in)	2725 mm (8 ft 10 in)
(D2)	Cab Height	2510 mm (8 ft 3 in)		2570 mm (8 ft 4 in)	
	Cab Height (with triple grouser track)	2530 mm (8 ft 4 in)		2590 mm (8 ft 5 in)	
	Cab Height (with rubber pad track)	2560 mm (8 ft 5 in)		2620 mm (8 ft 6 in)	
	Cab Height (with rubber belt track)	2536 mm (8 ft 4 in)		2596 mm (8 ft 5 in)	
(D3)	Swing Bearing Height	789 mm (2 ft 7 in)			
(D4)	Overall Undercarriage Length	2760 mm (9 ft 1 in)			
(D5)	Overall Shipping Length	6100 mm (20 ft)	6110 mm (20 ft)	6090 mm (19 ft 9 in)	6095 mm (19 ft 9 in)
(D6)	Boom Swing Right	—			
(D7)	Boom Swing Left	—			
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)			
(D9)	Overall Track Width	2200 mm (7 ft 3 in)			
(D9a)	Overall Machine Width	2250 mm (7 ft 5 in)			
Ground Clearance		370 mm (1 ft 2.6 in)			
2438 mm (8 ft) Flat Bottom		1211 mm (4 ft)	1218 mm (4 ft)	1211 mm (4 ft)	1218 mm (4 ft)
Machine Minimum Weight ⁽²⁾		7572 kg (16693 lb)			
Machine Maximum Weight ⁽²⁾		8273 kg (18240 lb)			

⁽¹⁾ Clearance between the tracks and the bottom of the upper frame, not additional ground clearance.⁽²⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

308 CR Excavator

Table 7

308 CR Excavator			
Boom		Swing Boom	
Stick		Standard Stick 1826 mm (6 ft)	Long Stick 2358 mm (8 ft)
(D1)	Boom Height in Working Position	2660 mm (8 ft 7 in)	3050 mm (10 ft)
	Boom Height in Shipping Position	-	2660 mm (8 ft 7 in)
(D2)	Cab Height	2510 mm (8 ft 3 in)	
	Cab Height (with triple grouser track)	2530 mm (8 ft 4 in)	
	Cab Height (with rubber pad track)	2560 mm (8 ft 5 in)	
	Cab Height (with rubber belt track)	2536 mm (8 ft 4 in)	
(D3)	Swing Bearing Height	735 mm (2 ft 5 in)	
(D4)	Overall Undercarriage Length	2880 mm (9 ft 5 in)	
(D5)	Overall Shipping Length (working position)	—	6536 mm (21 ft 4 in)
	Overall Shipping Length (shipping position)	6580 mm (21 ft 6 in)	6330 mm (20 ft 8 in)
(D6)	Boom Swing Right	963 mm (3 ft 2 in)	
(D7)	Boom Swing Left	503 mm (1 ft 8 in)	
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)	
(D9)	Overall Track Width	2300 mm (7 ft 7 in)	
Ground Clearance		349 mm (1 ft 2 in)	
2438 mm (8 ft) Flat Bottom		3042 mm (10 ft)	3491 mm (11 ft 5 in)
Machine Minimum Weight ⁽¹⁾		8146 kg (17960 lb)	
Machine Maximum Weight ⁽¹⁾		9380 kg (20678 lb)	

⁽¹⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

308 CR Excavator (Variable Angle Boom)

Table 8

308 CR Excavator			
Boom		Swing Boom, Variable Angle Boom	
Stick		Standard Stick 1823 mm (6 ft)	
Boom Position		IN	OUT
(D1)	Boom Height in Working Position	2900 mm (9 ft 5 in)	2770 mm (9 ft 1 in)
(D2)	Cab Height	2510 mm (8 ft 3 in)	
	Cab Height (with triple grouser track)	2530 mm (8 ft 4 in)	
	Cab Height (with rubber pad track)	2560 mm (8 ft 5 in)	
	Cab Height (with rubber belt track)	2536 mm (8 ft 4 in)	
(D3)	Swing Bearing Height	735 mm (2 ft 5 in)	
(D4)	Overall Undercarriage Length	2880 mm (9 ft 5 in)	
(D5)	Overall Shipping Length	6030 mm (19 ft 8 in)	7100 mm (23 ft 3 in)
(D6)	Boom Swing Right	963 mm (3 ft 2 in)	
(D7)	Boom Swing Left	503 mm (1 ft 8 in)	
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)	
(D9)	Overall Track Width	2300 mm (7 ft 7 in)	
Ground Clearance		349 mm (1 ft 2 in)	
2438 mm (8 ft) Flat Bottom		3042 mm (10 ft)	
Machine Minimum Weight ⁽¹⁾		8591 kg (18941 lb)	
Machine Maximum Weight ⁽¹⁾		9483 kg (20906 lb)	

⁽¹⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

308.5 Excavator

Table 9

308.5 Excavator			
Boom		Fixed Boom	
Stick		Standard Stick 1820 mm (6 ft)	Long Stick 2358 mm (7 ft 9 in)
(D1)	Boom Height in Working Position	2845 mm (9 ft 3 in)	3160 mm (10 ft 4 in)
	Boom Height in Shipping Position	—	2725 mm (8 ft 9 in)
(D2)	Cab Height	2570 mm (8 ft 4 in)	
	Cab Height (with triple grouser track)	2590 mm (8 ft 5 in)	
	Cab Height (with rubber pad track)	2620 mm (8 ft 6 in)	
	Cab Height (with rubber belt track)	2596 mm (8 ft 5 in)	
(D3)	Swing Bearing Height	789 mm (2 ft 7 in)	
(D4)	Overall Undercarriage Length	2880 mm (9 ft 5 in)	
(D5)	Overall Shipping Length (working position)	—	6080 mm (19 ft 9 in)
	Overall Shipping Length (shipping position)	6140 mm (20 ft 1 in)	6095mm (19 ft 10 in)
(D6)	Boom Swing Right	—	
(D7)	Boom Swing Left	—	
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)	
(D9)	Overall Track Width	2300 mm (7 ft 7 in)	
Ground Clearance		403 mm (1 ft 3 in)	
2438 mm (8 ft) Flat Bottom		1140 mm (3 ft 9 in)	1218 mm (4 ft)
Machine Minimum Weight ⁽¹⁾		8115 kg (17891 lb)	
Machine Maximum Weight ⁽¹⁾		8751 kg (19292 lb)	

⁽¹⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

309 CR Excavator

Table 10

309 CR Excavator Standard Undercarriage			
Boom		Swing Boom	
Stick		Standard Stick 1823 mm (6 ft)	Long Stick 2358 mm (8 ft)
(D1)	Boom Height in Working Position	2660 mm (8 ft 7 in)	3050 mm (10 ft)
	Boom Height in Shipping Position	—	2260 mm (7 ft 4 in)
(D2)	Cab Height	2510 mm (8 ft 3 in)	
	Cab Height (with triple grouser track)	2530 mm (8 ft 4 in)	
	Cab Height (with rubber pad track)	2560 mm (8 ft 5 in)	
	Cab Height (with rubber belt track)	2536 mm (8 ft 4 in)	
(D3)	Swing Bearing Height	735 mm (2 ft 5 in)	
(D4)	Overall Undercarriage Length	2880 mm (9 ft 5 in)	
(D5)	Overall Shipping Length (working position)	—	6536 mm (21 ft 4 in)
	Overall Shipping Length (shipping position)	6580 mm (21 ft 6 in)	6330 mm (20 ft 8 in)
(D6)	Boom Swing Right	963 mm (3 ft 2 in)	
(D7)	Boom Swing Left	503 mm (1 ft 8 in)	
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)	
(D9)	Overall Track Width	2300 mm (7 ft 7 in)	
Ground Clearance		349 mm (1 ft 2 in)	
2438 mm (8 ft) Flat Bottom		3042 mm (10 ft)	3491 mm (11 ft 5 in)
Machine Minimum Weight ⁽¹⁾		8417 kg (18556 lb)	
Machine Maximum Weight ⁽¹⁾		9380 kg (20678 lb)	

⁽¹⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

309 CR Excavator

Table 11

309 CR Excavator Long Undercarriage			
Boom		Swing Boom	
Stick		Standard Stick 1823 mm (6 ft)	Long Stick 2358 mm (8 ft)
(D1)	Boom Height in Working Position	2735 mm (9 ft)	3160 mm (10 ft 4 in)
	Boom Height in Shipping Position	—	2735 mm (9 ft)
(D2)	Cab Height	2514 mm (8 ft 3 in)	
(D3)	Swing Bearing Height	729 mm (2 ft 5 in)	
(D4)	Overall Undercarriage Length	3200 mm (10 ft 6 in)	
(D5)	Overall Shipping Length	6090 mm (20 ft)	6095 mm (20 ft)
(D6)	Boom Swing Right	935 mm (3 ft 1 in)	
(D7)	Boom Swing Left	604 mm (2 ft)	
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)	
(D9)	Overall Track Width	2470 mm (8 ft 1.2 in)	
Ground Clearance		343 mm (1 ft 1.5 in)	
2438 mm (8 ft) Flat Bottom		3042 mm (10 ft)	3491 mm (11 ft 5 in)
Machine Minimum Weight ⁽¹⁾		8756 kg (19304 lb)	
Machine Maximum Weight ⁽¹⁾		9403 kg (20731 lb)	

⁽¹⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

309 CR Excavator (Variable Angle Boom)

Table 12

309 CR Excavator Standard Undercarriage			
Boom		Swing Boom, Variable Angle Boom	
Stick		Standard Stick 1823 mm (6 ft)	
Boom Position		IN	OUT
(D1)	Boom Height in Working Position	2840 mm (9 ft 5 in)	2770 mm (9 ft 1 in)
(D2)	Cab Height	2510 mm (8 ft 3 in)	
	Cab Height (with triple grouser track)	2530 mm (8 ft 4 in)	
	Cab Height (with rubber pad track)	2560 mm (8 ft 5 in)	
	Cab Height (with rubber belt track)	2536 mm (8 ft 4 in)	
(D3)	Swing Bearing Height	735 mm (2 ft 5 in)	
(D4)	Overall Undercarriage Length	2880 mm (9 ft 5 in)	
(D5)	Overall Shipping Length	6145 mm (20 ft 2 in)	7100 mm (23 ft 3 in)
(D6)	Boom Swing Right	963 mm (3 ft 2 in)	
(D7)	Boom Swing Left	503 mm (1 ft 8 in)	
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)	
(D9)	Overall Track Width	2300 mm (7 ft 7 in)	
Ground Clearance		349 mm (1 ft 1.7 in)	
2438 mm (8 ft) Flat Bottom		3042 mm (10 ft)	
Machine Minimum Weight ⁽¹⁾		8591 kg (18941 lb)	
Machine Maximum Weight ⁽¹⁾		9483 kg (20906 lb)	

⁽¹⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

309 CR Excavator (Variable Angle Boom)

Table 13

309 CR Excavator Long Undercarriage			
Boom		Variable Angle Boom	
Stick		Standard Stick 1823 mm (6 ft)	
Boom Position		IN	OUT
(D1)	Boom Height in Working Position	2530 mm (8 ft 4 in)	2452 mm (8 ft 0.5 in)
(D2)	Cab Height	2514 mm (8 ft 3 in)	
(D3)	Swing Bearing Height	798 mm (2 ft 7 in)	
(D4)	Overall Undercarriage Length	3200 mm (10 ft 6 in)	
(D5)	Overall Shipping Length	5771 mm (18 ft 11 in)	7158 mm (23 ft 6 in)
(D6)	Boom Swing Right	935 mm (3 ft 1 in)	
(D7)	Boom Swing Left	604 mm (2 ft)	
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)	
(D9)	Overall Track Width	2470 mm (8 ft 1 in)	
Ground Clearance		343 mm (1 ft 1.5 in)	
2438 mm (8 ft) Flat Bottom		3042 mm (10 ft)	
Machine Minimum Weight ⁽¹⁾		8972 kg (19780 lb)	
Machine Maximum Weight ⁽¹⁾		9550 kg (21054 lb)	

⁽¹⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

310 Excavator

Table 14

310 Excavator		
Boom		Fixed Boom
Stick		Standard Stick 2500 mm (8 ft 2 in)
(D1)	Boom Height in Working Position	3086 mm (10 ft 2 in)
(D2)	Cab Height	2670 mm (8 ft 9 in)
	Cab Height (with triple grouser track)	2690 mm (8 ft 10 in)
	Cab Height (with rubber pad track)	2720 mm (8 ft 11 in)
	Cab Height (with rubber belt track)	2696 mm (8 ft 10 in)
(D3)	Swing Bearing Height	839 mm (2 ft 9 in)
(D4)	Overall Undercarriage Length	3200 mm (10 ft 6 in)
(D5)	Overall Shipping Length	6730 mm (22 ft)
(D6)	Boom Swing Right	—
(D7)	Boom Swing Left	—
(D8)	Track Belt/Shoe Width	450 mm (1 ft 6 in)
(D9)	Overall Track Width	2470 mm (8 ft 1 in)
Ground Clearance		393 mm (1 ft 4 in)
2438 mm (8 ft) Flat Bottom		4945 mm (16 ft 3 in)
Machine Minimum Weight ⁽¹⁾		9601 kg (21166 lb)
Machine Maximum Weight ⁽¹⁾		10182 kg (22447 lb)

⁽¹⁾ Weight is with no Bucket, Coupler, or Work Tool.

Consult your Cat dealer for specifications that are not included.

Working Ranges

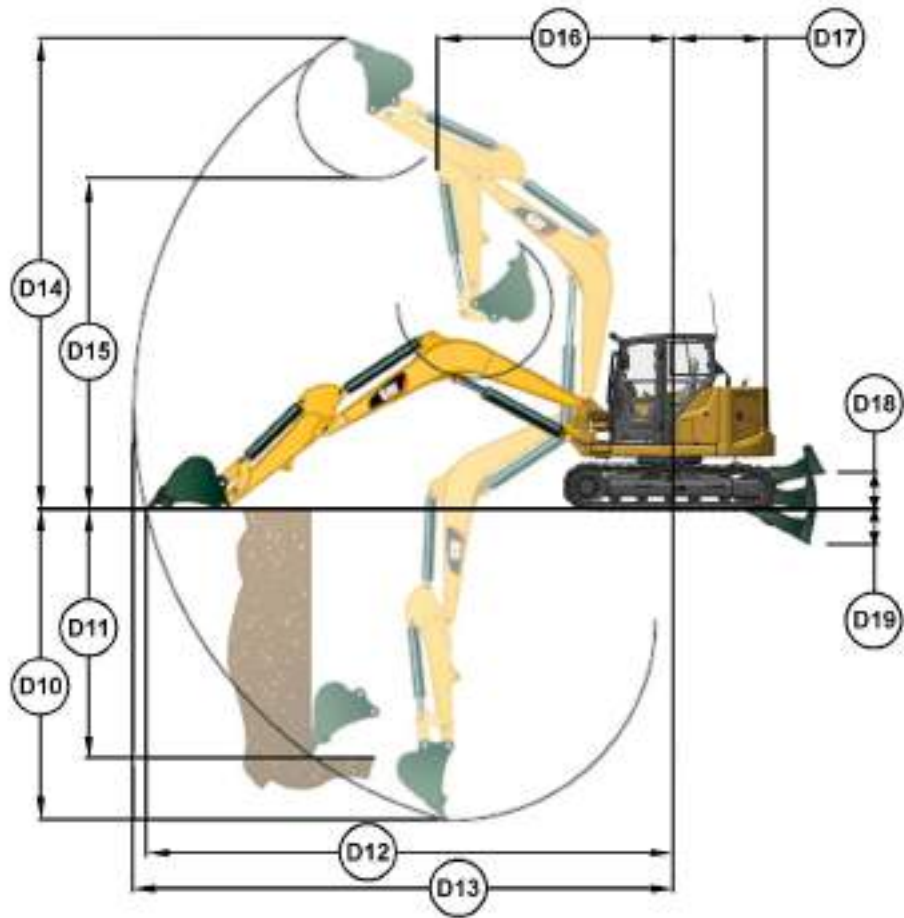


Illustration 54

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307.5 Excavator

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 15

307.5 Excavator		
Boom Options	Fixed Boom	
Stick Options	Standard Stick 1665 mm (5 ft 5.5 in)	Long Stick 2208 mm (7 ft 3 in)
Maximum Digging Depth (D10)	4047 mm (13 ft 3 in)	4589 mm (15 ft 1 in)
Maximum Vertical Wall Digging Depth (D11)	3544 mm (11 ft 7.5 in)	4060 mm (13 ft 3.8 in)

(continued)

(Table 15, contd)

307.5 Excavator		
Boom Options	Fixed Boom	
Stick Options	Standard Stick 1665 mm (5 ft 5.5 in)	Long Stick 2208 mm (7 ft 3 in)
Maximum Reach at Ground Level (D12)	6139 mm (20 ft 2 in)	6659 mm (21 ft 10 in)
Maximum Reach (D13)	6297 mm (20 ft 8 in)	6805 mm (22 ft 4 in)
Maximum Dig Height (D14)	7401 mm (24 ft 3 in)	7818 mm (25 ft 8 in)
Maximum Dump Clearance (D15)	5353 mm (17 ft 7 in)	5770 mm (18 ft 11 in)
Boom in Reach (D16)	1681 mm (5 ft 6 in)	2250 mm (7 ft 5 in)
Tail Swing With Counterweight (D17)	1995 mm (6 ft 6.5 in)	1995 mm (6 ft 6.5 in)
Tail Swing Without Counterweight (D17)	1800 mm (5 ft 11 in)	1800 mm (5 ft 11 in)
Maximum Blade Height (D18)	363 mm (1 ft 2.3 in)	363 mm (1 ft 2.3 in)
Maximum Blade Depth (D19)	414 mm (1 ft 4.3 in)	414 mm (1 ft 4.3 in)
Stick Digging Force	37.8 kN (8504 lb)	33.7 kN (7579 lb)
Bucket Digging Force	54.6 kN (12272 lb)	54.6 kN (12272 lb)

308 CR Excavator

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 16

308 CR Excavator		
Boom Options	Swing Boom, Fixed Boom	
Stick Options	Standard Stick 1823 mm (6 ft)	Long Stick 2358 mm (8 ft)
Maximum Digging Depth (D10)	4109 mm (13 ft 6 in)	4644 mm (15 ft 3 in)
Maximum Vertical Wall Digging Depth (D11)	2992 mm (9 ft 10 in)	3405 mm (11 ft 2 in)
Maximum Reach at Ground Level (D12)	6949 mm (22 ft 10 in)	7461 mm (24 ft 5.7 in)
Maximum Reach (D13)	7141 mm (23 ft 5 in)	7637 mm (25 ft 0.7 in)

(continued)

Product Information Section
Specifications

(Table 16, contd)

308 CR Excavator		
Boom Options	Swing Boom, Fixed Boom	
Stick Options	Standard Stick 1823 mm (6 ft)	Long Stick 2358 mm (8 ft)
Maximum Dig Height (D14)	6735 mm (22 ft 1 in)	7038 mm (23 ft 1 in)
Maximum Dump Clearance (D15)	4759 mm (15 ft 7 in)	5071 mm (16 ft 7.6 in)
Boom in Reach (D16)	3059 mm (10 ft)	3215 mm (10 ft 7 in)
Tail Swing With Counterweight (D17)	1645 mm (5 ft 5 in)	1645 mm (5 ft 5 in)
Tail Swing Without Counterweight (D17)	1450 mm (4 ft 9 in)	1450 mm (4 ft 9 in)
Maximum Blade Height (D18)	369 mm (1 ft 2.5 in)	369 mm (1 ft 2.5 in)
Maximum Blade Depth (D19)	408 mm (1 ft 4 in)	408 mm (1 ft 4 in)
Stick Digging Force	42.3 kN (9509 lb)	35.7 kN (8032 lb)
Bucket Digging Force	62 kN (13946 lb)	62 kN (13946 lb)

308 CR Excavator (Variable Angle Boom)

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 17

308 CR Excavator		
	Variable Angle Boom	
Boom Options	IN	OUT
Maximum Digging Depth (D10)	3925 mm (12 ft 10.5 in)	3462 mm (11 ft 4 in)
Maximum Vertical Wall Digging Depth (D11)	3388 mm (11 ft 1 in)	3518 mm (11 ft 6.5 in)
Maximum Reach at Ground Level (D12)	6402 mm (21 ft)	7750 mm (25 ft 5 in)
Maximum Reach (D13)	6612 mm (21 ft 8 in)	7919 mm (26 ft)
Maximum Dig Height (D14)	5500 mm (18 ft 1 in)	8177 mm (26 ft 10 in)
Maximum Dump Clearance (D15)	3649 mm (12 ft)	6396 mm (20 ft 11.8 in)

(continued)

(Table 17, contd)

308 CR Excavator		
	Variable Angle Boom	
Boom Options	IN	OUT
Boom in Reach (D16)	2853 mm (9 ft 4 in)	2995 mm (9 ft 10 in)
Tail Swing With Counterweight (D17)	1645 mm (5 ft 5 in)	1645 mm (5 ft 5 in)
Tail Swing Without Counterweight (D17)	1450 mm (4 ft 9 in)	1450 mm (4 ft 9 in)
Maximum Blade Height (D18)	369 mm (1 ft 2.5 in)	369 mm (1 ft 2.5 in)
Maximum Blade Depth (D19)	408 mm (1 ft 4 in)	408 mm (1 ft 4 in)
Stick Digging Force	40.9 kN (9205 lb)	40.9 kN (9205 lb)
Bucket Digging Force	61.6 kN (20906 lb)	61.6 kN (20906 lb)

308.5 Excavator

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 18

308.5 Excavator		
Boom Options	Fixed Boom	
Stick Options	Standard Stick 1820 mm (6 ft)	Long Stick 2358 mm (7 ft 9 in)
Maximum Digging Depth (D10)	4202 mm (13 ft 9 in)	4589 mm (15 ft 1 in)
Maximum Vertical Wall Digging Depth (D11)	3375 mm (11 ft 1 in)	4060 mm (13 ft 4 in)
Maximum Reach at Ground Level (D12)	6214 mm (20 ft 5 in)	6659 mm (21 ft 10 in)
Maximum Reach (D13)	6370 mm (20 ft 11 in)	6805 mm (22 ft 4 in)
Maximum Dig Height (D14)	7374 mm (24 ft 2 in)	7818 mm (25 ft 8 in)
Maximum Dump Clearance (D15)	5339 mm (16 ft 6 in)	5770 mm (18 ft 11 in)
Boom in Reach (D16)	1978 mm (6 ft 6 in)	2265 mm (7 ft 5 in)
Tail Swing With Counterweight (D17)	1995 mm (6 ft 6.5 in)	1995 mm (6 ft 6.5 in)

(continued)

Product Information Section
Specifications

(Table 18, contd)

308.5 Excavator		
Boom Options	Fixed Boom	
Stick Options	Standard Stick 1820 mm (6 ft)	Long Stick 2358 mm (7 ft 9 in)
Tail Swing Without Counterweight (D17)	1800 mm (5 ft 11 in)	1800 mm (5 ft 11 in)
Maximum Blade Height (D18)	363 mm (1 ft 2.3 in)	363 mm (1 ft 2.3 in)
Maximum Blade Depth (D19)	414 mm (1 ft 4.3 in)	414 mm (1 ft 4.3 in)
Stick Digging Force	41.7 kN (9378 lb)	37.5 kN (8420 lb)
Bucket Digging Force	61.5 kN (13833 lb)	61.5 kN (13833 lb)

309 CR Excavator

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 19

309 CR Excavator Standard Undercarriage		
Boom Options	Swing Boom	
Stick Options	Standard Stick 1823 mm (6 ft)	Long Stick 2358 mm (8 ft)
Maximum Digging Depth (D10)	4109 mm (13 ft 6 in)	4644 mm (15 ft 3 in)
Maximum Vertical Wall Digging Depth (D11)	2992 mm (9 ft 10 in)	3405 mm (11 ft 2 in)
Maximum Reach at Ground Level (D12)	6949 mm (22 ft 10 in)	7461 mm (24 ft 6 in)
Maximum Reach (D13)	7141 mm (23 ft 5 in)	7637 mm (25 ft 0.7 in)
Maximum Dig Height (D14)	6735 mm (22 ft 1 in)	7038 mm (23 ft 1 in)
Maximum Dump Clearance (D15)	4759 mm (15 ft 7 in)	5071 mm (16 ft 8 in)
Boom in Reach (D16)	3059 mm (10 ft)	3215 mm (10 ft 7 in)
Tail Swing With Counterweight (D17)	1645 mm (5 ft 5 in)	1645 mm (5 ft 5 in)
Tail Swing Without Counterweight (D17)	1450 mm (4 ft 9 in)	1450 mm (4 ft 9 in)
Maximum Blade Height (D18)	369 mm (1 ft 2.5 in)	369 mm (1 ft 2.5 in)

(continued)

(Table 19, contd)

309 CR Excavator Standard Undercarriage		
Boom Options	Swing Boom	
Stick Options	Standard Stick 1823 mm (6 ft)	Long Stick 2358 mm (8 ft)
Maximum Blade Depth (D19)	408 mm (1 ft 4 in)	408 mm (1 ft 4 in)
Stick Digging Force	42.3 kN (9509 lb)	35.7 kN (8032 lb)
Bucket Digging Force	62 kN (13946 lb)	62 kN (13946 lb)

309 CR Excavator

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 20

309 CR Excavator Long Undercarriage		
Boom Options	Swing Boom	
Stick Options	Standard Stick 1823 mm (6 ft)	Long Stick 2358 mm (8 ft)
Maximum Digging Depth (D10)	4115 mm (13 ft 6 in)	4650 mm (15 ft 3 in)
Maximum Vertical Wall Digging Depth (D11)	2998 mm (9 ft 10 in)	3411 mm (11 ft 2 in)
Maximum Reach at Ground Level (D12)	6951 mm (22 ft 10 in)	7462 mm (24 ft 6 in)
Maximum Reach (D13)	7140 mm (23 ft 5 in)	7637 mm (25 ft 0.7 in)
Maximum Dig Height (D14)	6729 mm (22 ft 1 in)	7032 mm (23 ft 1 in)
Maximum Dump Clearance (D15)	4753 mm (15 ft 7 in)	5065 mm (16 ft 7 in)
Boom in Reach (D16)	3058 mm (10 ft)	3215 mm (10 ft 7 in)
Tail Swing With Counterweight (D17)	1645 mm (5 ft 5 in)	1645 mm (5 ft 5 in)
Tail Swing Without Counterweight (D17)	1450 mm (4 ft 9 in)	1450 mm (4 ft 9 in)
Maximum Blade Height (D18)	342 mm (1 ft 1.5 in)	342 mm (1 ft 1.5 in)
Maximum Blade Depth (D19)	684 mm (2 ft 3 in)	684 mm (2 ft 3 in)

(continued)

(Table 20, contd)

309 CR Excavator Long Undercarriage		
Boom Options	Swing Boom	
Stick Options	Standard Stick 1823 mm (6 ft)	Long Stick 2358 mm (8 ft)
Stick Digging Force	42.3 kN (9500 lb)	35.7 kN (8023 lb)
Bucket Digging Force	62 kN (13943 lb)	62 kN (13943 lb)

309 CR Excavator (Variable Angle Boom)

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 21

309 CR Excavator (Variable Angle Boom) Standard Undercarriage		
	Variable Angle Boom	
Boom Options	IN	OUT
Maximum Digging Depth (D10)	3925 mm (12 ft 11 in)	3462 mm (11 ft 4 in)
Maximum Vertical Wall Digging Depth (D11)	3388 mm (11 ft 1 in)	3518 mm (11 ft 7 in)
Maximum Reach at Ground Level (D12)	6402 mm (21 ft)	7750 mm (25 ft 5 in)
Maximum Reach (D13)	6612 mm (21 ft 8 in)	7919 mm (26 ft)
Maximum Dig Height (D14)	5500 mm (18 ft 1 in)	8177 mm (26 ft 10 in)
Maximum Dump Clearance (D15)	3649 mm (12 ft)	6396 mm (21 ft)
Boom in Reach (D16)	2853 mm (9 ft 4 in)	2995 mm (9 ft 10 in)
Tail Swing With Counterweight (D17)	1645 mm (5 ft 5 in)	1645 mm (5 ft 5 in)
Tail Swing Without Counterweight (D17)	1450 mm (4 ft 9 in)	1450 mm (4 ft 9 in)
Maximum Blade Height (D18)	369 mm (1 ft 2.5 in)	369 mm (1 ft 2.5 in)
Maximum Blade Depth (D19)	408 mm (1 ft 4 in)	408 mm (1 ft 4 in)
Stick Digging Force	40.9 kN (9205 lb)	40.9 kN (9205 lb)
Bucket Digging Force	61.6 kN (13856 lb)	61.6 kN (13856 lb)

309 CR Excavator (Variable Angle Boom)

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 22

309 CR Excavator (Variable Angle Boom) Long Undercarriage		
	Variable Angle Boom	
Boom Options	IN	OUT
Maximum Digging Depth (D10)	3931 mm (12 ft 11 in)	3468 mm (11 ft 5 in)
Maximum Vertical Wall Digging Depth (D11)	3394 mm (11 ft 2 in)	3524 mm (11 ft 7 in)
Maximum Reach at Ground Level (D12)	6403 mm (21 ft)	7732 mm (25 ft 4 in)
Maximum Reach (D13)	6612 mm (21 ft 8 in)	7900 mm (25 ft 11 in)
Maximum Dig Height (D14)	5494 mm (18 ft)	8171 mm (26 ft 10 in)
Maximum Dump Clearance (D15)	3643 mm (11 ft 11 in)	6390 mm (21 ft)
Boom in Reach (D16)	2853 mm (9 ft 4 in)	2995 mm (9 ft 10 in)
Tail Swing With Counterweight (D17)	1645 mm (5 ft 5 in)	1645 mm (5 ft 5 in)
Tail Swing Without Counterweight (D17)	1450 mm (4 ft 9 in)	1450 mm (4 ft 9 in)
Maximum Blade Height (D18)	342 mm (1 ft 1.5 in)	342 mm (1 ft 1.5 in)
Maximum Blade Depth (D19)	684 mm (2 ft 3 in)	684 mm (2 ft 3 in)
Stick Digging Force	41.1 kN (9241 lb)	41.1 kN (9241 lb)
Bucket Digging Force	61.7 kN (13867 lb)	61.7 kN (13867 lb)

310 Excavator

Note: All dimensions are approximate and may vary depending on bucket selection.

Table 23

310 Excavator	
Boom Options	Fixed Boom
Stick Options	Standard Stick 2500 mm (8 ft 2 in)
Maximum Digging Depth (D10)	5174 mm (17 ft)
Maximum Vertical Wall Digging Depth (D11)	4836 mm (15 ft 10 in)
Maximum Reach at Ground Level (D12)	7511 mm (24 ft 8 in)
Maximum Reach (D13)	7644 mm (25 ft 1 in)
Maximum Dig Height (D14)	8007 mm (26 ft 3 in)
Maximum Dump Clearance (D15)	5866 mm (19 ft 3 in)
Boom in Reach (D16)	2272 mm (7 ft 5.5 in)
Tail Swing With Counterweight (D17)	1995 mm (6 ft 6.5 in)
Tail Swing Without Counterweight (D17)	1800 mm (5 ft 11 in)
Maximum Blade Height (D18)	392 mm (1 ft 3.4 in)
Maximum Blade Depth (D19)	634 mm (2 ft 1 in)
Stick Digging Force	49.2 kN (11060 lb)
Bucket Digging Force	77.7 kN (17459 lb)

i08437158

Boom/Stick/Bucket Combinations

SMCS Code: 6000; 6700

This machine can be equipped with various boom-stick-bucket combinations to meet the needs of various applications.

As a rule, use a bucket with a smaller capacity when you are using a longer stick and/or a longer boom. Conversely, use a bucket with a larger capacity when you are using a shorter stick and/or a shorter boom. This rule ensures better machine stability and protection against structural machine damage.

Note: The selection of a compatible boom-stick-bucket combination is a guide. Work tools, uneven ground conditions, soft ground conditions, or poor ground conditions have effects on machine performance. The operator is responsible for being aware of these effects.

Consult your Cat dealer for information on selecting the correct boom-stick-bucket combination.

The following tables show various compatible boom-stick-bucket combinations. Select an optimum combination according to the working conditions and according to the type of work that is being done.

Table 24

307.5, 308 CR, 308.5, and 309 CR Excavator (All Except China Market)			
Heavy-Duty Buckets ⁽¹⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
305 - 6813	330 mm (13 inch)	136 kg (299 lb)	0.10 m ³ (0.13 yd ³)
295 - 5951	457 mm (18 inch)	151 kg (333 lb)	0.15 m ³ (0.20 yd ³)
295 - 5952	610 mm (24 inch)	178 kg (392 lb)	0.23 m ³ (0.30 yd ³)
295 - 5953	762 mm (30 inch)	207 kg (455 lb)	0.31 m ³ (0.40 yd ³)
295 - 5954	914 mm (36 inch)	230 kg (507 lb)	0.39 m ³ (0.51 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³

Table 25

307.5, 308 CR, 308.5, and 309 CR Excavator			
Heavy-Duty Rock Buckets ⁽¹⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
295 - 5970	610 mm (24 inch)	194 kg (427 lb)	0.23 m ³ (0.30 yd ³)
295 - 5971	762 mm (30 inch)	223 kg (490 lb)	0.31 m ³ (0.40 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³

Table 26

307.5, 308 CR, 308.5, and 309 CR Excavator			
Ditch Cleaning Buckets ⁽¹⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
306 - 5664 ⁽²⁾	1219 mm (48 inch)	216 kg (476 lb)	0.33 m ³ (0.43 yd ³)
306 - 5662 ⁽²⁾	1372 mm (54 inch)	235 kg (516 lb)	0.37 m ³ (0.49 yd ³)
306 - 5660 ⁽²⁾	1524 mm (60 inch)	253 kg (556 lb)	0.42 m ³ (0.55 yd ³)
310 - 2963	1500 mm (59 inch)	145 kg (319 lb)	0.24 m ³ (0.31 yd ³)
310 - 2965	1800 mm (71 inch)	166 kg (365 lb)	0.30 m ³ (0.39 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³⁽²⁾ Weight includes optional bolt-on cutting edge

Table 27

307.5, 308 CR, 308.5, and 309 CR Excavator			
Mud/Grading Buckets ⁽¹⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
388 - 9666	1200 mm (47 inch)	279 kg (615 lb)	0.41 m ³ (0.54 yd ³)
388 - 9667	1500 mm (59 inch)	346 kg (762 lb)	0.52 m ³ (0.68 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³

Product Information Section
Boom/Stick/Bucket Combinations

Table 28

307.5, 308 CR, 308.5, and 309 CR Excavator			
Digging Buckets (CW10) ⁽¹⁾⁽²⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
525 - 4543	400 mm (16 inch)	137 kg (301 lb)	0.11 m ³ (0.15 yd ³)
525 - 4544	600 mm (24 inch)	174 kg (382 lb)	0.20 m ³ (0.26 yd ³)
525 - 4545	800 mm (31 inch)	215 kg (472 lb)	0.29 m ³ (0.37 yd ³)
525 - 4546	900 mm (35 inch)	230 kg (506 lb)	0.33 m ³ (0.44 yd ³)
525 - 4569	900 mm (35 inch)	197 kg (433 lb)	0.35 m ³ (0.46 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³

⁽²⁾ These buckets require a CW10 Quick Coupler to be installed on a machine.

Table 29

307.5, 308 CR, 308.5, and 309 CR Excavator			
Ditch Cleaning Buckets (CW10) ⁽¹⁾⁽²⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
525 - 4558	1600 mm (63 inch)	275 kg (606 lb)	0.45 m ³ (0.59 yd ³)
525 - 4559	1800 mm (71 inch)	295 kg (650 lb)	0.51 m ³ (0.67 yd ³)
525 - 4582	1600 mm (63 inch)	234 kg (521 lb)	0.40 m ³ (0.52 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³

⁽²⁾ These buckets require a CW10 Quick Coupler to be installed on a machine.

Table 30

307.5, 308 CR, 308.5, and 309 CR Excavator			
Coupler	Coupler Part Number	Type	Weight
Pin Grabber	444 - 7498	Manual	88 kg (195 lb)
Pin Grabber	485 - 5302	Hydraulic	94 kg (207 lb)
CW10	525 - 4607	Manual	74 kg (164 lb)
CW10	525 - 4610	Manual (with Hook)	83 kg (182 lb)
CW10	525 - 4612	Hydraulic	75 kg (165 lb)
CW10	525 - 4615	Hydraulic (with Hook)	83 kg (183 lb)

Table 31

307.5, 308 CR, 308.5, and 309 CR Excavator		
Thumb Part Number	Type	Weight
305 - 6740	Without Coupler	120 kg (264 lb)
305 - 6741	With Coupler	140 kg (307 lb)

Table 32

307.5, 308 CR, 308.5, and 309 CR Excavator (China Market)			
Heavy-Duty Buckets ⁽¹⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
369 - 2641	817 mm (32 inch)	256 kg (562 lb)	0.31 m ³ (0.41 yd ³)
435 - 2124	850 mm (34 inch)	261 kg (576 lb)	0.33 m ³ (0.43 yd ³)
435 - 2125	945 mm (37 inch)	277 kg (610 lb)	0.38 m ³ (0.50 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³

Table 33

307.5, 308 CR, 308.5, and 309 CR Excavator (China Market)		
Dual Lock Pin Grabber Coupler		
Part Number	Type	Weight
444 - 7498	Manual	88 kg (195 lb)
485 - 5302	Hydraulic	94 kg (207 lb)

Table 34

310 Excavator			
Heavy-Duty Buckets ⁽¹⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
547 - 7030	460 mm (18 inch)	203 kg (447 lb)	0.18 m ³ (0.24 yd ³)
547 - 7031	610 mm (24 inch)	225 kg (495 lb)	0.27 m ³ (0.35 yd ³)
547 - 7032	762 mm (30 inch)	257 kg (565 lb)	0.35 m ³ (0.46 yd ³)
547 - 7033	914 mm (36 inch)	301 kg (662 lb)	0.45 m ³ (0.59 yd ³)
547 - 7034	1067 mm (42 inch)	338 kg (744 lb)	0.54 m ³ (0.71 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³

Table 35

310 Excavator			
Ditch Cleaning Buckets ⁽¹⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
547 - 7081	1200 mm (47 inch)	162 kg (357 lb)	0.27 m ³ (0.35 yd ³)
547 - 7082	1500 mm (59 inch)	189 kg (416 lb)	0.35 m ³ (0.46 yd ³)
547 - 7083	1800 mm (71 inch)	216 kg (475 lb)	0.42 m ³ (0.55 yd ³)

⁽¹⁾ Max Material Density 1800 kg/m³

Table 36

310 Excavator			
Mud/Grading Buckets ⁽¹⁾ Fill Factor = 100%			
Bucket Part Number	Width of Bucket	Weight	Capacity (ISO)
547 - 7084	1200 mm (47 inch)	320 kg (704 lb)	0.43 m ³ (0.56 yd ³)
547 - 7085	1500 mm (59 inch)	373 kg (820 lb)	0.56 m ³ (0.73 yd ³)
547 - 7086	1800 mm (71 inch)	425 kg (936 lb)	0.68 m ³ (0.89 yd ³)

(1) Max Material Density 1800 kg/m³

Table 37

310 Excavator		
Dual Lock Pin Grabber Coupler		
Part Number	Type	Weight
485 - 5306	Hydraulic	154 kg (338 lb)

Table 38

310 Excavator		
Thumb Part Number	Type	Weight
540 - 6735	With Coupler	146 kg (321 lb)

i08509556

Lifting Capacities (307.5 Excavator)

SMCS Code: 7000

S/N: GW71–Up



Failure to comply to the rated load can cause possible personal injury or property damage. This includes the risk of unintended boom lowering. Review the rated load of a particular work tool before performing any operation. Make adjustments to the rated load as necessary for non-standard configurations.

Note: Lifting capacities are based on a standard machine with the following conditions:

- lubricants
- full fuel tank
- rubber track
- cab
- 75 kg (165 lb) operator

Lifting capacities will vary with different work tools and attachments. Consult your Cat dealer regarding the lifting capacities for specific work tools and attachments.

Note: Lifting capacities should be used as a guide. Work tools, uneven ground conditions, soft ground conditions, or poor ground conditions have effects on lifting capacities. The operator is responsible for being aware of these effects.

Special hazards (toxic gases, ground conditions, etc.) require special precautions. The operator must determine whether special hazards exist in each application. The operator shall perform the appropriate steps to eliminate the hazard. The operator shall perform the appropriate steps to reduce the hazard.

For North American applications and European applications, the lifting capacities are defined by "ISO 10567 2007". The lifting capacities are defined as the lower value of 75% of the static tipping capacity or 87% of the hydraulic lift capacity.

Rated loads were calculated with a machine that was equipped with a standard bucket and no quick coupler. If other combinations of work tools are used, the difference between the weight of the work tool and/or quick coupler and the standard bucket must be subtracted from the rated load.

This machine may be equipped with a standard stick or with a long stick. Lifting capacities may vary between a standard stick and a long stick. Measure the distance on the stick between the boom hinge pin and the work tool hinge pin. This distance will tell you if the machine is equipped with a standard stick or with a long stick.

Refer to Operation and Maintenance Manual, “Specifications” in this manual for information on stick length.

Note: Regional regulations may require the use of an overload warning device and boom and stick lowering control valves during object handling applications.

Contact your Cat dealer for additional information.

Symbols Found in the Lifting Capacity Charts

Below are symbols that are commonly found on lifting capacity charts for track excavators.

Note: Depending on the machine configuration, some symbols may not be used.

(m) **Measurements are provided in meters**
(ft) **and feet**

 **Lift Capacities are provided in kilograms and pounds**

, **Load is limited by hydraulic lifting capacity rather than by a tipping load**

 **Lift point radius**

 **Lift point height**

 **Lifting capacity over the front of the machine**

 **Lifting capacity over the side of the machine**

+  **Heavy Lift ON**

1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Down, Extra Counterweight, Bucket, Steel Tracks

m ft		1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7					
																m ft	
6.0	m	0	0	0	0	0	0	0	0	0	0	0	0	1199'	1199'	2.66	
19.7	ft	0	0	0	0	0	0	0	0	0	0	0	0	2643'	2643'	9.4	
5.0	m	0	0	0	0	2029'	2035'	1153'	1287'	0	0	0	0	958'	958'	4.06	
16.4	ft	0	0	0	0	4473'	4486'	2542'	2837'	0	0	0	0	2112'	2112'	13.3	
4.0	m	0	0	0	0	2172'	2187'	1937'	1946'	0	0	0	0	880'	880'	4.77	
13.1	ft	0	0	0	0	4788'	4822'	4270'	4290'	0	0	0	0	1940'	1940'	15.6	
3.0	m	0	0	0	0	2574'	2606'	2097'	2114'	1549'	1338'	0	0	867'	867'	5.19	
9.8	ft	0	0	0	0	5675'	5745'	4623'	4661'	3415'	2950'	0	0	1911'	1911'	17.0	
2.0	m	0	0	0	0	3081'	3135'	2317'	1913'	1904'	1305'	0	0	898'	898'	5.40	
6.6	ft	0	0	0	0	6792'	6911'	5108'	4217'	4198'	2677'	0	0	1980'	1980'	17.7	
1.0	m	0	0	0	0	3429'	2860'	2490'	1818'	1956'	1262'	0	0	976'	976'	5.42	
3.3	ft	0	0	0	0	7560'	6305'	5490'	4008'	4312'	2782'	0	0	2152'	2152'	17.8	
0.0	m	0	0	0	0	3463'	2747'	2523'	1749'	1907'	1229'	0	0	1116'	1116'	5.25	
0.0	ft	0	0	0	0	7635'	6056'	5562'	3856'	4204'	2709'	0	0	2460'	2460'	17.2	
-1.0	m	2423'	2397'	3992'	3858'	3197'	2715'	2347'	1721'	0	0	0	0	1370'	1370'	4.87	
-3.3	ft	5342'	5284'	8801'	8505'	7048'	5986'	5174'	3794'	0	0	0	0	3020'	3020'	16.0	
-2.0	m	4110'	4059'	3483'	3529'	2599'	2639'	1803'	1846'	0	0	0	0	1567'	1567'	4.23	
-6.6	ft	9061'	8949'	7679'	7780'	5730'	5818'	3975'	4070'	0	0	0	0	3455'	3455'	13.9	
-3.0	m	1950'	1915'	1930'	1948'	1313'	1357'	0	0	0	0	0	0	0'	1130'	4.16	
-9.8	ft	4299'	4222'	4255'	4295'	2895'	2992'	0	0	0	0	0	0	0'	2491'	13.7	

Illustration 55

g06371833

307.5 Excavator
1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Down, Extra Counterweight, No Bucket, Steel Tracks

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1430'	2.66
19.7 ft	0	0	0	0	0	0	3153'	9.4
5.0 m	0	0	2230'	1357'	0	0	1165'	4.06
16.4 ft	0	0	4916'	2992'	0	0	2568'	13.3
4.0 m	0	0	2359'	2140'	0	0	1072'	4.77
13.1 ft	0	0	5201'	4718'	0	0	2363'	15.6
3.0 m	0	0	2757'	2310'	1720'	1513	1047'	5.19
9.8 ft	0	0	6078'	5093'	3792'	3336	2308'	17.0
2.0 m	0	0	3273'	2513'	2108'	1475	1068'	5.40
6.6 ft	0	0	7216'	5540'	4647'	3252	2355'	17.7
1.0 m	0	0	3632'	2688'	2159'	1431	1133'	5.42
3.3 ft	0	0	8007'	5926'	4760'	3155	2498'	17.8
0.0 m	0	0	3672'	2724'	2110'	1397	1260'	5.25
0.0 ft	0	0	8095'	6005'	4652'	3080	2778'	17.2
-1.0 m	2604'	4216'	3405'	2547'	0	0	1495'	4.87
-3.3 ft	5741'	9295'	7507'	5615'	0	0	3296'	16.0
-2.0 m	4319'	3700'	2801'	2000'	0	0	1764'	4.23
-6.6 ft	9522'	8157'	6175'	4409'	0	0	3889'	13.9
-3.0 m	2157'	2124'	1503'	0	0	0	0'	4.16
-9.8 ft	4755'	4683'	3314'	0	0	0	0'	13.7

Illustration 56

g06371835

307.5 Excavator

1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Down, No Counterweight, Bucket, Steel Tracks

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7			m ft
6.0 m 19.7 ft	0 0	0 0	0 0	0 0	0 0	0 0	1199 ' 2643 '	1199 ' 2643 '	2.66 9.4
5.0 m 16.4 ft	0 0	0 0	2029 ' 4473 '	2035 ' 4486 '	1153 ' 2542 '	1287 ' 2837 '	0 0	958 ' 2112 '	4.06 13.3
4.0 m 13.1 ft	0 0	0 0	2172 ' 4788 '	2187 ' 4822 '	1937 ' 4270 '	1946 ' 4290 '	0 0	880 ' 1940 '	4.77 15.6
3.0 m 9.8 ft	0 0	0 0	2574 ' 5675 '	2606 ' 5745 '	2097 ' 4623 '	1817 ' 4006 '	1549 ' 3415 '	1195 ' 2635 '	5.19 17.0
2.0 m 6.6 ft	0 0	0 0	3081 ' 6792 '	3135 ' 6911 '	2317 ' 5108 '	1722 ' 3796 '	1904 ' 4198 '	1162 ' 2562 '	5.40 17.7
1.0 m 3.3 ft	0 0	0 0	3429 ' 7560 '	2574 ' 5675 '	2490 ' 5490 '	1627 ' 3587 '	1956 ' 4312 '	1119 ' 2467 '	5.42 17.8
0.0 m 0.0 ft	0 0	0 0	3463 ' 7635 '	2460 ' 5423 '	2523 ' 5562 '	1558 ' 3435 '	1907 ' 4204 '	1086 ' 2394 '	5.25 17.2
-1.0 m -3.3 ft	2423 ' 5342 '	2397 ' 5284 '	3992 ' 8801 '	3858 ' 8505 '	3197 ' 7048 '	2428 ' 5353 '	2347 ' 5174 '	1530 ' 3373 '	4.87 16.0
-2.0 m -6.6 ft	4110 ' 9061 '	4059 ' 8949 '	3483 ' 7679 '	3529 ' 7780 '	2599 ' 5730 '	2639 ' 5818 '	1803 ' 3975 '	1552 ' 3422 '	4.23 13.9
-3.0 m -9.8 ft	1950 ' 4299 '	1915 ' 4222 '	1930 ' 4255 '	1948 ' 4295 '	1313 ' 2895 '	1357 ' 2992 '	0 0	0 0	4.18 13.7

Illustration 57

g06371836

307.5 Excavator
1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Down, No Counterweight, No Bucket, Steel Tracks

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1430'	2.66
19.7 ft	0	0	0	0	0	0	3153'	9.4
5.0 m	0	0	2230'	1357'	0	0	1165'	4.06
16.4 ft	0	0	4916'	2992'	0	0	2568'	13.3
4.0 m	0	0	2359'	2140'	0	0	1072'	4.77
13.1 ft	0	0	5201'	4718'	0	0	2363'	15.6
3.0 m	0	0	2757'	1976'	1720'	1370'	1047'	5.19
9.8 ft	0	0	6078'	4356'	3792'	3020'	2308'	17.0
2.0 m	0	0	3273'	1881'	2108'	1332'	1068'	5.40
6.6 ft	0	0	7216'	4147'	4647'	2937'	2355'	17.7
1.0 m	0	0	3632'	1789'	2159'	1287'	1133'	5.42
3.3 ft	0	0	8007'	3944'	4760'	2837'	2498'	17.8
0.0 m	0	0	3672'	1723'	2110'	1254'	1260'	5.25
0.0 ft	0	0	8095'	3799'	4652'	2765'	2778'	17.2
-1.0 m	2604'	4216'	3405'	1695'	0	0	1495'	4.87
-3.3 ft	5741'	9295'	7507'	3737'	0	0	3296'	16.0
-2.0 m	4319'	3700'	2801'	1713'	0	0	1764'	4.23
-6.6 ft	9522'	8157'	6175'	3777'	0	0	3889'	13.9
-3.0 m	2157'	2124'	1503'	0	0	0	0'	4.18
-9.8 ft	4755'	4683'	3314'	0	0	0	0'	13.7

Illustration 58

g06371837

307.5 Excavator

1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Up, Extra Counterweight, Bucket, Steel Tracks

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1199'	2.66
19.7 ft	0	0	0	0	0	0	2643'	9.4
5.0 m	0	0	2029'	2035'	1153'	1287'	958'	4.06
16.4 ft	0	0	4473'	4486'	2542'	2837'	2112'	13.3
4.0 m	0	0	2172'	2187'	1937'	1946'	880'	4.77
13.1 ft	0	0	4788'	4822'	4270'	4290'	1940'	15.6
3.0 m	0	0	2574'	2606'	2097'	1793'	1549'	5.19
9.8 ft	0	0	5675'	5745'	4623'	3953'	3415'	17.0
2.0 m	0	0	3081'	3135'	1968'	1701'	1335'	5.40
6.6 ft	0	0	6792'	6911'	4339'	3750'	2943'	17.7
1.0 m	0	0	3429'	2507'	1872'	1607'	1293'	5.42
3.3 ft	0	0	7560'	5527'	4127'	3543'	2851'	17.8
0.0 m	0	0	2859'	2398'	1803'	1541'	1261'	5.25
0.0 ft	0	0	6303'	5287'	3975'	3397'	2780'	17.2
-1.0 m	2423'	2397'	3992'	3858'	3197'	2367'	1775'	4.87
-3.3 ft	5342'	5284'	8801'	8505'	7048'	5218'	3913'	16.0
-2.0 m	4110'	4059'	3483'	3529'	2599'	2639'	1803'	4.23
-6.6 ft	9061'	8949'	7679'	7780'	5730'	5818'	3975'	13.9
-3.0 m	1950'	1915'	1930'	1948'	1313'	1357'	0	4.18
-9.8 ft	4299'	4222'	4255'	4295'	2895'	2992'	0	13.7

Illustration 59

g06371838

307.5 Excavator
1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Up, Extra Counterweight, No Bucket, Steel Tracks

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1430'	2.66
19.7 ft	0	0	0	0	0	0	3153'	9.4
5.0 m	0	0	2230'	1357'	0	0	1165'	4.06
16.4 ft	0	0	4916'	2992'	0	0	2568'	13.3
4.0 m	0	0	2359'	2140'	0	0	1072'	4.77
13.1 ft	0	0	5201'	4718'	0	0	2363'	15.6
3.0 m	0	0	2757'	2293'	1720'	1365	1047'	5.19
9.8 ft	0	0	6078'	5055'	3792'	3009	2308'	17.0
2.0 m	0	0	3273'	2126'	1505'	1327	1068'	5.40
6.6 ft	0	0	7216'	4687'	3318'	2926	2355'	17.7
1.0 m	0	0	3632'	2033'	1461'	1284	1133'	5.42
3.3 ft	0	0	8007'	4482'	3221'	2831	2498'	17.8
0.0 m	0	0	3030'	1967'	1429'	1251	1260'	5.25
0.0 ft	0	0	6680'	4336'	3150'	2758	2778'	17.2
-1.0 m	2604'	4216'	3405'	1938'	0	0	1495'	4.87
-3.3 ft	5741'	9295'	7507'	4273'	0	0	3296'	16.0
-2.0 m	4319'	3700'	2801'	2000'	0	0	1764'	4.23
-6.6 ft	9522'	8157'	6175'	4409'	0	0	3889'	13.9
-3.0 m	2157'	2124'	1503'	0	0	0	1320'	4.18
-9.8 ft	4755'	4683'	3314'	0	0	0	2910'	13.7

Illustration 60

g06371839

307.5 Excavator

1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Up, No Counterweight, Bucket, Steel Tracks

m ft		1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				
															m ft	
6.0	m	0	0	0	0	0	0	0	0	0	0	0	0	1199'	1199'	2.66
19.7	ft	0	0	0	0	0	0	0	0	0	0	0	0	2643'	2643'	9.4
5.0	m	0	0	0	0	2029'	2035'	1153'	1287'	0	0	0	0	958'	958'	4.06
16.4	ft	0	0	0	0	4473'	4486'	2542'	2837'	0	0	0	0	2112'	2112'	13.3
4.0	m	0	0	0	0	2172'	2187'	1937'	1668'	0	0	0	0	880'	880'	4.77
13.1	ft	0	0	0	0	4788'	4822'	4270'	3677'	0	0	0	0	1940'	1940'	15.6
3.0	m	0	0	0	0	2574'	2606'	2097'	1612'	1216	1053	0	0	867'	867'	5.19
9.8	ft	0	0	0	0	5675'	5745'	4623'	3554'	2681	2321	0	0	1911'	1911'	17.0
2.0	m	0	0	0	0	3081'	2441'	1765'	1520'	1184	1020	0	0	898'	898'	5.40
6.6	ft	0	0	0	0	6792'	5381'	3891'	3351'	2610	2249	0	0	1980'	1980'	17.7
1.0	m	0	0	0	0	2670'	2239'	1669'	1426'	1142	978	0	0	976'	825'	5.42
3.3	ft	0	0	0	0	5886'	4936'	3680'	3144'	2518	2156	0	0	2152'	1819'	17.8
0.0	m	0	0	0	0	2553'	2130'	1601'	1360'	1110	945	0	0	1116'	855'	5.25
0.0	ft	0	0	0	0	5628'	4696'	3530'	2998'	2447	2083	0	0	2460'	1885'	17.2
-1.0	m	2423'	2397'	3992'	3858'	2518'	2099'	1573'	1332'	0	0	0	0	1151'	963'	4.87
-3.3	ft	5342'	5284'	8801'	8505'	5551'	4627'	3468'	2937'	0	0	0	0	2538'	2123'	16.0
-2.0	m	4110'	4059'	3483'	3529'	2599'	2129'	1803'	1353'	0	0	0	0	1567'	1226'	4.23
-6.6	ft	9061'	8949'	7679'	7780'	5730'	4694'	3975'	2983'	0	0	0	0	3455'	2703'	13.9
-3.0	m	1950'	1915'	1930'	1948'	1313'	1357'	0	0	0	0	0	0	0	1130'	4.18
-9.8	ft	4299'	4222'	4255'	4295'	2895'	2992'	0	0	0	0	0	0	0	2491'	13.7

Illustration 61

g06371840

307.5 Excavator
1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Up, No Counterweight, No Bucket, Steel Tracks

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1430'	2.66
19.7 ft	0	0	0	0	0	0	3153'	9.4
5.0 m	0	0	2230'	1357'	0	0	1165'	4.06
16.4 ft	0	0	4916'	2992'	0	0	2568'	13.3
4.0 m	0	0	2359'	2140'	0	0	1072'	4.77
13.1 ft	0	0	5201'	4718'	0	0	2363'	15.6
3.0 m	0	0	2757'	2293'	1391'	1228'	1047'	5.19
9.8 ft	0	0	6078'	5055'	3067'	2707'	2308'	17.0
2.0 m	0	0	3273'	1923'	1354'	1191'	1068'	5.40
6.6 ft	0	0	7216'	4239'	2985'	2626'	2355'	17.7
1.0 m	0	0	2833'	1831'	1311'	1147'	1133'	5.42
3.3 ft	0	0	6246'	4037'	2890'	2529'	2498'	17.8
0.0 m	0	0	2723'	1765'	1278'	1115'	1260'	5.25
0.0 ft	0	0	6003'	3891'	2818'	2458'	2778'	17.2
-1.0 m	2604'	4216'	2887'	1738'	0	0	1495'	4.87
-3.3 ft	5741'	9295'	5924'	3827'	0	0	3296'	16.0
-2.0 m	4319'	3700'	2801'	2000'	0	0	1764'	4.23
-6.6 ft	9522'	8157'	6175'	4409'	0	0	3889'	13.9
-3.0 m	2157'	2124'	1503'	0	0	0	0	4.16
-9.8 ft	4755'	4683'	3314'	0	0	0	0	13.7

Illustration 62

g06371841

307.5 Excavator

1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Down, Extra Counterweight, Bucket, Steel Track with Pads

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7			m ft
									
6.0 m	0	0	0	0	0	0	0	0	1186 ' 2.91
19.7 ft	0	0	0	0	0	0	0	0	2615 ' 9.5
5.0 m	0	0	0	2028 ' 2035 '	1226 ' 1350 '	0	0	0	954 ' 4.08
16.4 ft	0	0	0	4471 ' 4486 '	2703 ' 2976 '	0	0	0	2103 ' 13.4
4.0 m	0	0	0	2181 ' 2196 '	1940 ' 1949 '	0	0	0	879 ' 4.78
13.1 ft	0	0	0	4808 ' 4841 '	4277 ' 4297 '	0	0	0	1938 ' 15.7
3.0 m	0	0	0	2589 ' 2622 '	2103 ' 2121 '	1577 ' 1402	0	0	867 ' 5.20
9.8 ft	0	0	0	5708 ' 5781 '	4636 ' 4676 '	3477 ' 3091	0	0	1911 ' 17.1
2.0 m	0	0	0	3095 ' 3150 '	2324 ' 1996	1906 ' 1368	0	0	900 ' 5.40
6.6 ft	0	0	0	6823 ' 6945 '	5124 ' 4400	4202 ' 3016	0	0	1984 ' 17.7
1.0 m	0	0	0	3434 ' 2984	2494 ' 1900	1957 ' 1325	0	0	979 ' 5.42
3.3 ft	0	0	0	7571 ' 6579	5498 ' 4189	4314 ' 2921	0	0	2158 ' 17.8
0.0 m	0	0	2371 ' 0	3459 ' 2873	2522 ' 1833	1903 ' 1292	0	0	1122 ' 5.24
0.0 ft	0	0	5227 ' 0	7626 ' 6334	5560 ' 4041	4195 ' 2848	0	0	2474 ' 17.2
-1.0 m	2470 ' 2443 '	4051 ' 3917 '	3184 ' 3234 '	2337 ' 1808	0	0	0	0	1381 ' 4.86
-3.3 ft	5445 ' 5386 '	8931 ' 8635 '	7020 ' 7130 '	5152 ' 3982	0	0	0	0	3045 ' 15.9
-2.0 m	4167 ' 4118 '	3448 ' 3493 '	2574 ' 2613 '	1776 ' 1819 '	0	0	0	0	1560 ' 4.21
-6.6 ft	9187 ' 9074 '	7602 ' 7701 '	5675 ' 5761 '	3915 ' 4010 '	0	0	0	0	3439 ' 13.8
-3.0 m	1844 ' 1806 '	1866 ' 1883 '	1246 ' 1292 '	0	0	0	0	0	1105 ' 4.18
-9.8 ft	4065 ' 3982 '	4114 ' 4151 '	2747 ' 2848 '	0	0	0	0	0	2436 ' 13.7

Illustration 63

g06371842

307.5 Excavator
1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Down, Extra Counterweight, No Bucket, Steel Track with Pads

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1416'	2.91
19.7 ft	0	0	0	0	0	0	3122'	9.5
5.0 m	0	0	2230'	2235'	1429'	1550'	1161'	4.08
16.4 ft	0	0	4916'	4927'	3150'	3417'	2560'	13.4
4.0 m	0	0	2368'	2382'	2143'	2151'	1071'	4.78
13.1 ft	0	0	5221'	5251'	4725'	4742'	2361'	15.7
3.0 m	0	0	2772'	2805'	2299'	2316'	1047'	5.20
9.8 ft	0	0	6111'	6184'	5068'	5106'	2308'	17.1
2.0 m	0	0	3287'	3342'	2519'	2155'	1069'	5.40
6.6 ft	0	0	7247'	7368'	5553'	4751'	2357'	17.7
1.0 m	0	0	3638'	3150'	2692'	2063'	1136'	5.42
3.3 ft	0	0	8020'	6945'	5935'	4548'	2504'	17.8
0.0 m	0	2579'	3668'	3046'	2722'	1998'	1265'	5.24
0.0 ft	0	5686'	8087'	6715'	6001'	4405'	2789'	17.2
-1.0 m	2652'	2624'	4275'	3392'	3442'	2537'	1505'	4.86
-3.3 ft	5847'	5785'	9425'	7478'	7588'	5593'	3318'	15.9
-2.0 m	4377'	4324'	3665'	2776'	2815'	1973'	1758'	4.21
-6.6 ft	9650'	9533'	8080'	6120'	6206'	4350'	3876'	13.8
-3.0 m	2050'	2012'	2059'	1435'	1481'	0	0	4.18
-9.8 ft	4519'	4436'	4539'	3164'	3265'	0	0	13.7

Illustration 64

g06371843

307.5 Excavator

1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Down, No Counterweight, Bucket, Steel Track with Pads

m ft		1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7					
																m ft	
6.0	m	0	0	0	0	0	0	0	0	0	0	0	0	1186'	1186'	2.91	
19.7	ft	0	0	0	0	0	0	0	0	0	0	0	0	2615'	2615'	9.5	
5.0	m	0	0	0	0	2028'	2035'	1226'	1350'	0	0	0	0	954'	954'	4.08	
16.4	ft	0	0	0	0	4471'	4486'	2703'	2976'	0	0	0	0	2103'	2103'	13.4	
4.0	m	0	0	0	0	2181'	2196'	1940'	1949'	0	0	0	0	879'	879'	4.78	
13.1	ft	0	0	0	0	4808'	4841'	4277'	4297'	0	0	0	0	1938'	1938'	15.7	
3.0	m	0	0	0	0	2589'	2622'	2103'	2121'	1577'	1259'	0	0	867'	867'	5.20	
9.8	ft	0	0	0	0	5708'	5781'	4636'	4676'	3477'	2776'	0	0	1911'	1911'	17.1	
2.0	m	0	0	0	0	3095'	3150'	2324'	1805'	1906'	1225'	0	0	900'	900'	5.40	
6.6	ft	0	0	0	0	6823'	6945'	5124'	3979'	4202'	2701'	0	0	1984'	1984'	17.7	
1.0	m	0	0	0	0	3434'	2697'	2494'	1709'	1957'	1182'	0	0	979'	979'	5.42	
3.3	ft	0	0	0	0	7571'	5946'	5498'	3768'	4314'	2606'	0	0	2158'	2158'	17.8	
0.0	m	0	0	2371'	0	3459'	2586'	2522'	1642'	1903'	1149'	0	0	1122'	1122'	5.24	
0.0	ft	0	0	5227'	0	7626'	5701'	5560'	3620'	4195'	2533'	0	0	2474'	2474'	17.2	
-1.0	m	2470'	2443'	4051'	3917'	3184'	2556'	2337'	1615'	0	0	0	0	1381'	1178'	4.86	
-3.3	ft	5445'	5386'	8931'	8635'	7020'	5635'	5152'	3560'	0	0	0	0	3045'	2597'	15.9	
-2.0	m	4167'	4116'	3448'	3493'	2574'	2613'	1776'	1819'	0	0	0	0	1560'	1560'	4.21	
-6.6	ft	9187'	9074'	7602'	7701'	5675'	5761'	3915'	4010'	0	0	0	0	3439'	3439'	13.8	
-3.0	m	1844'	1806'	1866'	1883'	1246'	1292'	0	0	0	0	0	0	0	1105'	4.18	
-9.8	ft	4065'	3982'	4114'	4151'	2747'	2848'	0	0	0	0	0	0	0	2436'	13.7	

Illustration 65

g06371844

307.5 Excavator
1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Down, No Counterweight, No Bucket, Steel Track with Pads

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1416'	2.91
19.7 ft	0	0	0	0	0	0	3122'	9.5
5.0 m	0	0	2230'	2235'	1429'	1550'	1161'	4.08
16.4 ft	0	0	4916'	4927'	3150'	3417'	2560'	13.4
4.0 m	0	0	2368'	2382'	2143'	2151'	1071'	4.78
13.1 ft	0	0	5221'	5251'	4725'	4742'	2361'	15.7
3.0 m	0	0	2772'	2805'	2299'	2316'	1747'	5.20
9.8 ft	0	0	6111'	6184'	5068'	5106'	3851'	17.1
2.0 m	0	0	3287'	3342'	2519'	1964'	2110'	5.40
6.6 ft	0	0	7247'	7368'	5553'	4330'	4652'	17.7
1.0 m	0	0	3638'	2863'	2692'	1872'	2159'	5.42
3.3 ft	0	0	8020'	6312'	5935'	4127'	4760'	17.8
0.0 m	0	2579'	3668'	2759'	2722'	1807'	2105'	5.24
0.0 ft	0	5686'	8087'	6083'	6001'	3984'	4641'	17.2
-1.0 m	2652'	2624'	4275'	3392'	2727'	2537'	1780'	4.86
-3.3 ft	5847'	5785'	9425'	7478'	6012'	5593'	3924'	15.9
-2.0 m	4377'	4324'	3665'	2776'	2815'	1973'	2016'	4.21
-6.6 ft	9650'	9533'	8080'	6120'	6206'	4350'	4445'	13.8
-3.0 m	2050'	2012'	2059'	1435'	1481'	0	0	4.18
-9.8 ft	4519'	4436'	4539'	3164'	3265'	0	0	13.7

Illustration 66

g06371845

307.5 Excavator

1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Up, Extra Counterweight, Bucket, Steel Track with Pads

m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				m ft	
																
6.0 m	0	0	0	0	0	0	0	0	0	0	0	0	0	1186'	1186'	2.91
19.7 ft	0	0	0	0	0	0	0	0	0	0	0	0	0	2615'	2615'	9.5
5.0 m	0	0	0	0	2028'	2035'	1226'	1350'	0	0	0	0	0	954'	954'	4.08
16.4 ft	0	0	0	0	4471'	4486'	2703'	2976'	0	0	0	0	0	2103'	2103'	13.4
4.0 m	0	0	0	0	2181'	2196'	1940'	1949'	0	0	0	0	0	879'	879'	4.78
13.1 ft	0	0	0	0	4808'	4841'	4277'	4297'	0	0	0	0	0	1938'	1938'	15.7
3.0 m	0	0	0	0	2589'	2622'	2103'	2121'	1577'	1246'	0	0	0	867'	867'	5.20
9.8 ft	0	0	0	0	5708'	5781'	4636'	4676'	3477'	2747'	0	0	0	1911'	1911'	17.1
2.0 m	0	0	0	0	3095'	3150'	2324'	1774'	1402'	1213'	0	0	0	900'	900'	5.40
6.6 ft	0	0	0	0	6823'	6945'	5124'	3911'	3091'	2674'	0	0	0	1984'	1984'	17.7
1.0 m	0	0	0	0	3434'	2616'	1961'	1681'	1360'	1171'	0	0	0	979'	979'	5.42
3.3 ft	0	0	0	0	7571'	5767'	4323'	3708'	2998'	2582'	0	0	0	2158'	2158'	17.8
0.0 m	0	0	2371'	0	3459'	2509'	1893'	1616'	1328'	1139'	0	0	0	1122'	1122'	5.24
0.0 ft	0	0	5227'	0	7626'	5531'	4173'	3563'	2928'	2511'	0	0	0	2474'	2474'	17.2
-1.0 m	2470'	2443'	4051'	3917'	3184'	2481'	1868'	1589'	0	0	0	0	0	1381'	1167'	4.86
-3.3 ft	5445'	5386'	8931'	8635'	7020'	5470'	4114'	3503'	0	0	0	0	0	3045'	2573'	15.9
-2.0 m	4167'	4116'	3448'	3493'	2574'	2613'	1776'	1819'	0	0	0	0	0	1560'	1560'	4.21
-6.6 ft	9187'	9074'	7602'	7701'	5675'	5761'	3915'	4010'	0	0	0	0	0	3439'	3439'	13.8
-3.0 m	1844'	1806'	1866'	1883'	1246'	1292'	0	0	0	0	0	0	0	0	1105'	4.18
-9.8 ft	4065'	3982'	4114'	4151'	2747'	2848'	0	0	0	0	0	0	0	0	2436'	13.7

Illustration 67

g06371846

307.5 Excavator
1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Up, Extra Counterweight, No Bucket, Steel Track with Pads

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1416'	2.91
19.7 ft	0	0	0	0	0	0	3122'	9.5
5.0 m	0	0	2230'	2235'	1429'	1550'	1161'	4.08
16.4 ft	0	0	4916'	4927'	3150'	3417'	2560'	13.4
4.0 m	0	0	2368'	2382'	2143'	2151'	1071'	4.78
13.1 ft	0	0	5221'	5251'	4725'	4742'	2361'	15.7
3.0 m	0	0	2772'	2805'	2299'	2316'	1047'	5.20
9.8 ft	0	0	6111'	6184'	5068'	5106'	2308'	17.1
2.0 m	0	0	3287'	3342'	2519'	1934'	1069'	5.40
6.6 ft	0	0	7247'	7368'	5553'	4264'	2357'	17.7
1.0 m	0	0	3638'	2783'	2122'	1844'	1136'	5.42
3.3 ft	0	0	8020'	6135'	4678'	4065'	2504'	17.8
0.0 m	0	2579'	3668'	2683'	2057'	1781'	1265'	5.24
0.0 ft	0	5686'	8087'	5915'	4535'	3926'	2789'	17.2
-1.0 m	2652'	2624'	4275'	3392'	2853'	2030'	1505'	4.86
-3.3 ft	5847'	5785'	9425'	7478'	5849'	4475'	3318'	15.9
-2.0 m	4377'	4324'	3665'	2776'	2815'	1973'	1758'	4.21
-6.6 ft	9650'	9533'	8080'	6120'	6206'	4350'	3876'	13.8
-3.0 m	2050'	2012'	2059'	1435'	1481'	0	1294'	4.16
-9.8 ft	4519'	4436'	4539'	3164'	3265'	0	2853'	13.7

Illustration 68

g06371847

307.5 Excavator

1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Up, No Counterweight, Bucket, Steel Track with Pads

m ft		1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				m ft	
																	
6.0	m	0	0	0	0	0	0	0	0	0	0	0	0	1186'	1186'	2.91	
19.7	ft	0	0	0	0	0	0	0	0	0	0	0	0	2615'	2615'	9.5	
5.0	m	0	0	0	0	2028'	2035'	1226'	1350'	0	0	0	0	954'	954'	4.08	
16.4	ft	0	0	0	0	4471'	4486'	2703'	2976'	0	0	0	0	2103'	2103'	13.4	
4.0	m	0	0	0	0	2181'	2196'	1940'	1949'	0	0	0	0	879'	879'	4.78	
13.1	ft	0	0	0	0	4808'	4841'	4277'	4297'	0	0	0	0	1938'	1938'	15.7	
3.0	m	0	0	0	0	2589'	2622'	2103'	1686'	1284	1110	0	0	867'	867'	5.20	
9.8	ft	0	0	0	0	5708'	5781'	4636'	3717'	2831	2447	0	0	1911'	1911'	17.1	
2.0	m	0	0	0	0	3095'	2547'	1854'	1593'	1251	1076	0	0	900'	900'	5.40	
6.6	ft	0	0	0	0	6823'	5615'	4087'	3512'	2758	2372	0	0	1984'	1984'	17.7	
1.0	m	0	0	0	0	2804'	2348'	1759'	1500'	1209	1034	0	0	979'	979'	5.42	
3.3	ft	0	0	0	0	6182'	5176'	3878'	3307'	2665	2280	0	0	2158'	2158'	17.8	
0.0	m	0	0	2371'	0	2689'	2241'	1691'	1435'	1177	1002	0	0	1122'	910'	5.24	
0.0	ft	0	0	5227'	0	5928'	4941'	3728'	3164'	2595	2209	0	0	2474'	2006'	17.2	
-1.0	m	2470'	2443'	4051'	3917'	2857'	2212'	1664'	1409'	0	0	0	0	1381'	1027'	4.86	
-3.3	ft	5445'	5386'	8931'	8635'	5858'	4877'	3668'	3106'	0	0	0	0	3045'	2264'	15.9	
-2.0	m	4167'	4116'	3448'	3493'	2574'	2244'	1776'	1431'	0	0	0	0	1560'	1309'	4.21	
-6.6	ft	9187'	9074'	7602'	7701'	5675'	4947'	3915'	3155'	0	0	0	0	3439'	2886'	13.8	
-3.0	m	1844'	1806'	1866'	1883'	1246'	1292'	0	0	0	0	0	0	0	1105'	4.16	
-9.8	ft	4065'	3982'	4114'	4151'	2747'	2848'	0	0	0	0	0	0	0	2436'	13.7	

Illustration 69

g06371848

307.5 Excavator
1665 mm (5 ft 6 inch) Standard Stick

Standard Stick, Blade Up, No Counterweight, No Bucket, Steel Track with Pads

m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	0	0	0	0	1416'	2.91
19.7 ft	0	0	0	0	0	0	3122'	9.5
5.0 m	0	0	2230'	2235'	1429'	1550'	1161'	4.08
16.4 ft	0	0	4916'	4927'	3150'	3417'	2560'	13.4
4.0 m	0	0	2368'	2382'	2143'	2151'	1071'	4.78
13.1 ft	0	0	5221'	5251'	4725'	4742'	2361'	15.7
3.0 m	0	0	2772'	2805'	2299'	1846'	1459'	5.20
9.8 ft	0	0	6111'	6184'	5068'	4070'	3217'	17.1
2.0 m	0	0	3287'	2699'	2012'	1753'	1421'	5.40
6.6 ft	0	0	7247'	5950'	4436'	3865'	3133'	17.7
1.0 m	0	0	2968'	2515'	1920'	1663'	1378'	5.42
3.3 ft	0	0	6543'	5545'	4233'	3666'	3038'	17.8
0.0 m	0	2579'	2860'	2415'	1855'	1600'	1346'	5.24
0.0 ft	0	5686'	6305'	5324'	4090'	3527'	2967'	17.2
-1.0 m	2652'	2624'	4275'	4138'	2826'	2384'	1827'	4.86
-3.3 ft	5847'	5785'	9425'	9123'	6230'	5256'	4028'	15.9
-2.0 m	4377'	4324'	3665'	3711'	2776'	2408'	1973'	4.21
-6.6 ft	9650'	9533'	8080'	8181'	6120'	5309'	4350'	13.8
-3.0 m	2050'	2012'	2059'	2077'	1435'	1481'	0	4.16
-9.8 ft	4519'	4436'	4539'	4579'	3164'	3265'	0	13.7

Illustration 70

g06371849

307.5 Excavator

1665 mm (5 ft 6 inch) Standard Stick

2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Down, Extra Counterweight, Bucket, Steel Tracks

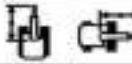
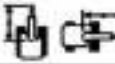
m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	1712'	1727'	0	0	1080'	3.75
19.7 ft	0	0	3774'	3807'	0	0	2381'	12.3
5.0 m	0	0	0	1606'	1606'	0	918'	4.73
16.4 ft	0	0	0	3541'	3541'	0	2024'	15.5
4.0 m	0	0	1687'	1676'	1652'	1421'	857'	5.35
13.1 ft	0	0	3719'	3695'	3642'	3133'	1889'	17.5
3.0 m	0	0	2138'	2133'	1837'	1633'	845'	5.73
9.8 ft	0	0	4713'	4702'	4050'	3600'	1863'	18.8
2.0 m	0	0	2717'	2760'	2093'	1746'	871'	5.92
6.6 ft	0	0	5990'	6085'	4614'	3849'	1920'	19.4
1.0 m	0	0	3191'	3251'	2327'	1809'	934'	5.94
3.3 ft	0	0	7035'	7167'	5130'	3988'	2059'	19.5
0.0 m	0	0	3396'	2722'	2450'	1716'	1048'	5.78
0.0 ft	0	0	7487'	6001'	5401'	3783'	2310'	19.0
-1.0 m	0	3411'	3286'	3300'	2397'	1664'	1244'	5.44
-3.3 ft	0	7520'	7244'	5831'	5284'	3668'	2743'	17.9
-2.0 m	3153'	4115'	2901'	2096'	1657'	0	1442'	4.88
-6.6 ft	6951'	9072'	6396'	4621'	3653'	0	3179'	16.0
-3.0 m	4180'	2900'	2077'	1297'	0	0	1251'	4.53
-9.8 ft	9215'	6393'	4579'	2859'	0	0	2758'	14.8

Illustration 71

g06371850

307.5 Excavator
2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Down, Extra Counterweight, No Bucket, Steel Tracks

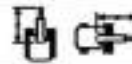
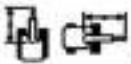
m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				
													 m ft		
6.0 m	0	0	0	0	1928	1942	0	0	0	0	0	0	1306	1306	3.75
19.7 ft	0	0	0	0	4251	4261	0	0	0	0	0	0	2879	2879	12.3
5.0 m	0	0	0	0	0	0	1813	1817	0	0	0	0	1130	1130	4.73
16.4 ft	0	0	0	0	0	0	3997	4006	0	0	0	0	2491	2491	15.5
4.0 m	0	0	0	0	1859	1848	1853	1858	1614	1658	0	0	1058	1058	5.35
13.1 ft	0	0	0	0	4096	4074	4085	4096	3558	3655	0	0	2332	2332	17.5
3.0 m	0	0	0	0	2278	2272	2033	2046	1839	1522	0	0	1038	1038	5.73
9.8 ft	0	0	0	0	5022	5009	4482	4511	4054	3355	0	0	2288	2288	16.6
2.0 m	0	0	0	0	2904	2946	2288	2310	1949	1468	0	0	1056	1056	5.92
6.6 ft	0	0	0	0	6402	6495	5044	5093	4297	3236	0	0	2328	2328	19.4
1.0 m	0	0	0	0	3386	3446	2524	1970	2053	1409	0	0	1111	1111	5.94
3.3 ft	0	0	0	0	7465	7597	5564	4343	4526	3106	0	0	2449	2449	19.5
0.0 m	0	0	0	0	3598	2885	2649	1880	2090	1360	0	0	1215	1215	5.78
0.0 ft	0	0	0	0	7932	6360	5840	4145	4608	2998	0	0	2679	2679	19.0
-1.0 m	0	0	3653	3526	3504	2811	2597	1828	1986	1332	0	0	1398	1172	5.44
-3.3 ft	0	0	8053	7773	7725	6197	5725	4030	4378	2937	0	0	3082	2584	17.9
-2.0 m	3375	3329	4327	4404	3102	3149	2295	1820	0	0	0	0	1644	1370	4.88
-6.6 ft	7441	7339	9539	9709	6839	6942	5060	4012	0	0	0	0	3624	3020	16.0
-3.0 m	4387	4480	3097	3143	2272	2309	0	1493	0	0	0	0	0	1447	4.53
-9.8 ft	9672	9877	6828	6929	5009	5090	0	3291	0	0	0	0	0	3190	14.8

Illustration 72

g06371851

307.5 Excavator

2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Down, No Counterweight, Bucket, Steel Tracks

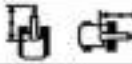
m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	1712	1727	0	0	1080	3.75
19.7 ft	0	0	3774	3807	0	0	2381	12.3
5.0 m	0	0	0	1606	1606	0	918	4.73
16.4 ft	0	0	0	3541	3541	0	2024	15.5
4.0 m	0	0	1687	1676	1652	1421	857	5.35
13.1 ft	0	0	3719	3695	3642	3133	1889	17.5
3.0 m	0	0	2138	2133	1837	1633	845	5.73
9.8 ft	0	0	4713	4702	4050	3600	1863	18.8
2.0 m	0	0	2717	2760	2093	1736	871	5.92
6.6 ft	0	0	5990	6065	4614	3627	1920	19.4
1.0 m	0	0	3191	2606	2327	1618	934	5.94
3.3 ft	0	0	7035	5745	5130	3567	2059	19.5
0.0 m	0	0	3396	2435	2450	1525	1048	5.78
0.0 ft	0	0	7487	5368	5401	3362	2310	19.0
-1.0 m	0	3411	3286	3300	2397	1473	1244	5.44
-3.3 ft	0	7520	7244	7275	5198	5284	2743	17.9
-2.0 m	3153	3107	4115	4191	2901	2355	1442	4.88
-6.6 ft	6951	6850	9072	9240	6396	5192	3179	16.0
-3.0 m	4180	4272	2900	2945	2077	2114	0	4.53
-9.8 ft	9215	9418	6393	6493	4579	4651	0	14.8

Illustration 73

g06371852

307.5 Excavator
2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Down, No Counterweight, No Bucket, Steel Tracks

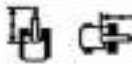
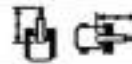
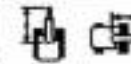
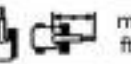
m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft							
															
6.0 m	0	0	1928	1942	0	0	1306	1306	3.75						
19.7 ft	0	0	4251	4281	0	0	2879	2879	12.3						
5.0 m	0	0	0	0	1813	1817	0	0	1130	1130	4.73				
16.4 ft	0	0	0	0	3997	4006	0	0	2491	2491	15.5				
4.0 m	0	0	0	0	1859	1848	1853	1858	1614	1409	0	0	1058	1058	5.35
13.1 ft	0	0	0	0	4098	4074	4085	4096	3558	3106	0	0	2332	2332	17.5
3.0 m	0	0	0	0	2278	2272	2033	2046	1839	1379	0	0	1038	1038	5.73
9.8 ft	0	0	0	0	5022	5009	4482	4511	4054	3040	0	0	2288	2288	18.8
2.0 m	0	0	0	0	2904	2946	2288	1894	1949	1325	0	0	1056	1056	5.92
6.6 ft	0	0	0	0	6402	6495	5044	4176	4297	2921	0	0	2328	2328	19.4
1.0 m	0	0	0	0	3386	2760	2524	1779	2053	1266	0	0	1111	949	5.94
3.3 ft	0	0	0	0	7465	6085	5564	3922	4526	2791	0	0	2449	2092	19.5
0.0 m	0	0	0	0	3598	2598	2649	1689	2090	1217	0	0	1215	967	5.78
0.0 ft	0	0	0	0	7932	5728	5840	3724	4608	2683	0	0	2679	2132	19.0
-1.0 m	0	0	3653	3526	3504	2524	2597	1637	1986	1189	0	0	1398	1045	5.44
-3.3 ft	0	0	8053	7773	7726	5564	5726	3609	4378	2621	0	0	3092	2304	17.9
-2.0 m	3375	3329	4327	4404	3102	2517	2295	1629	0	0	0	0	1644	1225	4.88
-6.6 ft	7441	7339	9539	9709	6839	5549	5060	3591	0	0	0	0	3624	2701	16.0
-3.0 m	4387	4480	3097	3143	2272	2309	0	1493	0	0	0	0	0	1447	4.53
-9.8 ft	9672	9877	6828	6929	5009	5090	0	3291	0	0	0	0	0	3190	14.8

Illustration 74

g06371853

307.5 Excavator

2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Up, Extra Counterweight, Bucket, Steel Tracks

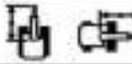
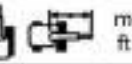
m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	1712	1727	0	0	1080	3.75
19.7 ft	0	0	3774	3807	0	0	2381	12.3
5.0 m	0	0	0	1606	1606	0	918	4.73
16.4 ft	0	0	0	3541	3541	0	2024	15.5
4.0 m	0	0	1687	1676	1652	1421	857	5.35
13.1 ft	0	0	3719	3695	3642	3133	1889	17.5
3.0 m	0	0	2138	2133	1837	1380	845	5.73
9.8 ft	0	0	4713	4702	4050	3042	1863	18.8
2.0 m	0	0	2717	2760	2093	1711	871	5.92
6.6 ft	0	0	5990	6065	4614	3772	1920	19.4
1.0 m	0	0	3191	2536	1865	1273	934	5.94
3.3 ft	0	0	7035	5591	4112	2806	2059	19.5
0.0 m	0	0	2836	2372	1771	1224	1048	5.78
0.0 ft	0	0	6252	5229	3904	2698	2310	19.0
-1.0 m	0	3411	3286	2757	1718	1456	1043	5.44
-3.3 ft	0	7520	7244	6078	3788	3210	2299	17.9
-2.0 m	3153	3107	4115	4191	2901	2295	1442	4.88
-6.6 ft	6951	6850	9072	9240	6396	5060	3179	16.0
-3.0 m	4180	4272	2900	2945	2077	2114	0	4.53
-9.8 ft	9215	9418	6393	6493	4579	4651	0	14.8

Illustration 75

g06371854

307.5 Excavator
2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Up, Extra Counterweight, No Bucket, Steel Tracks

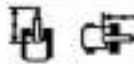
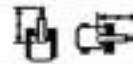
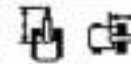
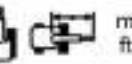
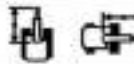
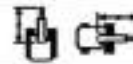
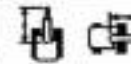
m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				m ft
															
6.0 m	0	0	0	0	1928	1942	0	0	0	0	0	0	1306	1306	3.75
19.7 ft	0	0	0	0	4251	4281	0	0	0	0	0	0	2879	2879	12.3
5.0 m	0	0	0	0	0	0	1813	1817	0	0	0	0	1130	1130	4.73
16.4 ft	0	0	0	0	0	0	3997	4006	0	0	0	0	2491	2491	15.5
4.0 m	0	0	0	0	1859	1848	1853	1858	1614	1401	0	0	1058	1058	5.35
13.1 ft	0	0	0	0	4098	4074	4085	4096	3558	3089	0	0	2332	2332	17.5
3.0 m	0	0	0	0	2278	2272	2033	2046	1553	1372	0	0	1038	1038	5.73
9.8 ft	0	0	0	0	5022	5009	4482	4511	3424	3025	0	0	2288	2288	18.8
2.0 m	0	0	0	0	2904	2946	2288	1871	1500	1319	0	0	1056	1056	5.92
6.6 ft	0	0	0	0	6402	6495	5044	4125	3307	2908	0	0	2328	2328	19.4
1.0 m	0	0	0	0	3386	2692	2024	1759	1441	1261	0	0	1111	950	5.94
3.3 ft	0	0	0	0	7465	5935	4462	3878	3177	2780	0	0	2449	2094	19.5
0.0 m	0	0	0	0	2998	2536	1934	1671	1392	1213	0	0	1215	968	5.78
0.0 ft	0	0	0	0	6609	5591	4264	3684	3069	2674	0	0	2679	2134	19.0
-1.0 m	0	0	3653	3526	2920	2465	1882	1621	1365	1186	0	0	1398	1045	5.44
-3.3 ft	0	0	8053	7773	6437	5434	4149	3574	3009	2615	0	0	3082	2304	17.9
-2.0 m	3375	3329	4327	4404	3102	2458	1873	1613	0	0	0	0	1644	1221	4.88
-6.6 ft	7441	7339	9539	9709	6839	5419	4129	3556	0	0	0	0	3624	2692	16.0
-3.0 m	4387	4480	3097	3143	2272	2309	0	1493	0	0	0	0	0	1447	4.53
-9.8 ft	9672	9877	6828	6929	5009	5090	0	3291	0	0	0	0	0	3190	14.8

Illustration 76

g06371855

307.5 Excavator

2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Up, No Counterweight, Bucket, Steel Tracks

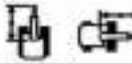
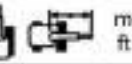
m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	1712	1727	0	0	1080	3.75
19.7 ft	0	0	3774	3807	0	0	2381	12.3
5.0 m	0	0	0	1606	1606	0	918	4.73
16.4 ft	0	0	0	3541	3541	0	2024	15.5
4.0 m	0	0	1687	1676	1652	1421	857	5.35
13.1 ft	0	0	3719	3695	3642	3133	1889	17.5
3.0 m	0	0	2138	2133	1837	1229	845	5.73
9.8 ft	0	0	4713	4702	4050	2709	1863	18.8
2.0 m	0	0	2717	2760	1779	1180	871	5.92
6.6 ft	0	0	5990	6085	3922	2601	1920	19.4
1.0 m	0	0	2704	2267	1662	1122	800	5.94
3.3 ft	0	0	5961	4898	3664	2474	1764	19.5
0.0 m	0	0	2530	2103	1569	1073	822	5.78
0.0 ft	0	0	5578	4636	3459	2366	1812	19.0
-1.0 m	0	3411	3286	2450	1516	1275	907	5.44
-3.3 ft	0	7520	7244	5401	3342	2811	2000	17.9
-2.0 m	3153	3107	4115	4191	2445	2026	1102	4.88
-6.6 ft	6951	6850	9072	9240	5390	4467	2429	16.0
-3.0 m	4180	4272	2900	2945	2077	2114	1251	4.53
-9.8 ft	9215	9418	6393	6493	4579	4661	2758	14.8

Illustration 77

g06371856

307.5 Excavator
2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Up, No Counterweight, No Bucket, Steel Tracks

m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				
														m ft	
6.0 m	0	0	0	0	1928	1942	0	0	0	0	0	0	1306	1306	3.75
19.7 ft	0	0	0	0	4251	4281	0	0	0	0	0	0	2879	2879	12.3
5.0 m	0	0	0	0	0	0	1813	1817	0	0	0	0	1130	1130	4.73
16.4 ft	0	0	0	0	0	0	3997	4006	0	0	0	0	2491	2491	15.5
4.0 m	0	0	0	0	1859	1848	1853	1858	1614	1265	0	0	1058	1058	5.35
13.1 ft	0	0	0	0	4098	4074	4085	4096	3558	2789	0	0	2332	2332	17.5
3.0 m	0	0	0	0	2278	2272	2033	2046	1402	1235	0	0	1038	1038	5.73
9.8 ft	0	0	0	0	5022	5009	4482	4511	3091	2723	0	0	2288	2288	18.8
2.0 m	0	0	0	0	2904	2946	1937	1690	1349	1183	0	0	1056	868	5.92
6.6 ft	0	0	0	0	6402	6495	4270	3726	2974	2608	0	0	2328	1914	19.4
1.0 m	0	0	0	0	2856	2423	1822	1578	1290	1125	0	0	1111	840	5.94
3.3 ft	0	0	0	0	6296	5342	4017	3479	2844	2480	0	0	2449	1852	19.5
0.0 m	0	0	0	0	2691	2268	1731	1490	1241	1077	0	0	997	855	5.78
0.0 ft	0	0	0	0	5933	5000	3816	3285	2736	2374	0	0	2198	1885	19.0
-1.0 m	0	0	3653	3526	2613	2197	1679	1440	1214	1050	0	0	1079	923	5.44
-3.3 ft	0	0	8053	7773	5761	4844	3702	3175	2676	2315	0	0	2379	2035	17.9
-2.0 m	3375	3329	4327	4404	2605	2190	1671	1432	0	0	0	0	1269	1082	4.88
-6.6 ft	7441	7339	9539	9709	5743	4828	3684	3157	0	0	0	0	2798	2385	16.0
-3.0 m	4387	4480	3097	3143	2272	2309	0	1493	0	0	0	0	0	1447	4.53
-9.8 ft	9672	9877	6828	6929	5009	5090	0	3291	0	0	0	0	0	3190	14.8

Illustration 78

g06371857

307.5 Excavator

2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Down, Extra Counterweight, Bucket, Steel Track with Pads

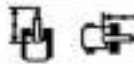
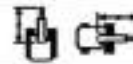
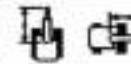
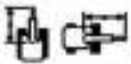
m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				m ft
															
6.0 m	0	0	0	0	1928	1942	0	0	0	0	0	0	1306	1306	3.75
19.7 ft	0	0	0	0	4251	4281	0	0	0	0	0	0	2879	2879	12.3
5.0 m	0	0	0	0	0	0	1813	1817	0	0	0	0	1130	1130	4.73
16.4 ft	0	0	0	0	0	0	3997	4006	0	0	0	0	2491	2491	15.5
4.0 m	0	0	0	0	1859	1848	1853	1858	1614	1265	0	0	1058	1058	5.35
13.1 ft	0	0	0	0	4096	4074	4085	4096	3558	2789	0	0	2332	2332	17.5
3.0 m	0	0	0	0	2278	2272	2033	2046	1402	1235	0	0	1038	1038	5.73
9.8 ft	0	0	0	0	5022	5009	4482	4511	3091	2723	0	0	2288	2288	18.8
2.0 m	0	0	0	0	2904	2946	1937	1690	1349	1183	0	0	1056	868	5.92
6.6 ft	0	0	0	0	6402	6495	4270	3726	2974	2608	0	0	2328	1914	19.4
1.0 m	0	0	0	0	2856	2423	1822	1578	1290	1125	0	0	1111	840	5.94
3.3 ft	0	0	0	0	6296	5342	4017	3479	2844	2480	0	0	2449	1852	19.5
0.0 m	0	0	0	0	2691	2268	1731	1490	1241	1077	0	0	997	855	5.78
0.0 ft	0	0	0	0	5933	5000	3816	3285	2736	2374	0	0	2198	1885	19.0
-1.0 m	0	0	3653	3526	2613	2197	1679	1440	1214	1050	0	0	1079	923	5.44
-3.3 ft	0	0	8053	7773	5761	4844	3702	3175	2676	2315	0	0	2379	2035	17.9
-2.0 m	3375	3329	4327	4404	2605	2190	1671	1432	0	0	0	0	1269	1082	4.88
-6.6 ft	7441	7339	9539	9709	5743	4828	3684	3157	0	0	0	0	2796	2385	16.0
-3.0 m	4387	4480	3097	3143	2272	2309	0	1493	0	0	0	0	0	1447	4.53
-9.8 ft	9672	9877	6828	6929	5009	5090	0	3291	0	0	0	0	0	3190	14.8

Illustration 79

g06371858

307.5 Excavator
2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Down, Extra Counterweight, No Bucket, Steel Track with Pads

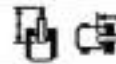
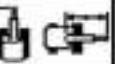
m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				
									m ft						
6.0 m	0	0	0	0	1932	1945	0	0	0	0	0	0	1298	1298	3.79
19.7 ft	0	0	0	0	4259	4288	0	0	0	0	0	0	2862	2862	12.4
5.0 m	0	0	0	0	0	0	1816	1816	0	0	0	0	1127	1127	4.75
16.4 ft	0	0	0	0	0	0	4004	4004	0	0	0	0	2485	2485	15.6
4.0 m	0	0	0	0	1863	1852	1857	1862	1629	1671	0	0	1057	1057	5.36
13.1 ft	0	0	0	0	4107	4083	4094	4105	3591	3684	0	0	2330	2330	17.6
3.0 m	0	0	0	0	2305	2300	2040	2053	1841	1584	0	0	1038	1038	5.74
9.8 ft	0	0	0	0	5082	5071	4497	4526	4059	3492	0	0	2288	2288	18.8
2.0 m	0	0	0	0	2920	2964	2296	2318	1952	1531	0	0	1057	1057	5.92
6.6 ft	0	0	0	0	6437	6534	5062	5110	4303	3375	0	0	2330	2330	19.4
1.0 m	0	0	0	0	3397	3457	2530	2052	2055	1471	0	0	1113	1113	5.93
3.3 ft	0	0	0	0	7489	7621	5578	4524	4530	3243	0	0	2454	2454	19.5
0.0 m	0	0	0	0	3600	3010	2650	1963	2089	1423	0	0	1219	1219	5.77
0.0 ft	0	0	0	0	7937	6636	5842	4328	4605	3137	0	0	2687	2687	18.9
-1.0 m	2124	2092	3694	3566	3496	2938	2593	1913	1979	1396	0	0	1405	1405	5.43
-3.3 ft	4683	4612	8144	7862	7707	6477	5717	4217	4363	3078	0	0	3097	3097	17.8
-2.0 m	3419	3372	4298	4374	3085	3131	2281	1906	0	0	0	0	1641	1641	4.86
-6.6 ft	7538	7434	9475	9643	6801	6903	5029	4202	0	0	0	0	3618	3618	15.9
-3.0 m	4297	4386	3050	3094	2237	2273	0	1445	0	0	0	0	0	1436	4.53
-9.8 ft	9473	9569	6724	6821	4932	5011	0	3186	0	0	0	0	0	3166	14.8

Illustration 80

g06371860

307.5 Excavator

2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Down, No Counterweight, Bucket, Steel Track with Pads

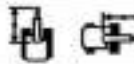
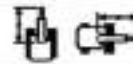
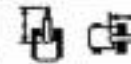
m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				m ft
															
6.0 m	0	0	0	0	1717	1730	0	0	0	0	0	0	1072	1072	3.79
19.7 ft	0	0	0	0	3785	3814	0	0	0	0	0	0	2363	2363	12.4
5.0 m	0	0	0	0	0	0	1604	1605	0	0	0	0	916	916	4.75
16.4 ft	0	0	0	0	0	0	3536	3538	0	0	0	0	2019	2019	15.6
4.0 m	0	0	0	0	1691	1681	1656	1661	1436	1479	0	0	856	856	5.36
13.1 ft	0	0	0	0	3728	3706	3651	3662	3166	3261	0	0	1887	1887	17.6
3.0 m	0	0	0	0	2167	2163	1844	1857	1635	1269	0	0	845	845	5.74
9.8 ft	0	0	0	0	4777	4769	4065	4094	3605	2798	0	0	1863	1863	18.8
2.0 m	0	0	0	0	2734	2777	2101	1817	1749	1218	0	0	872	872	5.92
6.6 ft	0	0	0	0	6027	6122	4632	4006	3856	2685	0	0	1922	1922	19.4
1.0 m	0	0	0	0	3201	2727	2333	1700	1853	1160	0	0	937	937	5.93
3.3 ft	0	0	0	0	7057	6012	5143	3748	4085	2557	0	0	2066	2066	19.5
0.0 m	0	0	0	0	3397	2560	2451	1609	1887	1111	0	0	1052	846	5.77
0.0 ft	0	0	0	0	7489	5644	5404	3547	4160	2449	0	0	2319	1865	18.9
-1.0 m	1917	1885	3452	3327	3292	2486	2392	1557	1777	1084	0	0	1251	933	5.43
-3.3 ft	4226	4156	7610	7335	7258	5481	5273	3433	3918	2390	0	0	2758	2057	17.8
-2.0 m	3196	3150	4087	4162	2883	2484	2081	1552	0	0	0	0	1439	1131	4.86
-6.6 ft	7046	6945	9010	9176	6356	5476	4588	3422	0	0	0	0	3172	2493	15.9
-3.0 m	4091	4179	2853	2897	2042	2078	0	1249	0	0	0	0	0	1241	4.53
-9.8 ft	9019	9213	6290	6387	4502	4581	0	2754	0	0	0	0	0	2736	14.8

Illustration 81

g06371861

307.5 Excavator
2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Down, No Counterweight, No Bucket, Steel Track with Pads

m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				
														m ft	
6.0 m	0	0	0	0	1932	1945	0	0	0	0	0	0	1298	1298	3.79
19.7 ft	0	0	0	0	4259	4288	0	0	0	0	0	0	2862	2862	12.4
5.0 m	0	0	0	0	0	0	1816	1816	0	0	0	0	1127	1127	4.75
16.4 ft	0	0	0	0	0	0	4004	4004	0	0	0	0	2485	2485	15.6
4.0 m	0	0	0	0	1863	1852	1857	1862	1629	1671	0	0	1057	1057	5.36
13.1 ft	0	0	0	0	4107	4083	4094	4105	3591	3684	0	0	2330	2330	17.6
3.0 m	0	0	0	0	2305	2300	2040	2053	1841	1441	0	0	1038	1038	5.74
9.8 ft	0	0	0	0	5082	5071	4497	4526	4059	3177	0	0	2288	2288	18.8
2.0 m	0	0	0	0	2920	2964	2296	1976	1952	1387	0	0	1057	1057	5.92
6.6 ft	0	0	0	0	6437	6534	5062	4356	4303	3058	0	0	2330	2330	19.4
1.0 m	0	0	0	0	3397	2882	2530	1861	2055	1328	0	0	1113	1113	5.93
3.3 ft	0	0	0	0	7489	6354	5578	4103	4530	2928	0	0	2454	2454	19.5
0.0 m	0	0	0	0	3600	2723	2650	1772	2089	1280	0	0	1219	1021	5.77
0.0 ft	0	0	0	0	7937	6003	5842	3907	4605	2822	0	0	2687	2251	18.9
-1.0 m	2124	2092	3694	3566	3496	2651	2593	1722	1979	1253	0	0	1405	1105	5.43
-3.3 ft	4683	4612	8144	7862	7707	5844	5717	3796	4363	2762	0	0	3097	2436	17.8
-2.0 m	3419	3372	4298	4374	3085	2646	2281	1715	0	0	0	0	1641	1298	4.86
-6.6 ft	7538	7434	9475	9643	6801	5833	5029	3781	0	0	0	0	3618	2862	15.9
-3.0 m	4297	4386	3050	3094	2237	2273	0	1445	0	0	0	0	0	1436	4.53
-9.8 ft	9473	9569	6724	6821	4932	5011	0	3186	0	0	0	0	0	3166	14.8

Illustration 82

g06371862

307.5 Excavator

2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Up, Extra Counterweight, Bucket, Steel Track with Pads

m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				
														m ft	
6.0 m	0	0	0	0	1717	1730	0	0	0	0	0	0	1072	1072	3.79
19.7 ft	0	0	0	0	3785	3814	0	0	0	0	0	0	2363	2363	12.4
5.0 m	0	0	0	0	0	0	1604	1605	0	0	0	0	916	916	4.75
16.4 ft	0	0	0	0	0	0	3536	3538	0	0	0	0	2019	2019	15.6
4.0 m	0	0	0	0	1691	1681	1656	1661	1436	1479	0	0	856	856	5.36
13.1 ft	0	0	0	0	3728	3706	3651	3662	3166	3261	0	0	1887	1887	17.6
3.0 m	0	0	0	0	2167	2163	1844	1857	1635	1255	0	0	845	845	5.74
9.8 ft	0	0	0	0	4777	4769	4065	4094	3605	2767	0	0	1863	1863	18.8
2.0 m	0	0	0	0	2734	2777	2101	1784	1397	1205	0	0	872	872	5.92
6.6 ft	0	0	0	0	6027	6122	4632	3933	3080	2657	0	0	1922	1922	19.4
1.0 m	0	0	0	0	3201	2642	1953	1670	1340	1148	0	0	937	937	5.93
3.3 ft	0	0	0	0	7057	5825	4306	3682	2954	2531	0	0	2066	2066	19.5
0.0 m	0	0	0	0	3397	2481	1860	1581	1291	1100	0	0	1052	841	5.77
0.0 ft	0	0	0	0	7489	5470	4101	3486	2846	2425	0	0	2319	1854	18.9
-1.0 m	1917	1885	3452	3327	3292	2410	1809	1531	1265	1074	0	0	1251	927	5.43
-3.3 ft	4226	4156	7610	7335	7258	5313	3988	3375	2789	2368	0	0	2758	2044	17.8
-2.0 m	3196	3150	4087	4162	2883	2409	2081	1526	0	0	0	0	1438	1119	4.86
-6.6 ft	7046	6945	9010	9176	6356	5311	4588	3364	0	0	0	0	3172	2467	15.9
-3.0 m	4091	4179	2853	2897	2042	2078	0	1249	0	0	0	0	0	1241	4.53
-9.8 ft	9019	9213	6290	6387	4502	4581	0	2754	0	0	0	0	0	2736	14.8

Illustration 83

g06371864

307.5 Excavator
2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Up, Extra Counterweight, No Bucket, Steel Track with Pads

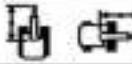
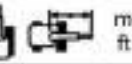
m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft
								
6.0 m	0	0	1932	1945	0	0	1298	3.79
19.7 ft	0	0	4259	4288	0	0	2862	12.4
5.0 m	0	0	0	1816	1816	0	1127	4.75
16.4 ft	0	0	0	4004	4004	0	2485	15.6
4.0 m	0	0	1863	1852	1629	1671	1057	5.36
13.1 ft	0	0	4107	4083	3591	3684	2330	17.6
3.0 m	0	0	2305	2300	1841	1428	1038	5.74
9.8 ft	0	0	5082	5071	4059	3148	2288	18.8
2.0 m	0	0	2920	2964	1566	1375	1057	5.92
6.6 ft	0	0	6437	6534	3452	3031	2330	19.4
1.0 m	0	0	3397	2799	1508	1317	1113	5.93
3.3 ft	0	0	7489	6171	3325	2903	2454	19.5
0.0 m	0	0	3600	2646	1459	1269	1219	5.77
0.0 ft	0	0	7937	5833	3217	2798	2687	18.9
-1.0 m	2124	2092	3496	2577	1972	1433	1405	5.43
-3.3 ft	4683	4612	7707	5681	3741	3159	3097	17.8
-2.0 m	3419	3372	3085	2572	1965	1690	1641	4.86
-6.6 ft	7538	7434	6801	5670	4332	3726	3618	15.9
-3.0 m	4297	4386	2237	2273	0	1445	0	4.53
-9.8 ft	9473	9569	4932	5011	0	3185	0	14.8

Illustration 84

g06371866

307.5 Excavator

2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Up, No Counterweight, Bucket, Steel Track with Pads

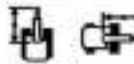
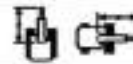
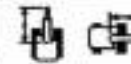
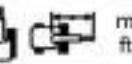
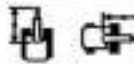
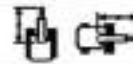
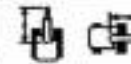
m ft	1.0 3.3		2.0 6.6		3.0 9.8		4.0 13.1		5.0 16.4		6.0 19.7				m ft
															
6.0 m	0	0	0	0	1717	1730	0	0	0	0	0	0	1072	1072	3.79
19.7 ft	0	0	0	0	3795	3814	0	0	0	0	0	0	2363	2363	12.4
5.0 m	0	0	0	0	0	0	1604	1605	0	0	0	0	916	916	4.75
16.4 ft	0	0	0	0	0	0	3536	3538	0	0	0	0	2019	2019	15.6
4.0 m	0	0	0	0	1691	1681	1656	1661	1436	1143	0	0	856	856	5.36
13.1 ft	0	0	0	0	3728	3706	3651	3662	3166	2520	0	0	1887	1887	17.6
3.0 m	0	0	0	0	2167	2163	1844	1857	1297	1119	0	0	845	845	5.74
9.8 ft	0	0	0	0	4777	4769	4065	4094	2859	2467	0	0	1863	1863	18.8
2.0 m	0	0	0	0	2734	2777	2101	1603	1246	1069	0	0	872	733	5.92
6.6 ft	0	0	0	0	6027	6122	4632	3534	2747	2357	0	0	1922	1616	19.4
1.0 m	0	0	0	0	3201	2374	1751	1490	1189	1012	0	0	937	708	5.93
3.3 ft	0	0	0	0	7057	5234	3860	3285	2621	2231	0	0	2066	1561	19.5
0.0 m	0	0	0	0	2665	2213	1658	1400	1140	964	0	0	880	728	5.77
0.0 ft	0	0	0	0	5875	4879	3655	3086	2513	2125	0	0	1940	1605	18.9
-1.0 m	1917	1885	3452	3327	2588	2142	1606	1350	1114	938	0	0	973	806	5.43
-3.3 ft	4226	4156	7610	7335	5706	4722	3541	2976	2456	2068	0	0	2145	1775	17.8
-2.0 m	3196	3150	4087	4162	2883	2140	1601	1345	0	0	0	0	1181	979	4.86
-6.6 ft	7046	6945	9010	9176	6356	4718	3530	2965	0	0	0	0	2604	2158	15.9
-3.0 m	4091	4179	2853	2897	2042	2078	0	1249	0	0	0	0	0	1241	4.53
-9.8 ft	9019	9213	6290	6387	4502	4581	0	2754	0	0	0	0	0	2736	14.8

Illustration 85

g06371868

307.5 Excavator
2208 mm (7 ft 3 inch) Long Stick

Long Stick, Blade Up, No Counterweight, No Bucket, Steel Track with Pads

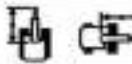
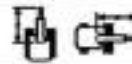
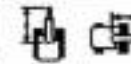
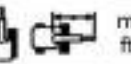
m ft	1.0 3.3	2.0 6.6	3.0 9.8	4.0 13.1	5.0 16.4	6.0 19.7		m ft							
															
6.0 m	0	0	1932	1945	0	0	1298	1298	3.79						
19.7 ft	0	0	4259	4288	0	0	2862	2862	12.4						
5.0 m	0	0	0	0	1816	1816	0	0	1127	1127	4.75				
16.4 ft	0	0	0	0	4004	4004	0	0	2485	2485	15.6				
4.0 m	0	0	1863	1852	1857	1862	1629	1322	0	0	1057	1057	5.36		
13.1 ft	0	0	4107	4083	4094	4105	3591	2915	0	0	2330	2330	17.6		
3.0 m	0	0	2305	2300	2040	2053	1469	1291	0	0	1038	1038	5.74		
9.8 ft	0	0	5082	5071	4497	4526	3239	2846	0	0	2288	2288	18.8		
2.0 m	0	0	2920	2964	2296	1763	1415	1239	0	0	1057	1057	5.92		
6.6 ft	0	0	6437	6534	5062	3687	3120	2732	0	0	2330	2330	19.4		
1.0 m	0	0	3397	2530	1910	1651	1357	1181	0	0	1113	886	5.93		
3.3 ft	0	0	7489	5578	4211	3640	2992	2604	0	0	2454	1953	19.5		
0.0 m	0	0	2826	2378	1821	1565	1308	1133	0	0	1219	904	5.77		
0.0 ft	0	0	6230	5243	4015	3450	2884	2498	0	0	2687	1993	18.9		
-1.0 m	2124	2092	3694	3566	2751	2309	1770	1516	1282	1107	0	0	1144	977	5.43
-3.3 ft	4683	4612	8144	7862	6065	5090	3902	3342	2826	2441	0	0	2522	2154	17.8
-2.0 m	3419	3372	4298	4374	3085	2304	1763	1509	0	0	0	0	1348	1148	4.86
-6.6 ft	7538	7434	9475	9643	6801	5079	3887	3327	0	0	0	0	2972	2531	15.9
-3.0 m	4297	4386	3050	3094	2237	2273	0	1445	0	0	0	0	0	1436	4.53
-9.8 ft	9473	9569	6724	6821	4932	5011	0	3186	0	0	0	0	0	3166	14.8

Illustration 86

g06371871

307.5 Excavator

2208 mm (7 ft 3 inch) Long Stick

i08509653

Lifting Capacities
(310 Excavator)

SMCS Code: 7000

S/N: GWT1-Up

WARNING

Failure to comply to the rated load can cause possible personal injury or property damage. This includes the risk of unintended boom lowering. Review the rated load of a particular work tool before performing any operation. Make adjustments to the rated load as necessary for non-standard configurations.

Note: Lifting capacities are based on a standard machine with the following conditions:

- lubricants
- full fuel tank
- rubber track

- cab
- 75 kg (165 lb) operator

Lifting capacities will vary with different work tools and attachments. Consult your Cat dealer regarding the lifting capacities for specific work tools and attachments.

Note: Lifting capacities should be used as a guide. Work tools, uneven ground conditions, soft ground conditions, or poor ground conditions have effects on lifting capacities. The operator is responsible for being aware of these effects.

Special hazards (toxic gases, ground conditions, etc.) require special precautions. The operator must determine whether special hazards exist in each application. The operator shall perform the appropriate steps to eliminate the hazard. The operator shall perform the appropriate steps to reduce the hazard.

For North American applications and European applications, the lifting capacities are defined by "ISO 10567 2007". The lifting capacities are defined as the lower value of 75% of the static tipping capacity or 87% of the hydraulic lift capacity.

Rated loads were calculated with a machine that was equipped with a standard bucket and no quick coupler. If other combinations of work tools are used, the difference between the weight of the work tool and/or quick coupler and the standard bucket must be subtracted from the rated load.

This machine may be equipped with a standard stick or with a long stick. Lifting capacities may vary between a standard stick and a long stick. Measure the distance on the stick between the boom hinge pin and the work tool hinge pin. This distance will tell you if the machine is equipped with a standard stick or with a long stick.

Refer to Operation and Maintenance Manual, "Specifications" in this manual for information on stick length.

Note: Regional regulations may require the use of an overload warning device and boom and stick lowering control valves during object handling applications.

Contact your Cat dealer for additional information.

Symbols Found in the Lifting Capacity Charts

Below are symbols that are commonly found on lifting capacity charts for track excavators.

Note: Depending on the machine configuration, some symbols may not be used.

(m)
(ft) **Measurements are provided in meters and feet**



Lift Capacities are provided in kilograms and pounds

,

Load is limited by hydraulic lifting capacity rather than by a tipping load



Lift point radius



Lift point height



Lifting capacity over the front of the machine



Lifting capacity over the side of the machine



Heavy Lift ON

**310 Excavator with Fixed Boom and
Standard Stick.**

(mm) (in)	2000 79		3000 118		4000 157		5000 197		6000 236				(mm) (in)
6000													
567					* 2725	* 2725	* 2574	2165			* 1574	* 1574	5510
4000					* 6010	* 6010	* 5877	4752			* 3470	* 3470	217
357					* 2913	* 2913	* 2644	2125	* 1708	* 1708	* 1526	* 1526	6050
3000					* 6422	* 6422	* 5830	4686	* 3766	* 3766	* 3364	* 3364	238
118			* 4010	* 4010	* 3247	* 3247	* 2706	2056	1647	1518	* 1526	* 1526	6290
2000			* 8841	* 8841	* 7159	* 7159	* 6171	4534	4073	3347	* 3370	* 3370	252
79			* 4820	* 4820	* 3629	2773	2415	1969	1601	1474	* 1575	1267	6090
1000			* 10029	* 10029	* 8002	6114	5326	4336	3672	3250	* 3473	2735	258
30			* 5356	4324	3282	2612	2322	1890	1752	1427	* 1606	1234	9570
0			* 11809	8873	7237	5759	5119	4145	3862	3146	* 3680	2722	259
0	* 2883	* 2883	* 3419	3841	3155	2485	2247	1809	1711	1388	1541	1252	6430
0	* 8312	* 6312	* 11950	8488	6959	5501	4954	3989	3772	3090	3399	2781	253
-1000	* 4344	* 4344	* 5160	3766	3095	2431	2201	1767	1661	1366	1641	1330	6130
-39	* 9579	* 9579	* 11245	8309	6902	5360	4854	3695	3726	3018	3619	2992	241
-2000	* 5831	* 5831	* 4488	3766	* 3461	2416	2193	1759			* 2141	1500	5630
-79	* 12657	* 12657	* 8853	8306	* 7632	5327	4836	3678			* 4722	3368	222
-3000	* 4353	* 4353	* 3478	* 3478	* 2689	* 2689					* 1915	* 1915	4890
-118	* 9589	* 9589	* 7670	* 7670	* 5930	* 5930					* 4223	* 4223	160

Illustration 87

g06619289

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

Product Information Section
310 Excavator

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000					* 2725	* 2725	* 2574	* 2574			* 1574	* 1574	5510
197					* 6010	* 6010	* 5677	* 5677			* 3470	* 3470	217
4000					* 2913	* 2913	* 2844	* 2844	* 1708	* 1708	* 1528	* 1528	9050
157					* 6422	* 6422	* 5830	* 5830	* 3796	* 3796	* 3394	* 3394	239
3000			* 4010	* 4010	* 3247	* 3247	* 2799	2354	* 2501	1673	* 1528	* 1528	8390
118			* 8841	* 8841	* 7159	* 7159	* 6171	4993	* 5515	3686	* 3370	* 3370	252
2000			* 4620	* 4620	* 3620	3076	* 2984	2174	* 2567	1626	* 1575	* 1575	6580
79			* 50626	* 10029	* 9002	6792	* 6580	4793	* 5661	3591	* 3473	* 3473	258
1000			* 5306	4551	* 3923	2910	* 3126	2094	* 2607	1580	* 1669	1369	6570
39			* 11909	10030	* 6650	8417	* 6889	4595	* 5740	3484	* 3680	3018	259
0	* 2883	* 2883	* 5419	4359	* 4019	2790	* 3188	2012	* 2564	1541	* 1626	1390	6430
0	* 6312	* 6312	* 11950	8612	* 8901	6151	* 6981	4435	* 5654	3367	* 4627	3065	253
-1000	* 4344	* 4344	* 5100	4289	* 3874	2720	* 3037	1968	* 2352	1521	* 2094	1478	6130
-39	* 9579	* 9579	* 11245	9445	* 8541	6005	* 6997	4339	* 5187	3355	* 4596	3258	241
-2000	* 5831	* 5831	* 4468	* 4468	* 3481	2708	* 2957	1990			* 2141	1668	5630
-79	* 12857	* 12857	* 9853	* 9853	* 7632	5971	* 5881	4322			* 4722	3679	222
-3000	* 4353	* 4353	* 3478	* 3478	* 2689	* 2689					* 1915	* 1915	4890
-118	* 5589	* 5589	* 7670	* 7670	* 5930	* 5930					* 4223	* 4223	193

Illustration 88

g06619299

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
													
6000					* 2725	* 2725	* 2574	* 2574			* 1574	* 1574	5510
197					* 6010	* 6010	* 5877	* 5877			* 3470	* 3470	217
4000					* 2913	* 2913	* 2844	2283	* 1708	* 1708	* 1528	* 1528	9550
157					* 6422	* 6422	* 6830	4951	* 3766	* 3766	* 3364	* 3364	238
3000			* 4010	* 4010	* 3247	* 3247	* 2799	2194	1972	1828	* 1528	* 1528	9390
118			* 8841	* 8841	* 7159	* 7159	* 6171	4939	4349	3589	* 3370	* 3370	252
3000			* 4820	* 4820	* 3629	2859	* 2984	2106	1926	1584	* 1575	* 1575	6560
79			* 99529	* 10029	* 8002	6522	* 6580	4644	4248	3493	* 3473	* 3473	258
9000			* 6356	4306	* 3923	2797	2481	2018	1877	1537	* 1609	1383	9570
39			* 11809	9492	* 8650	6167	5470	4448	4138	3388	* 3690	2639	259
0	* 2863	* 2963	* 5419	4121	3373	2680	2406	1947	1826	1498	* 1826	1353	6430
0	* 8312	* 6312	* 11950	9687	7437	5909	5304	4254	4048	3303	* 4027	2984	253
-1000	* 4344	* 4344	* 5100	4049	3303	2916	2386	1905	1816	1479	1793	1437	6130
-39	* 9579	* 9579	* 11245	8828	7283	5788	5304	4200	4004	3261	3887	3169	241
-2000	* 5831	* 5831	* 4468	* 4468	* 3483	2601	* 2987	1867			* 2141	1619	5630
-79	* 12857	* 12857	* 9853	* 9853	* 7632	5735	* 5881	4183			* 4722	3570	222
-3000	* 4353	* 4353	* 3478	* 3478	* 2689	* 2689					* 1915	* 1815	4890
-118	* 9599	* 9599	* 7870	* 7870	* 5930	* 5930					* 4223	* 4223	193

Illustration 89

g06619300

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with optional counterweight.

Product Information Section
310 Excavator

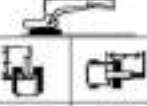
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		235				
5000					* 2735	* 2735	* 2574	* 2574			* 1574	* 1574	5510
187					* 6019	* 6019	* 5677	* 5677			* 3479	* 3479	217
4000					* 2913	* 2913	* 2644	* 2644	* 1709	* 1708	* 1528	* 1528	4050
157					* 6422	* 6422	* 5830	* 5830	* 3766	* 3766	* 3364	* 3364	238
3000			* 4010	* 4010	* 3247	* 3247	* 2709	2409	* 2501	1788	* 1528	* 1528	4300
118			* 8841	* 8841	* 7159	* 7159	* 6171	5313	* 5515	3643	* 3379	* 3379	252
2000			* 4820	* 4820	* 3829	* 3829	* 2964	2319	* 2567	1744	* 1575	* 1575	5560
79			* 10629	* 10629	* 8862	* 8862	* 6580	5113	* 5961	3645	* 3473	* 3473	258
1000			* 5356	* 5356	* 3823	3106	* 3129	2229	* 2807	1606	* 3669	* 1689	6570
38			* 11809	* 11809	* 8650	6849	* 6809	4815	* 5749	3738	* 3688	* 3688	259
0	* 2663	* 2663	* 5419	4682	* 4010	2988	* 3168	2157	* 2584	1656	* 1828	1408	6430
0	* 6312	* 6312	* 11560	10279	* 8861	6983	* 6981	4755	* 5654	3651	* 4027	3298	253
-3000	* 4344	* 4344	* 5100	* 5100	* 3874	2926	* 3007	2113	* 2352	1637	* 2084	1590	6130
-38	* 9579	* 9579	* 11245	* 11245	* 8541	6438	* 6557	4859	* 5187	3609	* 4596	3006	241
-2000	* 5831	* 5831	* 4498	* 4498	* 3461	2904	* 2667	2105			* 2141	1793	5630
-79	* 12857	* 12857	* 9853	* 9853	* 7632	6404	* 5891	4642			* 4722	3952	222
-3000	* 4353	* 4353	* 3479	* 3479	* 2689	* 2689					* 1915	* 1915	4800
-118	* 9599	* 9599	* 7670	* 7670	* 5890	* 5890					* 4223	* 4223	193

Illustration 90

g06620344

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with optional counterweight.

(mm) (in)	3000		3500		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000					* 2725	* 2725	* 2574	* 2574			* 1574	* 1574	5510
197					* 6010	* 6010	* 5677	* 5677			* 3470	* 3470	217
4000					* 2913	* 2913	* 2644	2102	* 1708	* 1708	* 1526	* 1526	6050
157					* 6422	* 6422	* 5830	4834	* 3706	* 3706	* 3364	* 3364	238
3000			* 4010	* 4010	* 3247	* 3247	* 2799	2129	1916	1571	* 1528	* 1528	6090
118			* 8841	* 8841	* 7159	* 7159	* 6171	4682	4224	3484	* 3370	* 3370	252
2000			* 4820	* 4820	* 3829	2862	2503	2036	1876	1627	* 1575	1315	6560
79			* 10629	* 10629	* 8002	6311	5518	4487	4123	3398	* 3473	2990	258
1000			* 5355	4166	* 3923	2702	2408	1947	1820	1490	* 1659	1282	6570
39			* 11809	9173	* 8850	5957	5312	4292	4014	3283	* 3880	2827	259
0	* 2963	* 2963	* 5410	3977	3274	2585	2334	1876	1770	1441	* 1826	1301	6430
0	* 6312	* 6312	* 11950	8788	7220	5699	5146	4137	3624	3179	* 4527	2989	253
-1000	* 4344	* 4344	* 5100	3904	3205	2521	2289	1804	1759	1422	1709	1382	6130
-39	* 9579	* 9579	* 11245	9909	7066	5558	5049	4043	3580	3136	3766	3047	241
-2000	* 5831	* 5831	* 4488	* 4488	* 3481	2506	2280	1826			* 2141	1556	5830
-79	* 12657	* 12657	* 9853	* 9853	* 7632	5825	5028	4026			* 4722	3435	222
-3000	* 4353	* 4353	* 3478	* 3478	* 2688	* 2688					* 1915	* 1915	4890
-118	* 9599	* 9599	* 7670	* 7670	* 5830	* 5830					* 4223	* 4223	193

Illustration 91

g06620346

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

Product Information Section
310 Excavator

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													5510
197					* 2725	* 2725	* 2574	* 2574			* 1574	* 1574	217
4000					* 6010	* 6010	* 5677	* 5677			* 3470	* 3470	6050
157					* 2913	* 2913	* 2644	* 2644	* 1708	* 1708	* 1526	* 1526	238
3000					* 6422	* 6422	* 5830	* 5830	* 3766	* 3766	* 3364	* 3364	6390
118			* 4010	* 4010	* 3247	* 3247	* 2799	2336	* 2501	1731	* 1528	* 1528	252
2000			* 8841	* 8841	* 7158	* 7158	* 6171	5155	* 5515	3818	* 3370	* 3370	6590
79			* 4820	* 4820	* 3629	* 3629	* 2984	2247	* 2567	1687	* 1575	* 1575	258
1000			* 10629	* 10629	* 8062	* 8062	* 6580	4996	* 5991	3720	* 3473	* 3473	6570
39			* 5358	* 5358	* 3823	3918	* 3129	2157	* 2007	1639	* 1866	1421	259
0			* 11809	* 11809	* 8660	8636	* 6899	4767	* 5749	3013	* 3680	3133	6430
0	* 2893	* 2893	* 5419	4512	* 4010	2889	* 3166	2085	* 2554	1599	* 1826	1444	253
-1000	* 8312	* 8312	* 11950	9950	* 8861	8370	* 6981	4598	* 5954	3520	* 4827	3183	6130
-38	* 4344	* 4344	* 5100	* 5100	* 3874	2823	* 3037	2042	* 2352	1580	* 2884	1535	241
-2000	* 9579	* 9579	* 11245	* 11245	* 8541	8225	* 6667	4502	* 5187	3483	* 4596	3394	5630
-79	* 5831	* 5831	* 4458	* 4458	* 3461	2858	* 2667	2034			* 2141	1731	222
-3000	* 12957	* 12957	* 9853	* 9853	* 7632	6191	* 5881	4404			* 4722	3817	4890
-118	* 4303	* 4303	* 3478	* 3478	* 2680	* 2089					* 1815	* 1915	393
	* 9599	* 9599	* 7070	* 7070	* 5930	* 5930					* 4223	* 4223	

Illustration 92

g06620347

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

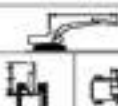
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		238				
													
5000					* 2725	* 2725	* 2674	* 2674			* 1574	* 1574	5510
167					* 6010	* 6010	* 5677	* 5677			* 3470	* 3470	217
4000					* 2913	* 2913	* 2844	* 2844	* 1709	* 1709	* 1529	* 1529	8060
157					* 6422	* 6422	* 5830	* 5830	* 3766	* 3766	* 3364	* 3364	238
3000			* 4010	* 4010	* 3247	* 3247	* 2769	2261	2041	1681	* 1529	* 1529	8360
118			* 8841	* 8841	* 7159	* 7159	* 6171	4986	4500	3767	* 3370	* 3370	252
2000			* 4820	* 4820	* 3829	3047	* 2984	2173	1995	1637	* 1575	* 1575	8580
79			* 19629	* 19629	* 9802	8729	* 6580	4791	4398	3610	* 3473	* 3473	258
1000			* 5350	4441	* 3923	2987	2599	2085	1945	1590	* 1609	1381	8570
39			* 11869	9702	* 9850	8385	5662	4597	4289	3506	* 3680	3045	259
0	* 2663	* 2863	* 5419	4257	* 4019	2770	2480	2014	1905	1551	* 1826	1402	6430
0	* 6312	* 6312	* 11950	9388	* 8861	8107	5497	4441	4200	3420	* 4027	3052	253
-1000	* 4344	* 4344	* 5100	4185	* 3874	2709	2447	1972	1885	1532	* 2094	1489	8130
-39	* 9579	* 9579	* 11248	8226	* 8541	6906	5397	4347	4155	3379	* 4596	3283	241
-2000	* 5831	* 5831	* 4498	* 4468	* 3481	2991	* 2667	1984			* 2141	1677	5630
-79	* 12857	* 12857	* 9853	* 8853	* 7632	5933	* 5881	4338			* 4722	3697	222
-3000	* 4353	* 4353	* 3478	* 3478	* 2689	* 2689					* 1915	* 1815	4880
-118	* 9599	* 9599	* 7870	* 7870	* 5930	* 5930					* 4223	* 4223	193

Illustration 93

g06620348

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with optional counterweight.

Product Information Section
310 Excavator

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000					* 2725	* 2725	* 2574	* 2574			* 1574	* 1574	5510
197					* 6010	* 6010	* 5677	* 5677			* 3470	* 3470	217
4000					* 2913	* 2913	* 2644	* 2644	* 1708	* 1708	* 1526	* 1526	6050
157					* 6422	* 6422	* 5830	* 5830	* 3766	* 3766	* 3364	* 3364	238
3000			* 4010	* 4010	* 3247	* 3247	* 2709	* 2709	* 2501	1847	* 1526	* 1526	6390
118			* 8841	* 8841	* 7159	* 7159	* 6171	* 6171	* 5515	4072	* 3370	* 3370	252
2000			* 4820	* 4820	* 3629	* 3629	* 2994	2303	* 2587	1803	* 1575	* 1575	6990
79			* 10529	* 10529	* 8002	* 8002	* 6580	5276	* 5951	3974	* 3473	* 3473	258
1000			* 5306	* 5306	* 3923	3200	* 3129	2302	* 2807	1754	* 1669	* 1669	6570
39			* 11909	* 11909	* 8650	7069	* 6899	5077	* 5749	3867	* 3680	* 3680	259
0	* 2893	* 2893	* 5419	* 5419	* 4018	3085	* 3195	2230	* 2564	1714	* 1626	1546	6430
0	* 8312	* 8312	* 11950	* 11950	* 8861	6603	* 6991	4918	* 5654	3790	* 4027	3416	253
-1000	* 4344	* 4344	* 5100	* 5100	* 3874	3019	* 3037	2187	* 2352	1695	* 2684	1647	6130
-30	* 9579	* 9579	* 11245	* 11245	* 8541	6657	* 6907	4822	* 5187	3737	* 4506	3651	241
-2000	* 5831	* 5831	* 4468	* 4468	* 3461	* 3461	* 2967	2179			* 2141	* 2141	5690
-79	* 12857	* 12857	* 8853	* 8853	* 7632	* 7632	* 6991	4804			* 4722	* 4722	222
-3000	* 4353	* 4353	* 3478	* 3478	* 2689	* 2689					* 1915	* 1915	4890
-118	* 9590	* 9590	* 7670	* 7670	* 5930	* 5930					* 4223	* 4223	193

Illustration 94

g06620349

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with optional counterweight.

(mm) (in)	2800		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		238				
													
5000					* 2720	* 2720	* 2588	2031			* 1583	* 1583	5510
107					* 8004	* 8004	* 8659	4479			* 3447	* 3447	217
4000					* 2024	* 2024	* 2647	2011	* 1700	1441	* 1517	* 1517	6050
157					* 6448	* 6448	* 5837	4435	* 3749	3177	* 3345	* 3345	238
3000			* 4040	* 4040	* 3272	2608	* 2815	1953	1863	1428	* 1524	1264	6380
118			* 8908	* 8908	* 7214	8191	* 8206	4307	4105	3145	* 3260	2788	252
2000			* 4849	4134	* 3690	2643	2453	1873	1824	1391	* 1575	1184	8580
79			* 10881	9116	* 8071	5827	5409	4130	4022	3068	* 3474	2611	268
1000			* 5373	3801	3329	2481	2363	1789	1790	1360	* 1670	1160	8579
39			* 11847	8380	7341	5470	5211	3944	3820	2977	* 3695	2550	269
0	* 2853	* 2853	* 5429	3611	3198	2361	2288	1719	1743	1314	1594	1177	8430
0	* 6290	* 6290	* 11971	7962	7054	5206	5047	3791	3842	2888	3448	2590	253
-1000	* 4338	* 4036	* 5100	3538	3128	2295	2244	1677	1722	1255	1870	1255	6130
-39	* 9582	* 9582	* 11264	7801	8897	5082	4948	3697	3799	2855	3692	2788	241
-2000	* 5827	* 5827	* 4480	3540	* 3487	2282	2236	1699			* 2188	1421	5830
-79	* 12849	* 12849	* 9879	7805	* 7890	5031	4829	3680			* 4777	3133	222
-3000	* 4357	* 4357	* 3486	* 3486	* 2718	2320					* 1945	* 1945	4880
-118	* 9608	* 9608	* 7709	* 7709	* 5594	5116					* 4288	* 4288	183

Illustration 95

g06620350

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

Product Information Section
310 Excavator

(mm) (in)	2000		3000		4000		5000		6000		7000				(mm) (in)
	79		118		157		197		236		275				
6000					* 2729	* 2729	* 2999	2999			* 1563	* 1563			9510
597					* 6004	* 6004	* 5959	4784			* 3447	* 3447			217
4000					* 2024	* 2024	* 2847	2940	* 1700	* 1700	* 1517	* 1517			6050
357					* 6448	* 6448	* 5837	4739	* 3749	* 3749	* 3345	* 3345			238
3000			* 4040	* 4040	* 3272	* 3272	* 2815	2091	1687	1536	* 1524	* 1524			6300
118			* 8908	* 8908	* 7214	* 7214	* 6208	4611	4381	3388	* 3360	* 3360			252
2000			* 4849	* 4849	* 3660	2828	* 3010	2611	1640	1501	* 1575	1283			6560
79			* 10991	* 10991	* 6071	6235	* 6535	4434	4298	3311	* 3474	2829			258
1000			* 5373	4981	* 3953	2606	2522	1927	1806	1499	* 1670	1255			9570
30			* 11847	9900	* 8716	5879	5581	4248	4252	3219	* 3695	2767			259
0	* 3853	* 2953	* 5429	3992	3417	2546	2448	1857	1808	1424	* 1626	1278			6430
0	* 6290	* 6290	* 11571	8561	7534	5614	5358	4095	4118	3140	* 4056	2819			253
-1000	* 4336	* 4336	* 5168	3818	3346	2481	2403	1915	1847	1405	1792	1363			6130
-30	* 9562	* 9562	* 11264	8420	7378	5470	5298	4001	4074	3098	3050	3065			241
-2000	* 5827	* 5827	* 4480	3821	* 3487	2487	* 2998	1807			* 2166	1540			5830
-79	* 12846	* 12846	* 8879	8424	* 7660	5439	* 6950	3984			* 4777	3396			222
-5000	* 4357	* 4357	* 3498	* 3498	* 2718	* 2718					* 1945	* 1945			4890
-118	* 9688	* 9688	* 7769	* 7769	* 5994	* 5994					* 4288	* 4288			193

Illustration 96

g06620351

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

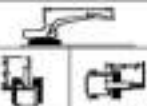
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		235				
5000					* 2723	* 2723	* 2566	2694			* 1503	* 1503	5510
197					* 6094	* 6004	* 5659	4826			* 3447	* 3447	217
4000					* 2924	* 2924	* 2647	2578	* 1700	* 1700	* 1517	* 1517	4050
157					* 6448	* 6448	* 5837	4582	* 3749	* 3749	* 3345	* 3345	238
3000			* 4040	* 4040	* 3272	* 3272	* 2815	2626	1930	1480	* 1524	1314	3360
118			* 8908	* 8908	* 7214	* 7214	* 6206	4454	4258	3262	* 3390	2896	252
2000			* 4849	* 4849	* 3980	2732	2540	1939	1893	1444	* 1575	1232	3560
79			* 10591	* 10591	* 8071	6024	5601	4277	4173	3185	* 3474	2718	258
1900			* 5373	3030	* 3953	2570	2450	1855	1949	1400	* 1576	1204	3570
39			* 11847	8579	* 8716	5987	5409	4291	4077	3004	* 3095	2655	259
0	* 2853	* 2853	* 5429	3747	3318	2450	2376	1786	1911	1367	* 1839	1226	6430
0	* 5290	* 5290	* 11571	8201	7317	5403	5239	3938	3694	3015	* 4056	2704	253
-1000	* 4336	* 4336	* 5108	3673	3247	2395	2331	1743	1791	1348	1736	1307	6130
-39	* 9562	* 9562	* 11254	8100	7166	5259	5140	3844	3949	2972	3829	2893	241
-2000	* 5827	* 5827	* 4480	3675	* 3487	2371	2323	1735			* 2198	1478	6630
-79	* 12849	* 12849	* 9879	8104	* 7090	5228	5121	3827			* 4777	3260	222
-3000	* 4357	* 4357	* 3496	* 3486	* 2718	* 2718					* 1945	* 1945	4860
-118	* 9608	* 9608	* 7709	* 7709	* 5994	* 5994					* 4283	* 4283	193

Illustration 97

g06620353

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with optional counterweight.

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													5510
197					* 2723	* 2723	* 2595	* 2595			* 1563	* 1563	217
4000					* 4064	* 4064	* 3659	* 3659			* 3447	* 3447	6050
157					* 2924	* 2924	* 2647	* 2647	* 1700	* 1700	* 1517	* 1517	238
3000			* 4040	* 4040	* 3272	* 3272	* 2815	* 2815	2055	1590	* 1524	* 1524	6390
118			* 8998	* 8998	* 7214	* 7214	* 6208	* 6208	4532	3505	* 3360	* 3360	252
2000			* 4849	* 4849	* 3660	* 3660	* 3010	* 3010	2077	1555	* 1575	* 1575	6560
79			* 10691	* 10691	* 8071	* 8071	* 6636	* 6636	4581	3429	* 3474	* 3474	258
1000			* 5375	* 5375	* 4217	* 4217	* 3499	* 3499	1890	1474	* 1474	* 1474	6570
39			* 11847	* 11847	* 9298	* 9298	* 7553	* 7553	4395	3337	* 3695	* 3695	259
0	* 2853	* 2853	* 5429	* 5429	* 4045	* 4045	2531	1924	1936	1477	* 1839	* 1839	6430
0	* 5290	* 5290	* 11971	* 11971	* 8880	* 8880	5811	5590	4242	3257	* 4956	* 4956	253
-1000	* 4306	* 4306	* 5198	* 5198	* 3888	* 3888	2570	2490	1891	1416	* 2194	* 2194	6130
-38	* 9562	* 9562	* 11264	* 11264	* 8715	* 8715	* 6567	* 6567	5490	4148	4225	3215	241
-2000	* 5927	* 5927	* 6827	* 6827	* 4480	* 4480	* 3467	* 3467	2556	1873	* 2698	* 2698	5680
-79	* 12848	* 12848	* 9879	* 9879	* 7660	* 7660	5836	* 5950	4131		* 4777	* 4777	222
-3000	* 4357	* 4357	* 3496	* 3496	* 2718	* 2718					* 1945	* 1945	4880
-118	* 9938	* 9938	* 7799	* 7799	* 5994	* 5994					* 4288	* 4288	193

Illustration 98

g06620355

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with optional counterweight.

i08509674

- cab
- 75 kg (165 lb) operator

Lifting Capacities (307.5 Excavator)

SMCS Code: 7000

S/N: GW71-Up



Failure to comply to the rated load can cause possible personal injury or property damage. This includes the risk of unintended boom lowering. Review the rated load of a particular work tool before performing any operation. Make adjustments to the rated load as necessary for non-standard configurations.

Note: Lifting capacities are based on a standard machine with the following conditions:

- lubricants
- full fuel tank
- rubber track

Lifting capacities will vary with different work tools and attachments. Consult your Cat dealer regarding the lifting capacities for specific work tools and attachments.

Note: Lifting capacities should be used as a guide. Work tools, uneven ground conditions, soft ground conditions, or poor ground conditions have effects on lifting capacities. The operator is responsible for being aware of these effects.

Special hazards (toxic gases, ground conditions, etc.) require special precautions. The operator must determine whether special hazards exist in each application. The operator shall perform the appropriate steps to eliminate the hazard. The operator shall perform the appropriate steps to reduce the hazard.

For North American applications and European applications, the lifting capacities are defined by "ISO 10567 2007". The lifting capacities are defined as the lower value of 75% of the static tipping capacity or 87% of the hydraulic lift capacity.

Rated loads were calculated with a machine that was equipped with a standard bucket and no quick coupler. If other combinations of work tools are used, the difference between the weight of the work tool and/or quick coupler and the standard bucket must be subtracted from the rated load.

This machine may be equipped with a standard stick or with a long stick. Lifting capacities may vary between a standard stick and a long stick. Measure the distance on the stick between the boom hinge pin and the work tool hinge pin. This distance will tell you if the machine is equipped with a standard stick or with a long stick.

Refer to Operation and Maintenance Manual, "Specifications" in this manual for information on stick length.

Note: Regional regulations may require the use of an overload warning device and boom and stick lowering control valves during object handling applications.

Contact your Cat dealer for additional information.



Heavy Lift ON

Symbols Found in the Lifting Capacity Charts

Below are symbols that are commonly found on lifting capacity charts for track excavators.

Note: Depending on the machine configuration, some symbols may not be used.

(m)
(ft) **Measurements are provided in meters and feet**



Lift Capacities are provided in kilograms and pounds

,

Load is limited by hydraulic lifting capacity rather than by a tipping load



Lift point radius



Lift point height



Lifting capacity over the front of the machine



Lifting capacity over the side of the machine

Product Information Section
307.5 Excavator

307.5 Excavator with Fixed Boom and Standard Stick.

(mm) (in)	1500		2000		3000		4500		5000				(mm) (in)
	38		79		118		157		197				
													
6000					* 2343	* 2343					* 1302	1302	3850
197					* 5166	* 5166					* 2870	2870	152
4000			* 2742	* 2742	* 2462	* 2462	* 2210	1894			* 1188	1188	4500
157			* 6048	* 6048	* 5429	* 5429	* 4872	4177			* 2620	2620	181
3000			* 4038	* 4038	* 2890	* 2890	2023	1837	* 1203	* 1203	* 1158	1158	5020
118			* 8903	* 8903	* 6308	* 6308	4481	4051	* 2850	* 2850	* 2553	2553	198
2000					* 3358	2697	1933	1752	1361	1243	* 1181	1181	5240
79					* 7405	5946	4253	3852	3000	2740	* 2605	2605	205
5000					2858	2529	1847	1669	1322	1255	* 1259	1259	5260
38					6302	5574	4073	3681	2915	2658	* 2773	2773	207
0					2705	2441	1788	1613	1295	1179	* 1407	1153	5080
0					6096	5381	3943	3557	2895	2601	* 3102	2543	200
-1000	* 2728	* 2728	* 4411	* 4411	2740	2419	1767	1592			1415	1295	4660
-39	* 6017	* 6017	* 9728	* 9728	6842	5331	3896	3511			3120	2834	185
-2000	* 4041	* 4041	* 3426	* 3426	* 2641	* 2641	* 1780	* 1780			* 1758	1758	4020
-79	* 8910	* 8910	* 7554	* 7554	* 5823	* 5823	* 3925	* 3925			* 3877	3877	158
-3000													0
-118													0

Illustration 99

g06620906

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													
197					* 2343	* 2343					* 1302	1302	3650
4000			* 2742	* 2742	* 2462	* 2462	* 3210	* 3210			* 1188	1188	4590
157			* 6046	* 6046	* 5429	* 5429	* 4872	* 4872			* 2620	2620	181
3000			* 4038	* 4038	* 2600	* 2600	* 2350	* 2350	* 1293	* 1293	* 1158	1158	5030
118			* 8903	* 8903	* 6306	* 6306	* 5191	* 5191	* 2850	* 2850	* 2550	2550	198
2000					* 3358	* 3358	* 2555	1666	* 2131	1392	* 1181	1181	5240
79					* 7405	* 7405	* 5634	4335	* 4098	3070	* 2605	2605	256
1000					* 3668	2885	* 2708	1681	* 2158	1354	* 1258	1258	5290
39					* 8088	6360	* 5970	4149	* 4759	2996	* 2773	2773	207
0					* 3647	2795	* 2710	1823	* 2034	1328	* 1407	1407	5090
0					* 8041	6180	* 5975	4021	* 4489	2927	* 3102	3102	209
-1000	* 2729	* 2729	* 4411	* 4411	* 3322	2769	* 2483	1802			* 1691	1440	4690
-39	* 6017	* 6017	* 8726	* 8726	* 7324	6107	* 5475	3974			* 3729	3194	185
-2000	* 4041	* 4041	* 3420	* 3420	* 2641	* 2641	* 1790	* 1790			* 1758	1758	4020
-79	* 8910	* 8910	* 7554	* 7554	* 5823	* 5823	* 3925	* 3925			* 3877	3877	158
-3000													0
-118													0

Illustration 100

g06620907

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

Product Information Section
307.5 Excavator

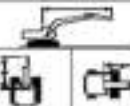
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													
197					* 2343	* 2343					* 1302	1302	3950
4000					* 5166	* 5166					* 2670	2670	152
157			* 2742	* 2742	* 2462	* 2462	* 2210	* 2210			* 1188	1188	4590
3000			* 6046	* 6046	* 5429	* 5429	* 4872	* 4872			* 2620	2620	181
118			* 4038	* 4038	* 2990	* 2990	* 2050	2000	* 1203	* 1203	* 1158	1158	5020
2000			* 8903	* 8903	* 6306	* 6306	* 5181	4424	* 2850	* 2850	* 2553	2553	198
79					* 3358	* 3358	2119	1921	1490	1370	* 1181	1181	5240
1000					* 7405	* 7405	4573	4235	3306	3022	* 2605	2605	205
39					3140	2779	2033	1839	1401	1333	* 1258	1258	5200
0					6924	6127	4482	4054	3221	2939	* 2773	2773	267
0					3047	2691	1974	1782	1424	1307	* 1407	1407	5090
-1000					6719	5905	4353	3930	3101	2882	* 3102	3102	280
-39	* 2729	* 2729	* 4411	* 4411	* 5922	2608	1952	1792			* 1601	1424	4090
-2000	* 6017	* 6017	* 9726	* 9726	* 7324	5684	4305	3884			* 3729	3130	185
-79	* 4041	* 4041	* 3426	* 3426	* 2641	* 2641	* 1780	* 1780			* 1758	1758	4020
-3000	* 9910	* 8910	* 7554	* 7554	* 5823	* 5823	* 3925	* 3925			* 3677	3677	158
-118													0

Illustration 101

g06620911

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

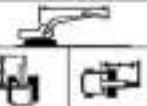
(mm) (in)	1000		2000		3000		4000		5000				(mm) (in)
	39		79		118		157		197				
5000					* 2543	* 2343					* 1302	1302	3990
197					* 5166	* 5166					* 2870	2870	152
4000			* 2742	* 2742	* 2462	* 2462	* 2210	* 2210			* 1188	1188	4590
157			* 6046	* 6046	* 5429	* 5429	* 4872	* 4872			* 2620	2620	181
3000			* 4038	* 4038	* 2880	* 2880	* 2350	* 2350	* 1293	* 1293	* 1158	1158	5030
118			* 8903	* 8903	* 8306	* 8306	* 5181	* 5181	* 2950	* 2950	* 2553	2553	198
2000					* 3358	* 3358	* 2555	2145	* 2131	1527	* 1181	1181	5240
79					* 7405	* 7405	* 5634	4730	* 4098	3396	* 2805	2805	205
1000					* 3880	3154	* 2700	2080	* 2158	1490	* 1258	1258	5280
39					* 8089	6954	* 5970	4543	* 4759	3282	* 2773	2773	207
0					* 3647	3055	* 2710	2003	* 2034	1482	* 1407	1407	5090
0					* 8041	6753	* 5975	4416	* 4498	3223	* 3102	3102	200
-1000	* 2729	* 2729	* 4411	* 4411	* 3322	* 3322	* 2483	1901			* 1691	1691	4890
-39	* 6017	* 6017	* 9726	* 9726	* 7324	* 7324	* 5475	4369			* 3729	3729	185
-2000	* 4041	* 4041	* 3426	* 3426	* 2641	* 2641	* 1790	* 1789			* 1756	1756	4020
-79	* 8910	* 8910	* 7554	* 7554	* 5823	* 5823	* 3825	* 3825			* 3877	3877	158
-3000													0
-118													0

Illustration 102

g06620914

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

Product Information Section
307.5 Excavator

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 1925	* 1925	* 1880	* 1880			* 1229	* 1229	4520
197					* 4245	* 4245	* 4144	* 4144			* 2709	* 2709	178
4000					* 2055	* 2055	* 1921	* 1921	* 1516	1298	* 1145	* 1145	5180
157					* 4531	* 4531	* 4235	* 4235	* 3342	2863	* 2524	* 2524	203
3000					* 2462	* 2462	* 2004	* 2004	1398	1277	* 1122	* 1122	5590
118					* 5429	* 5429	* 4617	* 4617	3083	2815	* 2473	* 2473	219
2000					* 3002	* 3002	1937	1752	1340	1229	* 1142	966	5750
79					* 6620	* 6620	4372	3864	2975	2711	* 2518	2131	326
1000					2894	2528	1928	1648	1295	1177	1028	898	5770
39					6315	5575	4032	3534	2855	2584	2267	2065	327
0					2710	2391	1748	1509	1251	1134	1003	867	5610
0					5990	5271	3848	3406	2757	2500	2322	2110	321
-1000			* 3771	* 3771	2654	2332	1701	1527	1230	1114	1140	1042	5290
-39			* 8315	* 8315	5852	5142	3751	3366	2713	2457	2533	2298	307
-2000	* 3828	* 3828	* 4180	* 4180	* 2982	2335	1702	1527			1374	1243	4090
-79	* 7999	* 7999	* 9040	* 9040	* 6574	5149	3753	3367			3030	2740	383
-3000			* 2764	* 2764	* 2034	* 2034					* 1401	* 1401	5730
-118			* 6095	* 6095	* 4485	* 4485					* 3080	* 3080	347

Illustration 103

g06621167

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
6000					* 1025	* 1025	* 1880	* 1880			* 1220	1220	4530
597					* 4245	* 4245	* 4144	* 4144			* 2709	2709	178
4000					* 2055	* 2055	* 1921	* 1921	* 1515	* 1515	* 1145	1145	5090
157					* 4531	* 4531	* 4235	* 4235	* 3343	* 3343	* 2524	2524	203
3000					* 2462	* 2462	* 2054	* 2054	* 1878	1426	* 1122	* 1122	5990
118					* 5429	* 5429	* 4617	* 4617	* 4141	3190	* 2473	* 2473	219
2000					* 3002	* 3002	* 2337	1999	* 1976	1380	* 1142	1142	5790
79					* 6620	* 6620	* 5153	4341	* 4356	3043	* 2518	2518	226
1000					* 3445	2888	* 2553	1862	* 2063	1326	* 1206	1206	5770
39					* 7596	6368	* 5930	4905	* 4550	2924	* 2658	2658	227
0					* 3600	2744	* 2849	1780	* 2976	1283	* 1327	1063	5810
0					* 7039	6051	* 5941	3925	* 4577	2828	* 2925	2368	221
-1000			* 3771	* 3771	* 3440	2683	* 2958	1737	* 1823	1283	* 1543	1180	5290
-39			* 8315	* 8315	* 7603	5917	* 5940	3629	* 4345	2784	* 3402	2653	207
-2000	* 3926	* 3926	* 4180	* 4180	* 2982	* 2982	* 2190	1737			* 1656	1486	4990
-79	* 7266	* 7266	* 9040	* 9040	* 6574	* 6574	* 4830	3831			* 3656	3154	183
-3000			* 2764	* 2764	* 2034	* 2034					* 1401	1401	3730
-118			* 6065	* 6065	* 4485	* 4485					* 3069	3069	147

Illustration 104

g06621169

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

Product Information Section
307.5 Excavator

(mm) (in)	1000		2000		3000		4000		5000				(mm) (in)
	39		79		118		157		197				
5000													
197					* 1525	* 1525	* 1880	* 1880			* 1229	1229	4525
4000					* 4245	* 4245	* 4144	* 4144			* 2709	2709	179
157					* 2055	* 2055	* 1821	* 1821	* 1516	* 1516	* 1145	1145	5160
3000					* 4531	* 4531	* 4235	* 4235	* 3342	* 3342	* 2524	2524	203
118					* 2462	* 2462	* 2094	* 2094	1537	1404	* 1132	* 1122	5580
2000					* 5429	* 5429	* 4617	* 4617	3369	3097	* 2473	* 2473	219
79					* 3002	* 3002	* 2337	1921	1488	1357	* 1142	1142	5750
1000					* 6620	* 6620	* 5153	4237	3250	2892	* 2518	2518	226
39					* 3445	2779	2014	1917	1433	1304	* 1206	1206	5770
0					* 7586	6128	4441	4007	3160	2876	* 2659	2659	227
0					2999	2641	1931	1738	1389	1262	* 1327	1068	5610
-1000					8611	5824	4258	3932	3063	2782	* 2625	2355	221
-39			* 3771	* 3771	2936	2583	1887	1696	1369	1242	1279	1162	5250
-2000			* 8315	* 8315	6473	5695	4161	3739	3018	2739	2820	2563	207
-79	* 3626	* 3626	* 4100	* 4100	* 2962	* 2962	1888	1698			* 1558	1362	4860
-3000	* 7890	* 7990	* 8040	* 8040	* 6574	* 6574	4162	3740			* 3656	3046	183
-118			* 2764	* 2764	* 2034	* 2034					* 1401	1401	1730
			* 6095	* 6095	* 4485	* 4485					* 3089	3089	147

Illustration 105

g06621221

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
6000													4520
597					* 1025	* 1025	* 1880	* 1880			* 1229	1229	178
4000					* 4245	* 4245	* 4144	* 4144			* 2709	2709	5100
357					* 2055	* 2055	* 1921	* 1921	* 1515	* 1515	* 1145	1145	203
3000					* 4631	* 4631	* 4235	* 4235	* 3342	* 3342	* 2524	2524	5660
118					* 2462	* 2462	* 2094	* 2094	* 1878	1583	* 1122	* 1122	219
2000					* 5429	* 5429	* 4617	* 4617	* 4141	3446	* 2473	* 2473	5790
79					* 3002	* 3002	* 2337	* 2337	* 1876	1514	* 1142	1142	226
1000					* 6620	* 6620	* 5153	* 5153	* 4356	3336	* 2518	2518	6770
39					* 3445	* 3445	* 2553	2041	* 2063	1490	* 1206	1206	227
0					* 7596	* 7596	* 5630	4500	* 4550	3226	* 2659	2659	6810
0					* 3600	3014	* 2549	1959	* 2076	1417	* 1327	1327	221
-1000					* 7938	6645	* 5841	4320	* 4577	3124	* 2625	2625	5250
-39			* 3771	* 3771	* 3448	2653	* 2558	1910	* 1823	1397	* 1543	1396	207
-2000	* 3526	* 3526	* 8315	* 8315	* 7603	6511	* 5640	4224	* 4245	3080	* 3402	2881	4980
-79	* 7096	* 7096	* 4160	* 4160	* 2952	* 2952	* 2190	* 2190			* 1656	1656	183
-3000			* 9640	* 9640	* 6574	* 6574	* 4830	* 4830			* 3656	3656	3730
-118			* 2764	* 2764	* 2034	* 2034					* 1401	1401	147
			* 8065	* 8065	* 4485	* 4485					* 3080	3080	

Illustration 106

g06621228

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

Product Information Section
307.5 Excavator

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 2343	* 2343					* 1302	1302	3850
197					* 5199	* 5199					* 2870	2870	152
4000			* 2742	* 2742	* 2462	* 2462	* 2210	* 2210			* 1188	1188	4500
157			* 6048	* 6048	* 5429	* 5429	* 4872	* 4872			* 2620	2620	181
3000			* 4038	* 4038	* 2990	* 2990	* 2350	1902	* 1209	* 1209	* 1158	1158	5020
118			* 8903	* 8903	* 6395	* 6395	* 5181	4190	* 2850	* 2850	* 2553	2553	198
2000					* 3358	2792	2011	1816	1419	1291	* 1181	1181	5240
79					* 7495	6156	4434	4064	3128	2947	* 2605	2605	205
1000					2976	2621	1826	1734	1390	1254	* 1258	1258	5260
39					6562	5784	4244	3822	3043	2765	* 2773	2773	207
0					2883	2536	1990	1877	1353	1228	* 1407	1201	5080
0					6356	5592	4114	3696	2983	2708	* 3102	2948	200
-1000	* 2729	* 2729	* 4411	* 4411	2858	2513	1844	1667			* 1991	1338	4800
-39	* 6017	* 6017	* 5726	* 5726	6302	5541	4067	3653			* 3729	2950	185
-2000	* 4041	* 4041	* 3426	* 3426	* 2841	* 2841	* 1780	* 1780			* 1758	1758	4020
-79	* 8910	* 8910	* 7554	* 7554	* 5823	* 5823	* 3925	* 3925			* 3877	3877	159
-3000													0
-118													0

Illustration 107

g06621434

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

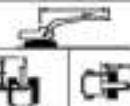
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													
500					* 2343	* 2343					* 1302	1302	3850
507					* 5188	* 5188					* 2870	2870	152
4000			* 2742	* 2742	* 2462	* 2462	* 2210	* 2210			* 1188	1188	4590
157			* 8048	* 8048	* 5429	* 5429	* 4872	* 4872			* 2620	2620	181
3000			* 4038	* 4038	* 2860	* 2860	* 2380	* 2380	* 1293	* 1293	* 1158	1158	5020
118			* 8903	* 8903	* 6308	* 6308	* 5181	* 5181	* 2856	* 2856	* 2553	2553	188
2000					* 3358	* 3358	* 2555	2008	* 2131	1448	* 1181	1181	5240
79					* 7405	* 7405	* 6534	4494	* 4898	3185	* 2605	2605	206
1000					* 3668	2692	* 2708	1953	* 2158	1408	* 1258	1258	5290
39					* 8089	6588	* 6970	4307	* 4759	3105	* 2773	2773	207
0					* 5647	2601	* 2710	1895	* 2034	1381	* 1407	1407	5090
0					* 8041	6398	* 5975	4179	* 4488	3046	* 3102	3102	200
-1000	* 2729	* 2729	* 4411	* 4411	* 3322	* 3322	* 2483	1874			* 1691	1691	4090
-39	* 8017	* 8017	* 8726	* 8726	* 7324	* 7324	* 5475	4132			* 3729	3729	185
-2000	* 4041	* 4041	* 3426	* 3426	* 2641	* 2641	* 1780	* 1780			* 1758	1758	4020
-79	* 8910	* 8910	* 7554	* 7554	* 5823	* 5823	* 3925	* 3925			* 3877	3877	158
-3000													0
-118													0

Illustration 108

g06621436

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

Product Information Section
307.5 Excavator

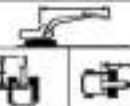
(mm) (in)	1000		2000		3000		4000		5000				(mm) (in)
	39		79		118		157		197				
6000					* 2343	* 2343					* 1302	1302	3950
597					* 5166	* 5166					* 2870	2870	152
4000			* 2742	* 2742	* 2482	* 2482	* 2210	* 2210			* 1188	1188	4590
157			* 6046	* 6046	* 5429	* 5429	* 4872	* 4872			* 2620	2620	181
3000			* 4038	* 4038	* 2860	* 2860	* 2350	* 2350	* 1293	* 1293	* 1158	1158	5020
118			* 8903	* 8903	* 8306	* 8306	* 5181	* 5181	* 2850	* 2850	* 2553	2553	198
2000					* 3358	* 3358	2197	1085	1557	1419	* 1181	1181	5240
79					* 7405	* 7405	4844	4377	3434	3129	* 2605	2605	266
1000					* 2690	2674	2111	1903	1519	1382	* 1258	1258	5290
39					* 6089	5337	4854	4195	3348	3046	* 2773	2773	267
0					* 5647	2787	2052	1848	1492	1356	* 1407	1407	5090
0					* 6041	6145	4524	4071	3289	2986	* 3102	3102	200
-1000	* 2729	* 2729	* 4411	* 4411	* 3022	2764	2036	1826			* 1691	1691	4090
-39	* 6017	* 6017	* 5726	* 5726	* 7324	6064	4477	4026			* 3729	3729	185
-2000	* 4041	* 4041	* 3426	* 3426	* 2641	* 2641	* 1780	* 1780			* 1756	1756	4020
-79	* 8910	* 8910	* 7554	* 7554	* 5823	* 5823	* 3625	* 3625			* 3677	3677	158
-3000													0
-118													0

Illustration 109

g06621438

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

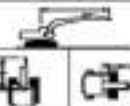
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
6000					* 2343	* 2343					* 1302	1302	3850
157					* 5168	* 5168					* 2870	2870	152
4000			* 2742	* 2742	* 2462	* 2462	* 2210	* 2210			* 1188	1188	4590
157			* 6048	* 6048	* 5429	* 5429	* 4872	* 4872			* 2620	2620	181
3000			* 4038	* 4038	* 2880	* 2880	* 2350	* 2350	* 1265	* 1265	* 1158	1158	5030
118			* 8903	* 8903	* 6308	* 6308	* 5181	* 5181	* 2850	* 2850	* 2553	2553	188
2000					* 3358	* 3358	* 3555	* 2695	* 2131	1580	* 1181	1181	5240
79					* 7405	* 7405	* 5634	* 5634	* 4858	3485	* 2605	2605	206
1000					* 3688	* 3688	* 2708	2132	* 2158	1542	* 1258	1258	5290
39					* 6088	* 6088	* 5970	4701	* 4758	3490	* 2773	2773	207
0					* 3647	* 3647	* 2710	2074	* 2094	1515	* 1407	1407	5080
0					* 6041	* 6041	* 5975	4574	* 4486	3342	* 3102	3102	200
-1000	* 2729	* 2729	* 4411	* 4411	* 3322	* 3322	* 2483	2053			* 1691	1691	4890
-30	* 8017	* 8017	* 9726	* 9726	* 7324	* 7324	* 5475	4527			* 3729	3729	185
-2000	* 4041	* 4041	* 3426	* 3426	* 2841	* 2841	* 1780	* 1780			* 1758	1758	4020
-79	* 8910	* 8910	* 7554	* 7554	* 5823	* 5823	* 3925	* 3925			* 3877	3877	158
-3000													0
-118													0

Illustration 110

g06621894

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

Product Information Section
307.5 Excavator

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 1625	* 1925	* 1880	* 1880			* 1229	1229	4520
197					* 4246	* 4245	* 4144	* 4144			* 2709	2709	178
4000					* 2055	* 2055	* 1921	* 1921	* 1516	* 1516	* 1145	1145	5160
157					* 4531	* 4531	* 4235	* 4235	* 3342	* 3342	* 2524	2524	203
3000					* 2462	* 2462	* 2094	* 2094	1456	1325	* 1122	* 1122	5580
118					* 5429	* 5429	* 4617	* 4617	3211	2922	* 2473	* 2473	219
2000					* 3002	* 3002	* 2307	1816	1407	1278	* 1142	1142	5790
79					* 6620	* 6620	* 5153	4005	3103	2818	* 2518	2518	226
1000					* 3445	2624	1908	1712	1353	1205	* 1206	677	5770
39					* 7585	5785	4203	3779	2982	2701	* 2659	2155	227
0					2834	2486	1823	1639	1309	1182	1103	669	5610
0					6250	5482	4020	3601	2885	2607	2432	2294	221
-1000			* 3771	* 3771	2772	2427	1779	1591	1288	1163	1203	1048	5250
-39			* 8315	* 8315	6111	5353	3923	3508	2840	2584	2653	2399	207
-3000	* 3626	* 3626	* 4100	* 4100	* 2962	2436	1780	1591			* 1858	1255	4680
-79	* 7998	* 7998	* 9040	* 9040	* 6574	5359	3924	3509			* 3656	2856	183
-3000			* 2764	* 2764	* 2034	* 2034					* 1401	1401	3730
-118			* 6085	* 6085	* 4405	* 4405					* 3080	3080	147

Illustration 111

g06621895

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

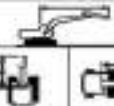
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													4530
197					* 1925	* 1925	* 1895	* 1880			* 1229	1229	178
4000					* 4245	* 4245	* 4144	* 4144			* 2709	2709	5140
157					* 2055	* 2055	* 1921	* 1921	* 1516	* 1516	* 1145	1145	263
3000					* 4531	* 4531	* 4235	* 4235	* 3342	* 3342	* 2524	2524	5590
118					* 2462	* 2462	* 2094	* 2094	* 1876	1482	* 1122	* 1122	219
2000					* 5429	* 5429	* 4617	* 4617	* 4141	3269	* 2473	* 2473	5750
79					* 3002	* 3002	* 2337	* 2337	* 1976	1434	* 1142	1142	226
1000					* 6620	* 6620	* 5153	* 5153	* 4356	3182	* 2518	2518	5770
39					* 3445	* 3445	* 2553	1934	* 2063	1380	* 1206	1206	227
Ø					* 7596	* 7596	* 5830	4284	* 4550	3043	* 2659	2659	5810
Ø					* 3600	2852	* 2049	1852	* 2076	1337	* 1327	1130	221
-1000					* 7608	6289	* 5941	4084	* 4577	2947	* 2825	2481	5250
-39					* 3771	* 3771	* 3448	2791	* 2558	1808	* 1823	1316	207
2000	* 3626	* 3626	* 4100	* 4100	* 2982	* 2982	* 2190	1808	* 4346	2903	* 3402	2714	4090
-79	* 7995	* 7995	* 9040	* 9040	* 6574	* 6574	* 4830	3989			* 3656	3656	3730
-3000			* 2764	* 2764	* 2038	* 2038					* 1401	1401	147
-118			* 6065	* 6065	* 4485	* 4485					* 3089	3089	

Illustration 112

g06621903

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

Product Information Section
307.5 Excavator

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 1625	* 1825	* 1880	* 1880			* 1220	1220	4520
497					* 4245	* 4245	* 4144	* 4144			* 2709	2709	178
4000					* 2055	* 2055	* 1921	* 1921	* 1518	* 1518	* 1145	1145	5180
157					* 4531	* 4531	* 4235	* 4235	* 3342	* 3342	* 2524	2524	203
3000					* 2462	* 2462	* 2004	* 2004	1505	1453	* 1122	* 1122	5590
118					* 5429	* 5429	* 4817	* 4817	3517	3204	* 2473	* 2473	219
2000					* 3002	* 3002	* 2337	1988	1546	1405	* 1142	1142	5750
79					* 6620	* 6620	* 5153	4379	3408	3099	* 2518	2518	226
1000					* 3446	2674	2092	1882	1491	1353	* 1206	1206	5770
39					* 7586	6338	4813	4149	3288	2983	* 2659	2659	227
0					* 3600	2737	2006	1802	1447	1310	* 1327	1110	5810
0					* 7938	6035	4430	3974	3191	2889	* 2625	2448	221
-1000			* 3771	* 3771	* 3446	2670	1985	1760	1427	1290	* 1543	1206	5250
-39			* 8315	* 8315	* 7603	5900	4332	3881	3146	2845	* 2402	2664	207
-2000	* 3626	* 3626	* 4160	* 4160	* 2982	* 2982	* 2190	1761			* 1656	1656	4990
-79	* 7996	* 7996	* 9040	* 9040	* 6574	* 6574	* 4930	3982			* 3656	3656	183
-3000			* 2764	* 2764	* 2034	* 2034					* 1401	1401	3730
-118			* 6065	* 6065	* 4485	* 4485					* 3069	3069	147

Illustration 113

g06621905

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade UP with no optional counterweight.

(mm) (in)	1000		2000		3000		4000		5000				(mm) (in)
	39		79		118		157		197				
5000													4530
197					* 1925	* 1925	* 1880	* 1880			* 1229	1229	178
4000					* 4245	* 4245	* 4144	* 4144			* 2709	2709	5160
157					* 2055	* 2055	* 1921	* 1921	* 1516	* 1516	* 1145	1145	203
3000					* 4531	* 4531	* 4235	* 4235	* 3042	* 3042	* 2524	2524	5500
118					* 2462	* 2462	* 2094	* 2094	* 1878	1617	* 1122	* 1122	219
2000					* 5429	* 5429	* 4617	* 4617	* 4141	3564	* 2473	* 2473	5750
79					* 3002	* 3002	* 2337	* 2337	* 1976	1688	* 1142	1142	228
1000					* 6820	* 6820	* 5153	* 5153	* 4356	3457	* 2518	2518	5770
39					* 3445	* 3445	* 2553	2113	* 2083	1514	* 1206	1206	227
0					* 7598	* 7598	* 5830	4658	* 4550	3339	* 2659	2659	5810
0					* 3660	* 3660	* 2849	2031	* 2076	1471	* 1327	1327	221
-1000					* 7938	* 7938	* 5841	4478	* 4577	3243	* 2625	2625	5250
-39			* 3771	* 3771	* 3448	* 3448	* 2553	1986	* 1823	1450	* 1543	1543	207
-2000			* 6315	* 6315	* 7503	* 7503	* 5540	4382	* 4240	3188	* 3402	3402	4660
-79	* 3626	* 3626	* 4100	* 4100	* 2982	* 2982	* 2100	* 2100			* 1958	1958	3730
-3000			* 9040	* 9040	* 6574	* 6574	* 4830	* 4830			* 3956	3956	547
-118			* 2764	* 2764	* 2034	* 2034					* 1401	1401	147

Illustration 114

g06621906

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, blade DOWN with no optional counterweight.

Product Information Section
307.5 Excavator

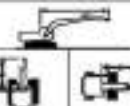
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													3850
4000					* 2207	* 2337					* 1206	1206	152
3000					* 5153	* 5153					* 2854	2854	181
2000					* 2472	* 2472	* 2209	1704			* 1181	1181	5200
1000					* 5400	* 5400	* 4870	3890			* 2604	2604	181
0					* 2885	* 2885	* 2364	1721	* 1289	* 8	* 1153	1153	5020
-1000					* 6361	* 6361	* 5214	3794	* 2841	* 12	* 2543	2543	186
-2000					* 3383	2526	1984	1644	1366	1152	* 1182	1182	5240
-3000					* 7459	5569	4375	3624	3063	2540	* 2605	2605	206
-4000					2915	2349	1909	1563	1357	1121	* 1264	1030	5280
-5000					8429	5179	4188	3467	2992	2472	* 2787	2272	207
-6000					2818	2258	1840	1506	1331	1098	* 1420	1069	5080
-7000					6215	4979	4058	3322	2685	2416	* 3131	2357	200
-8000	* 2727	* 2727	* 4465	* 4465	2795	2237	1819	1480			1498	1107	4090
-9000	* 6013	* 6013	* 9714	* 9714	6105	4833	4011	3277			3210	2638	185
-10000	* 4033	* 4033	* 3429	* 3429	* 2661	2272	* 1905	1517			* 1783	1509	4020
-11000	* 8894	* 8894	* 7561	* 7561	* 5867	5010	* 3980	3345			* 3832	3327	158
-12000													0
-13000													0

Illustration 115

g06621907

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, no blade with no optional counterweight.

(mm) (in)	1000		2000		3000		4000		5000				(mm) (in)
	35		75		118		157		197				
													
5000					* 2337	* 2307					* 1295	1295	3850
197					* 5153	* 5153					* 2854	2854	152
4000					* 2472	* 2472	* 2209	* 2209			* 1181	1181	4500
157					* 5450	* 5450	* 4870	* 4870			* 2604	2604	181
3000					* 2885	* 2895	* 2364	1890	* 1299	* 8	* 1153	1153	5020
118					* 6361	* 6361	* 5214	4167	* 2941	* 12	* 2543	2543	198
2000					* 3383	2777	2170	1813	1528	1200	* 1182	1182	5240
75					* 7459	6122	4794	3997	3259	2621	* 2905	2905	205
1000					* 3983	2908	2085	1732	1491	1249	* 1294	1294	5200
35					* 8122	6732	4598	3820	3298	2753	* 2787	2787	207
0					3100	2509	2029	1676	1470	1223	* 1429	1194	5080
0					6836	5532	4467	3666	3248	2698	* 3131	2633	200
-1000	* 2727	* 2727	* 4495	* 4405	* 3335	2488	2005	1655			* 1711	1335	4890
-35	* 6013	* 6013	* 5714	* 6714	* 7353	5486	4421	3650			* 3772	2943	185
-2000	* 4033	* 4033	* 3429	* 3429	* 2961	* 2961	* 1805	* 1905			* 1783	1783	4020
-75	* 8894	* 8894	* 7581	* 7581	* 5867	* 5867	* 3980	* 3980			* 3932	3932	158
-3000													0
-118													0

Illustration 116

g06621909

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, no blade with no optional counterweight.

Product Information Section
307.5 Excavator

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 1020	* 1020	* 1872	* 1872			* 1222	1222	4520
197					* 4234	* 4234	* 4129	* 4129			* 2694	2694	178
4000					* 2062	* 2062	* 1922	* 1922	* 1515	1196	* 1138	1138	3160
157					* 4547	* 4547	* 4339	* 4239	* 3329	2638	* 2509	2509	203
3000					* 2483	* 2483	* 2188	1737	1423	1182	* 1117	* 982	5560
118					* 5476	* 5476	* 4648	3831	3137	2690	* 2483	* 2120	219
2000					* 3029	2578	1987	1643	1382	1143	* 1141	883	5750
79					* 6678	5680	4380	3622	3047	2520	* 2517	1947	326
1000					2907	2355	1880	1542	1303	1096	* 1210	958	5770
39					6454	5193	4146	3399	2940	2416	* 2099	1862	227
0					2775	2213	1797	1462	1201	1055	1061	881	5810
0					8119	4880	3963	3224	2848	2327	2383	1943	221
-1000			* 3771	* 3771	2712	2154	1753	1420	1271	1035	1183	965	5250
-39			* 8316	* 8295	5980	4750	3865	3130	2862	2283	2859	2127	307
-2000	* 3621	* 3621	* 4105	* 4105	* 3601	2180	1754	1421			1417	1165	4880
-79	* 7985	* 7985	* 9052	* 9052	* 6615	4762	3867	3133			3124	2547	183
-3000			* 2779	* 2779	* 2058	* 2059					* 1427	1427	3730
-118			* 6125	* 6125	* 4538	* 4538					* 3146	3146	147

Illustration 117

g06621910

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, no blade with no optional counterweight.

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													4520
197					* 1020	* 1020	* 1872	* 1872			* 1222	1222	173
4000					* 4234	* 4234	* 4129	* 4129			* 2694	2694	173
157					* 2062	* 2062	* 1922	* 1922	* 1510	* 1510	* 1138	1138	5160
3000					* 4547	* 4547	* 4239	* 4239	* 3329	* 3329	* 2506	2506	203
118					* 2463	* 2463	* 2109	* 2109	1581	1309	* 1117	* 1117	5560
2000					* 5470	* 5470	* 4648	* 4648	3443	2887	* 2463	* 2463	219
79					* 3029	* 3029	* 2360	1812	1521	1270	* 1141	1141	5760
1000					* 6678	* 6678	* 6205	3995	3353	2901	* 2517	2517	226
39					* 3467	2606	2098	1711	1472	1223	* 1210	985	5770
0					* 7544	5746	4558	3772	3245	2697	* 2666	2128	227
0					3067	2464	1983	1631	1430	1183	* 1337	992	5810
0					6741	5433	4373	3597	3155	2609	* 2948	2187	221
-1000			* 3771	* 3771	* 3464	2405	1939	1589	1408	1163	1314	1085	5250
-39			* 8316	* 8316	* 7638	5303	4275	3503	3107	2594	2086	2382	207
-2000	* 3621	* 3621	* 4165	* 4165	* 3001	2410	* 2217	1590			* 1680	1294	4990
-79	* 7985	* 7985	* 9052	* 9052	* 6616	5315	* 4689	3505			* 3704	2853	183
-3000			* 2778	* 2778	* 2058	* 2058					* 1427	1427	3730
-118			* 6125	* 6125	* 4538	* 4538					* 3146	3146	147

Illustration 118

g06621912

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, no blade with no optional counterweight.

Product Information Section
307.5 Excavator

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 2341	* 2341					* 1306	1306	3790
197					* 5162	* 5162					* 2880	2880	149
4000					* 2454	* 2454	* 2204	1829			* 1185	1185	4050
157					* 5412	* 5412	* 4900	4034			* 2612	2612	179
3000					* 2855	* 2855	* 2352	1789	* 1180	* 7	* 1153	1153	5000
118					* 6295	* 6295	* 5186	3944	* 2903	* 15	* 2543	2543	197
2000					* 3358	2633	2086	1713	1450	1202	* 1178	1178	5230
79					* 7400	5607	4560	3777	3107	2651	* 2599	2599	209
1000					3044	2452	1983	1632	1418	1171	* 1257	1076	5280
39					6711	5407	4372	3598	3126	2582	* 2772	2372	207
0					2341	2356	1521	1573	1301	1145	* 1409	1112	5130
0					6485	5196	4237	3465	3067	2525	* 3104	2452	201
-1000	* 2614	* 2614	* 4206	* 4206	* 3303	2332	1896	1550			* 1687	1237	4720
-39	* 5764	* 5764	* 8407	* 8407	* 7415	5142	4184	3419			* 3720	2728	186
-2000	* 4138	* 4138	* 3502	* 3502	* 2715	* 2715	* 1882	1576			* 1800	1543	4070
-79	* 9125	* 9125	* 7723	* 7723	* 5987	* 5987	* 4151	3476			* 3909	3403	160
-3000											* 1252	1252	2960
-118											* 2790	2790	117

Illustration 119

g06621913

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, no blade with no optional counterweight.

(mm) (in)	1000		2000		3000		4000		5000				
	39		79		118		157		197				
													(mm) (in)
5000					* 2341	* 2341					* 1306	1306	
197					* 5162	* 5162					* 2690	2690	140
4000					* 2454	* 2454	* 2204	* 2204			* 1185	1185	4550
157					* 5412	* 5412	* 4980	* 4980			* 2612	2612	179
3000					* 2855	* 2855	* 2352	1954	* 1180	* 7	* 1153	1153	5000
118					* 6295	* 6295	* 5186	4317	* 2803	* 15	* 2543	2543	197
2000					* 3295	2694	* 2558	1982	1588	1330	* 1179	1179	5230
79					* 7400	6300	* 5952	4150	3502	2932	* 2599	2599	206
1000					* 3675	2703	2186	1801	1550	1299	* 1257	1257	5290
39					* 8103	5900	4782	3971	3431	2864	* 2772	2772	207
0					* 3668	2607	2107	1742	1529	1273	* 1409	1409	5190
0					* 9087	5749	4646	3841	3372	2867	* 3104	3104	201
-1000	* 2614	* 2614	* 4208	* 4208	* 3063	2583	2065	1719			* 1687	1374	4720
-30	* 5764	* 5764	* 9407	* 9407	* 7415	5995	4594	3791			* 3720	3031	166
-2000	* 4138	* 4138	* 3502	* 3502	* 2715	* 2715	* 1882	* 1882			* 1800	1800	4070
-79	* 9125	* 9125	* 7723	* 7723	* 5987	* 5987	* 4151	* 4151			* 3909	3069	160
-3000											* 1252	1252	2960
-118											* 2790	2790	117

Illustration 120

g06621915

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, no blade with no optional counterweight.

Product Information Section
307.5 Excavator

(mm) (in)	1000		2000		3000		4000		5000				(mm) (in)
	30		70		118		157		197				
													(mm) (in)
5000					* 1921	* 1921	* 1846	* 1846			* 1230	1230	4470
197					* 4225	* 4225	* 4071	* 4071			* 2712	2712	176
4000					* 2051	* 2051	* 1915	* 1915	* 1455	1243	* 1141	1141	5130
157					* 4523	* 4523	* 4223	* 4223	* 3206	2742	* 2515	2515	202
3000					* 2453	* 2453	* 2094	* 2094	1403	1232	* 1117	* 1117	5540
118					* 5409	* 5409	* 4817	* 4817	3271	2717	* 2483	* 2483	218
2000					* 2996	* 2996	* 2345	1713	1444	1194	* 1130	827	5740
70					* 6607	* 6607	* 5171	3779	3183	2633	* 2511	2044	225
1000					* 3440	2462	1805	1611	1305	1147	* 1205	896	5770
30					* 7502	5426	4333	3553	3075	2529	* 2657	1982	227
0					2501	2314	1880	1530	1302	1106	1128	828	5620
0					6396	5103	4145	3374	2962	2438	2486	2029	221
-1000					2833	2251	1833	1485	1330	1084	1228	1003	5280
-36			* 3678	* 3678	6247	4863	4062	3275	2932	2391	2711	2211	208
-2000	* 3523	* 3523	* 4166	* 4166	* 3038	2253	1831	1483			* 1687	1191	4710
-79	* 7768	* 7768	* 9186	* 9186	* 6701	4967	4037	3271			* 3721	2526	185
-3000	* 3821	* 3821	* 2878	* 2878	* 2138	* 2138					* 1452	1452	3800
-118	* 8426	* 8426	* 6348	* 6348	* 4714	* 4714					* 3203	3203	100

Illustration 121

g06621916

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, no blade with no optional counterweight.

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													4470
197					* 1921	* 1921	* 1946	* 1946			* 1230	1230	178
4000					* 4235	* 4235	* 4071	* 4071			* 2712	2712	5130
157					* 2051	* 2051	* 1915	* 1915	* 1455	* 1455	* 1141	1141	202
3000					* 4523	* 4523	* 4223	* 4223	* 3208	* 3208	* 2515	2515	5540
118					* 2453	* 2453	* 2094	* 2094	* 1878	1380	* 1117	* 1117	218
2000					* 5409	* 5409	* 4617	* 4617	* 4136	2998	* 2483	* 2483	5740
79					* 2596	* 2596	* 2345	1882	1582	1321	* 1139	1139	226
1000					* 6607	* 6607	* 5171	4158	3489	2914	* 2511	2511	5770
39					* 3448	2710	2151	1781	1530	1274	* 1205	1006	227
0					* 7902	5981	4742	3926	3381	2810	* 2657	2218	5620
0					* 3517	2505	2086	1699	1491	1233	* 1327	1091	221
0					* 7875	5596	4555	3747	3287	2720	* 2627	2273	5280
-1000			* 3878	* 3878	* 3481	2502	2519	1654	1468	1212	* 1542	1122	208
-39			* 8110	* 8110	* 7677	5516	4451	3648	3238	2672	* 3400	2474	4710
-2000	* 3523	* 3523	* 4168	* 4168	* 3039	2503	* 2250	1652			* 1687	1328	185
-79	* 7758	* 7758	* 9186	* 9186	* 6701	5520	* 4962	3644			* 3721	2629	3890
-3000	* 3821	* 3821	* 2879	* 2879	* 2138	* 2138					* 1452	1452	150
-118	* 8426	* 8426	* 6349	* 6349	* 4734	* 4734					* 3203	3203	

Illustration 122

g06621917

Lift chart above : Fixed boom, standard stick, triple grouser track shoes, no bucket, no blade with no optional counterweight.

i08509677

- cab
- 75 kg (165 lb) operator

Lifting Capacities (308.5 Excavator)

SMCS Code: 7000

S/N: GZ81-Up

WARNING

Failure to comply to the rated load can cause possible personal injury or property damage. This includes the risk of unintended boom lowering. Review the rated load of a particular work tool before performing any operation. Make adjustments to the rated load as necessary for non-standard configurations.

Note: Lifting capacities are based on a standard machine with the following conditions:

- lubricants
- full fuel tank
- rubber track

Lifting capacities will vary with different work tools and attachments. Consult your Cat dealer regarding the lifting capacities for specific work tools and attachments.

Note: Lifting capacities should be used as a guide. Work tools, uneven ground conditions, soft ground conditions, or poor ground conditions have effects on lifting capacities. The operator is responsible for being aware of these effects.

Special hazards (toxic gases, ground conditions, etc.) require special precautions. The operator must determine whether special hazards exist in each application. The operator shall perform the appropriate steps to eliminate the hazard. The operator shall perform the appropriate steps to reduce the hazard.

For North American applications and European applications, the lifting capacities are defined by "ISO 10567 2007". The lifting capacities are defined as the lower value of 75% of the static tipping capacity or 87% of the hydraulic lift capacity.

Rated loads were calculated with a machine that was equipped with a standard bucket and no quick coupler. If other combinations of work tools are used, the difference between the weight of the work tool and/or quick coupler and the standard bucket must be subtracted from the rated load.

This machine may be equipped with a standard stick or with a long stick. Lifting capacities may vary between a standard stick and a long stick. Measure the distance on the stick between the boom hinge pin and the work tool hinge pin. This distance will tell you if the machine is equipped with a standard stick or with a long stick.

Refer to Operation and Maintenance Manual, "Specifications" in this manual for information on stick length.

Note: Regional regulations may require the use of an overload warning device and boom and stick lowering control valves during object handling applications.

Contact your Cat dealer for additional information.



Heavy Lift ON

Symbols Found in the Lifting Capacity Charts

Below are symbols that are commonly found on lifting capacity charts for track excavators.

Note: Depending on the machine configuration, some symbols may not be used.

(m)
(ft) **Measurements are provided in meters and feet**



Lift Capacities are provided in kilograms and pounds

,

Load is limited by hydraulic lifting capacity rather than by a tipping load



Lift point radius



Lift point height



Lifting capacity over the front of the machine



Lifting capacity over the side of the machine

308.5 Excavator with Fixed Boom

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 2224	* 2224					* 1800	* 1800	3950
157					* 4904	* 4904					* 3990	* 3990	158
4000					* 2353	* 2353	* 2129	* 2129			* 1898	* 1898	4070
157					* 5189	* 5189	* 4694	* 4694			* 3744	* 3744	184
3000			* 3790	* 3790	* 2751	* 2751	* 2280	1877	1588	1302	* 1887	1256	5190
118			* 8358	* 8358	* 6067	* 6067	* 5028	4139	3452	2870	* 3721	2769	201
2000					* 3203	2761	* 2498	1780	1528	1299	1383	1146	5310
79					* 7195	6089	* 5503	3939	3366	2791	3047	2527	209
1000					* 3615	2579	2083	1698	1480	1224	1340	1110	5330
39					* 7970	5684	4593	3743	3271	2699	2902	2447	210
0					* 5645	2477	2018	1636	1450	1193	1387	1142	5190
0					* 6038	5491	4445	3605	3108	2630	3058	2518	203
-1000	* 3148	* 3148	* 4588	* 4588	* 3370	2444	1987	1608			1543	1294	4770
-39	* 6942	* 6942	* 10118	* 10118	* 7431	5389	4382	3546			3401	2788	186
-2000	* 4968	* 4968	* 3638	* 3638	* 2755	* 2755	* 1953	1628			* 1844	1570	4110
-79	* 10292	* 10292	* 8022	* 8022	* 6075	* 6075	* 4306	3591			* 4086	3463	162
-3000			* 2041	* 2041	* 1421	* 1421					* 1415	* 1415	3010
-118			* 4500	* 4500	* 3133	* 3133					* 3121	* 3121	119

Illustration 123

g06633471

Lift chart above : Fixed boom, standard stick with no optional counterweight, triple grouser track shoes, no bucket and blade UP.

Product Information Section
308.5 Excavator

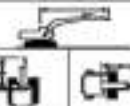
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													
5000					* 2224	* 2224					* 1800	* 1800	3950
5000					* 4904	* 4904					* 3900	* 3900	158
4000					* 2353	* 2353	* 2129	* 2129			* 1898	* 1898	4670
157					* 5189	* 5189	* 4994	* 4994			* 3744	* 3744	184
3000			* 3790	* 3790	* 2751	* 2751	* 2280	* 2280	* 2028	1481	* 1887	* 1411	5190
118			* 8358	* 8358	* 6067	* 6067	* 5028	* 5028	* 4471	3222	* 3721	* 3110	201
2000					* 3263	* 3263	* 2498	2014	* 2091	1435	* 1740	* 1291	5310
79					* 7195	* 7195	* 5508	4441	* 4619	3142	* 3858	* 2846	209
1000					* 3615	2667	* 2670	1923	* 2138	1382	* 1800	* 1260	5330
39					* 7970	6519	* 5880	4239	* 4715	3047	* 4100	* 2784	210
0					* 5645	2851	* 2700	1858	* 2084	1350	* 1888	* 1262	5190
0					* 6038	6296	* 5954	4097	* 4584	2976	* 4382	* 2848	203
-1000	* 3148	* 3148	* 4588	* 4588	* 3370	2817	* 2510	1891			* 1667	* 1433	4770
-39	* 6942	* 6942	* 10118	* 10118	* 7431	6211	* 6548	4096			* 4315	* 3159	188
-2000	* 4968	* 4968	* 3638	* 3638	* 2755	* 2755	* 1953	* 1853			* 1844	* 1844	4110
-79	* 10292	* 10292	* 8022	* 8022	* 6075	* 6075	* 4306	* 4306			* 4086	* 4086	162
-3000			* 2041	* 2041	* 1421	* 1421					* 1415	* 1415	3010
-118			* 4500	* 4500	* 3133	* 3133					* 3121	* 3121	119

Illustration 124

g06633472

Lift chart above : Fixed boom, standard stick with no optional counterweight, triple grouser track shoes, no bucket and blade DOWN.

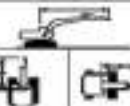
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
6000													
597					* 2224	* 2224					* 1809	* 1809	3050
4000					* 4604	* 4604					* 3960	* 3960	158
157					* 2353	* 2353	* 2129	* 2129			* 1808	* 1808	4670
3000					* 5189	* 5189	* 4694	* 4694			* 3744	* 3744	184
118			* 3790	* 3790	* 2751	* 2751	* 2280	* 2280	1706	1427	* 1687	1379	5100
2000			* 8358	* 8358	* 6067	* 6067	* 5028	* 5028	3767	3147	* 3721	3040	201
79					* 3263	* 3263	* 2498	1953	1671	1392	* 1749	1263	5310
1000					* 7195	* 7195	* 5508	4306	3684	3099	* 3858	2784	209
39					* 3615	2825	2276	1864	1626	1349	1475	1226	6330
0					* 7970	6229	5019	4111	3586	2978	3252	2794	210
0					* 3645	2724	2206	1801	1590	1318	1624	1263	5190
0					* 6038	5006	4370	3972	3513	2907	3390	2784	203
-1000	* 3148	* 3148	* 4588	* 4588	* 3370	2691	* 2510	1775			* 1957	1587	4770
-30	* 6942	* 6942	* 10116	* 10116	* 7431	5934	* 5543	3913			* 4315	3681	188
-2000	* 4068	* 4068	* 3838	* 3838	* 2755	* 2755	* 1953	* 1953			* 1844	* 1844	4110
-79	* 10292	* 10292	* 8022	* 8022	* 6075	* 6075	* 4306	* 4306			* 4086	* 4086	162
-3000			* 2041	* 2041	* 1421	* 1421					* 1415	* 1415	3010
-118			* 4560	* 4560	* 3133	* 3133					* 3121	* 3121	119

Illustration 125

g06633473

Lift chart above : Fixed boom, standard stick with optional counterweight, triple grouser track shoes, no bucket and blade UP.

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(mm) (in)	1000		2000		3000		4000		5000				(mm) (in)
	39		79		118		157		197				
5000													3050
187					* 2224	* 2224					* 1809	* 1009	156
4000					* 4904	* 4904					* 3900	* 3690	4670
157					* 2353	* 2353	* 2129	* 2129			* 1898	* 1698	184
3000					* 5189	* 5189	* 4894	* 4894			* 3744	* 3744	5100
118			* 3790	* 3790	* 2751	* 2751	* 2280	* 2280	* 2028	1593	* 1687	* 1687	201
2000			* 8358	* 8358	* 6067	* 6067	* 5008	* 5008	* 4471	3514	* 3721	* 3721	5310
79					* 3263	* 3263	* 2499	* 2499	* 2091	1657	* 1749	* 1433	209
1000					* 7195	* 7195	* 6508	* 6508	* 4610	3433	* 3858	* 3116	5390
39					* 3615	* 3615	* 2670	2009	* 2138	1514	* 1899	* 1375	210
0					* 7970	* 7970	* 6886	4629	* 4715	3339	* 4169	* 3033	5190
0					* 3645	3117	* 2700	2035	* 2084	1482	* 1988	* 1418	203
-1000	* 3148	* 3148	* 4588	* 4588	* 3370	* 3370	* 2516	2007			* 1957	* 1573	4770
-39	* 6942	* 6942	* 10116	* 10116	* 7431	* 7431	* 5549	4426			* 4315	* 3489	388
-2000	* 4958	* 4958	* 3638	* 3638	* 2755	* 2755	* 1953	* 1953			* 1844	* 1844	4110
-79	* 10292	* 10292	* 8022	* 8022	* 6075	* 6075	* 4306	* 4306			* 4068	* 4006	162
-3000			* 2041	* 2041	* 1421	* 1421					* 1415	* 1415	3010
-118			* 4500	* 4500	* 3133	* 3133					* 3121	* 3121	119

Illustration 126

g06633474

Lift chart above : Fixed boom, standard stick with optional counterweight, triple grouser track shoes, no bucket and blade DOWN.

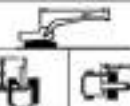
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													4530
507					* 1025	* 1025	* 1000	* 1000			* 1513	* 1513	178
4000					* 4244	* 4244	* 4189	* 4189			* 3337	* 3337	5190
357					* 2090	* 2090	* 1920	* 1920	* 1840	1324	* 1414	* 1414	203
3000					* 4555	* 4555	* 4234	* 4234	* 4058	2919	* 3117	* 3117	5990
2618					* 2461	* 2461	* 2093	* 2093	1580	1302	* 1387	* 1387	219
2000					* 5427	* 5427	* 4615	* 4615	3458	2871	* 3058	* 3058	5790
179					* 3001	* 3001	* 2339	1790	1518	1254	1190	987	226
1000					* 6617	* 6617	* 5151	3938	3348	2796	2638	2177	5770
39					* 3443	2579	2079	1682	1483	1202	1194	957	227
0					* 7593	5686	4564	3708	3226	2690	2567	2111	5610
0					* 3688	2441	1985	1602	1418	1159	1194	979	221
0					* 7934	5382	4376	3633	3126	2556	2633	2158	5250
-1000			* 4218	* 4218	* 3446	2382	1939	1580	1307	1139	1304	1060	267
-39			* 9301	* 9301	* 7569	5253	4276	3440	3060	2512	2675	2350	4990
-2000	* 4058	* 4058	* 4058	* 4058	* 2980	2385	* 2189	1561			* 1657	1270	183
-79	* 3947	* 3947	* 3936	* 3936	* 6571	5259	* 4827	3441			* 3654	2860	3730
-3000			* 2762	* 2762	* 2033	* 2033					* 1400	* 1400	147
-118			* 6061	* 6061	* 4482	* 4482					* 3087	* 3087	

Illustration 127

g06633476

Lift chart above : Fixed boom, long stick with no optional counterweight, triple grouser track shoes, no bucket and blade UP.

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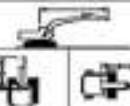
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													4520
197					* 1025	* 1025	* 1000	* 1000			* 1513	* 1513	178
4000					* 4244	* 4244	* 4189	* 4189			* 3337	* 3337	5180
157					* 2088	* 2088	* 1920	* 1920	* 1845	1485	* 1414	* 1414	203
3000					* 4555	* 4555	* 4234	* 4234	* 4054	3274	* 3117	* 3117	5560
118					* 2481	* 2481	* 2000	* 2000	* 1877	1483	* 1387	* 1387	219
2000					* 5427	* 5427	* 4615	* 4615	* 4139	3225	* 3058	* 3058	5750
79					* 3001	* 3001	* 2336	* 2336	* 1975	1414	* 1412	* 1412	226
1000					* 6617	* 6617	* 5151	* 5151	* 4354	3118	* 3114	* 3114	5770
39					* 3443	2980	* 2552	1908	* 2062	1300	* 1490	* 1490	227
0					* 7583	6526	* 5627	4207	* 4548	2999	* 3286	* 3286	5610
0					* 3588	2816	* 2049	1626	* 2075	1316	* 1637	* 1637	221
-1000					* 7934	6208	* 5338	4026	* 4575	2903	* 3610	* 3610	5290
-39			* 4218	* 4218	* 3446	2754	* 2557	1782	* 1622	1296	* 1741	* 1741	207
-2000	* 4058	* 4058	* 9301	* 9301	* 7509	6673	* 5637	3630	* 4238	2958	* 3840	* 3840	4980
-79	* 8947	* 8947	* 4098	* 4098	* 2880	* 2880	* 2189	1783			* 1857	* 1857	183
-3000			* 9036	* 9036	* 6571	* 6571	* 4827	3632			* 3654	* 3654	5730
-118			* 2762	* 2762	* 2033	* 2033					* 1400	* 1400	147

Illustration 128

g06633477

Lift chart above : Fixed boom, long stick with no optional counterweight, triple grouser track shoes, no bucket and blade DOWN.

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 1925	* 1925	* 1900	* 1900			* 1513	* 1513	4520
397					* 4244	* 4244	* 4189	* 4189			* 3337	* 3337	178
4000					* 2086	* 2086	* 1920	* 1920	* 1945	1440	* 1414	* 1414	5180
157					* 4555	* 4555	* 4234	* 4234	* 4058	3196	* 3117	* 3117	203
3000					* 2461	* 2461	* 2093	* 2093	* 1877	1428	* 1387	1194	5590
118					* 5427	* 5427	* 4615	* 4615	* 4139	3148	* 3658	2611	219
2000					* 3001	* 3001	* 2336	1983	1661	1380	* 1412	1063	5750
79					* 6617	* 6617	* 5151	4305	3653	3043	* 3114	2411	226
1000					* 3443	2626	* 2552	1848	1606	1327	1293	1063	5770
39					* 7593	6231	* 5627	4076	3540	2927	2629	2344	227
0					* 3899	2688	2177	1789	1501	1285	1317	1069	5610
0					* 7934	5627	4801	3900	3441	2833	2505	2369	221
-1000			* 4218	* 4218	* 3446	2629	2132	1727	1540	1295	1439	1184	5250
-39			* 9301	* 9301	* 7599	5798	4701	3807	3366	2789	3171	2611	207
-2000	* 4058	* 4058	* 4098	* 4098	* 2980	* 2980	* 2189	1727			* 1657	1407	4990
-79	* 8947	* 8947	* 9036	* 9036	* 6571	* 6571	* 4827	3908			* 3654	3102	183
-3000			* 2762	* 2762	* 2033	* 2033					* 1400	* 1400	3730
-118			* 6001	* 6001	* 4462	* 4462					* 3067	* 3067	147

Illustration 129

g06633479

Lift chart above : Fixed boom, long with optional counterweight, triple grouser track shoes, no bucket and blade UP.

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(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 1025	* 1025	* 1000	* 1000			* 1513	* 1513	4520
197					* 4044	* 4044	* 4189	* 4189			* 3337	* 3337	178
4000					* 2095	* 2095	* 1920	* 1920	* 1940	* 1940	* 3414	* 3414	3160
157					* 4555	* 4555	* 4234	* 4234	* 4058	* 4058	* 3117	* 3117	203
3000					* 2461	* 2461	* 2083	* 2083	* 1877	1595	* 1387	* 1387	5560
118					* 5427	* 5427	* 4615	* 4615	* 4139	3517	* 3058	* 3058	219
2000					* 3001	* 3001	* 2336	* 2336	* 1975	1546	* 1412	* 1412	5760
79					* 6617	* 6617	* 5151	* 5151	* 4354	3410	* 3114	* 3114	225
1000					* 3443	* 3443	* 2552	2085	* 2052	1402	* 1495	1197	5770
39					* 7593	* 7593	* 5627	4586	* 4548	3291	* 3288	2038	227
0					* 3588	3082	* 2649	2003	* 2075	1449	* 1837	1227	5610
0					* 7894	6795	* 5838	4416	* 4575	3195	* 3615	2705	221
-1000			* 4218	* 4218	* 3446	* 3446	* 2557	1959	* 1922	1429	* 1741	1336	5250
-38			* 9301	* 9301	* 7599	* 7599	* 5637	4320	* 4238	3150	* 3849	2947	207
-2000	* 4058	* 4058	* 4098	* 4098	* 2880	* 2880	* 2189	* 2189			* 1857	* 1657	4990
-75	* 8947	* 8947	* 9036	* 9036	* 6571	* 6571	* 4827	* 4827			* 3854	* 3854	183
-3000			* 2762	* 2762	* 2033	* 2033					* 1406	* 1406	3730
-118			* 6091	* 6091	* 4482	* 4482					* 3067	* 3067	147

Illustration 130

g06633480

Lift chart above : Fixed boom, long with optional counterweight, triple grouser track shoes, no bucket and blade DOWN.

(mm) (in)	1000		2000		3000		4000		5000				(mm) (in)
	39		79		118		157		197				
													
5000					* 2218	* 2218					* 1802	* 1802	3650
167					* 4892	* 4892					* 3973	* 3973	158
4000					* 2383	* 2383	* 2129	1822			* 1891	1381	4670
157					* 5209	* 5209	* 4895	4017			* 3729	3044	184
3000					* 2776	* 2776	* 2298	1772	1590	1210	* 1684	1167	5130
118					* 6120	* 6120	* 5062	3908	3507	2888	* 3714	2572	201
2000					* 3289	2008	* 3523	1690	1583	1186	1408	1085	5310
79					* 7262	5751	* 5563	3726	3445	2615	3104	2349	209
1000					* 3632	2419	2141	1603	1524	1150	1376	1085	5330
39					* 6008	5332	4721	3535	3361	2536	3031	2283	210
0					* 3658	2313	2073	1540	1480	1121	1435	1068	5180
-0					* 8096	5069	4572	3395	3292	2471	3142	2368	203
-1000	* 3144	* 3144	* 4594	* 4584	* 3384	2281	2045	1513			1598	1188	4770
-39	* 8932	* 8932	* 10107	* 10107	* 7461	5030	4509	3337			3502	2621	188
-2000	* 4881	* 4881	* 3841	* 3841	* 2774	2308	* 1980	1534			* 1870	1479	4110
-79	* 10276	* 10276	* 8028	* 8028	* 6118	5089	* 4385	3382			* 4123	3261	162
-3000			* 2058	* 2058	* 1448	* 1448					* 1442	* 1442	3010
-118			* 4534	* 4534	* 3192	* 3192					* 3180	* 3180	119

Illustration 131

g06633481

Lift chart above : Fixed boom, standard stick, triple grouser track shoes with no optional counterweight, no bucket and no blade.

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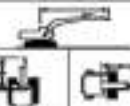
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 2218	* 2218					* 1802	* 1802	3950
4000					* 4892	* 4892					* 3673	* 3673	158
3000					* 2363	* 2363	* 2129	* 2129			* 1691	* 1691	4670
2000					* 5209	* 5209	* 4695	* 4695			* 3729	* 3729	184
1000					* 2778	* 2778	* 2296	1939	1733	1337	* 1884	1289	5190
0					* 6120	* 6120	* 5052	4276	3622	2948	* 3714	2843	201
-1000					* 3289	* 3289	* 3523	1956	1706	1312	* 1752	1162	5310
-2000					* 7252	* 7252	* 5953	4094	3760	2892	* 3853	2607	209
-3000					* 3692	2665	* 2997	1770	1667	1279	1509	1152	5330
-4000					* 8008	5876	* 5945	3902	3676	2813	3321	2539	210
-5000					* 9658	2560	2284	1709	1636	1246	1562	1160	5190
-6000					* 8060	5644	4957	3763	3607	2748	3444	2625	203
-7000	* 3144	* 3144	* 4584	* 4584	* 3384	2528	* 2543	1680			* 1876	1322	4770
-8000	* 6932	* 6932	* 10107	* 10107	* 7461	5575	* 5607	3704			* 4362	2914	186
-9000	* 4951	* 4661	* 3841	* 3841	* 2774	* 2774	* 1980	1700			* 1870	* 1870	4110
-10000	* 10276	* 10276	* 8028	* 8028	* 6118	* 6118	* 4395	3749			* 4123	* 4123	162
-11000			* 2056	* 2056	* 1448	* 1448					* 1442	* 1442	3010
-12000			* 4534	* 4534	* 3192	* 3192					* 3180	* 3180	119

Illustration 132

g06633482

Lift chart above : Fixed boom, standard stick, triple grouser track shoes with optional counterweight, no bucket and no blade.

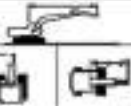
(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
5000													4530
197					* 1920	* 1920	* 1892	* 1892			* 1506	* 1506	179
4000					* 4233	* 4233	* 4173	* 4173			* 3322	* 3322	5180
157					* 2073	* 2073	* 1922	* 1922	* 1834	1290	* 1406	1151	203
3000					* 4571	* 4571	* 4237	* 4237	* 4844	2711	* 3101	2538	5560
118					* 2483	* 2483	* 2107	1793	1697	1216	* 1382	991	219
2000					* 5474	* 5474	* 4845	3931	3522	2681	* 3047	2180	5750
79					* 3028	* 3028	* 2365	1888	1555	1177	* 1412	912	226
1000					* 6676	* 6676	* 5203	3722	3430	2595	* 3112	2010	5770
39					* 3485	2423	2128	1587	1505	1129	1189	885	227
0					* 7641	5342	4891	3499	3319	2490	2622	1954	5810
0					* 3615	2281	2042	1507	1483	1080	1225	910	221
-1000					* 7972	5029	4503	3323	3225	2402	2701	2007	5250
-39			* 4218	* 4218	* 3482	2221	1996	1485	1441	1055	1343	995	207
-2000	* 4053	* 4053	* 4103	* 4103	* 7635	4899	4402	3229	3179	2357	2958	2187	4680
-79	* 8936	* 8936	* 9049	* 9049	* 2899	2327	* 2216	1498			* 1679	1192	183
-3000			* 2776	* 2776	* 6013	4910	* 4885	3232			* 3702	2628	3730
-118			* 6121	* 6121	* 2057	* 2057					* 1426	* 1426	147

Illustration 133

g06633484

Lift chart above : Fixed boom, standard stick, triple grouser track shoes with no optional counterweight, no bucket and no blade.

(mm) (in)	1000 39		2000 79		3000 118		4000 157		5000 197				(mm) (in)
													
5000					* 1020	* 1020	* 1802	* 1802			* 1506	* 1506	4520
197					* 4233	* 4233	* 4173	* 4173			* 3522	* 3522	178
4000					* 2073	* 2073	* 1822	* 1822	* 1834	1355	* 1408	* 1408	5180
157					* 4571	* 4571	* 4237	* 4237	* 4044	2666	* 3101	* 3101	203
3000					* 2483	* 2483	* 2107	* 2107	* 1880	1341	* 1382	1102	5580
118					* 5474	* 5474	* 4846	* 4846	* 4146	2958	* 3047	2429	219
3000					* 3038	* 3038	* 2360	1855	1698	1302	* 1412	1018	5750
79					* 6676	* 6676	* 5203	4990	3745	2672	* 3112	2244	226
1000					* 3485	2679	* 2579	1753	1648	1255	* 1495	982	5770
39					* 7641	5887	* 5686	3806	3634	2767	* 3296	2187	227
0					* 3615	2529	2235	1674	1605	1215	1348	1020	5610
0					* 7972	5574	4628	3690	3540	2679	2973	2248	221
-1000			* 4218	* 4218	* 3482	2488	2189	1631	1584	1156	1476	1115	5250
-39			* 9301	* 9301	* 7835	5443	4627	3597	3493	2634	3255	2468	207
-2000	* 4053	* 4053	* 4103	* 4103	* 2999	2474	* 2216	1632			* 1679	1328	4680
-79	* 8936	* 8936	* 9048	* 9048	* 6613	5455	* 4886	3596			* 3702	2930	183
-3000			* 2776	* 2776	* 2057	2057					* 1426	* 1426	3730
-118			* 6121	* 6121	* 4535	4535					* 3144	* 3144	147

Illustration 134

g06633486

Lift chart above : Fixed boom, standard stick, triple grouser track shoes with optional counterweight, no bucket and no blade.

i08509678

Lifting Capacities

SMCS Code: 7000

S/N: GG81-Up

S/N: GW81-Up



Failure to comply to the rated load can cause possible personal injury or property damage. This includes the risk of unintended boom lowering. Review the rated load of a particular work tool before performing any operation. Make adjustments to the rated load as necessary for non-standard configurations.

There may be local regulations and/or government regulations that govern the use of excavators which lift heavy objects. Obey all local and government regulations.

Lifting capacities should be used as a guide. Work tools, uneven ground conditions, soft ground conditions, or poor ground conditions have effects on lifting capacities. The operator is responsible for being aware of these effects.

The lifting capacities are defined by "ISO 10567 2007". The lifting capacities are defined as the lower value of 75% of the static tipping capacity or 87% of the hydraulic lift capacity.

Note: Lifting capacities are based upon a standard machine with the following conditions:

- Lift point: Stick nose without bucket
- Lubricants full
- Fuel tank full
- Steel track
- Complete cab with a 75 kg (165 lb) operator

Lifting capacities will vary with different work tools and attachments. The weight of a work tool attachment must be subtracted from the lift capacity. Consult your Cat® dealer regarding the lifting capacities for specific work tools and attachments.

This machine may be equipped with various sticks. Lifting capacities may vary between the different sticks. Measure the distance on the stick between the boom hinge pin and the work tool hinge pin. This distance will inform you of the size of the stick that is equipped on the machine.

Use the lifting eye that is provided on the linkage to lift objects. When the lifting eye is used, the connection must be made with a sling or shackle.

Note: Japan regulations require a shovel crane configuration to lift certain objects. A shovel crane has a rated load capacity, therefore, the lift capacities discussed below do not apply to a shovel crane configuration. Contact your Cat® dealer for additional information.

Note: Regional regulations may require the use of an overload warning device and boom and stick lowering control valves during object handling applications.

Contact your Cat dealer for additional information.

Configuration Identification

Note: Each component has a stamp to identify the configuration affecting lifting capacity.

The owner will need to check the machine configuration to identify the correct lifting capacity.

The configuration identifier will be located with the part number stamped on the component. Refer to the following table for the abbreviation of the configuration.

Table 39

Configuration Identification		
Component	Configuration	Abbreviation
Front	Reach Boom	R
	Mass Boom	M
	Variable Angle Boom	VA
	Super Long Reach Boom	SLR
	Standard	STD
	Heavy Duty	HD
	Extreme Special	ES
	Thumb Ready Stick	TR
Undercarriage	Short Undercarriage (Crawler)	STD
	Long Undercarriage (Crawler)	LC
	Long Narrow Undercarriage (Crawler)	LN
Cylinder	Standard	-
	Heavy Lift	HL
Counterweight	Metric Ton (tonne)	t ⁽¹⁾

(Table 39, contd)

(1) Counterweight stamp indicates metric ton. (example 1.0t = 1000 kg)

Symbols Found in the Lifting Capacity Charts

Below are symbols that are commonly found on lifting capacity charts for track excavators.

Note: Depending on the machine configuration, some symbols may not be used.

(mm)
(inch) **Measurements are provided in millimeters and inches**



Lift Capacities are provided in kilograms and pounds



Load is limited by hydraulic lifting capacity rather than by a tipping load



Lift point radius



Lift point height



Lifting capacity over the front of the machine



Lifting capacity over the side of the machine

(continued)



Heavy Lift ON

308 CR Excavator with Standard Boom

(mm) (in)	2000 79	3000 118	4000 157	5000 197	6000 236			(mm) (in)
5000								1726
197								1582
4000			* 2581	1950	1559	1358		1396
157			* 6691	4322	3437	2594		1154
3000		* 4025	2979	2182	1681	1324	1325	2547
118		* 8875	6568	4812	4149	3361	2921	2547
2000				2093	1758	1483	1272	1105
79				4548	3869	3240	2605	2437
1000				1958	1689	1415	1220	1081
39				4316	3679	3120	2690	2363
0								2063
0								2063
0								2063
-1000	* 3617	* 3617	2961	2486	1885	1650	1368	1174
39	* 7975	* 7975	6572	5437	4157	3528	3015	2590
-3000	* 5535	* 5535	3626	2907	1909	1523		
-79	* 12204	* 12204	6672	5329	4210	3579		
-3000			* 1495	* 1495				
-118			* 3299	* 3299				

Illustration 135

g06614284

Lift chart above : Standard stick with no optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	3000		3000		4000		5000		6000				
	79		118		157		197		236				
													(mm) (in)
5000											* 2297	1654	4700
197											* 5565	3648	185
4000					* 2581	2160	* 2419	1496			* 2140	1285	5480
157					* 5691	4763	* 5333	3298			* 4719	2833	215
3000			* 4925	3320	* 5039	2879	* 2574	1462			* 2129	1115	5900
118			* 8875	7322	* 6668	4585	* 5670	3324			* 4694	2458	232
2000					* 3658	1965	* 2929	1409	* 2386	1063	* 2220	1054	6100
79					* 6065	4329	* 6235	3106	* 5269	2344	* 4895	2281	240
1000					* 4109	1861	* 3031	1355	* 2416	1039	* 2559	1014	6100
39					* 5061	4104	* 6583	2989	* 5327	2292	* 5202	2235	240
0			* 3748	2789	* 4163	1805	* 3052	1320			* 2365	1050	5890
0			* 8265	6139	* 5180	3881	* 6730	2910			* 5214	2315	232
-1000	* 3617	* 3617	* 5347	2788	* 3801	1791	* 2703	1309			* 2335	1106	5450
-39	* 7975	* 7975	* 11790	6147	* 8362	5950	* 6103	2896			* 5148	2572	215
-2000	* 5535	* 5535	* 4096	2831	* 2917	1815					* 2176	1456	4090
-79	* 12204	* 12204	* 8932	6243	* 6432	4001					* 4796	3210	185
-3000			* 1496	* 1496							* 1314	* 1314	3280
-118			* 3299	* 3299							* 2898	* 2898	129

Illustration 136

g06614285

Lift chart above : Standard stick with no optional counterweight, rubber belts or triple grouser track shoes, blade
DOWN

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
													
5000											1864	1625	4700
197											4110	3584	185
4000					* 2581	2112	1686	1472			1450	1267	5860
157					* 5681	4856	3717	3246			3187	2793	215
3000			* 4023	3207	2364	2034	1651	1439			1251	1101	5900
118			* 8875	7071	5191	4484	3641	3173			2781	2427	232
2000					2234	1920	1596	1386	1206	1051	1174	1022	5100
79					4927	4234	3520	3057	2658	2316	2588	2254	240
1900					2129	1821	1542	1334	1182	1027	1153	1002	6100
39					4695	4015	3300	2842	2425	2064	2541	2209	240
0			* 3748	2986	2071	1766	1505	1290			1196	1037	5890
0			* 8285	6622	4567	3895	3319	2864			2636	2287	232
-1000	* 3617	* 3617	3245	2699	2057	1752	1495	1280			1320	1150	5450
-36	* 7975	* 7975	7155	5939	4535	3864	3298	2842			2651	2317	215
-2000	* 5535	* 5535	3290	2735	2081	1775					1861	1631	4690
-79	* 12204	* 12204	7255	6031	4589	3915					3663	3155	185
-5000			* 1490	* 1490							* 1314	* 1314	3290
-118			* 3299	* 3299							* 2898	* 2898	129

Illustration 137

g06614287

Lift chart above : Standard stick with optional counterweight, rubber belts or triple grouser track shoes, blade UP

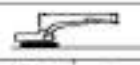
(mm) (in)	2000		3000		4000		5000		6000		8000			(mm) (in)	
	79		118		157		197		256						
															
5000													* 2297	1793	4700
197													* 5065	3933	185
4000					* 2581	* 2581	* 2419	1615					* 2140	1392	5460
157					* 5601	* 5601	* 5333	3661					* 4719	3068	215
3000			* 4025	* 4025	* 3039	2239	* 2574	1560					* 2129	1212	5900
118			* 8875	* 8875	* 6658	4838	* 5676	3487					* 4894	2672	232
2000					* 3656	2123	* 2829	1528	* 2396	1159			* 2220	1129	6100
79					* 6065	4882	* 6233	3369	* 5299	2954			* 4895	2496	340
1000					* 4109	2621	* 3031	1475	* 2436	1134			* 2389	1107	6100
39					* 8061	4457	* 6663	3252	* 5327	2902			* 5300	2441	340
0			* 3748	3022	* 4163	1965	* 3052	1439					* 2365	1147	5890
0			* 8265	6965	* 9160	4334	* 6730	3173					* 5214	2529	232
-1000	* 3617	* 3617	* 5347	3030	* 3801	1951	* 2768	1428					* 2336	1273	5450
-35	* 7975	* 7975	* 11790	6982	* 8362	4302	* 6103	3150					* 5148	2898	215
-2000	* 5535	* 5535	* 4096	3074	* 2917	1975							* 2176	1585	4690
-79	* 12204	* 12204	* 8032	6777	* 8432	4354							* 4796	3496	185
-3000			* 1496	* 1496									* 1314	* 1314	3290
-118			* 3299	* 3299									* 2998	* 2998	129

Illustration 138

g06614289

Lift chart above : Standard stick with optional counterweight, rubber belts or triple grouser track shoes, blade
DOWN

Product Information Section
Lifting Capacities

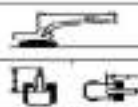
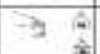
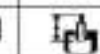
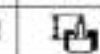
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		256				
													
6000							1581	1377			1388	1206	5370
197							3485	3096			3055	2643	211
4000							1575	1371	1137	988	1128	980	6030
157							3472	3023	2506	2180	2486	2161	237
3000					* 2555	1514	1532	1330	1125	976	996	863	5420
118					* 5633	4220	3378	2933	2480	2153	2196	1902	253
2000					2088	1789	1457	1268	1094	946	930	803	5930
79					4604	3946	3235	2796	2412	2087	2050	1770	260
1000					1956	1664	1399	1203	1059	912	910	789	6930
39					4313	3670	3086	2653	2354	2013	2006	1727	260
0			2919	2495	1868	1582	1347	1153	1001	885	934	803	6430
0			5437	5304	4120	3487	2976	2542	2273	1992	2089	1770	253
-1000	* 2954	* 2954	2894	2382	1831	1546	1328	1127	1001	876	1016	872	6020
-36	* 6513	* 6513	6360	5252	4037	3456	2911	2485	2251	1932	2241	1923	237
-2000	* 4618	* 4618	2919	2495	1835	1550	1328	1132			1206	1033	5360
-79	* 10179	* 10179	6436	5303	4046	3417	2923	2497			2660	2278	211
-3000	* 4413	* 4413	* 3078	2477	* 2111	1802					* 1815	1462	4270
-118	* 9732	* 9732	* 6786	5492	* 4505	3531					* 4001	3234	166

Illustration 139

g06614290

Lift chart above : Long stick with no optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)	
	79		118		157		197		236					
														
5000							* 2000	1516			* 1684	1331	5070	
197							* 4585	3343			* 3713	2934	211	
4000							* 2078	1510		* 1632	1034	* 1592	1045	6030
157							* 4082	3330		* 3642	2412	* 3509	2382	237
3000					* 2555	2114	* 2278	1459		* 2104	1082	* 1583	959	6420
118					* 5635	4661	* 5023	3238		* 4539	2385	* 3491	2113	253
2000					* 3235	1986	* 2582	1405		* 2224	1051	* 1639	894	6600
79					* 7132	4386	* 5694	3066		* 4903	2318	* 3614	1972	260
1000					* 3847	1858	* 2869	1330		* 2336	1017	* 1764	875	6600
39					* 8462	4098	* 6526	2562		* 5152	2242	* 3896	1938	260
0			* 3045	2727	* 4119	1773	* 3013	1286		* 2354	989	* 1891	857	6420
0			* 8477	6013	* 9663	3916	* 6649	2640		* 5191	2181	* 4398	1978	253
-1000	* 2954	* 2954	* 5195	2703	* 3967	1737	* 2915	1262		* 2139	980	* 2121	975	6020
-35	* 6513	* 6513	* 11456	5959	* 6792	3830	* 6429	2762		* 4717	2160	* 4677	2150	237
-2000	* 4616	* 4616	* 4881	2727	* 3418	1741	* 2439	1267				* 2875	1155	5360
-79	* 10179	* 10179	* 10762	6012	* 7533	3836	* 5309	2794				* 4576	2547	211
-3000	* 4413	* 4413	* 3078	3078	* 2111	1794						* 1815	* 1815	4270
-118	* 9732	* 9732	* 6796	6796	* 4555	3855						* 4821	* 4021	168

Illustration 140

g06614291

Lift chart above : Long stick with no optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													5370
197							1708	1491			* 1684	1311	211
4000							3755	3288			* 3713	2898	6030
157							1702	1485	1238	1090	1228	1071	237
3000							3752	3275	2730	2381	2708	2382	6420
118					* 2555	2066	1659	1484	1226	1068	1089	947	253
2000					* 5633	4555	3658	3185	2753	2355	2401	2089	6900
79					2260	1942	1594	1382	1195	1038	1019	884	266
1500					4982	4281	3515	3048	2634	2289	2247	1950	6800
39					2128	1817	1528	1317	1158	1004	999	865	260
0					4691	4006	3368	2905	2557	2214	2203	1967	6420
0			3184	2633	2040	1734	1474	1267	1132	977	1027	887	253
-1000	* 2954	* 2954	7829	5906	4496	3825	3253	2794	2495	2154	2264	1956	6020
-39	* 6513	* 6513	3158	2809	2002	1696	1447	1241	1122	968	1117	963	237
-2000	* 4616	* 4616	6963	5754	4415	3744	3192	2737	2474	2134	2462	2134	5360
-79	* 10179	* 10179	3183	2633	2006	1702	1453	1247			1322	1138	211
-3000	* 4413	* 4413	7819	5905	4434	3755	3203	2749			2916	2510	4270
-138	* 9732	* 9732	* 3078	* 3078	* 2111	1754					* 1815	* 1815	168
			* 6786	* 6786	* 4655	3667					* 4001	* 4001	

Illustration 141

g06614292

Lift chart above : Long stick with optional counterweight, rubber belts or triple grouser track shoes, blade UP

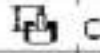
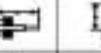
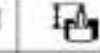
(mm) (in)	2000		3000		4000		5000		6000					(mm) (in)
	79		118		157		197		236					
														
6000							* 2080	1636			* 1684	1440	9370	
197							* 4586	3607			* 9713	8175	211	
4000							* 2078	1630			* 1592	1319	6030	
157							* 4662	3694	* 3642	2622	* 3009	2600	237	
3000					* 2595	* 2595	* 2278	1888	* 2194	1777	* 1683	1446	6420	
118					* 5623	* 5623	* 5023	3901	* 4638	3595	* 3491	2906	253	
2000					* 3235	2146	* 2582	1925	* 2224	1746	* 1639	979	6690	
79					* 7132	4733	* 5634	3362	* 4903	2526	* 3614	2159	260	
1000					* 3647	2018	* 2899	1458	* 2336	1112	* 1764	959	6690	
39					* 5862	4450	* 6326	3216	* 5152	2452	* 3690	2116	260	
Ø			* 3645	2975	* 4119	1933	* 3013	1407	* 2354	1064	* 1691	985	6420	
Ø			* 8477	6548	* 5083	4263	* 6643	3103	* 5191	2381	* 4380	2172	253	
-1000	* 2964	* 2954	* 5195	3945	* 3667	1897	* 2915	1381	* 2139	1075	* 2121	1070	6030	
-39	* 6513	* 6513	* 11456	6454	* 8792	4182	* 6429	3046	* 4717	2370	* 4677	2360	237	
-2000	* 4616	* 4616	* 4881	2968	* 3416	1901	* 2430	1386			* 2075	1264	5360	
-79	* 10179	* 10179	* 10762	6547	* 7533	4191	* 5359	3057			* 4576	2766	211	
-3000	* 4413	* 4413	* 3678	* 3678	* 2111	* 2111					* 1815	* 1815	4270	
-118	* 9732	* 9732	* 6786	* 6786	* 4605	* 4605					* 4001	* 4001	166	

Illustration 142

g06614293

Lift chart above : Long stick with optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

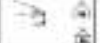
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		235				
													
6000											1803	1565	4790
557											5975	5460	185
4000					* 2581	2045	1629	1420			1400	1220	5480
357					* 5691	4505	3593	3131			3096	2690	215
3000			* 4025	3109	2279	1964	1598	1387			1216	1068	5900
118			* 8875	6843	5325	4302	3517	3055			2691	2354	232
2000					2159	1851	1540	1334	1161	1009	1130	982	6130
79					4739	4082	3396	2942	2561	2235	2491	2164	240
1000					2053	1752	1486	1282	1137	985	1109	961	6190
39					4527	3862	3279	2828	2507	2175	2449	2119	240
Ø			3120	2582	1996	1697	1449	1247			1150	995	5890
Ø			8679	6894	4400	3742	3198	2730			2596	2193	232
-1000	* 3617	* 3617	3126	2590	1981	1683	1436	1237			1279	1104	5450
-39	* 7975	* 7975	6697	5716	4368	3711	3172	2727			2820	2454	215
-2000	* 5535	* 5535	3173	2631	2005	1706					1600	1375	4890
-79	* 12204	* 12204	6997	5802	4421	3762					3528	3091	185
-3000			* 1496	* 1496							* 1314	* 1314	3290
-118			* 3299	* 3299							* 2896	* 2896	129

Illustration 143

g06614295

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes with pads, blade UP

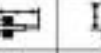
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	75		115		157		197		235				
													
6000												* 2297 1728 4790	
157												* 5565 3609 165	
4000					* 2581	* 2581	* 2419	1563				* 2140 1345 5450	
157					* 5691	* 5691	* 5333	3447				* 4719 2966 215	
3000			* 4025	3458	* 3033	2170	* 2574	1530				* 2129 1170 5990	
115			* 8875	7625	* 6688	4785	* 5676	3374				* 4694 2579 232	
2000					* 3658	2054	* 2828	1476	* 2386	1117		* 2220 1067 6190	
75					* 6065	4530	* 6236	3255	* 5260	2464		* 4895 2397 240	
1000					* 4109	1952	* 3331	1423	* 2416	1000		* 2350 1067 6190	
39					* 5061	4304	* 6883	3139	* 5327	2411		* 5302 2352 240	
Ø			* 3748	2918	* 4163	1896	* 3052	1387				* 2565 1105 5890	
Ø			* 8265	6433	* 9180	4181	* 6730	3059				* 5214 2497 232	
-1000	* 3617	* 3617	* 5347	2926	* 3801	1882	* 2768	1377				* 2335 1227 5450	
-39	* 7975	* 7975	* 11790	6451	* 8982	4100	* 6103	3036				* 5148 2706 215	
-2000	* 5535	* 5535	* 4006	2989	* 2917	1505						* 2176 1529 4890	
-75	* 12204	* 12204	* 8632	6546	* 6432	4202						* 4796 3572 165	
-3000			* 1486	* 1486								* 1514 * 1514 3280	
-115			* 3299	* 3299								* 2698 * 2698 129	

Illustration 144

g06614296

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				
	79		118		157		197		236				(mm) (in)
 													
5000											1941	1693	4790
197											4280	3733	185
4000					* 2581	2195	1756	1534			1513	1323	5450
157					* 5691	4841	3873	3383			3336	2917	215
3000			* 4025	3331	2450	2117	1722	1501			1318	1152	5900
118			* 8875	7344	5401	4667	3797	3311			2908	2540	232
2000					2338	2003	1667	1449	1262	1100	1229	1071	6100
79					5139	4417	3676	3194	2760	2426	2709	2362	240
1000					2224	1904	1613	1397	1238	1077	1208	1061	6100
95					4905	4196	3556	3080	2725	2374	2663	2317	240
0			* 3748	2810	2167	1849	1576	1361			1253	1088	5890
0			* 8265	6196	4778	4076	3475	3002			2763	2399	232
-1000	* 3617	* 3617	8992	2818	2152	1835	1565	1351			1393	1206	5450
-39	* 7975	* 7975	7480	6213	4746	4047	3452	2979			3071	2660	215
-2000	* 6535	* 6535	3437	2859	2177	1856					1738	1496	4630
-79	* 12204	* 12204	7560	6305	4799	4097					3633	3104	165
-3000			* 1456	* 1456							* 1314	* 1314	3280
-118			* 3299	* 3299							* 2898	* 2898	129

Illustration 145

g06614297

Lift chart above : Standard stick with optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				
	79		118		157		197		236				
													(mm) (in)
6000											* 2257	1857	4700
197											* 5565	4594	185
4000					* 2581	* 2581	* 2419	1683			* 2140	1452	5450
157					* 5601	* 5601	* 5333	3711			* 4719	3202	215
3000			* 4025	* 4025	* 3003	2330	* 2574	1649			* 2129	1267	5900
118			* 8875	* 6875	* 6668	5136	* 5676	3637			* 4694	2794	232
2000					* 3658	3214	* 2829	1596	* 2386	1252	* 2220	1181	6100
79					* 6065	4852	* 6235	3518	* 5399	2674	* 4866	2693	240
1000					* 4109	2112	* 3031	1543	* 2416	1189	* 2359	1190	6100
30					* 9061	4657	* 6883	3402	* 5327	2621	* 5202	2657	240
0			* 3748	3160	* 4163	2656	* 3052	1507			* 2365	1202	5890
0			* 8255	6969	* 9160	4534	* 6730	3322			* 5214	2651	232
-1000	* 3617	* 3617	* 5347	3169	* 3801	2842	* 2768	1496			* 2335	1334	5450
-36	* 7975	* 7975	* 11790	6996	* 8362	4803	* 6103	3299			* 5148	2542	215
-2000	* 5535	* 5535	* 4006	3211	* 2917	2885					* 2176	1659	4690
-79	* 12204	* 12204	* 8832	7081	* 6432	4554					* 4796	3656	185
-3000			* 1496	* 1496							* 1514	* 1514	3280
-118			* 3299	* 3299							* 2698	* 2698	129

Illustration 146

g06614298

Lift chart above : Standard stick with optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	75		118		157		197		236				
													
5000							1851	1439			1400	1263	5370
197							3842	3174			3197	2785	211
4000							3545	1433	1190	1038	1184	1030	6030
157							3628	3161	2632	2290	2610	2270	237
3000					* 2565	1907	1805	1392	1161	1026	1048	909	6420
118					* 5633	4405	3534	3070	2604	2263	2310	2064	263
2000					2184	1872	1838	1330	1150	995	980	847	6000
75					4815	4129	3391	2933	2536	2197	2160	1868	260
1000					2052	1747	1476	1265	1115	962	980	828	6690
99					4524	3803	3242	2790	2458	2122	2116	1826	260
0			3067	2529	1964	1685	1418	1215	1087	905	988	849	6420
0			6762	5677	4331	3670	3127	2679	2307	2062	2173	1871	253
-1000	* 2954	* 2954	3041	2506	1926	1629	1391	1190	1077	926	1072	922	6030
-30	* 6313	* 6313	6705	5525	4248	3592	3068	2623	2375	2042	2369	2033	237
-2000	* 4616	* 4616	3066	2329	1830	1635	1397	1195			1271	1090	5360
-75	* 10179	* 10175	6781	5676	4267	3600	3079	2634			2803	2404	211
-3000	* 4413	* 4413	* 3070	2601	* 2111	1685					* 1815	1538	4270
-118	* 9732	* 9732	* 6766	5735	* 4665	3714					* 4001	3392	168

Illustration 147

g06614301

Lift chart above : Long stick with no optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				
	79		118		157		197		256				
												(mm) (in)	
5000							* 2000	1584			* 1684	1393	5370
197							* 4586	3495			* 3713	3071	211
4000							* 2078	1578	* 1852	1148	* 1592	1138	6090
157							* 4682	3480	* 3642	2931	* 3509	2910	237
3000					* 2555	* 2555	* 2278	1836	* 2104	1136	* 1583	1038	6420
118					* 5633	* 5633	* 5023	3387	* 4639	2594	* 3491	2223	253
2000					* 3235	2577	* 2582	1479	* 2224	1105	* 1838	942	6600
79					* 7132	4586	* 5694	3248	* 4903	2437	* 3814	2078	260
1000					* 3847	1945	* 2869	1407	* 2336	1071	* 1764	925	6600
30					* 8462	4298	* 6526	3102	* 6152	2361	* 3896	2035	260
0			* 3643	2865	* 4119	1984	* 3013	1356	* 2354	1043	* 1891	947	6420
0			* 3477	6317	* 3065	4110	* 6643	2989	* 5191	2301	* 4396	2088	253
-1000	* 2954	* 2954	* 5195	2840	* 3967	1828	* 2915	1350	* 2139	1034	* 2121	1029	6020
-36	* 6513	* 6513	* 11456	6263	* 8792	4636	* 6429	2992	* 4717	2290	* 4677	2289	237
-2000	* 4616	* 4616	* 8881	2864	* 3415	1832	* 2439	1336			* 2875	1217	5360
-79	* 10179	* 10179	* 10762	6316	* 7533	4039	* 5359	2940			* 4576	2084	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-118	* 9732	* 9732	* 6796	* 6796	* 4655	* 4655					* 4901	* 4901	168

Illustration 148

g06614302

Lift chart above : Long stick with no optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													5370
197							1779	1554			* 1684	1368	211
4000							3622	3426			* 3713	3016	6030
157							1772	1548	1294	1130	1264	1121	237
3000							3908	3413	2854	2491	2851	2471	6420
118					* 2555	2149	1730	1507	1282	1118	1140	993	253
2000					* 5633	4758	3814	3022	2627	2455	2515	2190	6600
79					2355	2025	1665	1445	1251	1088	1069	929	265
1500					5195	4464	3671	3185	2756	2399	2556	2048	6800
39					2225	1900	1597	1380	1218	1054	1049	910	260
0					4902	4169	3522	3042	2681	2324	2514	2096	6420
0			* 3845	2757	2136	1817	1545	1329	1188	1027	1079	903	253
0			* 8477	6998	4709	4006	3407	2951	2619	2264	2378	2058	6020
-1000	* 2954	* 2954	3305	2734	2096	1781	1518	1304	1178	1017	1173	1013	237
-39	* 6513	* 6513	7286	6028	4626	3927	3348	2875	2596	2244	2596	2233	5360
-2000	* 4616	* 4616	3330	2757	2102	1785	1524	1309			1367	1155	211
-79	* 10179	* 10179	7343	6079	4635	3936	3358	2886			3080	2636	4270
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	168
-138	* 9732	* 9732	* 6786	* 6786	* 4655	* 4655					* 4001	* 4001	

Illustration 149

g06614303

Lift chart above : Long stick with optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
5000							* 2080	1700			* 1684	* 1684	5370
197							* 4586	3756			* 3713	* 3713	211
4000							* 2078	1698	* 1652	1243	* 1562	* 1233	6030
157							* 4582	3743	* 3642	2741	* 3509	* 2719	237
3000					* 2555	* 2555	* 2278	1656	* 2104	1231	* 1583	* 1096	6420
118					* 5633	* 5633	* 5023	3651	* 4639	2714	* 3491	* 2416	253
2000					* 3236	2237	* 2582	1592	* 2224	1200	* 1639	* 1027	6600
79					* 7132	4533	* 5694	3511	* 4903	2647	* 3614	* 2265	260
1000					* 3847	2109	* 2899	1526	* 2336	1196	* 1784	* 1008	6600
30					* 6462	4651	* 6326	3065	* 5152	2571	* 3690	* 2222	260
0			* 3845	3107	* 4119	2624	* 3013	1479	* 2354	1139	* 1591	* 1035	6420
0			* 8477	6652	* 9069	4463	* 6643	3253	* 5191	2511	* 4390	* 2262	253
-1000	* 2954	* 2954	* 5155	3083	* 3967	1988	* 2915	1449	* 2139	1129	* 2121	* 1124	6020
-30	* 6513	* 6513	* 11456	6798	* 6792	4365	* 6429	3195	* 4717	2490	* 4677	* 3478	237
-3500	* 4616	* 4616	* 4881	3107	* 3416	1592	* 2430	1454			* 2075	* 1326	5360
-79	* 10179	* 10179	* 10762	6851	* 7353	4391	* 5359	3207			* 4576	* 2925	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-118	* 9732	* 9732	* 6786	* 6786	* 4655	* 4655					* 4001	* 4001	168

Illustration 150

g06614305

Lift chart above : Long stick with optional counterweight, triple grouser track shoes with pads, blade DOWN

308 CR Excavator with Variable Angle Boom

(mm) (in)	2900		3000		4000		5000		6000				
	79		118		157		197		228				
													(mm) (in)
6000													
236													
5000													
197													
4000												* 1904	1528 4720
157												* 4 197	3370 188
3000							1563	1356			1433	1242	5240
118							3448	2989			3180	2740	206
2000			* 3776	2906	2184	1856	1501	1296			1261	1106	5480
79			* 8327	6406	4773	4092	3310	2858			2825	2439	216
1000			3112	2574	2008	1706	1420	1222			1228	1054	5470
33			6902	5675	4427	3769	3138	2694			2707	2325	215
Ø	* 3526	* 3526	2932	2408	1896	1596	1356	1157			1263	1079	5240
Ø	* 7775	* 7775	6495	5310	4167	3519	2900	2551			2788	2370	206
-1000	* 5680	4808	2907	2346	1827	1537					1436	1216	4710
-30	* 12348	10605	6122	5178	4029	3389					3167	2687	185
-2000	6502	4586	2890	2360							2021	1692	3740
.79	14338	10774	6390	5205							4458	3730	147

Illustration 151

q06614306

Lift chart above : Standard stick with variable angle boom IN, no optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (ft)	2955		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		235				
6000													
238													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 152

g06614307

Lift chart above : Standard stick with variable angle boom IN, no optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Lift chart above : Standard stick with variable angle boom IN, optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	2500		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		238				
6000													
236													
5000													
167													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 154

g06614310

Lift chart above : Standard stick with variable angle boom IN, optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

 (mm) (in)	2500		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		235				
													
6000													
235													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
50													
0													
0													
-1000													
-30													
-2000													
-79													

Illustration 155 g06614314
Lift chart above : Standard stick with variable angle boom IN, no optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
239													
6000													
197													
4000													
157													
3000													
198													
2000													
79													
1000													
30													
0													
0													
-1000													
-30													
-2000													
-79													

Illustration 156

g06614315

Lift chart above : Standard stick with variable angle boom IN, no optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157											* 1604	* 1604	4720
3000											* 4197	* 4197	166
118							* 2007	1522			1619	1409	5240
2000							* 4426	5379			3571	3167	206
79			* 3776	* 3776	* 2647	2891	1899	1473			1457	1264	5490
1000			* 8327	* 8327	* 5837	4611	3740	3248			3214	2767	216
39			3524	3026	2275	1843	1621	1368			1404	1212	5470
0			7766	6451	5016	4284	3575	3083			3098	2673	215
-1000	* 3526	* 3526	3343	2769	2157	1831	1554	1303			1450	1246	5240
-39	* 1775	* 1775	7172	6089	4756	4037	3426	2940			3197	2747	206
-1000	* 5600	* 5600	3279	2709	2094	1772					1650	1409	4710
-39	* 12348	* 12348	7229	5955	4616	3807					3638	3186	165
-2000	* 8261	5587	3261	2712							2314	1949	3740
-79	* 18217	12218	7258	5991							5103	4267	147

Illustration 157

g06614317

Lift chart above : Standard stick with variable angle boom IN, optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
236													
5000													
197													
4000													
157											* 1904	* 1904	4720
3000											* 4197	* 4197	185
118											* 1915	* 550	5240
2000											* 4223	3417	205
79			* 3776	* 3776	* 2647	* 2647	* 2246	1623			* 2954	1395	5490
1000			* 6327	* 6327	* 5837	* 5837	* 4852	3579			* 4528	3075	215
39			* 5267	3286	* 3275	2158	* 2527	1547			* 2328	1342	5470
5			* 11815	7246	* 7224	4754	* 5571	3411			* 5135	2993	215
0	* 3526	* 3526	* 5762	3114	* 3851	2041	* 2703	1481			* 2548	1394	5240
-1000	* 7775	* 7775	* 12755	8867	* 8351	4501	* 5858	3266			* 5818	3051	205
-39	* 5860	* 5860	* 5563	3652	* 3845	1981					* 2856	1588	4710
-2000	* 12348	* 12348	* 12287	6731	* 8337	4368					* 6283	3461	185
-79	* 8261	8541	* 4641	3685							* 3338	2183	5740
	* 19217	14423	* 9233	6758							* 7353	4813	147

Illustration 158

g06614318

Lift chart above : Standard stick with variable angle boom IN, optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	70		118		157		197		235				
6000													6700
234			* 3201	* 3231	2248	1927					1644	1418	185
5000			* 7125	* 7125	4638	4250					3625	3123	5000
187			* 2600	* 2606	2252	1938	1519	1314			1180	1018	224
4000			* 5525	* 5525	4865	4274	3350	2867			2652	2243	6300
157			* 2267	* 2387	2177	1908	1492	1287	1079	929	974	836	248
3000			* 5263	* 5263	4806	4119	3290	2838	2395	2048	2148	1842	6670
118					2032	1731	1426	1224	1058	905	867	740	263
2000					4481	3817	3144	2669	2328	1998	1911	1632	6850
79							1345	1147	1017	889	814	693	270
1000							2967	2520	2243	1915	1785	1528	6850
39							1278	1082	980	833	801	680	270
5							2617	2385	2162	1837	1767	1595	6670
0					1704	1420	1238	1044	957	811	828	702	283
-1000					3757	3131	2730	2301	2111	1798	1825	1548	6300
-39			* 2338	* 2338	1704	1421	1226	1035	967	811	* 1825	766	248
-2000			* 5156	* 5156	3758	3132	2709	2282	2110	1787	* 2288	1892	
-79					* 1448	* 1486	* 1148	* 1148					
					* 3183	* 3183	* 2513	* 2513					

Illustration 159

g06614320

Lift chart above : Standard stick with variable angle boom OUT, no optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	2800		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236			* 0231	* 3231	* 2908	2101					* 2544	1870	4700
5000			* 7125	* 7125	* 8411	4898					* 5618	3452	185
197			* 2600	* 2600	* 2843	2142	* 2402	1454			* 2138	1131	5000
4000			* 5525	* 5525	* 6268	4722	* 5267	3266			* 4713	2493	224
157			* 2367	* 2367	* 3005	2099	* 2449	1427	* 2076	1096	* 1888	894	6900
3000			* 5263	* 5263	* 6016	4563	* 5401	3147	* 4577	2282	* 4334	2090	248
118					* 3374	1929	* 2571	1362	* 2092	1012	* 1826	831	6670
2000					* 7445	4254	* 5869	3004	* 4613	2231	* 3988	1933	263
79							* 2667	1284	* 2096	974	* 1888	780	6850
1000							* 5860	2831	* 4622	2147	* 3888	1730	275
33							* 2629	1217	* 2022	938	* 1502	766	6050
5							* 5787	2684	* 4459	2066	* 3311	1692	272
5					* 3082	1611	* 2302	1176	* 1805	915	* 1305	752	6670
5					* 6796	3551	* 5275	2596	* 3681	2018	* 2878	1747	263
-1000			* 2338	* 2338	* 2394	1611	* 1924	1176	* 1341	915	* 1625	865	6300
-39			* 5156	* 5156	* 5278	3552	* 4243	2579	* 2956	2017	* 2388	1938	248
-2000					* 1448	* 1448	* 1140	* 1140					
-79					* 3186	* 3186	* 2513	* 2513					

Illustration 160

g06614323

Lift chart above : Standard stick with variable angle boom OUT, no optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236			* 3231	* 3231	2412	2585					1702	1540	6790
5000			* 7125	* 7125	5316	4588					3028	3395	185
197			* 2505	* 2505	2425	2000	1646	1426			1208	1114	5890
4000			* 5525	* 5525	5343	4810	3630	3140			2639	2456	224
157			* 2387	* 2387	2349	2020	1619	1402	1182	1020	1060	922	6390
3000			* 5263	* 5263	5179	4454	3570	3091	2602	2250	2367	2033	248
118					2204	1883	1553	1336	1158	988	955	821	6070
2000					4859	4152	3424	2951	2550	2200	2107	1819	263
79							1472	1261	1118	960	920	771	6850
1000							3247	2781	2485	2117	1964	1700	270
39							1405	1196	1081	925	887	750	6850
0							3097	2637	2384	2039	1956	1673	270
0					1875	1572	1368	1158	1058	982	910	783	6670
-1000					4135	3487	3010	2553	2333	1990	2020	1726	263
-39			* 2338	* 2338	1876	1573	1356	1140	1058	982	* 1025	854	6090
-2000			* 5159	* 5159	4136	3488	2989	2534	2332	1999	* 2288	1883	248
-79					* 1446	* 1446	* 1140	* 1140					
					* 3189	* 3189	* 2513	* 2513					

Illustration 161

g06614324

Lift chart above : Standard stick with variable angle boom OUT, optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3201	* 3201	* 2908	2291					* 2544	1899	4790
236			* 7125	* 7125	* 6411	5951					* 5618	3747	185
5000			* 2506	* 2506	* 2843	2302	* 2402	1573			* 2138	1232	5090
107			* 5525	* 5525	* 6268	5975	* 5287	3469			* 4713	2717	224
4000			* 2387	* 2387	* 3000	2229	* 2449	1546	* 2075	1130	* 1885	1024	6300
157			* 5263	* 5263	* 6818	4918	* 5401	3410	* 4577	2492	* 4334	2258	248
3000					* 3374	2089	* 2571	1480	* 2092	1107	* 1889	915	6870
118					* 7440	4888	* 5669	3287	* 4513	2441	* 3588	2017	263
2000							* 2687	1403	* 2096	1099	* 1888	961	6850
79							* 5690	3094	* 4822	2357	* 3688	1990	278
1000							* 2629	1337	* 2022	1033	* 1562	849	6850
39							* 5797	2946	* 4459	2278	* 3311	1872	278
0					* 3082	1771	* 2502	1298	* 1805	1010	* 1365	678	6870
0					* 6756	3904	* 5275	2862	* 3981	2228	* 2878	1632	263
-1000			* 2338	* 2338	* 2394	1771	* 1924	1289	* 1341	1010	* 1625	* 1625	6300
-39			* 5156	* 5156	* 5278	3905	* 4243	2645	* 2958	2227	* 2288	* 2288	248
-2000					* 1448	* 1448	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 162

g06614326

Lift chart above : Standard stick with variable angle boom OUT, optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3231	* 3231	2336	2918					1721	1494	6700
236			* 7125	* 7125	5156	4433					3794	3272	185
5000			* 2500	* 2500	2347	2021	1590	1376			1240	1069	5000
197			* 5525	* 5525	5176	4457	3508	3034			2734	2358	224
4000			* 2387	* 2387	2273	1951	1503	1350	1138	979	1027	883	6300
157			* 5263	* 5263	5511	4302	3440	2970	2504	2158	2265	1948	248
3000					2126	1814	1497	1286	1112	955	816	704	6670
118					4692	4005	3300	2836	2452	2108	2020	1729	263
2000							1416	1200	1073	919	862	735	6850
79							3123	2666	2386	2025	1800	1622	270
3000							1248	1144	1037	883	849	723	6850
39							2973	2520	2286	1947	1872	1584	270
0					1806	1503	1300	1106	934	861	677	746	6670
0					3968	3314	2880	2459	2235	1938	1934	1645	263
-1000			* 2339	* 2339	1806	1504	1300	1097	933	860	* 1625	615	6300
-39			* 5159	* 5159	3866	3315	2865	2419	2234	1897	* 2286	1786	248
-2000					* 1448	* 1448	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 163

g06614328

Lift chart above : Standard stick with variable angle boom OUT, no optional counterweight, triple grouser track shoes with pads, blade UP

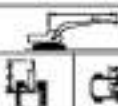
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3231	* 3231	* 2968	2221					* 2544	1643	4700
236			* 7125	* 7125	* 6411	4898					* 5610	3624	185
5000			* 2505	* 2505	* 2843	2232	* 2402	1522			* 2128	1188	5890
197			* 5525	* 5525	* 6268	4823	* 5297	3355			* 4713	3020	224
4000			* 2387	* 2387	* 3000	2165	* 2446	1495	* 3076	1099	* 1865	865	6300
157			* 5263	* 5263	* 6615	4763	* 5401	3296	* 4577	2401	* 4334	2172	248
3000					* 3374	2035	* 2571	1430	* 3092	1098	* 1869	879	6870
118					* 7442	4454	* 5969	3154	* 4613	2350	* 3588	1938	263
2000							* 2897	1352	* 3096	1028	* 1665	826	6850
79							* 5880	2560	* 4622	2286	* 3666	1832	275
1000							* 2629	1285	* 3022	982	* 1562	814	6850
39							* 5797	2834	* 4459	2187	* 3311	1735	275
0					* 3582	1751	* 2502	1247	* 1805	969	* 1365	640	6870
0					* 6796	3752	* 5275	2749	* 3981	2137	* 2876	1452	263
-1000			* 2338	* 2338	* 2384	1702	* 1924	1236	* 1341	969	* 1025	* 1025	6000
-39			* 5159	* 5159	* 5278	3753	* 4243	2729	* 2956	2190	* 2266	* 2266	248
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 164

g06614329

Lift chart above : Standard stick with variable angle boom OUT, no optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) in)	2000		3000		4000		5000		6000		8000				(mm) in)
	79		116		167		197		230						
6000															
230			* 0231	* 0231	* 2908	2183							1858	1667	4793
5000			* 7125	* 7125	* 6411	4786							4098	3544	185
197			* 2599	* 2599	* 2843	2173	1717	1460					1948	1167	5893
4900			* 5525	* 5525	* 6268	4792	3797	3286					2972	2573	224
157			* 2387	* 2387	2444	2193	1890	1464	1236	1070			1122	969	6393
3900			* 5283	* 5283	5590	4637	3726	3229	2726	2390			2474	2137	248
116					2299	1984	1624	1401	1213	1047			1005	865	6070
2000					5070	4335	3580	3088	2674	2316			2215	1907	263
79							1543	1323	1174	1019			948	814	6850
1900							3403	2910	2580	2227			2090	1794	270
39							1475	1258	1137	1075			935	801	6850
0							3253	2775	2508	2148			2062	1767	270
0					1071	1655	1406	1220	1114	962			945	827	6670
-1000					4346	3656	3186	2691	2457	2190			2129	1825	263
-39			* 2338	* 2338	1072	1656	1427	1211	1114	962			* 1625	* 1625	6393
-2000			* 5156	* 5156	4347	3651	3146	2671	2456	2099			* 2260	* 2260	248
-79					* 1448	* 1448	* 1140	* 1140							
					* 3169	* 3169	* 2513	* 2513							

Illustration 165

g06614330

Lift chart above : Standard stick with variable angle boom OUT, optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		238				
													
6000			* 3201	* 3231	* 2908	2901					* 2544	1773	4700
238			* 7125	* 7125	* 6411	5251					* 5515	3908	585
5000			* 2508	* 2508	* 2043	2092	* 2452	1841			* 2138	1290	3600
197			* 5525	* 5525	* 6268	5275	* 5297	3818			* 4713	2945	224
4000			* 2367	* 2367	* 3000	2320	* 2448	1814	* 2076	1184	* 1985	1075	6300
157			* 5263	* 5263	* 6016	5116	* 5401	3558	* 4577	2611	* 4334	2370	248
3000					* 3374	2180	* 2571	1558	* 2092	1161	* 1808	963	6670
118					* 7443	4807	* 5688	3417	* 4613	2560	* 3688	2122	283
2000							* 2867	1471	* 2096	1123	* 1690	908	6850
79							* 5888	3244	* 4622	2476	* 3980	2031	270
1000							* 2829	1485	* 2022	1087	* 1502	865	6850
59							* 5797	3097	* 4459	2367	* 3311	1974	270
0					* 3082	1881	* 2162	1388	* 1805	1084	* 1308	824	6670
0					* 6796	4104	* 5275	3012	* 3981	2347	* 2878	2037	283
-1000			* 2338	* 2338	* 2904	1892	* 1924	1357	* 1341	1084	* 1025	* 1025	6300
-30			* 5158	* 5158	* 5278	4105	* 4243	2992	* 2956	2346	* 2289	* 2289	248
-2000					* 3440	* 1446	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 166

g06614331

Lift chart above : Standard stick with variable angle boom OUT, optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	70		118		157		197		235				
0000													
236													
5000													
167													
4000													
167													4620
3000													182
118													5150
2000													263
70													5300
1000													212
30													5300
0													212
0													5140
-1000													262
-30													4610
-2000													181
-70													3600
													141

Illustration 167

g06614332

Lift chart above : Short stick with variable angle boom IN, no optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
330													
5000													
197													
4000													
157													
3000					* 2147	* 2147	* 2090	1457			* 1568	* 1568	4520
118					* 4733	* 4733	* 4587	3212			* 3457	* 3457	102
2000			* 4028	3181	* 2737	2006	* 2294	1398			* 1666	1226	5390
79			* 8881	6979	* 6095	4429	* 5059	3083			* 3673	2703	212
1000			* 5383	3825	* 3326	1858	* 2549	1324			* 1902	1173	5390
30			* 11869	8229	* 7333	4087	* 5620	2020			* 4195	2586	212
0	* 3590	* 3589	* 5725	2677	* 3646	1756	* 2885	1262			* 2391	1200	5140
0	* 7913	* 7913	* 12623	5903	* 8038	3658	* 5922	2784			* 5272	2667	202
-1000	* 5736	* 5736	* 5420	2432	* 3660	1666					* 2868	1367	4810
-36	* 12648	* 12648	* 11951	5834	* 7860	3745					* 6320	3058	181
-2000	* 7752	5790	* 4345	2464							* 8905	2000	3566
-79	* 17080	12949	* 9580	5873							* 7288	4430	141

Illustration 168

g06614334

Lift chart above : Short stick with variable angle boom IN, no optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
50													
5													
0													
-1000													
-20													
-2000													
-79													

Illustration 169

g06614335

Lift chart above : Short stick with variable angle boom IN, optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236													
5000													
100													
4000													
157											* 1568	* 1568	4020
3000					* 2147	* 2147	* 2080	1576			* 3457	* 3457	182
118					* 4733	* 4733	* 4587	3475			* 1562	* 1562	5150
2000			* 4028	3404	* 2737	2189	* 2204	1618			* 1688	1335	5390
79			* 6881	7505	* 6035	4782	* 5059	3347			* 3673	2943	212
1000			* 5383	3081	* 3326	2018	* 2549	1444			* 1862	1281	5390
39			* 11869	8764	* 7333	4449	* 5620	3183			* 4195	2836	213
0	* 3560	* 3560	* 5725	2020	* 3645	1919	* 2886	1382			* 2391	1325	5140
0	* 7913	* 7913	* 12623	8438	* 8038	4211	* 5022	3047			* 5272	2821	202
-1000	* 5736	* 5736	* 5420	2875	* 3569	1859					* 2888	1519	4610
-39	* 12648	* 12648	* 11861	6339	* 7886	4894					* 8323	3350	161
-2000	* 7752	6258	* 4345	2006							* 3365	2195	3590
-79	* 17093	13755	* 9580	8408							* 7288	4839	141

Illustration 170

g06614336

Lift chart above : Short stick with variable angle boom IN, optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	70		118		157		197		238				
6000													
231													
5000													
197													
4000													
157													
3000													
118													
2000													
70													
1000													
50													
0													
0													
-1000													
-30													
-2000													
-70													

Illustration 171

g06614338

Lift chart above : Short stick with variable angle boom IN, no optional counterweight, triple grouser track shoes with pads, blade UP

(9990) (k)	2000		3000		4000		5000		6000				(mm) (in)
	79		110		157		197		235				
6000													
335													
5000													
197													
4000													
157													
3000													
110													
2000													
79													
1000													
30													
0													
0													
-1000													
-30													
-2000													
-79													

Illustration 172

g06614339

Lift chart above : Short stick with variable angle boom IN, no optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000					* 2147	* 2147	1721	1492					
118					* 4733	* 4733	3794	3291					
2000			* 4029	3171	* 2737	2043	1601	1435					
79			* 6881	6891	* 9335	4505	3692	3165					
1000			3440	2847	2227	1895	1580	1363					
39			7585	6277	4818	4100	3465	2904					
5	* 3580	* 3580	3285	2704	2115	1790	1522	1302					
0	* 7913	* 7913	7243	5963	4665	3948	3356	2871					
-1000	* 5736	* 5736	3238	2661	2063	1741							
-39	* 12648	* 12648	7140	5867	4548	3635							
-2000	* 7752	5568	3271	2601									
-79	* 17083	12277	7212	5834									

Illustration 173

g06614341

Lift chart above : Short stick with variable angle boom IN, optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		238				
													
6000													
236													
5000													
187													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
8													
0													
-1000													
-39													
-2000													
-79													

Illustration 174

g06614344

Lift chart above : Short stick with variable angle boom IN, optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000		7000		8000		9000		(mm) (in)
	70	110	157	197	236	275	315	355	395	435	475	515	555	595	635	675	
6000			* 3393	* 3365	2190	1878							1745	1497	4490		
236			* 7481	* 7481	4630	4343							3647	3390	176		
5000			* 2704	* 2704	2212	1898	1481	1275					1200	1097	5520		
197			* 5961	* 5961	4677	4188	3265	2812					2060	2285	217		
4000			* 2900	* 2900	2135	1825	1450	1252	1042	892			994	940	6150		
157			* 6173	* 6173	4704	4024	3211	2761	2298	1957	2169	1852	242				
3000					1960	1688	1309	1100	924	874	999	738	6540				
116					4367	3705	3003	2619	2258	1928	1916	1638	257				
2000					1607	1518	1300	1110	967	838	913	699	6720				
79					3963	3342	2695	2448	2175	1849	1794	1519	265				
5000					1696	1414	1240	1047	952	885	921	677	6720				
39					3746	3118	2739	2366	2099	1774	1767	1492	265				
0					1666	1382	1206	1012	922	785	821	702	6530				
0					3673	3048	2660	2232	2055	1732	1632	1547	257				
-1000			* 1903	* 1903	1674	1396	1202	1008	909	792	* 951	774	6150				
-39			* 4195	* 4195	3890	3085	2651	2224	2070	1747	* 2596	1757	242				
-2000					* 1219	* 1219	* 937	* 937									
-79					* 2688	* 2688	* 2067	* 2067									

Illustration 175

g06614346

Lift chart above : Short stick with variable angle boom OUT, no optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	70		118		157		197		235				
6000													
236			* 3093	* 3860	* 2967	2081					* 2248	1843	6490
5000			* 7481	* 7481	* 6586	4590					* 4548	3666	176
107			* 2704	* 2704	* 2886	2192	* 2430	1415			* 1814	1157	5520
4000			* 5901	* 5901	* 6390	4635	* 5359	3121			* 4091	2550	217
157			* 2900	* 2900	* 3076	2024	* 2463	1362	* 2071	968	* 1838	942	6150
3000			* 6173	* 6173	* 6767	4488	* 5431	3060	* 4567	2201	* 3611	2077	242
118					* 3402	1878	* 2570	1326	* 2075	980	* 1563	802	6540
2000					* 7502	4141	* 5667	2624	* 4576	2161	* 3448	1834	257
79					* 3816	1709	* 2843	1247	* 2064	943	* 1552	778	6720
5000					* 7972	3768	* 5829	2749	* 4553	2080	* 3423	1717	265
39					* 3430	1605	* 2575	1162	* 1988	909	* 1487	768	6720
0					* 7584	3539	* 5677	2607	* 4339	2005	* 3280	1690	265
-1000					* 2821	1573	* 2303	1147	* 1717	890	* 1266	705	6530
-39					* 6441	3488	* 5078	2530	* 3787	1962	* 2782	1752	257
-2000			* 1903	* 1903	* 2201	1580	* 1706	1143	* 1185	867	* 951	* 561	6150
-79			* 4195	* 4195	* 4854	3485	* 5069	2521	* 2589	1977	* 2896	* 2098	242
					* 1218	* 1219	* 937	* 637					
					* 2688	* 2690	* 2067	* 2967					

Illustration 176

g06614364

Lift chart above : Short stick with variable angle boom OUT, no optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

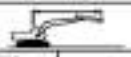
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)	
	79		118		157		197		236					
														
6000			* 3393	* 3898	2162	2021						1891	1828	4490
236			* 7481	* 7481	5208	4475						4171	3590	176
5000			* 2704	* 2704	2383	2051	1608	1360				1321	1138	5020
197			* 5961	* 5961	5255	4523	3545	3064				2813	2515	217
4000			* 2800	* 2800	2305	1977	1583	1366	1143	984		1061	929	6150
157			* 6173	* 6173	5662	4359	3491	3013	2521	2109		2365	2048	242
3000					2152	1832	1516	1302	1125	966		960	821	6540
118					4745	4041	3343	2871	2495	2130		2116	1810	257
2000					1678	1458	1435	1224	1087	936		921	769	6720
79					4362	3678	3165	2700	2398	2050		1968	1695	265
1000					1671	1558	1369	1161	1053	896		889	757	6720
33					4125	3454	3019	2560	2321	1970		1961	1689	265
0					1837	1535	1333	1127	1033	877		922	784	6530
0					4051	3384	2940	2484	2277	1933		2003	1729	257
-1000			* 1903	* 1903	1845	1542	1329	1123	* 1189	884	* 951	* 951		6150
-39			* 4195	* 4195	4686	3436	2931	2476	* 2589	1949	* 2586	* 2098		242
-2000					* 1218	* 1218	* 837	* 607						
-79					* 2688	* 2688	* 2067	* 2067						

Illustration 177

g06614369

Lift chart above : Short stick with variable angle boom OUT, optional counterweight, rubber belts or triple grouser track shoes, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		116		157		197		238				
8000													
236			* 3383	* 3093	* 2667	2241					* 2240	1800	4480
5000			* 7481	* 7401	* 6565	4842					* 4940	3860	176
197			* 2754	* 2704	* 2608	2252	* 2430	1535			* 1814	1282	5520
4000			* 5981	* 5961	* 6350	4988	* 5359	3384			* 4601	2783	217
157			* 2893	* 2800	* 3075	2186	* 2483	1511	* 2371	1093	* 1638	1034	8150
3000			* 6173	* 6173	* 6767	4826	* 5431	3332	* 4567	2411	* 3611	2280	242
116					* 3402	2538	* 2570	1445	* 2375	1075	* 1563	918	8540
2000					* 7502	4493	* 5987	3167	* 4578	2371	* 3446	2024	257
79					* 3616	1885	* 2943	1388	* 2884	1039	* 1552	862	8720
1900					* 7972	4122	* 5829	3013	* 4558	2290	* 3425	1900	265
38					* 3430	1765	* 2575	1302	* 1988	1004	* 1487	850	8720
0					* 7564	3860	* 5677	2670	* 4329	2215	* 3280	1874	265
0					* 2621	1733	* 2303	1267	* 1717	865	* 1266	881	8530
0					* 6441	3821	* 5078	2793	* 3787	2172	* 2792	1942	257
-9000			* 1993	* 1003	* 2201	1746	* 1706	1269	* 1185	862	* 951	* 951	8150
-39			* 4185	* 4185	* 4854	3837	* 3059	2784	* 2588	2187	* 2686	* 2686	242
-2000					* 1219	* 1219	* 837	* 937					
-79					* 2888	* 2888	* 2007	* 2667					

Illustration 178

g06614374

Lift chart above : Short stick with variable angle boom OUT, optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3093	* 3060	2286	1982					1027	1588	4490
236			* 7481	* 7401	5841	4326					4027	3458	178
5000			* 2704	* 2704	2307	1982	1551	1336			1271	1092	5520
197			* 5961	* 5961	5686	4376	3421	2960			2603	2498	217
4000			* 2800	* 2800	2229	1904	1527	1314	1098	942	1038	888	6190
157			* 6173	* 6173	4915	4207	3367	2696	2422	2077	2260	1959	242
3000					2876	1783	1480	1250	1088	924	920	783	6540
118					4576	3888	3219	2756	2382	2039	2026	1727	257
2000					1902	1598	1370	1172	1043	888	842	732	6720
79					4194	3525	3041	2585	2226	1959	1902	1615	265
1000					1795	1467	1313	1100	998	855	850	720	6720
99					3957	3321	2895	2445	2223	1894	1875	1589	268
0					1761	1488	1277	1075	968	835	882	747	6530
0					5684	3232	2810	2360	2179	1942	1944	1646	257
-1000			* 1003	* 1003	1760	1473	1273	1071	905	842	* 951	* 951	6190
-39			* 4195	* 4195	3801	3248	2807	2361	2194	1957	* 2596	* 2596	242
-2000					* 1216	* 1216	* 937	* 937					
-79					* 2688	* 2688	* 2067	* 2067					

Illustration 179

g06614379

Lift chart above : Short stick with variable angle boom OUT, no optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		238				
6000													
238			* 3300	* 3300	* 2987	2172					* 2240	1741	4490
5000			* 7481	* 7481	* 6585	4790					* 4842	3838	175
187			* 2704	* 2704	* 2898	2103	* 2430	1483			* 1814	1217	5520
4000			* 5861	* 5861	* 6390	4830	* 5359	3270			* 4801	3583	217
157			* 2800	* 2800	* 3078	2117	* 2483	1459	* 2071	1052	* 1838	964	6150
3000			* 6173	* 6173	* 6787	4888	* 5431	3218	* 4587	2200	* 3811	2192	242
118					* 3402	1989	* 2570	1364	* 2075	1034	* 1563	861	6540
2000					* 7502	4341	* 5867	3073	* 4576	2280	* 3448	1942	257
79					* 3816	1800	* 2443	1315	* 2084	998	* 1552	826	6720
1000					* 7972	3989	* 5829	2896	* 4550	2169	* 3423	1821	265
39					* 3430	1698	* 2575	1258	* 1988	963	* 1487	814	6720
8					* 7584	3739	* 5677	2756	* 4339	2124	* 3288	1734	265
0					* 2921	1684	* 2305	1215	* 1717	944	* 1288	643	6530
-1000					* 8441	3988	* 5878	2879	* 4387	2081	* 2792	1890	257
-39			* 1003	* 1003	* 2201	1671	* 1706	1211	* 1165	851	* 951	* 851	6150
-2000			* 4105	* 4105	* 4854	3995	* 3858	2671	* 2509	2090	* 2898	* 2090	242
-79					* 1219	* 1219	* 937	* 937					
					* 2888	* 2888	* 2887	* 2887					

Illustration 180

g06614382

Lift chart above : Short stick with variable angle boom OUT, no optional counterweight, triple grouser track shoes with pads, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	T9		118		157		197		236				
6000													
236			* 3093	* 3863	2457	2114					* 2248	1780	4490
5000			* 7481	* 7481	5419	4881					* 4648	3748	176
197			* 2704	* 2704	2479	2134	1678	1452			1393	1193	5520
4000			* 5961	* 5961	5466	4796	3701	3202			3050	2631	217
157			* 2900	* 2900	2400	2085	1654	1429	1199	1034	1136	977	6150
3000			* 6173	* 6173	5293	4542	3547	3150	2645	2279	2605	2155	242
118					2246	1915	1587	1364	1181	1016	1010	866	6540
2000					4656	4224	3499	3036	2604	2240	2228	1910	257
79					2074	1751	1508	1287	1144	980	958	812	6720
1000					4572	3881	3321	2837	2522	2190	2098	1781	265
35					1966	1646	1440	1220	1100	946	938	801	6720
0					4336	3637	3175	2697	2445	2096	2059	1765	265
0					1935	1618	1404	1189	1080	927	973	829	6530
0					4262	3567	3096	2621	2401	2043	2145	1829	257
-1000			* 1903	* 1903	* 2201	1625	1400	1185	* 1185	104	* 951	* 951	6150
-39			* 4195	* 4195	* 4854	3583	3087	2613	* 2588	2259	* 2056	* 2096	242
-2000					* 1219	* 1219	* 837	* 937					
-79					* 2668	* 2668	* 2007	* 2067					

Illustration 181

g06614384

Lift chart above : Short stick with variable angle boom OUT, optional counterweight, triple grouser track shoes with pads, blade UP

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													4460
236													173
5000													2520
197													217
4000													6150
157													242
3000													6540
118													257
2000													6720
79													265
1000													6720
99													265
0													6530
0													257
-1000													6150
-30													242
-2000													
-79													

Illustration 182

g06614386

Lift chart above : Short stick with variable angle boom OUT, optional counterweight, triple grouser track shoes with pads, blade DOWN

i08509685

Lifting Capacities

SMCS Code: 7000

S/N: GG91–Up

S/N: GW91–Up



Failure to comply to the rated load can cause possible personal injury or property damage. This includes the risk of unintended boom lowering. Review the rated load of a particular work tool before performing any operation. Make adjustments to the rated load as necessary for non-standard configurations.

There may be local regulations and/or government regulations that govern the use of excavators which lift heavy objects. Obey all local and government regulations.

Lifting capacities should be used as a guide. Work tools, uneven ground conditions, soft ground conditions, or poor ground conditions have effects on lifting capacities. The operator is responsible for being aware of these effects.

The lifting capacities are defined by “ISO 10567 2007”. The lifting capacities are defined as the lower value of 75% of the static tipping capacity or 87% of the hydraulic lift capacity.

Note: Lifting capacities are based upon a standard machine with the following conditions:

- Lift point: Stick nose without bucket
- Lubricants full
- Fuel tank full
- Steel track
- Complete cab with a 75 kg (165 lb) operator

Lifting capacities will vary with different work tools and attachments. The weight of a work tool attachment must be subtracted from the lift capacity. Consult your Cat® dealer regarding the lifting capacities for specific work tools and attachments.

This machine may be equipped with various sticks. Lifting capacities may vary between the different sticks. Measure the distance on the stick between the boom hinge pin and the work tool hinge pin. This distance will inform you of the size of the stick that is equipped on the machine.

Use the lifting eye that is provided on the linkage to lift objects. When the lifting eye is used, the connection must be made with a sling or shackle.

Note: Japan regulations require a shovel crane configuration to lift certain objects. A shovel crane has a rated load capacity, therefore, the lift capacities discussed below do not apply to a shovel crane configuration. Contact your Cat® dealer for additional information.

Note: Regional regulations may require the use of an overload warning device and boom and stick lowering control valves during object handling applications.

Contact your Cat dealer for additional information.

Configuration Identification

Note: Each component has a stamp to identify the configuration affecting lifting capacity.

The owner will need to check the machine configuration to identify the correct lifting capacity.

The configuration identifier will be located with the part number stamped on the component. Refer to the following table for the abbreviation of the configuration.

Table 40

Configuration Identification		
Component	Configuration	Abbreviation
Front	Reach Boom	R
	Mass Boom	M
	Variable Angle Boom	VA
	Super Long Reach Boom	SLR
	Standard	STD
	Heavy Duty	HD
	Extreme Special	ES
	Thumb Ready Stick	TR
Undercarriage	Short Undercarriage (Crawler)	STD
	Long Undercarriage (Crawler)	LC
	Long Narrow Undercarriage (Crawler)	LN
Cylinder	Standard	-
	Heavy Lift	HL
Counterweight	Metric Ton (tonne)	t ⁽¹⁾

(Table 40, contd)

(1) Counterweight stamp indicates metric ton. (example 1.0t = 1000 kg)

Symbols Found in the Lifting Capacity Charts

Below are symbols that are commonly found on lifting capacity charts for track excavators.

Note: Depending on the machine configuration, some symbols may not be used.

(mm)
(inch) **Measurements are provided in millimeters and inches**



Lift Capacities are provided in kilograms and pounds



Load is limited by hydraulic lifting capacity rather than by a tipping load



Lift point radius



Lift point height



Lifting capacity over the front of the machine



Lifting capacity over the side of the machine

(continued)



Heavy Lift ON

309 CR Excavator with Standard Boom and Standard Undercarriage

Ciklo Nr.	1.00		2.00		3.00				4.00		5.00		6.00		
	1.1	1.2	2.1	2.2	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
1	1.1	1.2	2.1	2.2	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
2													1.1	1.2	1.3
3													2.1	2.2	2.3
4					3.1	3.2	3.3	3.4					4.1	4.2	4.3
5					3.1	3.2	3.3	3.4					5.1	5.2	5.3
6			4.1	4.2	4.3	4.4	4.5	4.6					6.1	6.2	6.3
7			4.1	4.2	4.3	4.4	4.5	4.6					7.1	7.2	7.3
8					5.1	5.2	5.3	5.4	5.5	5.6			8.1	8.2	8.3
9					5.1	5.2	5.3	5.4	5.5	5.6			9.1	9.2	9.3
10					6.1	6.2	6.3	6.4	6.5	6.6			10.1	10.2	10.3
11					6.1	6.2	6.3	6.4	6.5	6.6			11.1	11.2	11.3
12					7.1	7.2	7.3	7.4	7.5	7.6			12.1	12.2	12.3
13					7.1	7.2	7.3	7.4	7.5	7.6			13.1	13.2	13.3
14					8.1	8.2	8.3	8.4	8.5	8.6			14.1	14.2	14.3
15					8.1	8.2	8.3	8.4	8.5	8.6			15.1	15.2	15.3
16					9.1	9.2	9.3	9.4	9.5	9.6			16.1	16.2	16.3
17					9.1	9.2	9.3	9.4	9.5	9.6			17.1	17.2	17.3
18					10.1	10.2	10.3	10.4	10.5	10.6			18.1	18.2	18.3
19					10.1	10.2	10.3	10.4	10.5	10.6			19.1	19.2	19.3
20					11.1	11.2	11.3	11.4	11.5	11.6			20.1	20.2	20.3
21					11.1	11.2	11.3	11.4	11.5	11.6			21.1	21.2	21.3
22					12.1	12.2	12.3	12.4	12.5	12.6			22.1	22.2	22.3
23					12.1	12.2	12.3	12.4	12.5	12.6			23.1	23.2	23.3
24					13.1	13.2	13.3	13.4	13.5	13.6			24.1	24.2	24.3
25					13.1	13.2	13.3	13.4	13.5	13.6			25.1	25.2	25.3
26					14.1	14.2	14.3	14.4	14.5	14.6			26.1	26.2	26.3
27					14.1	14.2	14.3	14.4	14.5	14.6			27.1	27.2	27.3
28					15.1	15.2	15.3	15.4	15.5	15.6			28.1	28.2	28.3
29					15.1	15.2	15.3	15.4	15.5	15.6			29.1	29.2	29.3
30					16.1	16.2	16.3	16.4	16.5	16.6			30.1	30.2	30.3
31					16.1	16.2	16.3	16.4	16.5	16.6			31.1	31.2	31.3
32					17.1	17.2	17.3	17.4	17.5	17.6			32.1	32.2	32.3
33					17.1	17.2	17.3	17.4	17.5	17.6			33.1	33.2	33.3
34					18.1	18.2	18.3	18.4	18.5	18.6			34.1	34.2	34.3
35															

Illustration 183

q06612846

Lift chart above : Standard stick with no optional counterweight, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													
197											* 2291	1673	4730
4000					* 2581	2163	* 2419	1513			* 5005	3669	185
157					* 5891	4814	* 5333	3336			* 4719	3667	215
3000			* 4925	3356	* 3603	2103	* 2574	1479			* 2129	1129	5988
118			* 8875	7399	* 6698	4836	* 5670	3262			* 4694	2489	232
2000					* 3656	1967	* 2820	1426	* 3386	1877	* 2220	1046	6180
79					* 6065	4386	* 6235	3144	* 5368	2375	* 4895	2310	240
1500					* 4109	1884	* 3033	1373	* 2416	1253	* 2389	1027	6180
39					* 5061	4155	* 6983	3027	* 5327	2322	* 5202	2265	240
0			* 3748	2815	* 4163	1829	* 3052	1337			* 2365	1084	5880
0			* 6265	6207	* 5180	4653	* 6730	2948			* 5214	2348	232
-1000	* 3017	* 3617	* 5347	2823	* 3801	1814	* 2788	1326			* 2395	1182	5458
-39	* 7975	* 7075	* 11760	9235	* 8382	4601	* 6103	2925			* 5148	2606	215
-2000	* 5535	* 5535	* 4986	2886	* 2617	1658					* 2176	1475	4898
-79	* 12294	* 12204	* 8832	8320	* 6432	4050					* 4798	3251	185
-3000			* 1496	* 1496							* 1314	* 1314	3288
-118			* 3299	* 3299							* 2898	* 2898	129

Illustration 184

g06612850

Lift chart above : Standard stick with no optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000		7000		(mm) (in)
	70		110		157		197		236		275		
5000													1877
197													1888
4000													4790
157													185
3000													165
110													185
2000													165
70													165
1000													165
30													165
0													165
0													165
-1000													165
-30													165
-2000													165
-70													165
-3000													165
-110													165

Illustration 185

g06612854

Lift chart above : Standard stick with optional counterweight, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		119		157		197		236				
5000													
197													4790
4000					* 2581	* 2581	* 2419	1625					185
157					* 5861	* 5861	* 5333	3584					5490
3000			* 4025	* 4025	* 3838	2253	* 2574	1582					215
119			* 6675	* 6675	* 6666	4868	* 5675	3510					9990
2000					* 3858	2137	* 2828	1638	* 2386	1167			232
79					* 8965	4712	* 6235	3591	* 5289	2572	* 4865	2584	6190
1900					* 4106	2635	* 3031	1485	* 2418	1143	* 2356	1115	240
39					* 6661	4487	* 6983	3275	* 5327	2519	* 5252	2456	5890
0			* 3748	3043	* 4103	1979	* 3052	1440			* 2365	1155	232
0			* 6205	8710	* 8160	4384	* 6730	3165			* 5214	2548	5450
-1000	* 3617	* 3617	* 5347	3051	* 3801	1965	* 2708	1436			* 2335	1282	215
-38	* 1975	* 1975	* 11760	8727	* 8362	4332	* 8103	3172			* 5148	2638	4890
-3000	* 5535	* 5535	* 4095	3094	* 2917	1988					* 2176	1596	185
-79	* 12204	* 12204	* 6832	6823	* 5432	4384					* 4196	3520	3280
-3000			* 1496	* 1496							* 1314	* 1314	120
-119			* 3299	* 3299							* 2806	* 2806	

Illustration 186

g06612857

Lift chart above : Standard stick with optional counterweight, rubber belts or triple grouser track shoes, blade
DOWN

(mm) (in)	3000		3800		4600		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													
197							1408	1360			1400	1221	5378
4000							3527	3073			3093	2695	211
157							1594	1388	1152	1002	1143	893	8090
3000							3514	3090	2541	2209	2520	2190	237
118							2555	1936	1551	1247	1140	860	1010
2000							5633	4266	3420	2909	2514	2182	2226
79							2114	1811	1486	1295	1106	943	815
1000							4661	3694	3277	2632	2445	2116	2079
39							1082	1686	1418	1210	1074	926	823
0							4370	3716	3128	2689	2368	2041	2035
0							1894	1604	1398	1189	1048	899	848
0							6524	5376	4176	3536	3012	2578	2368
-1000	* 2954	* 2054	2935	2415	1856	1588	1339	1144	1036	886	1031	885	8020
-38	* 6513	* 6513	6488	5324	4090	3457	2853	2522	2285	1961	2274	1952	257
-2000	* 4016	* 4016	2956	2438	1800	1572	1345	1149			1224	1046	5388
-79	* 10179	* 10179	6523	5375	4102	3466	2885	2533			2668	2312	211
-3000	* 4413	* 4413	* 3678	2510	* 2111	1624					* 1815	1482	4270
-118	* 9732	* 9732	* 8788	5534	* 4825	3580					* 4001	3299	168

Illustration 187

g06612862

Lift chart above : Long stick with no optional counterweight, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													5370
107							* 2080	1534			* 1684	1348	211
4000							* 4585	3381			* 3713	2969	9030
157							* 2076	1520	* 1652	1103	* 1552	1006	203
3000							* 4582	3366	* 3842	2442	* 3550	2422	8430
118					* 2555	2137	* 2276	1486	* 2104	1095	* 1583	971	253
2000					* 5653	4312	* 5023	3276	* 4838	2415	* 3481	2141	6890
79					* 3235	2018	* 2582	1423	* 2234	1065	* 1639	906	260
1000					* 2132	4431	* 5694	3137	* 4903	2348	* 3814	1999	8830
39					* 3847	1881	* 2889	1358	* 2338	1030	* 1764	887	280
0					* 8462	4149	* 6326	2691	* 5152	2272	* 3890	1955	8430
0			* 3845	2762	* 4119	1758	* 3013	1305	* 2354	1003	* 1961	910	253
-1000	* 2054	* 2054	* 5195	2738	* 3887	1788	* 2915	1279	* 2139	984	* 2121	989	8020
-39	* 6513	* 6513	* 11456	6037	* 8792	3881	* 6429	2620	* 4717	2191	* 4627	2181	237
-2000	* 4616	* 4616	* 4881	2762	* 3416	1764	* 2430	1284			* 2076	1171	5360
-79	* 83179	* 10179	* 16762	6090	* 7533	3888	* 5399	2632			* 4576	2542	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	1817					* 1815	* 1815	4270
-118	* 9732	* 8732	* 6798	* 6798	* 4855	4068					* 4081	* 4081	168

Illustration 188

g06612863

Lift chart above : Long stick with no optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)	
	79		118		157		197		236					
														
5000							1710	1501				* 1884	1319	5370
197							3791	3360				* 3713	2969	211
4000							1713	1495	1247	1098		1297	1079	6030
157							3779	3290	2756	2398		2728	2378	237
3000						* 2555	2079	1671	1454	1235	1070	1097	954	6420
118						* 5633	4583	3694	3206	2723	2372	2418	2184	253
2000						2275	1854	1606	1360	1204	1046	1028	891	6000
79						5617	4309	3541	3069	2655	2305	2266	1985	260
1000						2143	1829	1538	1327	1186	1012	1008	872	6000
39						4726	4834	3391	2905	2577	2230	2222	1922	260
0				3398	2052	2056	1746	1486	1277	1141	945	1035	894	6420
0				7073	5646	4533	3651	3270	2615	2516	2171	2263	1972	253
-1000	* 2954	* 2954	3182	2628	2018	1711	1460	1251	1131	975	1128	071		6020
-39	* 8515	* 8813	7017	5796	4456	3772	3217	2756	2494	2160	2463	2141		237
-3000	* 4616	* 4616	3397	2652	2022	1715	1464	1256				1333	1147	5390
-79	* 10179	* 10179	7072	5647	4456	3781	3229	2770				2540	2529	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	1798						* 1815	* 1815	4270
-118	* 9732	* 9732	* 6786	* 6786	* 4855	3895						* 4801	* 4801	188

Illustration 189

g06612865

Lift chart above : Long stick with optional counterweight, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
5000							* 2080	1640			* 1684	1440	5370
197							* 4590	3620			* 3713	3190	211
4000							* 2070	1640	* 1652	1197	* 1502	1167	6030
157							* 4582	3610	* 3647	2940	* 3509	2618	237
3000					* 2555	* 2555	* 2270	1590	* 2104	1185	* 1503	1053	6420
118					* 5833	* 5833	* 5023	3524	* 4839	2813	* 3491	2325	253
2000					* 3255	2160	* 2582	1535	* 2224	1154	* 1630	988	6680
79					* 7132	4763	* 5694	3384	* 4863	2546	* 3614	2175	260
1000					* 3647	2032	* 2869	1469	* 2336	1120	* 1764	987	6680
39					* 8462	4480	* 6326	3238	* 5152	2480	* 3890	2131	260
0			* 3845	2990	* 4119	1647	* 3013	1417	* 2354	1093	* 1901	993	6420
0			* 8477	8993	* 9083	4250	* 6843	3128	* 5191	2409	* 4590	2160	253
-1990	* 2054	* 2054	* 5195	2998	* 3087	1810	* 2915	1391	* 2138	1083	* 2121	1078	6020
-39	* 6513	* 6513	* 11459	6539	* 6702	4212	* 6429	3098	* 4717	2386	* 4637	2377	237
-3000	* 4616	* 4616	* 4881	3990	* 3416	1614	* 2430	1367			* 2075	1274	5380
-79	* 10179	* 10179	* 10762	6992	* 7533	4221	* 5399	3079			* 4576	2606	211
-3990	* 4413	* 4413	* 3678	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-118	* 9732	* 9732	* 6788	* 6788	* 4655	* 4655					* 4001	* 4001	168

Illustration 190

g06612868

Lift chart above : Long stick with optional counterweight, rubber belts or triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													6700
107													165
4000					* 2581	2060	1688	1437					5490
157					* 5694	4554	3635	3186					215
3000			* 4025	3136	2504	1986	1614	1404					5900
118			* 8975	6915	5680	4380	3559	3095					272
2000					2184	1673	1559	1351	1178	1022			6100
79					4816	4130	3436	2979	2594	2254			240
1000					2679	1774	1505	1290	1182	989			6100
39					4584	3811	3218	2684	2546	2202			240
0			3159	2615	2021	1719	1468	1264					5890
0			6905	5766	4457	3799	3237	2786					232
-1000	* 3617	* 3617	3187	2623	2007	1705	1467	1253					5450
-39	* 7975	* 7975	6984	5783	4424	3780	3214	2784					215
-2000	* 5535	* 5535	3213	2694	2031	1728							4890
-79	* 12204	* 12204	7984	5675	4476	3810							165
-3000			* 1460	* 1468									3290
-118			* 3299	* 3208									120

Illustration 191

g06612871

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes with pads, blade UP

Illustration 192 g06612875

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes with pads, blade DOWN

q06612875

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
5000											1954	1700	4790
197											4308	3755	185
4000					* 2501	2226	1768	1544			1524	1331	5490
157					* 5801	4889	3898	3404			3360	2935	215
3000			* 4025	3350	2485	2129	1734	1511			1320	1160	5880
118			* 8875	7388	5436	4695	3823	3331			2929	2567	232
2000					2346	2016	1679	1458	1272	1138	1238	1079	8190
79					5172	4445	3702	3215	2604	2443	2729	2378	240
1000					2241	1916	1625	1406	1247	1084	1217	1058	8190
39					4940	4226	3582	3101	2750	2391	2683	2333	240
0			* 3748	3829	2183	1862	1588	1371			1203	1006	5880
0			* 8265	8238	4813	4106	3501	3023			2784	2418	232
-1980	* 3617	* 3617	3418	2837	2188	1848	1577	1361			1403	1215	5490
-39	* 7975	* 7975	7533	6255	4781	4075	3478	3000			3094	2670	215
-2000	* 5635	* 5635	* 4888	3978	2192	1871					1751	1500	4690
-79	* 12294	* 12294	* 8832	6348	4834	4125					3881	3327	185
-3000			* 1486	* 1496							* 1314	* 1314	3280
-118			* 3299	* 3299							* 2880	* 2880	129

Illustration 193

g06612876

Lift chart above : Standard stick with optional counterweight, triple grouser track shoes with pads, blade UP

No.	100		150		200				250		300		Total
	100	150	100	150	100	150	200	250	100	150	100	150	
100													100
150					100	150	200	250					500
200			100	150	200	250	300	350					1000
250			100	150	200	250	300	350	400	450			1500
300			100	150	200	250	300	350	400	450	500		2000
350			100	150	200	250	300	350	400	450	500	550	2500
400			100	150	200	250	300	350	400	450	500	550	3000
450			100	150	200	250	300	350	400	450	500	550	3500
500			100	150	200	250	300	350	400	450	500	550	4000
550			100	150	200	250	300	350	400	450	500	550	4500
600			100	150	200	250	300	350	400	450	500	550	5000
650			100	150	200	250	300	350	400	450	500	550	5500
700			100	150	200	250	300	350	400	450	500	550	6000
750			100	150	200	250	300	350	400	450	500	550	6500
800			100	150	200	250	300	350	400	450	500	550	7000
850			100	150	200	250	300	350	400	450	500	550	7500
900			100	150	200	250	300	350	400	450	500	550	8000
950			100	150	200	250	300	350	400	450	500	550	8500
1000			100	150	200	250	300	350	400	450	500	550	9000

Illustration 194

q06612880

Lift chart above : Standard stick with optional counterweight, triple grouser track shoes with pads, blade DOWN

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
													
5000							1671	1456			* 1884	1278	5070
167							3683	3210			* 3713	2819	211
4000							1694	1450	1228	1052	1169	9543	6030
157							3670	3187	2665	2319	2643	2299	237
3000					* 2555	2919	1622	1406	1196	1040	1062	921	6420
118					* 3633	4451	3576	3107	2637	2292	2341	2031	253
2000					2209	1894	1557	1347	1185	1010	993	850	6000
79					4672	4177	3433	2970	2559	2226	2160	1894	295
1000					2677	1709	1489	1282	1130	976	973	840	6800
39					4580	3902	3264	2826	2482	2151	2146	1852	265
0			3104	2562	1906	1587	1407	1232	1132	949	1000	861	6420
0			6348	5650	4387	3716	3168	2716	2436	2092	2204	1898	253
-1000	* 2654	* 2954	3383	2539	1952	1551	1410	1206	1082	939	1067	925	6020
-39	* 8513	* 8513	6792	5596	4304	3646	3110	2656	2408	2073	2368	2062	237
-2000	* 4616	* 4616	3106	2562	1956	1555	1416	1211			1288	1106	5390
-79	* 10179	* 10179	6548	5649	4313	3649	3121	2671			2641	2436	211
-3000	* 4413	* 4413	* 3078	2634	* 2111	1707					* 1815	1558	4270
-118	* 8732	* 8732	* 6790	5800	* 4855	3763					* 4021	3436	188

Illustration 195

g06612882

Lift chart above : Long stick with no optional counterweight, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
5000							* 2060	1801			* 1884	1498	5370
167							* 4566	3531			* 3713	3195	211
4000							* 2078	1595	* 1052	1162	* 1592	1152	6030
157							* 4562	3516	* 3642	2561	* 3508	2540	237
3000					* 2555	* 2555	* 2278	1554	* 2104	1149	* 1583	1021	6420
118					* 5533	* 5533	* 5525	3426	* 4639	2535	* 3491	2251	253
2000					* 3235	2100	* 2560	1490	* 2234	1110	* 1639	955	6000
79					* 7132	4531	* 5694	3286	* 4803	2467	* 3814	2195	260
1000					* 3847	1972	* 2868	1424	* 2336	1084	* 1764	835	6900
39					* 8482	4349	* 6326	3140	* 5152	2591	* 3892	2042	260
0			* 3845	2000	* 4119	1887	* 3613	1373	* 2354	1057	* 1691	940	6420
0			* 5477	1034	* 9083	4192	* 6843	3028	* 5191	2331	* 4392	2118	253
-1000	* 2854	* 2954	* 5195	2675	* 3987	1851	* 2915	1347	* 2139	1048	* 3121	1643	6020
-39	* 6513	* 6513	* 11458	6340	* 8792	4081	* 6428	2970	* 4717	2310	* 4877	2395	237
-2000	* 4816	* 4816	* 4861	2809	* 3416	1655	* 2436	1352			* 2875	1233	5360
-79	* 10179	* 10179	* 10762	6395	* 7533	4090	* 5358	2581			* 4578	2719	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-118	* 6732	* 9732	* 6785	* 6785	* 4055	* 4055					* 4001	* 4001	168

Illustration 196

g06612884

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes with pads, blade DOWN

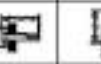
(mm) (in)	3000		3800		4600		5000		6000				
	79		118		157		197		236				
												(mm) (in)	
5000							1798	1593			* 1664	1377	5378
197							3947	3449			* 3713	3035	211
4000							1784	1557	1304	1137	1293	1126	8598
157							3834	3434	2974	2506	2851	2488	237
3000					* 2555	2182	1741	1516	1291	1125	1149	1000	8420
118					* 5833	4766	3845	3343	2847	2482	2534	2206	253
2000					2371	2007	1677	1454	1260	1095	1079	938	8880
79					5229	4492	3897	3206	2779	2415	2376	2063	260
1000					2239	1912	1608	1389	1225	1061	1058	918	8680
39					4937	4217	3548	3003	2701	2346	2332	2021	260
0			* 3845	3776	2191	1829	1557	1339	1197	1034	1087	940	8420
0			* 8477	8122	4744	4034	3432	2952	2640	2281	2397	2073	253
-1000	* 2954	* 2854	3330	2753	2114	1794	1535	1313	1187	1025	1182	1020	8820
-39	* 6513	* 6513	7342	6089	4681	3655	3174	2696	2618	2280	2608	2250	257
-2000	* 4016	* 4016	3355	2778	2118	1798	1535	1318			1398	1204	5380
-79	* 10179	* 10179	7357	6120	4670	3884	3385	2907			3082	2655	211
-3000	* 4413	* 4413	* 3678	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-118	* 9732	* 9732	* 8788	* 6780	* 4855	* 4855					* 4001	* 4001	168

Illustration 197

g06612887

Lift chart above : Long stick with optional counterweight, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		110		157		197		230				
													
5000							* 2080	1714			* 1684	* 1684	5370
197							* 4586	3779			* 3713	* 3713	211
4000							* 2079	1708	* 1852	1251	* 1502	1241	9590
157							* 4582	3765	* 3642	2759	* 3509	2737	237
3000					* 2555	* 2555	* 2279	1866	* 2104	1239	* 1589	1103	8420
110					* 5633	* 5633	* 5023	3673	* 4836	2732	* 3491	2433	253
2000					* 3235	2251	* 2592	1903	* 2224	1209	* 1030	1034	9890
79					* 7132	4903	* 5094	3534	* 4903	2895	* 3614	2281	200
1000					* 3647	2123	* 2999	1536	* 2336	1174	* 1704	1015	9890
39					* 6462	4681	* 6326	3380	* 5152	2599	* 3690	2236	200
0			* 3845	3129	* 4110	2938	* 3013	1485	* 2354	1147	* 1901	1042	8420
0			* 8477	6997	* 8003	4460	* 6543	3275	* 5101	2528	* 4390	2269	253
-1000	* 2954	* 2954	* 5195	3193	* 3667	2601	* 2913	1459	* 2139	1137	* 2121	1132	9020
-39	* 6513	* 6513	* 11456	6943	* 8792	4413	* 6429	3217	* 4717	2507	* 4677	2496	237
-2000	* 4616	* 4616	* 4981	3127	* 3416	2005	* 2430	1494			* 2075	1336	5380
-79	* 10179	* 10179	* 10762	6896	* 7533	4421	* 5359	3229			* 4576	2945	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-110	* 9732	* 9732	* 6786	* 6786	* 4655	* 4655					* 4001	* 4001	166

Illustration 198

g06612889

Lift chart above : Long stick with optional counterweight, triple grouser track shoes with pads, blade DOWN

309 CR Excavator with Standard Boom and Long Undercarriage

(mm) (in)	3000		3000		4000		5000		6000				
	79		118		157		197		236				
													(mm) (in)
5000											* 2297	1736	4736
197											* 5665	3659	165
4000					* 2581	* 2581	2018	1626			1736	1400	5480
157					* 5581	* 5581	4449	3585			3828	3088	210
3000			* 4025	* 4025	* 3033	2254	1962	1592			1514	1215	5988
118			* 6675	* 6675	* 6688	4975	4370	3510			3338	2669	292
2000					2722	2139	1925	1558	1451	1196	1412	1135	6186
79					5901	4718	4244	3590	3256	2571	3114	2502	240
1000					2811	2037	1868	1485	1426	1142	1391	1114	6186
39					5757	4492	4119	3275	3144	2518	3066	2456	240
0			* 3746	3052	2556	1981	1630	1449			1486	1155	5890
0			* 6265	6730	5423	4368	4095	3195			3188	2546	292
-1000	* 3517	* 3517	4117	3060	2534	1957	1619	1436			1612	1282	5480
-36	* 7975	* 7975	9078	6749	5388	4336	4010	3172			3553	2627	215
-2000	* 5535	* 5535	* 4006	3104	* 2917	1996					* 2176	1597	4690
-79	* 12204	* 12204	* 8832	6644	* 6432	4388					* 4796	3521	165
-3000			* 1496	* 1496							* 1314	* 1314	3280
-118			* 3299	* 3299							* 2896	* 2896	129

Illustration 199

g06612896

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	3000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
													
6000													4700
157													185
4000					* 2581	* 2581	* 2419	1818					5490
157					* 5891	* 5691	* 5333	4012					215
3000			* 4025	* 4025	* 3033	2538	* 2574	1785					5900
118			* 8875	* 8875	* 6668	5598	* 5676	3936					252
2000					* 3658	2418	* 2826	1730	* 2386	1311	* 2220	1276	6100
79					* 8265	8333	* 6235	3814	* 5280	2890	* 4695	2814	240
1000					* 4109	2313	* 3091	1875	* 2418	1288	* 2389	1255	6100
39					* 8061	5999	* 6665	3894	* 5527	2896	* 5202	2767	240
0			* 1748	* 1748	* 4169	2255	* 3052	1639			* 2965	1308	5990
0			* 8265	* 8265	* 8160	4871	* 6730	3613			* 5018	2872	232
-1000	* 3617	* 3617	* 5347	3538	* 3801	2240	* 2768	1638			* 2335	1448	5450
-39	* 7975	* 7975	* 11790	7800	* 8382	4939	* 6103	3589			* 5168	3193	215
-2000	* 5535	* 5535	* 4006	* 4006	* 2917	2284					* 2178	1607	4090
-79	* 12204	* 12204	* 8832	* 8832	* 8452	4883					* 4796	2964	185
-3000			* 1496	* 1496							* 1314	* 1314	3290
-118			* 3299	* 3299							* 2690	* 2688	129

Illustration 200

g06612900

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes, blade DOWN

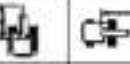
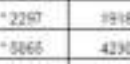
(mm) (in)	2000		3000		4000		5000		6000				
	75		118		157		197		236				(mm) (in)
5000											* 2297	1918	4790
197											* 5665	4230	185
4000					* 2581	* 2581	* 2419	1739			* 2140	1692	5450
157					* 5691	* 5691	* 5303	3835			* 4719	3342	215
3000			* 4005	* 4005	* 3033	2408	2115	1756			1621	1312	5900
118			* 8875	* 8875	* 6588	5311	4664	3761			3574	2893	232
2000					2901	2292	2058	1652	1556	1256	1515	1223	6100
75					6305	5054	4537	3642	3435	2770	3340	2698	240
1000					2793	2189	2001	1599	1331	1232	1493	1203	6100
39					6100	4820	4413	3525	3375	2717	3202	2652	240
0			* 3748	* 3748	2732	2133	1963	1663			1663	1347	5890
0			* 8265	* 8265	6021	4704	4328	3446			3424	2790	232
-1000	* 3617	* 3617	4406	3292	2717	2119	1952	1552			1750	1384	5450
-39	* 7975	* 7975	9719	7258	5991	4673	4303	3422			3815	3051	215
-2000	* 5535	* 5535	* 4006	3335	* 2917	2143					* 2176	1720	4690
-75	* 12204	* 12204	* 8852	7354	* 6432	4724					* 4798	3793	185
-3000			* 1466	* 1466							* 1314	* 1314	3290
-118			* 3299	* 3299							* 2896	* 2896	129

Illustration 201

g06612902

Lift chart above : Standard stick with optional counterweight, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	75		118		157		157		235				
-5000													
197													
4000					* 2581	* 2581	* 3419	1948					
157					* 5891	* 5891	* 5333	4277					
3000			* 4025	* 4025	* 3033	* 3033	* 2874	1905					
118			* 8875	* 8875	* 6688	* 6688	* 5676	4201					
2000					* 8658	2581	* 2823	1850	* 2386	1456	* 2220	1370	6100
75					* 8065	5891	* 6235	4080	* 5260	3181	* 4895	3020	240
1000					* 4109	2476	* 3031	1796	* 2418	1382	* 2359	1348	6100
39					* 8061	5456	* 6983	3968	* 5327	3047	* 5202	2973	240
0			* 9748	* 9748	* 4163	2417	* 3052	1753			* 2505	1400	5600
0			* 8265	* 8265	* 5180	5330	* 6730	3678			* 5214	3087	230
-1000	* 3617	* 3617	* 5347	3783	* 3601	2405	* 2765	1748			* 2335	1556	5450
-39	* 7975	* 7975	* 11790	8355	* 8362	5296	* 6103	3655			* 5148	3430	215
-2000	* 5535	* 5535	* 4098	* 4098	* 2917	2427					* 2176	* 2176	4690
-75	* 12204	* 12204	* 8832	* 6002	* 6402	5351					* 4798	* 4798	185
-3000			* 1496	* 1496							* 1514	* 1514	3280
-118			* 3299	* 3299							* 2899	* 2899	129

Illustration 202

g06612904

Lift chart above : Standard stick with optional counterweight, triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)	
	79		110		157		197		236					
														
5000							* 2060	1546			* 1584	1440	5370	
157							* 4586	3630			* 3715	3195	211	
4000							* 2078	1640	* 1852	1197	* 1592	1167	6030	
157							* 4582	3617	* 3642	2536	* 3009	2517	237	
3000						* 2555	* 2555	* 2278	1588	1473	1184	1312	1055	6420
118						* 5639	* 5639	* 5029	3525	3048	2612	2092	2321	255
2000						2752	2163	1925	1535	1441	1154	1292	985	6600
79						6069	4769	4248	3385	3177	2544	2717	2175	260
1000						2612	2034	1854	1469	1405	1119	1212	965	6600
39						5760	4485	4068	3236	3097	2458	2672	2129	260
0				* 1845	2999	2519	1948	1799	1417	1376	1092	1248	992	6420
0				* 8477	8614	5555	4297	3967	3125	3034	2497	2752	2186	255
-1000	* 2954	* 2954	4627	2975	2480	1912	1771	1391	1366	1062	1359	1077	6020	
-39	* 5013	* 5013	8879	6559	5467	4216	3906	3056	3012	2366	2998	2376	237	
-2000	* 4616	* 4616	4504	2999	2484	1916	1777	1396				1613	1273	5360
-79	* 10179	* 10179	8846	6613	5477	4225	3918	3079				3596	2868	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111						* 1815	* 1815	4270
-118	* 3732	* 3732	* 6788	* 6788	* 4855	* 4855						* 4001	* 4001	166

Illustration 203

g06612906

Lift chart above : Long stick with no optional counterweight, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		158		157		197		236				
5000													
197							* 2060	* 2880			* 1684	* 1684	5370
4000							* 4586	* 4586			* 3715	* 3715	211
157							* 2078	* 2878	* 1652	1343	* 1692	1332	6030
3000							* 4582	* 4582	* 3642	2961	* 3509	2906	237
118					* 2555	* 2555	* 2278	1793	* 2104	1331	* 1885	1185	6420
2000					* 5633	* 5633	* 5023	3953	* 4639	2934	* 3491	2615	253
79					* 3235	2444	* 2582	1728	* 2224	1299	* 1636	1112	6680
1000					* 7132	5385	* 5694	3610	* 4903	2865	* 3614	2452	260
39					* 3847	2311	* 2869	1660	* 2336	1254	* 1764	1062	6680
0					* 8462	5094	* 6326	3660	* 5152	2788	* 3690	2406	260
0			* 3845	* 3845	* 4119	2223	* 3013	1607	* 2354	1236	* 1991	1123	6420
0			* 5477	* 5477	* 6083	4902	* 6683	3544	* 5191	2726	* 4390	2476	253
-1000	* 2954	* 2954	* 5195	5450	* 3987	2185	* 2915	1581	* 2139	1227	* 2121	1221	6030
-39	* 6515	* 6515	* 11456	7608	* 8792	4813	* 6429	3485	* 4717	2704	* 4637	2692	237
-2000	* 4616	* 4616	* 4881	3476	* 3418	2185	* 2430	1586			* 2075	1444	5380
-79	* 10179	* 10179	* 18762	7664	* 7533	4828	* 5359	3497			* 4576	3165	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-118	* 9732	* 9732	* 6786	* 6786	* 4655	* 4655					* 4001	* 4001	166

Illustration 204

g06612909

Lift chart above : Long stick with no optional counterweight, triple grouser track shoes, blade DOWN

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
5000													5370
197							* 2080	1760			* 1682	* 1664	211
4000							* 4595	3661			* 3713	* 3713	6000
157							* 2078	1754	* 1852	1287	* 1592	1277	237
3000							* 4052	3668	* 3642	2838	* 3509	2816	6420
118					* 2555	* 2555	* 2278	1712	1578	1275	* 1583	1136	253
2000					* 5833	* 5633	* 5023	3775	3479	2811	* 3491	2505	6600
79					* 3335	2315	2058	1689	1548	1244	1325	1066	260
1000					* 7132	5105	4537	3635	3408	2744	2922	2351	9600
99					2796	2187	1987	1582	1500	1210	1305	1046	260
0					5162	4522	4081	3469	3326	2668	2877	2307	6420
0			* 3845	3291	2702	2181	1932	1691	1481	1182	1344	1075	253
-1000	* 2964	* 2964	4117	3206	2662	2365	1905	1605	1471	1173	1464	1168	6020
-36	* 6513	* 6513	9519	7070	5670	4555	4199	3518	3243	2586	3227	2574	237
-2000	* 4616	* 4616	* 4881	3230	2666	2369	1919	1510			1734	1377	5360
-79	* 10179	* 10179	* 10742	7123	5879	4581	4212	3530			3823	3057	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-118	* 9732	* 9732	* 6706	* 6706	* 4855	* 4655					* 4001	* 4001	108

Illustration 205

g06612911

Lift chart above : Long stick with optional counterweight, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
5000							* 2080	* 2080			* 1664	* 1664	5370
197							* 4586	* 4586			* 3713	* 3713	211
4000							* 2076	* 2076	* 1652	* 1652	* 1662	* 1662	6030
157							* 4582	* 4582	* 3642	* 3642	* 3509	* 3509	237
3000					* 2588	* 2588	* 2276	1913	* 2104	1426	* 1885	1275	6420
118					* 5633	* 5633	* 5023	4219	* 4639	3144	* 3491	3606	209
2000					* 3255	2607	* 2582	1648	* 2224	1396	* 1639	1197	6680
79					* 7132	5748	* 5694	4075	* 4933	3076	* 3614	2639	260
1000					* 3847	2474	* 2869	1780	* 2306	1390	* 1764	1177	6680
39					* 8462	5435	* 6326	3625	* 5152	2998	* 3600	2595	260
0			* 3845	* 3845	* 4119	2384	* 3013	1728	* 2354	1332	* 1991	1211	6420
0			* 8477	* 8477	* 9063	5561	* 6645	3610	* 5191	2936	* 4390	3670	253
-1000	* 2954	* 2954	* 5195	3702	* 3987	2348	* 2915	1751	* 2139	1322	* 2121	1316	6020
-39	* 6513	* 6513	* 11436	8162	* 8792	5178	* 6429	3751	* 4717	2910	* 4677	2902	207
-2000	* 4616	* 4616	* 4861	3727	* 3418	2352	* 2430	1706			* 2075	1554	5380
-79	* 10179	* 10179	* 18762	8216	* 7533	5187	* 5359	3762			* 4576	3426	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1615	* 1615	4270
-118	* 9732	* 9732	* 6766	* 6766	* 4655	* 4655					* 4001	* 4001	168

Illustration 206

g06612914

Lift chart above : Long stick with optional counterweight, triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000						
	79		116		157		197		236						
													(mm) (in)		
5000													* 2297	1865	4700
19T													* 5865	4719	185
4500					* 2581	* 2581	* 3419	1693					1814	1490	5440
15T					* 5991	* 5691	* 5335	8732					4690	3820	215
3000			* 4025	* 4025	* 3033	2346	2989	1693					1884	1274	5900
116			* 8975	* 8875	* 6688	5173	4563	3658					3493	2809	232
2000					2842	2229	2912	1605	1620	1219			1480	1197	6100
79					6267	4916	4436	3539	3351	2688			3262	2617	240
1000					2731	2127	1955	1552	1495	1195			1458	1195	6100
39					6321	4690	4312	3422	3295	2635			3215	2972	240
0			* 3748	3189	2676	2071	1917	1616					1518	1209	5890
0			* 6265	7031	5586	4566	4227	3543					3343	2696	232
-1000	* 3617	* 3617	4308	3197	2654	2056	1906	1605					1589	1342	5400
-39	* 7975	* 7975	9498	7049	5852	4534	4202	3519					3725	2999	215
-2000	* 5535	* 5535	* 4098	3040	* 2917	2080							* 2178	1670	4690
-79	* 12204	* 12204	* 8932	7144	* 6432	4586							* 4798	3681	185
-3000			* 1496	* 1496									* 1314	* 1314	3280
-116			* 3299	* 3299									* 2898	* 2898	129

Illustration 207

g06612917

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)	
	79		118		157		197		236					
														
5000												* 2297	* 2297	4700
197												* 5065	* 5065	185
4000					* 2581	* 2581	* 2419	1893				* 2140	1635	5460
157					* 5851	* 5851	* 5333	4174				* 4719	3604	215
3000			* 4025	* 4025	* 3033	* 3033	* 2574	1899				* 2129	1426	5900
118			* 8875	* 8875	* 6886	* 6886	* 5676	4099				* 4694	3149	232
2000					* 3658	2516	* 2823	1604	* 2385	1393		* 2220	1533	6100
79					* 8865	5332	* 6235	3577	* 5268	3019		* 4895	2940	240
1000					* 4169	2412	* 3031	1749	* 2418	1345		* 2559	1512	6100
39					* 8861	5315	* 6683	3657	* 5327	2965		* 5202	2693	240
8			* 9749	* 3748	* 4168	2354	* 3052	1712				* 2565	1562	5880
8			* 8265	* 6265	* 5180	3191	* 6730	3776				* 5214	3004	232
-1000	* 3517	* 3517	* 5347	3692	* 3801	2348	* 2768	1701				* 2595	1514	5450
-39	* 7975	* 7975	* 11750	8140	* 8382	5159	* 6103	3752				* 5148	3338	215
-2000	* 5535	* 5535	* 4006	* 4006	* 2917	2364						* 2176	* 2176	4680
-79	* 12204	* 12204	* 8832	* 6832	* 5432	5212						* 4798	* 4798	185
-3000			* 1496	* 1496								* 1314	* 1314	3280
-118			* 3293	* 3293								* 2895	* 2895	129

Illustration 208

g06612921

Lift chart above : Standard stick with no optional counterweight, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													4700
197													185
4000					* 2581	* 2581	* 2419	1808					5450
157					* 5881	* 5881	* 5333	3983					215
3000			* 4025	* 4025	* 3033	2498	2202	1773					8900
118			* 8875	* 8875	* 6988	6509	4856	3000					232
2000					3025	2382	2145	1719	1624	1310	1582	1276	8100
79					8859	5252	4730	3790	3582	2888	3488	2813	240
1000					2813	2279	2088	1686	1596	1280	1560	1255	8100
39					6423	5026	4505	3673	3526	2895	3441	2767	240
0			* 3748	* 3748	2852	2223	2050	1650			1823	1302	8890
0			* 8285	* 8285	6289	4902	4520	3663			3579	2870	232
-1000	* 3817	* 3817	4596	3428	2837	2209	2039	1619			1808	1444	5450
-39	* 7975	* 7975	10139	7559	6255	4871	4486	3570			3988	3184	215
-2000	* 5535	* 5535	* 4006	* 4006	* 2917	2232					* 2176	1793	4690
-79	* 12204	* 12204	* 8832	* 8832	* 6432	4823					* 4798	3803	185
-3000			* 1496	* 1496							* 1314	* 1314	3280
-118			* 3299	* 3299							* 2998	* 2998	129

Illustration 209

g06613617

Lift chart above : Standard stick with optional counterweight, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
5000											* 2297	* 2297	4700
197											* 5065	* 5065	185
4000					* 2581	* 2581	* 2413	2014			* 2140	1742	5480
157					* 5891	* 5891	* 5333	4448			* 4719	3841	215
3000			* 4023	* 4023	* 3053	* 3053	* 2374	1979			* 2129	1526	5000
118			* 8875	* 8875	* 6688	* 6688	* 5676	4364			* 4694	3364	232
2000					* 3658	2881	* 2823	1924	* 2386	1465	* 2220	1427	6100
79					* 6065	5511	* 6235	4242	* 5288	3230	* 4895	3148	240
1000					* 4109	2575	* 3031	1878	* 2418	1440	* 2359	1406	6100
39					* 8061	5676	* 6689	4722	* 5827	3176	* 5202	3100	240
0			* 9748	* 9749	* 4169	2517	* 3052	1833			* 2965	1460	5690
0			* 8285	* 8285	* 5180	3560	* 6730	4041			* 5214	3219	232
-1000	* 3617	* 3617	* 5347	3943	* 3801	2502	* 2788	1822			* 2335	1621	5450
-39	* 7975	* 7975	* 11790	8834	* 6362	3518	* 6103	4017			* 5149	3075	215
-2000	* 5535	* 5535	* 4099	* 4099	* 2917	* 2917					* 2176	* 2176	4690
-79	* 12294	* 12294	* 8832	* 6832	* 6432	* 6432					* 4798	* 4798	185
-3000			* 1496	* 1496							* 1314	* 1314	3290
-118			* 3299	* 3299							* 2898	* 2898	129

Illustration 210

g06612929

Lift chart above : Standard stick with optional counterweight, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													5375
157							* 2080	1713			* 1684	* 1684	211
4000							* 4586	3776			* 3713	* 3713	6030
157							* 2078	1707	* 1852	1255	* 1892	1240	207
3000							* 4582	3765	* 3642	2754	* 3509	2734	6420
118					* 2555	* 2555	* 2276	1866	1542	1238	* 1885	1162	253
2000					* 5633	* 5633	* 5029	3673	3400	2739	* 3491	2429	6690
79					* 3235	2253	2012	1602	1510	1207	1293	1033	260
1000					* 7132	4867	4436	3532	3329	2662	2651	2278	6690
39					2732	2124	1941	1536	1473	1173	1273	1013	200
0					6024	4683	4280	3586	3249	2595	2606	2234	6420
0			* 3845	3136	2639	2033	1687	1484	1445	1145	1311	1041	253
-1000	* 2954	* 2954	4217	3111	2599	2002	1659	1456	1434	1136	1428	1131	6030
-39	* 6513	* 6513	9299	6860	5731	4415	4098	3215	3163	2594	3148	2493	207
-2000	* 4616	* 4616	* 4881	3130	2604	2028	1664	1483			1692	1325	5380
-79	* 10179	* 10179	* 10782	8913	5741	4423	4111	3227			3731	2943	211
-3000	* 4413	* 4413	* 5078	* 3678	* 2111	* 2111					* 1815	* 1815	4275
-118	* 5732	* 5732	* 6766	* 6766	* 4655	* 4655					* 4801	* 4801	168

Illustration 211

g06612932

Lift chart above : Long stick with no optional counterweight, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
													
5000							* 2060	* 2092			* 1684	* 1684	5370
157							* 4566	* 4586			* 3713	* 3713	211
4000							* 2078	* 2078	* 1852	1402	* 1592	* 1582	6030
157							* 4562	* 4582	* 3642	3090	* 3008	* 3566	237
3000					* 2555	* 2555	* 2276	1887	* 2104	1388	* 1583	1238	6420
118					* 5633	* 5633	* 5029	4116	* 4639	3063	* 3491	2731	353
2000					* 3235	2544	* 2562	1802	* 2224	1358	* 1639	1164	6600
79					* 7132	5609	* 5694	3873	* 4903	2994	* 3614	2567	360
1000					* 3847	3411	* 2869	1734	* 2336	1323	* 1764	1144	6600
39					* 8462	5314	* 6326	3825	* 5152	2917	* 5690	2523	260
0			* 3845	* 3848	* 4119	2323	* 3513	1881	* 2354	1295	* 1591	1177	6420
0			* 8477	* 8477	* 8683	5122	* 6645	3707	* 5191	2655	* 4590	2595	365
-1000	* 2954	* 2954	* 5195	3904	* 3967	2285	* 2515	1654	* 2139	1285	* 2121	1279	6020
-39	* 6513	* 6513	* 11456	7948	* 8752	5039	* 6429	3648	* 4717	2833	* 4677	2821	237
-2000	* 4616	* 4616	* 4881	3630	* 3416	2289	* 3430	1990			* 2075	1511	5360
-79	* 10179	* 10179	* 10762	8904	* 7533	5048	* 6365	3660			* 4576	3332	211
-5000	* 4413	* 4413	* 3576	* 3078	* 2111	* 2111					* 1615	* 1615	4270
-118	* 9732	* 9732	* 6786	* 6786	* 4855	* 4695					* 4001	* 4001	168

Illustration 212

g06612934

Lift chart above : Long stick with no optional counterweight, triple grouser track shoes with pads, blade DOWN

(mm) (in)	3000		3000		4000		5000		6000				(mm) (in)
	79		116		157		197		236				
													
5000							* 2065	* 2090			* 1684	* 1684	5370
197							* 4566	* 4586			* 3713	* 3713	211
4000							* 2078	* 2078	* 1652	1541	* 1682	1330	6030
157							* 4582	* 4582	* 3642	2956	* 3509	2933	237
3000					* 2595	* 2595	* 2278	1775	1646	1326	* 1183	1183	6420
116					* 5633	* 5633	* 5025	3923	3630	2929	* 2491	2491	253
2000					* 3205	2405	2145	1716	1614	1296	1386	1114	6600
79					* 7132	5303	4729	3783	3069	2662	3056	2455	260
1000					2914	2276	2674	1645	1679	1263	1365	1094	6600
39					6426	5020	4573	3637	3485	2785	3011	2462	260
0			* 3845	* 3845	2822	2191	2020	1598	1549	1236	1407	1124	6420
0			* 8477	* 8477	6220	4831	4455	3524	3216	2725	3109	2479	253
-1000	* 2954	* 2954	* 5195	3343	2782	2156	1992	1572	1539	1226	1532	1221	6020
-39	* 6513	* 6513	* 11496	7371	6134	4751	4362	3466	3094	2704	3376	2692	237
-2000	* 4616	* 4616	* 4881	3367	2786	2158	1897	1577			* 2075	1439	5360
-79	* 10179	* 10179	* 18762	7434	6149	4759	4404	3477			* 4576	3172	211
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	4270
-116	* 5732	* 5732	* 6786	* 6786	* 4605	* 4605					* 4001	* 4001	168

Illustration 213

g06612936

Lift chart above : Long stick with optional counterweight, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
5000													5570
197							* 2085	* 2080			* 1684	* 1684	211
4000							* 4586	* 4586			* 3713	* 3713	6080
157							* 2078	* 2078	* 1652	* 1652	* 1592	* 1592	237
3000							* 4582	* 4582	* 3842	* 3842	* 3509	* 3509	6420
118					* 2555	* 2555	* 2278	* 2278	* 2104	1485	* 1083	1327	253
2000					* 5633	* 5633	* 5023	* 5023	* 4838	3273	* 3291	2925	6600
79					* 3235	2707	* 2582	1922	* 2224	1455	* 1639	1249	260
1000					* 7152	5968	* 5694	4238	* 4803	3285	* 3614	2754	6600
59					* 3847	2574	* 2869	1854	* 2336	1416	* 1794	1229	260
0					* 8462	5675	* 6326	4008	* 5152	3127	* 5090	2710	6420
0			* 3845	* 3845	* 4119	2486	* 3013	1801	* 2354	1390	* 1991	1265	253
-1000	* 2954	* 2954	* 5195	3856	* 3967	2446	* 2913	1775	* 2139	1380	* 2121	1374	6020
-29	* 8515	* 8515	* 11456	8902	* 8792	5397	* 6629	3913	* 4717	3044	* 4677	3030	5580
-2000	* 4616	* 4616	* 4881	3551	* 3416	2452	* 2430	1782			* 2075	1621	211
-79	* 10179	* 10179	* 10762	8558	* 7555	5406	* 5359	3525			* 4576	3575	4270
-3000	* 4413	* 4413	* 3078	* 3078	* 2111	* 2111					* 1815	* 1815	168
-118	* 5752	* 5752	* 6785	* 6785	* 4655	* 4655					* 4001	* 4001	

Illustration 214

g06612941

Lift chart above : Long stick with optional counterweight, triple grouser track shoes with pads, blade DOWN

309 CR Excavator with Variable Angle Boom and Standard Undercarriage

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157											* 1804	1548	4720
3000											* 4197	3489	186
118							1982	1372			1451	1298	5240
2000			* 3775	2939	2190	1878	1520	1313			3200	2774	206
79			* 8327	6481	4829	4141	3352	2895			2863	2472	216
1000			3152	2607	2034	1730	1442	1238			1245	1060	5870
35			6849	5749	4484	3814	3180	2730			2745	2358	215
0	* 3528	* 3528	2971	2441	1915	1618	1375	1175			1281	1095	5240
0	* 7775	* 7775	6552	5382	4225	3567	3031	2587			2625	2414	206
-1000	* 6600	* 6600	2907	2381	1855	1558					1457	1298	4710
-35	* 12348	* 12348	6409	5251	4086	3437					3212	2725	186
-2000	6588	4562	2918	2393							2049	1716	3740
-79	14525	10918	6437	5277							4518	3783	147

Illustration 215

g06612974

Lift chart above : Standard stick with no optional counterweight, variable angle boom IN, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
59													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 216

g06612981

Lift chart above : Standard stick with no optional counterweight, variable angle boom IN, rubber belts or triple grouser track shoes, blade DOWN

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
296													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 218

g06612992

Lift chart above : Standard stick with optional counterweight, variable angle boom IN, rubber belts or triple grouser track shoes, blade DOWN

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-3000													
-79													

Illustration 219

g06612993

Lift chart above : Standard stick with no optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	3000		3900		4900		5900		6900		7900		(mm) (ft)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000							* 2007	1582					
118							* 4425	3487					
2000			* 3776	* 3776	* 2647	2171	* 2246	1521					
79			* 8327	* 8327	* 5837	4787	* 4952	3354					
1000			* 8267	3079	* 3276	2019	* 2527	1445					
39			* 11815	0789	* 7224	4453	* 5571	3186					
0	* 3526	* 3526	* 5782	2907	* 3651	1908	* 2703	1379					
0	* 7775	* 7775	* 12705	0413	* 6051	4200	* 9999	3041					
-1000	* 5000	* 5600	* 5583	3545	* 3645	1844							
-36	* 12348	* 52348	* 12267	6273	* 6037	4066							
-2500	* 8261	6112	* 4641	2897									
-79	* 18217	13478	* 10239	6301									

Illustration 220

g06613000

Lift chart above : Standard stick with no optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade DOWN

(mm) IN	3000		3000		4000		5000		6000				(mm) IN
	79		118		157		197		236				
6000													
200													
300													
4000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
35													
0													
0													
-1000													
-35													
-2000													
.79													

Illustration 221

g06613002

Lift chart above : Standard stick with optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2900		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 222

g06613006

Lift chart above : Standard stick with optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade DOWN

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		116		157		197		236				
													
6000			* 9231	* 8231	2266	1945					1665	1434	4700
236			* 7125	* 7125	4996	4295					3670	3163	185
5000			* 2506	* 2506	2277	1946	1538	1330			1196	1095	5690
197			* 5525	* 5525	5021	4322	3992	2593			2637	2271	224
4000			* 2287	* 2287	2200	1898	1511	1304	1094	942	999	848	6500
157			* 5263	* 5263	4857	4157	3932	2675	2413	2078	2179	1870	245
3000					2058	1753	1485	1241	1071	919	880	752	6670
116					4538	3855	3195	2735	2361	2027	1941	1658	253
2000							1964	1163	1032	882	827	704	6850
79							3009	2585	2276	1945	1823	1593	270
1000							1297	1098	965	846	814	692	6850
30							2659	2422	2195	1995	1795	1535	270
0					1730	1442	1257	1060	972	824	881	718	6670
0					3814	3180	2771	2336	2144	1817	1854	1574	283
-1000			* 2338	* 2338	1730	1443	1248	1051	972	824	* 1525	780	6300
-35			* 5156	* 5156	3815	3181	2751	2316	2143	1817	* 2255	1720	248
-2000					* 1445	* 1445	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 223

g06613332

Lift chart above : Standard stick with no optional counterweight, variable angle boom OUT, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236			* 3231	* 3231	* 2998	2154					* 2544	1599	4700
5000			* 7125	* 7125	* 5411	4749					* 5515	3303	180
197			* 2590	* 2590	* 2843	2165	* 2402	1471			* 2138	1145	5600
4000			* 5525	* 5525	* 5258	4773	* 5297	3244			* 4713	2535	224
157			* 2387	* 2387	* 3000	2093	* 2449	1444	* 3076	1049	* 1965	947	6500
3000			* 5263	* 5263	* 6615	4614	* 5401	3185	* 4577	2313	* 4334	2089	348
118					* 3374	1952	* 2571	1380	* 3092	1026	* 1809	843	6670
2000					* 7440	4305	* 5659	3042	* 4613	2261	* 3988	1859	263
79							* 2667	1301	* 2096	948	* 1600	792	6850
1000							* 5860	2860	* 4622	2178	* 3660	1746	270
35							* 2629	1235	* 3022	952	* 1502	760	6850
0							* 5797	2725	* 4459	2036	* 3311	1719	270
0					* 3082	1634	* 2302	1136	* 1805	925	* 1305	605	6670
-1000					* 6796	3602	* 6275	2637	* 5981	2048	* 2878	1774	263
-35			* 2338	* 2338	* 2384	1634	* 1924	1167	* 1341	629	* 1025	678	6300
-2000			* 5155	* 5155	* 5278	3603	* 4243	2617	* 2996	2048	* 2250	1157	248
-79					* 1446	* 1446	* 1140	* 1140					
					* 3189	* 3189	* 2513	* 2513					

Illustration 224

g06613333

Lift chart above : Standard stick with no optional counterweight, variable angle boom OUT, rubber belts or triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3231	* 3231	2427	2092					1794	1990	4700
5000			* 2506	* 2506	2439	2103	1658	1438			1298	1122	5650
4000			* 1925	* 1925	2364	2033	1631	1411	1189	1028	1078	929	6300
3000			* 1526	* 1526	2226	1896	1566	1348	1169	1005	964	828	6670
2000					1894	1584	1484	1271	1127	968	908	778	6850
1000							1416	1255	1091	932	895	765	6850
500							8129	2608	2405	2056	1974	1687	270
0					1891	1685	1377	1167	1067	915	924	750	6670
0					4178	3495	3095	2574	2354	2007	2038	1741	263
-1000			* 2338	* 2338	1892	1585	1367	1159	1067	915	* 1025	861	6300
-39			* 5106	* 5106	4171	3495	3015	2555	2353	2006	* 2269	1899	248
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 9189	* 9189	* 2513	* 2513					

Illustration 225

g06613334

Lift chart above : Standard stick with optional counterweight, variable angle boom OUT, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 923.1	* 929.1	* 2968	2904					* 2544	1710	4700
236			* 7125	* 7125	* 5411	5081					* 5610	3771	185
5000			* 2506	* 2506	* 2843	2315	* 2402	1585			* 2138	1341	5600
197			* 6525	* 6525	* 5268	5105	* 5287	3482			* 4713	2736	224
4000			* 2387	* 2387	* 3000	2343	* 2449	1557	* 2076	1138	* 1965	1032	6300
157			* 5263	* 5263	* 6615	4946	* 5401	3432	* 4577	2510	* 4334	2275	248
3000					* 3374	2103	* 2571	1402	* 2092	1115	* 1808	922	6670
118					* 7440	4535	* 5659	3290	* 4613	2459	* 3988	2033	263
2000							* 2667	1413	* 2096	1077	* 1600	868	6050
79							* 5880	3117	* 4622	2375	* 3660	1915	270
1000							* 2629	1347	* 2032	1081	* 1502	805	6050
39							* 5797	2970	* 4459	2296	* 3311	1887	270
0					* 3082	1784	* 2392	1308	* 1805	1018	* 1305	683	6670
0					* 6796	3934	* 5275	2685	* 3981	2246	* 2876	1548	263
-1000			* 2338	* 2338	* 2394	1785	* 1924	1299	* 1341	1018	* 1025	* 1025	6300
-35			* 5156	* 5156	* 5276	3935	* 4243	2665	* 2956	2245	* 2260	* 2260	248
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 9189	* 9189	* 2513	* 2513					

Illustration 226

g06613335

Lift chart above : Standard stick with optional counterweight, variable angle boom OUT, rubber belts or triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		235				
6000													4700
236			* 5201	* 5201	2961	3030					1741	1902	185
5000			* 7125	* 7125	5207	4481					3840	3311	5650
197			* 2506	* 2506	2573	3043	1600	1393			1256	1093	224
4000			* 5525	* 5525	5232	4505	3548	3071			2770	2389	6300
157			* 2387	* 2387	2298	1973	1582	1366	1151	992	1041	895	248
3000			* 5263	* 5263	5068	4350	3488	3013	2537	2168	2296	1974	8670
118					2154	1836	1516	1303	1127	969	929	796	263
2000					4749	4048	3342	2873	2495	2157	2049	1755	6850
79							1435	1226	1088	932	875	747	270
1000							3185	2700	2400	2055	1929	1647	6550
39							1567	1161	1052	896	862	734	270
0							3015	2568	2319	1976	1901	1619	6670
0					1625	1525	1328	1122	1029	874	800	758	263
-1000					4025	3363	2628	2475	2268	1927	1963	1671	6300
-39			* 2338	* 2338	1826	1526	1319	1114	1038	874	* 1025	827	248
-2000			* 5156	* 5156	4826	3964	2907	2486	2267	1926	* 2266	1824	248
-79					* 1446	* 1446	* 1140	* 1140					
					* 3189	* 3189	* 2513	* 2513					

Illustration 227

g06613336

Lift chart above : Standard stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	3000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236			* 3231	* 3231	* 2908	2245					* 2544	1862	4700
5000			* 7525	* 7125	* 6411	4845					* 5515	3655	185
197			* 2500	* 2500	* 2843	2256	* 2402	1830			* 2138	1283	5600
4000			* 5525	* 5525	* 6255	4974	* 5297	3594			* 4713	2853	224
157			* 2387	* 2587	* 3000	2183	* 2449	1512	* 2076	1103	* 1965	966	6300
3000			* 5263	* 5263	* 6615	4815	* 5401	3534	* 4577	2432	* 4334	2291	248
118					* 3374	2643	* 2571	1446	* 2092	1090	* 1939	891	6670
2000					* 7440	4505	* 5659	3192	* 4513	2381	* 3988	1954	263
79							* 2667	1360	* 2096	1042	* 1900	838	6850
1000							* 5880	3019	* 4622	2297	* 3690	1848	270
35							* 2629	1305	* 2022	1006	* 1902	826	6850
0					* 3082	1725	* 2502	1264	* 1805	985	* 1305	652	6670
0					* 6796	3803	* 5275	2767	* 3981	2160	* 2878	1879	263
-1000			* 2398	* 2536	* 2384	1725	* 1924	1266	* 1941	985	* 1025	* 1025	6300
-35			* 5105	* 5105	* 5278	3804	* 4243	2767	* 2906	2167	* 2256	* 2260	248
-2000					* 1445	* 1445	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 228

g06613337

Lift chart above : Standard stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000 79		3000 118		4000 157		5000 197		6000 236				(mm) (in)
6500													4750
236			* 3231	* 3231	* 2908	2175					1871	1617	185
5000			* 7125	* 7125	* 6411	4796					4126	3566	5690
197			* 2506	* 2506	* 2843	2186	1729	1500			1398	1175	224
4000			* 5525	* 5525	* 6268	4620	3813	3307			2994	2591	6300
157			* 2087	* 2087	2400	2116	1701	1474	1246	1079	1131	976	249
3500			* 5263	* 5263	5424	4665	3752	3249	2747	2377	2490	2152	6670
118					2515	1979	1635	1410	1223	1055	1013	872	263
2900					5105	4353	3606	3109	2695	2326	2239	1922	6860
79							1555	1333	1193	1019	966	820	270
1000							3429	2939	2509	2244	2107	1806	6650
39							1487	1268	1147	982	943	808	270
0							3279	2795	2529	2166	2079	1781	6670
0					1987	1666	1447	1230	1124	960	974	833	263
-1000					4381	3678	3192	2712	2478	2117	2147	1836	6300
-39			* 2338	* 2338	1987	1666	1438	1221	1123	960	* 1025	* 1025	249
-2000			* 5106	* 5106	4382	3679	3171	2692	2477	2116	* 2260	* 2260	
-79					* 1446	* 1446	* 1140	* 1140					
					* 3189	* 3189	* 2513	* 2513					

Illustration 229

g06613338

Lift chart above : Standard stick with optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000		7000		(mm) (ft)
	79		118		157		197		236		275		
6000													4700
236			* 3231	* 3231	* 2600	2395					* 2544	1784	165
5000			* 7125	* 7125	* 6411	5281					* 5510	3993	5000
197			* 2505	* 2505	* 2843	2406	* 3402	1651			* 2138	1299	224
4000			* 5525	* 5525	* 6255	5355	* 5297	3541			* 4713	3364	6300
157			* 2387	* 2387	* 3000	2334	* 2449	1624	* 2076	1192	* 1965	1083	248
3000			* 5263	* 5263	* 6516	5146	* 5401	3592	* 4577	2629	* 4334	3367	9670
118					* 3374	2195	* 2571	1560	* 2092	1189	* 1800	970	263
2000					* 7440	4837	* 5699	3439	* 4613	2578	* 3688	2138	6950
79							* 2667	1401	* 2096	1131	* 1650	915	270
1000							* 5980	3266	* 4622	2494	* 3680	2017	9850
39							* 2629	1415	* 2022	1095	* 1500	802	270
0							* 5797	3120	* 4459	2415	* 3311	1989	9670
0					* 3082	1875	* 2392	1376	* 1906	1073	* 1306	831	263
-1000					* 6796	4134	* 5275	3094	* 3981	2365	* 2876	2053	6300
-35			* 2338	* 2338	* 2394	1875	* 1924	1367	* 1341	1072	* 1625	* 1025	248
-2500			* 5156	* 5156	* 6275	4135	* 4243	3014	* 2956	2364	* 2260	* 2260	
-79					* 1446	* 1446	* 1140	* 1140					
					* 3189	* 3189	* 2513	* 2513					

Illustration 230

g06613340

Lift chart above : Standard stick with optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	75		118		157		197		236				
6000													
236													
5000													
157													
4000													
157													
3000													
118													
2000													
75													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-75													

Illustration 231

g06613341

Lift chart above : Short stick with no optional counterweight, variable angle boom IN, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		116		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000													
116													
2000													
79													
1000													
30													
0													
0													
-1000													
-35													
-2000													
-79													

Illustration 232

g06613343

Lift chart above : Short stick with no optional counterweight, variable angle boom IN, rubber belts or triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
6000													
39													
0													
0													
-1000													
-35													
-2000													
-79													

Illustration 233

g06613344

Lift chart above : Short stick with optional counterweight, variable angle boom IN, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 234

g06613346

Lift chart above : Short stick with optional counterweight, variable angle boom IN, rubber belts or triple grouser track shoes, blade DOWN

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000					* 2147	* 2147	1013	1395			* 3457	* 3457	182
118					* 4733	* 4733	3556	3075			* 1562	1320	5150
2000			* 4028	2976	2237	1913	1553	1309			1363	1174	5200
79			* 8881	6561	4932	4216	3424	2589			3005	2588	213
1000			3215	3652	2081	1756	1477	1265			1309	1121	5090
39			7080	5847	4589	3685	3257	2789			2886	2472	213
0	* 3589	* 3589	3069	2509	1970	1660	1414	1204			1354	1154	5140
0	* 7919	* 7919	6748	5539	4349	3661	3118	2655			2966	2545	202
-1000	* 5736	* 5736	3813	3486	1917	1610					1559	1320	4610
-36	* 12648	* 12648	6644	5438	4227	3551					3457	2910	181
-2500	* 7752	5180	3946	3496							2276	1898	3690
-79	* 17059	11422	6717	5504							5016	4185	141

Illustration 235

g06613349

Lift chart above : Short stick with no optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236													
6000													
197													
4000													
157													
3000					* 2147	* 2147	* 2080	1642			* 1568	* 1568	4620
118					* 4733	* 4733	* 4587	3599			* 3457	* 3457	182
2000			* 4028	3334	* 2737	2125	* 2294	1483			* 1868	* 1868	5390
79			* 8881	7351	* 6055	4681	* 6059	3271			* 3673	* 3673	212
1000			* 6383	2998	* 3826	1972	* 2549	1409			* 1802	* 1802	5390
36			* 11869	6610	* 7355	4348	* 5620	3107			* 4195	* 4195	212
0	* 3589	* 3589	* 6725	2853	* 3645	1864	* 2886	1347			* 2391	* 2391	5140
0	* 7913	* 7913	* 12620	6284	* 8008	4110	* 5922	2971			* 5272	* 5272	262
-1000	* 5736	* 5736	* 3435	2805	* 3669	1615					* 2868	* 2868	4610
-36	* 12648	* 12648	* 11951	6185	* 7869	3887					* 6325	* 6325	181
-2000	* 7752	6094	* 4345	2837							* 3305	* 3305	3590
-79	* 17080	13437	* 8580	6254							* 7288	* 7288	141

Illustration 236

g06613350

Lift chart above : Short stick with no optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000 79		3000 118		4000 157		5000 197		6000 236				(mm) (in)
													
6000													
256													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 237

g06613352

Lift chart above : Short stick with optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	73		118		157		197		236				
6000													
335													
5000													
197													
4000													
197													
3000					* 2147	* 2147	* 2090	1654			* 3457	* 3457	182
118					* 4733	* 4733	* 4587	3647			* 1582	* 1582	5150
2000			* 4028	* 4028	* 2737	2273	* 2294	1896			* 3444	* 3444	203
79			* 8881	* 8881	* 6035	5012	* 5059	3818			* 3673	3180	212
1000			* 5383	3236	* 3326	2122	* 2549	1822			* 1802	1382	5390
36			* 11869	7113	* 7333	4580	* 5620	3955			* 4195	2582	212
0	* 3589	* 3589	* 8725	3078	* 3648	2014	* 2686	1460			* 2391	1400	5140
0	* 7919	* 7919	* 12629	6787	* 6098	4441	* 5922	3219			* 5272	3067	202
-1000	* 5736	* 5736	* 5425	3033	* 3869	1965					* 2868	1886	4010
-36	* 12548	* 12548	* 11951	6688	* 7869	4329					* 6325	3541	181
-2000	* 7752	6996	* 4345	3964							* 3306	2316	3950
-79	* 17093	14477	* 9580	6757							* 7288	5186	141

Illustration 238

g06613353

Lift chart above : Short stick with optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													4460
236			* 3353	* 3353	2216	1901					1767	1518	176
5000			* 7461	* 7461	4886	4191	1000	1292			3885	3342	1050
197			* 2704	* 2704	2237	1921					1226	1051	217
4000			* 5961	* 5961	4933	4236	3307	2849			2793	2318	6150
157			* 2600	* 2600	2159	1847	1475	1269	1057	905	969	855	242
3000			* 6173	* 6173	4766	4072	3253	2797	2332	1996	2291	1990	5540
118					2906	1702	1406	1264	1039	888	862	755	257
2000					4423	3754	3105	2655	2291	1957	1946	1654	6720
79					1832	1538	1327	1127	1002	852	827	700	265
6000					4646	3991	3327	2454	2209	1870	1823	1544	6720
197					1725	1436	1261	1063	967	818	814	688	255
4000					3603	3167	2781	2344	2132	1803	1796	1519	6560
157					1691	1405	1225	1029	947	799	845	714	257
3000					3736	3097	2702	2266	2088	1761	1862	1573	6150
118			* 1903	* 1903	1699	1412	1221	1025	954	805	* 951	787	242
2000			* 4195	* 4195	3547	3113	2695	2260	2104	1776	* 2096	1736	6720
79					* 3219	* 1219	* 937	* 937					
					* 2698	* 2698	* 2367	* 2367					

Illustration 239

g06613358

Lift chart above : Short stick with no optional counterweight, variable angle boom OUT, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3383	* 3000	* 2667	2125					* 2240	1693	4490
236			* 7481	* 7481	* 6586	4641					* 4640	3710	175
5000			* 3704	* 2704	* 2666	2125	* 2430	1430			* 1814	1172	5520
197			* 5961	* 5961	* 5350	4585	* 5359	3159			* 4501	2584	217
4000			* 2800	* 2800	* 3078	2640	* 2463	1400	* 2071	1012	* 1838	985	6150
157			* 6173	* 6173	* 6787	4519	* 5431	3107	* 4567	2201	* 3611	2196	342
3000					* 3402	1901	* 2570	1343	* 2075	994	* 1563	844	6540
118					* 7502	4182	* 5667	2962	* 4576	2191	* 3446	1862	257
2000					* 3616	1732	* 2640	1264	* 2064	967	* 1552	791	6720
79					* 7972	3823	* 5629	2787	* 4550	2111	* 3423	1743	265
1000					* 3430	1624	* 2575	1200	* 1968	923	* 1487	779	6720
39					* 7564	3599	* 5677	2645	* 4339	2039	* 3280	1717	265
0					* 2021	1596	* 2303	1165	* 1717	965	* 1266	807	6530
0					* 8441	3519	* 5078	2568	* 3787	1992	* 2792	1780	257
-1000			* 1903	* 1903	* 2201	1803	* 1796	1161	* 1185	910	* 951	* 851	6150
-39			* 4195	* 4195	* 4854	3636	* 3909	2569	* 2969	2008	* 2096	* 2096	242
-2000					* 1219	* 1219	* 937	* 937					
-79					* 2668	* 2668	* 2067	* 2067					

Illustration 240

g06613359

Lift chart above : Short stick with no optional counterweight, variable angle boom OUT, rubber belts or triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236			* 1393	* 3993	2976	2644					1905	1639	4490
5000			* 7481	* 7481	5243	4506					4201	3614	175
197			* 2794	* 2704	2399	2064	1619	1389			1031	1147	5520
4000			* 5951	* 5951	5290	4551	3571	3085			2595	2529	217
157			* 2800	* 2800	2321	1980	1595	1375	1152	961	1090	936	6150
3000			* 6173	* 6173	5117	4387	3517	3034	2541	2195	2405	2064	242
118					2168	1845	1528	1311	1134	973	968	829	6540
2000					4780	4058	3269	2692	2220	2147	2135	1825	257
79					1094	1681	1447	1234	1097	957	969	775	6720
1000					4396	3706	3191	2721	2418	2067	2060	1710	265
30					1886	1579	1381	1170	1062	904	897	764	6720
0					4160	3482	3045	2581	2341	1993	1979	1684	268
0					1853	1547	1345	1136	1042	884	930	791	6530
0					4086	3412	2998	2505	2296	1990	2061	1744	257
-1500			* 1903	* 1903	1861	1555	1341	1132	* 1163	891	* 951	* 951	6150
-39			* 4195	* 4195	4105	3426	2957	2496	* 2569	1965	* 2096	* 2096	242
-2500					* 1219	* 1219	* 937	* 937					
-79					* 2688	* 2688	* 2067	* 2067					

Illustration 241

g06613360

Lift chart above : Short stick with optional counterweight, variable angle boom OUT, rubber belts or triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

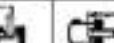
(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		116		157		197		236				
6000													4660
236			* 3393	* 3393	* 2947	2255					* 2245	1812	175
5000			* 7481	* 7481	* 6566	4972					* 4545	3695	5520
197			* 2704	* 2704	* 2896	2276	* 2430	1545			* 1814	1371	217
4000			* 5961	* 5961	* 6390	5018	* 5359	3456			* 4921	2803	6150
157			* 2800	* 2800	* 3078	2306	* 2463	1521	* 2071	1101	* 1838	1042	342
3000			* 6173	* 6173	* 6787	4855	* 5431	3354	* 4567	2429	* 3611	2298	6540
116					* 3402	2051	* 2570	1455	* 2075	1083	* 1563	925	257
2000					* 7502	4523	* 5667	3259	* 4576	2369	* 3446	2040	6720
79					* 3616	1883	* 2640	1376	* 2064	1047	* 1552	869	268
1000					* 7972	4152	* 5629	3035	* 4550	2308	* 3423	1916	6720
39					* 3430	1779	* 2575	1312	* 1969	1013	* 1487	857	268
0					* 7564	3922	* 5677	2882	* 4339	2233	* 3285	1899	6530
0					* 2021	1746	* 2303	1277	* 1717	993	* 1266	888	257
-1000					* 6441	3651	* 5078	2615	* 3787	2189	* 2792	1558	6150
-35			* 1903	* 1903	* 2201	1754	* 1795	1273	* 1165	1000	* 951	* 851	342
-2000			* 4195	* 4195	* 4854	3867	* 3969	2607	* 2569	2205	* 2096	* 2096	
-75					* 1219	* 1219	* 937	* 597					
					* 2588	* 2588	* 2067	* 2067					

Illustration 242

g06613362

Lift chart above : Short stick with optional counterweight, variable angle boom OUT, rubber belts or triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236			* 3393	* 3393	2312	1984					1848	1587	4480
3000			* 7481	* 7481	5097	4374					4076	3500	179
5000			* 2704	* 2704	2889	2004	1570	1354			1268	1107	5520
197			* 5861	* 5861	5144	4419	3463	2966			2640	2440	217
4000			* 2800	* 2800	2255	1936	1546	1331	1114	955	1053	901	6100
157			* 6173	* 6173	4971	4255	3409	2935	2455	2106	2321	1997	242
3000					2102	1785	1479	1267	1095	938	939	795	6540
118					4634	3936	3261	2793	2415	2067	2067	1754	257
2000					1926	1621	1308	1189	1068	961	878	744	6720
79					4251	3574	3083	2621	2333	1988	1991	1640	265
1000					1820	1519	1302	1125	1023	868	869	732	6720
39					4014	3350	2937	2482	2256	1913	1904	1614	265
0					1787	1488	1296	1091	1003	848	895	759	6000
0					3941	3286	2859	2406	2212	1871	1874	1673	257
-1000			* 1903	* 1903	1795	1495	1292	1087	* 1163	855	* 951	* 851	6100
-39			* 4195	* 4195	3658	3296	2849	2507	* 2509	1896	* 2096	* 2096	242
-2000					* 1218	* 1218	* 937	* 937					
-79					* 2688	* 2688	* 2067	* 2067					

Illustration 243

g06613363

Lift chart above : Short stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3393	* 3393	* 2987	2195					* 2243	1761	4480
236			* 7481	* 7481	* 6595	4841					* 4940	3892	175
5000			* 2704	* 2704	* 3898	2216	* 2430	1500			* 1814	1332	5530
197			* 5961	* 5961	* 6390	4887	* 5359	3308			* 4301	3716	217
4000			* 2800	* 2800	* 3079	2140	* 2463	1477	* 2071	1066	* 1638	1098	6150
157			* 6173	* 6173	* 6787	4719	* 5431	3256			* 3611	2232	342
3000					* 3462	1932	* 2570	1411	* 2075	1048	* 1563	863	6540
118					* 7502	4392	* 5667	3111	* 4576	2311	* 3446	1969	257
2000					* 9516	1823	* 2643	1332	* 2064	1011	* 1552	838	6720
79					* 7972	4020	* 5829	2937	* 4550	2290	* 3423	1847	265
1000					* 3430	1719	* 2675	1267	* 1968	977	* 1487	826	6720
39					* 7564	3791	* 5677	2794	* 4339	2164	* 3289	1821	265
0					* 2921	1687	* 2309	1232	* 1717	957	* 1266	856	6530
0					* 8441	3719	* 6078	2717	* 3787	2111	* 2792	1887	257
-1000			* 1903	* 1903	* 2301	1694	* 1756	1228	* 1165	985	* 951	* 951	6150
-39			* 4195	* 4195	* 4854	3736	* 3969	2706	* 2569	2127	* 2096	* 2096	242
-2000					* 3219	* 1219	* 937	* 937					
-79					* 2588	* 2588	* 2567	* 2567					

Illustration 244

g06613364

Lift chart above : Short stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade DOWN

(mm) (ft)	2000		3000		4000		5000		6000		7000		(mm) (ft)
	79		118		157		197		236		275		
6000			* 3393	* 3093	2473	2127					* 2245	1710	4480
236			* 7481	* 7481	5454	4689					* 4945	3772	175
5000			* 2704	* 2704	2495	2147	1690	1462			1394	1203	5520
197			* 5951	* 5951	5501	4734	3727	3223			3073	2550	217
4000			* 2800	* 2800	2416	2073	1666	1436	1209	1081	1145	964	6150
157			* 6173	* 6173	5528	4576	3673	3171	2665	2296	2525	2171	342
3000					2265	1926	1599	1374	1190	1023	1019	873	6540
118					4991	4251	3525	3029	2624	2257	2248	1925	257
2000					2090	1764	1518	1296	1153	987	958	819	6720
79					4607	3889	3367	2856	2542	2177	2113	1895	265
1000					1962	1662	1452	1255	1118	954	945	807	6720
39					4371	3688	3201	2718	2455	2103	2067	1790	265
0					1949	1636	1416	1196	1098	934	981	836	6520
0					4297	3595	3122	2642	2421	2090	2163	1844	257
-1000			* 1903	* 1903	* 2201	1638	1412	1194	* 1165	941	* 951	* 851	6150
-39			* 4195	* 4195	* 4854	3611	3113	2634	* 2569	2075	* 2036	* 2096	342
-2000					* 1219	* 1219	* 937	* 937					
-79					* 2588	* 2588	* 2067	* 2067					

Illustration 245

g06613367

Lift chart above : Short stick with optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236			* 5393	* 3993	* 2967	2946					* 2240	1890	4490
5000			* 7481	* 7481	* 6886	5173					* 4540	4167	175
197			* 2794	* 2704	* 2866	2967	* 3490	1613			* 1814	1391	5520
4000			* 5951	* 5951	* 6350	5216	* 5959	3056			* 4001	2995	217
157			* 2800	* 2800	* 3076	2291	* 2493	1599	* 2075	1156	* 1638	1095	6150
3000			* 6173	* 6173	* 6767	5551	* 5431	3504	* 4567	2549	* 3611	2413	242
118					* 3402	2142	* 2570	1523	* 2875	1137	* 1563	978	6540
2000					* 7502	4724	* 5667	3059	* 4576	2539	* 3446	2147	257
79					* 3616	1974	* 2649	1444	* 2064	1101	* 1552	916	6720
1000					* 7972	4352	* 5829	3184	* 4593	2427	* 3423	2020	265
30					* 5450	1669	* 2575	1390	* 1968	1067	* 1487	904	6720
0					* 7564	4122	* 5677	3042	* 4339	2392	* 3280	1993	265
0					* 2921	1637	* 2303	1345	* 1717	1047	* 1255	937	6500
0					* 6441	4051	* 5078	2565	* 3787	2339	* 2752	2065	257
-1500			* 1903	* 1903	* 2201	1845	* 1790	1341	* 1163	* 1165	* 951	* 801	6150
-50			* 4195	* 4195	* 4854	4086	* 3959	2596	* 2589	* 2569	* 2096	* 2096	242
-2500					* 1219	* 1219	* 937	* 937					
-79					* 2668	* 2668	* 2067	* 2067					

Illustration 246

g06613369

Lift chart above : Short stick with optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade DOWN

309 CR Excavator with Variable Angle Boom and Long Undercarriage

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
6000													
35													
0													
0													
-1000													
-35													
-2000													
-79													

Product Information Section
Lifting Capacities

(mm) (in)	2500		3000		4000		5000		6000				(mm) (in)
	79		116		157		197		236				
6500													
226													
5000													
197													
4000													
157													
3000													
116													
2500													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 248

g06613379

Lift chart above : Standard stick with no optional counterweight, variable angle boom IN, triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
296													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
6000													
39													
0													
0													
-1000													
-39													
-5000													
-79													

Illustration 249

g06613382

Lift chart above : Standard stick with optional counterweight, variable angle boom IN, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		167		197		236				
6000													
236													
5000													
167													
4000													
157													
3000													
118													
2000													
79													
1000													
99													
0													
0													
-1000													
-99													
-2000													
-79													

Illustration 250

g06613387

Lift chart above : Standard stick with optional counterweight, variable angle boom IN, triple grouser track shoes, blade DOWN

(mm) (in)	3000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
35													
0													
0													
-1000													
-35													
-2000													
-79													

Illustration 251

g06613389

Lift chart above : Standard stick with no optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2900		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 252

g06613391

Lift chart above : Standard stick with no optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79	118	157	197	236								
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 253

g06613392

Lift chart above : Standard stick with optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000		7000			(mm) (ft)
	75		118		157		197		236					
														
6000														
236														
6000														
197														
4000														
157														
3000														
118														
2000														
75														
1000														
30														
0														
0														
-1000														
-35														
-2000														
-75														

Illustration 254

g06613393

Lift chart above : Standard stick with optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)	
	79		118		157		197		236					
														
6000			* 3231	* 3231	* 2908	2506						2155	1711	4700
236			* 7125	* 7125	* 6411	5069						4753	3774	185
5000			* 2596	* 2596	* 2843	2319	1984	1594				1559	1241	5690
197			* 5525	* 5525	* 6266	5114	4375	3493				3439	2736	224
4000			* 2347	* 2347	* 3000	2247	1955	1557	1430	1138	1300	1031	6300	
157			* 5263	* 5263	* 6616	4954	4312	3434	3155	2509	2667	2273	245	
3000					2700	2106	1996	1490	1406	1115	1167	921	6670	
118					5954	4645	4160	3291	3069	2458	2574	2031	263	
2000							1903	1614	1366	1077	1100	900	6950	
79							3973	3117	3011	2374	2430	1913	270	
1000							1732	1347	1328	1041	1090	855	6850	
30							3819	2970	2929	2294	2404	1885	270	
0					2352	1796	1690	1300	1304	1018	* 1305	693	6670	
0					3186	3636	3727	2865	2875	2344	* 2876	1946	263	
-1000			* 2338	* 2338	* 2564	1786	* 1924	1299	* 1341	1017	* 1625	* 1625	6300	
-30			* 5156	* 5156	* 5276	3839	* 4243	2665	* 2956	2244	* 2260	* 2260	245	
-2000					* 1446	* 1446	* 1140	* 1140						
-79					* 3189	* 3189	* 2513	* 2513						

Illustration 255

g06613395

Lift chart above : Standard stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000 79		3000 118		4000 157		5000 197		6000 236				(mm) (in)
													
6000			* 3251	* 3251	* 2908	* 2908					* 2544	1926	4700
5000			* 7125	* 7125	* 6411	* 6411					* 5515	4347	185
5000			* 2506	* 2506	* 2843	* 2843	* 2402	1775			* 2138	1399	5630
197			* 5525	* 5525	* 6268	* 6268	* 5297	3923			* 4713	3095	224
4000			* 2387	* 2387	* 3000	2931	* 2449	1751	* 2076	1284	* 1965	1167	6300
157			* 5263	* 5263	* 6515	5582	* 5401	3862	* 4577	2831	* 4334	2872	348
3000					* 3374	2396	* 2571	1685	* 2092	1260	* 1809	1046	6670
118					* 7440	5261	* 5869	3716	* 4613	2779	* 3988	2306	263
2000							* 2667	1654	* 2096	1221	* 1602	987	6850
79							* 5880	3536	* 4622	2693	* 3666	2177	270
1000							* 2629	1636	* 2022	1186	* 1502	975	6850
39							* 5797	3387	* 4459	2612	* 3311	2149	270
0					* 3082	2096	* 2302	1496	* 1805	1162	* 1305	1007	6670
0					* 6796	4539	* 5275	3300	* 3981	2561	* 2878	2219	263
-1000			* 2338	* 2338	* 2394	2096	* 1924	1487	* 1341	* 1341	* 1025	* 1025	6300
-39			* 5106	* 5106	* 6278	4934	* 4248	3275	* 2906	* 2556	* 2258	* 2250	348
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 9189	* 9189	* 2513	* 2513					

Illustration 256

g06613397

Lift chart above : Standard stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)	
														
6000			* 3231	* 3231	* 2905	3400					* 2544	1834	4700	
236			* 7125	* 7125	* 6411	5425					* 5010	4045	585	
5000			* 2506	* 2506	* 2843	* 2843	* 2402	1686				1572	1336	5650
197			* 5525	* 5525	* 6268	* 6268	* 5297	3744				3686	2949	224
4000			* 2987	* 2987	* 3000	2399	2088	1671	1536	1228	1399	1116	6350	
157			* 5263	* 5263	* 6616	5290	4605	3684	3384	2709	3084	2461	248	
3000					2683	2254	2020	1606	1510	1205	1259	1001	6670	
118					5354	4979	4453	3541	3030	2657	2775	2207	263	
2000							1936	1527	1470	1167	1192	945	6850	
79							4268	3366	3242	2573	2638	2083	270	
1000							1866	1461	1432	1131	1179	932	6850	
39							4112	3221	3109	2494	2599	2056	270	
0					2535	1938	1629	1422	1409	1108	* 1305	962	6670	
0					5089	4274	4021	3135	3106	2444	* 2876	2122	263	
-1000			* 2308	* 2308	* 2394	1939	* 1924	1413	* 1341	1108	* 1025	* 1025	6300	
-39			* 5156	* 5156	* 5279	4275	* 4243	3115	* 2956	2445	* 2290	* 2250	348	
-2000					* 1445	* 1445	* 1140	* 1140						
-79					* 3189	* 3189	* 2513	* 2513						

Illustration 257

g06613401

Lift chart above : Standard stick with optional counterweight, variable angle boom OUT, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000 79		3000 118		4000 157		5000 197		6000 236				(mm) (in)
													
6000			* 3231	* 3231	* 2908	* 2908					* 2544	2056	4700
236			* 7125	* 7125	* 6411	* 6411					* 5610	4534	189
5000			* 2506	* 2506	* 2843	* 2843	* 2402	1899			* 2158	1531	5990
197			* 5625	* 5625	* 6268	* 6268	* 6297	4188			* 4713	3310	224
4000			* 2387	* 2387	* 3000	* 3000	* 2449	1872	* 2076	1579	* 1965	1256	6300
157			* 5263	* 5263	* 6616	* 6616	* 5401	4127	* 4577	3041	* 4334	2770	248
3000					* 3374	2545	* 2571	1805	* 2060	1356	* 1806	1130	6670
118					* 7440	5625	* 5669	3981	* 4613	2989	* 3888	2491	263
3000							* 2667	1725	* 2096	1317	* 1660	1068	6850
79							* 5880	3803	* 4622	2504	* 3660	2356	270
1900							* 2629	1656	* 2022	1280	* 1500	1056	6850
39							* 5797	3652	* 4459	2625	* 3311	2128	270
0					* 3082	2219	* 2392	1617	* 1805	1257	* 1305	1090	6670
0					* 6796	4892	* 5275	3565	* 3981	2772	* 2875	2404	263
-1000			* 2358	* 2358	* 2394	* 2394	* 1934	1607	* 1341	* 1341	* 1025	* 1025	6300
-39			* 5156	* 5156	* 5275	* 5275	* 4243	3544	* 2956	* 2956	* 2260	* 2260	248
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 3183	* 3183	* 2513	* 2513					

Illustration 258

g06613405

Lift chart above : Standard stick with optional counterweight, variable angle boom OUT, triple grouser track shoes, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		116		157		197		236				
9000													
236			* 3231	* 3231	* 2908	2998					* 2544	1794	4700
290			* 7125	* 7125	* 5411	5287					* 5615	3993	185
5000			* 2506	* 2506	* 2843	2429	* 2402	1651			1639	1298	5690
197			* 5525	* 5525	* 6268	5312	* 5297	3641			3601	2862	224
4000			* 2367	* 2367	* 3000	2936	2043	1624	1499	1191	1365	1081	6300
157			* 5253	* 5253	* 5615	5152	4504	3581	3305	2627	3010	2364	245
3000					2620	2195	1974	1550	1474	1169	1227	968	6670
116					5218	4641	4552	3459	3251	2575	2795	2135	253
2000							1990	1481	1434	1130	1151	913	6850
79							4167	3265	3162	2491	2561	2043	270
1000							1919	1414	1396	1094	1148	901	6850
30							4011	3118	3079	2412	2532	1999	270
0					2472	1875	1779	1375	1373	1071	* 1305	820	6670
0					5450	4136	3920	3032	3026	2362	* 2878	2090	263
-1000			* 2339	* 2258	* 2364	1875	* 1924	1366	* 1341	1071	* 1225	* 1025	6300
-35			* 5156	* 5156	* 6275	4137	* 4243	3012	* 2956	2361	* 2255	* 2260	248
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 259

g06613406

Lift chart above : Standard stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 5201	* 3221	* 2908	* 2909					* 2544	2006	4700
236			* 7125	* 7125	* 6411	* 6411					* 5610	4420	195
5000			* 2506	* 2506	* 2843	* 2843	* 2402	1853			* 2198	1462	5690
197			* 5525	* 5525	* 6268	* 6268	* 5257	4065			* 4713	3223	224
4000			* 2367	* 2367	* 3055	* 3055	* 2449	1825	* 2076	1342	* 1965	1223	6300
157			* 5263	* 5263	* 6616	* 6616	* 5401	4024	* 4577	2960	* 4334	2693	248
3000					* 3374	2486	* 2571	1759	* 2092	1319	* 1809	1097	6670
118					* 7440	5481	* 5659	3679	* 4613	2908	* 3998	2419	263
2000							* 2667	1679	* 2096	1280	* 1660	1037	6860
79							* 5880	3790	* 4622	2822	* 3660	2287	270
6000							* 2629	1610	* 2022	1249	* 1502	1024	6850
39							* 5797	3550	* 4459	2741	* 3311	2259	270
0					* 3082	2156	* 2302	1570	* 1805	1220	* 1305	1059	6670
0					* 6796	4753	* 5275	3462	* 3981	2690	* 2878	2333	263
-1000			* 2338	* 2338	* 2394	* 2394	* 1924	1561	* 1341	* 1341	* 1025	* 1025	6300
-39			* 5156	* 5156	* 6278	* 6278	* 4243	3442	* 2956	* 2956	* 2263	* 2263	248
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 260

g06613408

Lift chart above : Standard stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade DOWN

(mm) (ft)	3000		3500		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
													
6000			* 323.1	* 323.1	* 2900	* 2900					* 2544	1007	4700
236			* 7125	* 7125	* 6411	* 6411					* 5510	4255	185
5000			* 2506	* 2506	* 2843	* 2843	* 2402	1705			1745	1355	5000
197			* 5525	* 5525	* 6268	* 6268	* 5297	3891			3648	3075	224
4000			* 2387	* 2387	* 3000	2485	* 2449	1738	1605	1282	1463	1157	6300
157			* 5263	* 5263	* 6616	5488	* 5401	3632	3536	2826	3226	2572	248
3000					* 3374	2346	2107	1673	1579	1259	1319	1048	6670
118					* 7440	5177	4545	3689	3482	2779	2908	2311	263
2000							2023	1594	1539	1220	1250	990	6990
79							4461	3515	3395	2691	2756	2184	270
1000							1952	1520	1501	1184	1237	978	6850
39							4304	3369	3310	2612	2728	2156	270
0					2054	2028	1911	1489	1477	1162	* 1305	1055	6670
0					5853	4472	4215	3285	3257	2562	* 2876	2325	263
-1000			* 2338	* 2338	* 2394	2625	* 1924	1480	* 1341	* 1341	* 1525	* 1025	6300
-36			* 6156	* 6156	* 6276	4473	* 4243	3265	* 2956	* 2956	* 2260	* 2260	248
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 261

g06613410

Lift chart above : Standard stick with optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
236			* 5251	* 5251	* 2909	* 2909					* 2544	2190	4790
5000			* 7125	* 7125	* 6411	* 6411					* 5610	4710	185
157			* 2506	* 2506	* 2843	* 2843	* 3402	1973			* 2139	1564	5690
4000			* 5525	* 5525	* 6268	* 6268	* 5257	4355			* 4713	3449	224
157			* 2367	* 2367	* 3000	* 3000	* 3449	1945	* 2076	1436	* 1965	1311	6390
3000			* 5263	* 5263	* 6616	* 6616	* 5451	4289	* 4577	3170	* 4534	2691	248
118					* 3374	2648	* 3571	1875	* 2092	1414	* 1809	1181	6670
2000					* 7440	5839	* 5669	4143	* 4613	3118	* 3988	2634	253
79							* 2657	1798	* 2096	1375	* 1660	1110	6890
1000							* 5880	3955	* 4622	3003	* 3693	2466	270
39							* 3629	1736	* 2002	1390	* 1502	1106	6890
0							* 5757	3615	* 4459	2962	* 3511	2438	270
0					* 3092	2319	* 2352	1696	* 1805	1315	* 1305	* 1305	6670
0					* 6796	5112	* 5275	3727	* 3981	2501	* 2876	* 2676	263
-1000			* 2338	* 2338	* 2394	* 2394	* 1924	* 1924	* 1341	* 1341	* 1025	* 1025	6300
-39			* 5156	* 5156	* 5278	* 5278	* 4243	* 4243	* 2966	* 2966	* 2260	* 2260	248
-2000					* 1446	* 1446	* 1140	* 1140					
-79					* 3189	* 3189	* 2513	* 2513					

Illustration 262

g06613417

Lift chart above : Standard stick with optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
200													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
6000													
30													
0													
0													
-1000													
-39													
-2000													
-73													

Illustration 263

g06613418

Lift chart above : Short stick with no optional counterweight, variable angle boom IN, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236													
5000													
197													
4000													
157													
3000					* 2147	* 2147	* 3080	1762				* 1568	* 1568
118					* 4733	* 4733	* 4587	3930				* 3457	* 3457
2000			* 4028	* 4028	* 2737	* 2737	* 2294	1723				* 1562	* 1562
79			* 8881	* 8881	* 6035	* 6035	* 5059	3736				* 3444	* 3444
1000			* 5383	3583	* 3326	2915	* 2549	1647				* 1666	* 1666
39			* 11869	7960	* 7333	5101	* 5620	3633				* 3673	* 3673
0	* 3589	* 3589	* 5725	3426	* 3645	2201	* 2686	1580				* 4195	3225
0	* 7913	* 7913	* 12623	7556	* 8098	4655	* 5922	3491				* 2391	1517
-1000	* 5736	* 5736	* 5420	3379	* 3569	2146						* 6272	5345
-39	* 12646	* 12646	* 11951	7451	* 7869	4737						* 2866	1748
-2000	* 7762	* 7762	* 4345	3412								* 6325	3654
-79	* 17083	* 17083	* 9560	7524								* 3305	2547
												* 7288	5615

Illustration 264

g06613419

Lift chart above : Short stick with no optional counterweight, variable angle boom IN, triple grouser track shoes, blade DOWN

(mm) (ft)	3000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
335													
5000													
197													
4000													
157													
3000					* 2147	* 2147	* 2080	1701			* 1568	* 1568	4020
118					* 4733	* 4733	* 4587	3750			* 3457	* 3457	182
2000			* 4028	* 4028	* 2737	2338	* 2294	1642			* 1866	* 1866	5200
79			* 8881	* 8881	* 6035	5156	* 5059	3621			* 3673	* 3673	212
1000			4476	3330	2807	2187	1981	1568			* 1502	1394	5300
95			9875	7343	6190	4822	4367	3457			* 4195	3074	212
0	* 3589	* 3589	4309	3181	2689	2078	1915	1506			1894	1444	5140
0	* 7913	* 7913	9600	7915	5990	4582	4222	3020			4044	3184	202
-1000	* 5736	* 5736	4267	3136	2633	2027					2126	1658	4610
-35	* 12548	* 12548	9867	6936	5807	4465					4688	3655	181
-2000	* 7762	* 7762	* 4345	3168							* 3305	2392	3590
-79	* 17050	* 17050	* 9580	6985							* 7288	5273	141

Illustration 265

g06613428

Lift chart above : Short stick with optional counterweight, variable angle boom IN, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000													
200													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 266

g06613430

Lift chart above : Short stick with optional counterweight, variable angle boom IN, triple grouser track shoes, blade DOWN

(ft) (m)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 267

g06613432

Lift chart above : Short stick with no optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
													
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
30													
0													
0													
-1000													
-36													
-2000													
-79													

Illustration 268

g06613435

Lift chart above : Short stick with no optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade DOWN

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
9000													
236													
5000													
197													
4000													
157													
3000					* 2147	* 2147	* 2085	1758			* 1568	* 1568	4620
118					* 4733	* 4733	* 4587	3897			* 3457	* 3457	1032
2000			* 4000	* 4000	* 2737	* 2737	* 3264	1709			* 1562	* 1562	5150
79			* 6861	* 6861	* 9335	* 9335	* 5559	3769			* 3673	* 3673	212
6000			* 5383	3467	* 3326	3277	2068	1635			* 1902	1455	5360
39			* 11889	7644	* 7333	5020	4560	3625			* 4195	3209	212
0	* 3589	* 3589	4499	3319	2826	2168	2002	1573			1918	1509	5140
0	* 7913	* 7913	9920	7316	6194	4780	4414	3488			4229	3327	202
-1000	* 5736	* 5736	4448	3273	2753	2117					3224	1732	4610
-39	* 12648	* 12648	9807	7216	5671	4667					4583	3819	181
-2000	* 7752	* 7752	* 4545	3504							* 3305	2496	3590
-79	* 17093	* 17093	* 9560	7286							* 7288	5593	141

Illustration 269

g06613437

Lift chart above : Short stick with optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000													
236													
5000													
197													
4000													
157													
3000													
118													
2000													
79													
1000													
39													
0													
0													
-1000													
-39													
-2000													
-79													

Illustration 270

g06613438

Lift chart above : Short stick with optional counterweight, variable angle boom IN, triple grouser track shoes with pads, blade DOWN

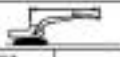
(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
236			* 3000	* 3000	* 2907	2259					* 2240	1814	4480
5000			* 7481	* 7481	* 6586	4981					* 4940	3999	176
197			* 2704	* 2704	* 2698	2300	1945	1546			* 1614	1271	5520
4000			* 5961	* 5961	* 6290	5026	4288	3428			* 4001	2803	317
157			* 2800	* 2800	* 3079	2303	1820	1522	1393	1101	1321	1042	6150
3000			* 6173	* 6173	* 6787	4856	4235	3356	3071	2428	2913	2297	242
118					2647	2054	1648	1456	1074	1083	1176	924	8540
2000					5836	4530	4078	3210	3029	2368	2598	2038	257
79					2462	1885	1755	1377	1336	1046	1111	868	6720
1000					5430	4157	3682	3036	2944	2307	2449	1914	265
39					2549	1781	1626	1312	1269	1012	1098	856	6720
0					5179	3926	3740	2893	2864	2231	2422	1887	265
0					2313	1748	1628	1277	1278	992	* 1266	887	6530
-1000					5101	3855	3667	2815	2819	2188	* 2792	1956	257
-39			* 1903	* 1903	* 2201	1756	* 1756	1273	* 1165	999	* 991	* 951	6150
-2000			* 4195	* 4195	* 4954	3871	* 3959	2807	* 2585	2203	* 2096	* 2096	242
-79					* 1219	* 1219	* 937	* 937					
					* 2688	* 2688	* 2067	* 2067					

Illustration 271

g06613441

Lift chart above : Short stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000 79		3000 118		4000 157		5000 197		6000 236				(mm) (in)
													
6000			* 3353	* 3353	* 2987	2545					* 2240	* 2240	4480
236			* 7481	* 7481	* 6596	5612					* 4940	* 4940	176
5000			* 2704	* 2704	* 2898	* 2898	* 2435	1745			* 1814	1437	5520
197			* 5961	* 5961	* 6390	* 6390	* 5359	3837			* 4001	3168	217
4000			* 2600	* 2600	* 3078	2488	* 2483	1718	* 2071	1247	* 1838	1182	8150
157			* 6173	* 6173	* 6787	5485	* 5431	3783	* 4667	2749	* 3611	2606	242
3000					* 3402	2394	* 2570	1648	* 2075	1226	* 1563	1053	6540
118					* 7502	5146	* 5667	3635	* 4576	2709	* 3446	2321	257
2000					* 3616	2169	* 2643	1567	* 2064	1191	* 1652	991	6720
79					* 7972	4761	* 5829	3456	* 4550	2626	* 3423	2185	265
1000					* 3430	2051	* 2575	1601	* 1968	1156	* 1467	979	6720
99					* 7564	4523	* 5677	3309	* 4339	2549	* 3280	2158	265
0					* 2921	2018	* 2309	1465	* 1717	1136	* 1266	1015	6530
0					* 6441	4449	* 5978	3230	* 3787	2505	* 2792	2206	257
-1000			* 1903	* 1903	* 2201	* 2201	* 1756	1461	* 1165	* 1165	* 951	* 951	6150
-39			* 4195	* 4195	* 4854	* 4854	* 3859	3221	* 2969	* 2969	* 2096	* 2096	242
-2000					* 1219	* 1219	* 937	* 937					
-79					* 2688	* 2688	* 2067	* 2067					

Illustration 272

g06613446

Lift chart above : Short stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes, blade DOWN

(mm) (in)	2500		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3993	* 3385	* 2987	3411					* 2240	* 2240	4480
236			* 7481	* 7481	* 6588	5317					* 4540	* 4540	176
5000			* 2704	* 2704	* 2898	2432	2078	1659			* 1814	* 1372	5520
197			* 5961	* 5961	* 6390	5363	4582	3639			* 4001	3024	217
4000			* 2800	* 2800	* 3078	2396	2023	1635	1497	1192	* 1638	1129	6150
157			* 6173	* 6173	* 6787	5194	4526	3606	3302	2627	* 3611	2490	242
3000					2829	2307	1982	1570	1478	1173	1272	1006	6540
118					6238	4896	4371	3461	3260	2567	2805	2218	257
2000					2445	2038	1656	1490	1440	1137	1202	947	6720
79					5832	4493	4185	3286	3175	2507	2649	2088	265
1000					2591	1933	1629	1435	1404	1102	1189	935	6720
99					5581	4262	4033	3143	3095	2431	2622	2062	265
0					2496	1901	1792	1396	1383	1083	* 1266	969	6530
0					5504	4191	3951	3096	3050	2368	* 2792	2136	257
-1000			* 1903	* 1903	* 2201	* 2201	* 1756	1386	* 1165	* 1165	* 851	* 951	6150
-39			* 4195	* 4195	* 4854	* 4854	* 3959	3057	* 2569	* 2569	* 2096	* 2096	242
-2000					* 1219	* 1219	* 937	* 937					
-79					* 2688	* 2688	* 2067	* 2067					

Illustration 273

g06613448

Lift chart above : Short stick with optional counterweight, variable angle boom OUT, triple grouser track shoes, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
6000			* 3393	* 3393	* 2987	* 2987					* 2240	* 2240	4480
236			* 7481	* 7481	* 6585	* 6585					* 4940	* 4940	176
5000			* 2704	* 2704	* 2898	* 2898	* 2430	1860			* 1814	* 1814	5520
197			* 5951	* 5951	* 6390	* 6390	* 5359	4102			* 4001	* 4001	2117
4000			* 3800	* 3800	* 3073	2650	* 2463	1836	* 2071	1342	* 1638	1274	6150
157			* 6173	* 6173	* 6787	5844	* 5431	4049	* 4567	2960	* 3611	2810	342
3000					* 3402	2497	* 2570	1789	* 2075	1324	* 1563	1139	6540
118					* 7932	5505	* 5657	3900	* 4576	2919	* 3446	2510	257
2000					* 3515	2322	* 2643	1687	* 2064	1286	* 1552	1074	6720
79					* 7972	5120	* 5629	3721	* 4550	2637	* 3423	2369	265
1000					* 3430	2214	* 2575	1621	* 1968	1251	* 1487	1062	6720
39					* 7564	4852	* 5677	3574	* 4339	2760	* 3289	2342	285
0					* 2921	2180	* 2303	1585	* 1717	1231	* 1396	* 1206	6530
0					* 8441	4808	* 5678	3495	* 3787	2715	* 2792	* 2792	257
-1000			* 1903	* 1903	* 2301	* 2301	* 1738	* 1736	* 1165	* 1165	* 951	* 951	6150
-39			* 4195	* 4195	* 4854	* 4854	* 3969	* 3969	* 2569	* 2569	* 2096	* 2096	242
-2000					* 1219	* 1219	* 937	* 937					
-79					* 2588	* 2588	* 2567	* 2567					

Illustration 274

g06613454

Lift chart above : Short stick with optional counterweight, variable angle boom OUT, triple grouser track shoes, blade DOWN

(mm) (ft)	3000		3500		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000													
335			* 3383	* 3303	* 2987	2345					* 2240	1891	4490
3000			* 7481	* 7401	* 6596	5179					* 4840	4169	175
5000			* 2764	* 2704	* 2898	2969	2032	1613			* 1814	1330	5520
197			* 5961	* 5901	* 6390	5225	4481	3556			* 4001	2893	217
4000			* 2800	* 2800	* 3076	2291	2007	1589	1481	1154	1388	1093	6150
187			* 6173	* 6173	* 6767	5656	4425	3503	3222	2545	3060	3411	242
3500					2766	2144	1937	1523	1442	1136	1240	972	6540
118					6100	4728	4278	3358	3180	2505	2734	2144	257
2000					2582	1975	1852	1444	1404	1100	1170	915	6720
79					5694	4356	4084	3183	3095	2425	2581	2018	265
1000					2468	1876	1783	1379	1368	1085	1158	902	6720
90					5443	4124	3932	3040	3016	2349	2503	1990	265
0					2433	1836	1746	1344	1347	1046	* 1266	935	6530
0					5065	4053	3950	2963	2970	2306	* 2792	2042	257
-1500			* 1983	* 1903	* 2201	1845	* 1795	1340	* 1185	* 1165	* 951	* 951	6150
-35			* 4195	* 4195	* 4604	4069	* 3959	2954	* 2568	* 2069	* 2686	* 2095	242
-2000					* 1219	* 1219	* 937	* 937					
-79					* 2588	* 2588	* 2067	* 2067					

Illustration 275

g06613457

Lift chart above : Short stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (in)	2000		3000		4000		5000		6000				(mm) (in)
	79		118		157		197		236				
													
6000			* 3393	* 3393	* 2987	* 2987					* 2240	* 2240	4480
236			* 7481	* 7481	* 6586	* 6586					* 4940	* 4940	178
5000			* 2794	* 2704	* 2888	* 2888	* 2430	1814			* 1814	1802	5520
197			* 5961	* 5961	* 6390	* 6390	* 5359	3999			* 4001	3311	217
4000			* 2800	* 2600	* 3078	2687	* 2493	1789	* 2071	1306	* 1638	1239	6150
157			* 6173	* 6173	* 6787	5705	* 5431	3946	* 4587	2878	* 3611	2731	242
3000					* 3482	2434	* 2570	1722	* 2075	1287	* 1563	1185	6540
118					* 7552	5366	* 5667	3797	* 4576	2838	* 3446	2437	257
2000					* 3616	2259	* 2643	1841	* 2084	1249	* 1552	1042	6720
79					* 7972	4981	* 5829	3616	* 4550	2755	* 3423	2268	285
1000					* 3430	2151	* 2575	1574	* 1968	1215	* 1467	1030	6720
39					* 7594	4743	* 5677	3472	* 4329	2678	* 3280	2271	265
0					* 2921	2117	* 2303	1538	* 1717	1195	* 1266	1067	6530
0					* 6443	4669	* 5078	3382	* 3787	2504	* 2792	2354	257
-1000			* 1993	* 1993	* 2201	* 2201	* 1798	1534	* 1165	* 1165	* 951	* 951	6150
-39			* 4195	* 4195	* 4854	* 4854	* 3959	3384	* 2969	* 2969	* 2096	* 2096	242
-2000					* 1219	* 1219	* 937	* 937					
-79					* 2688	* 2688	* 2067	* 2067					

Illustration 276

g06613920

Lift chart above : Short stick with no optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade DOWN

(FRT) (m)	2000		3000		4000		5000		6000				(FRT) (m)
	79		116		157		197		226				
													
6000			* 3388	* 3893	* 2987	2501					* 2240	* 2240	4480
595			* 7481	* 7481	* 6586	5515					* 4940	* 4940	176
5000			* 2794	* 2704	* 2898	* 2898	* 2430	1720			* 1914	1401	5520
197			* 5961	* 5961	* 6390	* 6390	* 5359	3006			* 4001	3155	217
4000			* 2800	* 2800	* 3079	2445	* 2463	1702	1568	1245	* 1638	1181	6150
157			* 6173	* 6173	* 6787	5392	* 5431	3754	3453	2745	* 3611	2605	342
3000					* 3462	2297	2070	1637	1547	1227	1334	1064	6540
116					* 7502	5064	4564	3609	3411	2705	2941	2324	257
2000					2785	2127	1985	1557	1508	1190	1261	994	6720
79					6096	4691	4378	3434	3335	2624	2781	2191	266
1000					2651	2023	1916	1492	1472	1156	1249	982	6720
39					5645	4490	4225	3291	3247	2549	2753	2164	266
0					* 2921	1990	1879	1457	1452	1136	* 1266	1017	6530
0					* 6441	4389	4143	3213	3251	2505	* 2793	2242	257
-3090			* 1903	* 1903	* 2201	* 2201	* 1794	1403	* 1165	* 1165	* 951	* 951	6150
-39			* 4195	* 4195	* 4654	* 4654	* 3959	3205	* 2903	* 2903	* 2096	* 2096	242
-3030					* 1219	* 1219	* 937	* 937					
-79					* 2588	* 2588	* 2067	* 2067					

Illustration 277

g06613459

Lift chart above : Short stick with optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade UP

Product Information Section
Lifting Capacities

(mm) (ft)	2000		3000		4000		5000		6000				(mm) (ft)
	79		118		157		197		236				
6000			* 3360	* 3363	* 2687	* 2687					* 2240	* 2240	4480
236			* 7481	* 7481	* 6556	* 6556					* 4940	* 4940	176
5000			* 2704	* 2704	* 2898	* 2898	* 2430	1934			* 1814	* 1814	9520
197			* 5961	* 5961	* 6390	* 6390	* 5359	4265			* 4001	* 4001	217
4000			* 2880	* 2880	* 3078	* 3078	* 2483	1910	* 2871	1401	* 1838	1331	6190
157			* 6173	* 6173	* 6787	* 6787	* 5431	4211	* 4567	3089	* 3611	2935	242
3000					* 3402	2696	* 2370	1842	* 2875	1382	* 1563	1191	8540
118					* 7502	5725	* 5667	4062	* 4576	3548	* 3446	2627	257
2000					* 9616	2421	* 2643	1761	* 2064	1345	* 1552	1125	6720
79					* 1972	5339	* 5829	3883	* 4550	2966	* 3423	2481	265
1000					* 3430	2313	* 2575	1695	* 1968	1330	* 1487	1113	6720
39					* 7564	5101	* 5677	3737	* 4339	2888	* 3260	2454	265
0					* 2921	2280	* 2303	1659	* 1717	1290	* 1206	* 1206	6530
0					* 6441	5627	* 5078	3658	* 3787	2844	* 2792	* 2792	257
-1000			* 1903	* 1903	* 2201	* 2201	* 1796	* 1796	* 1165	* 1165	* 981	* 981	6190
-39			* 4195	* 4195	* 4854	* 4854	* 3989	* 3989	* 2568	* 2568	* 2086	* 2086	242
-2000					* 1219	* 1219	* 997	* 997					
-79					* 2688	* 2688	* 2067	* 2067					

Illustration 278

g06613466

Lift chart above : Short stick with optional counterweight, variable angle boom OUT, triple grouser track shoes with pads, blade DOWN

Identification Information

i08508545

Plate Locations and Film Locations

SMCS Code: 1000; 7000

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

Serial Numbers will be used to identify engines, transmissions, and major attachments.

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

Product Identification Number (PIN) Plate



Illustration 279

g06276619

PIN plate location

The PIN plate is positioned on the front of the machine, close to the operator compartment.

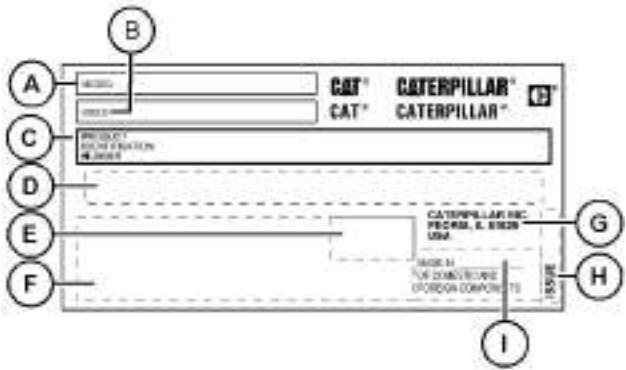


Illustration 280

g06201159

PIN plate

Model (A) _____

Build (B) _____

Product Identification Number (C) _____

Bar Code (D) _____

Month and/or Year of Manufacture Plate (If Required) (E) _____

Regional Certification Plate (If Required) (F) _____

Address of Manufacturer (G) _____

Issue (H) _____

Country of Origin Info Plate (If Required) (I) _____

Local regulation may require documentation of the Month and/or Year of Manufacture in the Operation and Maintenance Manual. Comply with these regulations.

Regional Product Marking (If Equipped)



Illustration 281

g06650998

Regional marking plate

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

Note: The regional marking plate or plates are installed on machines that meet the applicable requirements that were effective at that time and may differ from the one shown above.

Regional product marking may include one or more of the following:



CE mark



UKCA mark



EAC mark



Gulf Standardization Organization (GSO) mark



Ukraine mark

The following information may be stamped onto the regional product marking 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 (kg)_____
- Month and/or Year of Manufacture_____
- Machine Type_____

Eurasian Economic Union

Manufacturer Information

Manufacturer:

Caterpillar Inc.,
100 N.E. Adams Street
Peoria, Illinois 61629, USA

Entity authorized by the manufacturer at the territory
of Eurasian Economic Union:

Caterpillar Eurasia LLC
75, Sadovnicheskaya Emb.
Moscow 115035, Russia

Machine Specification Film

The machine specification film is on machines that are going into Japan.

The Japanese Industrial Safety and Health Act requires machine specifications to be displayed on a film that can easily be seen by the operator.

If equipped, this film will be on the cab door.

[illegible]

Illustration 282

q06178867

Typical example

Electromagnetic Emissions

Note: This label is on machines that are going into Canada.



Illustration 283

g06063443

If equipped, this label is located next to the PIN plate. This label verifies that the product meets the requirements of ICES-002 Issue 6. Compliance to ICES-002 Issue 6 is accomplished by meeting electromagnetic emissions industry standard CISPR-12.

Engine Serial Number

This label is on the engine.

Engine Serial Number _____

Sound Certification

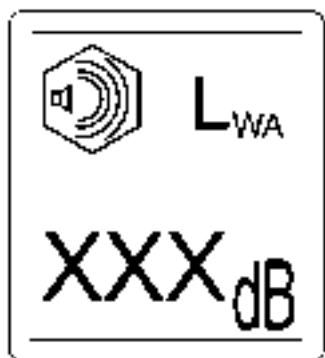


Illustration 284

g06675270

Sound certification film

A typical example of this film is shown.

A certification film is used to verify the environmental sound certification on machines that are certified to the regional requirements. A film installed on your machine will have a value. The value that is listed on the film indicates the guaranteed exterior sound power level (L_{wa}) at the time of manufacture for the conditions that are specified in the following sound test procedures:

- “ISO 6395”

- “European Union 2000/14/EC”
- “United Kingdom 2005 No. 1093”



Illustration 285

g03105800

(A) Low Noise Film
(B) Super Low Noise Film

If equipped, these certification labels are used to verify the Japan Ministry of Land, Infrastructure, Transportation, and Tourism (MLIT) noise designation according to the Japan “Designation Rule of Low Noise Type Construction Machine”.

Low Noise (A) – Verifies that the Japan “MLIT” designates the machine as a “Low Noise” type construction machine.

Super Low Noise (B) – Verifies that the Japan “MLIT” designates the machine as a “Super Low Noise” type construction machine.

i08085827

Emissions Certification Film

SMCS Code: 1000; 7000; 7405

Consult your Cat dealer for an Emission Control Warranty Statement.

The emission certification film is on the engine.

Declaration of Conformity (European Union)

SMCS Code: 1000; 7000

Table 41

An EU 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 EU Declaration of Conformity provided with the machine. The extract shown below from an EU 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.

ORIGINAL EU DECLARATION OF CONFORMITY

Manufacturer: Caterpillar Inc., 100 N.E. Adams Street, Peoria, Illinois 61629, 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 SAS,
40 Avenue Leon-Blum 38000 Grenoble, France**I, the undersigned, _____, hereby certify that the construction equipment specified hereunder**

Description:	Generic Denomination:	Earth-moving Equipment
	Function:	Hydraulic Excavator
	Model/Type:	307.5, 308 CR, 308.5, 309 CR, 310
	Serial Number:	
	Commercial Name:	Caterpillar

Fulfills all the relevant provisions of the following Directives

Directives	Notified Body	Document No.
2000/14/EC amended by 2005/88/EC, Note (1)		
2006/42/EC	N/A	
2014/30/EU	N/A	

Note (1) Guaranteed Sound Power Level - ____ dB (A) Annex VI
 Representative Equipment Type Sound Power Level - ____ dB (A)
 [Engine Power per ISO 14396 - ____ kW, Rated engine speed - ____ rpm
 Technical Documentation accessible through person listed above authorized to compile the Technical File
 Harmonised standards taken into consideration: EN 474-1: 2006+A4 :2013+AC:2014;
 EN 474-5: 2006+A3: 2013
 EN 13309: 2010

Done at:**Signature****Date:****Name/Position**

Note: The above information was correct as of July 2021, but may be subject to change, please refer to the individual declaration of conformity issued with the machine for exact details.

Declaration of Conformity (Great Britain)

SMCS Code: 1000; 7000

Table 42

A Declaration of Conformity document was provided with the machine if it was manufactured to comply with specific requirements for the Great Britain. In order to determine the details of the applicable legislation, review the complete Declaration of Conformity provided with the machine. The extract shown below from a Great Britain Declaration of Conformity for machines that are declared compliant to 2008 No. 1597 applies only to those machines originally "UKCA" marked by the manufacturer listed and which have not since been modified.

DECLARATION OF CONFORMITY

Manufacturer: Caterpillar Inc., 100 N.E. Adams Street, Peoria, Illinois 61629, USA

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

Standards & Regulations Manager Caterpillar France SAS
40 Avenue Leon-Blum 38000 Grenoble, France

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

Description:	Generic Denomination:	Earth - moving Equipment
	Function:	Hydraulic Excavator
	Model/Type:	307.5, 308 CR, 308.5, 309 CR, 310
	Serial Number:	
	Commercial Name:	Caterpillar

Fulfills all the relevant provisions of these regulations and/or other enactments as listed below:

Legislation	Approved Body	Document No.
2008 No. 1597		
2016 No. 1091		
2001 No. 1701 amended by 2005 No. 3525, Note (1)	Note (2)	

Note (1) Schedule - _____ 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

Note (2) If applicable, information related to Approved Body.

Designated standards taken into consideration: (for 2008 No. 1597 and 2016 No. 1091 Regulations or enactments only)

Done at:

Signature

Date:

Name/Position

Note: The above information was correct as of July 2021, 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

i07317232

Mounting and Dismounting

SMCS Code: 6700; 7000



Illustration 286

g06278943

Typical example

Mount the machine and dismount the machine only at locations that have steps and/or handholds. Before you mount the machine, clean the steps and the handholds. Inspect the steps and handholds. Make all necessary repairs.

Face the machine whenever you get on the machine and whenever you get off the machine.

Maintain a three-point contact with the steps and with the 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 carry tools or supplies when you try to mount the machine or when you try to dismount the machine. 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.

Machine Access System Specifications

The machine access system has been designed to meet the intent of the technical requirements in "ISO 2867 Earth-moving Machinery – Access Systems". The access system provides for operator access to the operator station and to conduct the maintenance procedures described in Maintenance section.

Alternate Exit

Machines that are equipped with cabs have alternate exits. For additional information, see Operation and Maintenance Manual, "Alternate Exit".

i07291744

Daily Inspection

SMCS Code: 1000; 6319; 6700; 7000

WARNING

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

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 cooling system pressure cap is cool enough to touch with your bare hand.

Remove the cooling system pressure cap slowly to relieve pressure.

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

NOTICE

Accumulated grease and oil on a machine is a fire hazard. Remove this debris with steam cleaning or high pressure water, at least every 1000 hours or each time any significant quantity of oil is spilled on a machine.

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

First 100 Hours

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

- Operation and Maintenance Manual, "Boom and Stick Linkage - Lubricate"

- Operation and Maintenance Manual, “Bucket Linkage - Lubricate”

Severe Applications

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

- Operation and Maintenance Manual, “Boom and Stick Linkage - Lubricate”
- Operation and Maintenance Manual, “Bucket Linkage - Lubricate”

Daily Basis

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

- Operation and Maintenance Manual, “Fuel Tank Water and Sediment - Drain”
- Operation and Maintenance Manual, “Hydraulic System Oil Level - Check”
- Operation and Maintenance Manual, “Indicators and Gauges - Test”
- Operation and Maintenance Manual, “Seat Belt - Inspect”
- Operation and Maintenance Manual, “Track Adjustment - Inspect”
- Operation and Maintenance Manual, “Travel Alarm - Test”
- Operation and Maintenance Manual, “Undercarriage - Check”

Refer to Operation and Maintenance Manual, “Maintenance Interval Schedule” for all maintenance recommendations.

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.



Illustration 287

g06276302

Inspect the attachment control linkage, attachment cylinders, and attachment for damage or excessive wear. Make any necessary repairs.

Inspect the lights for broken bulbs and for broken lenses. Replace any broken bulbs and any broken lenses.

Inspect the engine compartment for any trash buildup. Remove any trash buildup from the engine compartment.

Inspect the cooling system for any leaks, for faulty hoses and for any trash buildup. Correct any leaks. Remove any trash from the radiator.

Inspect all the belts for the engine attachments. Replace any belts that are worn, frayed, or broken.



Illustration 288

g06276303

Inspect the hydraulic system for leaks. Inspect the tank, cylinder rod seals, hoses, tubes, plugs, connections, and fittings. Correct any leaks in the hydraulic system.

Inspect the tubes and hoses along the boom and stick for wear and leaks. Replace any hoses or tubes that are worn or leak.

Inspect the differential and the final drives for leaks. Make any necessary repairs.

Inspect the swing drive for leaks.

Make sure that all covers and guards are securely attached. Inspect the covers and the guards for damage.



Illustration 289

g06276314

Inspect the steps, the walkways, and the handholds.
Clean the steps, the walkways, and the handholds.
Make any necessary repairs.

Inspect the operator compartment for trash buildup.
Check for trash buildup under the floorplate and on
the crankcase guard. Keep these areas clean.

Adjust the mirrors to achieve the best visibility.

Machine Operation

i08197772

Alternate Exit

SMCS Code: 7310

i07291771



Illustration 290

g06276524



Alternate Exit – The rear window serves as an alternate exit.



Break Glass – Perform the following procedure to exit through the rear window. A hammer is mounted on the rear of the cab. Strike the rear window with the hammer to break the glass. Climb through the opening of the rear window to exit the cab.

Note: Do not use the alternate exit except in an emergency situation.

Seat

SMCS Code: 5258-025; 7312-025; 7324; 7327

Standard Seat



Illustration 291

g06285915

- (1) Recline Lever
(2) Seat Fore and Aft Lever



Illustration 292

g06276785

- (1) Recline Lever
- (2) Seat Fore and Aft Lever

Use lever (1) to change the angle of the backrest.

Lift up on fore and aft lever (2) to release the seat from the locked position. Adjust the seat forward or rearward to the desired position and then release the lever to lock the seat.

Comfort Level Seat (If Equipped)



Illustration 293

g06276793

- (1) Recline Lever
- (2) Weight Adjustment Lever (or knob)
- (3) Seat Fore and Aft Lever

Use lever (1) to change the angle of the backrest.

To adjust for your weight, turn lever or knob (2) on the front of the seat.

Lift on fore and aft lever (3) to release the seat from the locked position. Adjust the seat forward or rearward to the desired position and then release the lever to lock the seat.

Deluxe Level Seat (If Equipped)



Illustration 294

g06276729

- (1) Headrest
- (2) Heat Switch
- (3) Lumbar Adjustment Knob
- (4) Recline Lever
- (5) Suspension Adjustment
- (6) Seat Fore and Aft Lever

The operator can adjust the height of headrest (1). To adjust the headrest, hold the headrest with both hands. Move the headrest up and down. Release the headrest when the desired position is attained. The headrest will remain in the desired position.

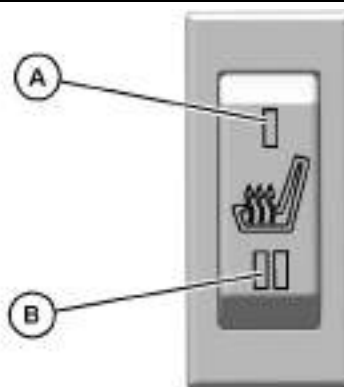


Illustration 295

g06251600

- (A) Low heat
- (B) High heat

Seat heater switch (2) is a three position switch. The middle position of the switch is off. Press the top position of the switch for low heat. Press the bottom of the switch for high heat.

WARNING

Heat-induced burns can occur when some people use a seat heater. Do not use the seat heater if you have a reduced ability to sense temperature changes, a reduced ability to feel pain, or have sensitive skin.

The lumbar support is located in the back of the seat. Turn knob (3) counterclockwise to increase the force of the lumbar support. To decrease the lumbar support, continue to turn the knob counterclockwise.

Pull up lever (4) to change the angle of the backrest. With the backrest in the desired position. Release the lever.

Use seat height suspension adjustment lever (5) to adjust the seat for the operator's height and weight.

Lift on fore and aft lever (6) to release the seat from the locked position. Adjust the seat forward or rearward to the desired position and then release the lever to lock the seat.

i07092308

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. Consult your Cat 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 Retractable Seat Belts

Fastening The Seat Belt



Illustration 296

g06223891

Pull seat belt (2) out of retractor (1) in a continuous motion.

Fasten seat belt catch (3) into buckle (4). 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



Illustration 297

g06223894

Push the release button on the buckle 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 Cat dealer for longer seat belts and for information on extending the seat belts.

i08197780

Diesel Particulate Filter Regeneration

SMCS Code: 108F

General Information

Regeneration is the removal of soot from the Diesel Particulate Filter (DPF). Active and passive regeneration are used to regenerate the DPF. The DPF traps both soot and ash. The soot is removed during regeneration. The ash is removed through a cleaning process. Refer to the Operation and Maintenance Manual, "Diesel Particulate Filter - Clean/Replace" for more information on the service of the DPF.

Modes of Regeneration

Passive – Passive Regeneration occurs when the exhaust temperature is high enough for regeneration to occur. Passive regeneration may occur unnoticed by the operator. No operator action is required. Operating the machine above mid throttle and under load allows for passive regeneration during normal operation. Low idle and low load applications will have lower exhaust temperatures, where passive regeneration is not possible.

Active – An active regeneration is a late injection of fuel into the combustion chamber, which sufficiently raises the exhaust temperature for an active regeneration. The engine ECM uses multiple inputs from the engine to determine when an active regeneration is needed. All applications, even high load, will require active regenerations. However, active regeneration will not occur as frequently as low idle and low load applications

There will be a slight change in the exhaust noise during an active regeneration. Active regenerations may require increased engine speed. The active regeneration may take up to 30 minutes to complete.

When an active regeneration is required with the hydraulic lockout control lever in the LOCKED position, the engine speed may be increased by the ECM.

When an active regeneration is required and the machine is being operated below the active regeneration threshold, a message will appear on the display recommending to increase the throttle to the maximum position. The operator can increase the engine speed to high idle with the Engine Speed Control Dial. An active regeneration will occur once all required conditions are met.

Note: If increasing the engine speed is not acceptable, the operator can allow a parked regeneration. In order for a parked regeneration to occur. Bring the machine to a stop. Move the hydraulic lockout control lever to the LOCKED position and set the engine speed to low idle. Do not operate the hydraulic controls. If those conditions are met for approximately 2 minutes, the ECM will slowly increase the engine speed and an active regeneration will begin. After completing the active regeneration, the engine speed will slowly decrease back down to low idle.

AC/Heater Fan – Elevated engine temperatures are required for regeneration. In colder ambient conditions, the AC/heater fan speed may be limited to as low as fan speed 2 in order to reduce the amount of heat removal from the engine by the HVAC heater core. This is to ensure the engine maintains sufficient heat to successfully complete the regeneration cycle. The fan speed reduction is variable and changes based on the ambient temperature and machine operating conditions.

Automatic Engine Shut Down – If the Emissions High Shutdown Safely message (J3701-16/J3701-0) is present and the engine is not shut down, the engine will automatically shut down to protect the DPF. The engine will automatically shut down 15 minutes after the arm bar is RAISED if the regeneration is not active.

NOTICE

The engine and emissions control system shall be operated, used, and maintained in accordance with the instructions provided. Failure to follow the instructions could result in emissions performance that does not meet the requirements applicable to the category of the engine. No deliberated tampering with, or misuse of the engine emissions control system should take place. Prompt action is critical to rectify any incorrect operation, use, or maintenance of the emissions control system.

Warning Symbols



1- DPF Regeneration – This emissions indicator appears on the LCD screen on the monitor stating "Required - Set Throttle to Max".



2- Emissions High – This indicator appears on the LCD screen on the monitor stating "High - Park, Raise Arm Bar".



3- DPF Regeneration – This emissions indicator appears on the LCD screen on the monitor stating "In Process".



Safely".

4- Emissions High – This indicator appears on the LCD screen on the monitor stating "High - Shutdown



Safely".

5- Emissions High – This indicator appears on the LCD screen on the monitor stating "High - Shutdown

Engine Emission Alert

The following chart describes the alert indicators and actions the operator needs to perform to allow an active regeneration.

Table 43

Warning Symbol	Machine Action	Operator Action
1- DPF Regeneration DPF Symbol Flashing	Regeneration process will begin soon after increasing in the throttle with no impact to machine functionality.	Set the engine speed to high idle.
2- Emissions High DPF Symbol Flashing Amber Action Lamp Illuminated	Hydraulic flow is reduced when operating with this warning. When arm bar is raised, regeneration begins within 2 minutes and engine speed is elevated	Bring the machine to a stop. Raise arm bar. Wait for regeneration to begin The regeneration may take up to 30 minutes.
3- DPF Regeneration DPF Symbol Flashing	Engine speed will be automatically increased with reduced blower fan speed and the regeneration process will begin within 2 minutes of raising the arm bar and will last up to 30 minutes.	Keep arm bar in raised position to complete regeneration.
4- Emissions High DPF Symbol Flashing Red Action Lamp Illuminated Audible Action Alarm	Engine speed will be limited and hydraulic system will be derated until an active regeneration is completed.	Regeneration can only be done through Cat Electronic Technician (ET), by an authorized Cat dealer. Consult your local Cat dealer. If the engine is run through these warning indicators, the DPF will require servicing and may require replacement.
5- Emissions High	Engine speed continues to be limited and hydraulic system is derated further.	DPF requires servicing or replacement, consult your local Cat dealer immediately. If engine is run through these warning indicators, severe damage can occur.

Carbon Dioxide (CO₂) Emissions Statement

Table 44

EU Stage V Engine Emission Compliant CO ₂ Values	
Engine Model	CO ₂ Value (g/kWh)
C2.4	809
C3.3B	807.2

Emissions regulations require that the value of the CO₂ emissions be reported to the end user. Refer to Table 44 for the determined CO₂ value during the EU type approval process. This value was recorded in EU type approval certificate. This CO₂ measurement results from testing over a fixed test cycle, under laboratory conditions, with a parent engine representative of the engine family. This value shall not imply or express any guarantee of the performance of a particular engine.

EU Stage V Emissions Control System (European Union)

Operation and Maintenance of the Stage V Emissions Control System

The engine, including the emissions control system, shall be operated, used, and maintained in accordance with the instructions provided to the end users to maintain the emissions performance of the engine within the requirements applicable to the engine category.

No deliberate tampering with or misuse of the engine emissions control system should take place; in particular regarding deactivating (or not maintaining) an exhaust gas recirculation (EGR) or a reagent dosing system if equipped.

Taking prompt action to rectify any incorrect operation, use or maintenance of the emissions control system in accordance with the rectification measures indicated by the unique warning diagnostic codes outlined below is essential.

The Stage V C3.3B engine has the ability to estimate the ash level in the DPF, starting at 3,000 hours. When the ash load reaches an estimated 100% level the DPF Ash Load Indicator will appear in the LCD display notifying the operator that a DPF service is required soon. This allows the customer to proactively schedule a service rather than operating until an engine derate occurs.

Due to the wide range of machine applications and load factors, it is not possible to publish a specific ash service target. However, the ash service life is expected to be greater than 3,000 hours for most applications and up to a maximum of 6,000 hours, at which point the DPF must be changed.

Note: The DPF ash load indicator will not be active below 3000 hours. When the ash load indicator is active, please contact your local Caterpillar dealer for DPF replacement/service at your earliest opportunity.

Failure Warnings and Operator Inducement Strategy

The EU Stage V Emissions Control system detects failures of the system by PM control diagnosis (PCD) and NOx control diagnosis (NCD). The system logs warning codes in the engine electronic control module (ECM) and signals the operator of system failure detection via a combination of visual and audible warnings in the machine operator station. Ignoring the operator warning signals will lead to the activation of the operator inducement system, which may result in an effective disablement of the machine.

EU Stage V Emissions Control System Failure Warnings

Table 45

Emission Failure Cause	Control Diagnostics System	Warning Code (SPN-FMI)	Event Level	Visual Warning (Display)	Audible Warning (Cab Alarm)	Inducement Response
Removal of the DPF system	PCD (Particulate Matter)	3936-7	3	DPF Alert Indicator ⁽¹⁾ Diagnostic Pop-Up	Yes	None
Loss of function of the DPF system		3936-2	2		No	
Failure of the PCD system		3251-3	2		No	
Removal of the EGR system	NCD (NOx Emission)	523578-2	2		No	2-Stage Engine Derate
Removal of the MAF sensor		132-4	3		Yes	

(1) Refer to "Warning Symbols" for more information.



Illustration 298

g06364484

Display showing fault information

- (1) Event icon
- (2) Warning code
- (3) Fault explanation
- (4) Warning pop-up banner (event level is by color)

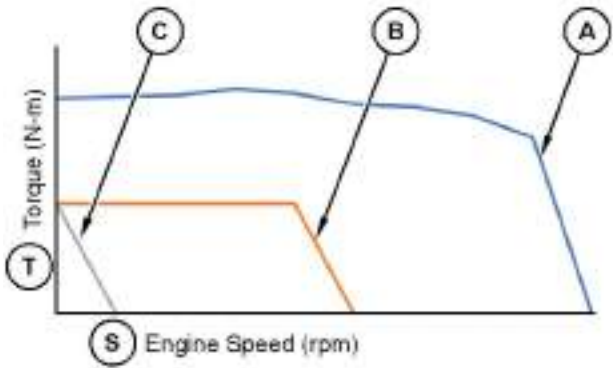


Illustration 299

g06364491

Inducement Levels

- (A) No fault code - normal operation range
- (B) Stage 1 inducement
- (C) Stage 2 inducement
- (S) Engine Speed (rpm)
- (T) Torque (N-m)

Stage 1 Inducement

Response – Engine De-rated to within 50% Max Torque, 60% Rated Speed

Occurrence – After 3 hours 15 minutes of active fault

Stage 2 Inducement

Response – Engine delivers nearly No Net Torque, Engine Speed near Low Idle

Occurrence – After 4 hours of active fault

DPF Service Operator Notification

The Diesel Particulate Filter (DPF) traps particulate matter in the form of both soot and ash. Soot is burned off periodically during the regeneration process, but ash will continue to accumulate slowly over time. Eventually, the DPF will become fully loaded with ash and will need to be serviced (cleaned or replaced) by an authorized Cat dealer.

The EU Stage V emissions control system estimates the DPF’s ash loading to provide maximum DPF life. When the ash load reaches an estimated 100%, the machine control system will generate an active event code and display a message to the operator. At this point, servicing the DPF is recommended. The message can be dismissed from the display and will reappear every 8 hours or each key cycle. After 50 hours without a service tool reset, the active event code will escalate and display a similar message every 15 minutes or each key cycle. If the message is continually ignored, the high ash content within the DPF will cause a high frequency of DPF regeneration triggering a diagnostic that is accompanied with an engine derate.



Illustration 300 g06364506
Typical Level 1 Pop-Up Message of the DPF Service Notification



Illustration 301 g06366126
Typical Level 2 Pop-Up Message of the DPF Service Notification

Engine Manufacturer Contact Information

Kubota Europe SAS
19-25, Rue Jules Vercreysse, Z.I. BP88
95101 Argenteuil Cedex
France

Kubota Europe SAS Italy Branch
Via Grandi, 29
20068 Peschiera Borrome (MI)
Italy

Kubota (Deutschland) GmbH
Senefelder Str. 3-5
63110 Rodgau / Nieder-Roden
Germany

i08392197

Operator Controls

SMCS Code: 7300; 7301; 7451

Note: Your machine may not be equipped with all the controls that are described in this topic.

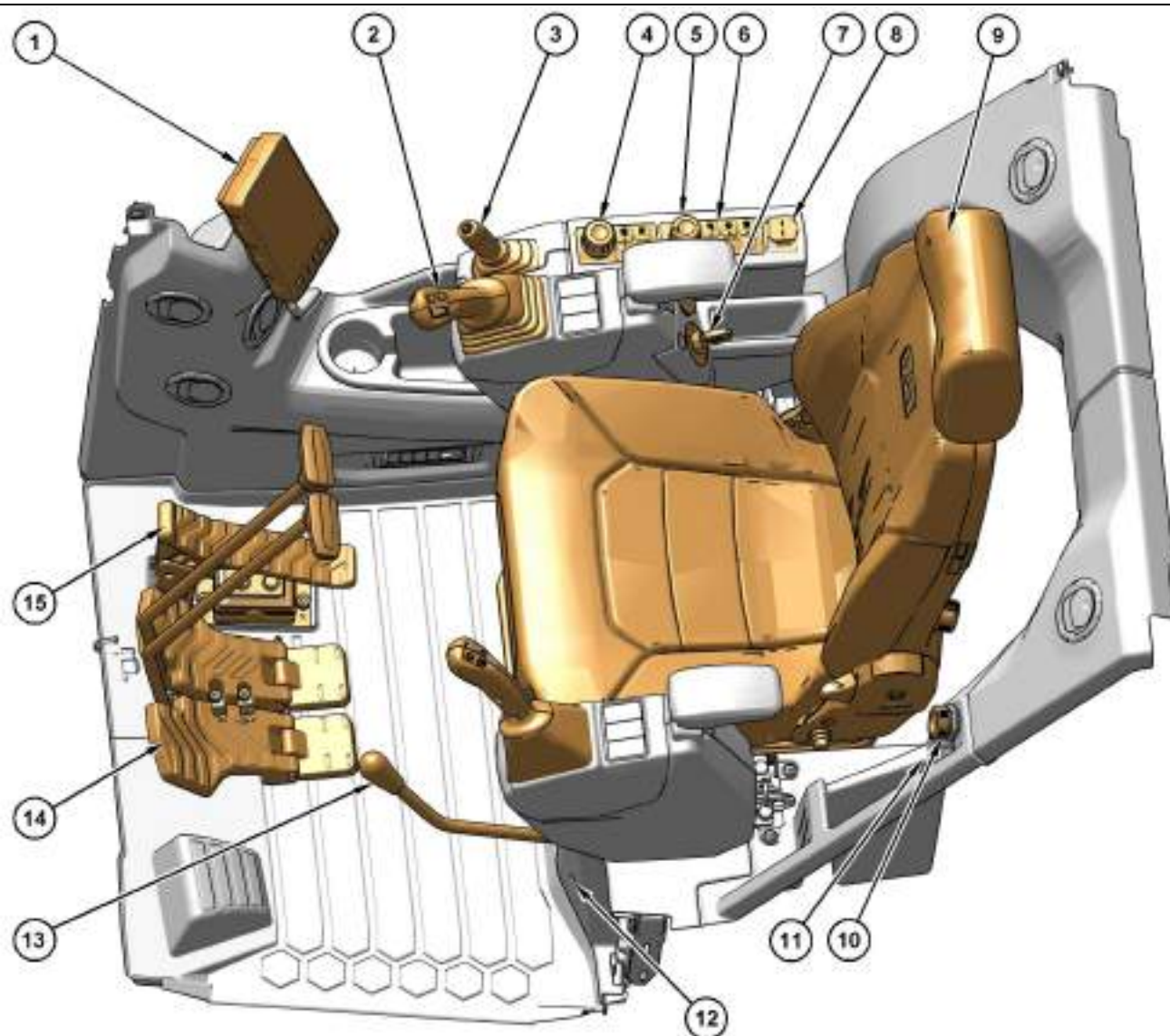


Illustration 302

g06607174

- (1) Monitoring System
- (2) Joystick Controls
- (3) Dozer Blade Lever (if equipped)
- (4) Jog Dial
- (5) Engine Speed Dial

- (6) Right Side Switch Panel
- (7) Engine Start Switch
- (8) USB Port (if equipped)
- (9) Operator Seat
- (10) Diagnostic Port

- (11) Power Outlet (12V)
- (12) Monitor wake-up button
- (13) Hydraulic Lockout Control
- (14) Travel Lever Controls (if equipped)
- (15) Auxiliary Control Pedal (if equipped)

Monitoring System (1)

The machine has a composite monitoring system including service hours, joystick pattern change, alert indicators, radio (if equipped), air conditioning system (if equipped), and so forth.

Refer to Operation and Maintenance Manual, "Monitoring System" for more information.

Joystick Controls (2)

The joystick controls are used to control the functions of the machine. For more information on the individual functions of the joysticks, refer to Operation and Maintenance Manual, "Joystick Controls".

Dozer Blade Lever (3) (If Equipped)



Float – Push the lever fully forward. The blade will lower to the ground. The blade will float with the contour of the ground.

The lever will return to the HOLD position.



Lower – Push lever (3) forward to lower the blade. The lever will return to the HOLD position when you release the lever. The blade will remain in the selected position.

Hold – Lever (3) will return to the HOLD position when the lever is released from the RAISED or LOWERED position.



Raise – Pull lever (3) backward to raise the blade. The lever will return to the HOLD position when you release the lever. The blade will remain in the selected position.

Travel Speed Control (3A) (If Equipped)



Illustration 303

g06277194

The high-speed travel switch is on the blade control lever. Use the switch to change the travel speed.

Push the switch to the high-speed position to make the machine travel in high speed. The rabbit travel speed icon will illuminate on the monitor when the machine is in the high-speed mode.

Push the switch again to return to low speed.

Always travel at slow speeds on slopes and rough ground.

Jog Dial (4)

Turn dial (4) to choose the desired item in the monitor and depress the dial to activate the selection.

Refer to Operation and Maintenance Manual, "Monitoring System" for more information.

Engine Speed Dial (5)

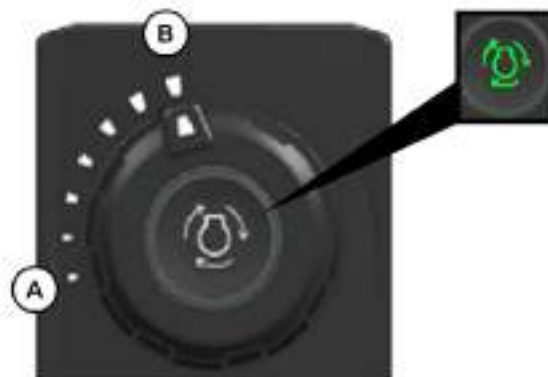


Illustration 304

g06345901

Turn the engine speed dial to change the desired engine speed (engine rpm). Select the desired position from the seven available positions. Turn the engine speed dial counterclockwise to decrease the engine speed (engine rpm). Turn the engine speed dial clockwise to increase the engine speed (engine rpm).

Low Engine Idle (A) – The engine operates in the low rpm range.

High Engine Idle (B) – The engine operates in the high rpm range.

Pressing the center of the engine speed dial can change the engine operation mode from "Power On Demand" mode to "Standard" mode (if equipped). A green illuminator on the center of the throttle dial indicates if the Power On Demand mode is ON.

In addition to the green illuminator on the dial, a "SMART" Mode indicator, which is the indicator for Power On Demand, will illuminate on the top status bar of the LCD monitor. When the machine is in "Standard" Mode, the "Power On Demand" Mode indicator will not be illuminated on the LCD monitor.

Note: Some machines may prohibit toggling of the Power On Demand mode.



Illustration 305

g06531055

The default state of Power On Demand at key on can be changed it Cat[®] Electronic Technician (Cat ET) by changing The Engine Speed Power Mode Power Up Default Configuration. Three settings are available:

- **ON** – Will always default to the ON position when the key is turned on (this is the default state from the factory). Power on demand can be cycled ON or OFF by pressing the center of the engine speed dial.
- **OFF** – Will always default to the OFF position when the key is turned on. Power on demand can be cycled ON or OFF by pressing the center of the engine speed dial.
- **ALWAYS ON** – Forced to ON position all the time, pressing the center of the engine speed dial does nothing.

Note: Due to regional regulations, some machines may prohibit toggling of the Power On Demand mode ON or OFF.

Right Switch Panel (6)

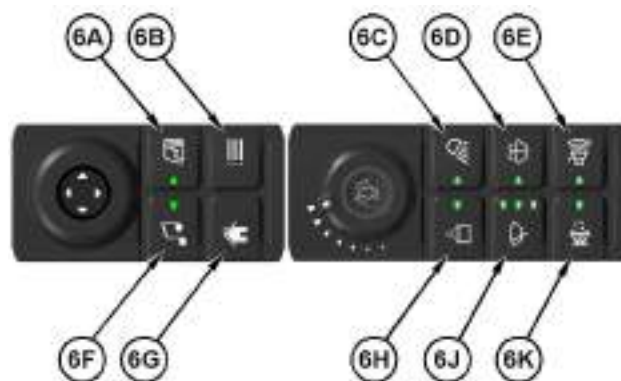


Illustration 306

g06285454

HVAC Control Shortcut (6A)

Pressing this button will navigate the monitor to display the relevant screen for HVAC controls.

The air conditioner provides comfort for the operator that is working under various temperature conditions. When the LED is lit, the HVAC is ON.

Display Menu Shortcut (6B)

Pressing this button to navigate to the display menu in the monitor.

Work Light Switch (6C)



Lights – Pressing the work lights button once turns the front work lights ON and illuminates the top LED. Pressing the button again within 2 seconds also illuminates the rear work lights and the bottom LED. Pressing the button again within 2 seconds turns OFF the front work lights and only illuminates the bottom LED. Pressing the button again (or waiting more than 2 seconds after any of the previous presses) turns OFF all work lights and indicator LED's.

Window Washer (6D)



Window Washer – Push the button to activate the window washer. The LED will illuminate while the button is pressed. Two wiper cycles will be completed after releasing the button.

NOTICE

If the wiper does not operate with the switch in the ON position, turn the switch off immediately. Check the cause. If the switch remains on, motor failure can result.

NOTICE

If the washer is used continuously for more than 20 seconds or used when no washer solution comes out, motor failure can result.

Travel Alarm Cancel (6E)

Travel Alarm Cancel – LED will illuminate while the travel alarm is canceled. Button must be pressed every time travel command is initiated to mute the travel alarm.

Note: The travel alarm will sound when the travel levers or the travel pedals are activated.

Radio Control Shortcut (6F)

Pressing this button will navigate the monitor to display the relevant screen for radio controls.

Home Screen Shortcut (6G)

Press the button to return back to the home menu on the monitor.

Overload Warning or Shovel Crane On/Off (6H) (If Equipped)

Overload Warning or Shovel Crane On/Off – If equipped with Overload Warning, this feature functions as the ON/OFF switch for that feature. When ON, the overload warning system activates if the boom pressure exceeds a threshold. If equipped with Shovel Crane, this feature functions as the ON/OFF switch for that feature. When ON, the machine will display the actual load and load limit. If the actual load approaches or exceeds the limit, a warning is activated.

ON – When the LED is lit, the overload warning or shovel crane feature is ON.

OFF – When the LED is not lit, the overload warning or shovel crane feature is OFF.

Window Wiper Control (6J)

Window Wiper – Pressing the wiper button once turns the wiper ON with a 6 second delay. Pressing the button again changes the delay to 3 seconds. Pressing the button again turns on the wiper continuously. Pressing the button again turns OFF the wiper. If the front window is open, the wipers will not turn ON. If the window is opened while the wiper is ON, it will stop until the window is closed.

No LEDs – Wipers are OFF

1 LED – 6 second intermittent delay

2 LEDs – 3 second intermittent delay

3 LEDs – Full ON

Radio Mute Switch (6K)

Radio Mute Switch – Press the switch to mute the radio. The indicator lamp will turn ON while the radio is muted.

Engine Start Switch (7)**NOTICE**

The engine start switch must be in the ON position and the engine must be running in order to maintain electrical functions and hydraulic functions. This procedure must be followed in order to prevent serious machine damage.

Note: Always place the hydraulic lockout lever in the RAISED position when you are starting the engine. The engine start switch will not function if the left hydraulic control is in the LOWERED position.

Key Switch (If Equipped)

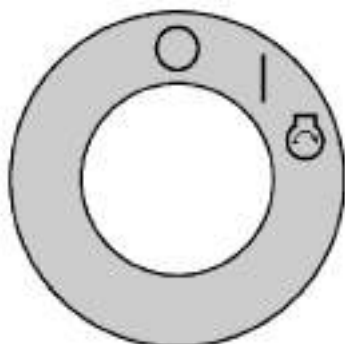


Illustration 307

g06285464



OFF – Insert the engine start switch key only while the start switch is in the OFF position. Remove the engine start switch key only while the engine start switch is in the OFF position. Turn the engine start switch to the OFF position before you attempt to restart the engine. Turn the engine start switch to the OFF position to stop the engine.



ON – To activate the electrical circuits in the cab, turn the key clockwise to the ON position.



START – To start the tractor engine, turn the key clockwise to the START position. After the engine starts, release the key. The key will return to the ON position.

Note: If the engine fails to start, return the engine start switch key to the OFF position. Return the key to the start position before you attempt to start the engine again.

See this Operation and Maintenance Manual, “Engine Starting” for additional information.

Push to Start (If Equipped)

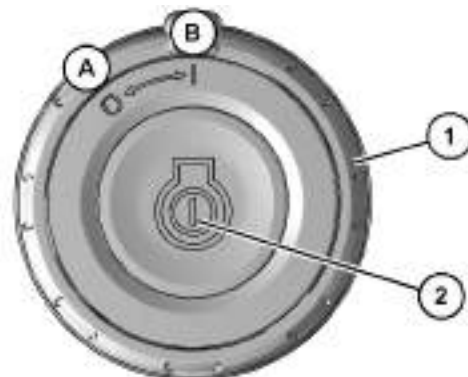


Illustration 308

g06180554

- (A) Off
- (B) On
- (1) Engine start ring
- (2) Start button

Note: The Bluetooth key must be inside the cab to activate the electrical circuits.



OFF – Turn the engine start ring (1) to the OFF position (A) to stop the engine.



ON – To activate the electrical circuits in the cab and enable engine starting, turn the engine start ring (1) clockwise to the ON position (B).



START – To start the engine, enter pass code in the monitor (only required if machine security is enabled). Press start button (2). After the engine starts, release the button.

USB Port (8) (If Equipped)

The USB port allows the operator to have extra media equipment connected to the machine.

Note: For charging purposes only.

Operators Seat (9)

The operators seat has various adjustments to meet a wide range of operators. For more information, refer to Operation and Maintenance Manual, "Seat".

Diagnostic Port - Electronic Technician (10)



Electronic Technician (ET) – This service port allows service personnel to connect a laptop computer to the machine electronics using the Cat® Electronic Technician (Cat ET) Service Tool. This connection will allow service personnel to interrogate the machine systems and engine systems.

Power Outlet (11)

A 12V power receptacle is located next to the diagnostic/service port. The power receptacle can be used for powering automotive electrical equipment or accessories. Raise the cap to use.

Monitor Wake-up Button (12)

This feature will function when the key is in the OFF position and the battery disconnect switch is in the ON position.

Pressing monitor wake-up button (13) will display the service hours of the machine and actual fuel level on the monitor display for two minutes.

Note: This feature can also be activated by pressing any button on the performance monitor (if equipped).

Hydraulic Lockout Control (13)



Deactivation of the hydraulic controls does not prevent the blade, boom swing, or auxiliary circuit functions from moving under gravity or other external forces. Gravity or other external forces can move the blade, boom swing, or auxiliary circuit functions suddenly if a hydraulic control lever is moved.

Personal injury or death may occur from sudden machine movement.



Locked – Place the hydraulic lockout control in the RAISED position to deactivate the hydraulic controls.

Make sure that the hydraulic lockout control is in the RAISED position before you exit the machine.

Note: Always put the left hydraulic lockout control in the RAISED position before starting the engine. The engine start switch will not function if the left hydraulic control is in the LOWERED position.



Unlocked – Place the hydraulic lockout control in the LOWERED position. When the hydraulic lockout control is in the LOWERED position, the hydraulic controls are operable.

Note: The hydraulic controls will only function if the joystick levers are centered when the implements are UNLOCKED. If the joystick levers are not centered when the hydraulic controls are switched from LOCKED to UNLOCKED, the hydraulic circuit associated with the lever out of center will be disabled until the joystick lever is centered.

Travel Lever Controls (If Equipped) (14)



Illustration 309

g06285448

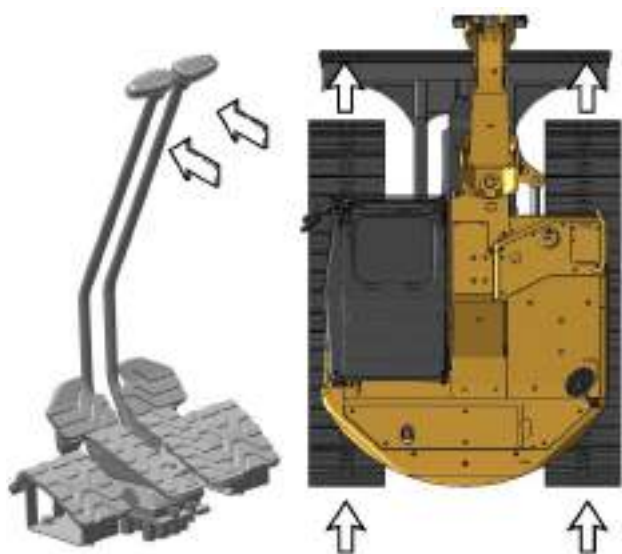
Position for normal travel

- (A) Rear of machine
- (B) Final drive
- (C) Idler

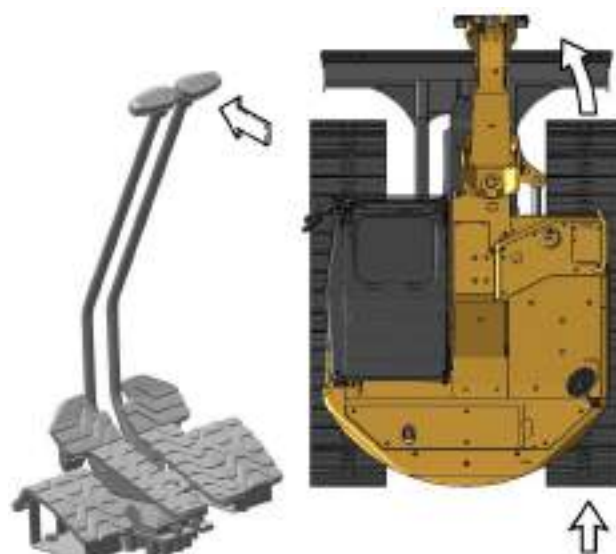
When you travel, make sure that final drive sprockets (B) are under the rear of the machine.

Stop – Release the travel levers/pedals to stop the machine. When you release the travel levers/pedals from any position, the travel levers/pedals will return to the CENTER position. The travel brakes will be applied.

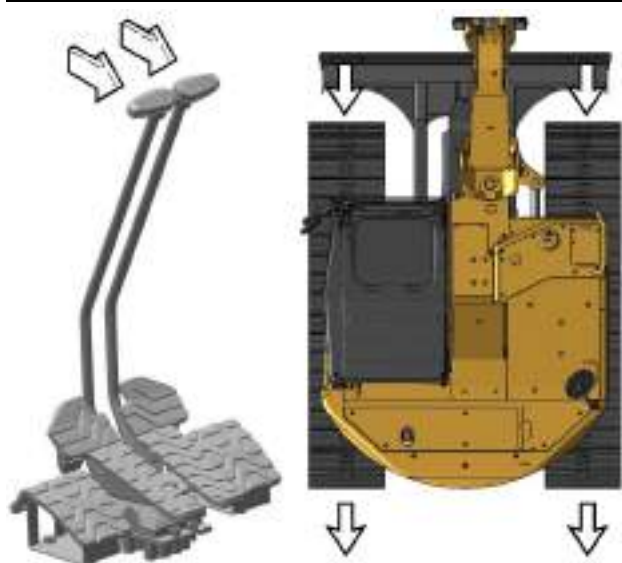
Move both of the travel levers or both of the travel pedals equally in the same direction to travel straight.

Illustration 310
FORWARD travel

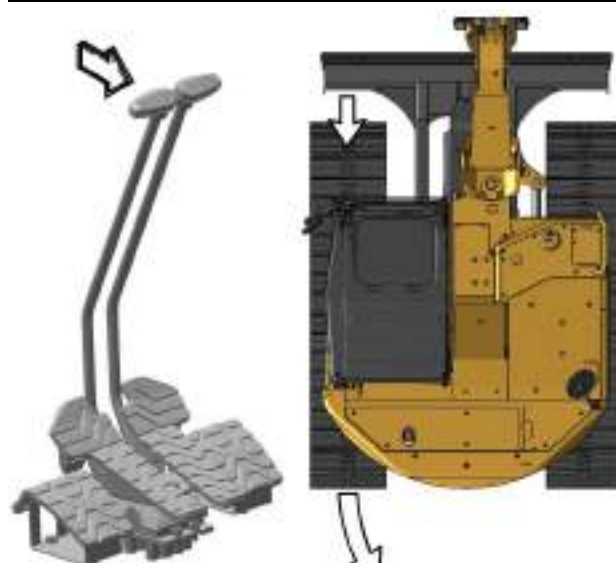
g06338693

Illustration 312
Pivot left turn (FORWARD)

g06338702

Illustration 311
REVERSE travel

g06338696

Illustration 313
Pivot Left Turn (REVERSE)

g06338705

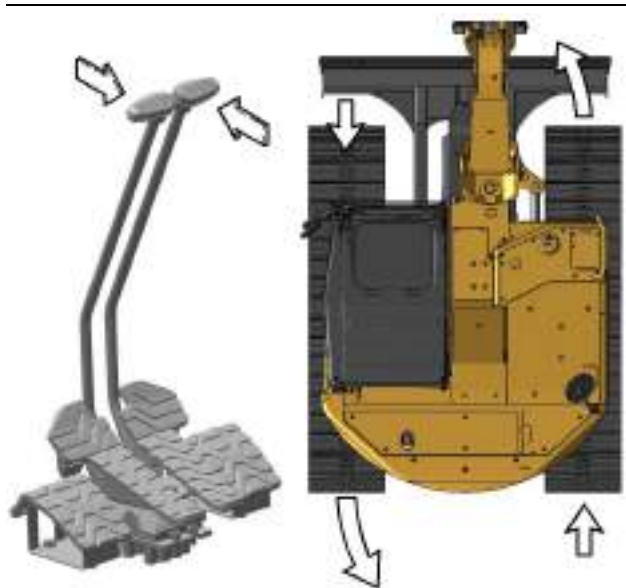


Illustration 314

g06338709

Counter rotate turn (LEFT)

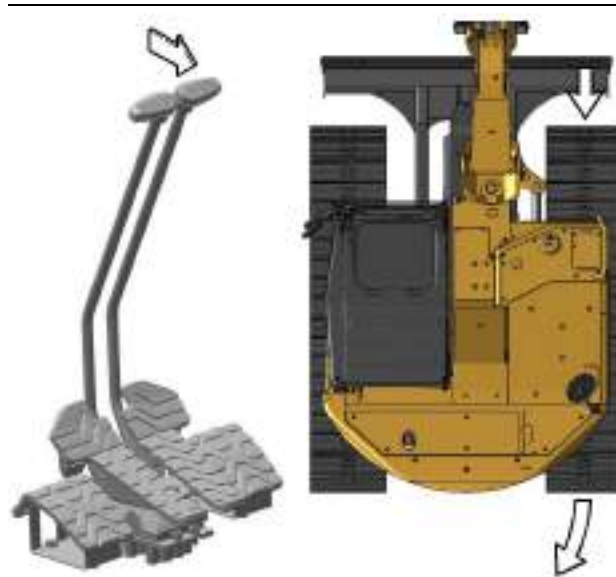


Illustration 316

g06338716

Pivot right turn (REVERSE)

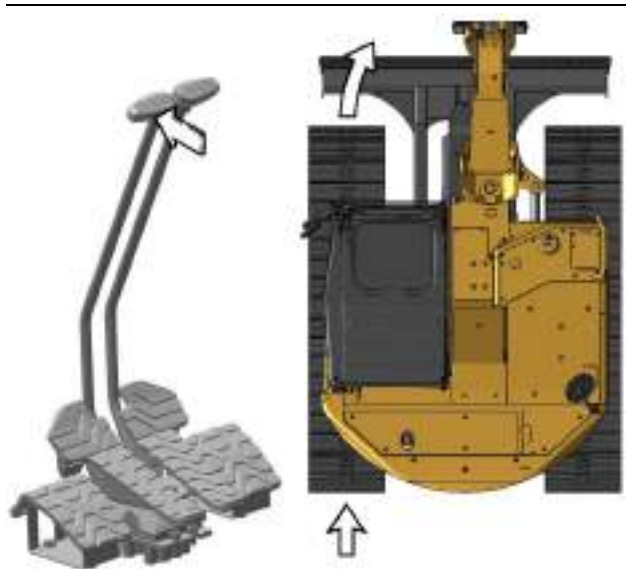


Illustration 315

g06338713

Pivot right turn (FORWARD)

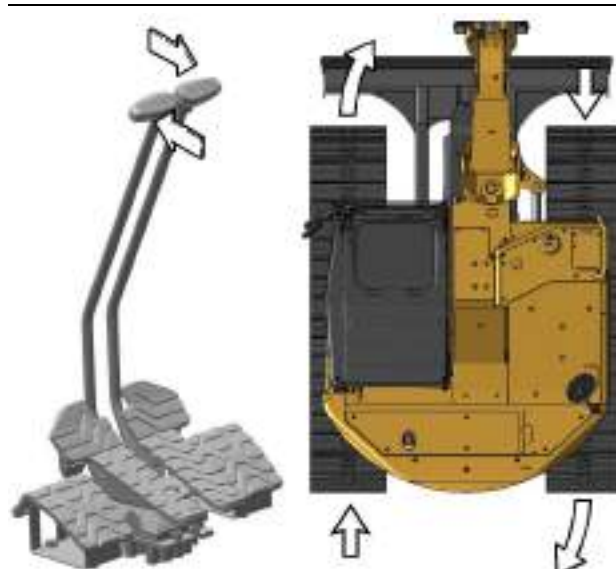


Illustration 317

g06338735

Counter rotate turn (RIGHT)

Auxiliary Control Pedal (15) (If Equipped)

The auxiliary control pedal is used to control the work tools. For more information on the auxiliary controls, refer to Operation and Maintenance Manual, Work Tool Control.

The auxiliary control pedal can also be used to control the variable angle boom (if equipped). Refer to Operation and Maintenance Manual, "VA Boom Controls" within this manual for more information.

i08265397

Cab Dome Light

SMCS Code: 1433



Illustration 318

g06466796

Dome light in the COURTESY LIGHT position

The cab dome light is located inside the cab above the door.

The lens of the lamp is a three-position switch.



Illustration 319

g06466801

Dome light in the ON position

When the front of the lamp is pressed upward, the lamp will be in the ON position.

When the rear of the lamp is pressed upward, the lamp will be in the OFF position.

When the lamp is in the middle (horizontal position), the lamp will be in the COURTESY LIGHT position.

The courtesy light allows the machine lighting to stay ON for a configurable (0 to 100 seconds) period of time after turning the key switch OFF.



Illustration 320

g06466812

Right switch panel

Note: For the lamp to illuminate in the COURTESY LIGHT position, work light switch (1) must be in an ON position, when the key is switched to OFF.

i08257420

Battery Disconnect Switch

SMCS Code: 1411-B11



Illustration 321

g06277361

The battery disconnect switch is on the right side of the machine behind the right access door.

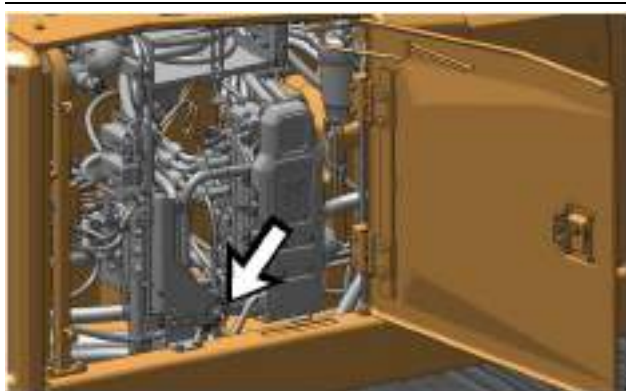


Illustration 322

g06277346

Battery disconnect switch



Battery Disconnect Switch – The battery disconnect switch can be used to disconnect the battery from the machines electrical system. The key must be inserted into the battery disconnect switch before the battery disconnect switch can be turned.



ON – To activate the electrical system, insert the disconnect switch key and turn the battery disconnect switch clockwise. The battery disconnect switch must be turned to the ON to enable battery power to start the engine.



OFF – To deactivate the electrical system, turn the battery disconnect switch counterclockwise to the OFF position.

The battery disconnect switch and the engine start switch perform different functions. The entire electrical system is disabled when you turn the battery disconnect switch to the OFF position. The battery remains connected to the electrical system when you turn the engine start switch to the OFF position.

Turn the battery disconnect switch to the OFF position and remove the key when you service the electrical system or any other machine components. If installed with a cover lock, close the cover and install a padlock.

Turn the battery disconnect switch to the OFF position and remove the key if you do not operate the machine for extended periods of a month or more. Turning off the disconnect switch will prevent the battery from being discharged.

A good practice is to use the disconnect switch after you operate the machine. Turning off the disconnect switch will prevent the battery from being discharged. The following problems can cause battery discharge:

- short circuits

- current draw via some components
- vandalism

Note: If the machine is equipped with product link, turning the disconnect switch to OFF will remove power from the product link module and it will not be able to communicate.

i08258164

Machine Security System (MSS)

SMCS Code: 7631

General Information

NOTICE

This machine is equipped with a Cat[®] Machine Security System (MSS) that is designed to restrict operation of the machine. The system can be enabled or disabled, unless the machine is equipped with the optional push to start system. If equipped with the push to start system, machine security will always be enabled. Machines equipped with “push to start”, also feature the Cat Bluetooth[®] key fob entry system.

Any user may start the engine and operate the machine if the security system has been disabled.



Illustration 323

g06223917

Machines that are equipped with Cat MSS can be identified by a decal in the operator station. Read the following information and know your machine settings. Your Cat dealer can identify your machine settings.

The Cat Machine Security System (MSS) discourages unwanted operation of a machine. When armed, the MSS requires operator login to start the engine. The following methods of operator login to disarm the security system are available:

- Cat Bluetooth[®] key fob
- Cat myEquipment mobile application

- Passcode

Components

The Machine Security System (MSS) consists of the following components:

- Engine start switch
- Electronic Control Module (ECM)
- Machine display
- Optional Cat Bluetooth key fob (CATBTFOB)
- Optional Bluetooth transceiver module (CATBTNT)

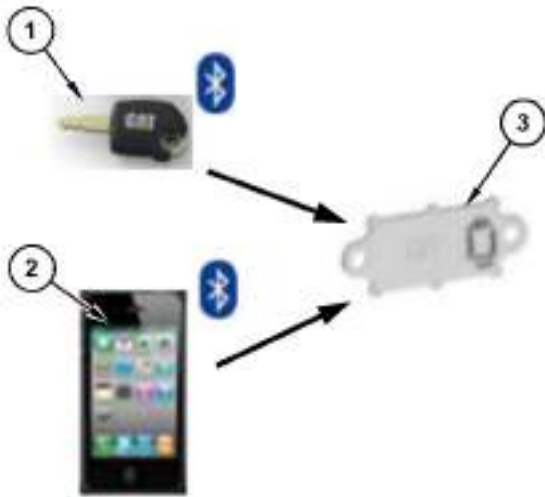


Illustration 324

g06212167

Bluetooth Connections

- (1) Cat Bluetooth key fob (CATBTFOB)
- (2) Smart phone application
- (3) Cat Bluetooth transceiver (CATBTNT)

The Cat Bluetooth key fob (1) contains an electronic chip. The electronic chip has a unique identification number (ID). A Bluetooth transceiver is mounted in the cab to read the ID of the key. The Bluetooth transceiver module translates the information received from the key fob into a J1939 message. This message is sent to the Electronic Control Module (ECM) that is connected to the MSS. The ECM is typically the Machine ECM. The ECM is set up with the ID of the keys of the intended users.

When the MSS is armed, the ECM validates the ID of the key fob. If the key ID is on the list of authorized keys in the ECM and the key is valid, the machine will operate normally. If the key ID is not on the list of authorized keys in the ECM or is not valid, the MSS will keep the critical machine functions disabled.

If the MSS is not enabled, the operator can skip the login and the machine will operate normally.

Standard Key

The machine security can be enabled or disabled using the Cat[®] Electronic Technician (Cat ET) Service Tool or within the display security settings screen (password protected). A master level access passcode must have been used to access the machine security settings in the display. If a standard level passcode was used, the user will be prompted to enter a master level passcode when accessing the machine security passcode screen.

If machine security is enabled, the display will prompt the user to enter a 4-digit numerical passcode when the machine is turned on. Prior to entering an authorized passcode, the engine starter will be disabled and you will not be allowed to proceed to the display home screen. After an authorized passcode has been entered, the display will proceed to the home screen and the engine will be allowed to start.

When turning off the key, the display will prompt the user to select between three options:

- Lock Now – Enables machine security 30 seconds after selected, will have to reenter passcode next time the machine is turned on.
- Wait XX Min – Waits the specified period of time (grace period) to enable machine security, will not have to reenter the passcode if machine is turned back on within the stated time.
- Unlimited – Does not enable machine security, will not have to reenter passcode the next time the machine is turned on.

Note: Selecting unlimited does not permanently disable machine security. The user will be prompted with the same three option above the next time the machine is turned on then back off.

The grace period can be adjusted within the display security settings screen (password protected). The time can be adjusted from 1 to 60 minutes.

Push to Start with Bluetooth Key Fob

If the machine is equipped with push to start and the Bluetooth key fob system, the machine will attempt to detect a Bluetooth key fob when the machine is turned on. If an authorized key fob is detected, the display will immediately proceed to the home screen and the engine will be allowed to start.

Note: The bluetooth key can be detected when it is outside the cab if it is in close proximity to the machine. Ensure the bluetooth key is in a sufficient distance from the machine when not in use to prevent unauthorized access to the machine.

Note: The bluetooth key fob features a sleep mode to preserve battery life. If the key detects no movement for 90 seconds, it will go into sleep mode and stop communicating. While in sleep mode, it cannot be used to access a machine. The bluetooth key will exit sleep mode and begin communicating after movement of the key is detected. When not in sleep mode, the bluetooth key communicates every 5 seconds.

Note: If multiple key fobs are present, the first valid key fob detected by the transceiver will be read. If the machine is not able to detect a key fob when it is turned on, the display will prompt the user to enter a 4-digit numerical passcode.

When the machine is turned off, the display will prompt the user with only the Lock Now and Wait XX Min options. Unlimited option is not available on machine equipped with push to start.

Adding and Removing Passcodes and Bluetooth Key Fobs

Passcodes and Bluetooth key fobs can be added and removed using the Cat® Electronic Technician (Cat ET) Service Tool or within the display security settings screen (password protected). A master level access passcode must have been used to access the machine security settings in the display. If a standard level passcode was used, the user will be prompted to enter a master level passcode when accessing the machine security passcode screen.

When adding a passcode or Bluetooth key fob, the user will be prompted to select the access level. A summary of the access levels is below.

Standard – A standard operator is a registered user of the machine. Operators with this access level can start the engine. This user may save a control configuration for future application.

Master – Master accounts can enable/disable machine security and add/remove passcodes in addition to all standard level functions.

Armed

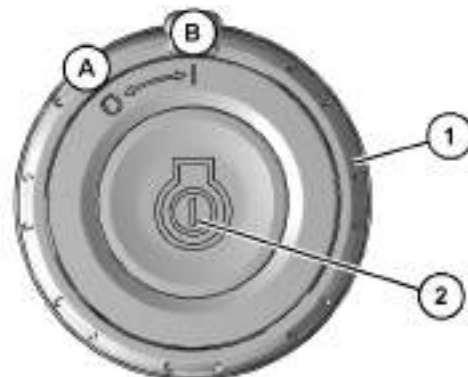


Illustration 325

g06180554

- (A) Off
- (B) On
- (1) Engine start switch ring
- (2) Engine start button

Engine Start Ring Switch Position ON – When the engine start switch ring is first moved to the ON position, the display boots up and the system attempts to detect a Bluetooth key ID or mobile application ID. The ECM will continue reading until a valid key ID is read or a passcode is entered.

Disarmed

MSS can be disabled through the service menu.

i07306305

Camera (If Equipped)

SMCS Code: 7347; 7348

Rear View Camera



Illustration 326

g06277566

The rear view camera system consists of a camera that is located in the middle of the top of the counterweight.

Note: The rear view camera system has been set up by the factory or by a Cat dealer to provide views which comply with specified guidelines. Consult your Cat dealer before any adjustments are made to the system.

For more information refer to Operation and Maintenance Manual, "Monitoring System".

i08461128

Monitoring System

SMCS Code: 7451; 7490

The monitoring system alerts the operator of a problem or of an impending problem. The monitoring panel is designed to alert the operator of faulty machine systems. When powering on the panel, there will be an LED test for the first 2 seconds (all LEDs on). The monitoring system consists of the following components:

- Display (with numerous screens and menus)
- Indicators

Two display options are available:

- Performance - Analog gauges and Liquid Crystal Display (LCD) with push-button interface.
- Premium - Full LCD with touchscreen interface.

Most display images in this document are from the performance display. However, the navigation and general functionality is common between the two displays for most features. When the functionality is different, supplemental screen images and details are provided.

Reference: For more information on the monitor functions, refer to Systems Operation, M0090757, "Monitoring System" for the performance display and Systems Operation, M0091327, "Monitoring System" for the premium display.

Performance Display



Illustration 327

g06347988

Home screen

- (1) Action Lamps
- (2) Status Indicator Area
- (3) Gauge Area
- (4) Status Information Area
- (5) Cabin Status Area
- (6) Navigation Buttons

Action Lamps (1)

The action lamps illuminate to show that a problem has occurred with the machine.

Status Indicators (2)

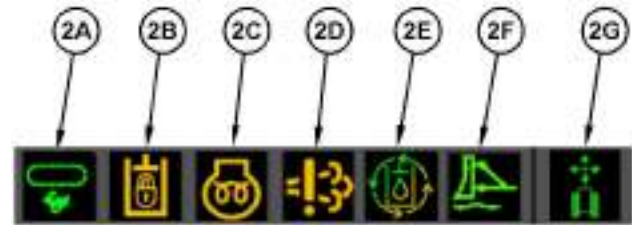


Illustration 328

g06274544

Travel Speed Indicator (2A)



(2A) Travel Speed – If the travel speed switch is moved to the high-speed position, the high-speed travel indicator illuminates.

Hydraulic Pilot Supply Solenoid Status Indicator (2B)



(2B) Hydraulic Pilot Supply Solenoid – Indicator (2B) will illuminate when the hydraulic system is locked out (left arm bar raised).

Glow Plug Indicator (2C)



(2C) Glow Plug – The alert indicator will illuminate when the engine start switch key is turned to the RUN position. After the glow plugs warm up, the LED will go out and the engine can be started. Refer to Operation and Maintenance Manual, “Engine Starting”. If the alert indicator does not turn off, consult your Cat® dealer.

Engine Emission System Indicator (2D)



(2D) Engine Emission System Malfunction – Indicator (2D) will illuminate when there is a fault with the engine emission system.

Continuous Flow (2E)



(2E) Continuous Flow – Indicator (2E) will illuminate in amber color when continuous hydraulic oil flow is ENABLED. The icon will appear green when continuous flow is active.

Blade Float Indicator (2F)

(2F) Blade Float – Indicator (2F) will illuminate when the blade float feature is **ACTIVE**.

Joystick Steering Indicator (2G)

(2G) Joystick Steering Control – Indicator (2G) will illuminate when joystick steering control status is **ACTIVE**. This indicator is located between the gauges in area (3).

Gauge Area (3)

Illustration 329

g06274545

Fuel Level (3A)

Fuel Level – This gauge indicates the amount of fuel that is remaining in the fuel tank. When the fuel gauge is in the red range, add fuel immediately.

Engine Coolant Temperature (3B)

Engine Coolant Temperature – This gauge indicates the temperature of the engine coolant. The normal operating range is when the indicator is below the red area and not resting in the full left position. Refer to Operation and Maintenance Manual, “Engine and Machine warmup”. If the gauge reaches the red range, stop the machine and investigate the cause of the problem.

Status Information Area (4)

Illustration 330

g06346172

(4A) Service Hour meter

There are seven icon locations to the right of service hour meter (4A). All possible indicators for each location are shown below.

Service Hour Meter (4A)

(4A) Service Hour Meter – Shows the total operating hours of the engine. Use the display to determine the service-hour maintenance intervals.

Location (4B)

(4B) Cruise Control – ON



(4B) Cruise Control – SET

Location (4C)

(4C) Throttle Dial Position – Indicates the engine speed dial setting.



(4C) Active Auto Idle Control – Auto Idle Control has lowered the engine speed or the Diesel Particulate Filter (DPF) is automatically regenerating.



(4C) Auto Idle Control – Auto Idle Control is enabled, but not currently active.

Auto Idle Control – Auto Idle Control is activated to reduce the engine speed to low idle when no active commands are given for 3 seconds. Turn ON or turn OFF this feature using the monitor.

Auto Idle Control feature allows the operator to reduce the rpm without touching the engine speed dial. Auto Idle Control is useful when the operator wants to reduce the engine speed to talk to someone or while the operator is waiting for a truck.

Location (4D)

(4D) Security System Immobilizer – This indicator will cover the Smart Mode icon if a security system immobilizer request has been received from Product Link.



(4D) Smart Mode – This indicator shows that the machine is set to operate in Power On Demand (POD).

Location (4E)

(4E) Shovel Crane (if equipped) – This indicator will illuminate when the shovel crane feature is ON.



(4E) Thumbwheel Mode – This indicator will illuminate when this feature is ACTIVE.



(4E) Hammer – This indicator will illuminate when this work tool is chosen.



(4E) Shear – This indicator will illuminate when this work tool is chosen.



(4E) User Defined – This indicator will illuminate when this work tool is chosen.



(4E) Tilt Bucket – This indicator will illuminate when this work tool is chosen.



(4E) Plate Compactor – This indicator will illuminate when this work tool is chosen.



(4E) Auger – This indicator will illuminate when this work tool is chosen.



(4E) Thumb – This indicator will illuminate when this work tool is chosen.



(4E) Mulcher – This indicator will illuminate when this work tool is chosen.



(4E) Brush Cutter – This indicator will illuminate when this work tool is chosen.



(4E) Tilt Coupler – This indicator will illuminate when this work tool is chosen.

Location (4F)

(4F) – In Call



(4F) – Bluetooth Connected



(4F) – Bluetooth Enabled

Location (4G)

(4G) – High Reach Boom – This icon appears if this function is controlled with the left thumbwheel.



(4G) – Offset Boom – This icon appears if this function is controlled with the left thumbwheel.



(4G) – Boom Swing – This icon appears if this function is controlled with the left thumbwheel.



(4G) – Swing Valve – This icon appears if this function is controlled with the left thumbwheel.



(4G) – Auxiliary Valve 2 – This icon appears if this function is controlled with the left thumbwheel.

Location (4H)

(4H) Joystick Pattern – This icon position combines Pattern Changer and Joystick Steering Pattern. The number on the upper left represents the Pattern Changer value. The number in the upper left portion of the icon indicates if an alternate control pattern is selected. The letter in the upper right corner reflects the joystick steering pattern for the right joystick. Refer to “Joystick Controls” and “Joystick Controls Alternate Patterns” sections for more information.

Cabin Status (5)

Depending upon installed features various information is available in this area. Use of the jog dial can also scroll information between the various available screens.



Illustration 331

g06390246

View of status area

With and without Radio and HVAC installed

Radio Volume (5A)

Radio Volume (5A) – The radio volume function displays the current volume.

Air Conditioning Fan Speed (5B)

Air Conditioning Fan Speed (5B) – The air conditioning fan speed function displays the current fan speed.

Radio Display (5C)

Radio Display (5C) – The radio display area will display radio station, Bluetooth audio, Aux audio input, or DAB information.

Air Temperature (5D)

Air Temperature (5D) – The air temperature function controls the temperature of the air coming out of the vents.

Hydraulic Temperature (5E)

Hydraulic Temperature (5E) – The current temperature of the machine hydraulic oil.

Battery Voltage (5F)

Battery Voltage (5F) – The current voltage of the machine battery.

Note: The hydraulic temperature gauge and battery voltage are accessible on machines with a radio and heat / air conditioning. To access them, either highlight the heat / air conditioning on the cabin status screen and use jog dial to jog to the right, or highlight the radio on cabin status screen and use the jog dial to jog to the left.

Clock (5G)

Clock (5G) – If equipped, will display the time of day.

Navigation Buttons (6)

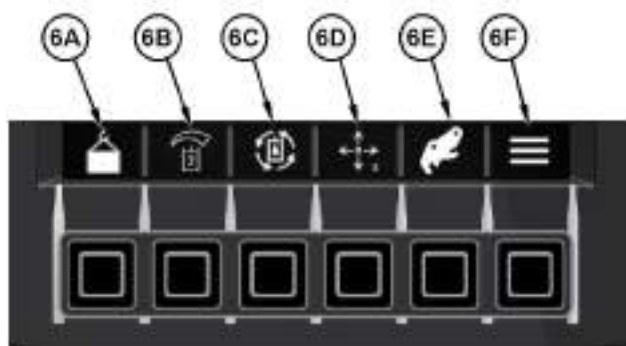


Illustration 332

g06330261

Navigation buttons (6A) through (6E) are programmable shortcuts. The shortcuts will be automatically populated based on how the machine is configured. To view the complete list or change a shortcut, navigate to the “Shortcut Settings” under the “Display Settings” menu on the monitor. Button (6F) accesses the main menu options available in the Monitoring System. The following sections detail the available options.

Premium Display



Illustration 333

g06564012

- (1) Action Lamps
- (2) Status Information Area
- (3) Camera View Area
- (4) Cabin Status Area
- (5) Gauge Area
- (6) Menu
- (7) Shortcuts

The monitoring system displays various warnings and information about the condition of the machine, and the machines surrounding with the rear view camera (if equipped). There are gauges and several alert indicators included on monitoring system display. Each gauge is dedicated to a parameter within a machine system. The monitoring system will allow the user to do the following:

- View surroundings
- Interpret status information
- Interpret parameters
- Troubleshoot machine systems

Action Lamps (1)

The action lamps illuminate to show that a problem has occurred with the machine.

Status Information Area (2)

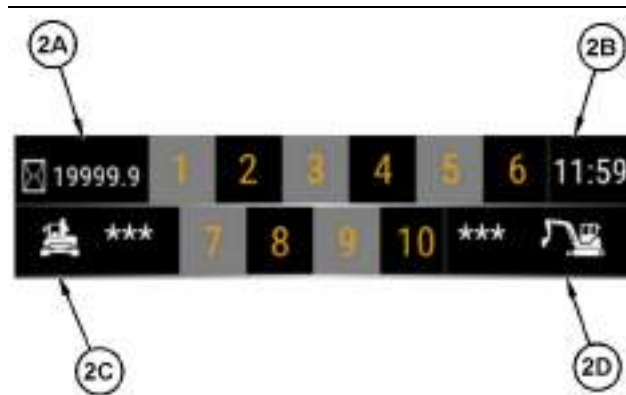


Illustration 334

g06617613

(2A) Service Hour Meter - Shows the total operating hours of the machine.

(2B) Clock

(2C) Machine Roll Indicator – Shows the side to side angle degree of the machine. The angle indication is limited to ± 10 degrees.

(2D) Machine Pitch Indicator – Shows the fore and aft angle degree of the machine. The angle indication is limited to ± 10 degrees.

Camera View Area (3)

The camera view area shows live feed of the rear view camera (if equipped).

Cabin Status Area (4)



Illustration 335

g06565233

The cabin status screens will change based on the machine configuration. The example shown above is for a machine equipped with both a radio and heat/air conditioning. If the machine is not equipped with one or both of those options, the corresponding area will be blank.

Radio Station (4A)

Radio Station (4A) – The radio station function displays station that is playing.

Air Conditioning Fan Speed (4B)

Air Conditioning Fan Speed (4B) – The air conditioning fan speed function displays the current fan speed.

Radio Volume (4C)

Radio Volume (4C) – The radio volume function displays the current volume.

Cab Temperature (4D)

Cab Temperature (4D) – The cab temperature function displays the temperature setting of the air coming out of the vents.

Gauge Area (5)

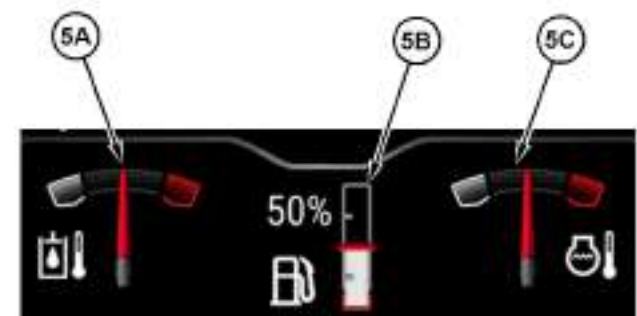


Illustration 336

g06617616

Hydraulic Oil Temperature (5A)

Hydraulic Oil Temperature – This gauge indicates the temperature of the hydraulic oil. If the gauge reaches the red range, stop the machine and investigate the cause of the problem.

Fuel Level (5B)

Fuel Level – This gauge indicates the amount of fuel that is remaining in the fuel tank. When the fuel gauge is in the red range, add fuel immediately.

Engine Coolant Temperature (5C)



Engine Coolant Temperature – This gauge indicates the temperature of the engine coolant. If the gauge reaches the red range, stop the machine and investigate the cause of the problem.

Menu Button (6)



Menu Button (6) – Press the menu button to go to the main menu of display to adjust various machine and display settings.

Shortcuts (7)

Navigation buttons (7) are programmable shortcuts. The shortcuts will be automatically populated based on how the machine is configured. To view the complete list or change a shortcut, navigate to the “Shortcut Settings” under the “Display Settings” menu on the monitor.

Main Menu

The following sections detail available options within the menu structure of the display.

Machine Settings

Machine settings adjust various options which control machine functions. Certain settings may require the engine to be OFF for adjustment.

Included in machine settings are the following:

- Control Mode
- Aux/Work Tool
- Auto Idle Control
- Machine Lighting
- Factory Defaults

Control Mode

Control mode contains several settings that affect machine operation.

Included in this subsection is descriptions of Pattern Changer, Cruise Control, Joystick Steering Pattern, Engine Idle Shutdown (if equipped), Fine Grading, Implement Speed, Joystick Response, Forward Travel Trim, and Reverse Travel Trim.

Pattern Changer

The pattern changer allows the selection of various control patterns for the left and right joystick. Refer to “Joystick Controls Alternate Patterns” for details of available patterns.

Joystick Steering Pattern

Joystick steering Pattern allows for the selection of desired function of the right joystick lever while in stick-steer mode. Refer to “Joystick Controls” for more details.

Fine Grading

The Fine Grading mode increases the fine control of the machine implement functions. When Enabled , the pump will generally operate at a higher pressure to help achieve greater fine control.

To access Fine Grading, press the “Menu” button, select “Machine Settings” , “Control Mode” , then “Fine Grading” .

Press “OK” to toggle between Enabled and Disabled.

Implement Speed

Implement speed allows the operator to adjust the joystick sensitivity and function maximum speeds. This parameter is adjusting both the joystick sensitivity and speed of the boom, stick, bucket, and swing together. The Advanced settings menu allows for individual adjustment.

To access the Implement Speed options, press the “Menu” button, select “Machine Settings” , “Control Mode” , then “Implement Speed” .

Select the desired option using the up and down arrows, then press “OK” .

Advanced

To access the Advanced options, press the “Menu” button, select “Machine Settings” , “Control Mode” , “Implement Speed” , then “Advanced” .



Illustration 337

g06333802

Select the desired option using the up and down arrows, then press "OK" .

The following are the options within each:

- Normal
- Fast
- Slow

Joystick Response

Joystick response allows the operator to adjust the implement response to the joystick inputs. This parameter is adjusting the joystick response of the boom, stick, bucket, and swing together. The Advanced settings menu allows for individual adjustment.

Adjusting the implement response rate will change how abrupt the implements start and stop, affecting the smoothness of operation of the machine.

To access the Joystick Response options, press the "Menu" button, select "Machine Settings", "Control Mode", then "Joystick Response" .

Select the desired option using the up and down arrows, then press "OK" .

Advanced

To access the Advanced options, press the "Menu" button, select "Machine Settings", "Control Mode", "Joystick Response", then "Advanced" .



Illustration 338

g06333802

Select the desired option using the up and down arrows, then press "OK" .

The following are the options within each:

- Normal
- Slow
- Fast

Cruise Control

To enable cruise control feature in the monitor press the "Menu" button, select "Machine Settings", "Control Mode", "Cruise Control" then press "OK" . Once enabled, cruise control can be activated as indicated in the "Joystick Controls" section.

The cruise control can be added to the shortcut menu in the monitor if desired. Each time the machine is powered ON, the cruise control feature must be enabled.

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 mount a moving machine. Do not dismount a moving machine. Never jump off the machine. Do not carry tools or supplies when you try to mount the machine or when you try to dismount the machine. 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.

Forward Travel Trim

Forward travel trim allows the operator to make fine adjustments between the left and right track speed in the FORWARD direction to correct any drift or wandering.

To access the Forward Travel Trim options, press the "Menu" button, select "Machine Settings", "Control Mode", then "Forward Travel Trim".



Illustration 339

g06333952

To adjust the forward travel trim, use the right and left arrows.

If your machine drifts RIGHT, then move the arrow to the LEFT.

Reverse Travel Trim

Reverse travel trim allows the operator to make fine adjustments between the left and right track speed in the REVERSE direction to correct any drift or wandering.

To access the Reverse Travel Trim options, press the "Menu" button, select "Machine Settings", "Control Mode", then "Reverse Travel Trim".



Illustration 340

g06333956

To adjust the reverse travel trim, use the right and left arrows.

If your machine drifts RIGHT, then move the arrow to the LEFT.

Engine Idle Shutdown

Engine Idle Shutdown feature automatically shuts off the engine when the following conditions are met for 3 to 15 minutes :

- Arm bar is raised
- Coolant temperature is above 50° C (122° F)
- Work lights are OFF
- Auto engine idle feature is enabled
- Throttle dial position is less than seven
- No active DPF regeneration

The engine idle shutdown feature must be enabled for the function to be active. To enable, press the "Menu" button, select "Service Mode", "Machine", "Engine Idle Shutdown", then press OK.

Once enabled, the timer can be adjusted by pressing the "Menu" button, "Machine Settings", "Control Mode", then "Engine Idle Shutdown". The idle time is adjustable from 3 to 15 minutes in increment of 1 minute. Press OK to confirm the selection.

Aux/Work Tool

The Aux/Work Tool submenu allows for configuration of the auxiliary hydraulics of the machine.

Included in this subsection is descriptions of Continuous Flow, Quick Coupler, Aux Flow 1 (if equipped), Aux Flow 1 Balance (if equipped), Aux Flow 2 (if equipped), Tiltrotator (if equipped), Aux Flow 2 Balance (if equipped), and Work Tool Select.

Continuous Flow

To enable the continuous flow feature in the monitor press the "Menu" button, select "Machine Settings", "Aux / Work Tool", "Continuous Flow" then OK. Once enabled, continuous flow can be activated as indicated in the "Continuous Flow" section.

The continuous flow enable can be added to the shortcut menu in the monitor if desired. Each time the machine is powered on, the continuous flow feature must be enabled.

Quick Coupler (If Equipped)

This menu allows for activation of a hydraulic quick coupler. Two types of couplers are supported including dual lock and single lock couplers. Dual lock couplers will show two screens indicating the status of each individual locking mechanism. Single lock couplers have only a single screen allowing for lock and unlock functions of the coupler. To access the Hydraulic Quick Coupler in the monitor press the "Menu" button, "Machine Settings", "Aux / Work Tool", then "Quick Coupler". The Single Lock or Dual Lock quick coupler screen will be selected automatically based on which quick coupler the machine is configured with.

The quick coupler control screen can be added to the shortcut menu in the monitor if desired.

Tiltrotator (If Equipped)

The Tiltrotator is a specialized worktool that can be purchased for the machine. Refer to the Tiltrotator Operation and Maintenance Manual for more details or contact your dealer for information.

Aux Flow 1 (If Equipped)

Aux 1 Flow allows for metering the flow provided to the auxiliary 1 circuit. To adjust the aux 1 flow press the "Menu" button, select "Machine Settings", "AUX / Work Tool", "Aux Flow 1" then adjust the flow rate. The flow is adjustable from 10 percentage to 100 percentage in increments of 10 percent.

The aux flow 1 can be added to the shortcut menu in the monitor if desired.

Aux Flow 1 Balance (If Equipped)

Aux Flow 1 Balance allows for reducing the flow to the aux 1 A port or aux 1 B port for work tools that require different flow rates in each direction.

To adjust the aux flow 1 balance press the "Menu" button, select "Machine Settings", "Aux / Work Tool", "Aux Flow 1 Balance" then adjust the balance as desired. When the slider is in the MIDDLE position, the supply flow rate is the same to both ports.

Adjusting the slider to the LEFT will reduce the flow rate to the right (aux 1 A) port but maintain same flow rate to the left (aux 1 B) port. Adjusting the slider to the RIGHT will reduce the flow rate to the left (aux 1 B) port but maintain the same flow rate to the right (aux 1 A) port.

Aux Flow 2 (If Equipped)

Aux 2 Flow allows for metering the flow provided to the auxiliary 2 circuit. To adjust the aux 2 flow press the "Menu" button, select "Machine settings", "Aux / Work Toll", "Aux Flow 2" then adjust the flow rate. The flow is adjustable from 10 percentage to 100 percentage in increments of 10 percent.

The aux flow 2 can be added to the shortcut menu in the monitor if desired.

Aux Flow 2 Balance (If Equipped)

Aux Flow 2 Balance allows for reducing the flow to the aux 2 A port or aux 2 B port for work tools that require different flow rates in each direction.

To adjust the aux flow 2 balance press the "Menu" button, select "Machine Settings", "Aux / Work Tool", "Aux Flow 2 Balance" then adjust the balance as desired. When the slider is in the MIDDLE position, the supply flow rate is the same to both ports. Adjusting the slider to the LEFT will reduce the flow rate to the right (aux 2 A) port but maintain same flow rate to the left (aux 2 B) port. Adjusting the slider to the RIGHT will reduce the flow rate to the left (aux 2 B) port but maintain the same flow rate to the right (aux 2 A) port.

Work Tool Select

Toggleing the work tool select, various work tools are available. Selecting the work tool attached to the machine will pick default settings for Aux 1 Flow metering and configure the valve for utilizing work tools.

To select the work tool press the "Menu" button, select "Machine Settings", "Aux / Work Tool", "Work Tool Select" then select the desired tool.

The work tool select can be added to the shortcut menu in the monitor if desired.

Some work tools are designated as heavy tools. When selected, the controls compensate for the additional load on the linkage to maintain optimal multi-functional operation. The following tools are designated as work tools:

- Shear
- Plate Compactor

- Mulcher
- Brush Cutter

Note: If the Fine Grading mode is Enabled, the controls will operate with the heavy tool settings, regardless of which work tool is selected.

Auto Idle Control

Auto idle control automatically reduces engine speed when no implement commands have been issued for 3 seconds. To enable, press the "Menu" button, select "Machine Settings", "Auto Idle Control", then press OK.

Auto idle control can be added to the shortcut menu in the monitor if desired.

Machine Lighting

Beacon Light (if equipped) – Toggles the beacon light ON and OFF. Press the "Menu" button, select "Machine Settings", "Machine Lighting", "Beacon Light", then press OK to toggle between ON and OFF. Beacon light can be added to the shortcut menu in the monitor if desired.

Courtesy Light – Courtesy light allows the machine lighting to stay ON after turning the key switch OFF. Courtesy lights illuminate if the work lights were ON when the key was switched OFF. Press the "Menu" button, select "Machine Settings", "Machine Lighting", "Courtesy Light". The timer is adjustable from 0 to 100 seconds in increment of 5 seconds. Press OK to confirm the selection.

Job Clock

The job clock displays the number of engine running hours that have been accumulated since the last reset. To reset the job clock back to zero, press the "Menu" button, "Machine Settings", "Job Clock", press the RESET button (icon with two parallel lines at a 45 degree angle).

Job Clock can be added to the shortcut menu in the monitor if desired.

Reset Factory Default

Restores factory default settings for the following parameters :

- Joystick Response
- Implement Speed
- Auxiliary Flow 1
- Auxiliary Flow 1 Balance
- Auxiliary Flow 2
- Auxiliary Flow 2 Balance

- Courtesy Light Timer
- Work Tool Select
- Automatic Engine Idle Control
- Cruise Control
- Beacon Light
- Joystick Steering Pattern

To reset, press the "Menu" button, select "Machine Settings", "Reset Factory Default" then OK.

Display Settings

Display settings configure the monitoring system on the machine. To access the display settings press the "Menu" button, select "Display Settings", then select the desired display setting to be adjusted. Available settings include Show Camera (if equipped), Brightness, Clock Adjust (if equipped), Language, Units, Clock Format (if equipped), and Shortcut Settings

Shortcut Settings – Shortcut settings are configurable allowing for direct access to submenu options on the monitoring system using the Navigation Buttons.

The following shortcut settings can be selected :

- Pattern Changer
- Quick Coupler
- Performance
- Camera
- Auto Idle
- Continuous Flow
- Work Tool Select
- Aux Flow 1
- Aux Flow 2
- HVAC
- Radio
- Audio Source
- Shovel Crane (If Equipped)
- Bluetooth ON / OFF
- Tiltrotator
- Cruise Control

- Beacon Light
- Joystick Steering Pattern
- Job Clock
- Blank (none)

HVAC (If Equipped)

Accesses the cab climate control system. Refer to the Air Conditioning and Heating Control section for more information.

Radio (If Equipped)

Accesses the radio controls of the machine. Refer to the Radio section for more details on how to operate.

Information

Accesses the performance and ECM summary submenus.

Performance – Displays sensor parameters available on the machine such as engine speed and pump pressure. To access the performance information press the “Menu” button, select “Information”, then “Performance.”

ECM Summary – Displays software version information for the machine, display, and other electronic components installed on the machine. To access the ECM summary press the “Menu” button, select “Information”, then “ECM summary.”

Service

Includes submenus showing diagnostics and service mode.

Contact your dealer for more information about menu items not disclosed in this manual.

Diagnostics

Reports fault code information used for troubleshooting.

Service Mode

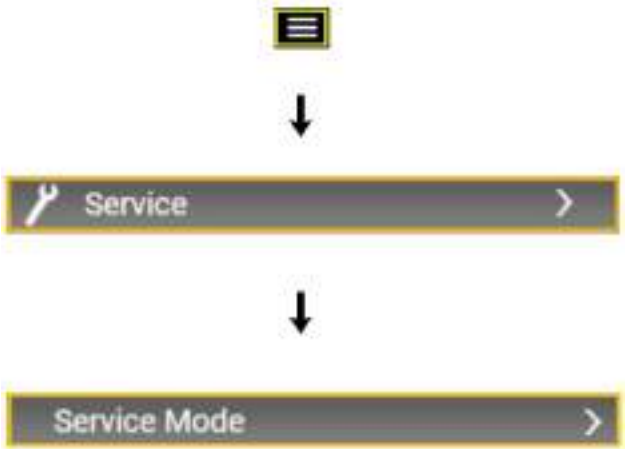


Illustration 341

g06334877

To access the Service Mode Menu options, press the “Menu” button, select “Service”, then “Service Mode”.

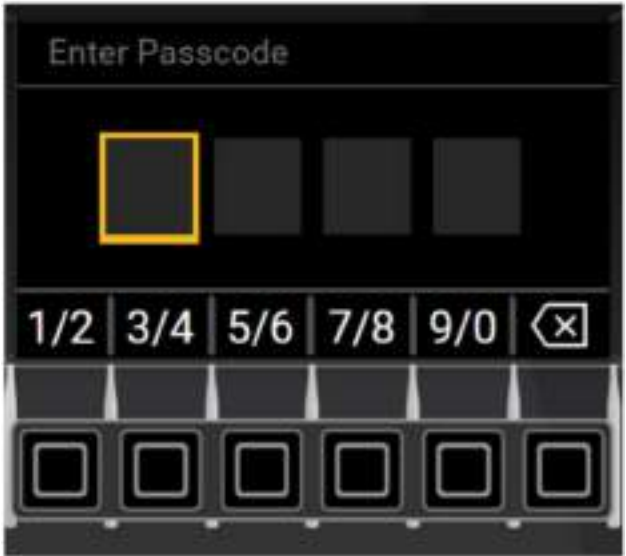


Illustration 342

g06334880

Enter the four-digit service entry password.

Note: Factory set default code is 1234 or 1925.

Thumbwheel Mode

Thumbwheel Mode allows stick to toggle to right thumb roller when in stick-steer mode. Refer to Operation and Maintenance Manual, “Joystick Controls” for more information.

This parameter must be ENABLED for the joystick thumbwheel controls to be used.

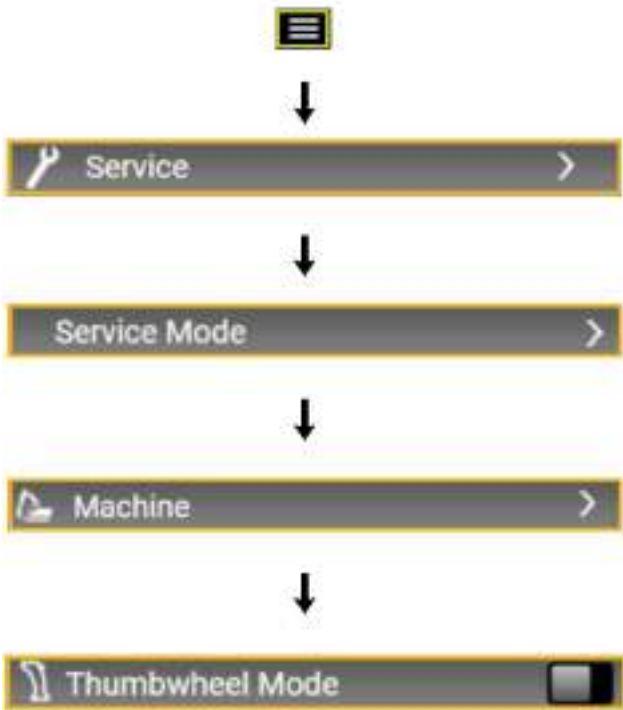


Illustration 343 g06334888

To access the Thumbwheel Mode options, press the “Menu” button, select “Service” , “Service Mode” , “Machine” , then “Thumbwheel Mode” .



Illustration 344 g06334998

To enable the Thumbwheel Mode function, select “Thumbwheel Mode” and press “OK” .

Note: When the indicator is green and the slide is to the right, the feature is activated.

Security

Machine security can be configured to prevent unregistered access to your machine. Additional security features can be configured using the Monitoring System. To access Security features, press the “Menu” button, select “Service” , “Service Mode” , then “Security” . If security is disabled or a standard security level passcode or bluetooth key was used to access the machine, you will be prompted to enter a master security level passcode when accessing the security screens. The default master passcode from the factory is “1111”. This default passcode can be removed after creating a new master passcode.

If security is enabled and a master security level passcode or bluetooth key was used to access the machine, it will proceed directly to the security screens.

Security Enable

Toggleing this setting will turn the security system ON or OFF.

Grace Period

This setting is used to set the duration after key off that the registered user stays logged on to the machine. If the machine is turned ON within this time range, the machine will bypass security access without the use of a Bluetooth key or passcode.

Users / Keys

The Users / Keys category from the Security Menu allows the owner / technician to enter unique passcodes (PINs) and/or Bluetooth keys (each with a unique ID) which allow those authorized users to start and operate the machine. Also, the owner or authorized technician can delete passcode PINs and Bluetooth key IDs of authorized keys and users.



Illustration 345 g06334983

To access the User / Keys options, press the “Menu” button, select “Service”, “Service Mode”, “Security”, then “Users / Keys” .



Illustration 346 g06390456

Add PIN



Illustration 347 g06345288

To add a new 4-digit PIN to the passcode list of authorized users, select “Add PIN” from the “Users / Keys” menu.



Illustration 348

g06345290

Only a user with a “Master” passcode can enter new “Standard” or “Master” passcodes.

Note: Standard passcodes are for operators and technicians - Master passcodes are intended for owners or authorized personnel

Multiple Master passcodes can be added to the Master Passcode list. The default master passcode from the factory is "1111". This default passcode can be removed after creating a new master passcode.

This same strategy applies to the Bluetooth system, with a Master Bluetooth key used to add or remove Bluetooth keys from the respective lists.

Passcode PINs and Bluetooth key IDs can also be added or removed from the respective lists using Cat ET.

Note: A maximum total of 25 passcodes and keys can be added to the machine.



Illustration 349

g06345300

From the Add PIN entry screen, use the number buttons to enter a unique 4-digit passcode number.

Note: Each button can enter two numbers. To enter the number two (2), press the left-most “1/2” button twice, then the highlight will move to the next entry field to the right.

Each time a number is entered, the highlight will automatically move to the next space to the right.

Once all four numbers have been entered, the new passcode will be added to the list of authorized PINs. The display will then return to the Keys/Users Menu.

In the example above, when the operator turns the key start switch to ON, the monitor will display the startup passcode entry screen. When the operator enters “1111”, the MSS will allow the engine to be started.

Remove PIN



Illustration 350 g06345316

To remove a new 4-digit PIN to the passcode list of authorized users, select “Remove PIN” from the “Users / Keys” menu.

From the “Remove PIN” entry screen, use the number buttons to enter the 4-digit passcode number that you wish to remove if equipped with the Performance display or select the 4-digit passcode number you wish to remove if equipped with the Premium display.

Press the “OK” button or tap the center of the Jog Dial (if equipped) to remove the 4-digit passcode number from the list of authorized passcodes.

Add Bluetooth Key



Illustration 351 g06345355

To add a Bluetooth key ID to the list of authorized Bluetooth keys, select “Add Bluetooth Key” from the “Users / Keys” menu.

From the “Users / Keys” menu, use the arrow buttons to highlight the “Add Bluetooth Key” option, then press the “OK” button. The “Add Bluetooth Key” confirmation screen will appear.



Illustration 352 g06345356

Use the arrow buttons to highlight the “Standard” or “Master” option, then press the “OK” button. The “Add Bluetooth Key” screen will be displayed.



Illustration 353

g06345359

Enter the unique 12-digit alpha-numeric ID assigned to the Bluetooth key chip.

The “Add Bluetooth Key” screen is first displayed with all 12 ID spaces blank and the left-most space highlighted. Use the arrow buttons scroll up and down through the numbers 0-9, then alpha characters A-F, which are displayed in the space. When the desired character is displayed in the highlighted space, move to the next space.

Note: The highlight can also be moved left to change a number previously entered.

Repeat this process for all 12 spaces. When all 12 spaces have been filled with the unique 12-digit Bluetooth key ID, press the “OK” button or tap the center of the Jog Dial (if equipped) to enter the Bluetooth key ID to the list of authorized Bluetooth IDs.

The display will return to the “Users / Keys” Menu.

Remove Bluetooth Key



Illustration 354

g06345381

To remove a 12-digit Bluetooth key ID from the list of authorized Bluetooth key IDs, select “Remove Bluetooth Key” from the “Users / Keys” menu.

Enter the unique 12-digit alpha-numeric ID assigned to the Bluetooth key ID that you wish to remove if equipped with the Performance display or select the Bluetooth Key ID that you wish to remove if equipped with the Premium display.

Press the “OK” button or tap the center of the Jog Dial (if equipped) to remove the Bluetooth key ID from the list of authorized Bluetooth IDs.

The display will return to the “Users / Keys” Menu.

Display System Mode

The Display System Mode can be changed between Normal and Simplified. When the mode is set to Normal, all available display settings are shown and available for adjustment. When the mode is set to Simplified, the display settings below are hidden and not available for adjustment:

- Fine Grading
- All joystick response settings
- Advanced implement speed settings (overall setting still available)
- Forward travel trim
- Reverse travel trim
- Auxiliary 1 flow balance

Operation Section

Fuel Transfer Pump (Refueling)

- Auxiliary 2 flow balance
- Job clock
- ECM summary
- Machine configurations within service mode

The Simplified Display System Mode is intended for customers who want to limit the adjustability of the machine.

To access the Display System Mode options, press the "Menu" button, select "Service", "Service Mode", then "Display System Mode".

Monitor Wake-up Feature

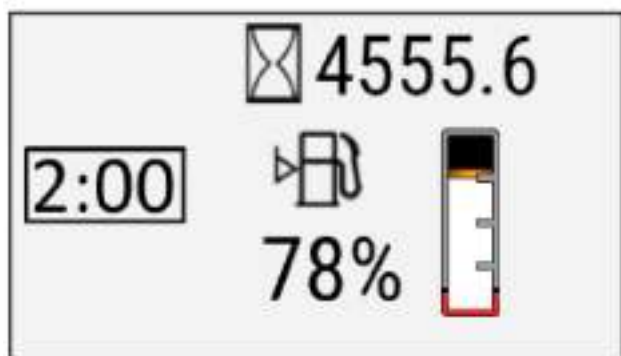


Illustration 355

g06366070

Monitor wake-up screen example

Pressing any navigation button on the monitor will display the service hours of the machine and actual fuel level for 2 minutes.

Note: This feature can also be activated by pressing the monitor wake-up button located below the seat near the door (if equipped).

i08259325

Fuel Transfer Pump (Refueling)

(If Equipped)

SMCS Code: 1256

Use the following procedure to pump fuel and store the hose.

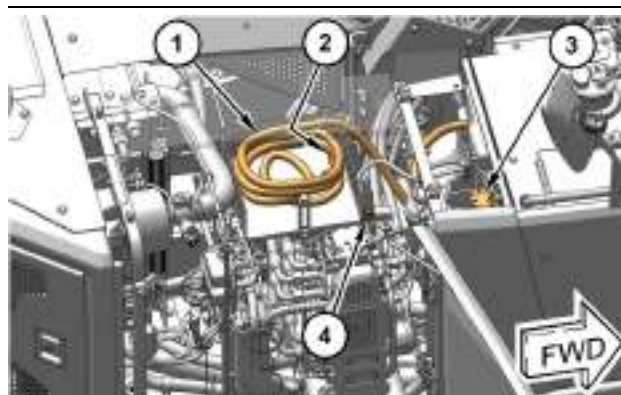


Illustration 356

g06277685

- (1) Suction hose
- (2) Suction valve
- (3) Electric refueling pump
- (4) ON/OFF switch



ON/OFF Switch – Push the ON/OFF switch to activate or deactivate the fuel transfer pump.

If one of the following conditions occur, the fuel transfer pump will not activate and/or stop operating:

- Battery disconnect switch is in the OFF position
- Fuel tank level is full

Use the following procedure to pump fuel and store the hose.

1. Park the machine on a level surface. Move the hydraulic lockout control to the LOCKED position. Stop the engine
2. Open the access that is on the right side of the machine.

i08369586

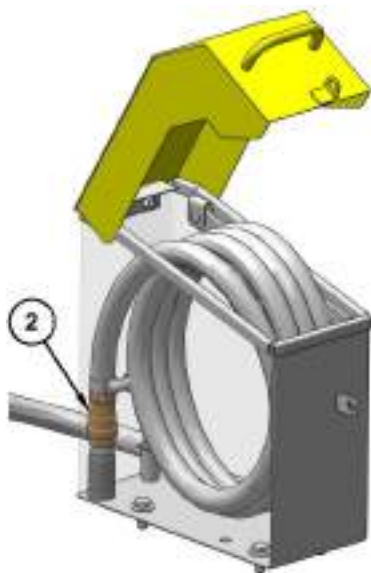


Illustration 357

g06338596

3. Suction valve (2) is at the end of hose (1).

Note: Suction valve (2) is a check valve and ensures that fuel only flows toward the tank.

Properly insert the end of the suction valve into a container of fuel.

4. Place switch (4) in the top position to activate the fuel transfer pump. Release the switch within 2 seconds and the pump will continue to operate until the fuel tank is full. If the switch is held in the TOP position for more than 2 seconds, the fuel transfer pump will continue to operate, regardless of the level in the fuel tank, until the switch is released. When the switch is released, it will return to the MIDDLE position.
5. When refueling is complete, place the switch in the BOTTOM position. Placing the switch in the BOTTOM position at any time will turn the fuel transfer pump off.
6. Wind the hose and store in the hose container.

NOTICE

To prevent hose damage, do not coil the hose in a tight radius.

7. Close the access door.
8. Install the fuel tank cap onto the fuel tank.

Radio

SMCS Code: 7338

The radio is integrated into the monitoring system. All the radio controls are adjusted using the monitor. Refer to Operation and Maintenance Manual, Monitoring System. The actual radio amplifier module is located in the headliner behind the operator seat.

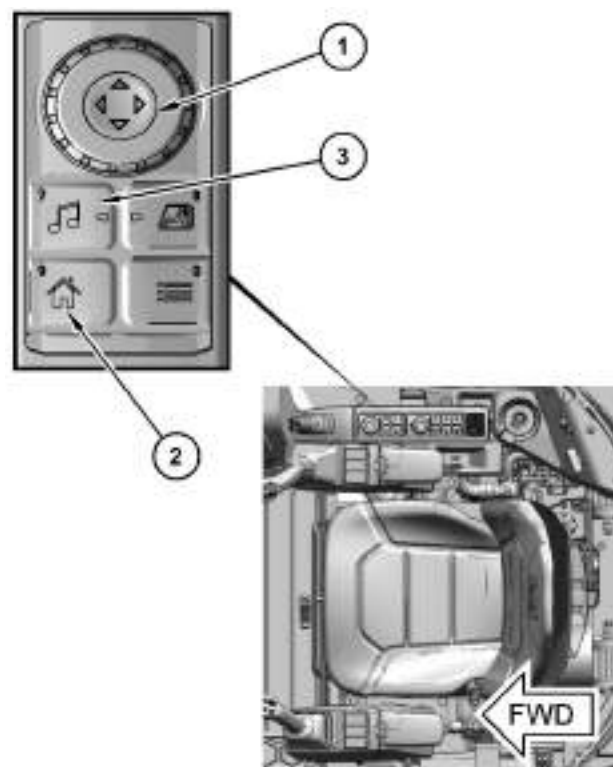


Illustration 358

g06644125

- (1) Jog dial
(2) Home button
(3) Radio button

The audio menu can be directly accessed by pressing radio button (3) on the right side switch panel. Input selections can be made using jog dial (1) or using the monitor navigation buttons. Home button (2) can be used to return to the main screen.



Illustration 359

g06348419

Pressing radio button (3) will go directly to the radio screen.

Using the jog dial, select the radio portion of the home screen (4) and press the jog dial inward to navigate to the radio screen.



Illustration 361

g06334464

Radio screen

- (5) Station
- (6) Seek
- (7) Source list menu
- (8) Scan
- (9) Preset stations
- (10) Radio settings menu
- (11) Volume control

Station (5) – Identifies the current station setting.

Seek (6) – The seek is used to automatically find the next radio station with a strong/clear signal.

Source list menu (7) – Allows the user to change the source of input. (AM, FM, AUX, DAB (if equipped), or Bluetooth)

Scan (8) – Automatically sweeps through the broadcast frequencies looking for signal.

Preset stations (9) – The preset stations store favorite radio stations for the operator. To set a station, tune to the desired station. Press and hold the preset number you want to assign to that station. Once a beep is heard, release the button. The button will indicate the preset frequency.

Radio settings menu (10) – Pressing this button leads to the radio settings menu.

Volume control (11) – The volume control is used to raise or lower the audio volume.

Radio Settings Menu

To access the radio settings menu, select “Settings” from the radio screen.

The following selections are available in the radio settings menu:



Illustration 360

g06334467

To navigate to the radio screen from the main screen, press the menu button and select “Radio” .

- Equalizer
- Bluetooth (Audio)



Illustration 362

g06334476

The equalizer menu consists of the following items:

Treble – Allows the user to adjust the treble.

Bass – Allows the user to adjust the bass.

Balance – Allows the user to adjust the balance between speakers.

Bluetooth

Includes setup option for pairing devices to your machine radio.

Bluetooth

Toggle switch enables Bluetooth for audio pairing.

Pairing

This setting makes the machine radio discoverable for pairing on Bluetooth devices.

A maximum of 5 user devices for the performance display and 8 user devices for the premium display can be paired to the machine.

Paired Devices

This setting provides a list of previously paired devices supported by your machine. The previously paired devices can also be removed using this menu option.

Selection Method

Most settings can be made using the monitor screen or by using the jog dial. Some radio and some air conditioning/heating controls can only be performed using the jog dial. When using the monitor screen, simply touch the button below the icon you want to select. When using the jog dial, rotate the dial to switch to different selections within the screen. Press the jog dial downward to choose a selection.

When using the jog dial to set the volume or tuner, rotate the dial clockwise to increase and counter-clockwise to decrease. Press inward on the dial to enter the desired setting.

AUX Operation



Illustration 363

g06277738

1. To play music from a device such as an MP3 player or a phone, connect the device using an auxiliary cable.
2. Select AUX to play the music from the device. The music should be playing over the radio speakers if properly connected. Adjust the volume as necessary.

Note: The USB port is for charging purposes only.

i08259327

Air Conditioning and Heating Control

SMCS Code: 7304; 7320; 7337

Refer to Maintenance Interval Schedule for Periodic Maintenance of the heating and air conditioning system.



Illustration 364 g06348804

- (1) Jog dial
- (2) Heating and air conditioning button
- (3) Home button

Air conditioning and heating functions are controlled through the monitor. The heating and cooling menu can be directly accessed by pressing button (2) on the right side switch panel. Input selections can be made using jog dial (1) or using the monitor. Home button (3) can be used to return to the main screen.



Illustration 365 g06348808

Press the Air Conditioning and Heating button (2) to go directly to the air conditioner screen.

To navigate to the air conditioner screen from the main screen, press menu button (4).



Illustration 366 g06334491

Access the screen by selecting the "HVAC" box on the display screen. The jog dial is standard on any machine with HVAC or radio since those functions require the jog dial to operate them.

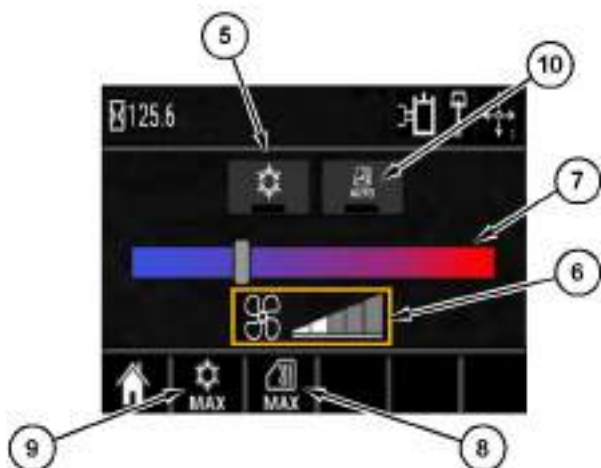


Illustration 367

g06605342

Air conditioner screen

- (5) Air Conditioning indicator
- (6) Fan blower speed control
- (7) Temperature control
- (8) Maximum defrost
- (9) Maximum A/C
- (10) Auto temperature control

Air Conditioning indicator (5) – Illuminates when the air conditioning system is ON.

Fan blower speed control (6) – The blower control is used to increase or decrease the desired blower speed.

Temperature control (7) – The temperature control is used to raise or lower the air temperature coming out of the vents.

Maximum Defrost(8) – Pressing this button sets the blower fan to max speed, turns the air conditioning on and changes the temperature to the hottest setting. Use this setting to remove steam and frost from the windows.

Maximum A/C (9) – Pressing this button sets the blower fan to max speed, turns the air conditioner on and changes the temperature to the coldest setting.

Auto temperature control (10) – Illuminates when the automatic temperature control feature is active.

Automatic Temperature Control

The control will automatically adjust the air conditioner, heater, and fan control to achieve the desired temperature. The fan can be adjusted manually while in this mode by adjusting the setting using the jog dial, while the system will still control the heater and air conditioning settings.



Illustration 368

g06348812

When automatic temperature control is active, the digital temperature setting is displayed.

Selection Method

Most settings can be made using the display screen or by using the jog dial. Some radio and some air conditioning/heating controls can only be performed using the jog dial.. When using the display screen, simply press the button below the icon you want to select. When using the jog dial, rotate the dial to switch to different selections within the screen. Press the jog dial downward to choose a selection.

When using the jog dial to set the temperature or blower speed, rotate the dial clockwise to increase and counter-clockwise to decrease. Press downward on the dial to enter the desired setting.

Air Vent Locations

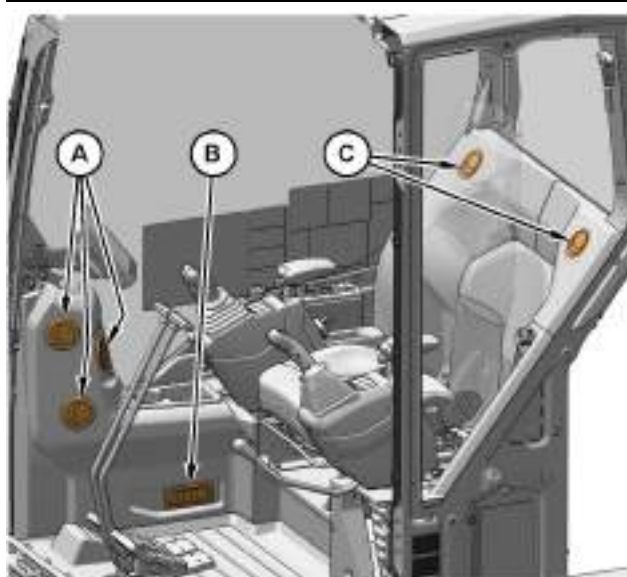


Illustration 369

g06278002

- (A) Front air vents
- (B) Floor air vents
- (C) Rear air vents

Redirect the louvers for air outlets (A), (B), and (C) by hand to the desired direction.

i07705261

Mirror

SMCS Code: 7319



Adjust all mirrors as specified in the Operation and Maintenance Manual. Failure to heed this warning can lead to personal injury or death.

Note: Your machine may not be equipped with all the mirrors that are described in this topic.

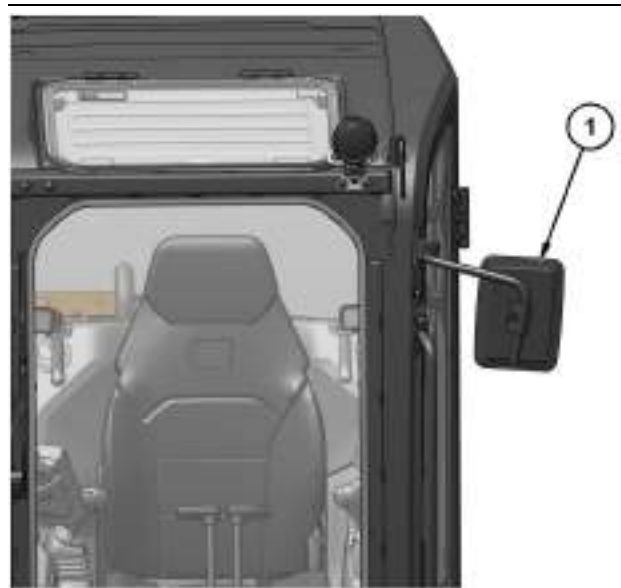


Illustration 370

g06278048

- (1) Cab mirror

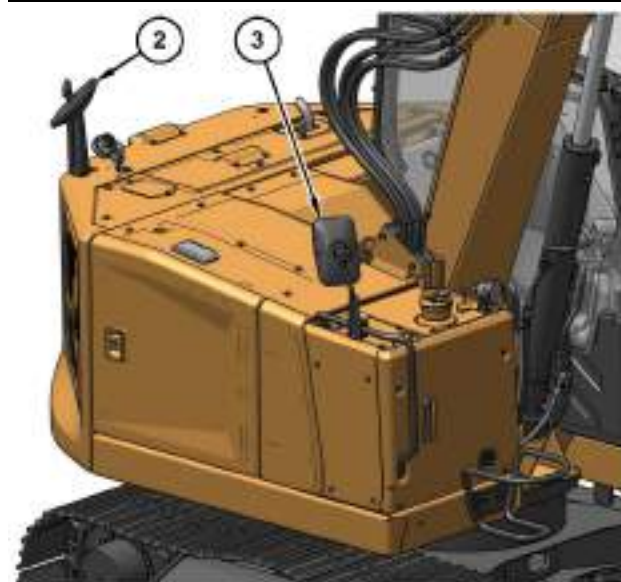


Illustration 371

g06278056

- (2) Rear counterweight-mounted mirror
- (3) Right side tank-mounted mirror

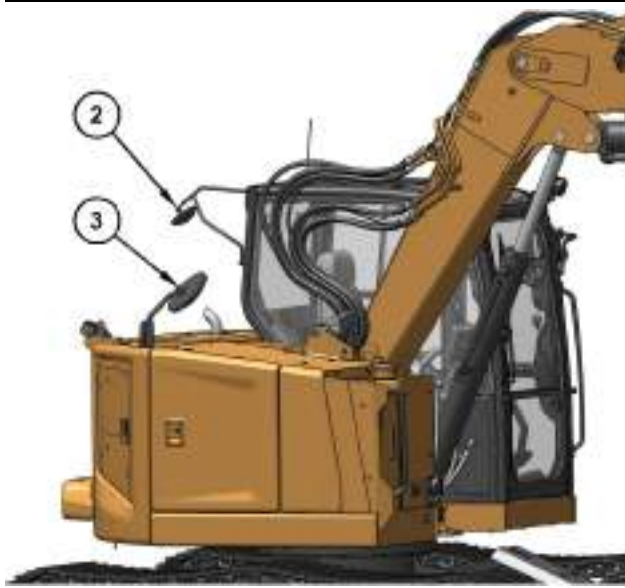


Illustration 372

g06285586

- (2) Rear cab-mounted mirror
(3) Right side-mounted mirror

Mirrors provide additional visibility around your machine. Make sure that the mirrors are in proper working condition and that the mirrors are clean. Adjust all mirrors at the beginning of each work period and adjust the mirrors when you change operators.

Modified machines or machines that have additional equipment or attachments may influence your visibility.

Mirror Adjustment

- Park the machine on a level surface.
- Lower the work tool to the ground.
- Move the hydraulic lockout control to the LOCKED position. For further details on this procedure, refer to Operation and Maintenance Manual, "Operator Controls".
- Stop the engine.
- Adjust rear view mirrors to provide visibility behind the machine at a maximum distance of 30 m (98 ft) from the rear corners of the machine.

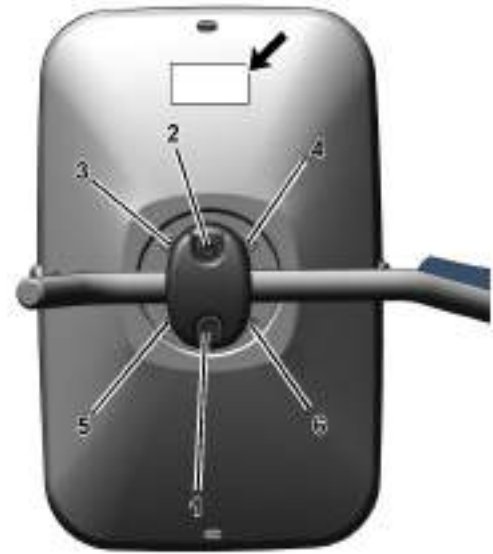


Illustration 373

g06220634

Tightening sequence

After adjustment of the mirror angle, make sure that the CAT logo is at the top.

It may be necessary to periodically tighten the mirror mounting bolts. If the bolts are loose, tighten the bolts in the sequence shown in Illustration 373. Tighten bolts (1) and (2) to $11 \pm 2 \text{ N}\cdot\text{m}$ ($8.1 \pm 1.5 \text{ lb}\cdot\text{ft}$).

Tighten the bolts (3) through (6) to $2 \pm 0.4 \text{ N}\cdot\text{m}$ ($1.5 \pm 0.3 \text{ lb}\cdot\text{ft}$).

Left Side View Mirror on the Cab (1)



Illustration 374

g06223279

If equipped, adjust the left side view mirror on the cab (1) so the left side of the cab, access door, and rear of left track can be seen from the operator seat. A view of at least 1 m (3.3 ft) from the side of the machine should be seen from the operator seat. Additionally, provide as much visibility to the rear as possible.

Rear Mirror (2)



Illustration 375

g06278128

Counterweight-mounted mirror (If Equipped)



Illustration 376

g06285593

Cab-mounted mirror (If Equipped)

If equipped, adjust the rear mirror on the counterweight (2) so the right track can be seen from the operator seat. A view of at least 1 m (3.3 ft) from the rear of the machine should be seen from the operator seat.

Right Side Mirror (3)



Illustration 377

g06278150

Tank-mounted mirror (If Equipped)

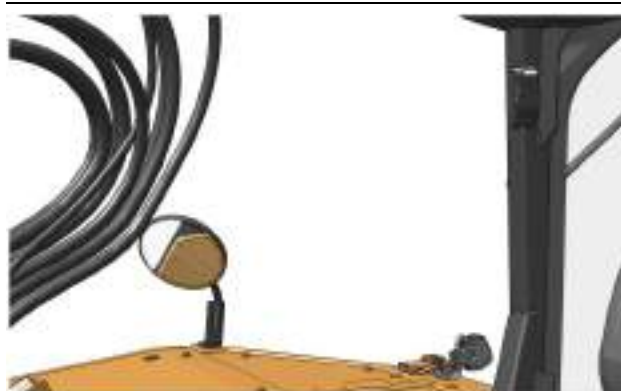


Illustration 378

g06285607

Side-mounted mirror (If Equipped)

Adjust the tank or right side mirror so a view of at least 1 m (3.3 ft) from the side of the machine can be seen from the operator seat.

i07307697

Window (Front)

SMCS Code: 7310-FR

To provide full ventilation inside the cab, the upper window and the lower window can be fully opened.

WARNING

Crushing Hazard! Stay clear (extremities, clothing) of the window run and of the window. Always open and close the front window using both handles. Always make sure the window locks into the recesses as the window is open and closed. Be careful not to hit the front window with your head as the front window is opened and closed.

Stop the engine before opening or closing the front window in order to avoid any unintentional operation or movement of the machine.

WARNING

When opening or closing the windows, be extra careful to prevent any personal injury. The hydraulic lockout control must be in the LOCKED position in order to prevent any possibility of sudden movement of the machine due to inadvertent contact with the hydraulic control(s).

Do not change the position of the window until the following items have been done:

- Park the machine on a level surface.
- Lower the work tool to the ground.
- Move the hydraulic lockout control to the LOCKED position.
- Stop the engine.

Perform the following procedure to vent the upper window.

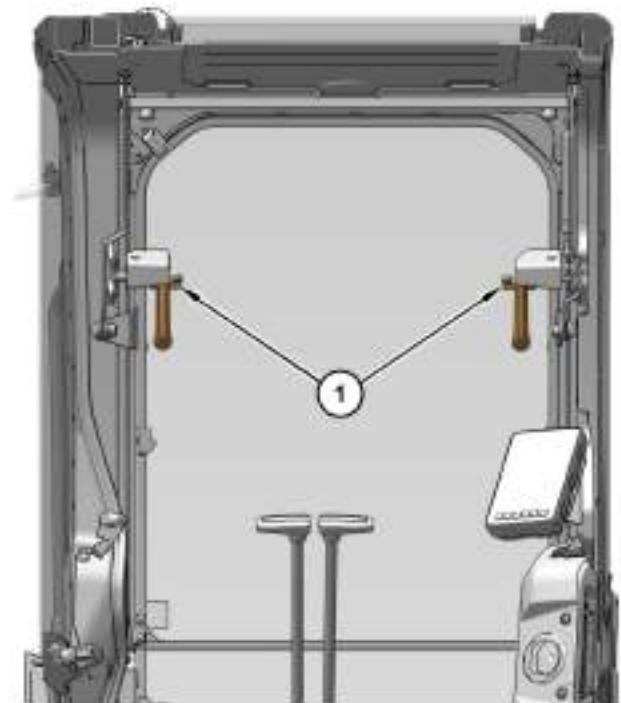


Illustration 379

g06278182

(1) Release lever

1. Release the auto-lock latches by pulling release levers (1) on the window handles.
2. Holding both handles on the window frame, pull the window upward.
3. Hold both handles and move the window into the storage position until the auto-lock latches near the ceiling are engaged.

Perform the following procedure to close the upper window.

1. Release the auto-lock latches by pulling release levers (1) on the window handles.
2. Holding both handles on the window frame, pull the window downward.
3. Hold both handles and move the window into the closed position until the auto-lock latches near the front of the machine engage.

Perform the following procedure to vent the lower window.

i07308015

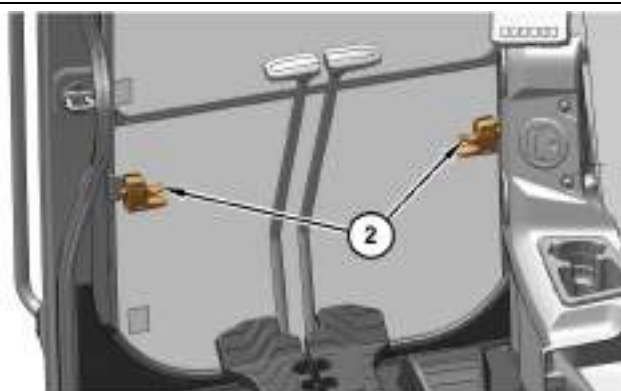


Illustration 380

g06278187

(2) Release lever

1. Release the auto-lock latches by pushing release levers (2) on the window handles.
2. Holding both handles on the window frame, pull the window upward.
3. Hold both handles and move the window into the storage position until the auto-lock latches near the top window are engaged.

Perform the following procedure to close the upper window.

1. Release the auto-lock latches by pulling release levers (2) on the window handles.
2. Holding both handles on the window frame, pull the window downward.
3. Hold both handles and move the window into the closed position until the auto-lock latches near the front of the machine engage.

Cab Door

SMCS Code: 7308



Illustration 381

g06278510

To open the cab door from the outside of the cab, pull outward on the door handle.

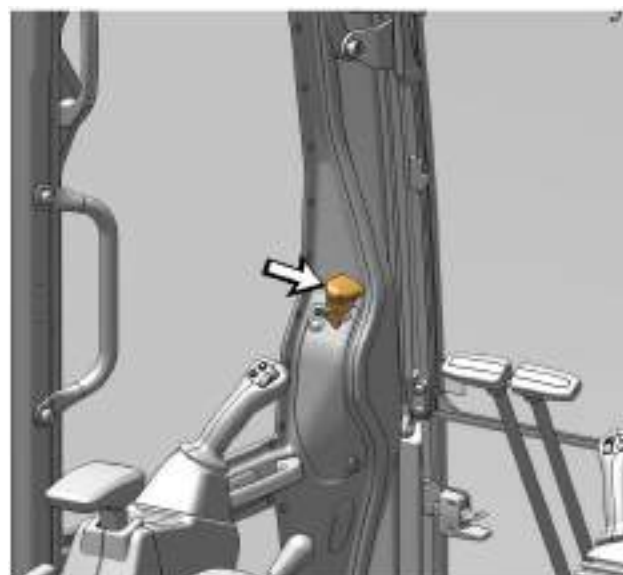


Illustration 382

g06278514

To open the cab door while inside the cab, push forward on the lever for the cab door latch.

For additional ventilation, open the cab door all the way to engage the catch on the exterior wall of the cab.

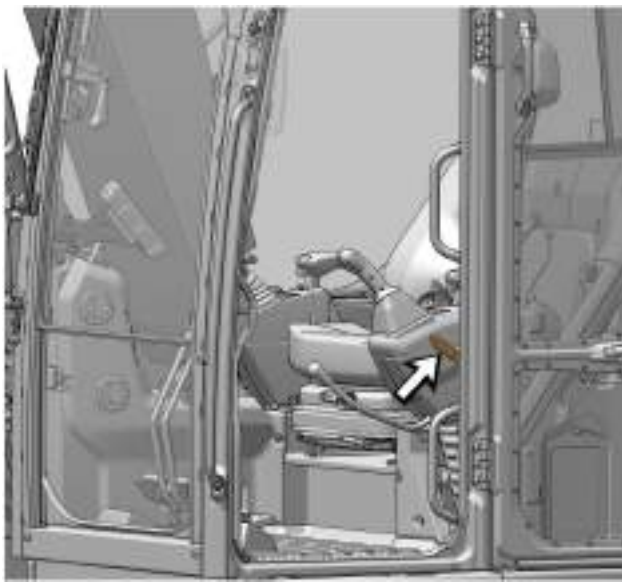


Illustration 383

g06278520

To release the cab door from the catch, pull downward on the cab door release lever.

i08259701

Joystick Controls (One-Button (If Equipped))

SMCS Code: 5705

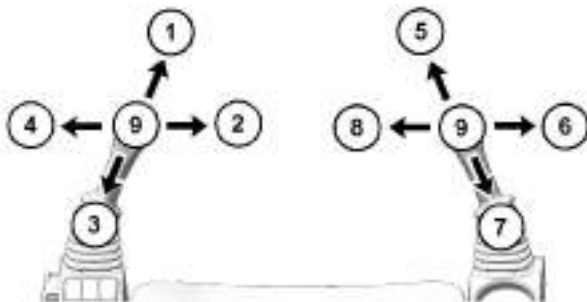


Illustration 384

g06180324

- (1) STICK OUT
- (2) SWING RIGHT
- (3) STICK IN
- (4) SWING LEFT
- (5) BOOM LOWER
- (6) BUCKET DUMP
- (7) BOOM RAISE
- (8) BUCKET CLOSE
- (9) HOLD

When you release the joysticks from any position, the joysticks will return to HOLD position (9). Movement of the upper structure will stop.

Two functions may be performed at the same time by moving a joystick diagonally.

The machine control pattern is initially set at the factory to the excavator pattern system, as shown. The pattern on the left pertains to the left joystick and the pattern on the right pertains to the right joystick.

The machine control pattern can be varied. Refer to Operation and Maintenance Manual, "Joystick Controls Alternate Patterns" for more information.

Joystick Configurations

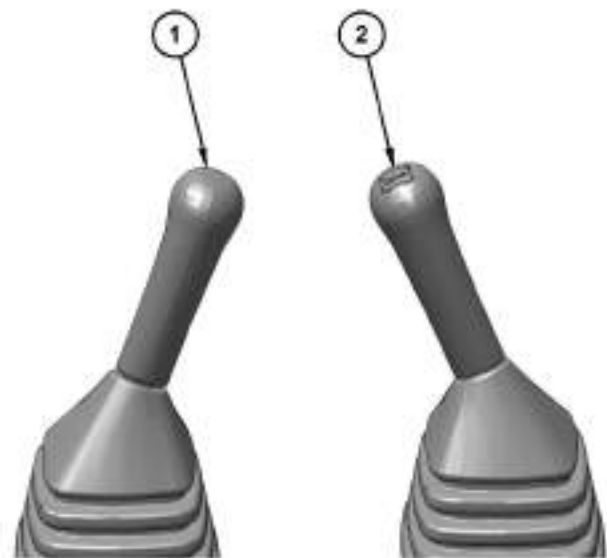


Illustration 385

g06285629

Slim Joystick Controls

- (1) Left joystick switch
- (2) Right joystick switch

Table 46

Joystick Configurations		
Switch Location	Machine Configuration	
	Joystick Steering Mode OFF	Joystick Steering Mode ON
1	Joystick Steering Mode On/Off	Joystick Steering Mode On/Off
2	Horn	Horn
Left Joystick	Stick / Swing	Travel
Right Joystick	Boom / Bucket	Boom / Bucket / Blade (Configurable)



Illustration 386

g06285635

Machines with this type of joystick require a separate rocker switch for changing travel speed.

This switch is directly behind the right joystick.

Note: These machines will have redundant travel speed control on the blade lever for machines with a blade.

Left Joystick Controls

Joystick Steering Mode Button (1)

Push button (1) then press the confirmation button on the monitoring system using the jog dial or display to change the controls of the right joystick and the left joystick to joystick steering mode. The confirmation process must be completed after every key cycle of the machine.

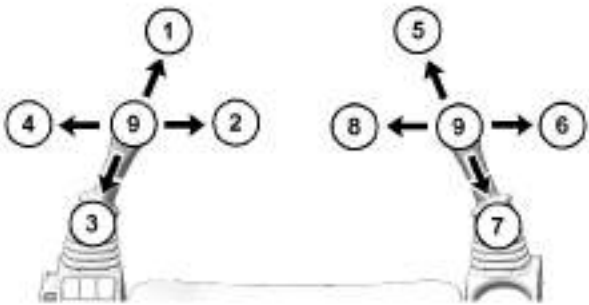


Illustration 387

g06180324

Joystick steering pattern A

- (1) TRAVEL FORWARD
- (2) COUNTER-ROTATE CLOCKWISE
- (3) TRAVEL REVERSE
- (4) COUNTER-ROTATE COUNTERCLOCKWISE
- (5) BOOM LOWER
- (6) BUCKET DUMP
- (7) BOOM RAISE
- (8) BUCKET CLOSE
- (9) HOLD

Once activated, the joystick steering light will illuminate as defined in the “Monitor System” section. The left joystick functionality is modified as shown in Illustration 387 . This control pattern is identified as joystick steering pattern A.

Note: Refer to Table 46 for additional control changes.

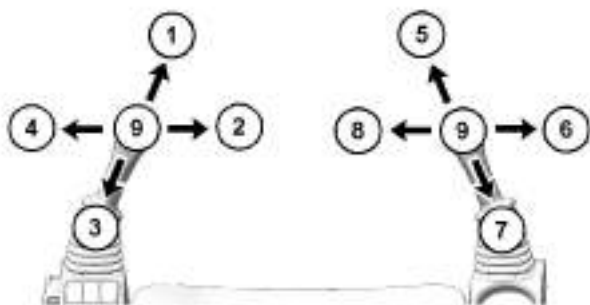


Illustration 388

g06180324

Joystick steering pattern B

- (1) TRAVEL FORWARD
- (2) COUNTER-ROTATE CLOCKWISE
- (3) TRAVEL REVERSE
- (4) COUNTER-ROTATE COUNTERCLOCKWISE
- (5) BLADE LOWER
- (6) ANGLE BLADE RIGHT
- (7) BLADE RAISE
- (8) ANGLE BLADE LEFT
- (9) HOLD

While in joystick steering mode, changing an alternate control pattern for the right joystick is possible. This pattern is identified as joystick steering pattern B. pattern. The following image details the control of the machine using blade control on the right joystick lever.

To change the joystick steering pattern between A and B, press the “Menu” button, select “Machine Settings”, “Control Mode”, “Joystick Steering Pattern”. Excavator (pattern A) or Blade (pattern B) can be selected.

Right Joystick Controls**Horn (2)**

Horn (2) – The horn button is on the right side joystick. Depress the horn button to sound the horn. Use the horn before starting the engine, or for alerting or signaling personnel.

i08259706

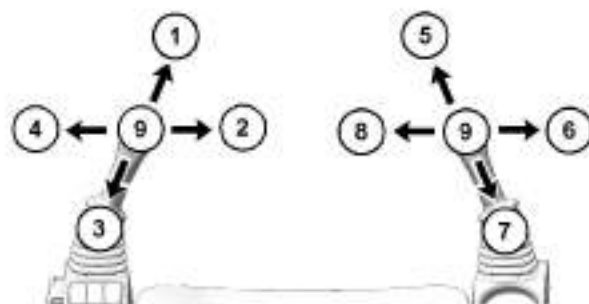
Joystick Controls**SMCS Code:** 5705

Illustration 389

g06180324

- (1) STICK OUT
- (2) SWING RIGHT
- (3) STICK IN
- (4) SWING LEFT
- (5) BOOM LOWER
- (6) BUCKET DUMP
- (7) BOOM RAISE
- (8) BUCKET CLOSE
- (9) HOLD

When you release the joysticks from any position, the joysticks will return to HOLD position (9). Movement of the upper structure will stop.

Two functions may be performed at the same time by moving a joystick diagonally.

The machine control pattern is initially set at the factory to the excavator pattern system, as shown. The pattern on the left pertains to the left joystick and the pattern on the right pertains to the right joystick.

The machine control pattern can be varied. Refer to Operation and Maintenance Manual, “Joystick Controls Alternate Patterns” for more information.

Joystick Configurations

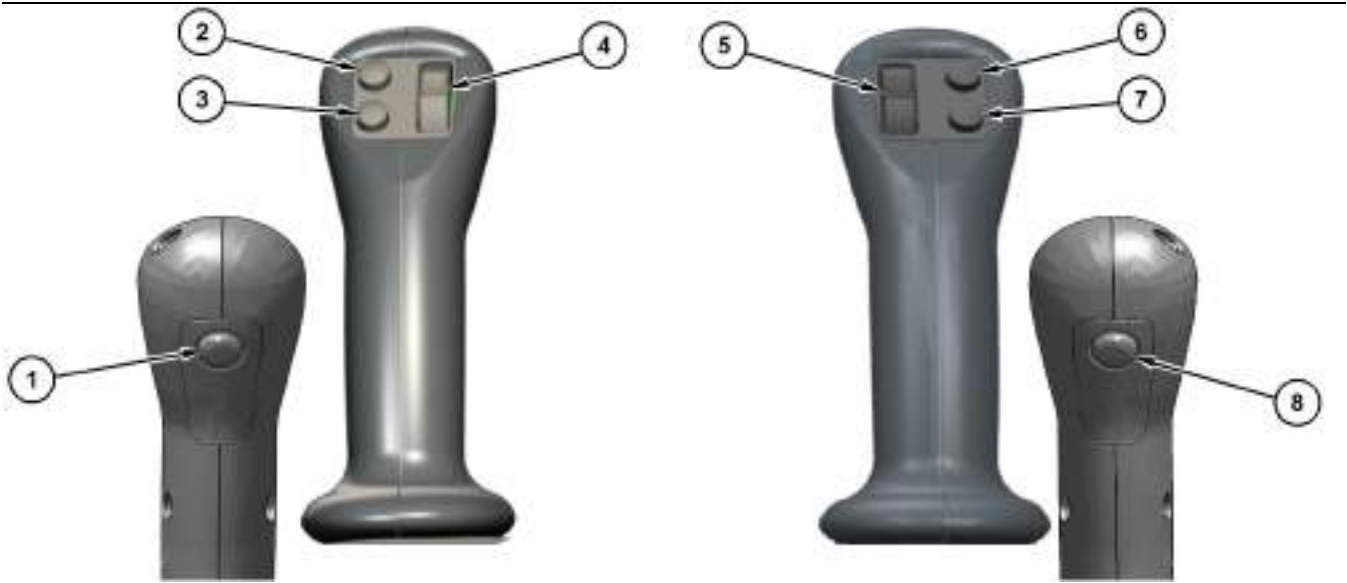


Illustration 390 g06285624

Vertical Slider Joystick Controls

- (1) Left joystick trigger switch
(2) Left joystick switch 1
(3) Left joystick switch 2
- (4) Left joystick thumbwheel
(5) Right joystick thumbwheel
(6) Right joystick switch 1
- (7) Right joystick switch 2
(8) Right joystick trigger switch

Table 47

Joystick Configurations		
Switch Location	Machine Configuration	
	Joystick Steering Mode OFF	Joystick Steering Mode ON
1	Inactive	Cruise Control
2	Boom Swing / Aux 2 Select	House Swing / Aux 2 Select
3	Joystick Steering Mode On/Off	Joystick Steering Mode On/Off
4	Boom Swing / Aux 2 Flow Control	House Swing / Aux 2 Flow Control
5	Aux 1 Flow Control	Aux 1 Flow Control / Stick Control (Configurable)
6	Horn	Horn
7	Travel Speed	Travel Speed
8	Inactive	Inactive / Blade Float / Thumbwheel (5) toggle
Left Joystick	Stick / Swing	Travel
Right Joystick	Boom / Bucket	Boom / Bucket / Blade (Configurable)

Left Joystick Controls

Trigger Switch (1)

Button (1) will only function in joystick steering mode. When in joystick steering mode this button activates cruise control. Cruise control maintains forward or reverse ground speed when the joystick is in the hold position.

Cruise control is available using the Monitor (see "Monitoring System" for details). Cruise control must first be enabled using the monitoring system.



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 mount a moving machine. Do not dismount a moving machine. Never jump off the machine. Do not carry tools or supplies when you try to mount the machine or when you try to dismount the machine. 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.

Cruise control is disabled by any of the following:

- moving the left joystick forward or reverse after placing the joystick in the hold position.
- pressing button (1).
- moving the travel pedals.
- pressing button (3).
- hydraulic lockout control lever is raised to the lockout position.

Boom Swing / 2nd Auxiliary Button (2)

Button (2) will determine which function thumb wheel (4) controls.

The default setting of thumb wheel (4) is boom swing function (if equipped).

Joystick Steering Mode Button (3)

Push button (3) to activate joystick steering mode, then press the confirmation button on the monitoring system using the jog dial or the display. The confirmation process must be completed after every key cycle of the machine.

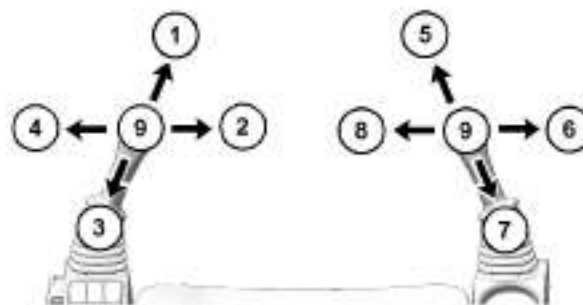


Illustration 391

g06180324

Joystick steering pattern A

- (1) TRAVEL FORWARD
- (2) COUNTER-ROTATE CLOCKWISE
- (3) TRAVEL REVERSE
- (4) COUNTER-ROTATE COUNTERCLOCKWISE
- (5) BOOM LOWER
- (6) BUCKET DUMP
- (7) BOOM RAISE
- (8) BUCKET CLOSE
- (9) HOLD

Once activated, the joystick steering light will illuminate as defined in the "Monitor System" section. The left joystick functionality is modified as shown in Illustration 391. This control pattern is identified as joystick steering pattern A.

Note: Refer to Table 47 for additional control changes.

In joystick steering mode, machine swing is available on the left thumb roller in place of boom swing (if equipped). Machine swing and aux 2 (if equipped) can toggle function control on the left thumbwheel while in joystick steering mode.

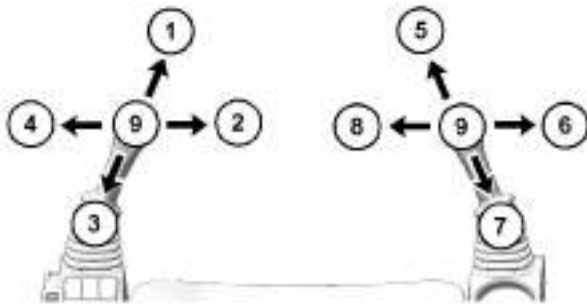


Illustration 392

g06180324

Joystick steering pattern B

- (1) TRAVEL FORWARD
- (2) COUNTER-ROTATE CLOCKWISE
- (3) TRAVEL REVERSE
- (4) COUNTER-ROTATE COUNTERCLOCKWISE
- (5) BLADE LOWER
- (6) BLADE TILT CLOCKWISE
- (7) BLADE RAISE
- (8) BLADE TILT COUNTERCLOCKWISE
- (9) HOLD

While in joystick steering mode, changing an alternate control pattern for the right joystick is possible. This pattern is identified as joystick steering pattern B. The following image details the control of the machine using blade control on the right joystick lever.

To change the joystick steering pattern between A and B, press the "Menu" button, select "Machine Settings", "Control Mode", "Joystick Steering Pattern". Excavator (pattern A) or Blade (pattern B) can be selected.

While in joystick steering mode with pattern B, the blade can be placed into float by moving the right joystick FORWARD and then pressing the right joystick trigger switch (8) while the right joystick is still FORWARD. The blade will remain in float after returning the right joystick to the HOLD position. Pressing the right joystick trigger switch again, moving the right joystick out of HOLD or moving the dozer blade lever out of HOLD will disable blade float.

Advanced Joystick Steering Mode: An advanced control pattern is available in joystick steering mode using the service mode of the display (see "Monitoring System – Thumbwheel Mode" for setup details). When Thumbwheel Mode is set to enabled and Joystick Steering Pattern A is selected, the trigger on the right joystick can allow for toggling between aux 1 and stick function on the right joystick thumbwheel.

Boom Swing / 2nd Auxiliary Flow Control (4)

If thumb wheel (4) is changed to second auxiliary control, the thumb wheel is used to operate work tools such as a grapple. Refer to Operation and Maintenance Manual, "Work Tool Control" for more information.

If thumb wheel (4) is changed to boom swing function, refer to the information below.

The boom swing control is used to swing the boom to the right or to the left.



Swing Left – Pull downward on the left thumbwheel to swing the boom to the LEFT.



Swing Right – Push upward on the left thumbwheel to swing the boom to the RIGHT.

Note: Operate the boom swing thumbwheel carefully until you become familiar with how boom swing reacts to the controls.

Right Joystick Controls

Primary Auxiliary Control (5)

The primary auxiliary control thumb wheel is used to control the work tools. For more information on the auxiliary controls, refer to Operation and Maintenance Manual, "Work Tool Control".

This thumbwheel can be toggled to activate the stick using button (8) while in joystick steering mode if right joystick is configured to Boom/Bucket by using advanced settings in the monitoring system.

Horn (6)



Horn (6) – The horn button is on the right side joystick. Depress the horn button to sound the horn. Use the horn before starting the engine, or for alerting or signaling personnel.

Travel Speed Control (7)

Depress the travel speed button to change between low and high travel speed. When high travel speed is selected, the high speed indicator will illuminate on the monitor.

Always travel at slow speeds on slopes and rough ground.

i08437189

i07483884

VA Boom Controls (If Equipped)

SMCS Code: 5461-VAR

WARNING

Do not operate the boom adjustment foot pedal while roading the machine. Boom movement can cause personal injury or death.

NOTICE

When digging at a low depth with a VA boom there is a possibility the VA boom cylinder could hit the front of the machine. Always check for interference with the VA boom cylinder in order to prevent machine damage.

The VA boom extends the working range of the machine by hydraulically increasing or reducing the angle of the boom. The VA boom is equipped with a hydraulic check valve to prevent the boom from falling in case a hydraulic line breaks.

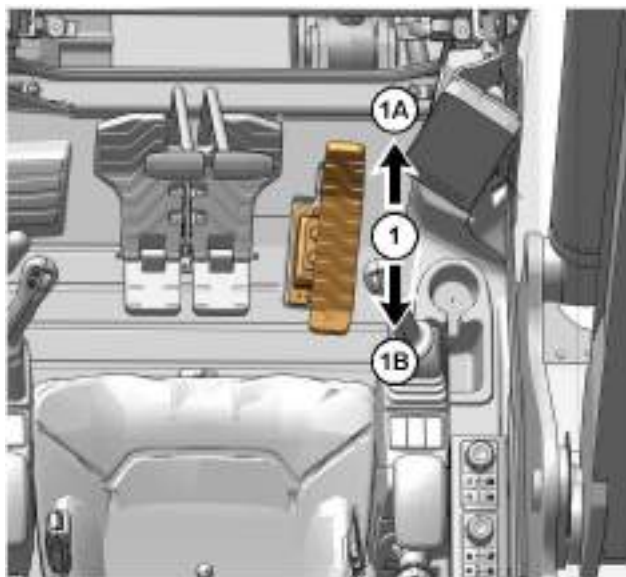


Illustration 393

g06334902

The VA boom pedal is on the right side of the cab.



VA Boom EXTEND (1A) – Push down on the front of the pedal to extend the boom.



VA Boom RETRACT (1B) – Push down on the rear of the pedal to retract the boom.

Work Tool Control

SMCS Code: 6700

Auxiliary lines are equipped with coupler assemblies. Wipe all coupler assemblies before you connect the work tools. The auxiliary lines must be relieved of pressure in order to connect the coupler assemblies to the work tool. Relieve the pressure in the auxiliary hydraulic lines by performing the following steps:

1. Operate the machine to charge the accumulator.
2. Lower implements to the ground.
3. Turn the engine off and turn the key switch to the ON position without starting the engine.
4. Ensure the Hydraulic Lockout control is in the UNLOCKED position to provide function to the hydraulic circuits.
5. Actuate the auxiliary circuit in both directions several times.

Note: Pressure can build up in the auxiliary lines if the attachment is not coupled/uncoupled immediately after the pressure has been released.

One-Way Flow

The following information pertains to work tools that require hydraulic oil flow in one direction. Hydraulic hammers are an example of work tools that require hydraulic oil flow in one direction.



Illustration 394

g06287026

Right joystick thumb wheel

Variable Speed – Move the thumb wheel upward to activate the work tool. Move the thumb wheel further to increase the speed of the work tool.

Hammer Control

Hydraulic Hammer ON – Push the right joystick switch upward to activate the hydraulic hammer.

Hydraulic Hammer OFF – Release the right joystick switch to deactivate the hydraulic hammer.

Two-Way Flow

The following information pertains to work tools that require hydraulic oil flow in two directions. These work tools can also be equipped with a rotate circuit. Hydraulic shears, pulverizers, crushers, and grapples are examples of work tools that require hydraulic oil flow in two directions.

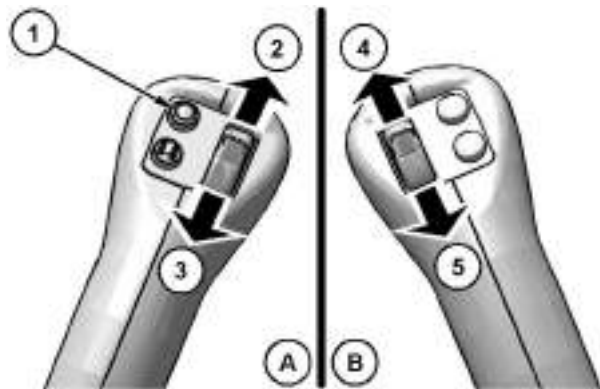


Illustration 395

g06287028

(A) Left joystick
(B) Right joystick

Primary Auxiliary Hydraulic Circuit (AUX 1) Variable Speed

Move the thumb wheel in the direction of desired flow to activate the work tool. Move thumb wheel UPWARD (4) : aux 1B. Move thumb wheel DOWNWARD (5) : aux 1A. Move the thumb wheel further to increase the speed of the work tool. Release the thumb wheel to stop the work tool.

Secondary Auxiliary Hydraulic Circuit (AUX 2) Variable Speed

Pressing button (1) will toggle the left thumb wheel control between aux 2 and boom swing (default if equipped). Aux 2 must be selected to operate the aux 2 circuit.

Move the thumb wheel in the direction of desired flow to activate the work tool. Move thumb wheel UPWARD (2) : aux 2B. Move thumb wheel DOWNWARD (3) : aux 2A. Move the thumb wheel further to increase the speed of the work tool. Release the thumb wheel to stop the work tool.

Note: Pressing the right joystick trigger (8) to toggle the control of aux 1 may be necessary. Refer to Operation and Maintenance Manual, "Monitoring System – Thumbwheel Mode" for selected function of the right thumbwheel.

Primary Auxiliary Hydraulic Circuit (AUX 1)



WARNING

Unexpected operation of the auxiliary control circuit can cause injury or death.

A RAISED hydraulic lock lever does not mean that the auxiliary control function is locked out.

In order to prevent unexpected operation of the auxiliary control circuit, make sure that the foot is not placed on or near the work tool control pedal.

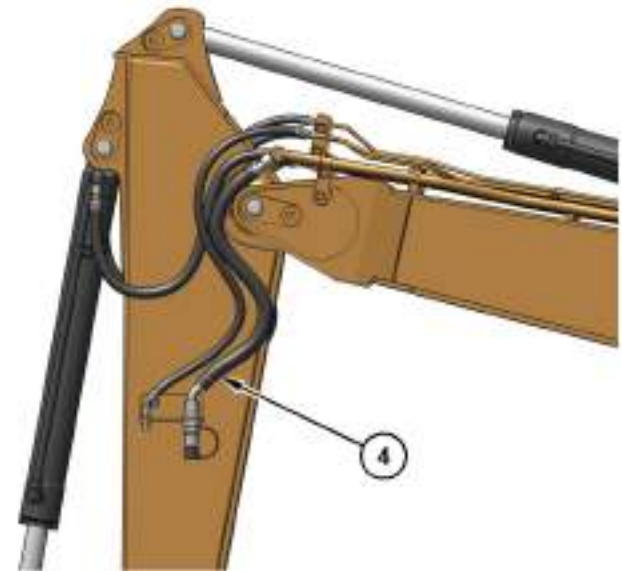


Illustration 396

g06338787

Left side view of stick

(4) Aux 1B

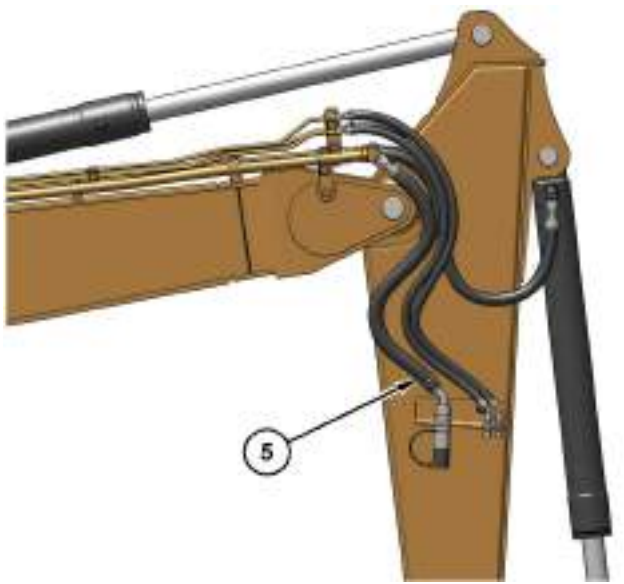


Illustration 397

g06338784

Right side view of stick

(5) Aux 1A

There are two primary auxiliary lines that are routed to the stick.

Line (4) is on the left side of the stick and is an oil feed line. Line (5) is on the right side of the stick and is an oil return line.

The primary auxiliary lines can be equipped with coupler assemblies. Wipe all coupler assemblies before you connect the work tools.

The primary auxiliary lines must be relieved of pressure to connect the coupler assemblies to the work tool. Relieve the pressure in the primary auxiliary hydraulic lines by performing the following steps:

1. Turn the engine start switch key to the ON position with the engine OFF.
2. Lower the hydraulic lockout control lever.
3. Move the control levers and thumb wheels in both directions repeatedly.

Note: The hydraulic accumulator must have pressure in order to relieve a circuit. If needed, start engine and engage the hydraulic lockout control lever for 5 seconds to charge the accumulator. After the accumulator has been pressurized, repeat Steps 1 through 3.

4. Couple/uncouple the attachment immediately after the pressure has been released.

Note: Pressure can build up in the primary auxiliary lines if the attachment is not coupled/uncoupled immediately after the pressure has been released.

Secondary Auxiliary Hydraulic Circuit (AUX 2) (If Equipped)

WARNING

Unexpected operation of the secondary auxiliary control circuit can cause injury or death.

In order to prevent unexpected operation of the secondary auxiliary control circuit, make sure that the thumb is not placed on or near the switch on the left joystick.

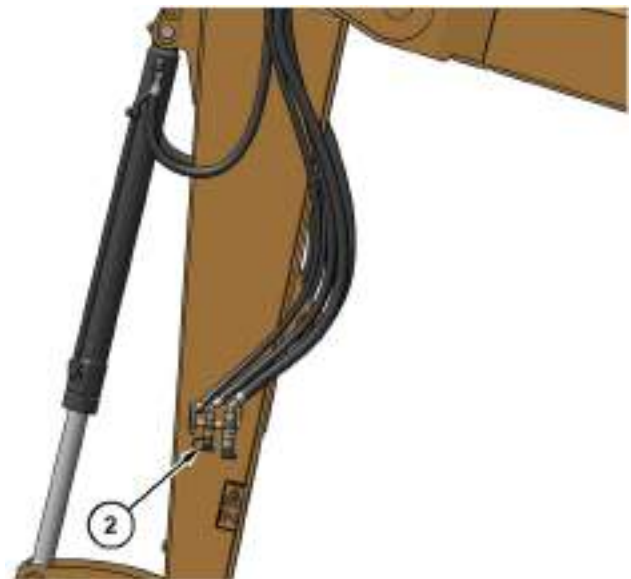


Illustration 398

g06338790

Left side view of stick

(2) Aux 2B

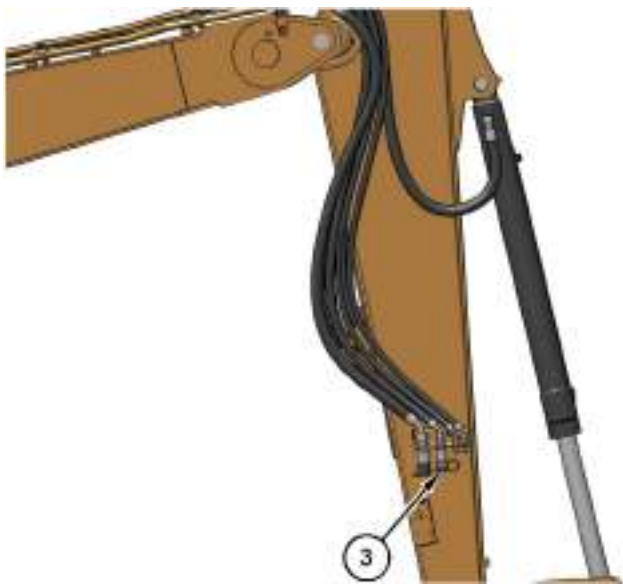


Illustration 399

g06338800

Right side view of stick

(3) Aux 2A

There are two secondary auxiliary lines that are routed to the stick.

Line (2) is on the left side of the stick and is an oil feed line. Line (3) is on the right side of the stick and is an oil return line.

The secondary auxiliary lines are equipped with coupler assemblies. Wipe all coupler assemblies before you connect the work tools.

The secondary auxiliary lines must be relieved of pressure to connect the coupler assemblies to the work tool. Relieve the pressure in the secondary auxiliary hydraulic lines by performing the following steps:

1. Turn the engine start switch key to the ON position with the engine OFF.
2. Using button (1) on the joystick, change the mode from "Boom Swing" to "Aux 2".
3. Lower the hydraulic lockout control lever.
4. Move the control levers and thumb wheels in both directions repeatedly.

Note: The hydraulic accumulator must have pressure in order to relieve a circuit. If needed, start engine and engage the hydraulic lockout control lever for 5 seconds to charge the accumulator. After the accumulator has been pressurized, repeat Steps 1 through 4.

5. Couple/uncouple the attachment immediately after the pressure has been released.

Note: Pressure can build up in the primary auxiliary lines if the attachment is not coupled/uncoupled immediately after the pressure has been released.

Auxiliary Tool Case Drain (if equipped)

The case drain is necessary for certain tools with hydraulic motors such as mulchers and flail mowers.

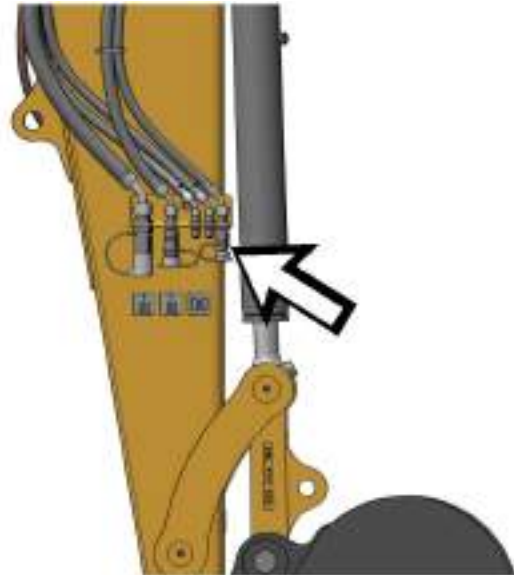


Illustration 400

g06348127

Case drain coupling on the stick

Wipe the quick connectors clean before attaching the case drain to the machine.

Continuous Flow

Note: The continuous flow feature must first be enabled in the monitor. Refer to Operation and Maintenance Manual, "Monitoring System" for additional information.



Illustration 401

g06287030

The operator controls the hydraulic flow rate with the thumb wheel on the right-hand joystick. To set continuous flow, first set the continuous flow feature to ON in the monitor. Then use the right thumb wheel to command Aux 1 until the desired hydraulic flow rate is achieved. Hold the thumb wheel at the desired command for 2.5 seconds. After 2.5 seconds, the continuous flow indicator on the monitor will turn green indicating that continuous flow is ACTIVE. Once the continuous flow is ACTIVE, release the thumb wheel and aux 1 will continue to flow. Continuous flow will stop operating when the thumb wheel is moved or the hydraulic lockout is lifted, or when the machine is turned off.

Work Tool Flow Mode Control



One-Way Flow – Move work tool flow control lever to this position when one-way flow is required.



Two-Way Flow – Move work tool flow control lever to this position when two-way flow is required.

Standard Auxiliary (307.5, 308 CR, 308.5, and 310 Machines)

One-Way Flow

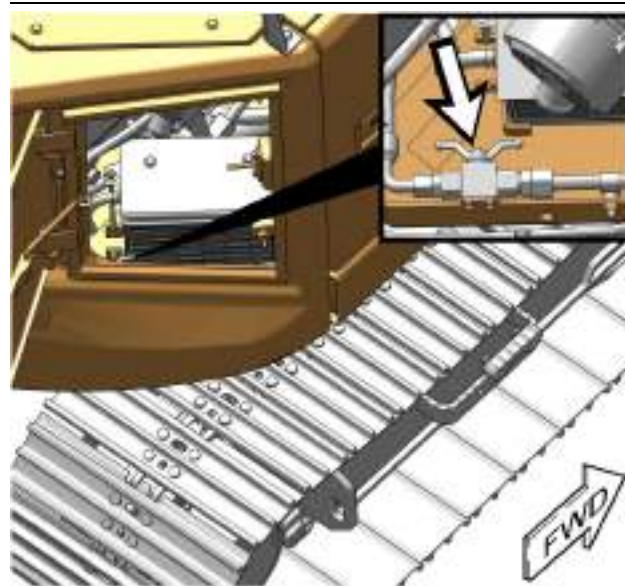


Illustration 402

g06287033

Valve position for one-way flow

The flow control manual valve is located next to the battery and can be accessed using the right rear door.

Two-Way Flow

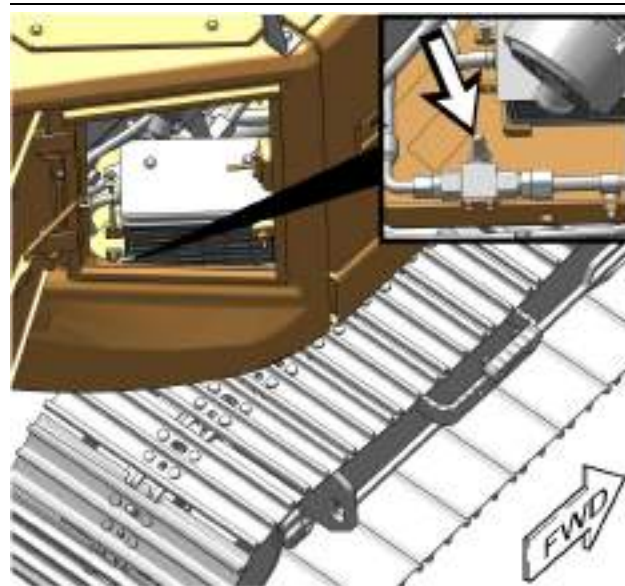


Illustration 403

g06338429

Valve position for two-way flow

The flow control manual valve is located next to the battery and can be accessed using the right rear door.

High-Flow Auxiliary (309 CR Machines)

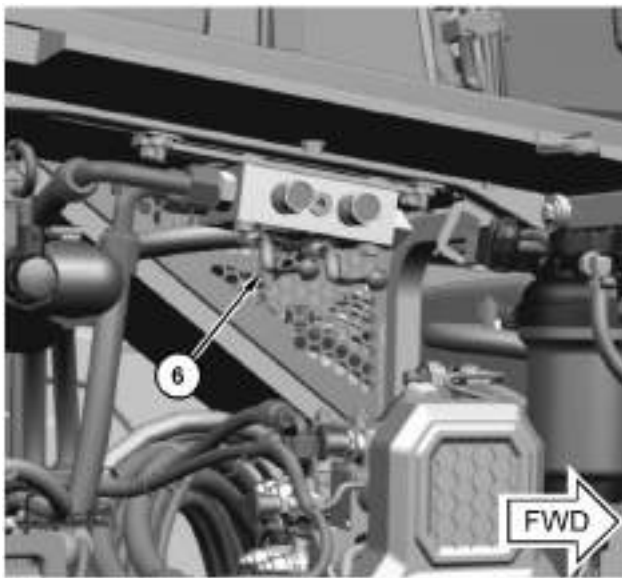


Illustration 404

g06338820

(6) One-way/Two-way Flow Valve

The valve for work tool flow mode control is on the right side of the machine. Open the right side access door to gain access to the valve.

One-Way Flow

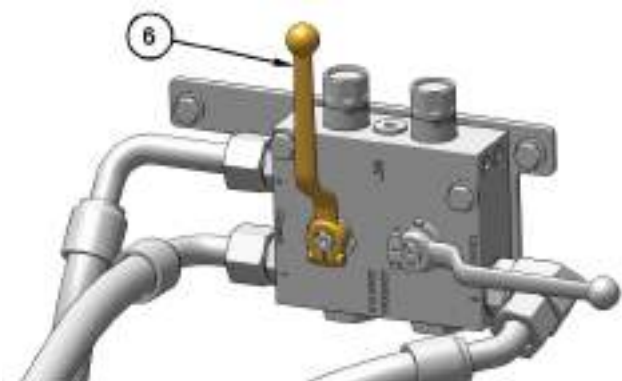


Illustration 405

g06338848

OPEN position

One-way flow

(6) One-way/Two-way Flow Valve

The flow control manual valve is located above the main control valve and can be accessed using the right access door.

Two-Way Flow

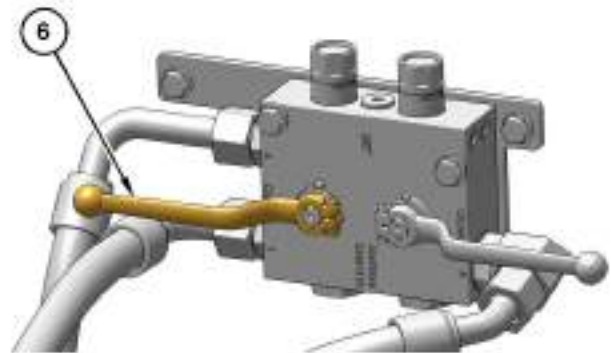


Illustration 406

g06338857

CLOSED position

Two-way flow

(6) One-way/Two-way Flow Valve

The flow control manual valve is located above the main control valve and can be accessed using the right access door.

Adjustable Primary Auxiliary Hydraulic Circuit (AUX 1)

This feature enables the ability to adjust pressures allowing for customized and improved performance of work tools.

Standard Auxiliary

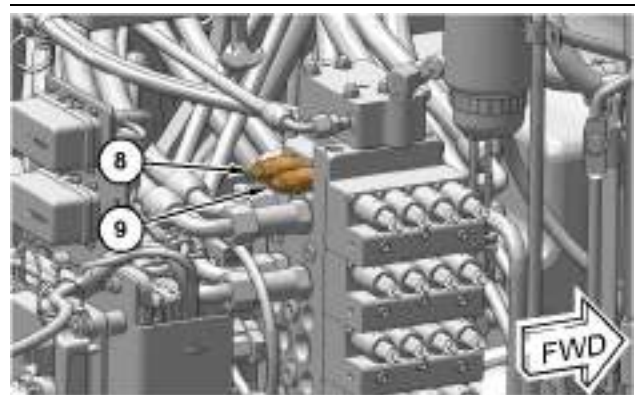


Illustration 407

g06288004

(8) Adjustable Relief Valve for Aux 1B

(9) Adjustable Relief Valve for Aux 1A

The aux 1 adjustable relief valves are on the main control valve. Open the right side access door to gain access to the valve.

Note: On machines equipped with High-Flow Auxiliary, adjusting the above mentioned relief valves will have no benefit on the Aux 1 circuit.

High-Flow Auxiliary (If Equipped)

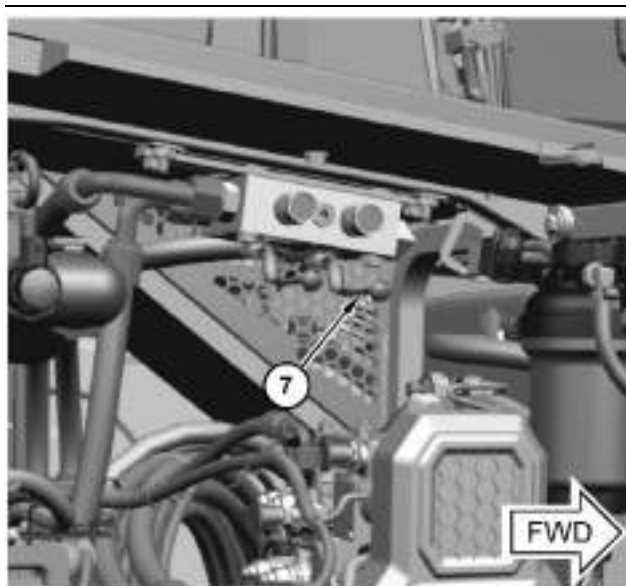


Illustration 408

g06338863

(7) Pressure Control Valve

The high-flow auxiliary valve is on the right side of the machine. Open the right side access door to gain access to the valve.

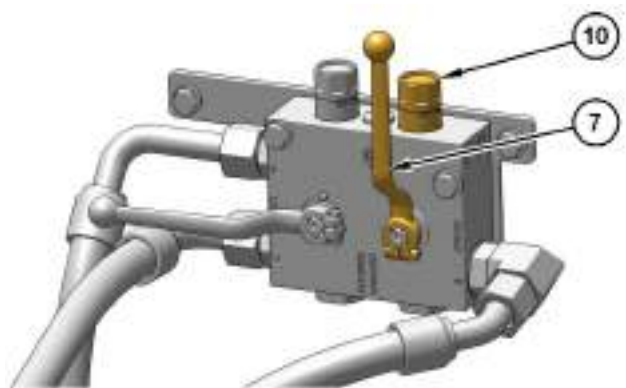


Illustration 409

g06338909

Valve Open

(7) Pressure Control Valve

(10) Adjustable Relief Valve

When pressure control valve (7) is in the OPEN position, dedicated auxiliary valve line relief (10) is active.



Illustration 410

g06338924

Valve Closed

(7) Pressure Control Valve

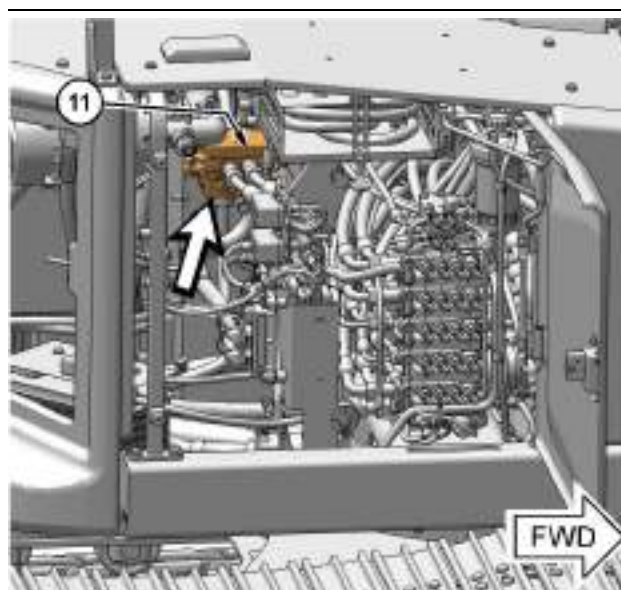


Illustration 411

g06339372

(11) Fixed Relief Valve

When pressure control valve (7) is in the CLOSED position, relief valve (11) is the active relief.

This feature gives the user the ability to choose between two pressure settings by simply turning ball valve (7).

Auxiliary Control Pedal (AUX 1) (Two-Way Flow) (If Equipped)

WARNING

Unintended operation of the Auxiliary Control pedal can cause injury or death. A RAISED hydraulic lock lever does not mean that the auxiliary line is locked out.

To Prevent unintended activation of the Auxiliary Control pedal while traveling or whenever the auxiliary line is not being used, make sure the foot is not placed on or near the Auxiliary Control pedal.

Note: Operate the Auxiliary Control pedal carefully until you become familiar with how “AUX 1” reacts to the controls.

The right Auxiliary Control pedal controls the two-way flow auxiliary line circuit (AUX 1).

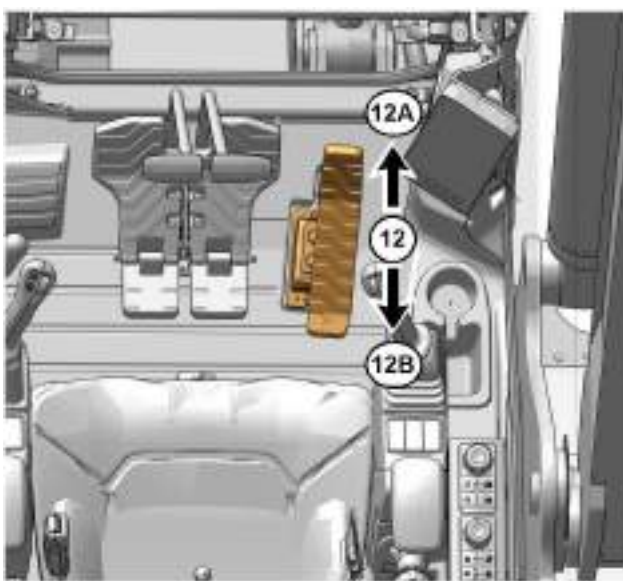


Illustration 412

g06338832

To pressurize the line that is connected to the left-hand side of the stick, apply pressure to the front of the pedal.

To pressurize the line that is connected to the right-hand side of the stick, apply pressure to the back of the pedal.

i08376936

Joystick Controls Alternate Patterns

SMCS Code: 5059; 5137

WARNING

Check if control pattern 1 (Standard) or control pattern 2 (Alternate) is selected before operating the machine.

Refer to Operation and Maintenance Manual.

Failure to understand control functions could result in injury or death.

Note: Joystick Controls Alternate Patterns are not available when the joystick steering mode is ON.

To access the pattern changer screen, press the “Menu” button, select “Machine Settings”, “Control Mode”, then “Pattern Changer”.

The Joystick-Mapping Installation Status configuration must be set to installed in Cat Electronic Technician (ET) and the Pattern Changer must be configured as Enabled in the display for the Pattern Changer to be available. Then modifying the Machine Application Configuration and the Joystick Mapping Group Selection in Cat ET will impact the available patterns as summarized below.

When the Machine Application Configuration is set to Standard and the Joystick Mapping Group Selection is configured as Two Way, the following pattern changer selections are available:

- Excavator
- Backhoe

When the Machine Application Configuration is set to Standard or ISJ Common and the Joystick Mapping Group Selection is configured as Four Way, the following pattern changer selections are available:

- “ISO” (Excavator)
- “SCM”
- “MHI”
- “KOB”

Backhoe Joystick Pattern

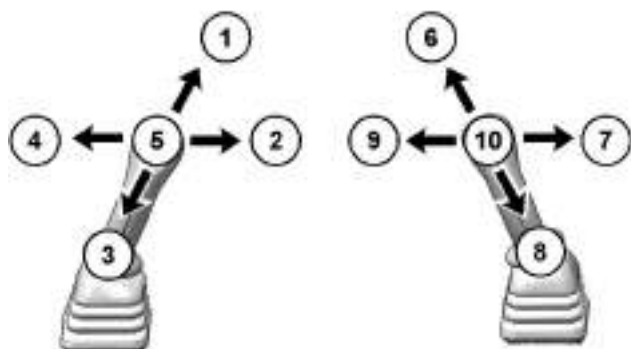


Illustration 413

g06349078



BOOM LOWER (1) – Move the joystick to this position to lower the boom.



SWING RIGHT (2) – Move the joystick to this position to swing the upper structure to the right.



BOOM RAISE (3) – Move the joystick to this position to raise the boom.



SWING LEFT (4) – Move the joystick to this position to swing the upper structure to the left.

HOLD (5) – When you release the joystick from any position, the joystick will return to the HOLD position. Movement of the structure will stop.



STICK OUT (6) – Move the joystick to this position to move the stick outward.



BUCKET DUMP (7) – Move the joystick to this position to dump the bucket or the work tool.



STICK IN (8) – Move the joystick to this position to move the stick inward.



BUCKET CLOSE (9) – Move the joystick to this position to close the bucket or the work tool.

HOLD (10) – When you release the joystick from any position, the joystick will return to the HOLD position. Movement of the structure will stop.

Two functions may be performed at the same time by moving the joysticks diagonally.

SCM Joystick Pattern

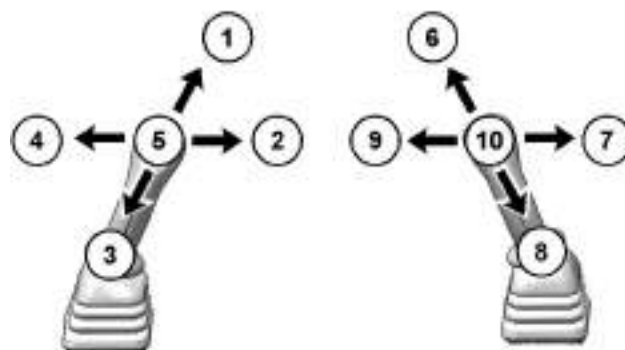


Illustration 414

g06349078



SWING RIGHT (1) – Move the joystick to this position to swing the upper structure to the right.



STICK IN (2) – Move the joystick to this position to move the stick inward.



SWING LEFT (3) – Move the joystick to this position to swing the upper structure to the left.



STICK OUT (4) – Move the joystick to this position to move the stick outward.

HOLD (5) – When you release the joystick from any position, the joystick will return to the HOLD position. Movement of the structure will stop.



BOOM LOWER (6) – Move the joystick to this position to lower the boom.



BUCKET DUMP (7) – Move the joystick to this position to dump the bucket or the work tool.



BOOM RAISE (8) – Move the joystick to this position to raise the boom.



BUCKET CLOSE (9) – Move the joystick to this position to close the bucket or the work tool.

HOLD (10) – When you release the joystick from any position, the joystick will return to the HOLD position. Movement of the structure will stop.

Two functions may be performed at the same time by moving the joysticks diagonally.

MHI (Mitsubishi) Joystick Pattern

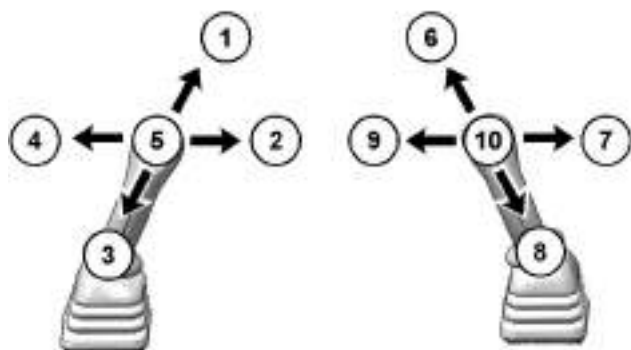


Illustration 415

g06349078



BOOM LOWER (1) – Move the joystick to this position to lower the boom.



BUCKET CLOSE (2) – Move the joystick to this position to close the bucket or the work tool.



BOOM RAISE (3) – Move the joystick to this position to raise the boom.



BUCKET DUMP (4) – Move the joystick to this position to dump the bucket or the work tool.

HOLD (5) – When you release the joystick from any position, the joystick will return to the HOLD position. Movement of the structure will stop.



STICK IN (6) – Move the joystick to this position to move the stick inward.



SWING RIGHT (7) – Move the joystick to this position to swing the upper structure to the right.



STICK OUT (8) – Move the joystick to this position to move the stick outward.



SWING LEFT (9) – Move the joystick to this position to swing the upper structure to the left.

HOLD (10) – When you release the joystick from any position, the joystick will return to the HOLD position. Movement of the structure will stop.

Two functions may be performed at the same time by moving the joysticks diagonally.

KOB (Shin-Ko) Joystick Pattern

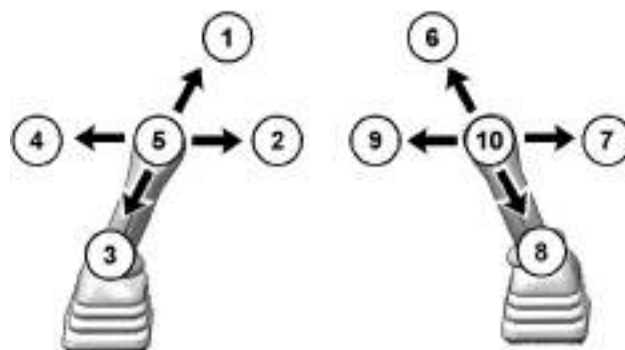


Illustration 416

g06349078



BOOM LOWER (1) – Move the joystick to this position to lower the boom.



BUCKET CLOSE (2) – Move the joystick to this position to close the bucket or the work tool.



BOOM RAISE (3) – Move the joystick to this position to raise the boom.



BUCKET DUMP (4) – Move the joystick to this position to dump the bucket or the work tool.

HOLD (5) – When you release the joystick from any position, the joystick will return to the HOLD position. Movement of the structure will stop.



STICK OUT (6) – Move the joystick to this position to move the stick outward.



SWING RIGHT (7) – Move the joystick to this position to swing the upper structure to the right.



STICK IN (8) – Move the joystick to this position to move the stick inward.



SWING LEFT (9) – Move the joystick to this position to swing the upper structure to the left.

HOLD (10) – When you release the joystick from any position, the joystick will return to the HOLD position. Movement of the structure will stop.

Two functions may be performed at the same time by moving the joysticks diagonally.

Engine Starting

i08200507

Engine Starting

SMCS Code: 1000; 1090; 1456; 7000

WARNING

Do not spray ether into engine when using thermal starting aid to start engine. Personal injury and machine damage could result. Follow procedure in the Operation and Maintenance Manual.

NOTICE

The engine start switch must be in the ON position and the engine must be running in order to maintain electrical functions and hydraulic functions. This procedure must be followed in order to prevent serious machine damage.

1. Move the hydraulic lockout control (lever) to the LOCKED position.
2. Move the joysticks to the HOLD position.
3. Turn the engine start switch to the ON position.
During cold weather, leave the engine start switch in the ON position until the glow plug lamp on the display turns off to preheat the glow plugs.

Note: It is not necessary to preheat the glow plugs on a warm engine.

4. All the indicators on the monitor panel should be activated and the action alarm should sound for approximately 2.5 seconds. If any of the indicators are not activated or if the action alarm does not sound, check the electrical system. Make any necessary repairs before you start the engine.

Note: For more information on the monitoring system, refer to Operation and Maintenance Manual, Monitoring System.

If any fluid levels are too low, add the corresponding fluid to the specified level. Add the fluid before you start the engine.

5. 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 horn before you start the engine.

NOTICE

If the engine fails to start after 10 seconds, disengage the starter. Wait 30 seconds before cranking again.

Do not crank the engine for more than 20 seconds. Cranking the engine for more than 20 seconds may cause damage to the engine and/or hydraulic system.

6. Turn the engine start switch to the START position.
7. Release the engine start switch key after the engine starts.
8. If the engine does not start, turn the key to the OFF position. Repeat step 6 and step 7.

i08200510

Engine and Machine Warm-Up

SMCS Code: 1000; 7000

NOTICE

Always run the engine at low idle for at least ten minutes before performing any other operations in cold conditions or each time the engine oil and oil filter are changed in order to protect your engine and hydraulic components.

NOTICE

Depending on the ambient temperature, in order to prevent the machine operation with high speed without sufficient lubrication at the turbo bearing, the engine speed may be set to low speed and the hydraulic power minimized for a pre-determined time after the engine starts. Refer to turbo protection feature.

To accelerate engine and hydraulic warmup in cold ambient temperature or high altitude for an extended time, the engine may automatically change speeds when the machine is stationary and the implements are LOCKED. During this warmup the hydraulic system will activate a warmup process that will cause hydraulic oil to flow through the valve to heat the hydraulic system. All accelerated warmup processes are automatic and will disable when the machine has warmed or the operator places the implements in the UNLOCKED position.

Hydraulic System

WARNING

When you cycle the machine controls, the machine can move suddenly. Contact between the machine and external objects or ground personnel can result in serious injury or death. Before you cycle the machine controls, the machine should be located in an unobstructed, hazard-free work area that is away from external objects and ground personnel.

1. Make sure that the area is clear of personnel and equipment.

Note: The hydraulic lockout control must be in the UNLOCKED position before the hydraulic controls will function.

2. Allow the engine to warmup at low idle for at least 5 minutes.

Note: Leave the implements LOCKED during this warmup process.

When you idle the machine for warmup, observe the following recommendations:

- If the temperature is greater than 0°C (32°F), warm up the engine for approximately 15 minutes.
- If the temperature is less than 0°C (32°F), warm up the engine for approximately 30 minutes.
- If the temperature is less than – 18°C (0°F) or if hydraulic functions are sluggish, additional time may be required.

NOTICE

The hydraulic oil temperature should be higher than 25 °C (77 °F) before performing work with the machine. Make sure that the warm-up procedure is performed.

If the hydraulic oil temperature is less than 25 °C (77 °F) and the machine is operated abruptly, serious damage to the hydraulic components may occur.

Note: The recommended operating temperature of the hydraulic fluid for this machine is 55 °C (131 °F).

3. To warmup the hydraulic oil, turn the engine speed dial to the medium engine speed.
4. Run the engine for approximately 5 minutes and continuously cycle the stick from fully extended to fully retracted at maximum command.

5. Turn the engine speed dial to the maximum engine speed and repeat Step 4.
6. Cycle all controls to circulate warm oil through all hydraulic cylinders and all hydraulic lines, and through the swing motor and travel motors.
7. Observe the gauges and the indicators frequently during the operation.

Turbo Protection



Turbo Protection Power Derate – After an engine start, the engine speed will be set to low speed and the hydraulic power limited for a time period. To protect the turbo, the engine speed may be slow to respond while the engine warms (maximum time to engine speed changes is 5 minutes). After the turbo bearing lubrication is sufficient, the engine speed goes to the setting dial speed.

Operation

i08509289

Operation Information

SMCS Code: 7000

WARNING

The bucket can interfere with the cab on machines equipped with a VA boom or a one piece boom with a long stick.

Know the machine's linkage movement extremes. Keep bucket and other work tools away from the cab at all times to avoid personal injury.

Some work tools can swing in all directions. Personal injury may result if the work tool swings into the cab or into a person in the work area.

The VA cylinder can interfere with the raised stabilizer. Know the linkage movement extremes and keep the VA cylinder away from raised stabilizers at all times to avoid possible personal injury.

Know the maximum height and reach of your machine. Serious injury or death by electrocution can occur if the machine or the work tools are not kept a safe distance from electrical power lines. Keep the distance at least 3000 mm (118 inch) plus an additional 10 mm (0.4 inch) for each 1000 volts over 50000 volts.

Note: The machine must function satisfactorily in the anticipated ambient temperature limits that are encountered during operation. The standard machine configuration is intended for use within an ambient temperature range of -18 °C (0 °F) to 43 °C (109 °F). Special configurations for different ambient temperatures may be available. Consult your Caterpillar dealer for additional information on special configurations of your machine.

Make sure that no personnel are on the machine or near the machine to prevent any personal injury. Always keep the machine under control to prevent injury.

Reduce the engine speed when you maneuver the machine in tight quarters and when you drive over an incline.

Select the necessary travel speed range before you drive downgrade. Do not change the travel speed range while you drive downhill.

Use the same travel speed on a downgrade and on an upgrade.

When you travel for any distance, keep the stick inward and carry the boom in a low position.

When you drive up a steep grade, keep the boom as close to the ground as possible.

When you travel uphill or you travel downhill, keep the boom on the uphill side of the machine.

1. Adjust the operator seat.
2. Fasten the seat belt.



Illustration 417

g06181515

3. Turn the engine speed dial to the desired operating range.
4. Move the hydraulic lockout control to the UNLOCKED position.

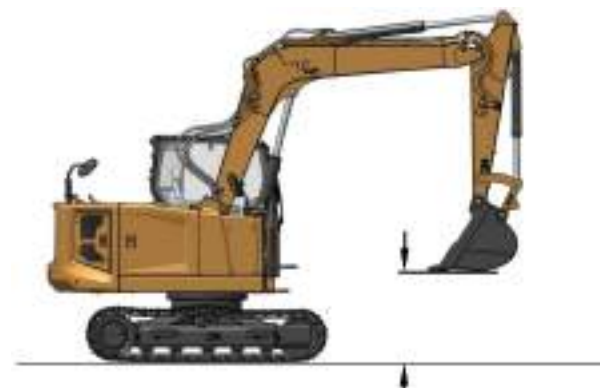


Illustration 418

g06278743

5. Raise the boom enough to provide sufficient ground clearance.
6. Select the desired travel speed by operating the travel speed control switch.
7. Make sure that the position of the upper structure and of the undercarriage is known before you move the machine. The drive sprockets should be at the rear of the machine.

Note: The directional steering controls will operate normally if the drive sprockets are at the rear of the machine and the idlers are at the front of the machine and under the cab. When the sprockets are under the cab, the travel controls will operate backward.

8. Turn the engine speed dial to increase the engine speed (rpm) to the desired speed.
9. Push both travel levers forward at the same time to travel forward. If both travel levers are pushed farther, the travel speed at the selected engine speed (rpm) will be faster.

Note: If the machine does not operate or if the machine does not travel in a straight line, consult your Caterpillar dealer.

10. See Operation and Maintenance Manual, "Operator Controls" for information about spot turning and about pivot turns.
11. When you make turns in soft material, travel in a forward direction occasionally to clear the tracks.
12. Slowly move both of the travel levers or both of the travel pedals to the CENTER position to stop the machine.

Lifting Objects

Regional regulations may require the use of an overload warning device and boom and stick lowering control valves when used to lift objects.

The overload warning device (if equipped) must be adjusted for the bucket linkage and bucket size that is installed on the machine. Adjust the overload warning device for proper operation.

The setting for the overload warning device (if equipped) should be checked by an authorized dealer.

Contact your Cat dealer for additional information.

i07310673

Frozen Ground Conditions

SMCS Code: 7000



Illustration 419

g06278746

To free the tracks from frozen ground, swing the boom to the front of the machine. Use boom down pressure to free the idler end of the machine.

Swing the boom to the rear of the machine. Use boom down pressure to free the sprocket end of the machine.

i07592807

Equipment Lowering with Engine Stopped

SMCS Code: 7000

Machines without a Boom Lowering Control Valve

To lower the boom, place the hydraulic activation control lever in the UNLOCKED position. Move the joystick to the BOOM LOWER position. If the accumulator is still charged, the boom will lower.

If the boom does not lower, the accumulator has been depleted. Use the following method to lower the boom.

WARNING

Be sure no one is under or near the work tools before manually lowering the boom. Keep all personnel away from the boom drop area when lowering the boom with the engine stopped in order to avoid possible personal injury.

WARNING

Personal injury can result from oil under high pressure.

DO NOT allow high pressure oil to contact skin.

Wear appropriate protective equipment while working with high pressure oil systems.

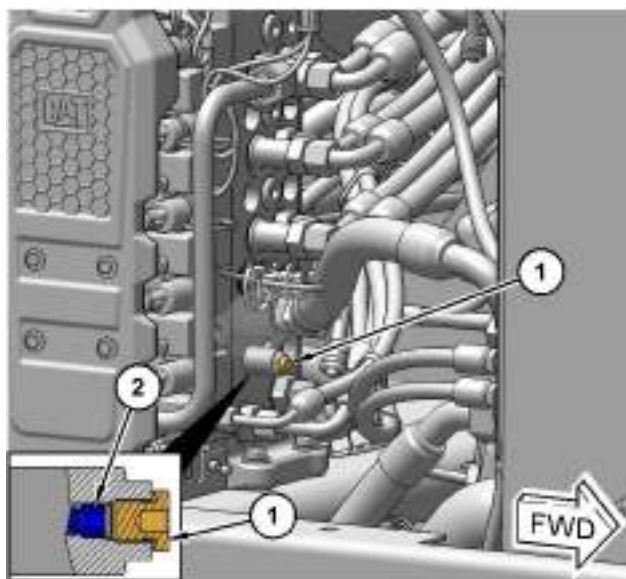


Illustration 420

g06373681

1. Open the access door on the right side of the machine.
2. Locate and remove plug (1).
3. Tighten internal plug (2) (clockwise).
As plug (2) rotates, the relief valve will open to tank allowing the boom to lower.
4. Make sure that the work tool has lowered all the way to the ground. Loosen plug (2) until the internal plug engages the hard stop snap ring (counter-clockwise) with minimal torque.
5. Install plug (1) and tighten to a torque of 18 N·m (13 lb ft).
6. Make the necessary repairs before you operate the machine.

7. Close the access door.

Machines with a Boom Lowering Control Valve

If the engine or the hydraulic system is disabled and the boom is up, the boom can be lowered manually. The boom lowering control valve allows the boom to be manually lowered. The boom lowering control valve is on the head end port on the boom cylinder. Use the following procedure if the machine is equipped with a boom lowering control valve:

WARNING

Boom load may cause cylinder oil pressure to reach relief pressure of the boom lowering control device when the boom is supported by one cylinder. Boom can lower suddenly, causing possible injury or death.

To avoid possible injury or death, be sure no one is under or near the work tool before manually lowering the boom.

Keep all personnel away from the boom drop area when lowering the boom with the engine stopped.

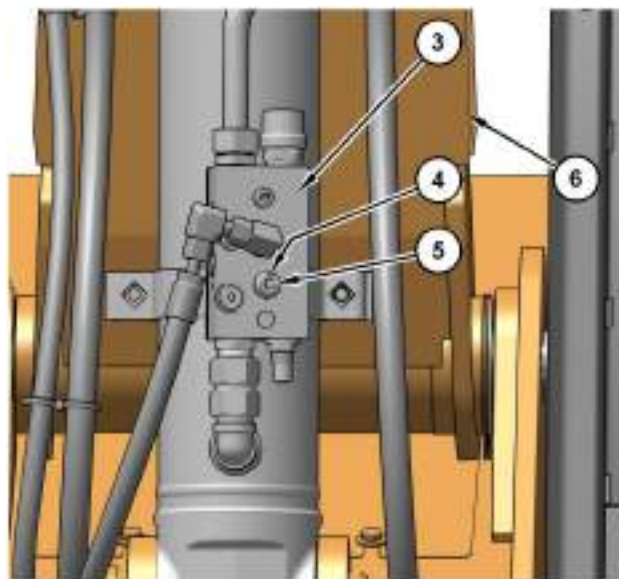


Illustration 421

g06346521

- (3) Boom lowering control valve
- (4) Locknut
- (5) Set screw
- (6) Boom

Note: The boom lowering control valve is at the base of the boom cylinder. The boom lowering control device allows the operator to manually lower the boom if the engine is stopped. The boom lowering control device also prevents a sudden drop of the boom if there is an oil leak in the hydraulic line of the boom.

1. Release the pressure in the hydraulic system.
Refer to Operation and Maintenance Manual, "System Pressure Release" for instructions.
2. Loosen locknut (4).
3. Slowly, turn set screw (5) counterclockwise until the boom begins to lower onto the ground.

Note: Once the boom begins to lower, stop turning set screw (5).

4. After the boom has lowered completely onto the ground, turn set screw (5) back to the original position.
5. Tighten locknut (4).
6. Make any necessary repairs before placing the excavator back into service.

Note: For further information, consult your Cat dealer.

Blade (If Equipped)

To lower the blade, place the hydraulic lockout control in the UNLOCKED position. Move the blade control lever to the BLADE LOWER position. If the accumulator is still charged, the blade will lower.

If the blade does not lower, the accumulator is empty. The blade will need to be blocked in the raised position until the engine can be started again.

Additional instructions can be found in the service manual and/or consult your Cat dealer.

Operating Techniques

i07310863

Operating Technique Information

SMCS Code: 7000

WARNING

Know the maximum height and the maximum reach of your machine. Serious injury or death by electrocution can occur if the machine or the work tools are not kept a safe distance from electrical power lines. Keep a distance of at least 3000 mm (118 inch) plus an additional 10 mm (0.4 inch) for each 1000 volts over 50000 volts.

For safety, one of the following may require a greater distance:

- Local codes
- State codes
- Requirements of the job site

NOTICE

When swinging into a ditch, do not use the ditch to stop the swinging motion. Inspect the machine for damage if the boom is swung into a bank or an object.

Repeated stopping by an object can cause structural damage if the boom is swung into a bank or an object.

With certain boom-stick-bucket combinations, the bucket or worktool can hit the cab and/or the front structure of the machine. Always check for interference when first operating a new bucket or a new work tool. Keep the bucket or work tool away from the cab and away from the front structure during operation.

Whenever the tracks of the machine raise off the ground while digging, lower the machine back to the ground smoothly. **DO NOT DROP OR CATCH IT WITH THE HYDRAULICS.** Damage to the machine can result.

With certain combinations of work tools, the third pedal can have different functions. Always check the function of the third pedal before you use the third pedal.

Know the location of any buried cables. Mark the locations clearly before you dig.

Consult your Cat dealer for special work tool tips that are available for use in severe applications.

Move the machine whenever the position for operating the machine is not efficient. The machine can be moved forward or backward during the operating cycle.

When you operate the machine in close places, utilize the bucket or the other work tool to perform the following functions:

- Pushing the machine
- Pulling the machine
- Lifting the tracks

Use a comfortable travel speed while you operate the machine.

Operating efficiency can be increased by using more than one machine control to perform a task.

Never swing a load over a truck cab or workers.

Position the truck so that material can be loaded from the rear of the truck or from the side of the truck. Load the truck evenly so that the rear axles are not overloaded.

An oversize bucket or a bucket that is equipped with side cutters should not be used in rocky material. These types of buckets slow down the cycle. Damage to the bucket and to other machine components could result.

Coaching Tips



Illustration 422

g06223763

Digging with a stable machine increases productivity. Create a stable work platform.

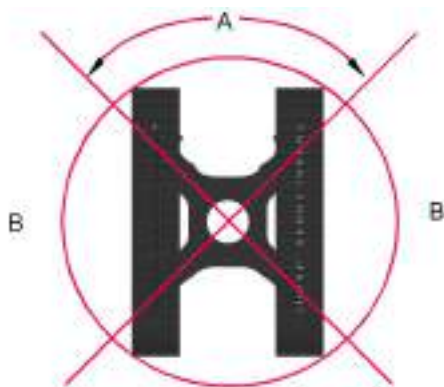


Illustration 423

g06210141

- (A) Most stable dig
(B) Dump

For improved stability: Do not dig over the drives or perpendicular to the tracks.

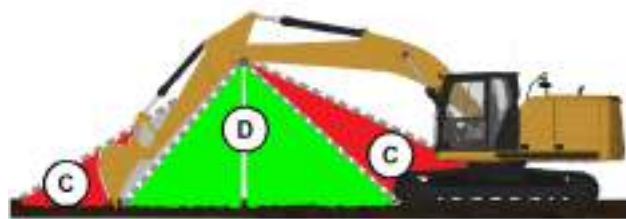


Illustration 424

g06212328

- (C) Weak crowd force
(D) Ideal crowd force

Dig from the top down in layers. Try to have a full bucket by the time the stick is vertical, but do not reach too far with the stick. The most crowd force is generated with the stick +/- 30 degrees from vertical.

Minimize unneeded movement. Only curl/dump the bucket as much as required to hold/dump material.

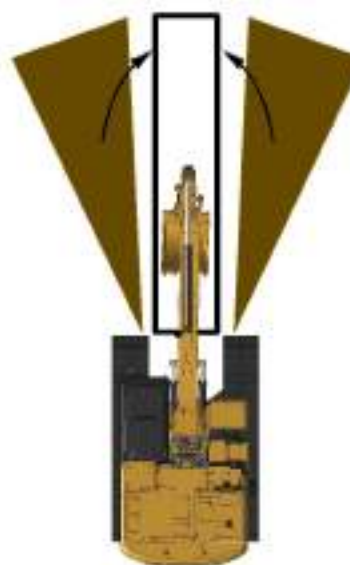


Illustration 425

g06210334

Minimize unneeded movement. During backfilling, start with the material closest to the trench.

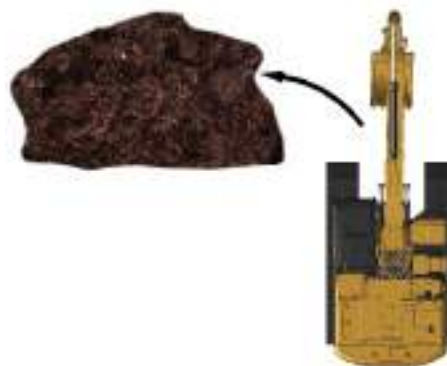


Illustration 426

g06210343

Watch your surroundings. Swing left to dump material for better visibility.

Watch the bucket. The bucket can contact the tracks or the cab.

Concentrate on being smooth, speed will come with practice.



Illustration 427

g06212604

Truck placement will affect efficiency: 45 degree truck loading is more efficient than 90 degree. Spotting the truck too far from the excavator causes excessive motion.

Load from a bench when possible. Bench loading is more efficient.

Restricted Operation



Illustration 428

g06222487

Do not use the swing force to perform the following operations:

- Soil compaction
- Ground breaking
- Demolition

Do not swing the machine while the bucket tips are in the soil.

These operations will damage the boom, the stick, and the work tool and the operations will reduce the life of the equipment.



Illustration 429

g06212594

Do not use the dropping force of the bucket or work tool as a hammer. This action will bring excessive force on the rear of the machine. Possible damage to the machine could result.



Illustration 430

g06222492

If the cylinder is operated at the end of the stroke during operations, excessive force will occur on the stopper on the inside of the cylinder. This practice will reduce the life of the cylinder and structures. To avoid this problem, always leave a small margin of play when the cylinder is operated.



Illustration 431

g06222498

If the stick IN function is operated at full speed with a fully loaded bucket or heavy work tool attachment to the end of the cylinder stroke, excessive force will occur inside the stick cylinder. This action will reduce the life of the stick cylinder. To avoid this problem, always operate a stick IN function with moderate speed towards the end of cylinder stroke.



Illustration 433

g06222505

Do not use the dropping force of the rear of the machine for excavation. This operation will damage the machine.

Operating Precaution



Illustration 432

g06222500

While the bucket is in the ground, do not use the travel force for any excavation. This operation will cause excessive force on the rear of the machine.



Illustration 434

g06222507

NOTICE

Do not allow the machine to swing from the force of traveling when you use the bucket, the stick, or the boom to assist in travel. If the force from traveling causes the machine to swing, damage may occur to the swing motor and to the swing drive.

Do not use the force of the bucket, the stick, or the boom to assist in turning the machine while the machine is traveling. This technique is referred to as "jump steering". This technique will damage the swing motor and the swing brake.



Illustration 435

g06222509

When deep holes are dug, do not lower the boom so that the bottom side of the boom touches the ground.

When deep holes are dug, do not allow the boom to interfere with the tracks.

i07310866

Travel in Water and Mud

SMCS Code: 7000-V6

NOTICE

When working in or around any body of water, around a stream or river, or in conditions of heavy mud, be careful that the swing bearing, the swing drive gear, and the swivel joint do not dip into water, mud, sand, or gravel. If the swing bearing dips into water, mud, sand, or gravel, immediately grease the swing bearing until the used grease leaks from the outer circle of the swing bearing. Failure to carry out this procedure may cause premature wear in the swing bearing.



Illustration 436

g06223764

Depth of water to the center of the track carrier roller.

The following guidelines pertain to travel across water and travel through mud, sand, or gravel.

The machine can travel across a river only under the following conditions:

- The bed of the river is flat.
- The flow of the river is slow.
- The machine dips into the water only to the center of the track carrier roller (dimension A).

NOTICE

Do not allow the fan on the engine to contact the water while the machine travels through the water. Do not allow the fan on the engine to contact the water during a swing while the machine is in the water. Damage to the fan may occur if the fan contacts the water.

While you cross the river, carefully confirm the depth of the water with the bucket. Do not move the machine into an area that has a water depth that is greater than Dimension A.

The machine may sink gradually on soft ground. Therefore, you should frequently check the height of the undercarriage from ground level and the depth of water on the ground.

Check the swing gear by looking through the port for inspection that is on the upper frame. If there is water in the swing gear, contact your Cat dealer for the required maintenance on the swing gear.

After you travel through water, carefully clean the machine to remove any salt, sand, or other foreign matter.

Procedure for Removing the Machine from Water or Mud

NOTICE

Do not allow the machine to swing from the force of traveling when you use the bucket, the stick, or the boom to assist in travel. If the force from traveling causes the machine to swing, damage may occur to the swing motor and to the swing drive.



Illustration 437

g06222519

1. You may not be able to move the machine by using the travel controls only. In this case use both the travel control levers/pedals and the stick to pull the machine out of the water or ground.



Illustration 438

g06222525

2. The machine may slip because of a steep slope. The procedure in Step 1 may not work. In this case, first rotate the upper structure by 180°. Then use both the travel control levers/pedals and the stick to move the machine up the slope.



Illustration 439

g06212337

3. It may be impossible to travel because the bottom of the frame comes into contact with the ground or the undercarriage is clogged with mud or gravel. In this case, operate the boom and the stick together. Raise the track and rotate the track forward and backward to remove the mud and the gravel.

i08509296

Boom, Stick and Bucket Operation

SMCS Code: 7000

Digging



Illustration 440

g06212506

1. Position the stick at a 70 degree angle to the ground.



Illustration 441

g06212513

2. Position the bucket cutting edge at a 120 degree angle to the ground. Maximum breakout force can now be exerted with the bucket.



Illustration 442

g06222533

3. Move the stick toward the cab and keep the bucket parallel to the ground.



Illustration 443

g06222535

4. If the stick stops due to the load, raise the boom and/or perform a curl to adjust the depth of the cut.

5. To apply the greatest force at the cutting edge, decrease the down pressure as you move the stick toward the cab.

6. Maintain a bucket attitude that ensures a continuous flow of material into the bucket.

7. Continue the pass in a horizontal direction so that material peels into the bucket.



Illustration 444

g06222538

8. Close the bucket and raise the boom when the pass has been completed.



Illustration 445

g06223077

9. Engage the swing control when the bucket is clear of the excavation.



Illustration 446

g06223078

10. To dump a load, move the stick outward and open the bucket in a smooth motion.

Lifting Objects

WARNING

To prevent injury, do not exceed the rated load capacity of the machine. If the machine is not on level ground, load capacities will vary.

NOTICE

Damage to bucket cylinder, bucket or linkage could result if slings are placed incorrectly.

There may be local regulations and/or government regulations that govern the use of machines which lift heavy objects. Obey all local and government regulations.

Note: Regional regulations may require the use of an overload warning device and boom and stick lowering control valves during object handling applications.

Contact your Cat dealer for additional information.

Short slings will prevent excessive load swing.



Illustration 447

g06212526

Use the lifting eye that is provided on the linkage to lift objects.

If the lifting eye is used, the connection must be made with a sling or with a shackle.



Illustration 448

g06212532

An unstable condition can exist if a load exceeds the machine load rating or if a heavy load is swung over an end or over a side.



Illustration 449

g06212530

The most stable lifting position is over a corner of the machine.

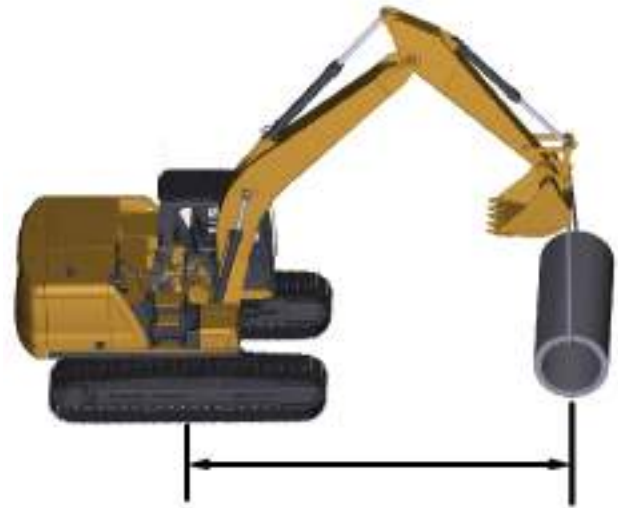


Illustration 451

g06212539

Lift capacity decreases as the distance from the swing centerline is increased.

Machines that are Equipped with a Long Reach Configuration

Machines with a long reach configuration require larger swing drift than standard machines when stopping, because inertial force in time of swing is large. Taking this into account, adjustments are made in timing for applying the swing brakes and speed of swinging.



Illustration 450

g06212535

For the best stability, carry a load close to the machine and to the ground.

Machines with a long reach configuration could be damaged and stability of the machine would be adversely affected if a control was suddenly operated, because inertial force of work tool is large.

i07329624

Quick Coupler Operation (Pin Lock (If Equipped))

SMCS Code: 6129; 6522; 7000

Installation

NOTICE

The vibration caused by extensive use of a hydraulic hammer as well as the added weight of certain demolition tools such as shears, crushers, and pulverizers may cause premature wear and decreased service life of the coupler.

Be sure to inspect the coupler daily for cracks, bent components, or wear when operating with any of the above work tools.

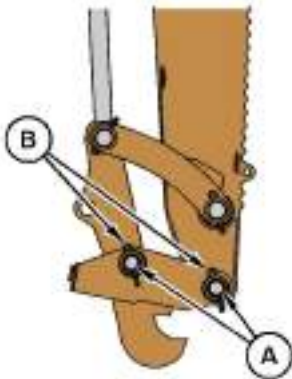


Illustration 452

g06286231

1. The quick coupler comes with two linkage pins (A) for installation on the machine. Lubricate the linkage pins (A) and pin bores before assembly on the machine.
2. Install the coupler and the linkage pins (A).

3. Install the cotter pins (B).

Securing the Work Tool



Improper attachment of work tools could result in injury or death.

Do not operate this machine until you have positive indication that the coupler pins are fully engaged. Check for engagement by:

1. Position the work tool on the ground.
2. Apply slight down pressure on the work tool.
3. Retract and extend the stick cylinder in order to push the work tool against the ground. Visually confirm that there is no movement between the coupler and the work tool.

Position the work tool on a level surface.

1. Start the engine.

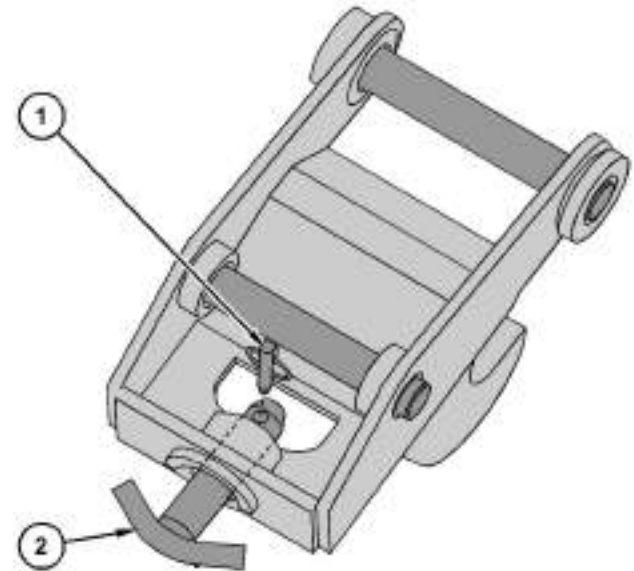


Illustration 453

g06286235

2. Remove the lock pin (1) and quick coupler pin (2) from the quick coupler.
3. Retract the work tool cylinder. Position the open hook on the quick coupler over the top pivot pin of the work tool.

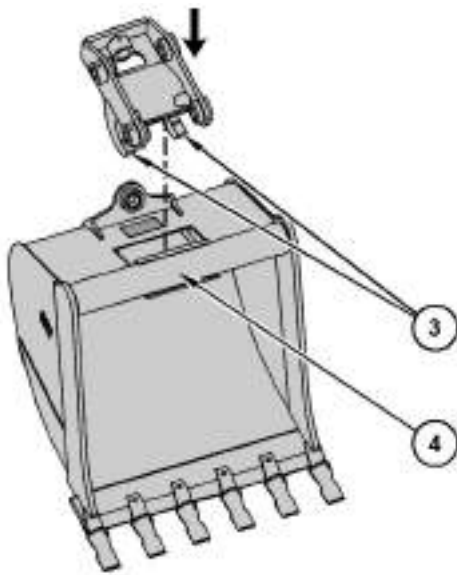


Illustration 454

g06286248

4. Move the stick inward and lower the stick until the hooks (3) engage the top pivot pin (4) of the work tool.

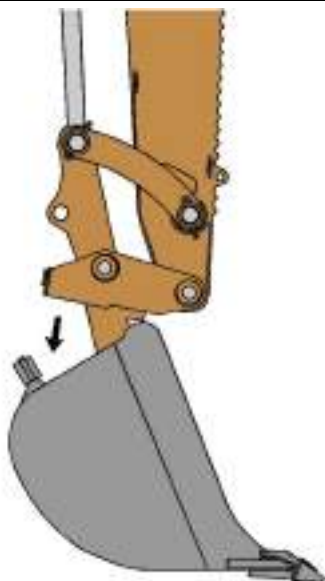


Illustration 455

g06286262

5. Extend the work tool cylinder to rotate the quick coupler toward the work tool. Line up the pin receiver of the work tool with the pin receiver of the quick coupler. Stop the engine.
6. Fully insert the quick coupler pin (2) into the pin receiver of the quick coupler and the work tool.

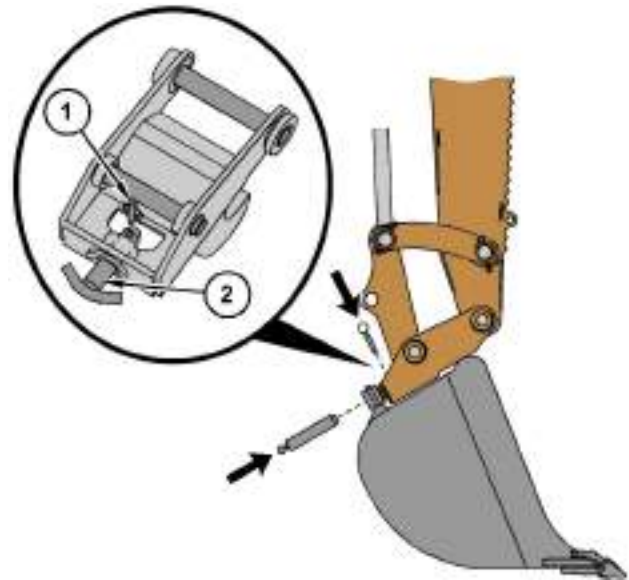


Illustration 456

g06286266

7. Fully insert the lock pin (1) into the quick coupler pin (2).
8. To verify the engagement of the work tool, perform the following procedure.
 - a. Start the engine. Retract and extend the stick cylinder to push the work tool against the ground.
 - b. Ensure that there is no movement between the work tool and the quick coupler.
 - c. Visually confirm the engagement of the work tool.

Releasing the Work Tool

WARNING

Disengaging the coupler pins will release the work tool from control of the operator.

Serious injury or death may result from disengaging the work tool when it is in an unstable position or carrying a load.

Place the work tool in a safe position before disengaging the coupler pins.

1. Lower the work tool onto a level surface. Make sure that the work tool is in full contact with the ground.
2. Remove the lock pin from the quick coupler pin.
3. Remove the quick coupler pin from the quick coupler.

4. Rotate the quick coupler out of the top pivot pin of the work tool.

i07329727

Quick Coupler Operation (Mechanical Pin Grabber Quick Coupler (If Equipped))

SMCS Code: 6129; 6522; 7000

NOTICE

The vibration caused by extensive use of a hydraulic hammer as well as the added weight of certain demolition tools such as shears, crushers, and pulverizers may cause premature wear and decreased service life of the coupler.

Be sure to inspect the coupler daily for cracks, bent components, or wear when operating with any of the above work tools.

General Operation

The quick coupler is used to change work tools, with minimal effort on the operators part. The quick coupler can be used with a broad range of buckets and work tools. Each work tool must have a set of pins in order for the quick coupler to work properly.

The work tools are held onto the quick coupler by two independent locking mechanisms. The work tool rear pin locking mechanism consists of a wedge that is actuated by a mechanical threaded actuator. This actuator provides a positive lock and is adjustable to ensure a rigid, tight interface between the work tool and the quick coupler. Additionally, a fully independent locking system exists on the front pin of the work tool. This system is spring applied, ensuring that the work tool is locked immediately after the front pin of the work tool is seated. Always ensure that both locking mechanisms are working properly before using the quick coupler.

Installation

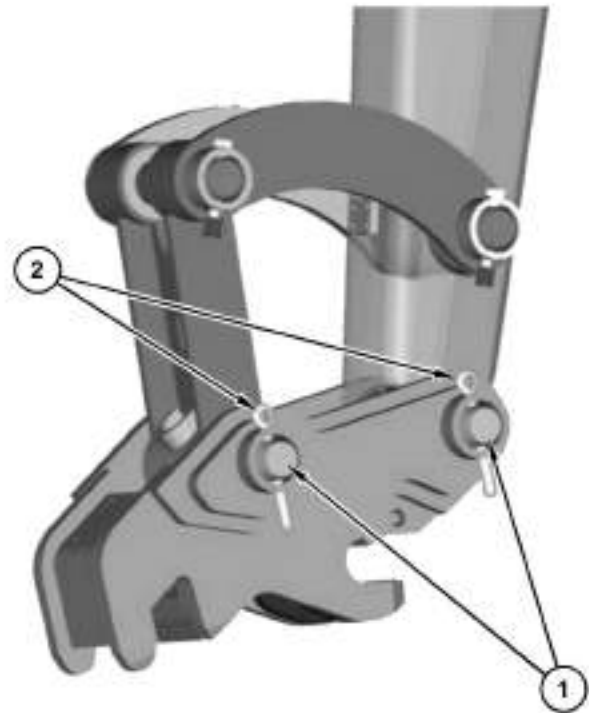


Illustration 457

g06286309

1. The quick coupler comes with two linkage pins (1) for installation on the machine. Lubricate the linkage pins (1) and pin bores before assembly on the machine.
2. Install the coupler and the linkage pins (1).

3. Install the cotter pins (2).

Coupling the Work Tool

WARNING

Improper attachment of work tools could result in serious injury or death.

Do not operate this machine until you have positive indication that the locking mechanisms are fully engaged. Check for engagement by:

- Visually confirm the engagement of the work tool. Ensure that both the front and rear pin locking mechanisms for the work tool are locked and secure the work tool to the quick coupler.
- Visually confirm positive indication of the ISO Engagement indicator, if equipped.
- Retract the bucket cylinder and drag the work tool on the ground.
- Visually confirm that there is no movement between the work tool and the quick coupler.

WARNING

Place the work tool or bucket in a safe position before engaging the quick coupler. Ensure that the work tool or bucket is not carrying a load.

Serious injury or death may result from engaging the work tool or bucket when it is in an unstable position or carrying a load.

WARNING

Crush injury. Could cause serious injury or death. Always confirm that the quick coupler is engaged onto the pins. Read the Operator's Manual.

NOTICE

With certain work tool combinations, including quick couplers, the work tool can hit the cab or the front of the machine. Always check for interference when first operating a new work tool.

1. Start the engine. Retract the bucket cylinder, positioning the quick coupler front locking mechanism over the front pin of the work tool.



Illustration 458

g06286320

2. Align the quick coupler front locking mechanism over the front pin of the work tool. Extend the stick cylinder until the automatic front locking mechanism of the quick coupler engages and secures the front pin of the work tool.



Illustration 459

g06286326

3. Extend the bucket cylinder to rotate the quick coupler toward the work tool until the quick coupler contacts the rear pin of the work tool. Position the work tool so that the work tool is slightly above the ground, with the front pin of the work tool higher than the rear pin of the work tool. If the work tool is a bucket, verify that the cutting edge is slightly higher than the bottom of the bucket. Stop the engine.

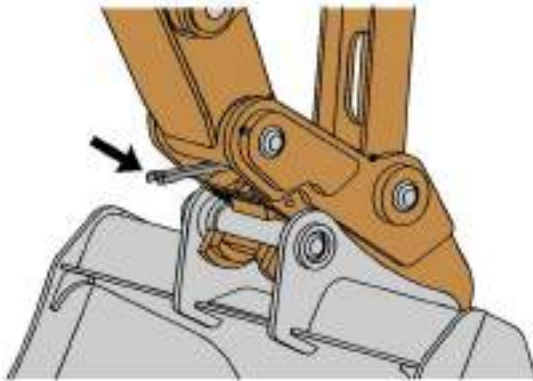


Illustration 460

g06286366

4. Using the supplied wrench, if equipped, and insert the ratcheting end onto the hex drive mechanism. Turn the ratchet in a clockwise direction to tighten the rear locking mechanism.
5. To verify the engagement of the work tool, perform the following procedure:
 - a. Visually confirm the engagement of the work tool. Ensure that both the work tool front and rear pin locking mechanisms are locked and securing the work tool to the coupler.
 - b. Retract the bucket cylinder and drag the work tool on the ground.
 - c. Visually confirm that there is no movement between the work tool and the quick coupler.

Uncoupling the Work Tool

WARNING

Place the work tool or bucket in a safe position before disengaging the coupler. Disengaging the coupler will release the work tool or bucket from control of the operator.

Serious injury or death may result from disengaging the work tool or bucket when it is in an unstable position or carrying a load.

NOTICE

Auxiliary hoses for work tools must be disconnected before the Hydraulic Quick Coupler is disengaged.

Pulling the work tool with the auxiliary hoses could result in damage to the host machine or the work tool.



Illustration 461

g06286326

1. To unlock the coupler, position the work tool so that the work tool is slightly above the ground, with the front pin of the work tool higher than the rear pin of the work tool. If the work tool is a bucket, verify that the cutting edge is slightly higher than the bottom of the bucket. Other work tools may need to be lowered to the ground. Stop the engine.

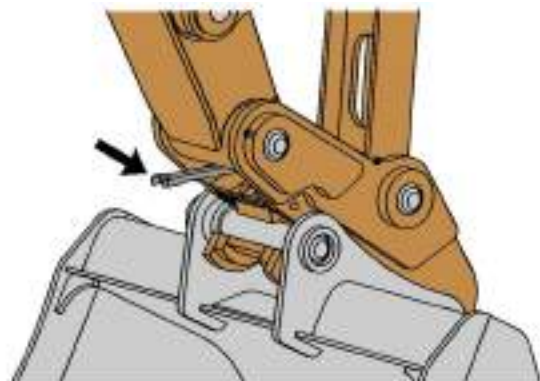


Illustration 462

g06286366

2. Using the supplied wrench, if equipped, and insert the ratcheting end onto the hex drive mechanism. Turn the wrench in a counterclockwise direction to release the rear locking mechanism.

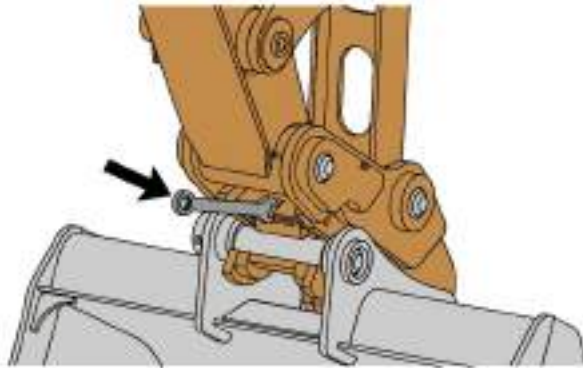


Illustration 463

g06286373

3. Using the supplied wrench, if equipped, and insert the open wrench end onto the front lock actuator. Push down on the wrench to rotate the front lock into an unlocked, detent position.
4. Start the engine. Lower the work tool to the ground.
5. Retract the bucket cylinder to rotate the quick coupler away from the work tool until the quick coupler disengages the rear pin of the work tool.
6. Move the stick away from the work tool to release the quick coupler from the front pin of the work tool. The front locking mechanism will automatically reset. The quick coupler is now ready to engage the next work tool.

Quick Coupler use with a Bucket that is Reversed

NOTICE

When some Cat buckets are used in the reverse position, it can be more difficult to couple the bucket and uncouple the bucket than in the normal position.

Care must be taken to ensure that the position of the boom, stick, and bucket are aligned to ensure smooth coupling. The coupler must be in position between the bucket bosses.



Illustration 464

g06286375

1. Follow the same steps for coupling and uncoupling the work tool to operate the coupler with a bucket that is reversed. Refer to "Coupling the Work Tool" and "Uncoupling the Work Tool" for the proper procedure.

i07330204

Quick Coupler Operation (Dual Lock Tilt Coupler (If Equipped))

SMCS Code: 6129; 6522; 7000

The quick coupler is used to change work tools while the operator remains in the cab. The quick coupler can be used with a broad range of buckets and work tools. Each work tool must have a set of pins in order for the quick coupler to work properly. The Dual Lock Tilt Quick Coupler also allows the work tool to rotate through a 180 degree arc.

The work tools are held onto the quick coupler by two independent locking mechanisms. The work tool rear pin locking mechanism consists of a hydraulically driven wedge. If pressure is lost, a check valve in the hydraulic cylinder traps oil to ensure that the lock remains in place. Additionally, a fully independent locking system exists on the front pin of the work tool. This system is spring applied and hydraulically released, ensuring that the work tool is locked immediately after the front pin of the work tool is seated. Always ensure that the hydraulic system and the locking mechanisms are working properly before using the quick coupler.

WARNING

Improper attachment of work tools could result in serious injury or death.

Do not operate this machine until you have positive indication that the locking mechanisms are fully engaged. Check for engagement by:

- **Visually confirm the engagement of the work tool. Ensure that both the front and rear pin locking mechanisms for the work tool are locked and secure the work tool to the quick coupler.**
- **Visually confirm positive indication of the ISO Engagement indicator, if equipped.**
- **Retract the bucket cylinder and drag the work tool on the ground.**
- **Visually confirm that there is no movement between the work tool and the quick coupler.**

WARNING

Place the work tool or bucket in a safe position before engaging the quick coupler. Ensure that the work tool or bucket is not carrying a load.

Serious injury or death may result from engaging the work tool or bucket when it is in an unstable position or carrying a load.

WARNING

Crush injury. Could cause serious injury or death. Always confirm that the quick coupler is engaged onto the pins. Read the Operator's Manual.

NOTICE

Before beginning installation, operating of machine, or repair of the Dual Lock Tilt Coupler:

The Dual Lock Tilt Coupler should only be used to perform tasks for which it was designed. Abusing the product and/or using it for purposes for which it was not intended can expose the operator and others to hazards as well as result in damage to the Dual Lock Tilt Coupler, carrier and/or other attachments.

Modification to the Dual Lock Tilt Coupler is done at the owner's risk and may void warranty.

NOTICE

The buzzer will not sound when the switch is in the lock position. The position of the switch does not confirm that the quick coupler locking system is properly engaged with the attachment pins. Visually confirm positive indication of the ISO Engagement Indicator, if equipped. A physical test is required by dragging the work tool on the ground to confirm that the coupler pins are engaged.

NOTICE

Always confirm that the buzzer sounds when the switch is in the unlock position. If no sound is heard while in this condition, ensure that the work tool is placed in a stable and safe position. Turn off the engine. Consult your Cat dealer.

NOTICE

With certain work tool combinations, including quick couplers, the work tool can hit the cab or the front of the machine. Always check for interference when first operating a new work tool.

Quick Coupler Operation

Refer to Operation and Maintenance Manual, "Quick Coupler Operation (Hydraulic Pin Grabber Quick Coupler)" for coupling and uncoupling the work tools.



Illustration 465

g06286461

Actuate Tilt Coupler to the Right (1) – Push the thumb wheel on the right joystick upward to tilt the coupler to the right.

Actuate Tilt Coupler to the Left (2) – Push the thumb wheel on the right joystick downward to tilt the coupler to the left.

DO NOT actuate angling of the coupler while in the process of digging. Angle actuation should be performed while the coupler is in the air and not engaged in material.

DO NOT operate the Dual Lock Tilt Coupler unless it is fully connected to a host machine. Auxiliary lines must be connected at all times to provide pressure relief.

i07518343

Quick Coupler Operation (Hydraulic Pin Grabber Quick Coupler (If Equipped))

SMCS Code: 6129; 6522; 7000

NOTICE

The vibration caused by extensive use of a hydraulic hammer as well as the added weight of certain demolition tools such as shears, crushers, and pulverizers may cause premature wear and decreased service life of the coupler.

Be sure to inspect the coupler daily for cracks, bent components, or wear when operating with any of the above work tools.

General Operation

The quick coupler is used to change work tools while the operator remains in the cab. The quick coupler can be used with a broad range of buckets and work tools. Each work tool must have a set of pins in order for the quick coupler to work properly.

The work tools are held onto the quick coupler by two independent locking mechanisms. The locks are controlled through a menu on the monitor system. Refer to Operation and Maintenance, "Monitoring System" for more information. The work tool rear pin locking mechanism consists of a hydraulically driven wedge. If pressure is lost, a check valve in the hydraulic cylinder traps oil to ensure that the lock remains in place. Additionally, a fully independent locking system exists on the front pin of the work tool. This system is spring applied and hydraulically released, ensuring that the work tool is locked immediately after the front pin of the work tool is seated. Always ensure that the hydraulic system and the locking mechanisms are working properly before using the quick coupler.

Installation

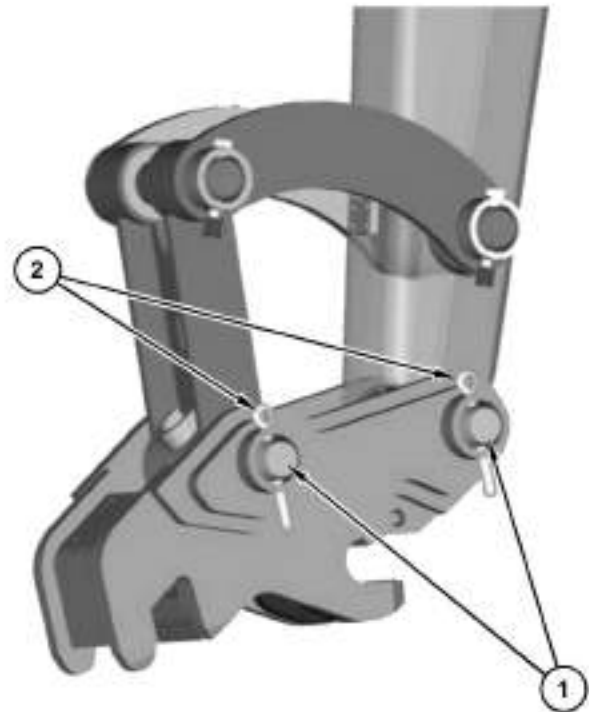


Illustration 466

g06286309

1. The quick coupler comes with two linkage pins (1) for installation on the machine. Lubricate the linkage pins (1) and pin bores before assembly on the machine.
2. Install the coupler and the linkage pins (1).

3. Install the cotter pins (2).

Quick Coupler Operation

Coupling the Work Tool

WARNING

Improper attachment of work tools could result in serious injury or death.

Do not operate this machine until you have positive indication that the locking mechanisms are fully engaged. Check for engagement by:

- Visually confirm the engagement of the work tool. Ensure that both the front and rear pin locking mechanisms for the work tool are locked and secure the work tool to the quick coupler.
- Visually confirm positive indication of the ISO Engagement indicator, if equipped.
- Retract the bucket cylinder and drag the work tool on the ground.
- Visually confirm that there is no movement between the work tool and the quick coupler.

WARNING

Place the work tool or bucket in a safe position before engaging the quick coupler. Ensure that the work tool or bucket is not carrying a load.

Serious injury or death may result from engaging the work tool or bucket when it is in an unstable position or carrying a load.

WARNING

Crush injury. Could cause serious injury or death. Always confirm that the quick coupler is engaged onto the pins. Read the Operator's Manual.

NOTICE

The buzzer will not sound when the switch is in the lock position. The position of the switch does not confirm that the quick coupler locking system is properly engaged with the attachment pins. Visually confirm positive indication of the ISO Engagement Indicator, if equipped. A physical test is required by dragging the work tool on the ground to confirm that the coupler pins are engaged.

NOTICE

Always confirm that the buzzer sounds when the switch is in the unlock position. If no sound is heard while in this condition, ensure that the work tool is placed in a stable and safe position. Turn off the engine. Consult your Cat dealer.

NOTICE

With certain work tool combinations, including quick couplers, the work tool can hit the cab or the front of the machine. Always check for interference when first operating a new work tool.



Illustration 467

g06286320

1. Align the quick coupler front locking mechanism over the front pin of the work tool. Extend the stick cylinder until the automatic front locking mechanism of the quick coupler engages and secures the front pin of the work tool.



Illustration 468

g06286326

2. Select "UNLOCK WEDGE" on the monitor display and confirm that the buzzer is sounding with an intermittent pattern of one beep per second. If no sound is heard while in this condition, ensure that the work tool is placed in a stable and safe position. Turn off the engine. Consult your Cat dealer. Extend the bucket cylinder until the rear of the quick coupler is rotated toward the work tool and contacts the work tool rear pin. Position the work tool so that it is slightly above the ground, with the front pin of the work tool higher than the rear pin of the work tool. If the work tool is a bucket, verify that the cutting edge is slightly higher than the bottom of the bucket.
3. Select "LOCK WEDGE" on the monitor display and the beep will stop and the rear lock (wedge) will slide back into place. The monitor will return to the home screen.

WARNING

Crush injury. Could cause serious injury or death. Always confirm that the quick coupler is engaged onto the pins. Read the Operator's Manual.

4. To verify the engagement of the work tool, perform the following procedure:

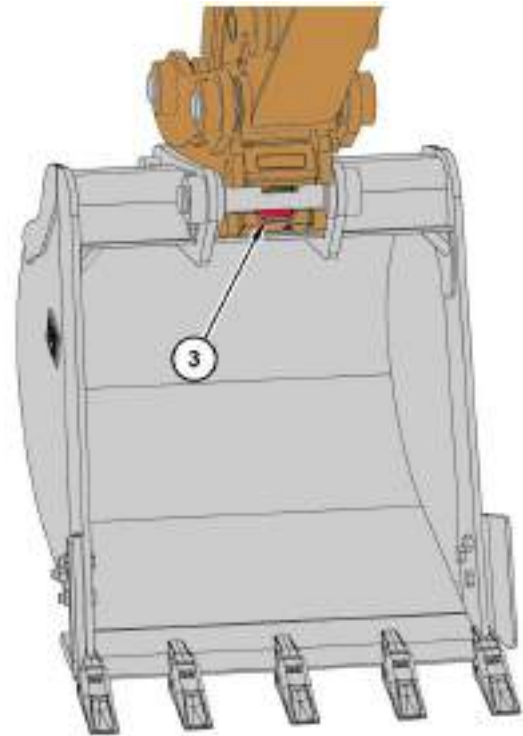


Illustration 469

g06286450

- a. Visually confirm the engagement of the work tool. Ensure that both the work tool front and rear pin locking mechanisms are locked and securing the work tool to the coupler.
- b. Visually confirm positive indication of the ISO Engagement indicator (3), if equipped.
- c. Retract the bucket cylinder and drag the work tool on the ground.
- d. Visually confirm that there is no movement between the work tool and the quick coupler.

NOTICE

Back drag the work tool on the ground to ensure the quick coupler is properly locked.

Do Not strike the work tool on the ground to ensure the quick coupler is properly locked. Striking the work tool on the ground will result in damage to the coupler cylinder.

Uncoupling the Work Tool

WARNING

Place the work tool or bucket in a safe position before disengaging the coupler. Disengaging the coupler will release the work tool or bucket from control of the operator.

Serious injury or death may result from disengaging the work tool or bucket when it is in an unstable position or carrying a load.

NOTICE

Auxiliary hoses for work tools must be disconnected before the Hydraulic Quick Coupler is disengaged.

Pulling the work tool with the auxiliary hoses could result in damage to the host machine or the work tool.

NOTICE

Always confirm that the buzzer sounds when the switch is in the unlock position. If no sound is heard while in this condition, ensure that the work tool is placed in a stable and safe position. Turn off the engine. Consult your Cat dealer.



Illustration 470

g06286326

1. To unlock the coupler, position the work tool so that it is slightly above the ground, with the front pin of the work tool higher than the rear pin of the work tool. If the work tool is a bucket, verify that the cutting edge is slightly higher than the bottom of the bucket.
2. Press the button for the "UNLOCK WEDGE" . Confirm that the buzzer is sounding with an intermittent pattern of one beep per second. If no sound is heard while in this condition, ensure that the work tool is placed in a stable and safe position. Turn off the engine. Consult your Cat dealer.

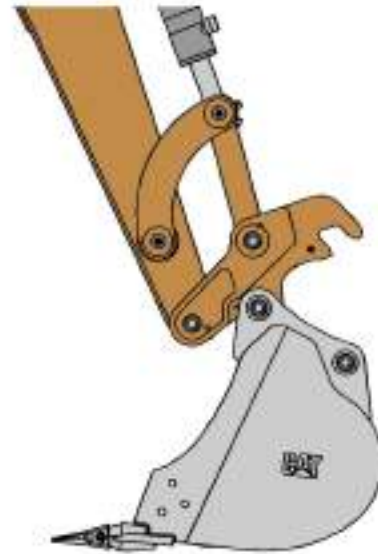


Illustration 471

g06286443

3. Retract the bucket cylinder, ensuring that the work tool rear pin locking mechanism is unlocked. The rear of the quick coupler should be rotated away from the work tool. Place the work tool in a stable and safe position on the ground.
4. Select "UNLOCK FRONT" on the monitor display. Confirm that the buzzer is sounding with an intermittent pattern of two beeps per second. The work tool front pin locking mechanism will unlock. This locking mechanism will remain unlocked for 10 seconds.



Illustration 472

g06286320

5. Within the 10-second time period, retract the stick cylinder until the quick coupler is disengaged from the work tool. Ensure that the work tool is in a stable and safe storage position on the ground.
6. Select "LOCK WEDGE" on the monitor display and the beep will stop and the rear lock (wedge) will slide back into place. The monitor will return to the home screen.

Coupling a Bucket that is Reversed

NOTICE

When some Cat buckets are used in the reverse position, it can be more difficult to couple the bucket and uncouple the bucket than in the normal position.

Care must be taken to ensure that the position of the boom, stick, and bucket are aligned to ensure smooth coupling. The coupler must be in position between the bucket bosses.



Illustration 473

g06286375

1. Follow the same steps for coupling and uncoupling the work tool to operate the coupler with a bucket that is reversed. Refer to "Coupling the Work Tool" and "Uncoupling the Work Tool" for the proper procedure.

i08509311

Quick Coupler Operation (CW (Single Lock) Quick Coupler (If Equipped))

SMCS Code: 6129; 6522; 7000

NOTICE

The vibration caused by extensive use of a hydraulic hammer and the added weight of certain demolition tools such as shears, crushers, and pulverizers may cause premature wear and decreased service life of the coupler.

Be sure to inspect the coupler daily for cracks, bent components, or wear when operating with any work tools.

General Operation

The CW coupler is used to change work tools quickly. The quick coupler can be used with a broad range of buckets and work tools.

Installation Procedure

WARNING

Personal injury or death can result from improperly checking for a leak.

Always use a board or cardboard when checking for a leak. Escaping air or fluid under pressure, even a pin-hole size leak, can penetrate body tissue causing serious injury, and possible death.

If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of injury.

Note: Hydraulic oil may be trapped in the lines if the hydraulic lines are plugged or if the hydraulic lines are connected. The trapped oil may be under pressure. Use care when you open the hydraulic lines.

Note: The quick coupler must be controlled by the excavator's hydraulic system.

Perform this procedure as described in the following steps:

Ensure that the quick coupler is compatible with the host machine. For more information, consult your Caterpillar dealer.

To provide a stable operating condition, the host machine must be on flat, level ground. The host machine must be blocked to prevent inadvertent movement.

The quick coupler must be supported to prevent inadvertent movement. Position the quick coupler to prevent unnecessary climbing and unnecessary bending.

Optimum alignment of the bores will prevent the use of unnecessary force when you install the pins. Never check the alignment of the bores with your fingers. Use the proper tools to check the alignment of the bores.

A retaining pin can fly out when the retaining pin is struck with force. The area must be clear of people when you drive retaining pins.

When you strike objects, chips and other debris can fly. Before you strike any object, make sure that no one can be injured by the flying debris. Always wear appropriate PPE, including safety glasses.

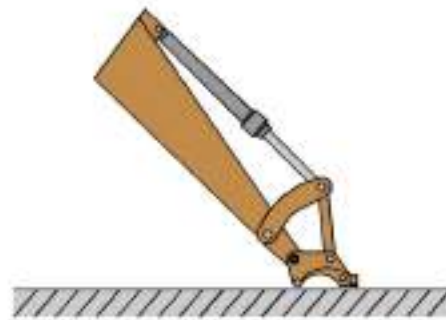


Illustration 474

g06286468

1. Position the quick coupler on the ground in front of the host machine. Make sure that the wedge faces away from the host machine.
2. Install the mounting pins.
3. Lubricate all the mounting points.
4. Connect the hydraulic lines to the quick coupler (if equipped).
5. After mounting the quick coupler on the excavator, or after working on the quick coupler hydraulic system, it is necessary to purge all the air from the cylinder and the control system. Refer to the "Hydraulic System Air Purge" for additional information.

Quick Coupler Removal Procedure

1. Lay the quick coupler flat on the ground.
2. Release the pressure from the hydraulic lines (if equipped).
 - a. Extend the wedge to the UNLOCKED position.
 - b. Stop the engine on the host machine. Turn the ignition to OFF.
 - c. Turn the ignition to the ON position without starting the engine.
 - d. Move the hydraulic control levers repeatedly through the full range of motion. This will release any pressure that may be present in the hydraulic system. Actuate the quick coupler using the machine control monitor. Cycle through locking and unlocking the quick coupler several times to release trapped hydraulic pressure within the quick coupler circuit.
 - e. The wedge should begin to move inward due to the spring force.

- f. Turn the ignition to the OFF position.
- g. Release the pressure in the host machine's hydraulic tank.

WARNING

Personal injury or death can result from improperly checking for a leak.

Always use a board or cardboard when checking for a leak. Escaping air or fluid under pressure, even a pin-hole size leak, can penetrate body tissue causing serious injury, and possible death.

If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of 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, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat® products.

Dispose of all fluids according to local regulations and mandates.

3. Place a suitable container below the hydraulic fittings to catch any hydraulic oil that may escape. Slowly disconnect the hydraulic lines. Plug the ends of the hydraulic lines or connect the hydraulic lines.
4. Dispose of the hydraulic oil in a suitable manner.
5. Remove the pins from the quick coupler.

Daily Inspection

WARNING

Personal injury or death can result from improperly checking for a leak.

Always use a board or cardboard when checking for a leak. Escaping air or fluid under pressure, even a pin-hole size leak, can penetrate body tissue causing serious injury, and possible death.

If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of injury.

NOTICE

Accumulated grease and oil on a work tool is a fire hazard.

Remove debris with steam cleaning or high pressure water at any time a significant quantity of oil is spilled on the work tool.

Note: If major repairs to the quick coupler are required, consult your Caterpillar dealer.

1. For the maximum service life of the work tool, make a thorough daily inspection before you mount a work tool to the host machine.
2. Inspect the quick coupler for the following conditions: loose bolts, oil leaks, broken parts, missing parts and cracked components. Check the overall condition of the quick coupler. Check the overall condition of the hydraulic system.
3. Inspect the warning signs and labels. Replace warning signs or labels that are missing. Replace warning signs or labels when you cannot read the warning signs or labels.
4. If equipped, inspect the condition of the hydraulic lines and the hydraulic fittings.
5. Check the mounting pins for the quick coupler.
6. Inspect the bolts for the wedge when you remove the wedge.
7. Check the lifting device, if equipped. If damage is present, do not use the lifting device. Contact your Caterpillar dealer for repairs.
8. Perform all repairs before you put the quick coupler into service.
9. Perform an UNLOCK and LOCK cycle of the wedge to provide a smooth operation of the wedge. This procedure is for the quick coupler with hydraulic coupling only.

Operation

Coupling the Work Tool

WARNING

Place the work tool or bucket in a safe position before engaging the quick coupler. Ensure that the work tool or bucket is not carrying a load.

Serious injury or death may result from engaging the work tool or bucket when it is in an unstable position or carrying a load.

⚠ WARNING

Crush injury. Could cause serious injury or death. Always confirm that the quick coupler is engaged onto the pins. Read the Operator's Manual.

Reference: For more information on connecting the quick coupler to the host machine, contact your dealer for special instructions.

Quick Coupler with Hydraulic Coupling**⚠ WARNING**

Place the work tool or bucket in a safe position before engaging the quick coupler. Ensure that the work tool or bucket is not carrying a load.

Serious injury or death may result from engaging the work tool or bucket when it is in an unstable position or carrying a load.

NOTICE

The buzzer will not sound when the switch is in the lock position. The position of the switch does not confirm that the quick coupler locking system is properly engaged with the attachment pins. Visually confirm positive engagement of the locking system. A physical test is required by dragging the work tool on the ground to confirm that the coupler is properly engaged with the work tool.

NOTICE

Always confirm that the buzzer sounds when the switch is in the unlock position. If no sound is heard while in this condition, ensure that the work tool is placed in a stable and safe position. Turn off the engine. Consult your Cat dealer.

NOTICE

With certain work tool combinations, including quick couplers, the work tool can hit the cab or the front of the machine. Always check for interference when first operating a new work tool.

1. Verify that the wedge is in the unlocked position. If the wedge is not extended, extend the bucket cylinder. Then, extend the wedge.

⚠ WARNING

Ensure that the wedge is extended before coupling the work tool. Severe damage may occur. Failing to extend the wedge before coupling the work tool could result in a poorly coupled work tool or an uncoupled work tool.

Serious injury or death may result from an improperly coupled work tool.

2. Ensure that the mounting bracket of the work tool is in line with the host machine. The work tool must be facing the host machine. The mounting bracket must be at the top of the work tool.

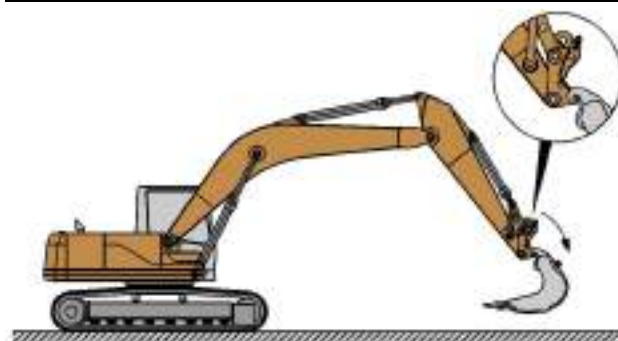
Coupling a Bucket

Illustration 475

g06286473

1. Hook the forward pivot of the quick coupler into the hooks of the mounting bracket.

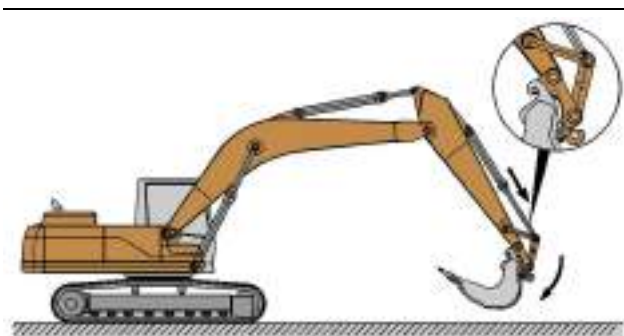


Illustration 476

g06286475

2. Select "UNLOCK" on the monitor display and confirm that the buzzer is sounding with an intermittent pattern of one beep per second. If no sound is heard while in this condition, ensure that the work tool is placed in a stable and safe position. Turn off the engine. Consult your Cat dealer. Extend the bucket cylinder until the coupler contacts the work tool.
3. Select "LOCK" on the monitor display and the beep will stop and the rear lock (wedge) will slide back into place. The monitor will return to the home screen.
4. Visually confirm that the wedge has engaged the work tool hook and is properly locked. If this visual confirmation cannot be performed from the machine cab due to obstruction, lighting, etc., place the machine in a safe state, exit the cab, and visually confirm proper engagement at the quick coupler.

WARNING

Inspect the quick coupler engagement before operating the machine.

Serious injury or death may result from improperly engaged coupler.

NOTICE

Visually confirm that the quick coupler engagement system is properly locked to the work tool. Confirm that the wedge has engaged the work tool hook and is properly locked.

5. Verify the engagement of the quick coupler and the work tool.
 - a. Place the work tool on the ground.

- b. Apply pressure to the work tool against the ground.
- c. Drag the work tool forward and backward.

Quick Coupler with Mechanical Coupling

WARNING

Place the work tool or bucket in a safe position before engaging the quick coupler. Ensure that the work tool or bucket is not carrying a load.

Serious injury or death may result from engaging the work tool or bucket when it is in an unstable position or carrying a load.

1. Ensure that the work tool mounting bracket is in line with the host machine. The work tool must be facing the host machine. The mounting bracket must be at the top of the work tool.

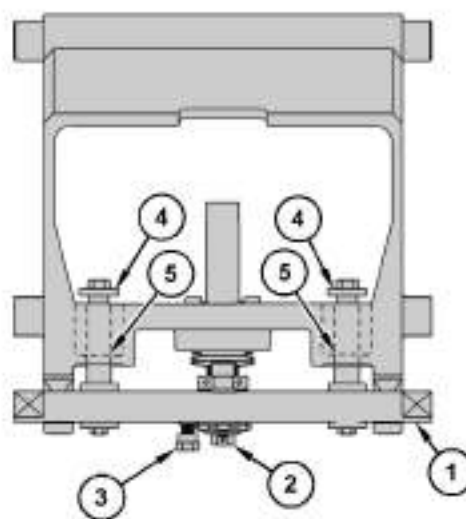


Illustration 477

g06334920

2. To move wedge (1) to the UNLOCKED position, perform the following steps:
3. Loosen lock bolt (3) until you can turn spindle (2).
4. Turn spindle (2) until the bolts (4) lightly contact the coupler (5).
5. Position the coupler with the wedge in an UPWARD position.

Coupling a Bucket

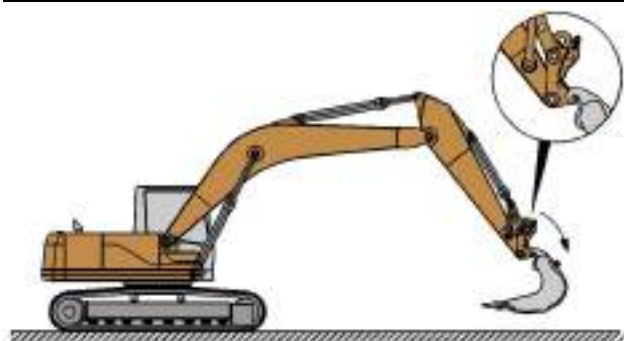


Illustration 478

g06286473

1. Hook the front pivots into the hooks of the mounting bracket on the work tool.

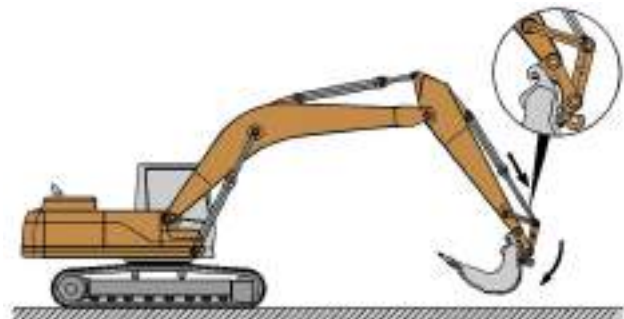


Illustration 479

g06286475

2. Tilt the quick coupler against the work tool by extending the bucket cylinder. Stop the engine of the host machine.
3. Turn the spindle inward. Tighten the spindle.

Note: If necessary, tighten the spindle until the next notch is aligned with the locking bolt.

4. Tighten the locking bolt.

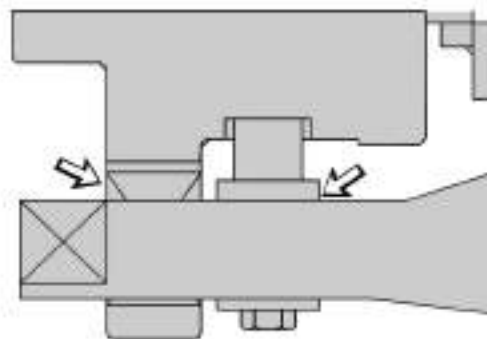


Illustration 480

g06334926

5. Ensure that there is a visible space between the wedge and the quick coupler frame. If there is not a space, the mounting bracket or the quick coupler may be damaged.

WARNING

Inspect the quick coupler engagement before operating the machine.

Serious injury or death may result from improperly engaged coupler.

6. Verify the engagement of the quick coupler and the work tool.
 - a. Place the work tool on the ground.
 - b. Apply pressure to the work tool against the ground.
 - c. Drag the work tool forward and backward.

Uncoupling the Work Tool

Use the following steps to prepare the quick coupler for uncoupling.

NOTICE

Auxiliary hoses for work tools must be disconnected before the Hydraulic Quick Coupler is disengaged.

Pulling the work tool with the auxiliary hoses could result in damage to the host machine or the work tool.

1. Disconnect any auxiliary hoses from the work tool (if equipped).
2. Ensure that the work tool is clear of the ground.
3. Fully extend the bucket cylinder. Extend the stick cylinder until the wedge is pointing downward. The load is now released from the wedge.

Quick Coupler with Hydraulic Coupling**⚠ WARNING**

Place the work tool or bucket in a safe position before disengaging the coupler. Disengaging the coupler will release the work tool or bucket from control of the operator.

Serious injury or death may result from disengaging the work tool or bucket when it is in an unstable position or carrying a load.

1. Extend the wedge cylinder.
2. Retract the bucket cylinder. The work tool is now suspended by the front pivot.
3. Place the work tool on the ground.
4. Unhook the quick coupler from the mounting bracket.

Quick Coupler with Mechanical Coupling**⚠ WARNING**

Place the work tool or bucket in a safe position before disengaging the coupler. Disengaging the coupler will release the work tool or bucket from control of the operator.

Serious injury or death may result from disengaging the work tool or bucket when it is in an unstable position or carrying a load.

1. Stop the engine of the host machine.
2. Loosen the locking bolt until you can turn the spindle.
3. Turn the spindle outward. If necessary, strike the wedge with a hammer to release the wedge.
4. Retract the bucket cylinder. The work tool will be suspended by the front pivot.
5. Place the work tool on the ground.
6. Unhook the quick coupler from the mounting bracket.

Lifting Loads**⚠ WARNING**

Lifting loads with the quick coupler is only permitted when there is no work tool attached. Lifting loads when there is a work tool attached may result in serious injury or death.

NOTICE

If used to lift loads, then the excavator must comply with the requirements for lifting machinery. These are given in standard EN 474-5. For more information, consult your Caterpillar dealer.

Note: When you lift loads with the lifting yoke or the lifting hook, the wedge must be retracted or the wedge must be removed from the coupler.

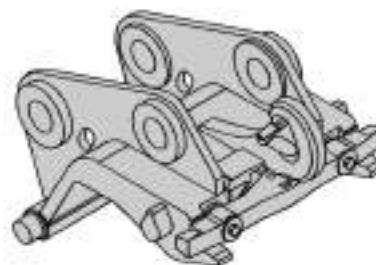
Lifting Hook (If Equipped)

Illustration 481

g06286477

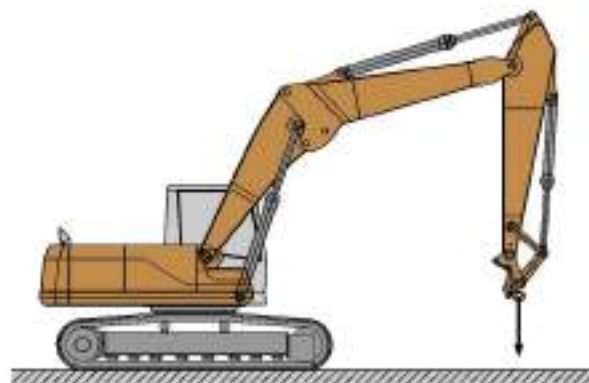


Illustration 482

g06286480

1. Fully extend the bucket cylinder.
2. Make sure that the wedge has been retracted or that the wedge has been removed.

⚠ WARNING

Use an appropriate lifting device that is rated for the specific load. Failure to do so can result in serious injury or death.

3. Fasten an appropriate chain, cable, or a lifting strap to the lifting hook. Do not perform any lifting operations if the safety latch is missing. Do not perform any lifting operations if the safety latch is damaged. Contact your supplier.

Lifting Objects

WARNING

To prevent injury, do not exceed the rated load capacity of the machine. If the machine is not on level ground, load capacities will vary.

The quick coupler and attached lifting hook have unique rated load capacities. Each capacity is marked on the corresponding component. Do not exceed the maximum capacity of any component used in a lifting operation. Quick coupler capacities are listed in the table below:

Table 48

Quick Coupler Rated Capacities ⁽¹⁾	
Quick Coupler Model	Rated Capacity
CW05	600 kg (1322 lb)
CW10	1400 kg (3086 lb)

⁽¹⁾ Capacities rated in accordance with EN 474-1:2006+A4:2013 Annex E and ASS 1418.8-2008 standards

Refer to the load charts in the Operation and Maintenance Manual of the host machine. Use the load charts and account for the mass of the work tool. Calculate the load capacity relative to the location of the lifting point on your specific host machine.

Use a sling or a shackle to attach to the lifting point and lift the object. The sling or the shackle must have a rated capacity that is greater than the mass of the load.

Regional regulations may require the use of an overload warning device and boom and stick lowering control valves when used to lift objects.

The overload warning device (if equipped) must be adjusted for the bucket linkage and bucket size that is installed on the machine. Adjust the overload warning device for proper operation.

The setting for the overload warning device (if equipped) should be checked by an authorized dealer.

Contact your Cat dealer for additional information.

The setting for the overload warning device should be checked by an authorized dealer.

i06978374

Bucket - Remove and Install

SMCS Code: 6001-011; 6001-012; 6001; 6101; 6102; 6523

Removal Procedure

WARNING

Failure to follow the instruction below for the installation of a work tool may result in personal injury or death. Special care must be taken if more than one person is installing the work tool.

- Confirm the verbal communication and the hand signals that will be used during the installation.
- Be alert for sudden movement of the front linkage and the work tool.
- Do not insert fingers into the bores of the support pins when the support pins and the bores are being aligned.

NOTICE

To facilitate removal of the bucket pins without causing damage to the pins, the bearings, and/or the O-ring seals put the bucket on the floor and the stick in a vertical position, as shown.



Illustration 483

g06181120

1. Start the engine. Park the machine on a hard, level surface. Position the bucket, the stick, and the bucket control linkage, as shown. Shut off the engine.

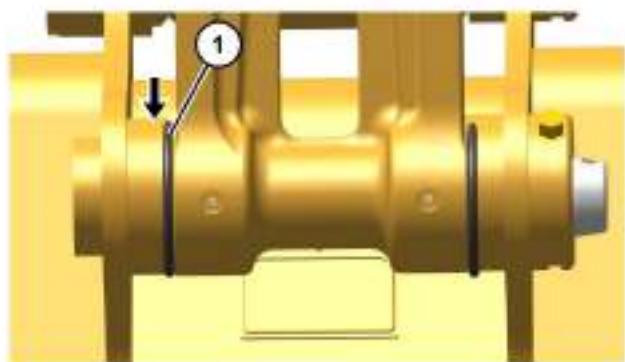


Illustration 484

g06192508

2. Slide O-ring seals (1) off the pin joints and onto the flanges of the bucket.

WARNING

When the pin assembly is removed, the linkage assembly may swing out of the bucket. To prevent possible personal injury, do not stand in front of the linkage assembly when the pin assembly is being removed.

Note: Removing the support pin may be difficult due to excessive pressure on the support pin. Remove the pressure on the support pin by adjusting the front linkage.

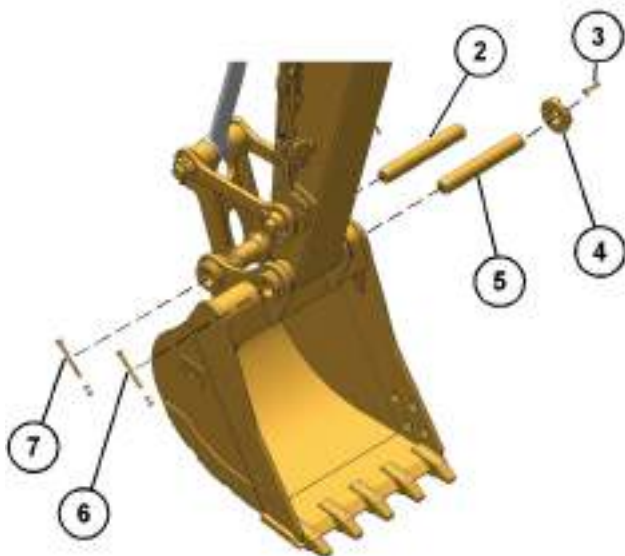


Illustration 485

g06186090

3. Remove nuts and retaining bolt (7) from support pin (2). Remove the support pin.

4. Remove bolts (3) and adapter plate (4). Remove the shims.
5. Remove nuts and retaining bolt (6) from support pin (5). Remove the support pin.
6. Start the engine and raise the stick out of the bucket.
7. Remove the O-ring seals (1) from the flanges on the bucket.

Note: After the support pins have been removed, make sure that the support pins do not become contaminated with sand or dirt. Make sure that the seals on the end of the stick and the seals on the end of the link do not become damaged.

Installation Procedure

1. Clean each pin and each pin bore. Lubricate each pin bore with molybdenum grease.

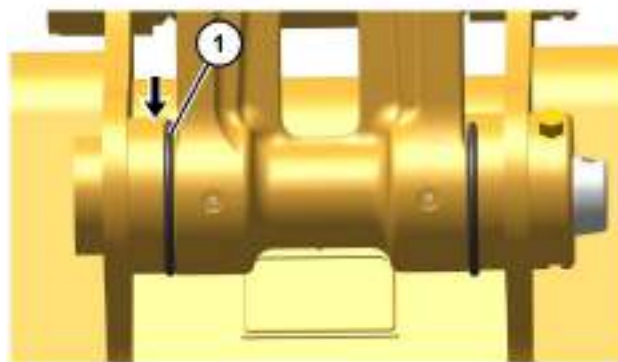


Illustration 486

g06192508

2. Position the O-ring seals (1) onto the flanges of the bucket.
3. Start the engine and lower the stick into the bucket until the pin bores are in alignment with each other. Stop the engine.

Operation Section
Bucket - Remove and Install

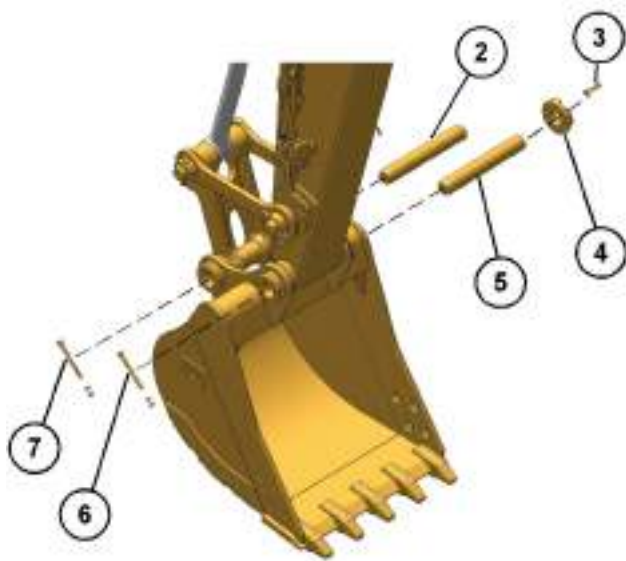


Illustration 487

g06186090

4. Install support pin (5). Align the retaining bolt hole in the support pin with the retaining bolt hole in the bucket.
5. Install the retaining bolt and nuts (6). Install adapter plate (4) without the shims, and without bolts (3) that hold the adapter plate.
6. Refer to Operation and Maintenance Manual, "Bucket Linkage - Inspect/Adjust" to adjust the bucket clearance.
7. Slide O-ring seals (1) in position over the pin joints between the bucket and the stick.
8. Start the engine and position the bucket linkage into the bucket until the pin bores are in alignment with each other. Stop the engine.
9. Install support pin (2). Align the retaining bolt hole in the bucket pin with the retaining bolt hole in the bucket.
10. Install retaining bolt and nuts (7).
11. Slide the O-ring seals (1) over the pin joints between the bucket and the link assembly.

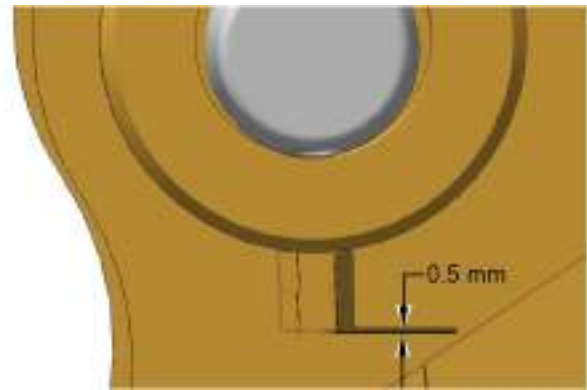


Illustration 488

g06192530

12. Tighten retaining nuts (6) and (7). Position the outside nut even with the end of the retaining bolt or 0.5 mm (0.02 inch) beyond the end of the retaining bolt. Tighten the inside nut against the outside nut.

13. Lubricate the bucket pins. Refer to Operation and Maintenance Manual, "Bucket Linkage - Lubricate".

i07311012

Work Tool Operation (If Equipped)

SMCS Code: 6700; 7000

Hammer Operation (If Equipped)



Illustration 489

g06222793

NOTICE

Use only a hydraulic hammer that is recommended by Caterpillar.

The use of a hydraulic hammer that is not recommended by Caterpillar could result in structural damage to the host machine.

Consult your Cat dealer for information on recommended hydraulic hammers.

Only use the hydraulic hammer to break rocks, concrete, and other hard objects. Before you start hydraulic hammer operation, place the machine on a level, stable surface.

Before you start hydraulic hammer operation, close the front window. Caterpillar recommends the installation of a window guard on the front window for protection from flying debris.

NOTICE

In order to avoid structural damage to the host machine or the hydraulic hammer, comply with the following:

Do not attempt to break rocks or concrete by burying the hammer tool completely into the rocks or concrete.

Do not apply a prying force to the hammer tool in order to remove the hammer tool from the material.

Do not allow the hydraulic hammer to operate at one location and for more than 15 seconds. Change the location of the hydraulic hammer and repeat the procedure. Failure to change the location of the hydraulic hammer could cause the hydraulic oil to overheat. Overheated hydraulic oil could damage the accumulator.

Stop the hydraulic hammer immediately if the jumper lines are pulsating violently. This indicates that the accumulator nitrogen charge is lost. Consult your Caterpillar dealer for the necessary repair.

NOTICE

Do not use the dropping force of the hydraulic hammer to break rocks or other hard objects. This could cause structural damage to the machine.

Do not use the sides or back of the hydraulic hammer to move rocks or other hard objects. Doing this could cause damage not only to the hammer but to stick or boom cylinder.

Do not operate the hydraulic hammer with any of the cylinders fully retracted or extended. Doing this could cause structural damage to the machine, resulting in reduced machine life.

Do not use the hydraulic hammer to lift an object.

Do not operate the hydraulic hammer while the stick is vertical to the ground. This could allow the stick cylinder to vibrate excessively.

Operate the attachment control levers carefully to keep the hydraulic hammer tool from hitting the boom.

Do not operate the hydraulic hammer under water unless the hydraulic hammer is properly equipped. Operating the hydraulic hammer under water could damage the machine hydraulic system. Consult your Caterpillar dealer for information on underwater operation.

Operation Section
If Equipped

Do not operate the hydraulic hammer with the upper structure sideways to the undercarriage. Before you start hydraulic hammer operation, place the upper structure in the recommended positions that are shown in illustration 490. Any other operating positions could make the machine unstable. Any other operating positions could place excessive loads on the undercarriage.

Refer to the following for any additional questions about the operation and care of your Caterpillar hydraulic hammer:

- Operation and Maintenance Manual, SEBU7346, "Hydraulic Hammers"
- The Operation and Maintenance Manual specific to your machine

An operation and maintenance decal, SMEU7397, is available for all hydraulic hammers. The decal provides procedures for operation and maintenance of the hydraulic hammers. The decal can be placed on the machine or the hammer. The decal can be obtained through the normal literature ordering channels.

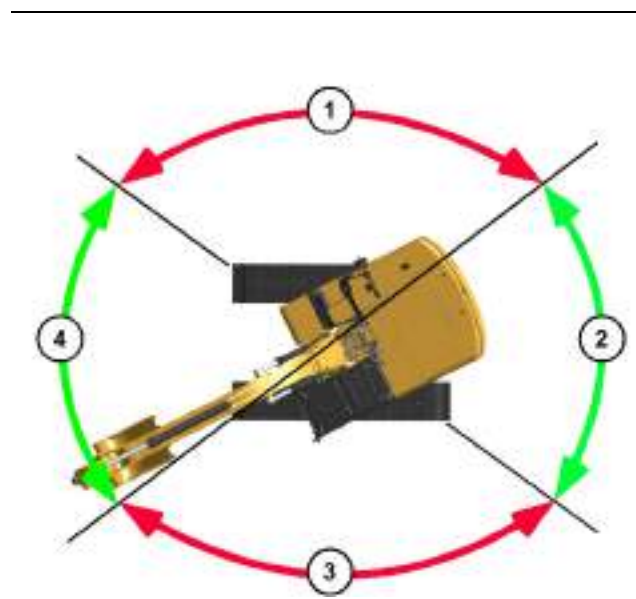


Illustration 490

g06192837

- (1) Incorrect working position
- (2) Correct working position
- (3) Incorrect working position
- (4) Correct working position

Shear Operation (If Equipped)



Illustration 491

g06222798

WARNING

Do not operate or work on this work tool unless you have read and understand the instructions and warnings in the Operation And Maintenance Manual for both the work tool and the host machine.

Failure to follow the instructions or heed the warnings could result in injury or death.

Contact your Caterpillar dealer for replacement manuals. Proper care is your responsibility.

NOTICE

Selection of a hydraulic shear must be done with extra care.

Use of a hydraulic shear not recommended by Caterpillar could result in structural damage to the host machine.

Consult your Cat dealer for hydraulic shear information.

WARNING

Serious injury or death could occur from the demolition of pipes, vessels, tanks or other containers that may contain gas, flammable materials or hazardous chemicals.

Do not perform any demolition work on these items until all of their contents have been removed.

Follow all regulations for the removal and disposal of these materials.

NOTICE

Using the demolition tool to level the work site or push over standing structures may damage the machine or the demolition tool. Use appropriate equipment to do site preparation or maintenance operations.

NOTICE

To avoid structural damage to the machine, do not break road surfaces by placing the cutting edge of the hydraulic shear on the ground and moving the machine.

Be sure that no one is near the work tool to prevent injury. Keep the work tool under control at all times to prevent injury. When a demolition tool is used, all personnel must maintain a minimum distance of 10 m (33 ft).

Close all windows. Make sure that all required guards are in place. Wear all required protective equipment. Follow the instructions in the Operation and Maintenance Manual for the work tool.

Crusher Operation (If Equipped)

WARNING

Improper operation and maintenance of the crusher could cause personal injury or death. Observe the following procedures for safe operation of the crusher.

Consult your Cat dealer for more information on the operation and maintenance of the crusher.

Do not operate the host machine with the work tool unless you have read and understood the instructions and warnings in the Operation and Maintenance Manual. Failure to follow the instructions or heed the warnings could result in machine or work tool damage, and/or serious injury or death. Contact your Cat dealer for a replacement manual, if needed.

When the crusher is installed on the host machine, always make sure that the protective guarding is in place.

Using the crusher in an incorrect manner can damage the machine and/or cause personal injury or death.

Always ensure that the work area is clear of ground personnel, due to the potential crush hazards with falling debris and machine movement.

Resting or placing your foot on the work tool pedal could result in unexpected movement of the machine / work tool which could result in personal injury or death. Always lock the crusher when not in use.

NOTICE

Selection of a hydraulic crusher must be done with extra care.

Use of a hydraulic crusher not recommended by Caterpillar could result in structural damage to the host machine.

Consult your Cat dealer for hydraulic crusher information.

Close all windows. Make sure that all required guards are in place. Wear all required protective equipment. Follow the instructions in the Operation and Maintenance Manual for the work tool.



Illustration 492

g06222800

Demolition work on the roof of a building could lead to serious personal injury if the building were to collapse and the excavator turned over or fell off the roof. The demolition work must be started ONLY AFTER surveying the building for its structural integrity.



Illustration 493

g06222803

Crushing work above your head must be avoided because objects can fall and damage the machine.

X



Illustration 494

g06222806

Do not perform demolition work at the base of the machine, because the ground could be unstable and cause the machine to fall.

X



Illustration 495

g06222809

Do not suddenly lower or stop the work tool, otherwise the excavator could turn over.

X

X



Illustration 496

g06222813

Crushing work using impact, swing, or dropping forces of the excavator could cause damages to the machine and also could lead to personal injury. As such, NEVER perform such an operation.

X



Illustration 497

g06222817

Crushing work with hydraulic cylinder at stroke end position could damage the excavator, resulting in shortening of lifespan. Also, as it could lead to unexpected personal injury due to breakage of the machine, do not perform any work at stroke end.



Illustration 498

g06222821

When performing work at elevated positions, always use care for the surroundings as well as for falling objects to avoid personal injury. Use guide personnel and signs as required.



Illustration 500

g06222831

Crushers could interfere with the boom and the cab depending on the type and method of usage. Know the working range of the crusher being used.



Illustration 499

g06222829

When working sideways, the track can lift. Avoid abrupt operation and operate slowly.

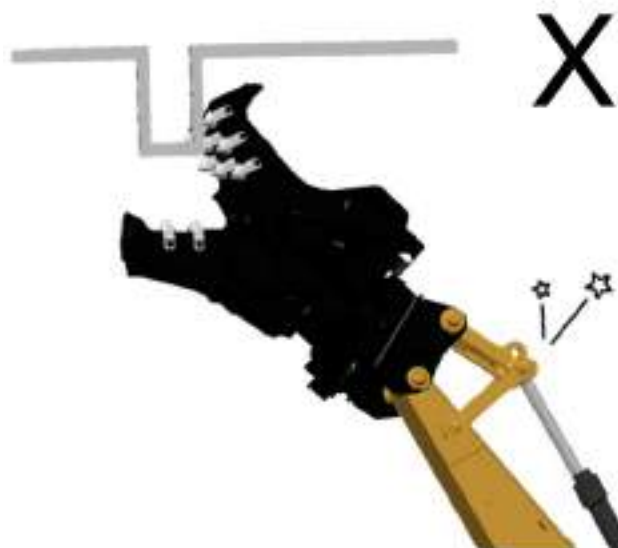


Illustration 501

g06222833

If the tooth of the crusher engages an object at a slant, excessive forces could be applied to the front regions. As such move the crusher to the front.

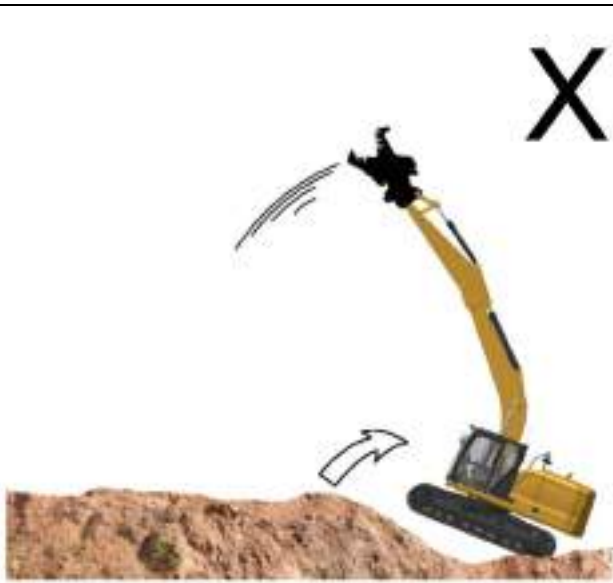


Illustration 502

g06222836

Never extend the boom cylinder suddenly. Sudden extension of the boom could cause tip backwards.



Illustration 503

g06222831

Sudden extension of the bucket cylinder, or sudden extension of the stick cylinder could cause damages at the stroke end position, resulting in personal injury. Operations that cause sudden extension of the cylinders is PROHIBITED!

i01582993

Blade Operation

SMCS Code: 6060

NOTICE

Avoid hitting or moving rocks using the blade. Blade and cylinder damage could occur.

When using the blade as outrigger, be sure to support the machine with the edge of the blade against the ground. When curling the front attachment, do not allow the bucket to hit the blade.

During digging operation, do not allow the boom cylinder to contact the blade edge. When no blade operation is needed, operate with the bucket on the opposite side of the machine from the blade.

Do not swing the upper structure with cab door and/or upper structure covers opened. An opened door and/or cover can hit the blade when the blade is in the raised position while the machine is swinging.

Parking

i07311026

Stopping the Machine

SMCS Code: 7000

WARNING

Leaving the machine unattended when the engine is running may result in personal injury or death. Before leaving the machine operator station, neutralize the travel controls, lower the work tools to the ground and deactivate all work tools, and place the lever for the hydraulic lockout control in the LOCKED position.

Note: There may be regulations that define the requirements for the operator and/or support personnel to be present when the engine is running.

Park on a level surface. If the machine must be parked on a grade, chock the tracks securely.

Note: The swing parking brake is automatically applied when the machine is stopped. The swing parking brake is released when the engine is running and the joystick is activated.

1. Turn the engine speed dial counterclockwise to reduce engine speed.



Illustration 504

g06181402

2. Release the travel levers/pedals to stop the machine.

3. Lower the work tool to the ground. Apply a slight downward pressure.
4. Move the hydraulic lockout control to the LOCKED position.

i07311032

Freezing Conditions

SMCS Code: 7000

If freezing temperatures are expected, remove the mud and the dirt from each track roller frame. Park the machine on wood planks. Use the following procedure to clean each track roller frame.



Illustration 505

g06188791

1. Position the boom over one side of the machine.
2. Use boom down pressure to lift the track on one side off the ground. Operate the track in the forward direction. Then operate the track in reverse. Continue this procedure until the maximum amount of material is thrown off the track.
3. Lower the track onto the wood planks.
4. Repeat the procedure for the other track.
5. Clean the area around the carrier rollers and around the track rollers.
6. Lower the work tool onto a wood plank to prevent the work tool from touching the ground.

i07311035

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 engine components.

Refer to the following procedure to allow the engine to cool and to prevent excessive temperatures in the turbocharger housing, which could cause oil coking problems.

1. Stop the machine and lower the work tool to the ground.
2. Move the hydraulic lockout control to the LOCKED position.
3. Run the engine at low idle for 5 minutes.
4. Turn the engine start switch to the OFF position and remove the engine start switch key.

Engine Stop Control

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

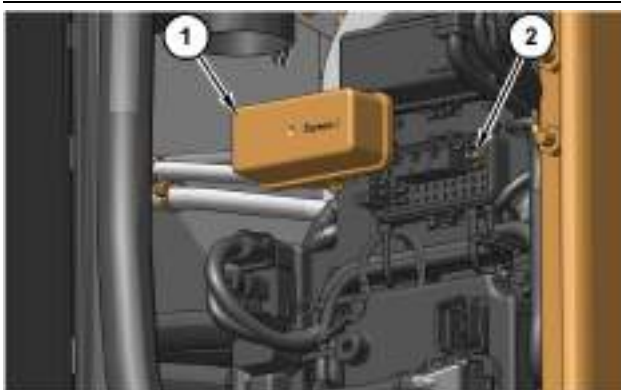


Illustration 506

g06288691

1. Open the access door on the right side of the machine.
2. Open the lower fuse cover (1) and remove fuse (2).

Note: Do not operate the machine again until the malfunction has been corrected.

3. Close the access door.

i07311066

Leaving the Machine

SMCS Code: 7000



Illustration 507

g06278943

1. Use the steps and the hand holds when you dismount. When you dismount, face the machine and use both hands.
2. Inspect the engine compartment for debris. Clean out any debris to avoid a fire hazard.
3. Remove all flammable debris from the front bottom guard through the access doors to reduce a fire hazard. Discard the debris properly.
4. Always turn the battery disconnect switch to the OFF position before leaving the machine (if equipped).
5. If the machine will not be operated for a month or more, remove the battery disconnect switch key (if equipped).
6. Turn off all lights (courtesy lights will remain ON for set time).
7. Lock all compartments.

i07735116

Machine Storage and Specified Storage Period

SMCS Code: 7000

Machine Storage

The Safety Section of this Operation and Maintenance Manual contains storage information for fuels, lubricants, and ether (if equipped).

The Operation Section of this Operation and Maintenance Manual contains information for short-term storage of this machine, including engine shutdown, parking, and instructions for leaving the machine.

For detailed steps on long-term storage refer to Special Instruction, SEHS9031, "Storage Procedure for Caterpillar Products".

Specified Storage Period

The specified storage period of this machine is 1 year.

After the specified storage period has expired, consult your Cat dealer for inspect, repair, rebuild, install remanufactured, or install new components, and disposal options, and to establish a new specified storage period.

If a decision is made to remove the machine from service, refer to Decommissioning and Disposal for further information.

Transportation Information

i07776326

Shipping the Machine

SMCS Code: 7000; 7500

Investigate the travel route for overpass clearances. Make sure that there will be adequate clearance for the machine.

Before you load the machine onto the trailer, remove ice, snow, or other slippery material from the loading dock and from the truck bed. Removal of ice, snow, or other slippery material will prevent the slipping of the machine as you load the machine. Removing ice, snow, or other slippery material will prevent the machine from moving in transit.

NOTICE

Obey all state and local laws governing the weight, width and length of a load.

Make sure the cooling system has proper antifreeze if moving machine to a colder climate.

Observe all regulations governing wide loads.

Do not use a fork lift to lift the machine. Using a fork lift to move your machine can result in property damage.

Choose the flattest ground when you load the machine or when you unload the machine.

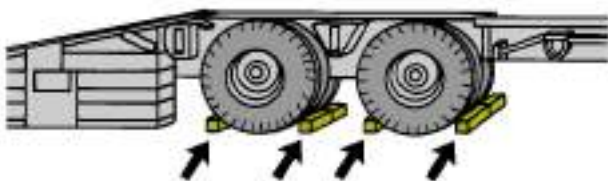


Illustration 508

g06404980

1. Before you load the machine and before you unload the machine, chock the trailer wheels or chock the rail car wheels.

2. When you use loading ramps, make sure that the loading ramps have adequate length, adequate width, and adequate strength. In addition, make sure that the surfaces of the loading ramps are clean. This will help prevent the machine from sliding in all types of weather conditions. This will allow the machine to move on the ramps smoothly.
3. Maintain the slope of the loading ramps within 15 degrees of the ground.
4. Minimize any step between the base of the loading ramps and the ground.
5. Clean the tracks on the machine to prevent any slippage.

Machine With A Long Stick That Has Two Pin Holes (If Equipped)

WARNING

Incorrect pin location of stick cylinder rod could cause the bucket to hit the cab resulting in personal injury or death, or damage to the machine. Please confirm the stick cylinder rod pin location prior to the start of work.

NOTICE

During digging operations with this front linkage, there is a possibility of extending the upper boom cylinder by relief.

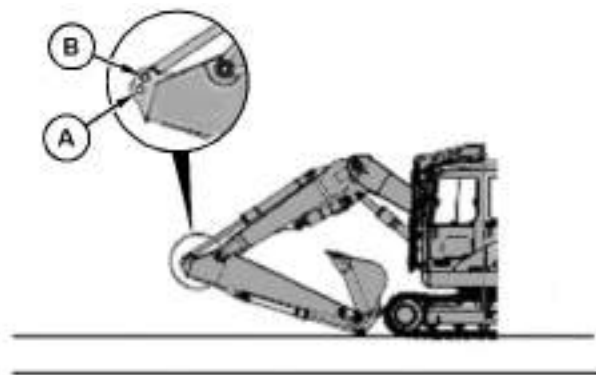


Illustration 509

g06404995

Make the following changes before shipping the machine.

Use pin hole (B) in machine transportation. Use pin hole (A) for machine operation.

NOTICE

Never use pinhole (B) for operation. Incorrect boom longstick-bucket combination could cause the bucket to hit the cab.

Use the following procedure to connect the stick cylinder rod to pin hole (B).

1. Fully extend the stick cylinder and the bucket cylinder. Lower the boom to the ground.
2. Remove the linkage pin from pin hole (A).
3. Align the pin hole of the stick cylinder rod with pin hole (B). Insert the linkage pin into pin hole (B). Use the linkage pin that was removed in Step 2.

Loading The Machine

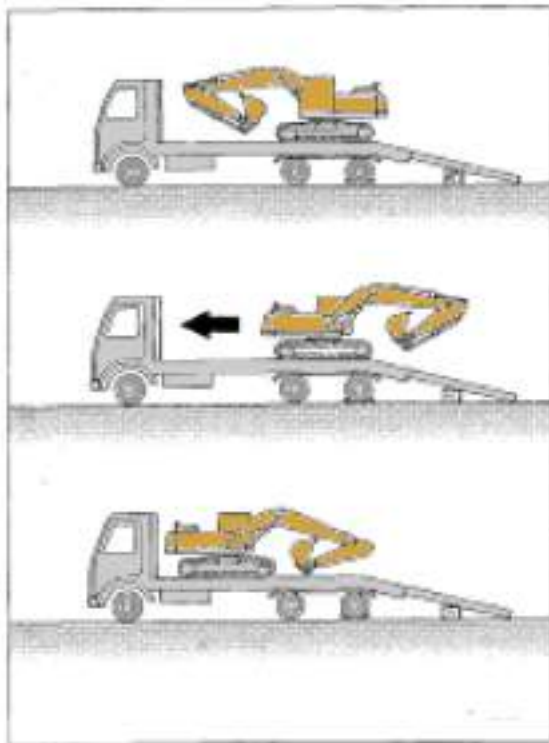


Illustration 510

g06435164

1. Position the machine so that the machine can drive straight up the loading ramps. Position the machine so that the front linkage and the dozer blade will be the first machine components to travel up the loading ramps. Make sure that the dozer blade is raised up.
2. Extend the front linkage forward over the trailer bed to help maintain balance.

3. Use caution when you travel over the areas around the loading ramp joints. Maintain the balance point of the machine.
4. After you load the machine onto the trailer be sure that the machine is properly positioned on the trailer bed.
5. Slowly, swing the upper structure for 180 degrees and carefully move the machine toward the front of the trailer or the rail car.
6. Refer to the Operation and Maintenance Manual, "Lifting and Tying Down the Machine" for information on tying down the machine.

Unloading The Machine

1. Position the machine so that the machine can drive straight down the loading ramps. Position the machine so that the front linkage will be the first machine component to travel down the loading ramps. Position the machine so that the dozer blade will be the last machine component to travel down the loading ramps. Make sure that the dozer blade is raised up.
2. Extend the front linkage forward over the ramps. While you travel down the loading ramps, adjust the front linkage to allow the work tool to remain close to the ground. This will prevent the machine from tipping forward.
3. Use caution when you travel over the areas around the loading ramp joints to maintain the balance point of the machine.

i08026717

Securing the Machine

SMCS Code: 7000

Comply with any laws that govern the characteristics of a load (length, width, height, and weight).

i07311272



Illustration 511

g06278949

1. Move the hydraulic lockout control (lever) to the LOCKED position.
2. Turn the engine start switch to the OFF position to stop the engine. Remove the engine start switch key.
3. Lock the door and the access covers.

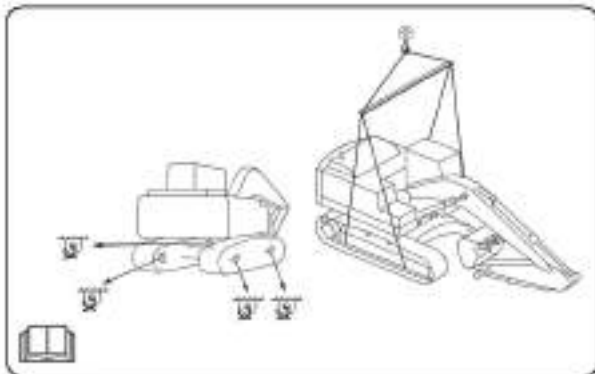


Illustration 512

g06344451

4. Chock the tracks and secure the machine with tie-downs. Make sure that you use the proper rated wire cable.

Use the holes on each end of the blade and on the lower frame.

Install tie-downs on the swing boom to prevent the boom from shifting.

Securely fasten all loose parts and all removed parts to the trailer or to the rail car.

Mirror Installation

SMCS Code: 7319



Illustration 513

g06279175

Before you transport the machine, remove the right and rearview mirror.

After you transport the machine, install the right and rearview mirror to the proper positions.

i07486465

Lifting and Tying Down the Machine

SMCS Code: 7000; 7500

WARNING

Improper lifting and improper tie-downs can allow the load to shift or fail and cause injury or damage. Use only properly rated cables and slings with lift and tie down points provided.

Follow the instructions in Operation and Maintenance Manual, "Lifting and Tying Down the Machine" for the proper technique for securing the machine. Refer to Operation and Maintenance Manual, "Specifications" for specific weight information.

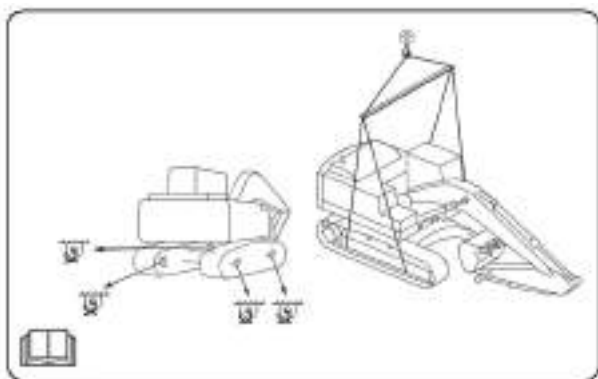


Illustration 514

g06344451

The lift and tie-down film is located in the cab below the seat.

Lifting the machine



Illustration 515

g06335014

The machine center of gravity is located at the center of the swing gear.



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

The weight and the instructions that are given herein describe the machine as the machine is manufactured by Caterpillar.

Refer to the Operation and Maintenance, "Specifications" for specific weight information.

Note: Only lift objects from approved lifting points and with approved lifting devices

1. Use proper rated cables and slings for lifting. The crane should be positioned so that the machine is lifted parallel to the ground.
2. To prevent contact with the machine, lifting cables should have sufficient length.
3. Move the hydraulic lockout control to the LOCKED position.
4. Thread the cable between the first and second rollers at each end of the track.
5. Do not use the foot step as a lifting point.
6. If the full length roller guard is equipped, remove the guard.
7. Apply the proper protector to prevent machine/wire damage and slippage. Make sure that the rollers are not affected by the load.

Tying Down the Machine

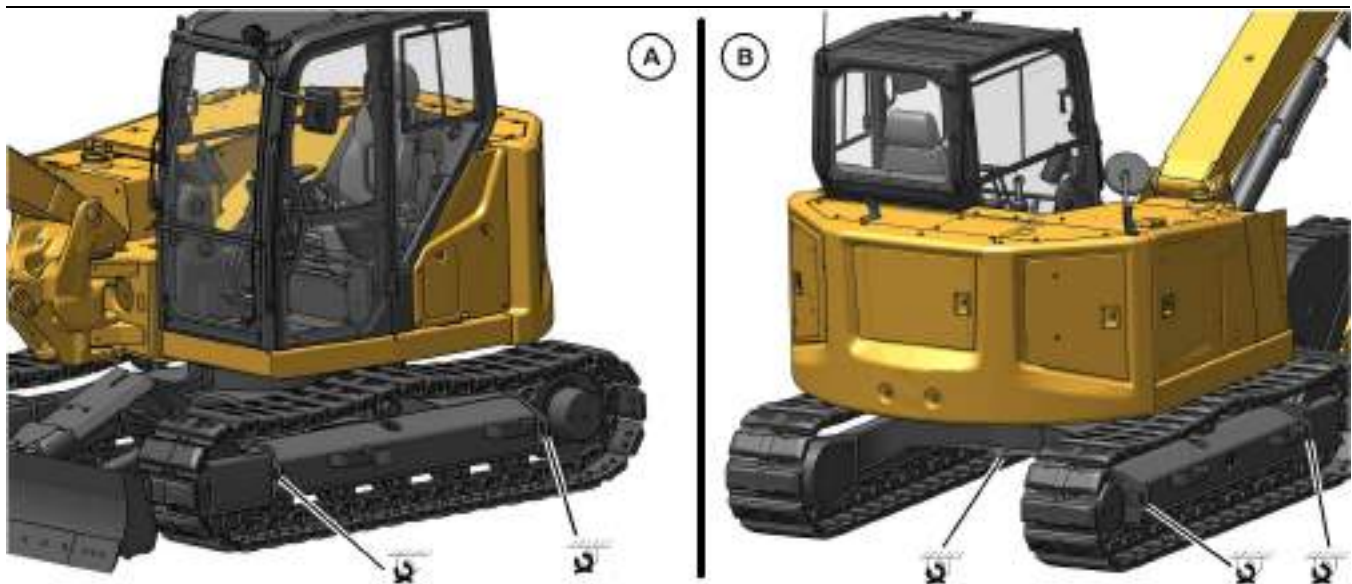


Illustration 516

g06335033

(A) Left side of machine

(B) Right side and rear of machine



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

The weight and the instructions that are given herein describe the machine as the machine is manufactured by Caterpillar.

Refer to the Operation and Maintenance, "Specifications" for specific weight information.

1. Use proper rated cables and shackles for tying down the machine.

2. Use the rear eyes and the front eyes that are provided on the lower frame to fasten tie-downs. Use corner protectors for sharp corners.
3. Move the hydraulic lockout control to the LOCKED position.

4. If there is a requirement of diagonal lashing for tying down, use the proper tie-down point on the lower frame. Set the lashing angle which is on the longitudinal axis of the machine and the cable, at 30 to 50 degrees.

Lifting the Machine Segments

Bucket

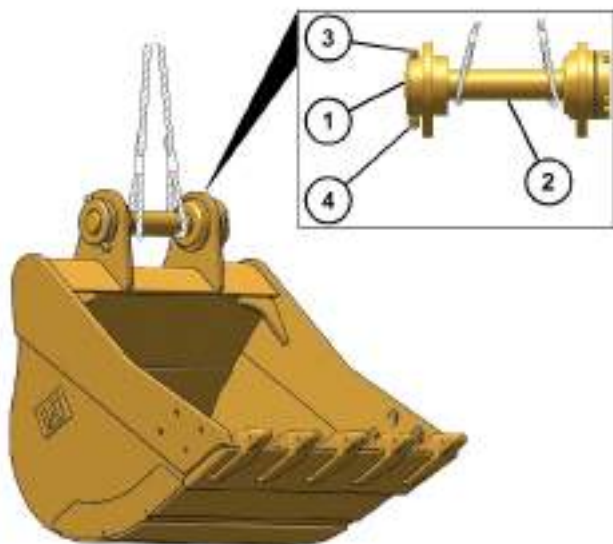


Illustration 517

g06184591

(1) Pin.(2) Sleeve.(3) Bolts.(4) Nuts.

Install pin (1) and install sleeve (2) in the brackets of the bucket. The previous illustration indicates the method to secure pin (1) with bolts (3) and nuts (4). Fasten two proper rated wire cables to pin (1).

Towing Information

i07486502

Towing the Machine

SMCS Code: 7000



Personal injury or death could result when towing a disabled machine incorrectly.

Block the machine to prevent movement before final drives are disengaged. The machine can roll free if it is not blocked. With final drives disengaged, the machine cannot be stopped or steered.

Follow the recommendations below, to properly perform the towing procedure.

Relieve the hydraulic tank and line pressure before any disassembly.

Even after the machine has been turned off, the hydraulic oil can still be hot enough to burn. Allow the hydraulic oil to cool before draining.

NOTICE

To tow the machine, both final drives must be disengaged.

Do not operate the travel motors with the final drives disengaged. Damage could result.

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. Always haul the machine if long distance moving is required.

Shields 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.

Before you tow the machine, make sure that the tow line or the tow bar is in good condition. Do not use a wire rope that is kinked, twisted, or damaged. Make sure that the tow line or the tow bar has enough strength for the towing procedure that is involved. The strength of the tow line or of the tow bar should be at least 150 percent of the gross weight of the towed machine. This requirement is for a disabled machine that is stuck in the mud and for being towed on a grade.

Do not use a chain for pulling a disabled machine. A chain link can break. This may cause personal injury. Use a wire rope with ends that have loops or rings. Put an observer in a safe position to watch the pulling procedure. The observer can stop the procedure if the wire rope starts to break. Stop pulling whenever the towing machine moves without moving the towed machine.

During towing, do not allow anyone to step between the towing and the towed machines.

Do not allow the wire rope to be straddled while the machine is being towed.

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

Avoid towing the machine on a slope.

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.

Prior to releasing the brake of the final drive, firmly lock both tracks to prevent the machine from moving suddenly. When the machine is ready to be towed, release the brake of the final drive. Refer to Operation and Maintenance Manual, "Final Drive Ring Gear Removal".

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 of the disabled machine. 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. Maximum towing machine capacity is required on an incline or on a surface that is in poor condition.

Do not tow a loaded machine.

Consult your Cat dealer for the equipment that is necessary for towing a disabled machine.

Retrieval and Towing of Machine



Illustration 518

g06335059

Note: Shackles must be used for towing the machine. The wire rope should be horizontal and straight to the track frame.

Install a properly rated wire rope to the lower frame of the towing machine and the lower frame of the towed machine. The permissible force for the lower frame is 100 percent of the gross weight of the towed machine.

Note: To prevent damage to the wire rope or the lower frame of the machines, use protective sleeves on the corners of the lower frame.

Retrieve the disabled machine carefully. The applied load for each wire rope should be equal. The angle (A) between each wire rope should be 60 degree maximum. Operate the machine at a low speed.

Lightweight Towing



Illustration 519

g06335066

The wire rope should be horizontal and straight to the track frame.

Install a properly rated wire rope to the lower frame of the towing machine and the lower frame of the towed machine. Operate the machine at a low speed.

i07311343

Final Drive Sun Gear Removal

SMCS Code: 4050

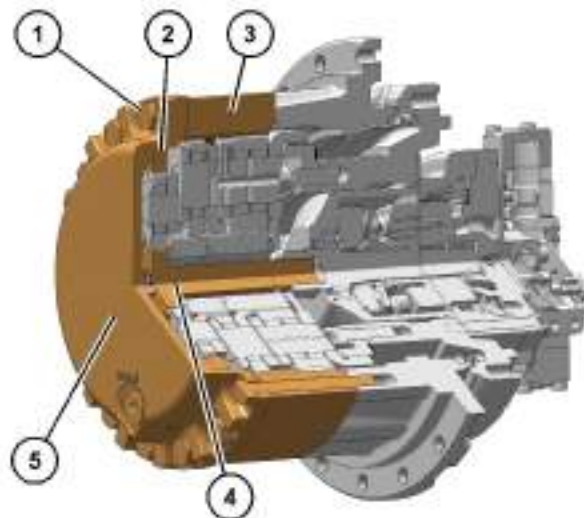


Illustration 520

g06188195

- (1) Bolt
- (2) Ring gear
- (3) Ring gear
- (4) Sun gear
- (5) Final drive cover

WARNING

Without the sun gear in place, the brakes are ineffective. Personal injury or death could result. Provide other means to hold or stop the machine.

1. Thoroughly clean the area around the final drive.
Make sure that you also clean the track shoes that are positioned above the final drive.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information on containing fluid spillage.

2. Drain the final drive oil into a suitable container.
See Operation and Maintenance Manual, "Final Drive Oil - Change" for the procedure.
3. Remove 14 of 16 cover bolts (1) from final drive cover (5). Do not leave a bolt in the top hole of the cover.

4. Insert an alignment dowel through the top hole of the cover and into the threads in the final drive housing. This is necessary to support ring gear (2) and ring gear (3) while you are removing the final drive cover.
5. Remove one track shoe to allow access to the face between final drive cover (5) and ring gear (2).
6. Loosen remaining two cover bolts (1).
7. Use a hammer and a wedge to separate final drive cover (5) and ring gear (2). Make sure that ring gear (2) and ring gear (3) stay in place.
8. Remove remaining two cover bolts (1) and final drive cover (5).
9. Remove sun gear (4) from final drive.
10. Install final drive cover (5) and 16 cover bolts (1).
11. Fill the final drive with new oil. See Operation and Maintenance Manual, "Final Drive Oil - Change" for the procedure.
12. Repeat Steps 1 through 11 for the other final drive.
13. Refer to the Service Manual for information on the installation of the final drive sun gear.

Engine Starting (Alternate Methods)

i07496826

Engine Starting with Jump Start Cables (If Equipped)

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

To prevent damage to engine bearings and to electrical circuits when you jump-start a machine, do not allow the stalled machine to touch the machine that is used as the electrical source.

Turn on (close) the battery disconnect switch prior to the boost connection to prevent damage to electrical components on the stalled machine.

Use only equal voltage for starting. Check the battery and starter voltage rating of your machine. Use only the same voltage for jump starting. Use of a welder or higher voltage will damage the electrical system.

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.

Refer to Special Instruction, SEHS7633, "Battery Test Procedure" for complete testing and charging information. This publication is available from your Cat dealer.

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

1. Lower the equipment to the ground. Move all controls to the HOLD position. Move the hydraulic lockout control to the LOCKED position.
2. Turn the start switch on the stalled machine to the OFF position. Turn off all accessories.
3. Turn the battery disconnect switch on the stalled machine to the ON position.
4. Move the machine that is being used as an electrical source near the stalled machine so that the jump-start cables reach the stalled machine.
Do not allow the machines to contact each other.
5. Stop the engine of the machine that is being used as an electrical source. If you are using an auxiliary power source, turn off the charging system.



Illustration 521

g06279263

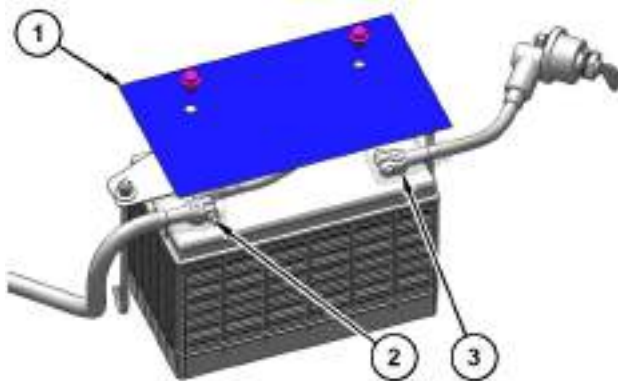


Illustration 522

g06338634

- (1) Cover
(2) Red positive post (connects to starter)
(3) Black negative post (connects to the battery disconnect switch)

6. Ensure that battery caps on both machines are tight and correctly placed. Ensure that batteries in the stalled machine are not frozen. Make sure that the batteries have enough electrolyte.

Note: The positive terminal of the 12 V system of the source and the negative terminal of the 12 V system of the source must be identified correctly before the jumper cables are connected. The positive terminal of the 12 V system of the discharged battery must be identified correctly before the jumper cables are connected.

7. The positive ends of the jump-start cable are red. Connect one positive end of the jump-start cable to the positive cable terminal of the discharged battery. Some machines have battery sets.

Note: Batteries that are in series may be in separate compartments. Use the terminal that is connected to the starter solenoid. This battery or battery set is normally on the same side of the machine as the starter.

Do not allow the positive cable clamps to contact any metal except for the battery terminals.

8. Connect the other positive end of the jump-start cable to the positive cable terminal of the electrical source.
9. Connect one negative end of the jump-start cable to the negative cable terminal of the electrical source.
10. Finally, connect the other negative end of the jump-start cable to the frame of the stalled machine. Do not connect the jump-start cable to the battery post. Do not allow the jump-start cables to contact the battery cables, the fuel lines, the hydraulic lines, or any moving parts.
11. Start the engine of the machine that is being used as an electrical source or energize the charging system on the auxiliary power source.
12. Wait at least two minutes before you attempt to start the stalled machine. This pause will allow the batteries in the stalled machine to partially charge.
13. Attempt to start the stalled engine. See Operation and Maintenance Manual, "Engine Starting" for the correct starting procedure.
14. Immediately after you start the stalled engine, disconnect the jump-start cables in reverse order.

Maintenance Section

Maintenance Access

i07311348

Access Door and Cover Locations

SMCS Code: 726A-CH

Engine Access Door



Illustration 523

g06279279

Left Access Door



Illustration 524

g06279281

Right Access Door



Illustration 525

g06279291

Lubricant Viscosities and Refill Capacities

i07868041

Lubricant Viscosities (Fluids Recommendations)

SMCS Code: 7581

General Information for Lubricants

When you are operating the machine in temperatures below -20°C (-4°F), refer to Special Publication, SEBU5898, "Cold Weather Recommendations". This publication is available from your Cat dealer.

Refer to the "Lubricant Information" section in the latest revision of the Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for a list of Cat engine oils and for detailed information. This manual may be found on the web at Safety.Cat.com.

The footnotes are a key part of the tables. Read all footnotes that pertain to the machine compartment in question.

Selecting the Viscosity

To select the proper oil for each machine compartment, refer to the "Lubricant Viscosity for Ambient Temperature" table. Use the oil type AND oil viscosity for the specific compartment at the proper ambient temperature.

The proper oil viscosity grade is determined by the minimum ambient temperature (the air in the immediate vicinity of the machine). Measure the temperature when the machine is started and while the machine is operated. To determine the proper oil viscosity grade, refer to the "Min" column in the table. This information reflects the coldest ambient temperature condition for starting a cold machine and for operating a cold machine. Refer to the "Max" column in the table for operating the machine at the highest temperature that is anticipated. Unless specified otherwise in the "Lubricant Viscosities for Ambient Temperatures" tables, use the highest oil viscosity that is allowed for the ambient temperature.

Machines that are operated continuously should use oils that have the higher oil viscosity in the final drives and in the differentials. The oils that have the higher oil viscosity will maintain the highest possible oil film thickness. Refer to "General Information for Lubricants" article, "Lubricant Viscosities" tables, and any associated footnotes. Consult your Cat dealer if additional information is needed.

NOTICE

Not following the recommendations found in this manual can lead to reduced performance and compartment failure.

Engine Oil

Cat oils have been developed and tested to provide the full performance and life that has been designed and built into Cat engines.

Cat DEO-ULS or oils that meet the Cat ECF-3 specification, API CJ-4, and the newer API CK-4, are required for use in the applications listed below. Cat DEO-ULS and oils meeting Cat ECF-3 specification, API CJ-4, the newer API CK-4, and ACEA E9 oil categories have been developed with limited sulfated ash, phosphorus, and sulfur. These chemical limits are designed to maintain the expected aftertreatment devices life, performance, and service interval. If oils meeting the Cat ECF-3 specification, API CJ-4, the newer API CK-4 specifications are not available, oils meeting ACEA E9 may be used. ACEA E9 oils meet the chemical limits designed to maintain aftertreatment device life. ACEA E9 oils are validated using some but not all ECF-3 and API CJ-4 standard engine performance tests. Consult your oil supplier when considering use of an oil that is not Cat ECF-3, API CJ-4, or the newer API CK-4 qualified.

Failure to meet the listed requirements will damage aftertreatment-equipped engines and can negatively impact the performance of the aftertreatment devices. The Diesel Particulate Filter (DPF) if equipped, will plug sooner and require more frequent DPF ash service intervals.

Typical aftertreatment systems may include the following:

- Diesel Particulate Filters (DPF)
- Diesel Oxidation Catalysts (DOC)
- Selective Catalytic Reduction (SCR)
- Lean NOx Traps (LNT)

Other systems may apply.

Oils that are per API CI-4 or prior categories are not allowed. These oils have high ash and are not appropriate for use in engines with aftertreatment devices.

Table 49

Lubricant Viscosities for Ambient Temperatures						
Compartment or System	Oil Type and Performance Requirements	Oil Viscosities	°C		°F	
			Min	Max	Min	Max
Engine Crankcase for all Machines	Cat DEO-ULS Cold Weather	SAE 0W-40	-40	40	-40	104
	Cat DEO-ULS SYN	SAE 5W-40	-30	50	-22	122
	Cat DEO-ULS	SAE 10W-30	-18	40	0	104
		SAE 15W-40	-10	50	14	122
Pump Coupling (If Equipped)	Cat DEO-ULS	SAE 10W-30	-18	40	0	104

Hydraulic Systems

Refer to the “Lubricant Information” section in the latest revision of the Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations” for detailed information. This manual may be found on the web at Safety.Cat.com.

The following are the preferred oils for use in most Cat machine hydraulic systems:

- Cat HYDO Advanced 10 SAE 10W
- Cat HYDO Advanced 20 SAE 20W
- Cat HYDO Advanced 30 SAE 30
- Cat BIO HYDO Advanced, Multigrade

It is recommended to follow the maintenance interval schedule for oil filter changes and for oil sampling that is stated in the Operation and Maintenance Manual for your particular machine. Consult your Cat dealer for details. When switching to Cat HYDO Advanced fluids, cross contamination with the previous oil should be kept to less than 10%.

Second choice oils are listed below.

- Cat MTO
- Cat DEO
- Cat DEO-ULS
- Cat TDTO
- Cat TDTO Cold Weather
- Cat TDTO-TMS
- Cat DEO-ULS Cold Weather

Note: Oil drain intervals of the oils listed above are less than those of Cat HYDO Advanced oils. An exception is Cat TDTO Cold Weather oil which allows 6000 hours or higher oil drain interval. S·O·S Services oil analysis is required when the oils listed above are used in Cat hydraulic system components and hydrostatic transmissions.

Table 50

Lubricant Viscosities for Ambient Temperatures						
Compartment or System	Oil Type and Performance Requirements	Oil Viscosities	°C		°F	
			Min	Max	Min	Max
Hydraulic System	Cat HYDO Advanced 10 Cat TDTO	SAE 10W	-20	40	-4	104
	Cat HYDO Advanced 20 Cat TDTO	SAE 20W	-5	45	23	113
	Cat HYDO Advanced 30 Cat TDTO	SAE 30	10	50	50	122
	Cat BIO HYDO Advanced	"ISO 46" Multi-Grade	-30	50	-22	122
	Cat MTO Cat DEO-ULS Cat DEO	SAE10W-30	-20	40	-4	104
	Cat DEO-ULS Cat DEO	SAE15W-40	-15	50	5	122
	Cat TDTO-TMS	Multi-Grade	-15	50	5	122
	Cat DEO-ULS SYN	SAE 5W-40	-25	40	-13	104
	Cat DEO-ULS Cold Weather	SAE0W-40	-40	40	-40	104
	Cat TDTO Cold Weather	SAE 0W-20	-40	40	-40	104

For applications requiring the use of fire-resistant hydraulic fluids, Caterpillar recommends the use of EcoSafe FR-46. This product is a fully synthetic, non-aqueous hydraulic fluid. Water based and glycol-based hydraulic products are not recommended for use in Cat machine hydraulic systems. EcoSafe FR-46 is an ISO 46 multi-grade product. For more information refer to the product information provided by the manufacturer of EcoSafe hydraulic oil. Refer to your Cat dealer for availability.

Other Fluid Applications

Table 51

Excavators, Front Shovels, Mass Excavators, Demolition Excavators, and Track Material Handlers Lubricant Viscosities for Ambient Temperatures						
Compartment or System	Oil Type and Performance Requirements	Oil Viscosity Grade	°C		°F	
			Min	Max	Min	Max
Swing Drives	Cat TDTO Cold Weather	SAE 0W-20	-40	0	-40	32
	Cat TDTO	SAE 10W	-30	0	-22	32
		SAE 30 ⁽¹⁾	-30	35	-22	95
		SAE 50	-15	50	5	122
	Cat TDTO-TMS	Multi-Grade	-25	25	-13	77
Differentials and Final Drives	Cat GO (Gear Oil) Cat Synthetic GO API GL-5 gear oil	SAE 75W-90	-30	40	-22	104
		SAE 75W-140	-30	45	-22	113
		SAE 80W-90	-20	40	-4	104

(continued)

(Table 51, contd)

Excavators, Front Shovels, Mass Excavators, Demolition Excavators, and Track Material Handlers Lubricant Viscosities for Ambient Temperatures						
Compartment or System	Oil Type and Performance Requirements	Oil Viscosity Grade	°C		°F	
			Min	Max	Min	Max
		SAE 85W-140	-10	50	14	122
		SAE 90	0	40	32	104
Track Roller Frame Recoil Spring and Pivot Shaft Bearings	Cat TDTO Cold Weather	SAE 0W-20	-40	0	-40	32
	Cat TDTO	SAE 10W	-30	0	-22	32
		SAE 30 ⁽¹⁾	-20	25	-4	77
		SAE 50	0	50	32	122
	Cat TDTO-TMS	Multi-Grade	-25	25	-13	77
Track Idlers and Track Rollers	Cat DEO-ULS Cat DEO	SAE 15W-40 ⁽¹⁾	-10	50	14	122
	Cat DEO Cold Weather	SAE 0W-40	-40	40	-40	104
	Cat DEO-ULS SYN	SAE 5W-40	-35	40	-31	104
	Cat FDAO SYN	Multi-Grade	-30	50	-22	122

⁽¹⁾ Factory fill oil for standard configuration machines.

Special Lubricants

Grease

To use a non-Cat grease, the supplier must certify that the lubricant is compatible with Cat grease.

Each pin joint should be flushed with the new grease. Ensure that all old grease is removed. Failure to meet this requirement may lead to failure of a pin joint.

Table 52

Recommended Grease						
Compartment or System	Grease Type	NLGI Grade	°C		°F	
			Min	Max	Min	Max
External Lubrication Points	Cat Prime Application Grease	NLGI Grade 2	-20	140	-4	284
	Cat Extreme Application Grease	NLGI Grade 1	-20	140	-4	284
		NLGI Grade 2	-15	140	+5	284
	Cat Extreme Application Grease-Artic	NLGI Grade 0.5	-50	130	-58	266
	Cat Extreme Application Grease-Desert	NLGI Grade 2	-10	140	+14	284
	Cat Utility Grease	NLGI Grade 2	-20	140	-4	284
	Cat Ball Bearing Grease	NLGI Grade 2	-20	160	-4	320

Diesel Fuel Recommendations

Diesel fuel must meet Caterpillar Specification for Distillate Fuel and the latest revisions of “ASTM D975” and “EN 590” to ensure optimum engine performance. Refer to Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations” for the latest fuel information and for Cat fuel specification. This manual may be found on the Web at Safety.Cat.com.

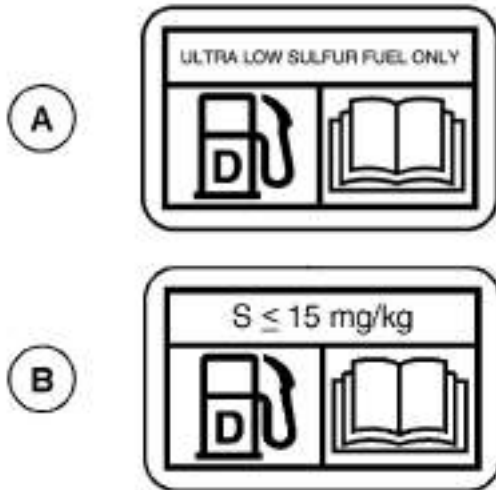


Illustration 526

g06343463

(A) North America film

(B) Europe, Africa, Middle East film

NOTICE

Ultra Low Sulfur Diesel (ULSD) fuel 0.0015 percent (≤ 15 ppm (mg/kg)) sulfur is required by regulation for use in engines certified to nonroad Tier 4 standards (U. S. EPA Tier 4 certified) and that are equipped with exhaust aftertreatment systems.

European ULSD 0.0010 percent (≤ 10 ppm (mg/kg)) sulfur fuel is required by regulation for use in engines certified to European Stage V type-approved nonroad engines. Additionally, the Cetane number should not be less than 45, and the biodiesel content should not be greater than 20% volume/volume.

Misfueling with fuels of higher sulfur level can have the following negative effects:

- **Shorten the time interval between aftertreatment device service intervals (cause the need for more frequent service intervals)**
- **Adversely impact the performance and life of aftertreatment devices (cause loss of performance)**
- **Reduce regeneration intervals of aftertreatment devices**
- Reduce engine efficiency and durability.
- Increase the wear.
- Increase the corrosion.
- Increase the deposits.
- Lower fuel economy
- Shorten the time period between oil drain intervals (more frequent oil drain intervals).
- Increase overall operating costs.

Failures that result for the use of improper fuels are not Caterpillar factory defects. Therefore, the cost of repairs would not be covered by a Caterpillar warranty.

Caterpillar does not require the use of ULSD in non-road and machine applications that are not Tier 4/ Stage IIIB/ Stage IV/ Stage V certified engines and are not equipped with aftertreatment devices. For Tier 4/Stage IIIB/Stage IV/Stage V certified engines, always follow operating instructions to ensure that the correct fuels are used.

Refer to Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations” for more details about fuels, lubricants, and Tier 4 requirements. This manual may be found on the web at Safety.Cat.com.

Fuel Additives

Cat Diesel Fuel Conditioner and Cat Fuel System Cleaner are available for use when needed. These products are applicable to diesel and biodiesel fuels. Consult your Cat dealer for availability.

Biodiesel

Biodiesel is a fuel that can be made from various renewable resources that include vegetable oils, animal fat, and waste cooking oil. Soybean oil and rapeseed oil are the primary vegetable oil sources. To use any of these oils or fats as fuel, the oils or fats are chemically processed (esterified). The water and contaminants are removed.

U.S. distillate diesel fuel specification “ASTM D975” includes up to B5 (5 percent) biodiesel. Currently, any diesel fuel in the U.S. may contain up to B5 biodiesel fuel.

European distillate diesel fuel specification “EN 590” includes up to B5 (5 percent) and in some regions up to B7 (7 percent) biodiesel. Any diesel fuel in Europe may contain up to B5 or in some regions up to B7 biodiesel fuel.

Note: The diesel portion used in the biodiesel blend must be Ultra Low Sulfur Diesel (15 ppm sulfur or less, per “ASTM D975”). In Europe the diesel fuel portion used in the biodiesel blend must be sulfur free diesel (10 ppm sulfur or less, per “EN 590”). The final blend must have 15 ppm sulfur or less.

Note: Up to B20 biodiesel blend level is acceptable for use in some Excavator engines.

When biodiesel fuel is used, certain guidelines must be followed. Biodiesel fuel can influence the engine oil, aftertreatment devices, non-metallic, fuel system components, and others. Biodiesel fuel has limited storage life and has limited oxidation stability. Follow the guidelines and requirements for engines that are seasonally operated and for standby power generation engines.

To reduce the risks associated with the use of biodiesel, the final biodiesel blend and the biodiesel fuel used must meet specific blending requirements. To be acceptable for blending, the biodiesel constituent must meet the requirements that are listed in Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations” Biodiesel, the latest edition of “ASTM D6751”, and/or the latest edition of “EN14214”.

All the guidelines and requirements are provided in the latest revision of Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”. This manual may be found on the web at Safety.Cat.com.

Coolant Information

The information provided in this “Coolant Recommendation” section should be used with the “Lubricants Information” provided in the latest revision of Special Publication, SEBU6250, “Caterpillar Machine Fluids Recommendations”. This manual may be found on the web at Safety.Cat.com.

The following two types of coolants may be used in Cat diesel engines:

Preferred – Cat ELC (Extended Life Coolant)

Acceptable – Cat DEAC (Diesel Engine Antifreeze/Coolant)

NOTICE

Never use water alone as a coolant. Water alone is corrosive at engine operating temperatures. In addition, water alone does not provide adequate protection against boiling or freezing.

i08437191

Capacities (Refill)

SMCS Code: 1000; 7000

Table 53

Approximate Refill Capacities				
Component or System	Sales Model	Liters	US gal	Recommended Type
Fuel Tank (Fixed Boom)	All	145	38	Refer to Operation and Maintenance Manual, "Lubricant Viscosities".
Fuel Tank (Swing Boom)		147	39	
Cooling System		14	3.7	
Coolant Reservoir		1	0.26	
Engine Crankcase with Filter		11	3.0	
Hydraulic System ⁽¹⁾		55	14.5	
Each Final Drive		1	0.26	
		kilograms	pounds	
Swing Gear	All	3.9	8.6	Refer to Operation and Maintenance Manual, "Lubricant Viscosities".
Refrigerant ⁽²⁾	307.5	0.9	1.98	R-134a
	308 CR, 308.5, 309 CR, 310	1.0	2.2	R-134a
		milliliters	ounces	
Refrigerant Oil ⁽²⁾	All	200	6.8	Polyalkylene Glycol (PAG) Oil

(1) The amount of hydraulic fluid that is needed to refill the hydraulic system after performing Operation and Maintenance Manual, "Hydraulic System Oil - Change"

(2) Refer to Service Manual, "Air Conditioning and Heating R-134a for All Caterpillar Machines" for additional information

i07445339

S-O-S Information

SMCS Code: 1000; 1348; 3080; 4050; 5050; 7000; 7542-008

S-O-S Services is a highly recommended process for Cat 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.

The effectiveness of S-O-S Services is dependent on timely submission of the sample to the laboratory at recommended intervals.

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

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

Maintenance Support

i07477696

Prepare the Machine for Maintenance

SMCS Code: 1000; 7000

Refer to the following procedure before you perform any maintenance to the machine.

 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.

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, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat® products.

Dispose of all fluids according to local regulations and mandates.

Note: Permit only one operator on the machine. Keep all other personnel away from the machine or in view of the operator.

1. Park the machine on a dry, level, solid surface that is free of any debris.

Note: The surface must be solid enough to support the weight of the machine and any tooling that is used to support the machine.

2. Engage the parking brake. Place wheel blocks in front and behind the wheels or tracks.
3. Lower all work tools to the ground.
4. Stop the engine.

5. Release the pressure in the hydraulic system. Refer to Operation and Maintenance Manual, "System Pressure Release" for more information.

Perform a visual inspection first. If the visual checks are completed but the problem has not been identified, perform operational checks. If the problem has not been identified, perform instrument tests. This procedure will help to identify system problems.

i07883315

Service Interval Chart

SMCS Code: 7000

The service interval chart is located inside the operator station.

Refer to the Operation and Maintenance Manual, "Maintenance Interval Schedule" for the correct maintenance intervals and procedures that are specific to your machine.

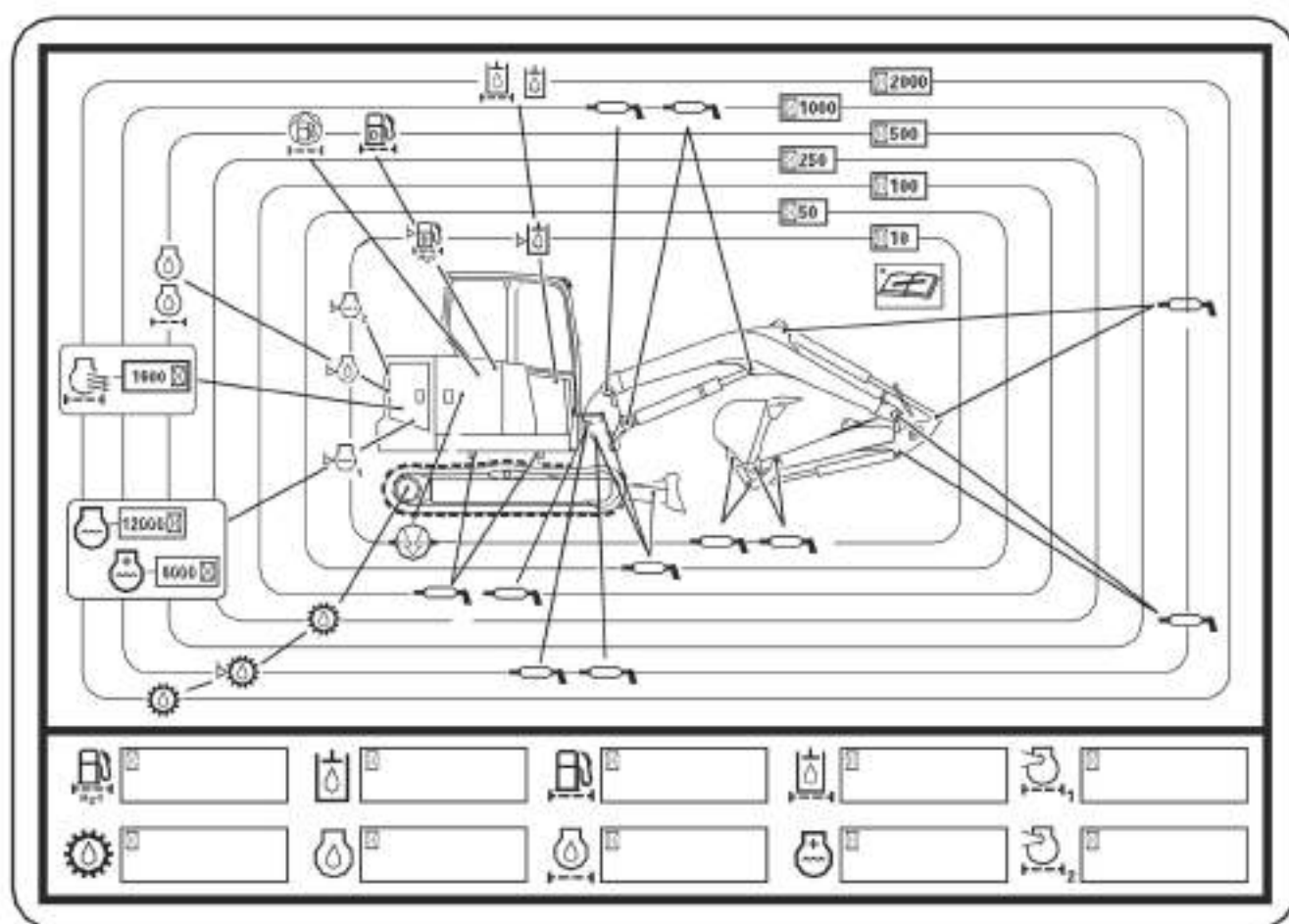


Illustration 527

g06469074

	Service hour interval – Hourly interval in which a maintenance procedure should be performed.		Engine oil level – Check the engine oil level.
	Coolant additive – Add cooling system coolant extender (ELC).		Engine oil – Change the engine oil.
	Coolant level – Check the coolant level.		Engine oil filter – Change the engine oil filter.
	Cooling system coolant – Change the ELC (Extended Life Coolant).		Final drive oil level – Check the final drive oil level.
	Engine air filter primary element – Clean or replace the primary air filter element.		Final drive oil – Change the final drive oil.
	Engine air filter secondary element – Replace the secondary air filter element.		Fuel cap filter – Replace the fuel cap filter.
	Engine breather element – Replace the engine breather element.		Fuel level – Check the fuel level.



Fuel system filter – Replace the fuel system filters.



Fuel system water separator – Drain the water separator.



Fuel system water separator element – Replace the fuel system water separator element.



Grease zerk – Lubricate the designated locations.



Hydraulic oil level – Check the hydraulic oil level.



Hydraulic oil – Change the hydraulic oil.



Hydraulic oil filter – Change the hydraulic oil filter.

i08200493

System Pressure Release

SMCS Code: 1250-553-PX; 1300-553-PX; 1350-553-PX; 5050-553-PX; 6700-553-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 to relieve pressure.

Hydraulic System

The release of hydraulic pressure in a hydraulic circuit is required before service is performed to that hydraulic circuit. Release the pressure in the following hydraulic circuits before any hydraulic lines are disconnected or removed from that hydraulic circuit.

- Boom hydraulic circuit
- Stick hydraulic circuit
- Bucket hydraulic circuit
- Swing hydraulic circuit
- Travel hydraulic circuit
- Attachment hydraulic circuits (if equipped)
- Pilot hydraulic circuit
- Return hydraulic circuit

Note: Refer to the Disassembly and Assembly Manual for additional information concerning service of the components of specific hydraulic circuits.

Release of Hydraulic Pressure from the Main 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 work tools have been lowered to the ground, and the 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.

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, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat® products.

Dispose of all fluids according to local regulations and mandates.

Perform the following steps to release the hydraulic system pressure from the main hydraulic system.

Note: For additional safety, wrap hydraulic joint with material that could absorb/reduce any residual pressure of oil when released. Loosen the joint slowly, pause, and carefully check hydraulic joint for tensions indicating presence of pressure or spring force in lines or components.

1. Position the machine on level ground.



Illustration 528

g06335090

2. Fully retract the stick cylinder rod. Adjust the position of the bucket so that the bucket is parallel to the ground. Lower the boom until the work tool is flat on the ground. Refer to Illustration 528.

3. Release the system pressure from the implement and swing hydraulic circuits.

Note: Perform Step 3b through Step 3d immediately after the engine is shut off to insure adequate pilot system pressure is available to release the pressure in the hydraulic circuits.

- a. Shut off the engine.
- b. Turn the engine start switch to the ON position without starting the engine.

- c. Place the hydraulic activation control lever in the UNLOCKED position.

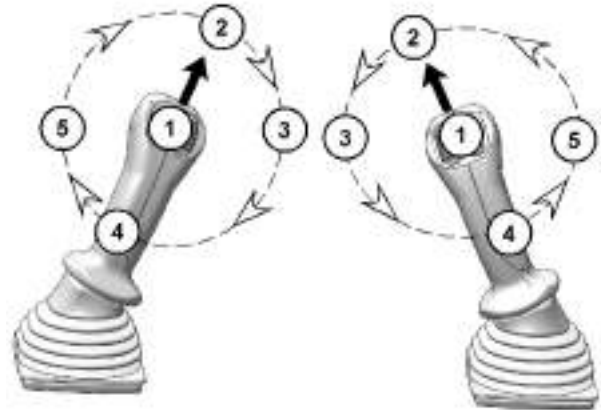


Illustration 529

g06184822

- d. Move both joysticks in a circular motion to the FULL STROKE positions multiple times until the pilot accumulator has been exhausted.

Note: Pilot pressure is required to relieve hydraulic system pressure.

- e. Place the hydraulic activation control lever in the LOCKED position.
- f. Start the engine and place the hydraulic activation control lever in the UNLOCKED position for 10 seconds to recharge the pilot accumulator.

Note: Do not activate any controls when recharging the pilot accumulator.

- g. Shut off the engine.
- h. Repeat Step 3b through Step 3g until the high-pressure lines have been released.

Note: Each time the accumulator is recharged, start the joysticks at different positions or rotate in the reverse direction. Doing so will ensure that the same circuit is not being relieved each time.

Note: You can also move only the joysticks or pedals of the hydraulic circuit that requires service to the full stroke positions after moving joysticks in a circular motion multiple times. This action will release the high pressure only in that single hydraulic circuit. This action will also release any pressure that might be present in the pilot hydraulic circuit.

4. Release hydraulic system pressure in the auxiliary circuits.

- a. Start the engine and place the hydraulic activation control lever in the UNLOCKED position for 10 seconds to recharge the pilot accumulator.

Note: Do not activate any controls when recharging the pilot accumulator.

- b. Shut off the engine.

Note: Perform Step 4c through Step 4e immediately after the engine is shut off to insure adequate pilot system pressure is available to release the pressure in the hydraulic circuits.

- c. Turn the engine start switch to the ON position without starting the engine.
- d. Place the hydraulic activation control lever in the UNLOCKED position.
- e. Actuate the auxiliary circuit in both directions several times.
- f. Place the hydraulic activation control lever in the LOCKED position.
- g. Start the engine and place the hydraulic activation control lever in the UNLOCKED position for 10 seconds to recharge the pilot accumulator.

Note: Do not activate any controls when recharging pilot accumulator.

- h. Shut off the engine.
- i. Repeat Step 4c through Step 4f for each auxiliary circuit.

5. After releasing the hydraulic pressure in each of the desired hydraulic circuits, place the hydraulic activation control lever in the LOCKED position.

6. Turn the engine start switch to the OFF position.

7. Remove the hydraulic oil tank filler cap.

8. The pressure in the multiple hydraulic circuits that require service is now released and lines and components can be disconnected or removed from those hydraulic circuits.

Note: Pressure can build up in the auxiliary lines if the attachment is not coupled/uncoupled immediately after the pressure has been released.

Note: Refer to "Equipment Lowering with Engine Stopped" for information on lowering the work tool with the engine off.

i07746333

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 Cat dealer.

Proper welding procedures are necessary 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 to prevent heat related damage. The following steps should be followed 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 sensors) or electronic component grounding points for 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 to reduce the possibility of damage to the following components:

- Bearings of the drive train
- Hydraulic components
- Electrical components
- Other components of the machine

4. Protect any wiring harnesses and components from the debris and the spatter which is created from welding.

5. Use standard welding procedures to weld the materials together.

i08441613

Maintenance Interval Schedule

SMCS Code: 7000

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

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

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

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

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

The following guidelines should be followed if the service hours are not met:

Items listed between 10 and 100 service hours should be performed at least every 3 months.

Items listed between 250 and 500 service hours should be performed at least every 6 months.

Items listed between 1000 service hours and 2500 service hours should be performed at least every year.

When Required

" Battery or Battery Cable - Inspect/Replace" . . .	446
" Blade Cutting Edges - Inspect/Replace"	451
" Bucket Linkage - Lubricate"	456
" Bucket Tips - Inspect/Replace"	456
" Camera - Clean"	461
" Condenser (Refrigerant) - Clean"	462
" Diesel Particulate Filter - Clean"	467

" Engine Air Filter Element - Clean/Replace"	468
" Film (Product Identification) - Clean"	479
" Fuel System - Prime"	482
" Fuel Tank Strainer - Clean"	484
" Fuses - Replace"	485
" Hydraulic Tank Screen - Clean"	497
" Radiator Core - Clean"	502
" Rollover Protective Structure (ROPS) - Inspect"	503
" Track Adjustment - Adjust"	508
" Window Washer Reservoir - Fill"	511
" Window Wiper - Inspect/Replace"	511
" Windows - Clean"	511

Every 10 Service Hours or Daily for First 100 Hours

" Blade Linkage - Lubricate"	451
" Boom and Stick Linkage - Lubricate"	452
" Boom and Stick Linkage - Lubricate"	452

Every 10 Service Hours or Daily

" Air Cleaner Dust Valve - Clean/Inspect"	445
" Air Conditioner/Cab Heater Filter (Recirculation) - Inspect/Replace"	445
" Bucket Linkage - Lubricate"	456
" Cab Air Filter (Fresh Air) - Clean/Replace"	460
" Cooling System Coolant Level - Check"	465
" Engine Air Filter Service Indicator - Inspect" . . .	472
" Engine Oil Level - Check"	473
" Fuel System Water Separator - Drain"	483
" Fuel Tank Water and Sediment - Drain"	485
" Hydraulic System Oil Level - Check"	496
" Indicators and Gauges - Test"	500
" Quick Coupler - Lubricate"	500
" Quick Coupler - Lubricate"	501
" Quick Coupler - Lubricate"	501
" Seat Belt - Inspect"	503

“ Thumb - Lubricate”	507
“ Track Adjustment - Inspect”	510
“ Travel Alarm - Test”	510
“ Undercarriage - Check”	511

Every 50 Service Hours

“ Blade Linkage - Lubricate”	451
“ Swing Frame Pin - Lubricate”	505

Every 100 Service Hours

“ Swing Bearing - Lubricate”	504
“ Swing Gear - Lubricate”	505

Every 250 Service Hours

“ Belts - Inspect/Adjust/Replace”	447
“ Condenser (Refrigerant) - Clean”	462
“ Cooling System Coolant Sample (Level 1) - Obtain”	466
“ Engine Oil Sample - Obtain”	474

Initial 500 Service Hours

“ Final Drive Oil - Change”	479
“ Hydraulic System Oil Filter (Return) - Replace”	495

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

“ Cooling System Coolant Sample (Level 2) - Obtain”	467
“ Final Drive Oil - Change”	479

Every 500 Service Hours

“ Air Conditioner/Cab Heater Filter (Recirculation) - Replace”	445
“ Boom and Stick Linkage - Lubricate”	452
“ Boom and Stick Linkage - Lubricate”	452
“ Boom Swing Cylinder Pins - Lubricate”	452
“ Boom, Stick, and Frame - Inspect”	454
“ Cab Air Filter (Fresh Air) - Replace”	461
“ Engine Air Filter Primary Element - Replace”	471

“ Engine Air Filter Secondary Element - Replace”	472
“ Engine Oil and Filter - Change”	474
“ Final Drive Oil Level - Check”	480
“ Final Drive Oil Sample - Obtain”	480
“ Fuel Lift Pump Strainer - Replace”	481
“ Fuel System Primary Filter (Water Separator) Element - Replace”	482
“ Hydraulic System Oil Sample - Obtain”	497

Every 1000 Service Hours

“ Battery - Clean”	446
“ Battery Hold-Down - Tighten”	446
“ Belts - Replace”	449
“ Engine Valve Lash - Check”	478
“ Rollover Protective Structure (ROPS) - Inspect”	503

Every 1500 Service Hours

“ Engine Crankcase Breather - Replace”	473

Every 2000 Service Hours

“ Final Drive Oil - Change”	479
“ Fuel Cap Filter - Replace”	481
“ Hydraulic System Oil Filter (Return) - Replace”	495
“ Receiver Dryer (Refrigerant) - Replace”	502

“ Swing Gear and Bearing - Inspect” 506

Every 2000 Service Hours of Partial Hammer Use (50% of Service Hours)

“ Hydraulic System Oil - Change” 492

Every Year

“ Cooling System Coolant Sample (Level 2) - Obtain” 467

Every 3 Years

“ Seat Belt - Replace” 504

Every 6000 Service Hours

“ Hydraulic System Oil - Change” 492

Every 6000 Service Hours or 3 Years

“ Cooling System Coolant Extender (ELC) - Add” 464

Every 12 000 Service Hours or 6 Years

“ Cooling System Coolant (ELC) - Change” 462

i07313721

Air Cleaner Dust Valve - Clean/Inspect

SMCS Code: 1051-571-VL

1. Open the right side rear access door.



Illustration 530

g06279728

2. Check the dust valve after every 10 service hours or at the end of each day. Actuate the valve by squeezing the lips of the valve to remove any accumulated debris. Collect the debris into a suitable container.
3. Close the right side rear access door.

i07558674

Air Conditioner/Cab Heater Filter (Recirculation) - Inspect/Replace

SMCS Code: 1054-510-A/C; 1054-040-A/C

NOTICE

An air recirculation filter element plugged with dust will result in decreased performance and service life to the air conditioner or cab heater.

To prevent decreased performance, clean the filter element, as required.



Illustration 531

g06279768

The cab recirculation air filter is located in the cab, near the floor left of the operator seat.

1. To remove the filter element (1), depress the locking tab and pull out the filter towards the front of the cab.
2. Clean the filter element by tapping the air filter to remove the dirt. Do not use compressed air to clean the filter.
3. After you clean the filter element, inspect the filter element. If the filter element is damaged or badly contaminated, use a new filter element. Make sure that the filter element is dry.
4. Install the air filter ensuring that the locking tabs are in engaged.

i07558672

Air Conditioner/Cab Heater Filter (Recirculation) - Replace

SMCS Code: 1054-510-ACD; 7309-510-FI

NOTICE

An air recirculation filter element plugged with dust will result in decreased performance and service life to the air conditioner or cab heater.

To prevent decreased performance, clean the filter element, as required.

i07592714



Illustration 532

g06279768

The cab recirculation air filter is located in the cab, near the floor left of the operator seat.

1. To remove the filter element (1), depress the locking tab and pull out the filter towards the front of the cab.
2. Install the air filter ensuring that the locking tabs are in engaged.

i00934864

Battery - Clean

SMCS Code: 1401-070

Clean the battery surface with a clean cloth. Keep the terminals clean and keep the terminals coated with petroleum jelly. Install the post cover after you coat the terminal post with petroleum jelly.

i00934872

Battery Hold-Down - Tighten

SMCS Code: 7257

Tighten the hold-downs for the battery in order to prevent the batteries from moving during machine operation.

Battery or Battery Cable - Inspect/Replace

SMCS Code: 1401; 1401-510; 1401-561; 1401-040; 1402-510; 1402-040

WARNING

Personal injury can result from battery fumes or explosion.

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

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

Always wear protective glasses when working with batteries.

1. Turn all the switches to the OFF position. Turn the engine start switch key to the OFF position.
2. Turn the battery disconnect switch to the OFF position. Remove the key.
3. Remove the battery hold-down.

Note: The machine may contain more than one set of batteries.

4. Disconnect the negative battery cable at the battery.
5. Disconnect the positive battery cable at the battery.
6. Disconnect the battery cable at the battery disconnect switch.
7. Inspect the battery terminals for corrosion. Clean the battery terminals and the surfaces of the batteries with a clean cloth.
8. Inspect the battery cables for wear or damage.
9. Make any necessary repairs. If necessary, replace the battery cables and/or the battery.
10. Connect the positive battery cable at the battery.
11. Connect the negative battery cable at the battery.
12. Coat the battery terminals with petroleum jelly to prevent corrosion and install the terminal covers.

13. Reinstall the battery hold-down. Tighten the hold-downs for the battery to prevent the batteries from moving during machine operation.
14. Connect the battery cable at the battery disconnect switch.
15. Install the key and turn the battery disconnect switch ON.

Recycle the Battery

Always recycle a battery. Never discard a battery.

Always return used batteries to one of the following locations:

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

i07560755

Belts - Inspect/Adjust/Replace

SMCS Code: 1357-510; 1357-025; 1357-040; 1357; 1358-510; 1358-025; 1359-510; 1359-510-BE; 1359-040; 1359-025; 1359-040-BE; 1359-025-BE; 1361-025; 1361-025-BE; 1361-040; 1361-510-BE; 1361-040-BE; 1361-510; 1397-025; 1397-510; 1397-040; 1405-040; 1405-510-BE; 1405-510; 1405-025; 1405-040-BE; 1405-025-BE; 1405-036; 1802-025; 1802-510

NOTICE

The V-belt must be tensioned correctly. Failure to tension the belt properly could cause damage to the belt and/or to the air conditioner compressor.

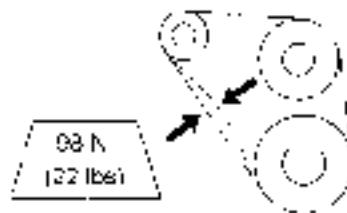


Illustration 533

g02872601

Your engine can be equipped with a water pump, with a fan drive, and with an alternator. Your engine can also be equipped with accessory drive belts. For maximum engine performance and maximum utilization of your engine, inspect the belts for wear and for cracking. Check the belt tension. Adjust the belt tension to minimize belt slippage. Belt slippage will decrease the belt life. Belt slippage will also cause poor performance of the alternator and of any driven equipment.

Water Pump Belt, Fan Drive Belt, and Alternator Belt

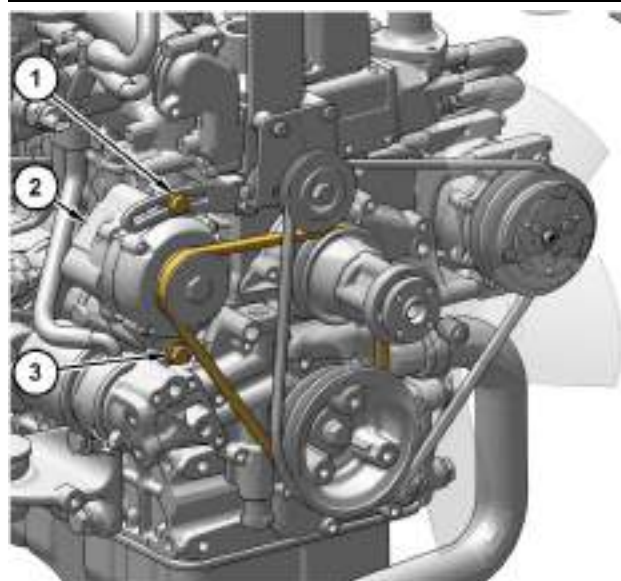


Illustration 534

g06335116

- (1) Adjusting bolt
- (2) Alternator
- (3) Mounting bolt

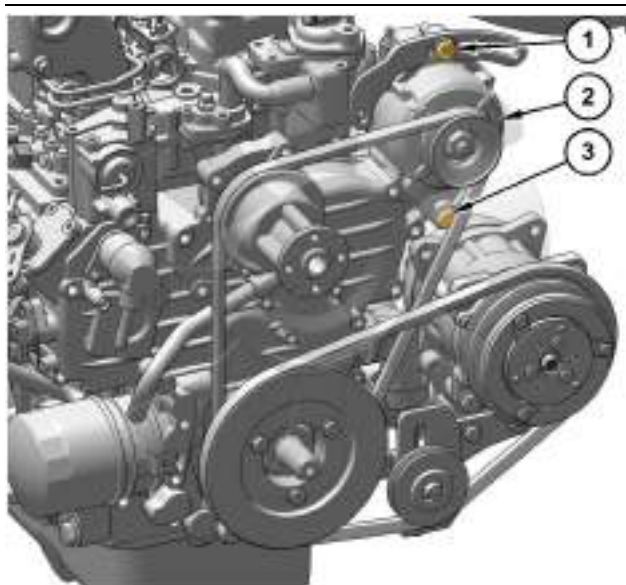


Illustration 535

g06373597

- (1) Adjusting bolt
- (2) Alternator
- (3) Mounting bolt

1. Open the engine access door and remove the fan guard.

Note: To gain better access, remove (place aside) the coolant overflow tank.

2. Apply approximately 98 N (22 lb) of force midway between the alternator and crankshaft pulleys.
3. Measure the deflection of the belt. The belt should deflect 10 to 12 mm (25/64 to 15/32 inch).
4. If the deflection is not correct, loosen alternator adjusting bolt (1) and mounting bolt (3). Move the alternator (2) to adjust the belt tension.
5. When the adjustment is correct, tighten bolt (1) to a torque of $25.5 \pm 1.5 \text{ N}\cdot\text{m}$ ($18.8 \pm 1.1 \text{ lb ft}$). Tighten bolt (3) to a torque of $52.5 \pm 3 \text{ N}\cdot\text{m}$ ($38.7 \pm 2.2 \text{ lb ft}$).
6. Check the deflection of the belt again.

Note: If a new belt is installed, check the belt adjustment again after 30 minutes of engine operation at the rated engine speed.

7. Install fan guard and close the engine access door.

Note: Remount the coolant overflow tank if the tank was placed aside for better access.

Air Conditioner Belt

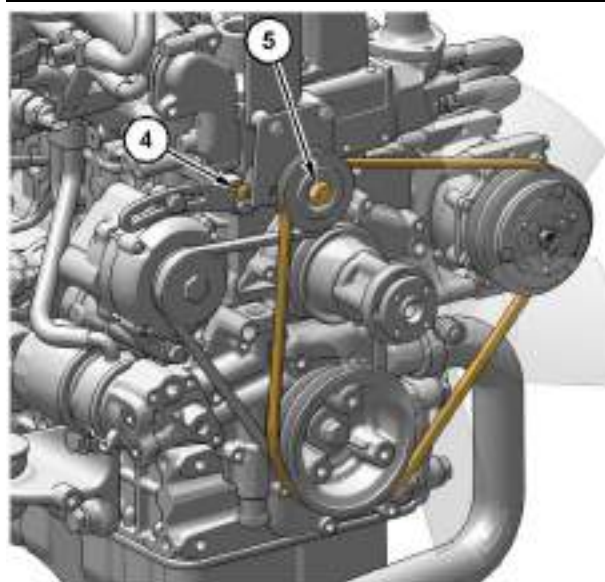


Illustration 536

g06373603

- (4) Adjusting bolt
- (5) Mounting bolt

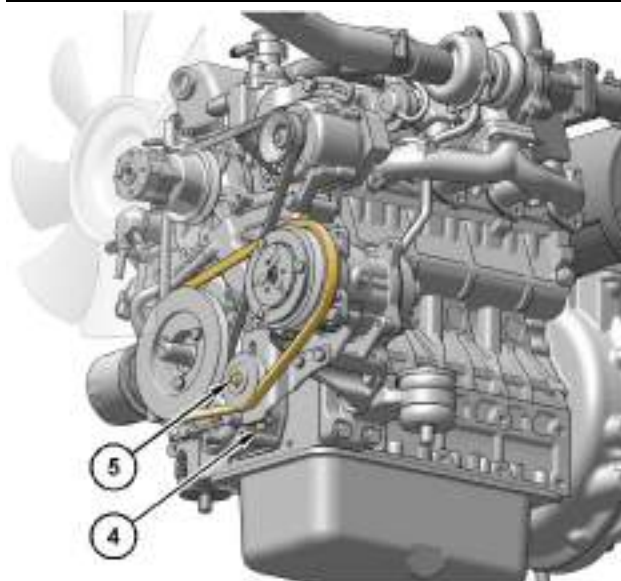


Illustration 537

g06359276

- (4) Adjusting bolt
- (5) Mounting bolt

1. Open the engine access door and remove the fan guard.

Note: To gain better access, remove (place aside) the coolant overflow tank.

2. Apply approximately 98 N (22 lb) of force midway between the crankshaft pulley and the compressor pulley.
3. Measure the deflection of the belt. The belt should deflect 7 to 10 mm (1/4 to 3/8 inch).
4. If the deflection is not correct, loosen mounting bolts (5) and turn adjusting bolt (4) to adjust the belt tension.

Note: Loosening the jam nut on the back side of adjusting bolt (4) prior to loosening the adjusting bolt may be necessary.

5. When the adjustment is correct, tighten jam nut on the back side of adjustment bolt (4) to a torque of $15 \pm 3 \text{ N}\cdot\text{m}$ ($11 \pm 2.2 \text{ lb ft}$).
6. Tighten mounting bolt (5) to a torque of $45 \pm 3 \text{ N}\cdot\text{m}$ ($33 \pm 2 \text{ lb ft}$).
7. Check the deflection again.

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

8. Install fan guard and close the engine access door.

Note: Remount the coolant overflow tank if the tank was placed aside for better access.

i07560754

Belts - Replace

SMCS Code: 1357-510; 1397-510

NOTICE

The V-belt must be tensioned correctly. Failure to tension the belt properly could cause damage to the belt and/or to the air conditioner compressor.

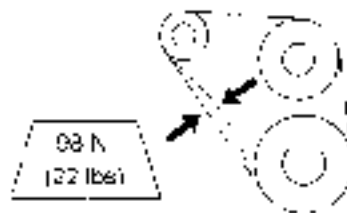


Illustration 538

g02872601

Your engine can be equipped with a water pump, with a fan drive, and with an alternator. Your engine can also be equipped with accessory drive belts. Adjust the belt tension to minimize belt slippage. Belt slippage will decrease the belt life. Belt slippage will also cause poor performance of the alternator and of any driven equipment.

Water Pump Belt, Fan Drive Belt, and Alternator Belt

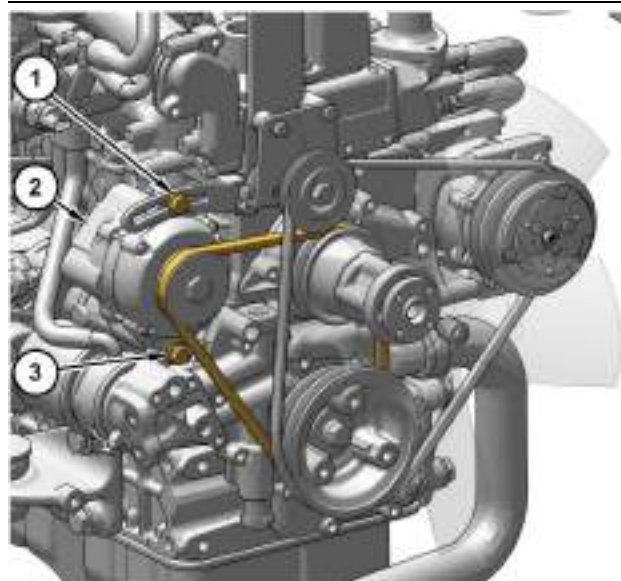


Illustration 539

g06335116

- (1) Adjusting bolt
- (2) Alternator
- (3) Mounting bolt

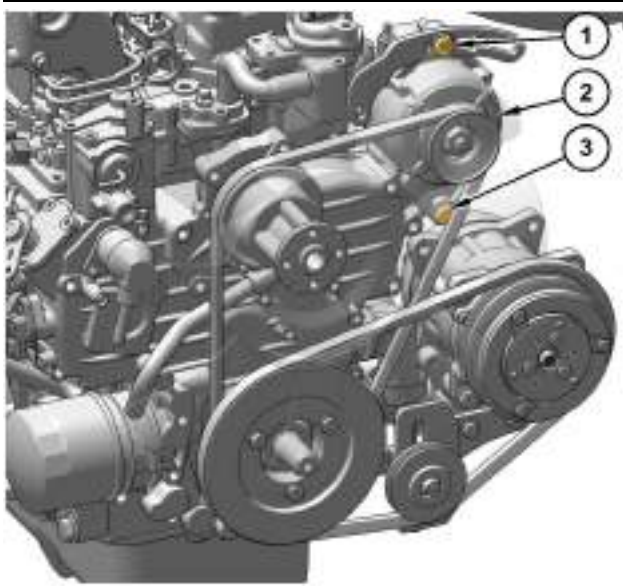


Illustration 540

g06373597

- (1) Adjusting bolt
- (2) Alternator
- (3) Mounting bolt

1. Open the engine access door and remove the fan guard.

Note: Before changing this belt, the Air Conditioner Belt must be removed. Refer to “Air Conditioner Belt” later in the section.

2. Loosen mounting bolt (3) and adjusting bolt (1).
3. Move alternator (2) and remove the old belt. Replace with a new belt.
4. Begin to adjust the belt tension by moving alternator (2).
5. Apply approximately 98 N (22 lb) of force midway between the alternator and crankshaft pulleys.
6. Measure the deflection of the belt. The belt should deflect 10 to 12 mm (25/64 to 15/32 inch).
7. When the adjustment is correct, tighten bolt (1) to a torque of 25.5 ± 1.5 N·m (18.8 ± 1.1 lb ft). Tighten bolt (3) to a torque of 52.5 ± 3 N·m (38.7 ± 2.2 lb ft).
8. Check the deflection of the belt again.

Note: When a new belt is installed, check the belt adjustment again after 30 minutes of engine operation at the rated engine speed.

9. Install fan guard and close the engine access door.

Air Conditioner Belt

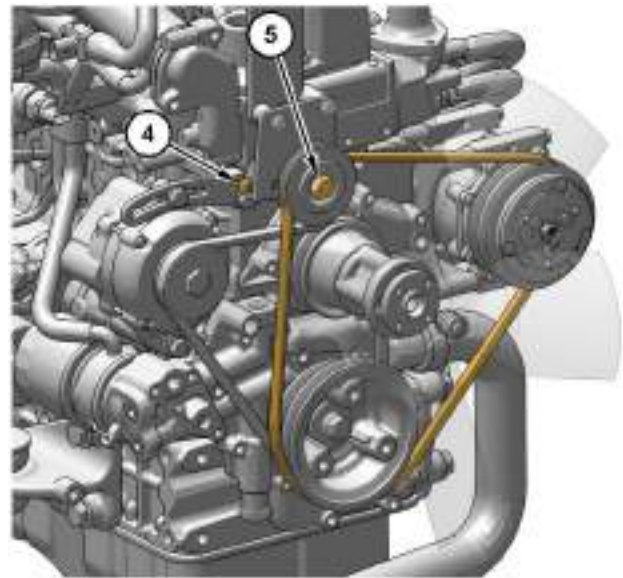


Illustration 541

g06373603

- (4) Adjusting bolt
- (5) Mounting bolt



Illustration 542

g06359276

- (4) Adjusting bolt
- (5) Mounting bolt

1. Open the engine access door and remove the fan guard.

Note: To gain better access, remove (place aside) the coolant overflow tank.

2. Loosen mounting bolt (5) and adjusting bolt (4).

Note: Loosening the jam nut on the back side of adjusting bolt (4) prior to loosening the adjusting bolt may be necessary.

3. Move pulley and remove the old belt. Replace with a new belt.**4. Begin to adjust the belt tension by moving the pulley.****5. Apply approximately 98 N (22 lb) of force midway between the crankshaft pulley and the compressor pulley.****6. Measure the deflection of the belt. The belt should deflect 7 to 10 mm (1/4 to 3/8 inch).****7. When the adjustment is correct, tighten jam nut on the back side of adjustment bolt (4) to a torque of $15 \pm 3 \text{ N}\cdot\text{m}$ ($11 \pm 2.2 \text{ lb ft}$).****8. Tighten mounting bolt (5) to a torque of $45 \pm 3 \text{ N}\cdot\text{m}$ ($33 \pm 2 \text{ lb ft}$).****9. Check the deflection again.**

Note: When a new belt is installed, recheck the belt adjustment again after 30 minutes of operation.

10. Install fan guard and close the engine access door.

Note: Remount the coolant overflow tank if the tank was placed aside for better access.

i07487543

Blade Cutting Edges - Inspect/Replace

SMCS Code: 6801



WARNING

Personal injury or death can result from a falling blade.

Block the blade before changing the cutting edges and the end bits.

Check the cutting edge of the blade and the end bits of the blade for wear. If any of the parts have signs of unusual wear or damage, replace the part.

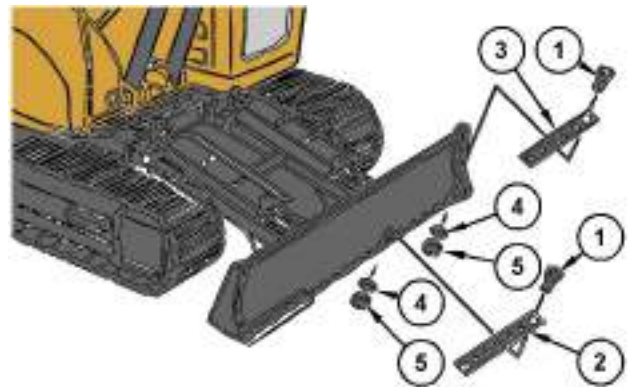


Illustration 543

g06335255

- 1. Raise the blade and place blocking underneath the blade.**
- 2. Lower the blade onto the blocking.**
- 3. Remove bolts (1), washers (4), and nuts (5).**
- 4. Remove cutting edge (2) and end bits (3).**
- 5. Clean the surface between the cutting edge and the end bits.**
- 6. Turn the cutting edge and/or the end bits upside-down if those edges are not worn.**
- 7. If both sides of the cutting edge and the end bits are worn, replace the parts with new parts.**
- 8. Install the new parts or the rotated parts with bolts (1). Tighten the bolts to a torque of $270 \pm 40 \text{ N}\cdot\text{m}$ ($200 \pm 30 \text{ lb ft}$).**
- 9. Raise the blade and remove the blocking.**
- 10. Lower the blade to the ground.**
- 11. After a few hours of operation, tighten bolts (1) to the torque that is specified in Step 8.**

i07487615

Blade Linkage - Lubricate

SMCS Code: 6060-086

Note: Caterpillar recommends the use of 5% molybdenum grease for lubricating the blade linkage. Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for more information on molybdenum grease.

Wipe all fittings before you apply lubricant.

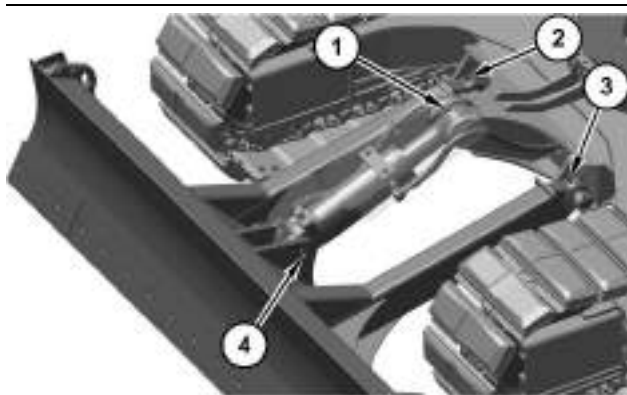


Illustration 544

g06335435

1. Apply lubricant through fitting (1). This fitting is on the rod end of the blade cylinder.
2. Apply lubricant through fitting (4). This fitting is on the head end of the blade cylinder.
3. Apply lubricant through fitting (2) and through fitting (3). These fittings are on the bar that supports the blade.

i07488347

Boom Swing Cylinder Pins - Lubricate

SMCS Code: 5105-086

1. Lower all work tools to the ground.
2. Wipe all grease fittings before you lubricate the grease fittings.

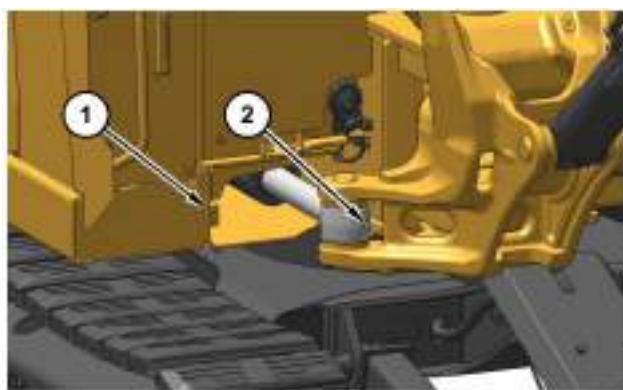


Illustration 545

g06335551

3. Apply lubricant to grease fitting (1) for the head end of the boom swing cylinder.
4. Apply lubricant to grease fitting (2) for the rod end of the boom swing cylinder.

i07488457

Boom and Stick Linkage - Lubricate (VA Boom (If Equipped))

SMCS Code: 6501-086; 6502-086

Wipe all fittings before you apply lubricant.

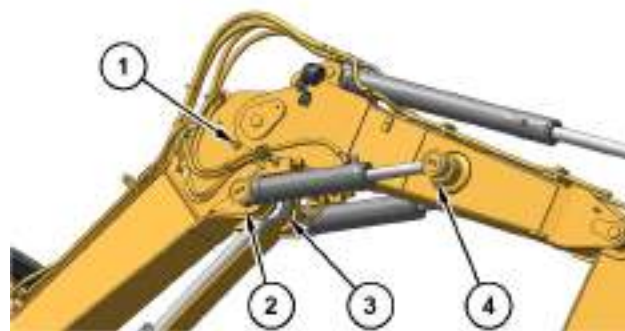


Illustration 546

g06335608

1. To lubricate the pin at the junction of the stub boom and the fore boom, apply lubricant through fitting (1).
2. Apply lubricant through fitting (2) and fitting (4). These fittings are on each VA Boom cylinder.
3. Apply lubricant through fitting (3). This fitting is on the rod of the boom cylinder.

i07521510

Boom and Stick Linkage - Lubricate

SMCS Code: 6501-086; 6502-086

Note: Cat recommends the use of 5% molybdenum grease for lubricating the boom, stick, and bucket control linkage. Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for more information on molybdenum grease.

Apply lubricant through all fittings after operation under water.

Wipe all fittings before you apply lubricant.



Illustration 547

g06279859

Example of Fixed Boom Machine

Illustration 548

g06348135

Example of Swing Boom Machine

1. Apply lubricant through the fittings at the base of the boom cylinder.



Illustration 549

g06279872

2. Apply lubricant through the fitting on the rod end of the boom cylinder.



Illustration 550

g06279882

3. Apply lubricant through the fitting on the head end of the stick cylinder.



Illustration 551

g06279885

4. Apply lubricant through both fittings at the junction of the boom and the stick.

Apply lubricant through the fitting on the rod end of the stick cylinder.

Apply lubricant through the fitting on the head end of the bucket cylinder.

i08017191

Boom, Stick, and Frame - Inspect

SMCS Code: 6501; 6502; 6506

All earth moving equipment is prone to a high degree of wear. Regular inspections for structural damage are necessary.

The interval between these inspections depends on the factors that follow.

- The age of the machine
- The severity of the application
- The loads that have been carried on the machine
- The amount of routine servicing that has been carried out

If the machine has been involved in any accident, the machine must be inspected thoroughly. Inspect the machine regardless of the date of the last inspection.

The machine must be clean before the machine is inspected.

Proper repair of frames and structures requires specific knowledge of the following subjects.

- Materials that have been used to manufacture the frame members
- Frame member construction
- Repair techniques that are recommended by the manufacturer.

Consult your Cat dealer if repairs are necessary. Your Cat dealer is qualified to carry out repairs on your behalf.

All repairs should be carried out by a Cat dealer. If you carry out your own repairs, contact your Cat dealer for advice about proper repair techniques.

Particular attention should be given to all welded structures. The following items should be thoroughly inspected for cracks and for defects:

- Boom
- Stick
- Blade (if equipped)
- Lifting points
- Upper frame
- Lower frame
- Bucket linkage lifting eye

NOTICE

The areas highlighted are of particular importance but other areas must not be neglected. The entire structure must be carefully examined.

Boom



Illustration 552

g06335653

Typical example

Check all welded joints and check the mounting points for the cylinder.

Stick



Illustration 553

g06335661

Typical example

Check all welded joints and check the mounting points for the cylinder.

Blade

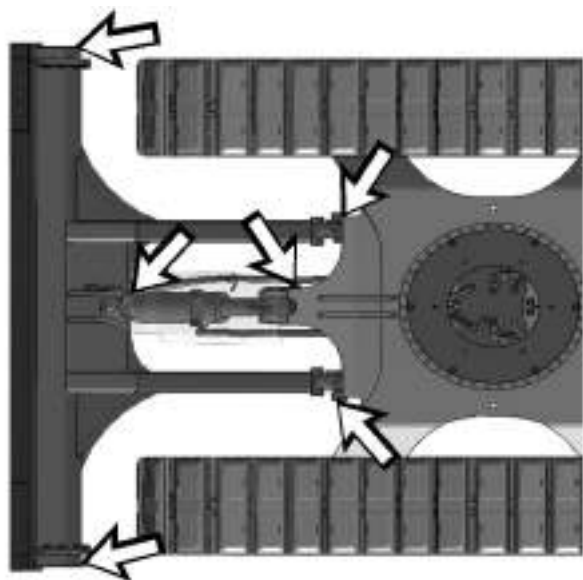


Illustration 554

g06335664

Typical example

If equipped with a blade, check the welded joints and check the mounting points for the cylinder.

Lifting Points

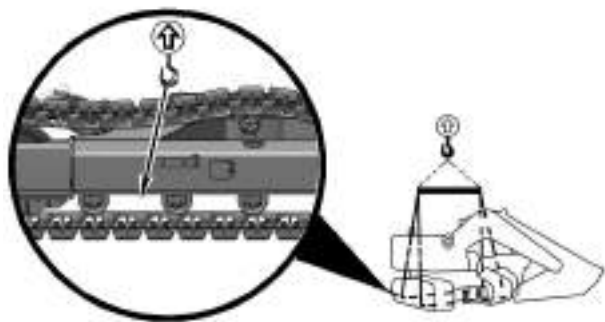


Illustration 555

g06335779

Typical example

Check the approved lifting points carefully. Check the welds. Check that the plates are not excessively bent. Check that the lifting holes are not deformed.

Upper Frame



Illustration 556

g06335782

Typical example

Check for damaged panels. Specifically look for any damage to the cab that might invalidate the certification. The cab is a safety device that must be maintained in good condition. Check for loose hardware or missing hardware.

Lower Frame



Illustration 557

g06335783

Typical example

Check the weld joints in the lower structure. Check for loose hardware or missing hardware. Check the ring of bolts that secure the swing gear.

Bucket Linkage Lifting Eye

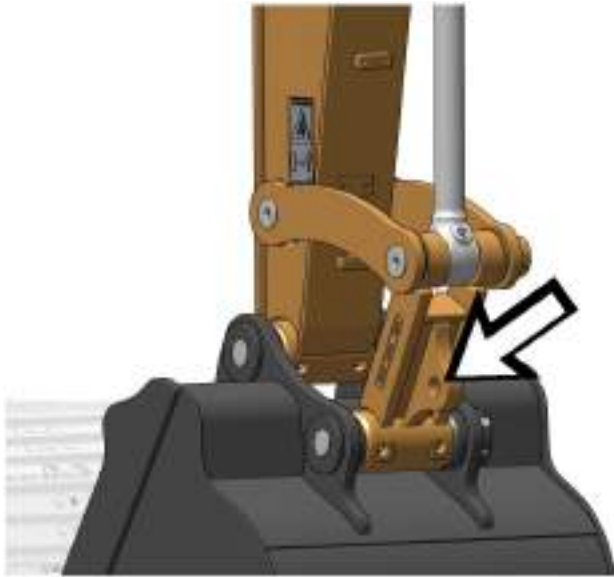


Illustration 558

g06508984

Typical example

Visually inspect the Bucket Linkage Lifting Eye for deformation due to overload or improper lifting, severe corrosion, pitting or metal loss, abrasion from side loading, visible cracks prior to use. If found damaged, replace the part.

i07315474

Bucket Linkage - Lubricate

SMCS Code: 6513-086

Note: Caterpillar recommends the use of 5% molybdenum grease for lubricating the bucket linkage. Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for more information on grease.

Wipe all fittings before you apply lubricant.

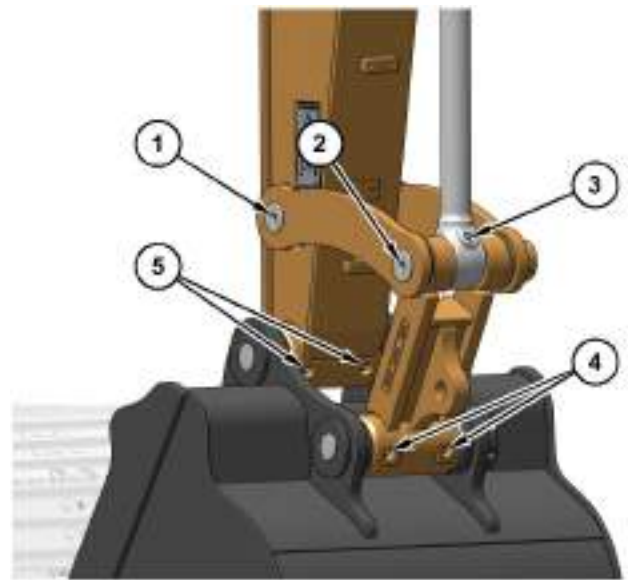


Illustration 559

g06279925

Note: Completely fill all cavities of the bucket control linkage with grease when you initially install a bucket.

1. Apply lubricant through fittings for the linkages (1), (2), and (3).
2. Apply lubricant through fittings for the bucket (4), and (5).

Note: Service the above fittings after you operate the bucket under water.

i07315929

Bucket Tips - Inspect/Replace

SMCS Code: 6805-040; 6805-510



Personal injury or death can result from bucket falling.

Block the bucket before changing bucket tips or side cutters.

Bucket Tips

WARNING

Block the bucket before changing the bucket teeth.

To prevent possible injury to the eyes, wear a protective face shield when striking the pin.

The pin, when struck, can fly out and cause injury to nearby personnel.

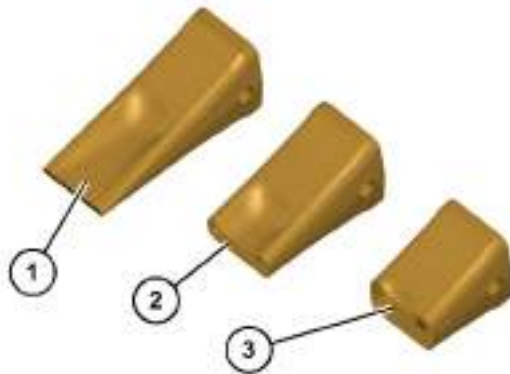


Illustration 560

g06214790

- (1) Usable tip
- (2) Replaceable bucket tip
- (3) Overworn tip

Check the bucket tips for wear. If the bucket tip has a hole, replace the bucket tip.

1. Remove the pin from the bucket tip. The pin can be removed by one of the following methods.

- Use a hammer and a punch from the retainer side of the bucket to drive out the pin.
- Use a Pin-Master. Follow Step 1a through Step 1c for the procedure.

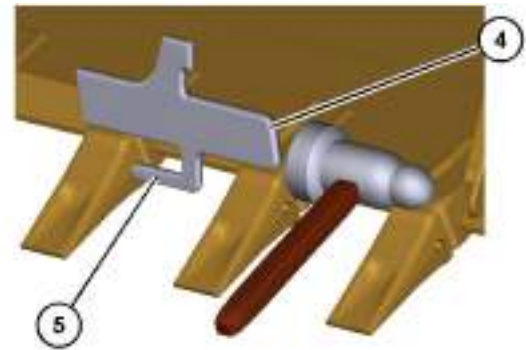


Illustration 561

g06214793

- (4) Back of Pin-Master
- (5) Extractor

- a. Place the Pin-Master on the bucket tip.
- b. Align extractor (5) with the pin.
- c. Strike the Pin-Master at the back of the tool (4) and remove the pin.

Note: Discard the old pin and the retainer assembly. When you change tips, use a new pin and a new retainer assembly. Refer to the appropriate parts manual for your machine.

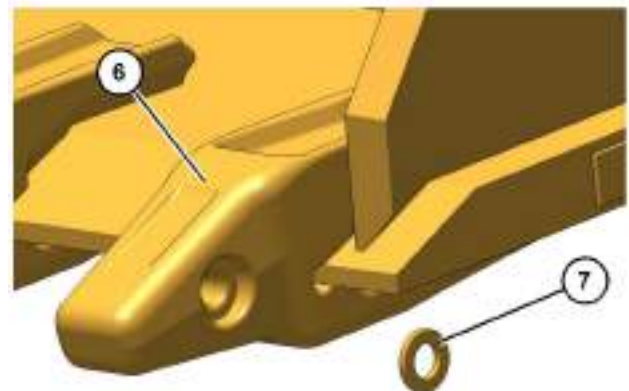


Illustration 562

g06214921

- (6) Retainer assembly
- (7) Adapter

2. Clean the adapter and the pin.

Maintenance Section
Bucket Tips - Inspect/Replace

3. Fit retainer assembly (6) into the counterbore that is in the side of adapter (7). Make sure that the face of the retainer assembly with the marking "OUTSIDE" is visible.



Illustration 563

g06214795

4. Install the new bucket tip onto the adapter.

Note: The bucket tips can be rotated by 180 degrees to allow the tip to wear evenly. You may also move the tips from the outside teeth to the inside teeth. Check the tips often. If wear is present on the tips, rotate the tips. The outside teeth generate the most wear.

5. Drive the pin through the bucket tip. The pin can be installed by using one of the following methods:

- From the same side of the retainer, drive the pin through the bucket tip, the retainer assembly, and the adapter.
- Use a Pin-Master. Follow Step 5a through Step 5e for the procedure.

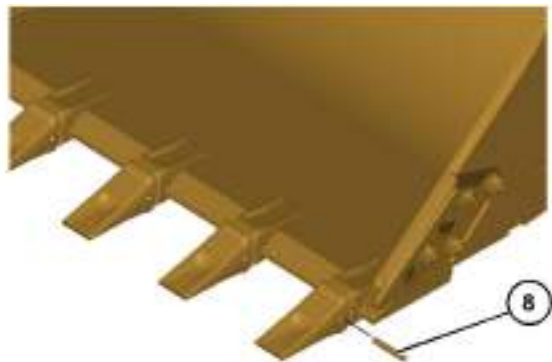


Illustration 564

g06214803

(8) Pin

- a. Insert pin (8) through the bucket tip.

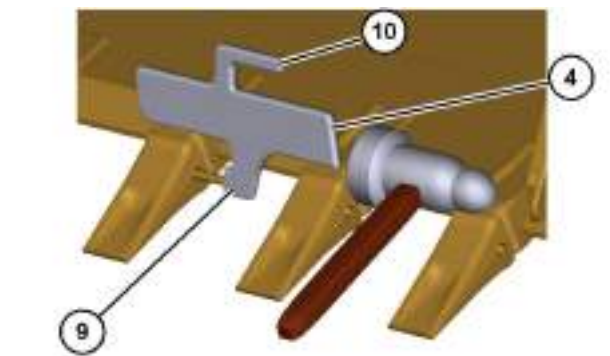


Illustration 565

g06214807

- b. Place the Pin-Master over the bucket tips so that the pin will fit into the counterbore of the pin holder (9).
- c. Strike the Pin-Master with a hammer at the back of the tool (4) to insert the pin.
- d. Slide pin holder (9) away from the pin and rotate the tool slightly to align pin setter (10) with the pin.



Illustration 566

g06214812

Final assembly of pin into bucket tip

- e. Strike the end of the tool until the pin is fully inserted.

Side Cutters

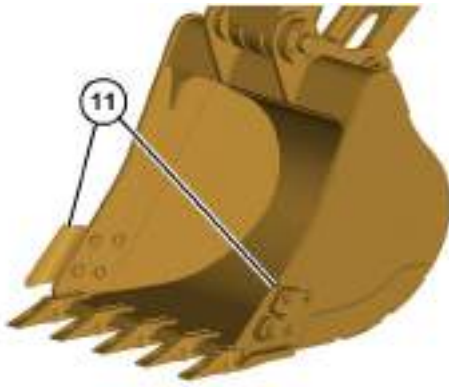


Illustration 567

g06214814

Bucket With Side Cutters

1. Remove the mounting bolts and the side cutters (11).
2. Clean the mounting surface of the side plate on the bucket and of the side cutter. Remove any burrs or protrusions on the mating surfaces.

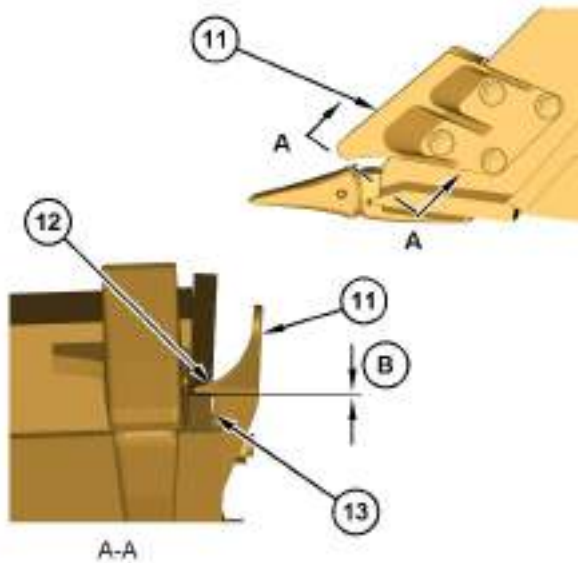


Illustration 568

g06214887

- (12) Shear ledge on a side cutter
(13) Side plate on a bucket
(B) 0.0 mm (0.0 inch)

Note: Some side cutters may be rotated for additional wear.

3. Install the side cutter.

Note: Certain bolts may require thread compound.

4. Hand tighten the bolts.
5. Make sure that there is not a gap between the side plate on the bucket and the shear ledge on the side cutter.
6. Torque the mounting bolts to the correct specification.

Side Protectors (If Equipped)

Inspect the wear of the side protector. When too much wear is present, replace the protector.

Maintenance Section
Cab Air Filter (Fresh Air) - Clean/Replace

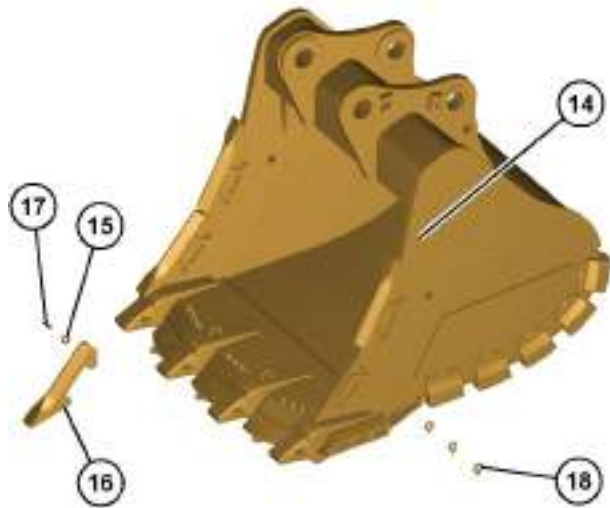


Illustration 569

g06219766

1. Hit pin (17) from the side of the bucket without the retainer to remove side protector (16) from side plate (14).
2. Clean side protector (16), pin (17), retainer (15), and side plate (14) before installation.

Note: Lateral clearance between the side plate and the side protector should not exceed 1 mm (0.04 inch). Shims (18) may be required to decrease the lateral clearance which will decrease movement. Install the shims between the side plate and the side protector on the opposite side of the retainer.

3. Put retainer (15) in side plate (14).
4. Align two pin holes of the new protector and the side plate. Hit the pin from the retainer side of the bucket.

Note: If the pin and/or the retainer are worn, replace the pin and/or the retainer.

i07558819

Cab Air Filter (Fresh Air) - Clean/Replace

SMCS Code: 7342-070; 7342-510

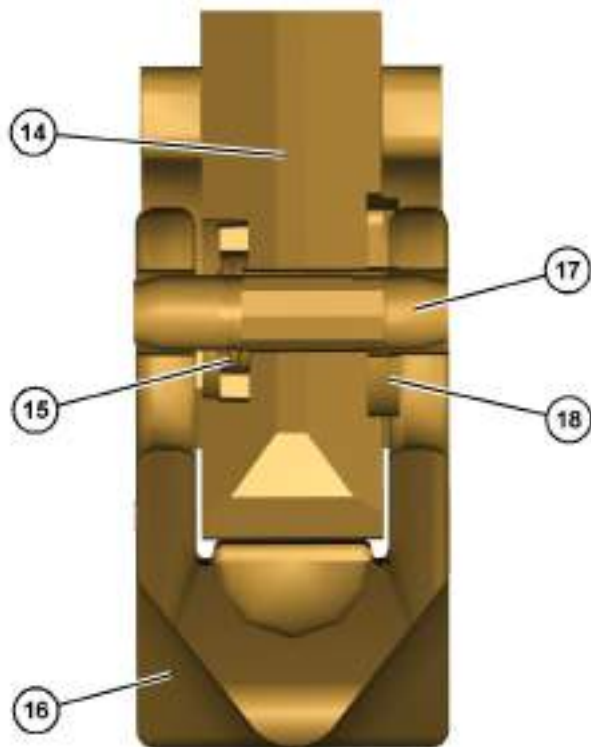


Illustration 570

g06219767

- (14) Side plate
(15) Retainer
(16) Side protector
(17) Pin
(18) Shim

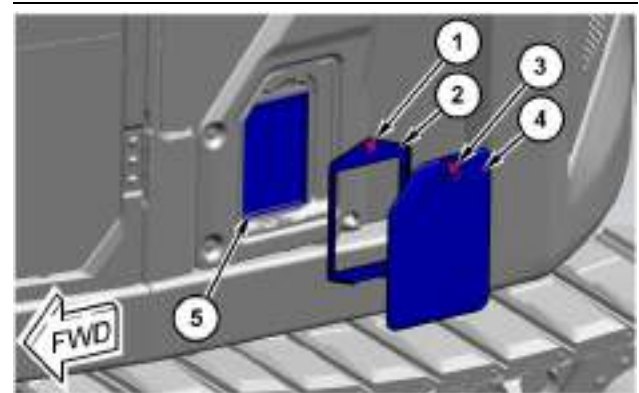


Illustration 571

g06374824

The cab fresh air filter is located rear of the cab door, accessible from the exterior of the machine.

1. To gain access to the filter, remove thumb screw (3) and cover (4).
2. Once the cover has been removed, clear the debris from around filter (5).
3. Remove inner cover (2) by removing thumb screw (1).
4. Remove filter (5) by pulling outward on the filter.

i07316167

5. Clean the filter by tapping the air filter to remove the dirt. Do not use compressed air to clean the filter.
6. After you clean the air filter, inspect the air filter. If the air filter is damaged or badly contaminated, use a new air filter.
7. Install the air filter ensuring that the filter is seated in the housing appropriately.
8. Install inner cover (2) and secure the cover with thumb screw (1).
9. Install cover (4) and secure the cover with thumb screw (3).

i07558820

Cab Air Filter (Fresh Air) - Replace

SMCS Code: 7342-510

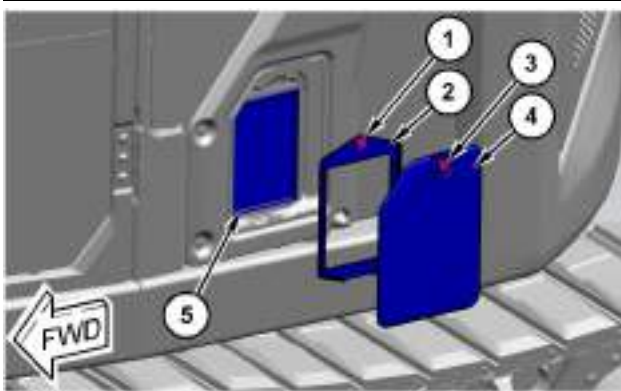


Illustration 572

g06374824

The cab fresh air filter is located rear of the cab door, accessible from the exterior of the machine.

1. To gain access to the filter, remove thumb screw (3) and cover (4).
2. Once the cover has been removed, clear the debris from around filter (5).
3. Remove inner cover (2) by removing thumb screw (1).
4. Remove filter (5) by pulling outward on the filter.
5. Install the new fresh air filter ensuring that the filter is seated in the housing appropriately.
6. Install inner cover (2) and secure the cover with thumb screw (1).
7. Install cover (4) and secure the cover with thumb screw (3).

Camera - Clean

SMCS Code: 7348-070

WARNING

Failure to use an appropriate external ladder or an appropriate platform for direct access to the rear view camera could result in slipping and falling which could result in personal injury or death. Be sure to use an appropriate external ladder or an appropriate platform for direct access to the rear view camera.

The machine's counterweight and the engine hood are not approved as a maintenance platforms.

WARNING

Unexpected machine movement can cause injury or death.

In order to avoid possible machine movement, move the hydraulic lockout control to the LOCKED position and attach a Special Instruction, SEHS7332, "Do Not Operate" or similar warning tag to the hydraulic lockout control.

Note: When you access the camera for cleaning, be sure to observe safe procedures for access. Maintain a three-point contact and/or use a body harness.



Illustration 573

g06279954

The rear view camera is on top of the counterweight.

If necessary, use a damp cloth to clean the glass of the camera. The camera is sealed. The camera is not affected by a wash with high-pressure spray.

Note: Alternatively, cameras may be cleaned from ground level by using a wash with a high-pressure spray or a damp rag on a wand.

i07316168

Condenser (Refrigerant) - Clean

SMCS Code: 1805-070

NOTICE

If excessively dirty, clean condenser with a brush. To prevent damage or bending of the fins, do not use a stiff brush.

Repair the fins if found defective.

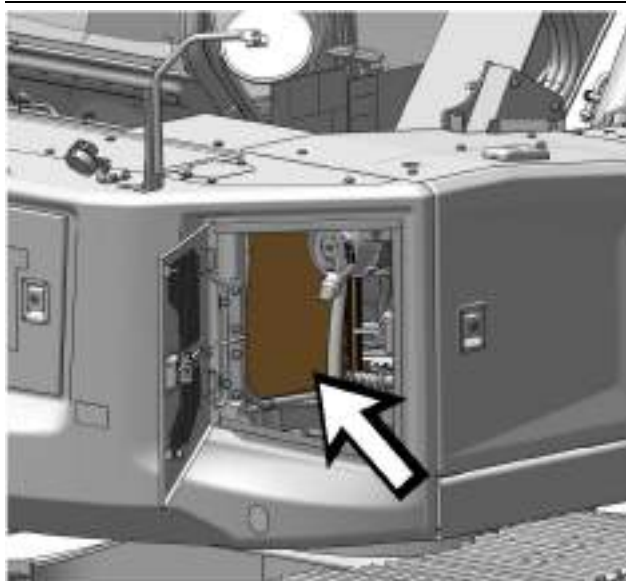


Illustration 574

g06279974

1. Open the access door on the right rear side of the machine. The condenser is located in front of the radiator.
2. Inspect the condenser for debris. Clean the condenser, if necessary.
3. Use clean water to wash off all dust and dirt from the condenser.
4. Close the access door.

i07510508

Cooling System Coolant (ELC) - Change

SMCS Code: 1350-044

WARNING

Engine hood and engine hood parts can be hot while engine is running or immediately after engine shutdown. Hot parts or hot components can cause burns or personal injury. Do not allow these parts to contact your skin, when engine is running or immediately after engine shutdown. Use protective clothing or protective equipment to protect your skin.

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

Do not change the coolant until you read and understand the cooling system information in Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations".

Failure to do so could result in damage to the cooling system components.

NOTICE

Mixing ELC with other products will reduce the effectiveness of the coolant.

This could result in damage to cooling system components.

If Caterpillar products are not available and commercial products must be used, make sure they have passed the Caterpillar EC-1 specification for pre-mixed or concentrate coolants and Caterpillar Extender.

Note: This machine was filled at the factory with Cat Extended Life Coolant.

If the coolant in the machine is changed to Extended Life Coolant from another type of coolant, see Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations".

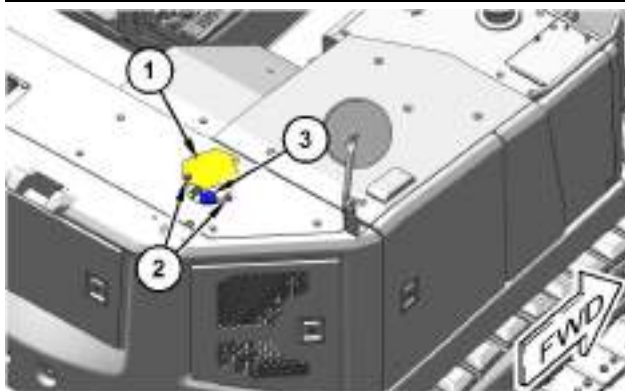


Illustration 575

g06343852

1. Gain access to the radiator cap by opening access cover (1).
 - a. Open cover (1) by loosening bolts (2).
2. Make sure that the cooling system has cooled down. Loosen the cooling system pressure cap (3) slowly to relieve system pressure.
3. Remove the pressure cap.
4. Inspect the gasket on the pressure cap. If the gasket is damaged, replace the pressure cap.

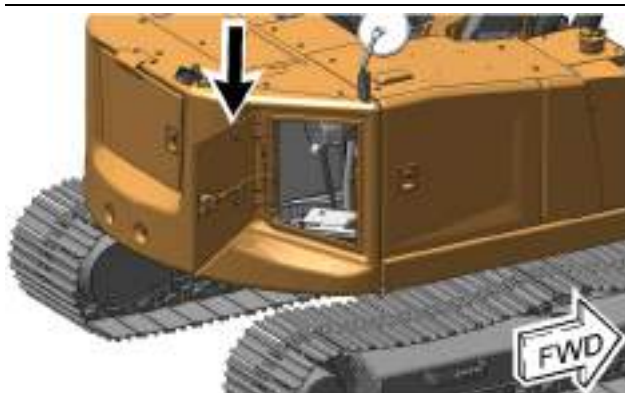


Illustration 576

g06287067

5. Open the rear access door on the right side of the machine.



Illustration 577

g06287068

6. Open the drain valve and allow the coolant to drain into a suitable container. The drain valve is on the bottom of the radiator.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information that pertains to containing fluid spillage.

7. Flush the cooling system. Follow Step 7a through Step 7h to flush the cooling system.
 - a. Close the drain valve.
 - b. Fill the cooling system with clean water.
 - c. Install the pressure cap.
 - d. Start the engine and run the engine until the engine reaches operating temperature.
 - e. Stop the engine and allow the engine to cool.
 - f. Loosen the pressure cap slowly to relieve any pressure in the cooling system.
 - g. Open the drain valve that is on the bottom of the radiator and allow the coolant to drain into a suitable container.
 - h. Flush the radiator with clean water until the draining water is transparent.
8. Close the drain valve.
9. Add the Extended Life Coolant. Refer to the following topics:

- Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations"
- Operation and Maintenance Manual, "Capacities (Refill)"

10. After the cooling system has been filled, perform the following procedures during initial start-up:
 - a. Start the engine without the filler cap.

- b. Run the engine at low idle for 10 minutes.
- c. Then, increase the engine speed to a high idle until the water temperature regulator is open and the coolant level is stabilized.
- d. Maintain the coolant at the proper level as the water temperature regulator opens and air is purged from the system. Refer to Operation and Maintenance Manual, "Cooling System Coolant Level - Check".

11. Install the cooling system pressure cap.

12. Stop the engine.

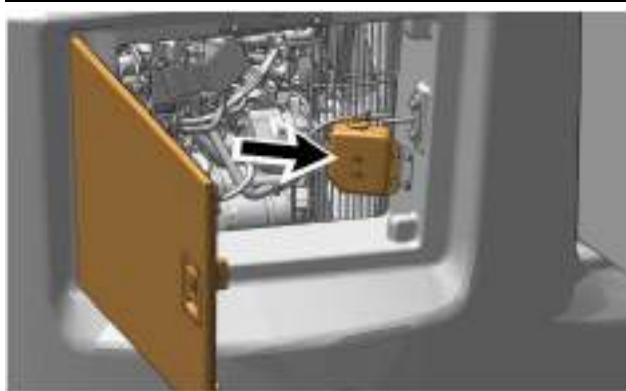


Illustration 578

g06287070

13. Open the rear door and check the coolant reservoir. Maintain the coolant level so that coolant is between the "LOW" and "FULL" lines. If more coolant is needed, see Operation and Maintenance Manual, "Cooling system Coolant Extender (ELC) - Add".
14. If more coolant is necessary, remove the pressure cap and add the appropriate coolant solution.
15. Install the pressure cap.
16. Close and latch the rear door. Close the right access door. Install the radiator cap access cover.

i07510331

Cooling System Coolant Extender (ELC) - Add

SMCS Code: 1352; 1353; 1395

WARNING

Engine hood and engine hood parts can be hot while engine is running or immediately after engine shutdown. Hot parts or hot components can cause burns or personal injury. Do not allow these parts to contact your skin, when engine is running or immediately after engine shutdown. Use protective clothing or protective equipment to protect your skin.

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.

Use Cat Extended Life Coolant (ELC) when you add coolant to the cooling system. See Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for all cooling system requirements.

Use a Coolant Conditioner Test Kit to check the concentration of the coolant.

NOTICE

Mixing ELC with other products will reduce the effectiveness of the coolant.

This could result in damage to cooling system components.

If Caterpillar products are not available and commercial products must be used, make sure they have passed the Caterpillar EC-1 specification for pre-mixed or concentrate coolants and Caterpillar Extender.

i07510434

Note: This machine was filled at the factory with Cat Extended Life Coolant.

1. Park the machine on level ground.
2. Stop the engine.

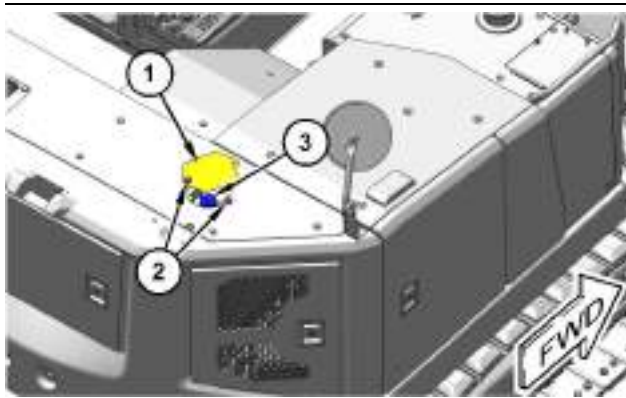


Illustration 579

g06343852

3. Gain access to the radiator cap by opening access cover (1).
 - a. Open cover (1) by loosening bolts (2).
4. Make sure that the cooling system has cooled down. Loosen the cooling system pressure cap (3) slowly to relieve system pressure. Remove the pressure cap.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information on containing fluid spillage.

5. You may need to drain some coolant from the radiator so that Cat Extender can be added to the cooling system.

Note: Always discard drained fluids according to local regulations.

6. Add Cat Extended Life Coolant (ELC) to the cooling system. Refer to the following topics for the proper amount of Cat Extender:

- Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations"
- Operation and Maintenance Manual, "Capacities (Refill)"

7. Inspect the o-ring of the cooling system pressure cap. If the o-ring is damaged, replace the pressure cap.
8. Install the cooling system pressure cap.
9. Install the access cover.

Cooling System Coolant Level - Check

SMCS Code: 1350-040; 1350-535-FLV; 1395-535-FLV

1. Open the engine access door.

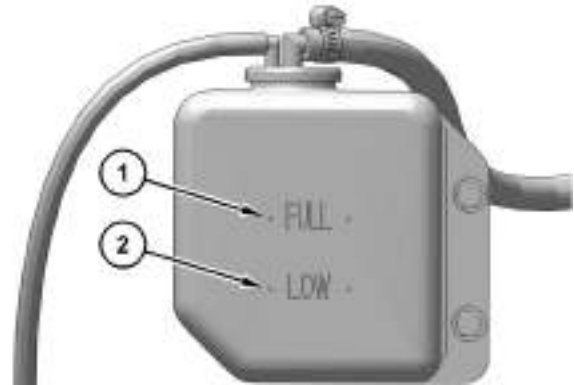


Illustration 580

g06287078

- (1) "FULL"
- (2) "LOW"

2. Check the coolant level of the coolant reservoir. Maintain the coolant level between the "FULL" mark and the "LOW" mark.

If the reservoir is empty, use steps 2a through 2h.

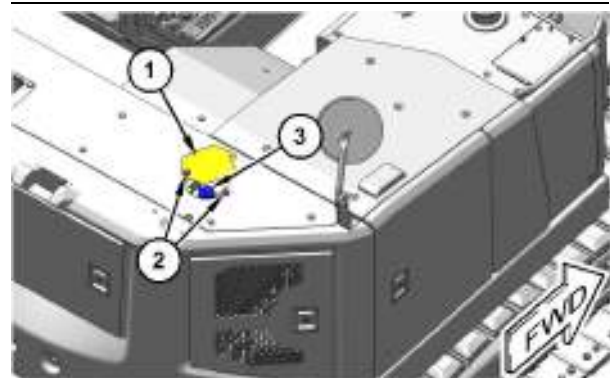


Illustration 581

g06343852

- a. Loosen bolts (2) to open access cover (1).
- b. Open cover (1) and slowly loosen the cooling system pressure cap (3) to relieve system pressure. Remove the pressure cap.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information on containing fluid spillage.

c. Add the appropriate coolant solution to the cooling system. Refer to the following topics:

- Special Publication, SEBU6250, "S·O·S Coolant Analysis"
- Operation and Maintenance Manual, "Capacities (Refill)"

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

e. Maintain the coolant level within 13 mm (0.5 inch) of the bottom of the radiator filler pipe.



Illustration 582

g06277320

f. Inspect the gasket of the cooling system pressure cap. If the gasket is damaged, replace the pressure cap.

g. Install the cooling system pressure cap.

h. Stop the engine.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information on Containing Fluid Spillage.

3. If additional coolant is necessary, remove the reservoir cap and add the appropriate coolant solution.
4. Install the reservoir cap.
5. Install access cover.

i07488559

Cooling System Coolant Sample (Level 1) - Obtain

SMCS Code: 1395-554; 1395-008; 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 solution

NOTICE

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

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, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat® products.

Dispose of all fluids according to local regulations and mandates.

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. To receive the full effect of S·O·S analysis, you must establish a consistent trend of data. 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 to avoid contamination.
- Never collect samples from expansion bottles.
- Never collect samples from the drain for a system.



Illustration 583

g06335663

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 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 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.

i07349178

Cooling System Coolant Sample (Level 2) - Obtain

SMCS Code: 1395-008; 1395-554; 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 Cat 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 Cat dealer.

i07400083

Diesel Particulate Filter - Clean (Emission Related Component)

SMCS Code: 108F-070; 1091-070

Consult your Cat dealer when the DPF needs to be cleaned.

The approved Caterpillar DPF maintenance procedure requires that one of the following actions be taken when the DPF needs to be cleaned:

- The DPF from your machine can be replaced with a new DPF
- The DPF from your machine can be replaced with a remanufactured DPF

- The DPF from your machine can be cleaned by your local authorized Cat dealer, or a Caterpillar approved DPF cleaning machine, and reinstalled

Note: To maintain emissions documentation, the DPF that is removed from the machine when the DPF is cleaned must be reinstalled on the same machine.

Note: A specific ash service regeneration must be performed before removing a DPF that will be cleaned. All three scenarios listed above require a reset of the ash monitoring system in the engine ECM.

i07560694

Engine Air Filter Element - Clean/Replace

SMCS Code: 1054-510; 1054-070

NOTICE

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

1. Open the right rear access door.
2. Start the engine.



Illustration 584

g06287255

3. Service the air cleaner if the yellow piston in the filter element indicator moves into the red zone.
4. Stop the engine.



Illustration 585

g06287267

5. Squeeze the outlet tube slightly to purge the dirt from the outlet tube.



Illustration 586

g06287281

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

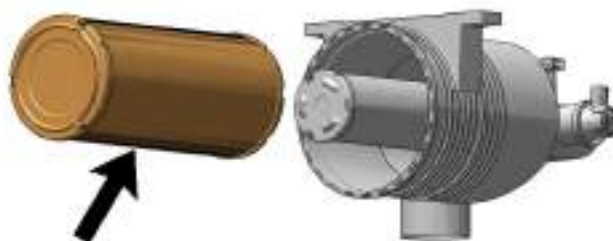


Illustration 587

g06287287

7. Remove the primary filter element from the air cleaner housing.
8. Clean the air cleaner cover.

9. Inspect the O-ring seal on the air cleaner cover.
Replace the O-ring seal if the O-ring seal is worn or damaged.
10. Cover the opening of the air inlet to the engine.
11. Clean the inside of the air cleaner housing.
12. Clean the primary filter element and inspect the filter element.

Note: Refer to "Cleaning Primary Air Filter Elements".

13. Install the clean primary filter element.

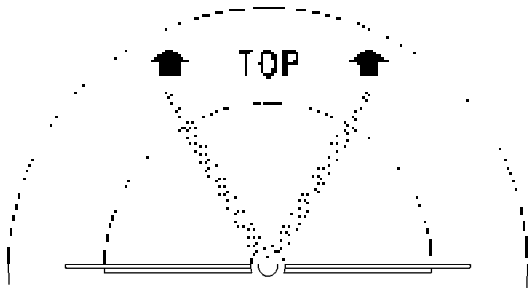


Illustration 588

g00103800

14. Install the air cleaner cover. The arrows on the front must point upward. Close the latches securely.
15. Reset the filter indicator by pushing in the reset button on top of the indicator.
16. Install a new primary filter element if one of the following problems occurs after starting the engine.
 - The piston of the air filter indicator moves into the red zone.
 - The color of the exhaust smoke is black.

The primary filter can be cleaned up to three times. Replace the filter if:

 - the filter had already been cleaned three times.
 - the filter is 1 year old.
 - the secondary filter is being replaced.
17. Close the right rear access door.

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



Illustration 589

g06276726

Note: When the primary air filter elements are cleaned, always begin with the clean side (inside) 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 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 590

g06276739

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

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

Storing Primary Air Filter Elements

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



Illustration 591

g06276742

Do not use paint, a waterproof cover, or plastic as a protective covering for storage. An airflow 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.

i07560246

Engine Air Filter Primary Element - Replace

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

NOTICE

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

1. Open the right rear access door.
2. Stop the engine.



Illustration 592

g06287267

3. Squeeze the outlet tube slightly to purge the dirt from the outlet tube.



Illustration 593

g06287281

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

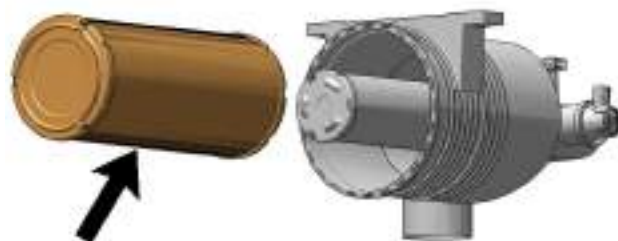


Illustration 594

g06287287

5. Remove the primary filter element from the air cleaner housing.
6. Clean the air cleaner cover.

Maintenance Section
Engine Air Filter Secondary Element - Replace

7. Inspect the O-ring seal on the air cleaner cover.
Replace the O-ring seal if the O-ring seal is worn or damaged.
8. Cover the opening of the air inlet to the engine.
9. Clean the inside of the air cleaner housing.
10. Install the new primary filter element.

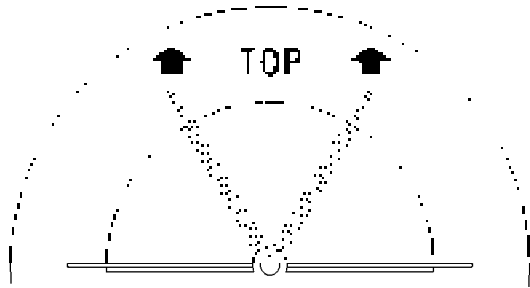


Illustration 595

g00103800

11. Install the air cleaner cover. The arrows on the front must point upward. Close the latches securely.
12. Reset the filter indicator by pushing in the reset button on top of the indicator.
13. Close the right rear access door.

i07560737

Engine Air Filter Secondary Element - Replace

SMCS Code: 1054-510

NOTICE

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

The secondary filter element should be replaced at the time the primary element is serviced for the third time.

NOTICE

The filter should be kept in service for no longer than one year.

NOTICE

Always leave the secondary filter element in place while you clean the air cleaner housing.

1. Open the right rear access door.

2. Remove the air cleaner housing cover.
3. Remove the primary filter element. Refer to Operation and Maintenance Manual, "Engine Air Filter Primary Element - Replace".

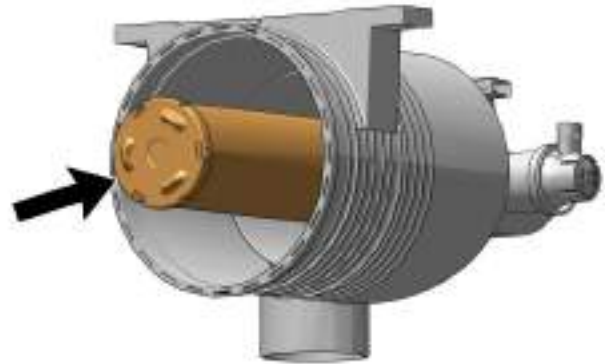


Illustration 596

g06287327

4. Remove the secondary filter element. Pull out to remove the element.
5. Cover the air inlet opening. Clean the inside of the air cleaner housing.
6. Install a new secondary filter element. Push the element firmly to properly seat the element. Write the date on the element.
7. Install the primary filter element and the air cleaner housing cover.
8. Close the right rear access door.

i07316348

Engine Air Filter Service Indicator - Inspect

SMCS Code: 7452-040-DJ

NOTICE

Service the air cleaner only with the engine stopped. Engine damage could result if the air cleaner is serviced while the engine is running.



Illustration 597

g06287255

1. Open the right side access door.
 2. Start the engine.
 3. Run the engine at high idle.
 4. If the piston in the engine air filter service indicator enters the red zone, service the air cleaner.
 5. Stop the engine.
- Note:** See the Operation and Maintenance Manual, "Engine Air Filter Element - Clean/Replace".
6. Close the right side access door.

i07488582

Engine Crankcase Breather - Replace

SMCS Code: 1317-510

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

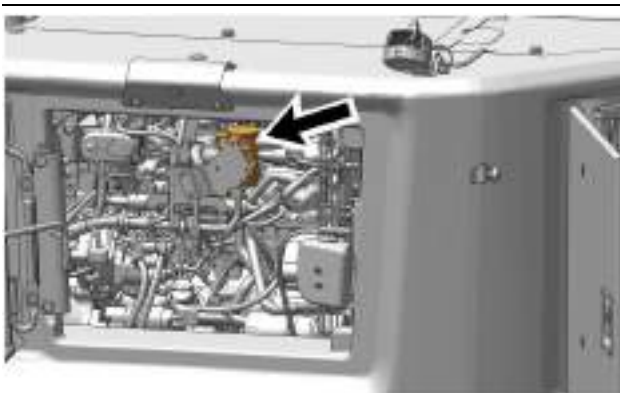


Illustration 598

g06287356

Engine crankcase breather location

2. The engine crankcase breather is located in the engine compartment on the right-hand side of engine. A replaceable filter element is located inside the engine crankcase breather.

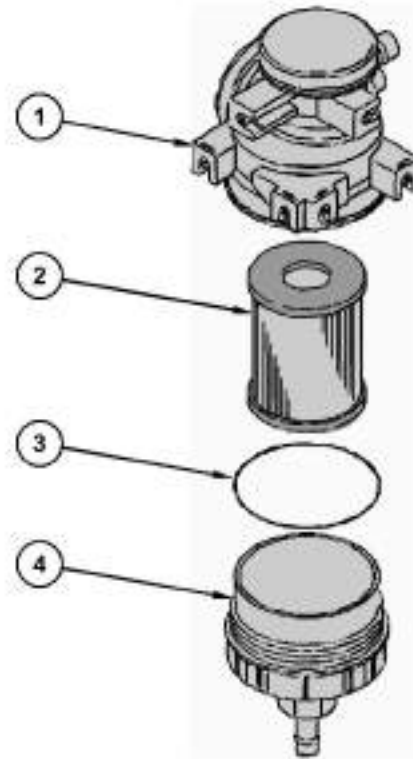


Illustration 599

g06335701

Engine Crankcase Breather

- (1) Housing
- (2) Filter Element
- (3) O-ring
- (4) Cover

3. Remove cover (4) and remove filter element (2).
4. Clean housing (1) and cover (4).
5. Inspect O-ring for damage. Replace if necessary.
6. Install a new filter element and Install cover (4).
7. Close the engine access door.

i07999883

Engine Oil Level - Check

SMCS Code: 1000-535



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

Maintenance Section

Engine Oil Sample - Obtain

NOTICE

Do not overfill the crankcase. Engine damage can result.

If the machine is on an incline or the engine has been stopped only for a short time, all engine oil may not be in the crankcase. The fluid level cannot be properly checked during these instances. Park the machine on level ground. The engine oil level can be checked after the engine has been stopped for at least 30 minutes. Do not check the oil level while the engine is running.

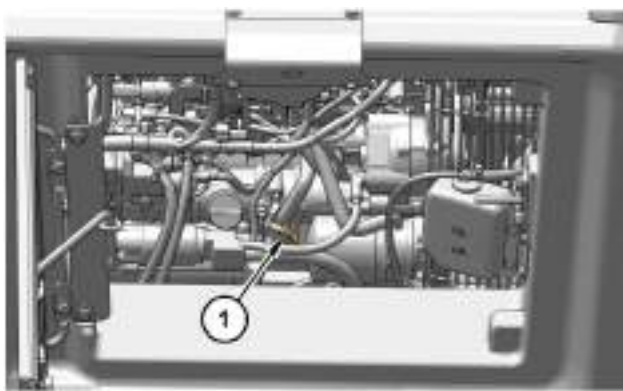


Illustration 600

g06287364

1. Open the engine access door on the rear of the machine.
2. Remove dipstick (1). Wipe the oil off the dipstick and reinsert the dipstick.

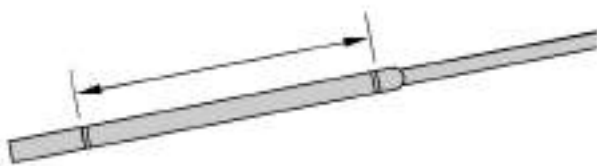


Illustration 601

g06502446

3. Remove the dipstick and check the dipstick. The oil level should be between the two marks on the dipstick.

NOTICE

Operating your engine when the oil level is above the "H" mark could cause the crankshaft to dip into the oil. This could lead to excessively high oil temperatures which can reduce the lubricating characteristics of the oil, lead to bearing damage, and could result in loss of engine power.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information on Containing Fluid Spillage.

4. Remove oil filler plug to add oil, if necessary. See Operation and Maintenance Manual, "Lubricant Viscosities".

Note: If the oil is deteriorated or badly contaminated, change the oil regardless of the maintenance interval.

5. Clean the oil filler plug. Install the oil filler plug.
6. Close the access door.

i07316359

Engine Oil Sample - Obtain

SMCS Code: 1000-008; 1000; 1348-554-SM; 1348-008; 7542-554-OC; 7542-554-SM; 7542-008

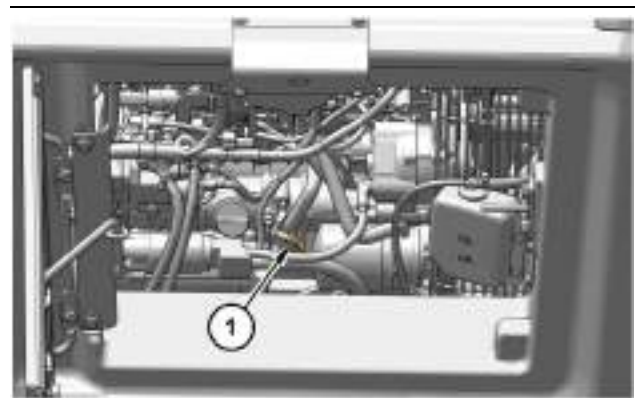


Illustration 602

g06287364

(1) Engine oil dipstick

Obtain the oil sample of the engine oil through the opening for the dipstick.

Refer to Special Publication, SEBU6250, "S·O·S Oil Analysis" for information that pertains to obtaining a sample of the engine oil. Refer to Special Publication, PEGJ0047, "How To Take A Good Oil Sample" for more information about obtaining a sample of the engine oil.

i08335274

Engine Oil and Filter - Change

SMCS Code: 1318-510

Selection of the Oil and Filter Change Interval

Prepare the machine for maintenance. Refer to "Prepare the Machine for Maintenance".

 WARNING

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

NOTICE

The engine oil and filter change interval for standard service application is every 500 hours or every year when the following requirements are met:

- Utilize Cat Recommended Fluids
- Utilize Cat Filters
- Utilize S·O·S Services at recommended interval
- Altitude does not exceed 2300 m (7545 ft)

When these requirements are not met, the oil and filter change interval should be every 250 hours, or use S·O·S Services oil sampling and analysis program to determine an acceptable oil change interval.

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

Note: S·O·S Services not required if using both Cat[®] recommended fluids and Cat filters.

NOTICE

When operating in any of the conditions or environments outlined in this Operation and Maintenance Manual, Severe Service Application, use S·O·S Services oil analysis to determine the best oil and filter change interval.

When S·O·S Services are not used in severe service applications, the oil and filter change interval should be every 250 hours..

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

Note: If the sulfur content in the fuel is greater than 1.5% by weight, use an oil that has a TBN of 30 and reduce the oil change interval by one-half.

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

Note: Drain the crankcase while the oil is warm. This allows waste particles that are suspended in the oil to drain. As the oil cools, the waste particles will settle to the bottom of the crankcase. The particles will not be removed by draining the oil and the particles will recirculate in the engine lubrication system with the new oil.

Reference: "Lubricant Viscosities"

Reference: Operation and Maintenance Manual, "Maintenance Interval Schedule"

Reference: Operation and Maintenance Manual, "Severe Service Application"

Reference: Operation and Maintenance Manual, "S·O·S Information"

Use the table below to determine the appropriate oil and filter change interval.

Table 54

Selection of Oil and Filter Change Interval					
	Altitude Exceeds 2300 m (7545 ft)	Conditions			Interval
		Cat Recommended Fluids	Cat Filters	S·O·S Services	
Standard Service Application	NO	YES	YES	YES	500 hours or every year
		YES	YES	NO	500 hours or every year
		YES	NO	YES	500 hours or every year
		NO	YES	YES	500 hours or every year
		NO	NO	NO	250 hours
Severe Service Application	YES	NO	NO	NO	250 hours
		YES	YES	NO	250 hours
		YES	YES	YES	Use S·O·S ⁽¹⁾
		YES	NO	YES	Use S·O·S ⁽¹⁾
		NO	YES	YES	Use S·O·S ⁽¹⁾

(1) If operating in any of the conditions or environments outlined in the Severe Service Application, use S·O·S Services oil analysis to determine the best oil change interval.

Engine Oil and Filter Change

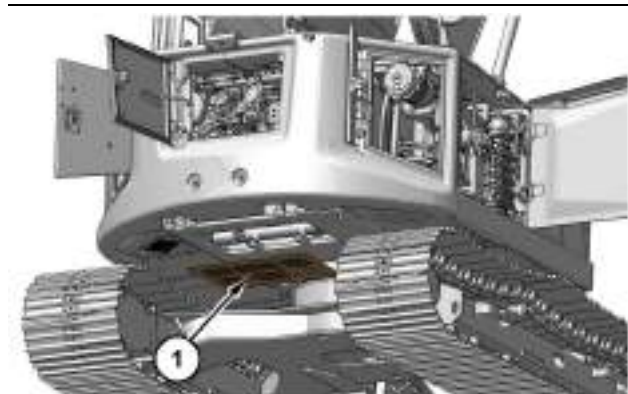


Illustration 603

g06645100

(1) Crankcase access cover

1. Open crankcase access cover (1) that is under the rear of the machine. Refer to "Access Door and Cover Locations". Remove the bolts that secure the access cover.

Note: Refer to "General Hazard Information" for information on Containing Fluid Spillage.

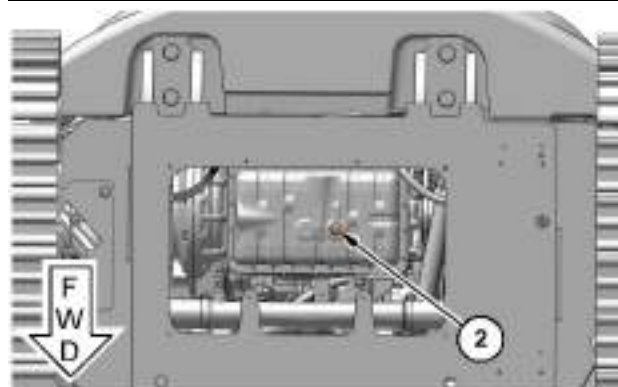


Illustration 604

g06645103

(2) Crankcase drain plug

2. Remove crankcase drain plug (2). Allow the oil to drain into a suitable container.

Note: Discard any drained fluids according to local regulations.

3. Clean and install drain plug (2).
4. Install crankcase access cover (1).



Illustration 605

g06646559

5. Open the engine hood. Refer to “Access Door and Cover Locations”.

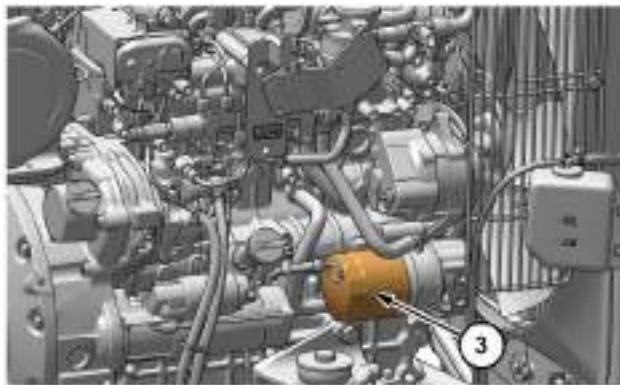


Illustration 606

g06645105

(3) Oil filter

6. Remove oil filter (3). Refer to Operation and Maintenance Manual, “Oil Filter - Inspect”. Discard the used oil filter properly.
7. Clean the filter housing base. Make sure that all the former filter gasket is removed.

Note: This oil filter is a cartridge type filter. This type of filter cannot be reused.

Note: Always discard used filters according to local regulations.



Illustration 607

g06644686

8. Apply a thin coat of engine oil to the gasket of the new filter.
9. Install the new filter by hand. When the gasket contacts the filter base, turn the filter by 270 degrees more. This will tighten the filter sufficiently.

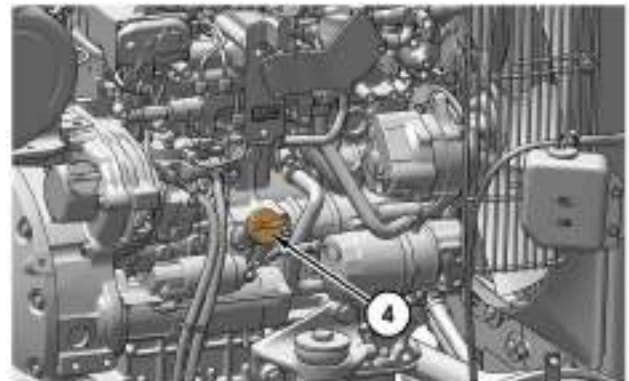


Illustration 608

g06645116

(4) Oil filler plug

10. Remove oil filler plug (4).
11. Fill the crankcase with new oil. Refer to “Capacities (Refill)” and “Lubricant Viscosities”.

NOTICE

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

12. Clean and install oil filler plug (4).

13. Start the engine and allow the oil to warm.
14. Check the engine for leaks.
15. Stop the engine.
16. Wait for 30 minutes to allow the oil to drain back into the crankcase.

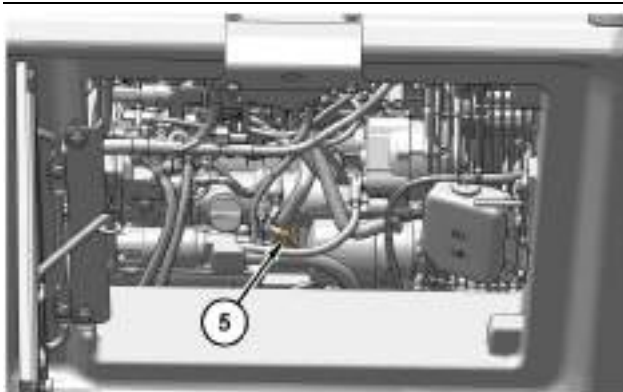


Illustration 609

g06645117

(5) Oil level gauge

17. Remove oil level gauge (5) and wipe off the oil.
18. Reinsert oil level gauge (5).
19. Remove the oil level gauge and check the oil level on the oil level gauge.

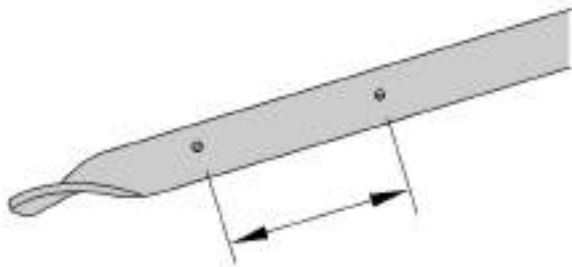


Illustration 610

g06287595

20. Maintain the oil between the marks on the oil level gauge.

21. Close the engine hood.

i08376387

Engine Valve Lash - Check

SMCS Code: 1102-082; 1102-535; 1102; 1105-535; 1105-025; 1121-535; 1209-535; 1209-082; 1209; 7527

WARNING

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

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

NOTICE

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

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

Refer to Service Manual, M0076974, "C2.4 System Operation and Testing and Adjusting" in order to perform the complete procedure for the valve lash adjustment.

i07786001

Film (Product Identification) - Clean

SMCS Code: 7405-070; 7557-070



Illustration 611

g06435629

Cleaning of the Films

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

Hand Washing

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

Power Washing

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

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

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

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

i05505790

Final Drive Oil - Change

SMCS Code: 4050-044-FLV

⚠ WARNING

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

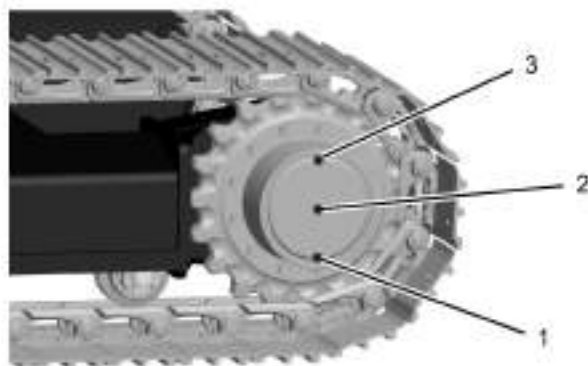


Illustration 612

g03483619

- (1) Oil drain plug
- (2) Oil level plug
- (3) Oil filler plug

1. Position one final drive so that oil drain plug (1) is at the bottom.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information on containing fluid spillage.

2. Remove oil drain plug (1), level plug (2), and filler plug (3). Allow the oil to drain into a suitable container.
3. Clean the plugs and inspect the plugs. Replace a worn plug or a damaged plug.

4. Apply pipe sealant to oil drain plug (1), level plug (2), and filler plug (3).

5. Install drain plug (1).

6. Add oil through the opening of filler plug (3).

Note: Overfilling the final drive will cause the seals to move out of place in the travel motor. Hydraulic oil or water may then enter the final drive and contaminate the final drive.

7. Fill the final drive to the bottom of the opening for level plug (2). Refer to Operation and Maintenance Manual, "Lubricant Viscosities" and Operation and Maintenance Manual, "Capacities (Refill)".

8. Install level plug (2) and filler plug (3).

9. Perform Step 1 to Step 8 on the other final drive.
Do not combine the oil for the final drives in the same container. The oil from the final drives must be kept separate for the check that is performed in Step 15.

10. Completely remove any oil that has spilled.

11. Start the engine and allow the final drives to operate through several cycles.

12. Stop the engine.

13. Check the oil level.

14. Maintain the oil level to the bottom of the opening for level plug (2).

15. Check the drained oil for metal chips or for particles. If there are any chips or particles, consult your Caterpillar dealer.

Note: Dispose of drained fluids according to local regulations.

i05505792

Final Drive Oil Level - Check

SMCS Code: 4050-535-FLV



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

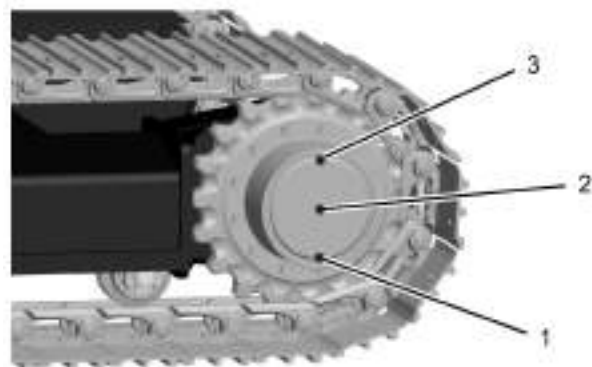


Illustration 613

g03483619

- (1) Oil drain plug
- (2) Oil level plug
- (3) Oil filler plug

1. Position one final drive so that oil drain plug (1) is at the bottom.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information on Containing Fluid Spillage.

2. Remove oil level plug (2).

3. Check the oil level. The oil should be near the bottom of the opening of level plug (2).

4. Add oil through the opening of filler plug (3), if necessary.

Note: Overfilling the final drive will cause the seals to move out of place in the travel motor. Hydraulic oil or water to may then enter the final drive and contaminate the final drive.

5. Clean oil level plug (2) and filler plug (3).

6. Apply pipe sealant to oil level plug (2) and filler plug (3).

7. Install oil level plug (2).

8. Install oil filler plug (3).

9. Repeat the procedure for the other final drive.

i05505794

Final Drive Oil Sample - Obtain

SMCS Code: 4011-008; 4050-008; 4050-SM; 7542-008



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

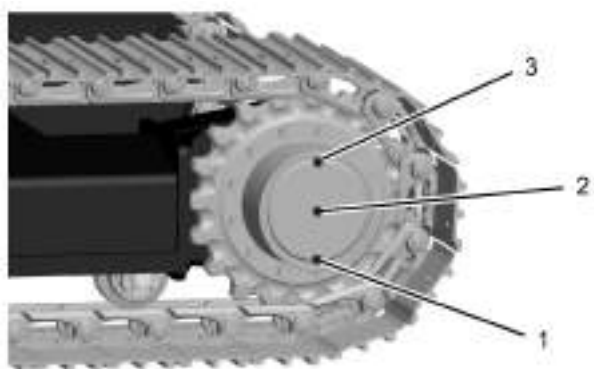


Illustration 614

g03483619

- (1) Oil drain plug
(2) Oil level plug
(3) Oil filler plug

1. Position the final drive so that oil drain plug (1) is at the bottom.
2. Remove oil level plug (2).
3. Obtain a sample of the final drive oil through the hole for the oil level plug.
4. Install oil level plug (2).

Refer to Special Publication, SEBU6250, "S·O·S Oil Analysis" for more information on obtaining a sample of the final drive oil. For additional information about taking an oil sample, refer to Special Publication, PEGJ0047, "How To Take A Good Oil Sample".

i07088575

Fuel Cap Filter - Replace

SMCS Code: 1261-510

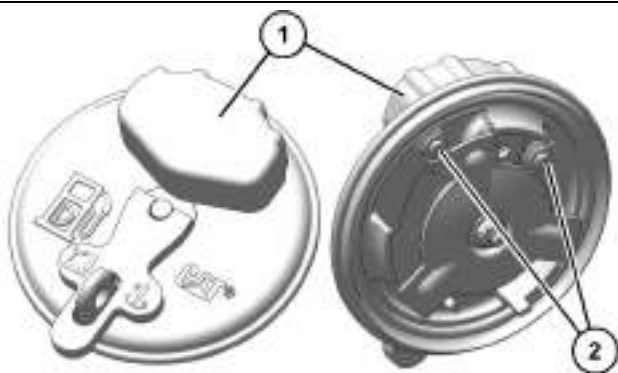


Illustration 615

g06220524

1. Remove the fuel cap.

2. Remove filter element screws (2) from the underside of the fuel cap and remove filter element (1).
3. Install a clean fuel cap filter element.
4. Install the screws to secure the filter element to the fuel cap.
5. Install the fuel tank cap.

i07316376

Fuel Lift Pump Strainer - Replace (In-line Filter)

SMCS Code: 1256-510-STR; 1256



Personal injury or death may result from failure to adhere to the following procedures.

Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire.

Clean up all leaked or spilled fuel. Do not smoke while working on the fuel system.

Turn the disconnect switch OFF or disconnect the battery when changing fuel filters.

NOTICE

Do not fill the fuel filters with fuel before installing the fuel filters. The fuel will not be filtered and could be contaminated. Contaminated fuel will cause accelerated wear to fuel system parts.

The fuel lift pump strainer is located behind the access door on the right side of the machine.

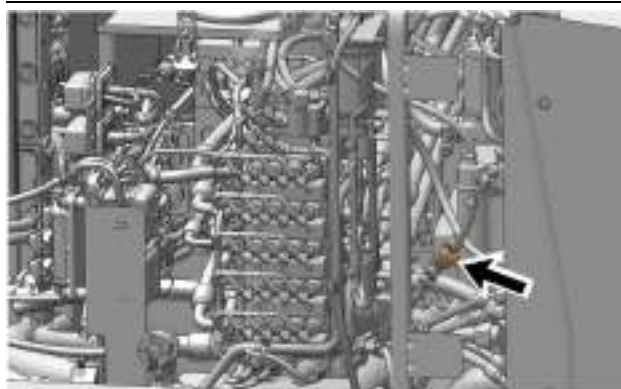


Illustration 616

g06287597

1. Open the right side access door.

2. Disconnect the hoses from the strainer and remove the strainer.
3. Replace the strainer.
4. Reconnect the hoses.
5. Close the access door.

i04664265

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, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat® products.

Dispose of all fluids according to local regulations and mandates.

Note: The volume of air in the water separator is small. Usually, priming is not necessary if only the water separator element has been changed.

1. This machine is equipped with an automatic electric fuel priming pump.
2. Turn the key start switch to the ON position. The priming pump will start automatically and run for 2 minutes. System will usually prime within 1 minute.

Note: Additional priming may be needed if you are priming because of the following circumstances:

- The engine will not start.
- The engine starts but the engine continues to misfire.
- The engine starts but the engine continues to emit smoke.
- The engine has run out of fuel.
- The fuel injectors have been removed from the engine.

i07316384

Fuel System Primary Filter (Water Separator) Element - Replace

SMCS Code: 1263-510-FQ

WARNING

Personal injury or death may result from failure to adhere to the following procedures.

Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire.

Clean up all leaked or spilled fuel. Do not smoke while working on the fuel system.

Turn the disconnect switch OFF or disconnect the battery when changing fuel filters.

NOTICE

Do not fill the fuel filters with fuel before installing the fuel filters. The fuel will not be filtered and could be contaminated. Contaminated fuel will cause accelerated wear to fuel system parts.

The primary filter/water separator is located behind the access door on the right side of the machine.

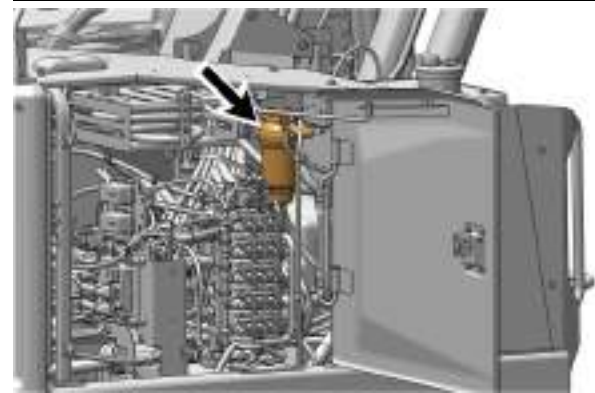


Illustration 617

g06287598

1. Open the access door on the right side of the machine.

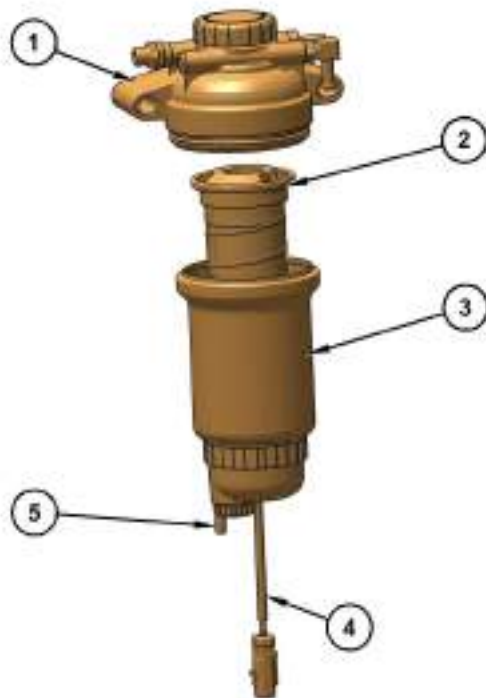


Illustration 618

g06287609

- (1) Filter base
- (2) Filter
- (3) Filter housing
- (4) Sensor
- (5) Drain valve

2. Turn drain valve (5) counterclockwise to open. The drain valve is on the bottom of the water separator.

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information that pertains to containing fluid spillage.

3. Drain the water and the sediment into a suitable container.

Note: Dispose of used fluids according to local regulations.

4. Close the drain valve (5).
5. Disconnect the water sensor (4) from the harness.

Note: Do not attempt to remove the sediment bowl from the housing. The sediment bowl is permanently attached to the housing. Attempting to remove the sediment bowl may damage the bowl.

6. Unscrew filter housing (3) and remove primary filter (2). A filter wrench may be used to loosen the filter housing. Properly discard the used filter.
7. Clean the mounting base (1).

8. Lubricate the seal of the new filter (2) with clean diesel fuel.
9. Install the new filter (2) into the housing.
10. Tighten the filter housing approximately 1/6 of a turn. Do not use tools to tighten the filter housing to the filter base.
11. Ensure that sensor (5) is in the correct position and connect to the wiring harness.
12. Open the fuel shutoff valve.
13. Close the access door.

i07316391

Fuel System Water Separator - Drain

SMCS Code: 1263

NOTICE

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

Refer to Special Publication, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat® products.

Dispose of all fluids according to local regulations and mandates.

The fuel system water separator is located behind the fuel tank on the right side of the machine.

1. Open the access door on the right side of the machine. Refer to Operation and Maintenance Manual, "Access Doors and Covers".

i07331979



Illustration 619

g06287602

-
2. Place a drain hose over the drain valve and insert the drain hose into a suitable container. Loosen the drain valve on the bottom of the housing.

Note: One half turn to one full turn will fully open the valve.

-
-
3. Tighten the drain valve by hand. Do not tighten the drain valve with a tool. Damage to the valve or to the seals may occur.
4. Close the access door.
5. Dispose of the water and sediment according to local regulations.

Fuel Tank Strainer - Clean

SMCS Code: 1273-070-STR

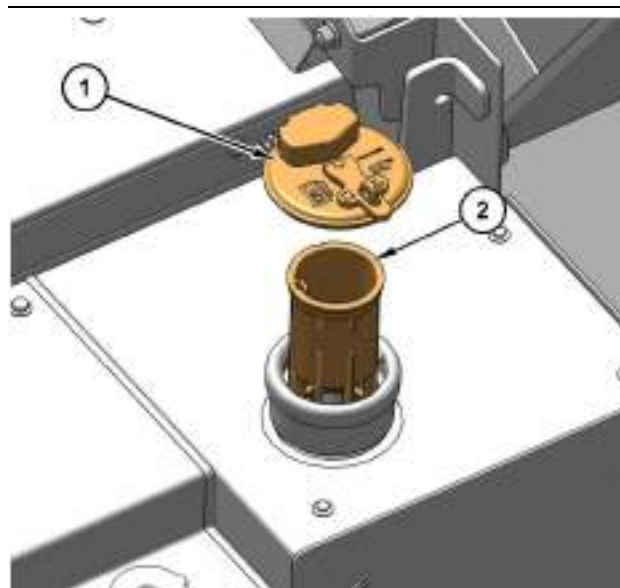


Illustration 620

g06287622

1. Remove fuel tank cap (1).
2. Remove strainer (2) from the filler opening.
3. Wash the strainer in a clean, nonflammable solvent.
4. Install the strainer into the filler opening.
5. Install the fuel tank cap.

i07488611

Fuel Tank Water and Sediment - Drain

SMCS Code: 1273-543

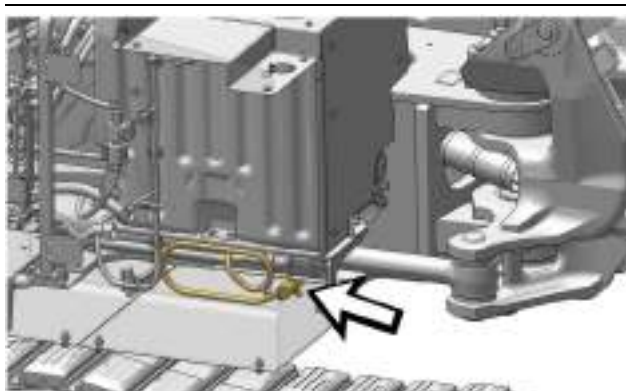


Illustration 621

g06335763

Note: Refer to Operation and Maintenance Manual, “General Hazard Information” for information on Containing Fluid Spillage.

1. Open the drain valve that is located under the tank on the front right side of the machine. Allow the water and the sediment to drain into a suitable container.

Note: Discard the drained fluids according to local regulations.

2. Close the drain valve.

Fill the Fuel Tank

You can now add fuel to the fuel tank, if necessary. Remove the fuel tank cap and pump fuel through the opening.

Make sure that you lock the fuel tank cap after the refueling is complete.

i07521509

Fuses - Replace

SMCS Code: 1417-510

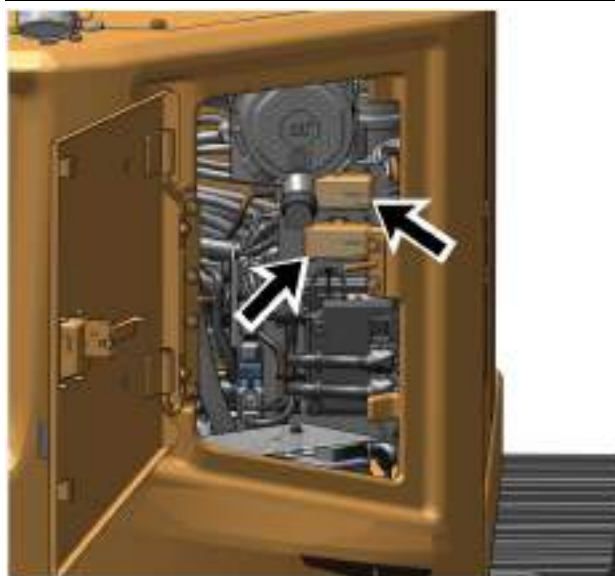


Illustration 622

g06287870

The fuse panel is on the right side of the machine behind the main control valve and accessible through the right rear door. Remove the covers to access the fuses.



Fuses – Fuses protect the electrical system from damage that is caused by overloaded circuits. Change a fuse if the element separates. If the element of a new fuse separates, check the circuit and/or repair the circuit.

NOTICE

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

NOTICE

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

Contact your Cat dealer.

Type 1

Fuses

To replace a fuse, use the puller that is stored in the fuse panel.

The following list identifies the circuits that are protected by each fuse. The amperage for each fuse is included with each circuit.

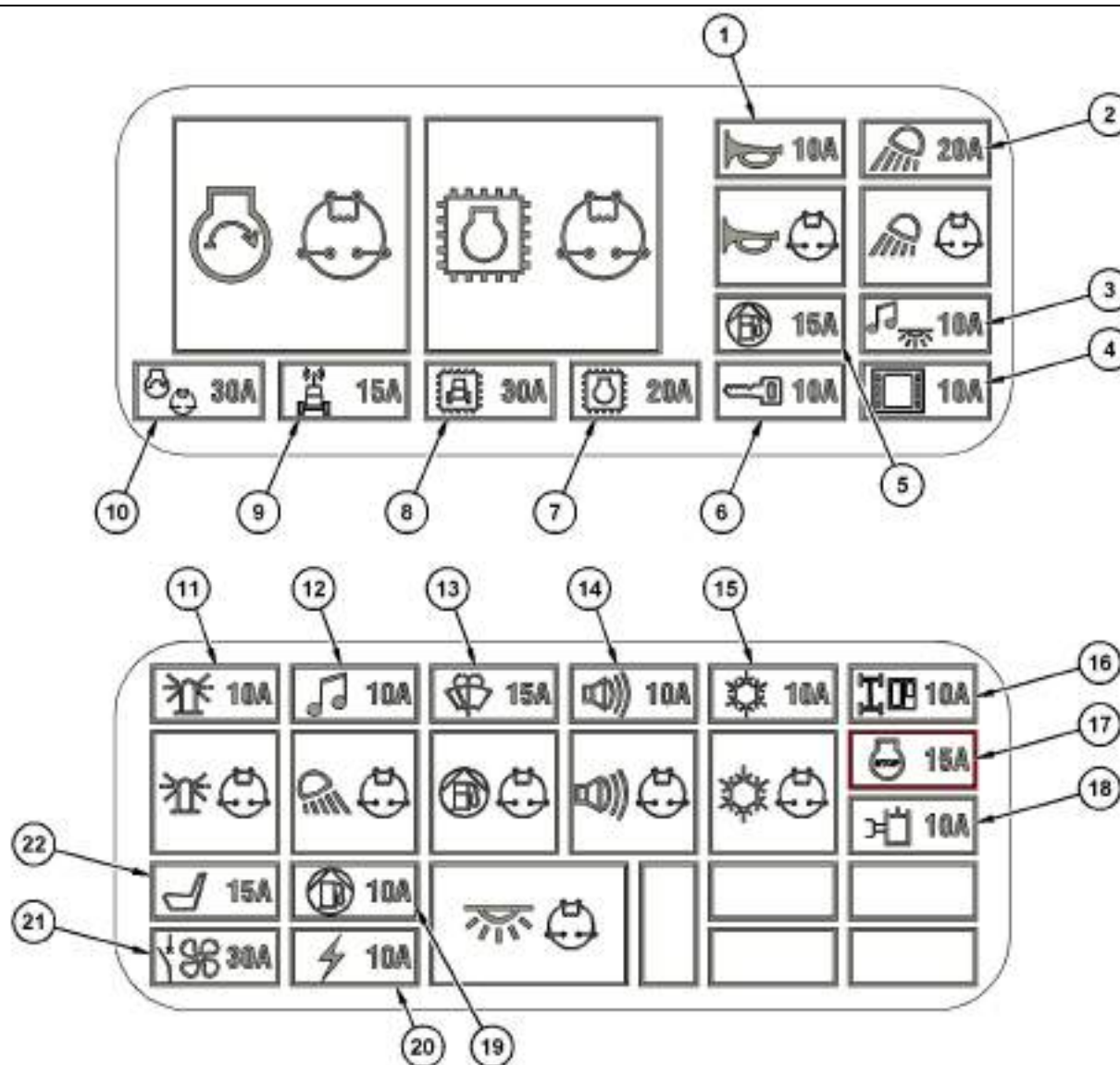


Illustration 623

g06287903

(1) Horn – 10 Amp

(2) Front Lights – 20 Amp

(3) Dome Light – 10 Amp

(4) Machine Security System (MSS) – 10 Amp

(5) Electric Refueling Pump – 15 Amp

(6) Key – 10 Amp

(7) Engine Electronic Control Module – 20 Amp

(8) Machine Electronic Control Module – 30 Amp

(9) Product Link Module – 15 Amp

(10) Engine Start – 30 Amp

- (11) Beacon – 10 Amp**
- (12) Radio – 10 Amp**
- (13) Window Wiper and Window Washer – 15 Amp**
- (14) Alarm – 10 Amp**
- (15) Air Conditioner – 10 Amp**
- (16) Chassis and Cab Switched Battery – 10 Amp**
- (17) Engine ECM Key ON / Secondary Engine Shutdown Method – 15 Amp**
- (18) Work Tool Auxiliary Circuit – 10 Amp**
- (19) Fuel Lifting Pump – 10 Amp**
- (20) Cab Power Port – 10 Amp**
- (21) Heater and Air Conditioner Blower Motor (Breaker) – 30 Amp**
- (22) Seat Heater and Air Suspension Seat – 15 Amp**

Relays

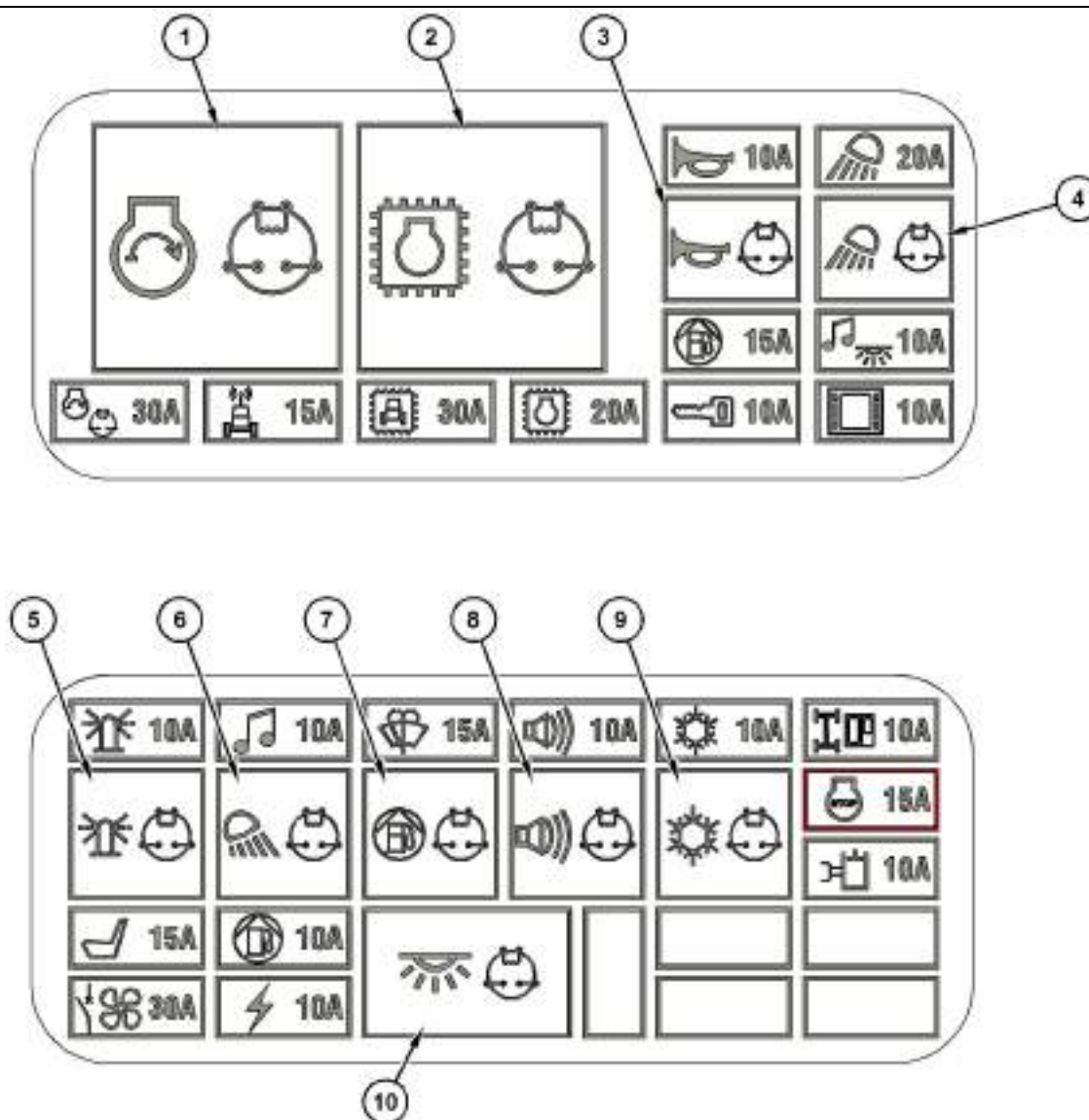


Illustration 624

g06287911

(1) **Engine Start** – Relay(2) **Engine Electronic Control Module** – Relay(3) **Horn** – Relay(4) **Front Lights** – Relay(5) **Beacon Light** – Relay(6) **Rear Light** – Relay(7) **Lifting Pump** – Relay(8) **Alarm** – Relay(9) **Air Conditioning** – Relay(10) **Dome Light** – Relay

Type 2

Fuses

To replace a fuse, use the puller that is stored in the fuse panel.

The following list identifies the circuits that are protected by each fuse. The amperage for each fuse is included with each circuit.

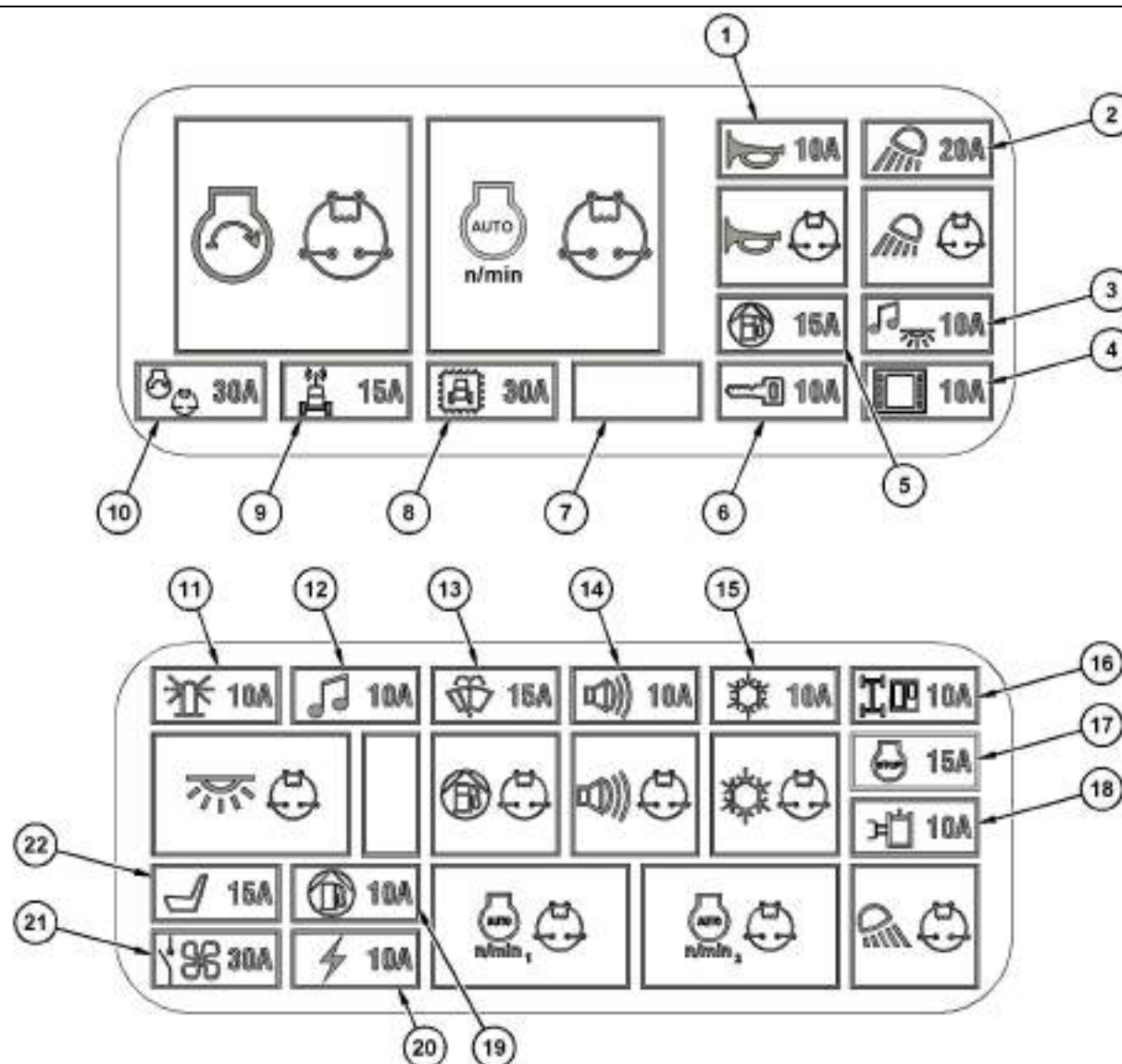


Illustration 625

g06288558

- (1) **Horn** – 10 Amp
- (2) **Front Lights** – 20 Amp
- (3) **Dome Light** – 10 Amp
- (4) **Machine Security System (MSS)** – 10 Amp
- (5) **Electric Refueling Pump** – 15 Amp
- (6) **Key** – 10 Amp
- (7) **Blank** – —
- (8) **Machine Electronic Control Module** – 30 Amp
- (9) **Product Link Module** – 15 Amp
- (10) **Engine Start** – 30 Amp
- (11) **Beacon** – 10 Amp
- (12) **Radio** – 10 Amp
- (13) **Window Wiper and Window Washer** – 15 Amp
- (14) **Alarm** – 10 Amp
- (15) **Air Conditioner** – 10 Amp
- (16) **Chassis and Cab Switched Battery** – 10 Amp
- (17) **Engine ECM Key ON / Secondary Engine Shutdown Method** – 15 Amp
- (18) **Work Tool Auxiliary Circuit** – 10 Amp
- (19) **Fuel Lifting Pump** – 10 Amp
- (20) **Cab Power Port** – 10 Amp
- (21) **Heater and Air Conditioner Blower Motor (Breaker)** – 30 Amp

(22) Seat Heater and Air Suspension Seat – 15
Amp

Relays

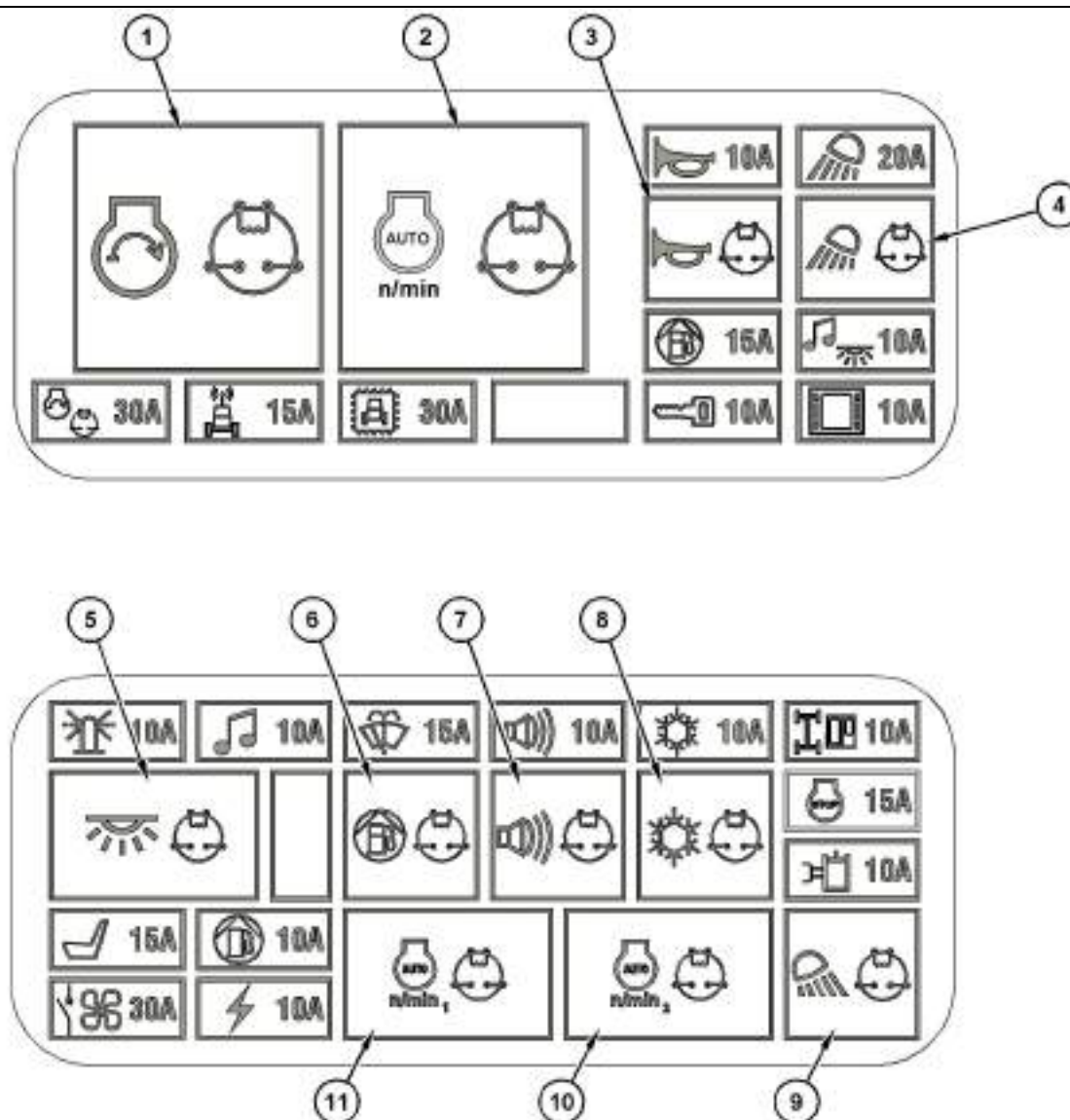


Illustration 626

g06288562

(1) **Engine Start** – Relay(2) **Engine Governor Control** – Relay(3) **Horn** – Relay(4) **Front Lights** – Relay(5) **Dome Light** – Relay(6) **Lifting Pump** – Relay(7) **Alarm** – Relay(8) **Air Conditioning** – Relay(9) **Rear Light** – Relay(10) **Engine Governor Motor** – Relay(11) **Engine Governor Motor** – Relay

i08437200

Hydraulic System Oil - Change

SMCS Code: 5056-044

Procedure to Change the Hydraulic Oil

WARNING

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

WARNING

Pressurized system!

The hydraulic tank contains hot oil under pressure. To prevent burns from the sudden release of hot oil, relieve the tank pressure with the engine off. Relieve pressure by slowly turning the cap until the cap reaches the secondary stop.

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, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat® products.

Dispose of all fluids according to local regulations and mandates.

1. Prepare the machine for maintenance. Refer to "Prepare the Machine for Maintenance". Lower the work tool to the ground with the boom lowered and the stick and bucket fully extended.

Note: For better access, rotate the upper structure 90 degrees to the tracks.

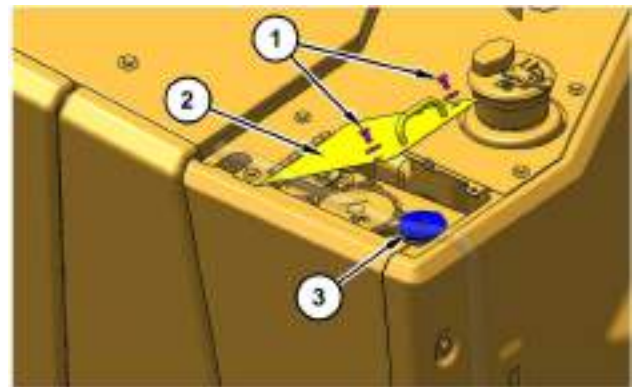


Illustration 627

g06335987

- (1) Hardware
- (2) Access door
- (3) Pressure cap

2. Remove hardware (1) and open access door (2) on the right side of the machine.
3. Clean the area thoroughly to keep dirt out of the hydraulic tank.
4. Relieve the internal pressure from the hydraulic tank by loosening the pressure cap. After the pressure is relieved, remove pressure cap (3).



Illustration 628

g06343667

5. The oil drain valve is located under the hydraulic tank.
6. Remove the hydraulic tank access cover that is located under the upper structure. Removing this cover will allow access to the drain valve.

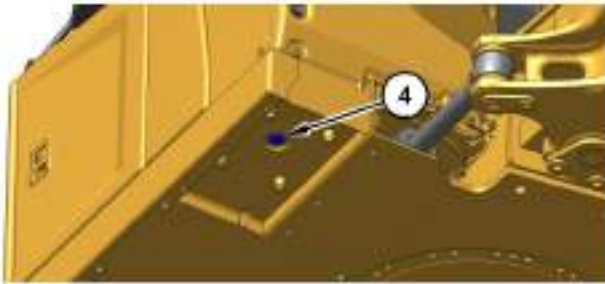


Illustration 629

g06336014

(4) Drain valve plug

Note: Refer to “General Hazard Information” for information on Containing Fluid Spillage.

7. Remove oil drain valve plug (4).



Illustration 630

g06336068

8. Install a swivel hose with clear plastic tubing to open the drain valve. Drain the oil into a suitable container.

9. Remove the swivel hose to close the drain valve.

10. Inspect the O-ring. Replace the O-ring if wear or damage is evident.

11. Clean the drain plug. Install the drain plug.

12. Clean the pump, the hydraulic lines, and the hydraulic tank.

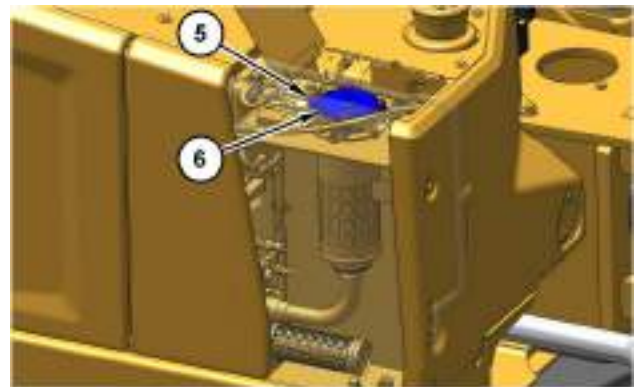


Illustration 631

g06337157

(5) Bolts
(6) Cover

13. Remove bolts (5) and cover (6).

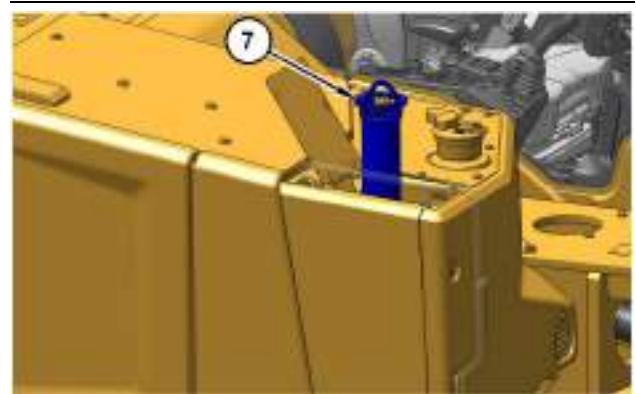


Illustration 632

g06337161

(7) Filter

14. Remove filter (7) using the attached handle and pulling straight upward.

Note: Dispose of used filters and used fluids according to local regulations.

Note: Refer to “General Hazard Information” for information on containing fluid spillage.

15. Inspect O-ring seals and replace the O-ring seals if wear or damage is evident.

16. Install filter (7). Then install cover (6) and bolts (5).

Note: Make sure that the O-ring seals and the spring are properly positioned during installation.

17. Fill the hydraulic system oil tank. Refer to “Lubricant Viscosities”. Fill the tank to the mid-mark on the sight gauge.

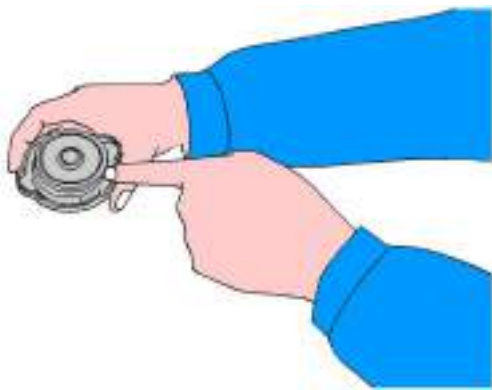


Illustration 633 g06288693

- 18.** Inspect the pressure cap. Clean the pressure cap. Replace the pressure cap if damage is evident.

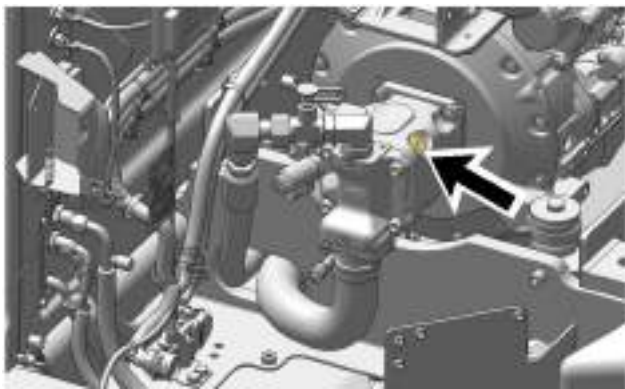


Illustration 634 g06374599

Standard machines

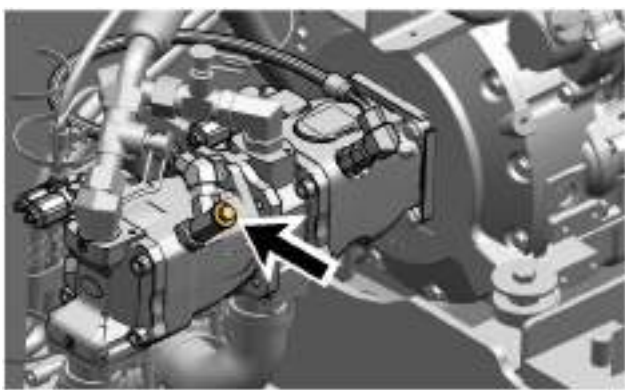


Illustration 635 g06374596

Machines with high-flow Aux pump

- 19.** Slowly loosen the vent plug on the top of the hydraulic pump. (or plug from tee on high-flow machines)

- 20.** Leave the plug loose until hydraulic oil starts to flow out of the plug. This indicates that the air has been released from the hydraulic system.

Table 55

Vent Plug Torque		
Sales Model	307.5, 308 CR, 308.5, and 309 CR	310
Specification	60 ± 10 N·m (44 ± 7 lb ft)	80 ± 10 N·m (59 ± 7 lb ft)

- 21.** Install the vent plug and tighten to the value listed in Table 55 .
- 22.** If necessary, add hydraulic oil through the opening for the pressure cap.
- 23.** Tighten the pressure cap securely.
- 24.** Install the hydraulic tank access cover that is located under the upper structure.
- 25.** Start the engine. Operate the engine at idling speed for 5 minutes.
- 26.** Operate the joysticks to circulate the hydraulic oil. Lower the work tool to the ground so that the stick is vertical to the ground. Stop the engine.



Illustration 636 g06288579

- (A) High temperature range
(B) Low temperature range
(C) Mid temperature range

- 27.** Maintain the oil level between the marks on the sight gauge in the appropriate temperature range.

If the hydraulic oil temperature is between 10° to 30° C (50° to 86° F), maintain the oil level in low temperature range (B). If the hydraulic oil temperature is between 50° to 80° C (122° to 187° F), maintain the oil level in high temperature range (A). If the hydraulic oil temperature is between 31° to 49° C (87° to 121° F), maintain the oil level in mid temperature range (C).

28. Close and secure the access door on top of the hydraulic tank.

i07493383

Hydraulic System Oil Filter (Return) - Replace

SMCS Code: 5068-510-RJ

WARNING

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

Note: Refer to Operation and Maintenance Manual, "General Hazard Information" for information on Containing Fluid Spillage.

1. Park the machine on level ground. Lower the work tool to the ground with the stick in the vertical position.

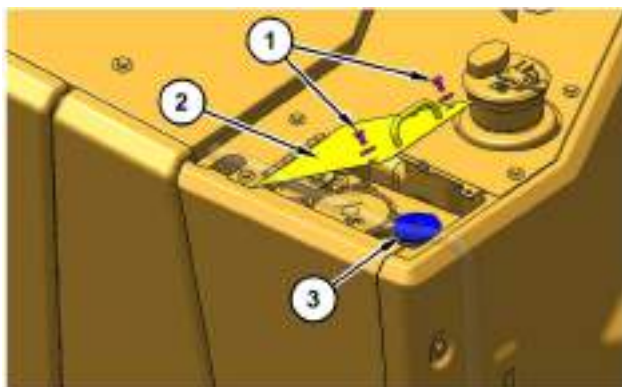


Illustration 637

g06335987

2. Remove hardware (1) and open access door (2) on the right side of the machine.
3. Clean the area thoroughly to keep dirt out of the hydraulic tank.
4. Relieve the internal pressure from the hydraulic tank by loosening the pressure cap. After the pressure is relieved, remove pressure cap (3).

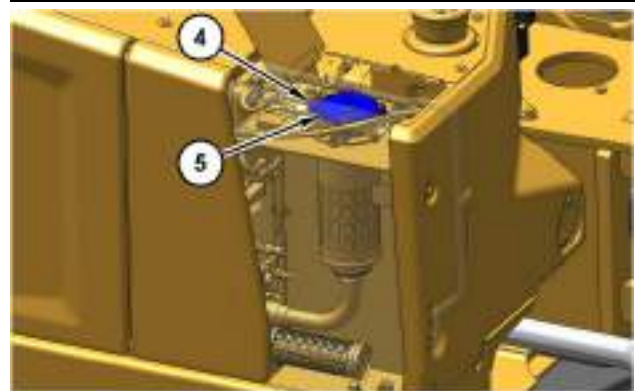


Illustration 638

g06337255

- (4) Bolts
(5) Cover

5. Remove bolts (4) and cover (5).

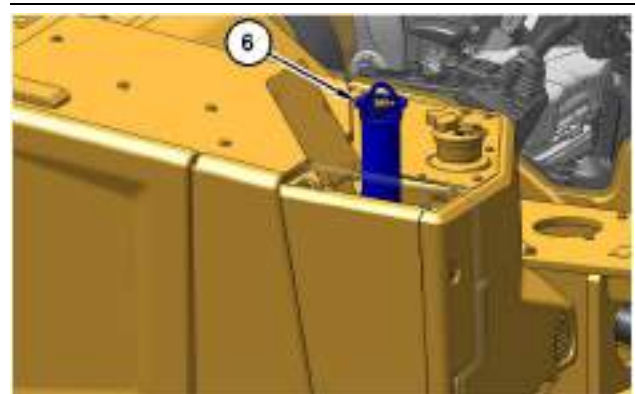


Illustration 639

g06337256

- (6) Filter

6. Remove filter (6) using the attached handle and pulling straight upward.

Note: Dispose of used filters and used fluids according to local regulations.

Note: Refer to Operation and Maintenance, "General Hazard Information" for information on containing fluid spillage.

7. Inspect O-ring seals and replace the O-ring seals if wear or damage is evident.
8. Install filter (6). Then install cover (5) and bolts (4).

Note: Make sure that the O-ring seals and the spring are properly positioned during installation.

9. Fill the hydraulic system oil tank. Refer to Operation and Maintenance Manual, "Capacities (Refill)".

10. Close and secure the access door on top of the hydraulic tank.
11. Drive the machine slowly for 10 minutes to 15 minutes. Move each cylinder evenly through several cycles.
12. Return the machine to the service position. Check the machine for oil leaks.
13. Stop the engine and check the hydraulic system oil level. See Operation and Maintenance Manual, "Hydraulic System Oil Level - Check"

i07593137

Hydraulic System Oil Level - Check

SMCS Code: 5050-535

WARNING

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

NOTICE

Never remove the fill/vent plug from the hydraulic tank if the oil is hot.

Air can enter the system and cause pump damage.

1. Park the machine on level ground. Lower the bucket to the ground with the stick in a vertical position.

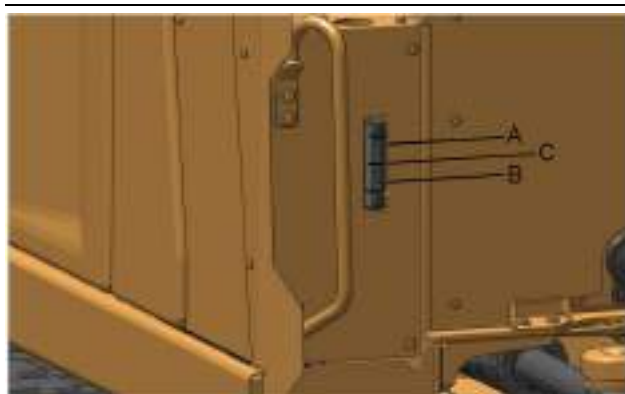


Illustration 640

g06288579

- (A) High temperature range
(B) Low temperature range
(C) Mid temperature range

2. If the hydraulic oil temperature is between 10° to 30° C (50° to 86° F), maintain the oil level in low temperature range (B). If the hydraulic oil temperature is between 50° to 80° C (122° to 187° F), maintain the oil level in high temperature range (A). If the hydraulic oil temperature is between 31° to 49° C (87° to 121° F), maintain the oil level in mid temperature range (C).

Note: Perform Step 3 through Step 5 if the oil level is low.

3. Add oil if necessary. See Operation and Maintenance, "Lubricant Viscosities"

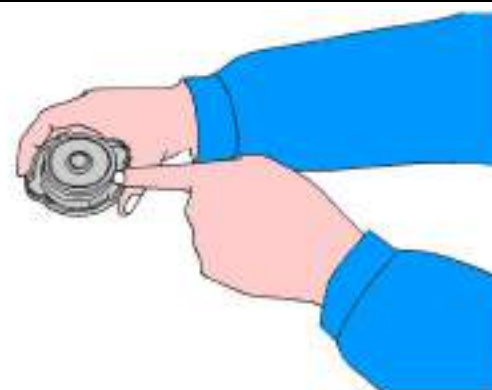


Illustration 641

g06288693

4. Inspect the pressure cap. Replace the cap if damage is evident.
5. Clean the pressure cap and install the cap.

i07493404

Hydraulic System Oil Sample - Obtain

SMCS Code: 5050-008-OC; 5095-SM; 5095-008; 7542-008; 7542

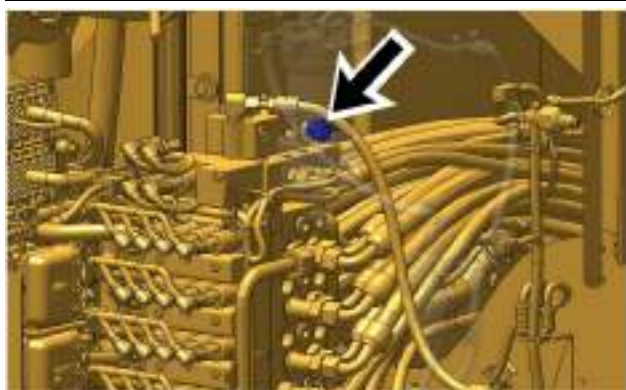


Illustration 642

g06337343

Park the machine on level ground. Lower the bucket to the ground with the stick in the vertical position.

Obtain a sample of the hydraulic oil through the sampling valve. The sampling valve for the hydraulic oil is located on the right side of the machine at the top front of the main control valve.

Refer to Special Publication, SEBU6250, "S·O·S Oil Analysis" for information that pertains to obtaining a sample of the hydraulic oil. Refer to Special Publication, PEGJ0047, "How To Take A Good Oil Sample" for more information about obtaining a sample of the hydraulic oil.

i08437215

Hydraulic Tank Screen - Clean

SMCS Code: 5056-070-Z3

WARNING

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

WARNING

Pressurized system!

The hydraulic tank contains hot oil under pressure. To prevent burns from the sudden release of hot oil, relieve the tank pressure with the engine off. Relieve pressure by slowly turning the cap until the cap reaches the secondary stop.

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, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat® products.

Dispose of all fluids according to local regulations and mandates.

1. Prepare the machine for maintenance. Refer to "Prepare the Machine for Maintenance". Lower the bucket to the ground so that the stick is vertical.

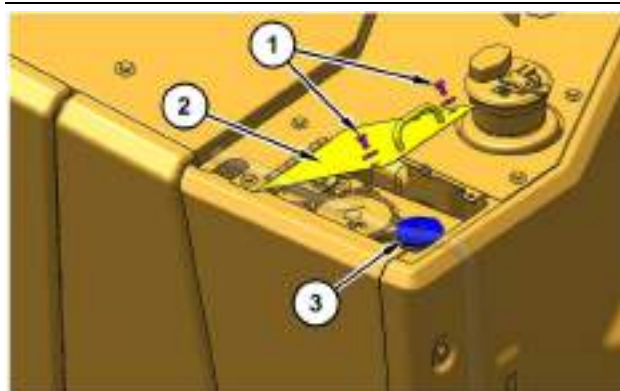


Illustration 643

g06335987

- (1) Hardware
- (2) Access door
- (3) Pressure cap

2. Remove hardware (1) and open access door (2) on the right side of the machine.
3. Clean the area thoroughly to keep dirt out of the hydraulic tank.
4. Relieve the internal pressure from the hydraulic tank by loosening the pressure cap. After the pressure is relieved, remove pressure cap (3).

Maintenance Section
Hydraulic Tank Screen - Clean



Illustration 644

g06335996

5. The oil drain valve is located under the hydraulic tank.
6. Remove the hydraulic tank access cover that is located under the upper structure. Removing this cover will allow access to the drain valve.

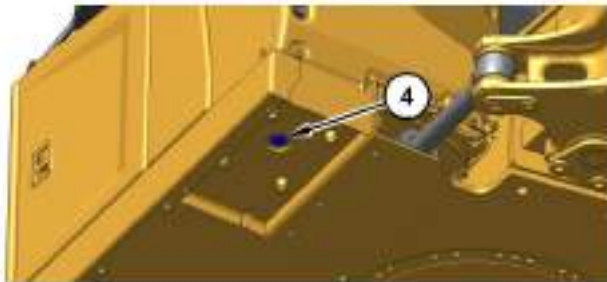


Illustration 645

g06336014

(4) Drain valve plug

Note: Refer to "General Hazard Information" for information on Containing Fluid Spillage.

7. Remove oil drain valve plug (4).



Illustration 646

g06336068

8. Install a swivel hose with clear plastic tubing to open the drain valve. Drain the oil into a suitable container.
9. Remove the swivel hose to close the drain valve.
10. Inspect the O-ring. Replace the O-ring if wear or damage is evident.
11. Clean the drain plug. Install the drain plug.
12. Clean the pump, the hydraulic lines, and the hydraulic tank.

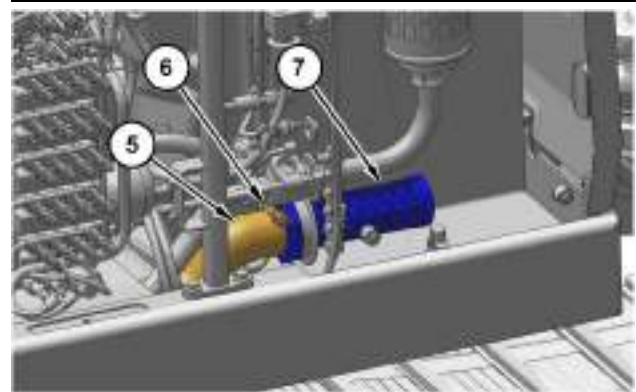


Illustration 647

g06337417

Right side view

- (5) Suction tube
- (6) Clamp
- (7) Strainer

13. Remove suction tube (5) by loosening clamp (6).

Note: Refer to "General Hazard Information" for information on containing fluid spillage.

14. Remove strainer (7).

Note: Dispose of used filters and used fluids according to local regulations.

15. Wash the screen in a clean nonflammable solvent. Allow the screen to dry. Inspect the screen. Replace the screen, if the screen is damaged.
16. Remove the O-ring seal from the old screen.
17. Inspect the O-ring seal. Replace the O-ring seal if wear or damage is evident.
18. Install the O-ring seal on strainer (7).
19. Install strainer (7) and tighten to a torque of $81 \pm 6 \text{ N}\cdot\text{m}$ ($60 \pm 4 \text{ lb ft}$).

Note: Make sure that the O-ring seal is properly positioned during installation.

20. Reconnect suction tube (5) and tight clamp (6).
21. Fill the hydraulic system oil tank. Refer to "Lubricant Viscosities". Fill the tank to the mid-mark on the sight gauge.



Illustration 648

g06288693

22. Inspect the pressure cap. Clean the pressure cap. Replace the pressure cap if damage is evident.
23. Install the pressure cap.

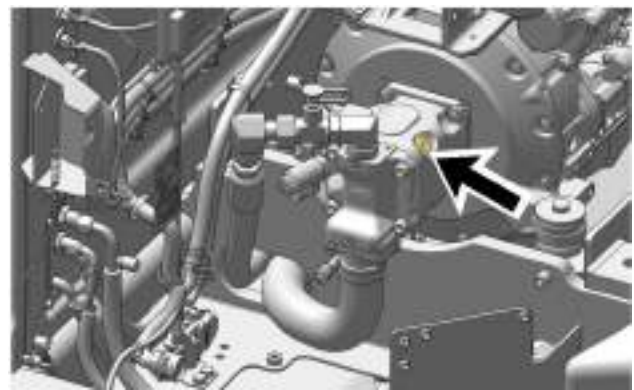


Illustration 649

g06374599

Standard machines

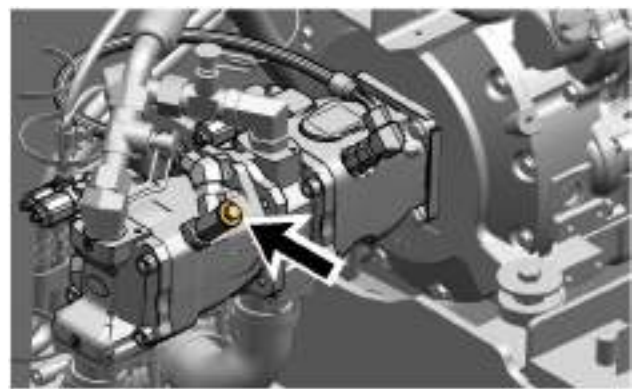


Illustration 650

g06374596

Machines with high-flow Aux pump

Note: Make no attempt to start the engine until the pump has been filled with hydraulic oil. Serious damage to the hydraulic components can result.

24. When the hydraulic oil has been replaced, the air must be removed from the hydraulic oil system. Use the following procedure to remove the air from the hydraulic oil system.
 - a. Stop the engine.
 - b. Slowly loosen the pressure cap on the top of the hydraulic tank.
 - c. Slowly loosen the vent plug on the top of the hydraulic pump. (or plug from tee on high-flow machines)
 - d. Leave the plug loose until hydraulic oil starts to flow out of the plug. This indicates that the air has been released from the hydraulic system.
 - e. Install the vent plug to a torque of $60 \pm 10 \text{ N}\cdot\text{m}$ ($44 \pm 7 \text{ lb ft}$) on 307.5 to 309 CR models and $80 \pm 10 \text{ N}\cdot\text{m}$ ($59 \pm 7 \text{ lb ft}$) on 310 models.

Maintenance Section
Indicators and Gauges - Test

- f. If necessary, add hydraulic oil through the opening for the pressure cap.
- g. Tighten the pressure cap securely.
25. Install the hydraulic tank access cover that is located under the upper structure.
26. Start the engine. Operate the engine at idling speed for 5 minutes.
27. Operate the joysticks to circulate the hydraulic oil. Lower the work tool to the ground so that the stick is vertical to the ground. Stop the engine.



Illustration 651

g06288579

- (A) High temperature range
(B) Low temperature range
(C) Mid temperature range

28. Maintain the oil level between the marks on the sight gauge in the appropriate temperature range.

If the hydraulic oil temperature is between 10° to 30° C (50° to 86° F), maintain the oil level in low temperature range (B). If the hydraulic oil temperature is between 50° to 80° C (122° to 187° F), maintain the oil level in high temperature range (A). If the hydraulic oil temperature is between 31° to 49° C (87° to 121° F), maintain the oil level in mid temperature range (C).

29. Close and secure the access door on top of the hydraulic tank.

i03753191

Indicators and Gauges - Test

SMCS Code: 7450-081; 7490-081

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

4. Turn on all machine lights. Check for proper operation.
5. Move the machine forward. Release the travel levers and the travel pedals. The machine should stop.
6. Stop the engine.
7. Make any repairs that are required before operating the machine.

i07521738

Quick Coupler - Lubricate

SMCS Code: 6129-086

Spindle Lubricate

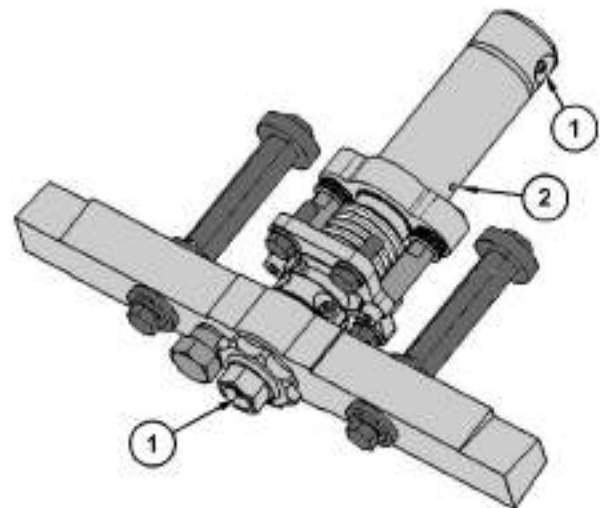


Illustration 652

g06348453

Note: On quick couplers with spindle coupling, the spindle must be lubricated.

1. Uncouple the work tool to lubricate the spindle housing. Refer to Uncoupling the Work Tool - Quick Coupler with Spindle Coupling for more information.
2. Turn the spindle inward completely, in a CLOCKWISE direction. Grease the spindle at both grease points (1) until the grease becomes visible at the grease release hole (2).
3. Turn the spindle outward completely, in a COUNTER-CLOCKWISE direction. Remove any excess grease from the spindle.

4. Couple the work tool.

i07521787

i07521781

Quick Coupler - Lubricate
(Mechanical Pin Grabber Quick Coupler (If Equipped))**SMCS Code:** 6129-086

1. Release the work tool from the quick coupler.
Ensure that the work tool is in a stable and safe storage position on the ground. Refer to Operation and Maintenance Manual, "Quick Coupler Operation - Mechanical Pin Grabber Quick Coupler" for the proper procedure.

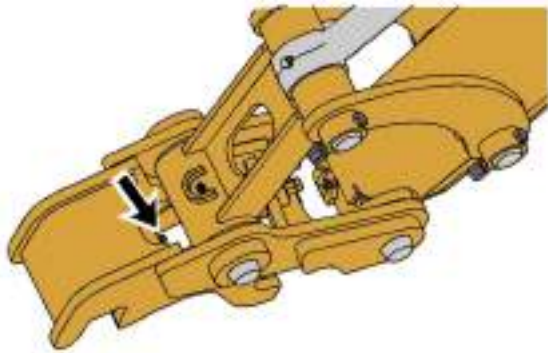


Illustration 653

g06348486

Fitting location

2. Wipe off the fitting before you lubricate the fitting.
3. Apply grease to the fitting of the quick coupler.
4. Check that all pin retainers are in place and that all bolts and nuts are tight.
5. Check the full operation of all the moving parts within the quick coupler. Repair or replace immediately if required.
6. Check that there is no material buildup around the rear locking mechanism, threaded actuator, or wedge plate. Check that there is no material buildup around the front locking mechanism.
7. Check the quick coupler for cracks, bent components, or wear.

Quick Coupler - Lubricate
(Hydraulic Pin Grabber Quick Coupler (If Equipped))**SMCS Code:** 6129-086

1. Uncouple the work tool from the quick coupler.
Ensure that the work tool is in a stable and safe storage position on the ground. Refer to Operation and Maintenance Manual, "Quick Coupler Operation - Hydraulic Pin Grabber Quick Coupler" for the proper procedure.



Illustration 654

g06348504

Fitting location

2. Wipe off the fittings before you lubricate the fitting.
3. Apply grease to the fittings of the quick coupler.
4. Check that all pin retainers are in place and that all bolts and nuts are tight, including the hydraulic cylinder mounting bolts.
5. Check the hydraulic hoses and fittings for any leaks, damage, or wear. Replace immediately if required.
6. Check the full operation of all the moving parts within the quick coupler. Repair or replace immediately if required.
7. Check that there is no material buildup around the rear locking mechanism, cylinder, or wedge plate. Check that there is no material buildup around the front locking mechanism.
8. Check the quick coupler for cracks, bent components, or wear.

i07495662

i08192239

Radiator Core - Clean

SMCS Code: 1353-070

1. Open the right side rear access door.

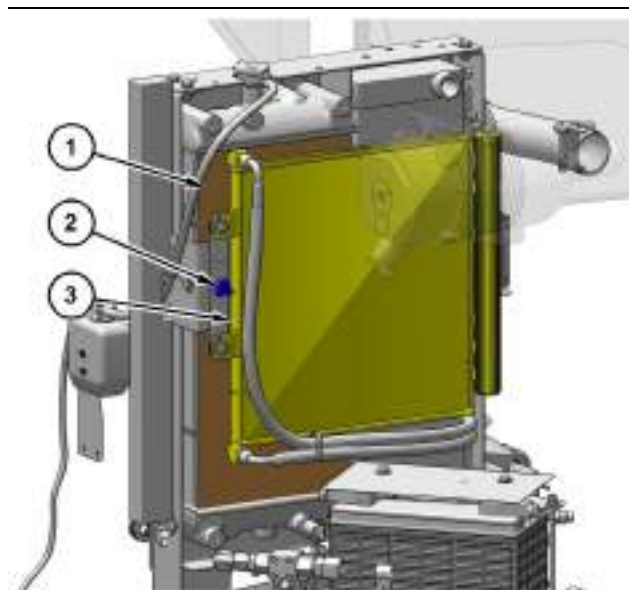


Illustration 655

g06338126

- (1) Radiator core
- (2) Bolt
- (3) A/C Condenser

2. To gain better access to the radiator core, remove bolt (2) and swing condenser (3) outward.
3. Inspect the radiator core for dust or debris.
4. You can use compressed air, high-pressure water, or steam to remove dust and other debris from the radiator fins. However, the use of compressed air is preferred.
5. Secure condenser (3) with bolt (2).
6. Close the right side rear access door.

Receiver Dryer (Refrigerant) - Replace

SMCS Code: 7322-510; 7322-710

WARNING

Personal injury can result from contact with refrigerant.

Contact with refrigerant can cause frost bite. Keep face and hands away to help prevent injury.

Protective goggles must always be worn when refrigerant lines are opened, even if the gauges indicate the system is empty of refrigerant.

Always use precaution when a fitting is removed. Slowly loosen the fitting. If the system is still under pressure, release it slowly in a well ventilated area.

Personal injury or death can result from inhaling refrigerant through a lit cigarette.

Inhaling air conditioner refrigerant gas through a lit cigarette or other smoking method or inhaling fumes released from a flame contacting air conditioner refrigerant gas, can cause bodily harm or death.

Do not smoke when servicing air conditioners or wherever refrigerant gas may be present.

Use a certified recovery and recycling cart to properly remove the refrigerant from the air conditioning system.

NOTICE

If the refrigerant system has been open to the outside air (without being plugged) for more than 30 minutes, the receiver-dryer must be replaced. Moisture will enter an open refrigerant system and cause corrosion which will lead to component failure.

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

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

i07316453

i07103309

Rollover Protective Structure (ROPS) - Inspect

SMCS Code: 7323-040; 7325-040



Illustration 656

g06184357

Consult your Caterpillar dealer for repair of any cracks in the ROPS.

Inspect the ROPS for loose bolts or for damaged bolts. Replace any damaged bolts or missing bolts with original equipment parts only. Tighten the M24 bolt (1) to $425 \pm 50 \text{ N}\cdot\text{m}$ ($315 \pm 40 \text{ lb ft}$).

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

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

Consult your Cat dealer for inspection of any potential damage or repair of any damage to any operator protective structure. (Including ROPS, FOPS, TOPS, OPS, and OPG) Refer to Special Instruction, SEHS6929, "Inspection, Maintenance, and Repair of Operator Protective Structures (OPS) and Attachment Installation Guidelines for All Earthmoving Machinery"

Seat Belt - Inspect

SMCS Code: 7327-040

Always inspect 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 657

g06224278

Typical example

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

Inspect seat belt (1) for webbing that is worn or frayed. Replace the seat belt if the webbing is worn or frayed.

Inspect all seat belt mounting hardware for wear or for damage. Replace any mounting hardware that is worn or damaged. Make sure that the mounting bolts are tight.

If your machine is equipped with a seat belt extension, also perform this inspection procedure for the seat belt extension.

Contact your Cat dealer for the replacement of the seat belt and the mounting hardware.

Note: The seat belt should be replaced within 3 years of the date of installation. A date of installation label is attached to the seat belt retractor and buckle. If the date of installation label is missing, replace belt within 3 years from the year of manufacture as indicated on belt webbing label, buckle housing, or installation tags (non-retractable belts).

i06970675

Seat Belt - Replace

SMCS Code: 7327-510

The seat belt should be replaced within 3 years of the date of installation. A date of installation label is attached to the seat belt retractor and buckle. If the date of installation label is missing, replace the belt within 3 years from the year of manufacture as indicated on the belt webbing label, buckle housing, or installation tags (non-retractable belts).



Illustration 658

g06183390

- (1) Date of installation (retractor)
- (2) Year of manufacture (tag) (fully extended web)
- (3) Date of installation (buckle)
- (4) Year of manufacture (underside) (buckle)

Consult your Cat dealer for the replacement of the seat belt and the mounting hardware.

Determine the age of a new seat belt before installing on seat. A manufacture label is on the belt webbing and imprinted on the belt buckle. Do not exceed the install by date on the label.

A complete seat belt system should be installed with new mounting hardware.

Date of installation labels should be marked and affixed to the seat belt retractor and buckle.

Note: Date of installation labels should be permanently marked by punch (retractable belt) or stamp (non-retractable belt).

If your machine is equipped with a seat belt extension, also perform this replacement procedure for the seat belt extension.

i07573650

Swing Bearing - Lubricate

SMCS Code: 7063-086

Note: Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for more information on grease.

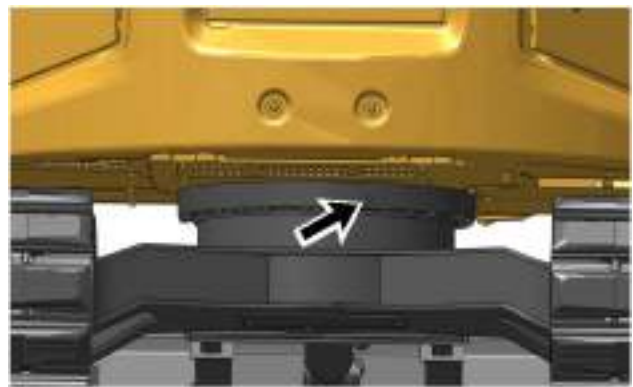


Illustration 659

g06338173

Rear view of machine

1. Wipe the fittings before lubricating the swing bearings.

Note: There are two fittings that need lubricant. One fitting is on the front of the swing bearing and one fitting is on the rear of the swing bearing.

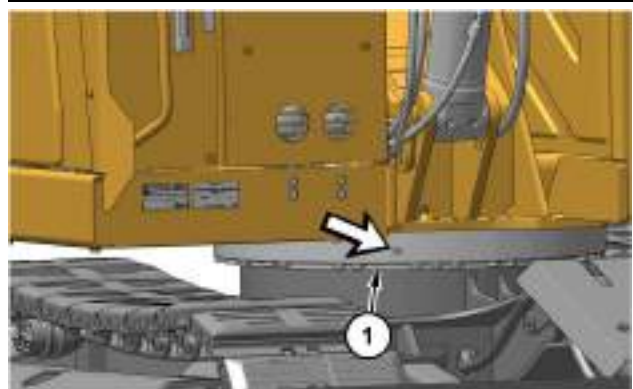


Illustration 660

g06366138

Front view of machine with fixed boom

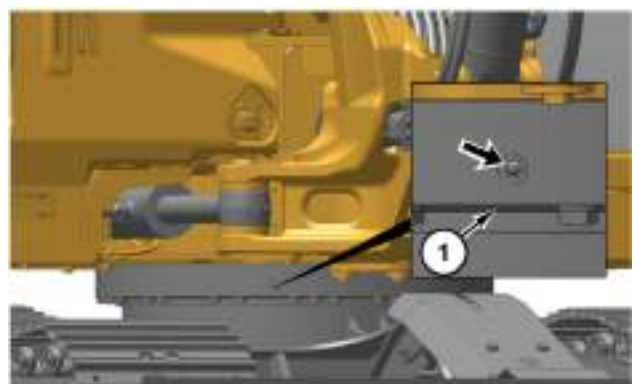


Illustration 661

g06365050

Front view of machine with boom swing

2. Apply lubricant through both fittings until the lubricant comes out of the bearing (area (1) below the fitting).

3. Rotate the upper structure of the machine 90 degrees from the original position.

Note: The grease fitting rotates with the upper machine structure.

4. Apply lubricant through both fittings until the lubricant comes out of the bearing (area (1) below the fitting).

5. Repeat Step 3 and Step 4 until the upper structure has rotated 360 degrees.

i07496115

Swing Frame Pin - Lubricate

SMCS Code: 6506-086; 6507-086

1. Lower all work tools to the ground.
2. Wipe all grease fittings before you lubricate the grease fittings.



Illustration 662

g06338178

3. Apply lubricant to the grease fittings for the swing frame.

i07496134

Swing Gear - Lubricate

SMCS Code: 7063-086

Note: Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluids Recommendations" for more information on grease.

NOTICE

Improper lubrication can cause damage to machine components.

To avoid damage, make sure that the proper amount of grease is applied to the swing drive.

When the amount of grease in the compartment becomes too large, the agitation loss becomes large, thereby accelerating grease deterioration.

Grease deterioration can cause damage to the pinion gear of the swing drive and swing internal gear.

Not enough grease will result in poor gear lubrication.

Wipe all the fittings before you apply lubricant.



Illustration 663

g06288605

1. Add lubricant through fitting.



Illustration 664

g06338197

2. Raise the boom and turn the upper structure by 90 degrees. Lower the bucket to the ground.
3. Repeat Step 1 at every 90 degrees in 4 places.

i07777105

Swing Gear and Bearing - Inspect

SMCS Code: 7063-040

NOTICE

Improper lubrication can cause damage to machine components.

To avoid damage, make sure that the proper amount of grease is applied to the swing drive.

When the amount of grease in the compartment becomes too large, the agitation loss becomes large, thereby accelerating grease deterioration.

Grease deterioration can cause damage to the pinion gear of the swing drive and swing internal gear.

Not enough grease will result in poor gear lubrication.

Remove the inspection cover that is located near the swing motor. Inspect the lubricant.



Illustration 665

g06338280

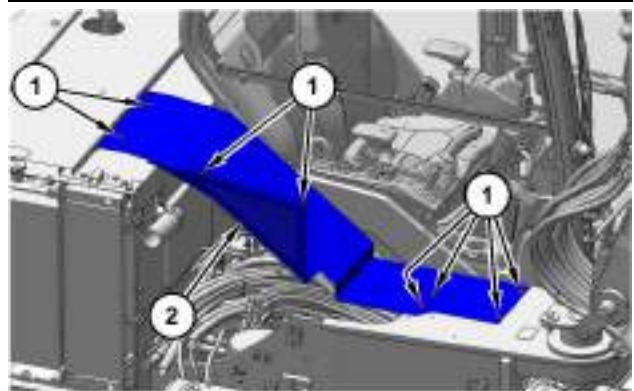


Illustration 666

g06338336

1. Remove eight bolts and washers (1).
2. Remove cover (2).

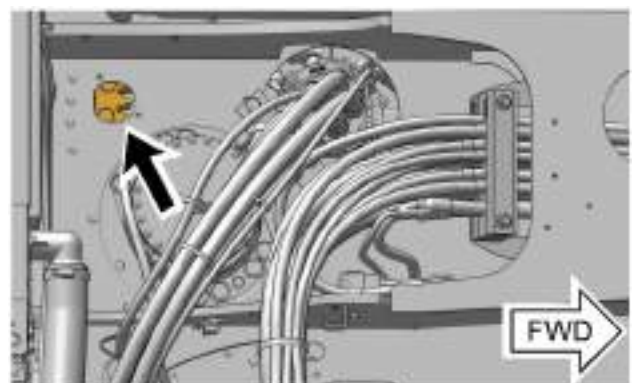


Illustration 667

g06338369

3. Remove cover from location shown in Illustration 667 .
4. Check for loose swing bearing bolts and retighten as needed.

Note: Rotate the swing bearing to inspect each bolt.

5. Check pinions for evidence of grease.

Note: If no grease is adhered to the pinions, there is a lack of grease.

Note: Add grease as needed.

6. If grease is contaminated or discolored with water, clean the pinions and re-grease the swing bearing.

Note: Refer to Operation and Maintenance Manual, "Swing Gear - Lubricate" for the lubricating procedure.

7. Install all covers.

i07496276

Thumb - Lubricate (If Equipped)

SMCS Code: 6547-086

Standard Thumb

1. Lower all work tools to the ground.
2. Wipe off the fittings before you lubricate the fittings.

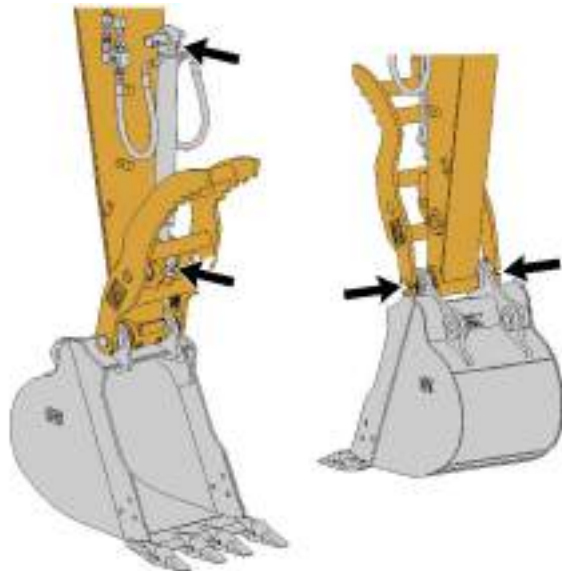


Illustration 668

g06338385

typical example of a standard thumb

3. Apply grease to the fittings.

There are lubrication fittings on each end of the cylinder and fittings on each side of the thumb.

4. Check the overall condition of the thumb. Look for the following conditions: loose bolts, worn parts, broken parts, missing parts and damaged parts. Make any necessary repairs.

Progressive Link Thumb

1. Lower all work tools to the ground.
2. Wipe off the fittings before you lubricate the fittings.

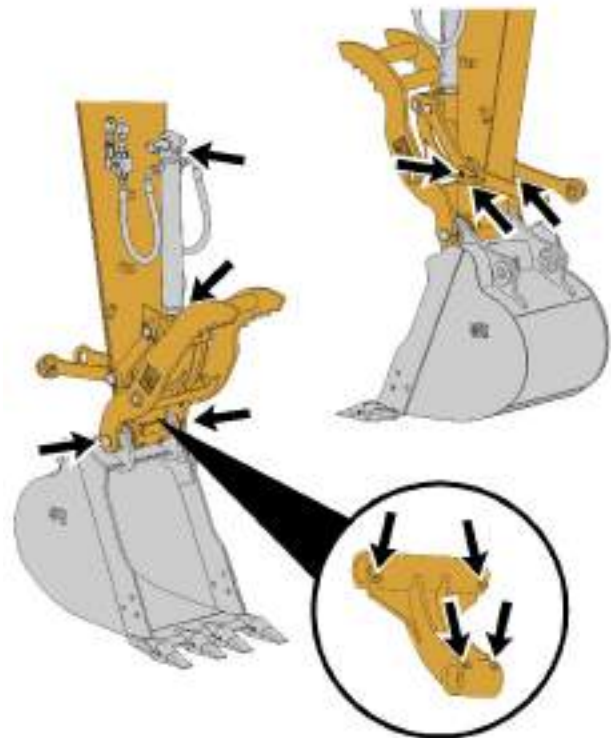


Illustration 669

g06338401

Typical example of a progressive link thumb

3. Apply grease to the fittings.

There are lubrication fittings in the following locations: each end of the cylinder, each side of the thumb, both of the side links, the pin and four fittings on the progressive link.

4. Check the overall condition of the thumb. Look for the following conditions: loose bolts, worn parts, broken parts, missing parts and damaged parts. Make any necessary repairs.

i08057957

Track Adjustment - Adjust

SMCS Code: 4170-025

WARNING

Personal injury or death can result from grease under pressure.

Grease coming out of the relief valve under pressure can penetrate the body causing injury or death.

Do not watch the relief valve to see if grease is escaping. Watch the track or track adjustment cylinder to see if the track is being loosened.

Loosen the relief valve one turn only.

If track does not loosen, close the relief valve and contact your Caterpillar dealer.

NOTICE

Keeping the track properly adjusted will increase the service life of the track and drive components.

Note: The track tension must be adjusted according to the current operating conditions. Keep the track as slack as possible if the soil is heavy.

Measuring Track Tension

1. Swing the upper structure so that the upper structure is perpendicular to the tracks.
2. Lower the bucket to the ground.
3. Raise the blade fully.
4. Apply gradual downward pressure with the boom until the track is lifted off the ground.
5. Block the machine by using the appropriate blocks and lower the frame onto the blocks.

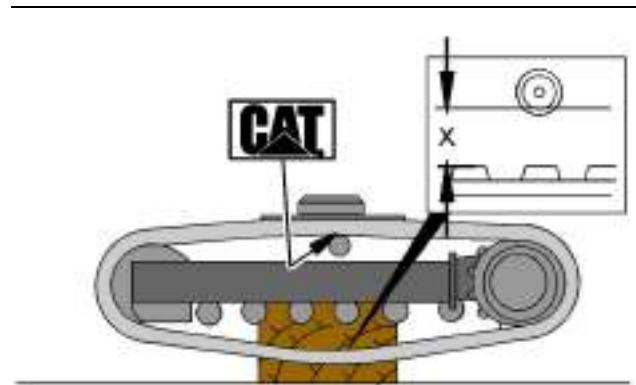


Illustration 670

g06338944

Example of the machine on blocks.

6. Operate the track until the "CAT" symbol that is on the track is above the track carrier roller.
7. Measure the sag in the track.
 - a. **Rubber Track**

Measure the distance between the track and the wear surface of the track roller. Dimension (X) should be 30 to 35 mm (1.18 to 1.38 inch). Adjust the tension on the track until dimension (X) is reached.
 - b. **Steel Track**

With the steel track not contacting the ground and link pin directly over the top of the carrier roller, measure the sag at the bottom from the wear surface of the track link to the wear surface of the closest track roller. This dimension should be 55 to 65 mm (2.17 to 2.56 inch). Adjust the tension on the track until dimension is reached.
8. Tighten the tension of the track. Refer to Operation and Maintenance Manual, "Track Adjustment - Adjust" for the correct procedure.

9. Repeat Step 1 through Step 8 for the other track.

Adjusting Track Tension



Illustration 671

g06338940

The track adjuster is on the track frame.

Tightening the Track

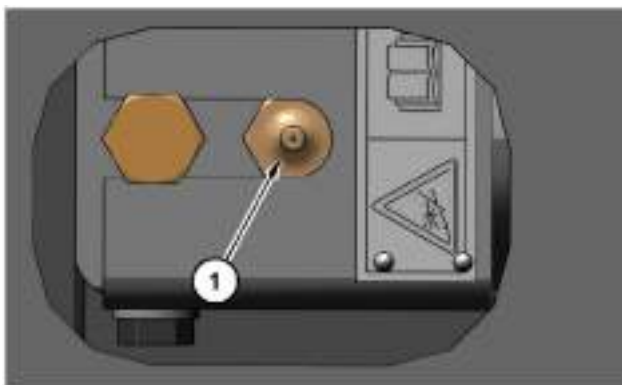


Illustration 672

g06288608

(1) Grease valve

Wipe the fitting before you add grease.

1. Add grease through grease valve (1) until the correct track tension is reached.
2. Operate the machine back and forth to equalize the pressure.
3. Check the amount of sag. Adjust the track, as needed.

Loosening the Track

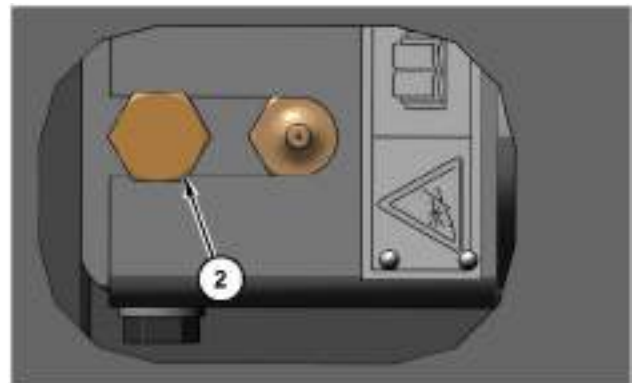


Illustration 673

g06288610

(2) Relief valve

1. Loosen relief valve (2) carefully until the track begins to loosen. One turn should be the maximum.
2. Tighten grease valve (2) to $34 \pm 5 \text{ N}\cdot\text{m}$ ($25 \pm 4 \text{ lb ft}$) when the desired track tension is reached.
3. Operate the machine back and forth to equalize the pressure.
4. Check the amount of sag. Adjust the track, as needed.

If the correct adjustment cannot be achieved, consult your Cat dealer.

Storage of Rubber Belt Tracks (If Equipped)

If a rubber track needs to be stored for an extended time, store the rubber track in a well ventilated area that is not exposed to direct sunlight. The tracks should be operated monthly while the tracks are in storage. If the rubber track is not stored on a machine, do not roll the track in a small radius.

Break in Period for the Rubber Track (If Equipped)

A rubber track that has been replaced requires a break-in period of 200 service hours. Adjust the track in 50-hour intervals during the break-in period.

i07316495

Track Adjustment - Inspect

SMCS Code: 4170-040



Illustration 674

g06182929

Check the track adjustment. Check the track for wear and for excessive dirt buildup.

If the track appears to be too tight or too loose, refer to Operation and Maintenance Manual, "Track Adjustment - Adjust".

i07511732

Travel Alarm - Test (If Equipped)

SMCS Code: 7429-081

Move the machine to test the travel alarm.

1. Start the engine. Move the hydraulic lockout control to the UNLOCKED position.
2. Raise the work tool to avoid any obstacles. Make sure that there is adequate overhead clearance.



Illustration 675

g06181402

3. Use the travel levers or the travel pedals to move the machine forward. The travel alarm should sound.
4. Release the travel levers and the travel pedals to stop the machine.
5. Use the travel levers and the travel pedals to move the machine backward. The travel alarm should sound.



Illustration 676

g06344494

6. Press the alarm mute button. The travel alarm should shut off.
7. Stop the machine. Lower the work tool to the ground. Move the hydraulic lockout control to the LOCKED position. Stop the engine.

i07316497

Undercarriage - Check

SMCS Code: 4150-535



Illustration 677

g06182923

1. Check the carrier rollers, the track rollers, and the idler wheels for possible leakage.
2. Check the surface of the track, the carrier rollers, the track rollers, the idler wheels, the track shoes, and the drive sprockets. Look for signs of wear and loose mounting bolts.
3. Listen for any abnormal noises while you are moving slowly in an open area.
4. If abnormal wear exists or abnormal noises or leaks are found, consult your Caterpillar dealer.

i07316501

Window Washer Reservoir - Fill

SMCS Code: 7306-544-KE

NOTICE

When operating in freezing temperatures, use Caterpillar or any commercially available nonfreezing window washer solvent.

1. Open the access door on the rear left side of the machine.



Illustration 678

g06288617

2. Remove the filler cap.
3. Fill the window washer reservoir with washer fluid through the filler opening.
4. Install the filler cap.
5. Close the access door.

i01258249

Window Wiper - Inspect/Replace

SMCS Code: 7305-510; 7305-040

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

i07305526

Windows - Clean

SMCS Code: 7310-070; 7340-070

Clean the outside of the windows from the ground, unless handholds are available.



Illustration 679

g06277176

Typical example

Cleaning Methods

Aircraft Window Cleaner

Apply the cleaner with a soft cloth. Rub the window with moderate pressure until all the dirt is removed. Allow the cleaner to dry. Wipe off the cleaner with a clean soft cloth.

Soap and Water

Use a clean sponge or a soft cloth. Wash the windows with a mild soap or with a mild detergent. Also use plenty of lukewarm water. Rinse the windows thoroughly. Dry the windows with a moist chamois or with a moist cellulose sponge.

Stubborn Dirt and Grease

Wash the windows with a good grade of naphtha, of isopropyl alcohol, or of Butyl Cellosolve. Then, wash the windows with soap and with water.

Polycarbonate Windows (If equipped)

Special care is needed to clean polycarbonate windows.

Wash polycarbonate windows with mild soap and warm water that does not exceed 50° C (122° F). Use a soft sponge, or damp cloth. Never use a dry cloth or paper towels on polycarbonate windows. Rinse the windows with a sufficient amount of clean cold water.

Note: Naphtha or kerosene can be used to remove labels, films, paint, or marking pen from polycarbonate windows.

Note: Do not use abrasive, or highly alkaline cleaners. Do not use sharp instruments, such as squeegees or razor blades on polycarbonate windows. Do not clean polycarbonate windows in the hot sun or at elevated temperatures.

Warranty Section

Warranty Information

i06112217

Emissions Warranty Information

SMCS Code: 1000

The certifying engine manufacturer warrants to the ultimate purchaser and each subsequent purchaser that:

1. New non-road diesel engines and stationary diesel engines less than 10 liters per cylinder (including Tier 1 and Tier 2 marine engines < 37 kW, but excluding locomotive and other marine engines) operated and serviced in the United States and Canada, including all parts of their emission control systems ("emission related components"), are:
 - a. Designed, built, and equipped so as to conform, at the time of sale, with applicable emission standards prescribed by the United States Environmental Protection Agency (EPA) by way of regulation.
 - b. Free from defects in materials and workmanship in emission-related components that can cause the engine to fail to conform to applicable emission standards for the warranty period.
2. New non-road diesel engines (including Tier 1 and Tier 2 marine propulsion engines < 37 kW and Tier 1 through Tier 4 marine auxiliary engines < 37 kW, but excluding locomotive and other marine engines) operated and serviced in the state of California, including all parts of their emission control systems ("emission related components"), are:
 - a. Designed, built, and equipped so as to conform, at the time of sale, to all applicable regulations adopted by the California Air Resources Board (ARB).
 - b. Free from defects in materials and workmanship which cause the failure of an emission-related component to be identical in all material respects to the component as described in the engine manufacturer's application for certification for the warranty period.

3. New non-road diesel engines installed in construction machines conforming to the South Korean regulations for construction machines manufactured after January 1, 2015, and operated and serviced in South Korea, including all parts of their emission control systems ("emission related components"), are:
 - a. Designed, built, and equipped so as to conform, at the time of sale, with applicable emission standards prescribed in the Enforcement Rule of the Clean Air Conservation Act promulgated by South Korea MOE.
 - b. Free from defects in materials and workmanship in emission-related components that can cause the engine to fail to conform to applicable emission standards for the warranty period.

A detailed explanation of the Emission Control Warranty that is applicable to new non-road and stationary diesel engines, including the components covered and the warranty period, is found in a supplemental Special Publication. Consult your authorized Cat dealer to determine if your engine is subject to an Emission Control Warranty and to obtain a copy of the applicable Special Publication.

Reference Information Section

Reference Materials

i08292374

Reference Material

SMCS Code: 1000; 7000

Additional literature regarding your product may be purchased from your local Cat dealer or by visiting publications.cat.com. Use the product name, sales model, and serial number to obtain the correct information for your product.

publications.cat.com

i08292382

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.

Improperly disposing of waste can threaten the environment. Obey all local regulations for the decommissioning and disposal of materials.

Utilize appropriate personal protective equipment when decommissioning and disposing product.

Consult the nearest Cat dealer for additional information. Including information for component remanufacturing and recycling options.

i08417753

Caterpillar Approved Work Tools

SMCS Code: 6700; 7007

NOTICE

Use only work tools that are recommended by Caterpillar. The use of work tools that are not recommended by Caterpillar could damage your machine. Consult your Cat dealer for information on recommended work tools.

The following work tools have been approved by Caterpillar. Refer to Operation and Maintenance Manual for each work tool for proper operation, maintenance, and servicing of the work tools.

Using work tools of other manufactures, or work tools which have been released for other excavators, can reduce the machines output and stability considerably, and can also damage the machine and cause injuries to the operator or other personnel.

Always compare the weight of the work tool and maximum payload of work tool with the indications in the lift capacity table. Never exceed the maximum payload stated in the lift capacity table.

Table 56

Caterpillar Approved Work Tools		
Work Tool	307.5, 308 CR, 308.5, and 309 CR Excavator	310 Excavator
Hammer	H65E H65Es H80E H80Es H95Es B8	H80E H80Es H95Es B10
Quick Coupler	Manual Dual Lock Pin Grabber Quick Coupler	
	Hydraulic Dual Lock Pin Grabber Quick Coupler	
	Hydraulic Dual Lock Tilt Pin Grabber Quick Coupler	Hydraulic Dual Lock Tilt Pin Grabber Quick Coupler
	Manual Pin Lock Quick Coupler	Manual Pin Lock Quick Coupler
	Manual CW10 Quick Coupler	Manual CW10 Quick Coupler
	Hydraulic CW10 Quick Coupler	
Thumbs	Hydraulic Thumb	Hydraulic Thumb
	Stiff-Link Thumb	
	Hydraulic Progressive Link Thumb	Hydraulic Progressive Link Thumb
Auger	A26B Auger	A26B Auger
Ripper	Ripper Shank	Ripper Shank
Compaction Wheels	Pin On Interface (12", 18", 24", 36" wide)	Pin On Interface (12", 18", 24", 36" wide)
	1/4 yd Pin-Lock Interface (12", 18", 24" wide)	1/4 yd Pin-Lock Interface (12", 18", 24" wide)
Compaction Plate	CVP40	CVP40
Flail Mower	HMF210	HMF210
Mulcher	HM208 HM210	HM208 HM210
Scrap Shear	S305	S305
Work Tool Adapter	Pin Grabber to SSL Tool Adapter	
Buckets	X ⁽¹⁾	X ⁽¹⁾
Tilt-Rotate Coupler	TRS8	TRS8

⁽¹⁾ Refer to Operation and Maintenance Manual, Boom/Stick/Bucket Combinations for more information.

Table 57

Caterpillar Approved Work Tools for 307.5, 308 CR, 308.5, 309 CR, and 310 Excavator			
Work Tool	Width	Weight	Capacity
Bucket	400 mm (15.7 inch)	127.4 kg (280.87 lb)	0.15 m ³ (0.196 yd ³)
	800 mm (31.5 inch)	228 kg (502.7 lb)	0.29 m ³ (0.379 yd ³)
	600 mm (23.6 inch)	182.9 kg (403.22 lb)	0.2 m ³ (0.26 yd ³)
	400 mm (15.7 inch)	141.4 kg (311.73 lb)	0.1 m ³ (0.14 yd ³)

The use of hammers shortens the life of hydraulic oil.
If a hammer is used, the following measures should be taken:

Table 58

Application		Hydraulic Oil	Hydraulic System Oil Filter
Normal Work (Excavation Work)		Replace the first time after 500 service hours, then every 1000 service hours	Replace the first time after 50 service hours, then every 500 service hours
Percentage of Hammer Work	20%	Every 800 service hours	300 service hours
	40%	Every 400 Service hours	
	60%	Every 300 service hours	100 service hours
	Over 80%	Every 200 service hours	

Refer to Operation and Maintenance Manual, "Maintenance Interval Schedule" for more information.

This list was completed at the time of publication. There may be additional work tools that have been approved since that time. Consult your Cat[®] dealer for an updated list of approved work tools.

Intended Use Statement for Work Tool Adapter

The pin grabber to Skid Steer Loader (SSL) tool adapter has the intended function of using bale spears, pallet forks, and general-purpose SSL buckets on mini hydraulic excavators.

Bale Spears and Pallet Forks – Use for loading, unloading, and transporting bales and pallets for short distances.

General Purpose Buckets – Use for grading, ditch cleaning, and debris removal not intended for hard bank excavation.

Do not operate the work tool in a position where the machine may become unstable. When lifting heavy loads, ensure that the front blade is grounded to provide increased machine stability.

Do not use the work tool improperly.

Remove the work tool from the machine before lifting the host machine. Refer to "Lifting and Tying Down the Machine" for more information.

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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: _____

	<u>Dealer Contact</u>	<u>Phone Number</u>	<u>Hours</u>
Sales:	_____	_____	_____
Parts:	_____	_____	_____
Service:	_____	_____	_____

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