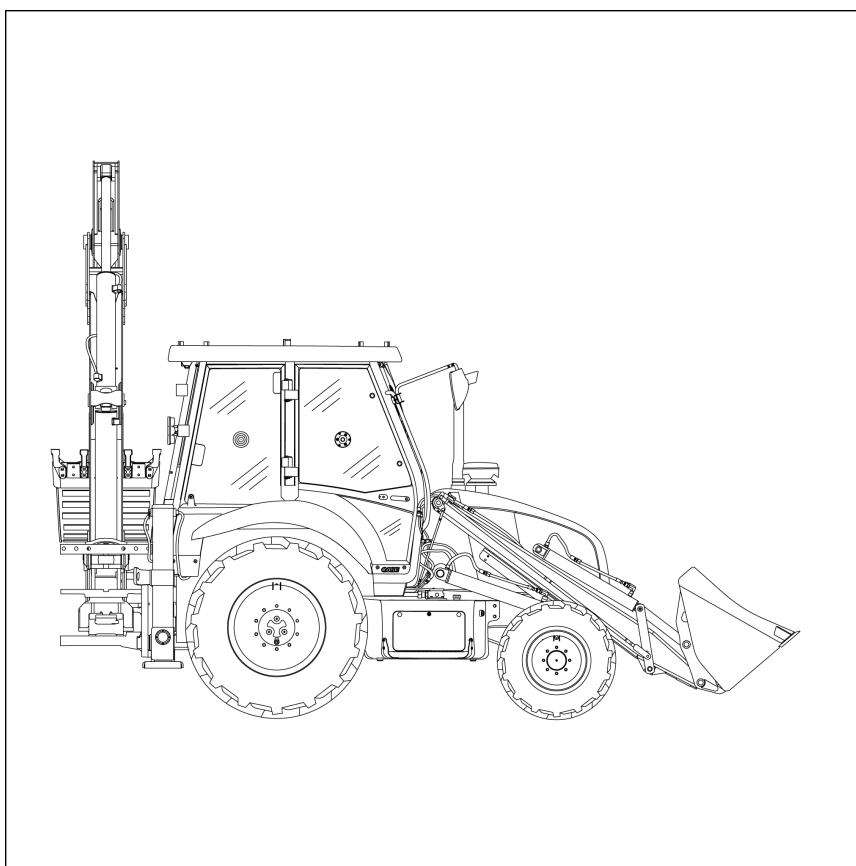




OPERATOR'S MANUAL



570T

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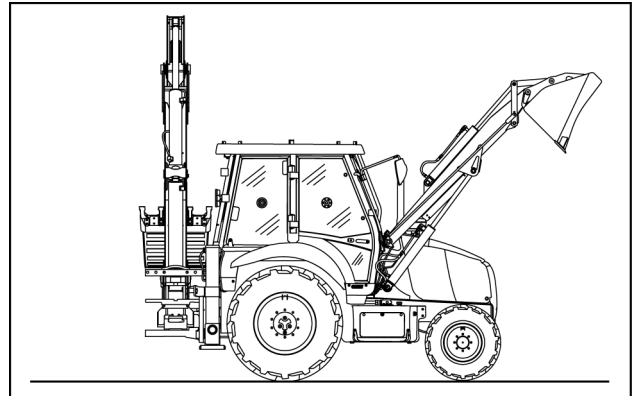
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1 - GENERAL INFORMATION

Foreword

Loader backhoes **570T** has been designed to perform most of the earth-moving operations. If you use this machine for duties involving the use of attachments, accessories, or special tools, consult your **CASE** dealer to make sure that the adaptations or modifications carried out are in conformity with the machine's technical specifications and with current regulations on safety. Any modifications or adaptations which are not approved by the manufacturer may invalidate the machine's original conformity with safety requirements.



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Note to the Owner

Read this manual before you start the engine or operate the machine. If you need more information, contact your **CASE** Dealer.

This manual contains important information about safe operation, adjustment, and maintenance of your loader backhoe. This manual is divided into chapters as outlined in the table of contents. Refer to the index at the end of this manual for locating specific items about your machine. The loader backhoe conforms to current safety regulations. Read this manual carefully, paying particular attention to the instructions concerning safety, operation and maintenance so as to avoid the risk of injury while operating or servicing the machine.

NOTE: *All persons who will be operating this machine shall possess a valid local vehicle operating permit and/or other applicable local age work permits.*

The machine has been designed and manufactured according to the strictest quality standards. However, the risk of accidents can never be completely excluded. That is why it is essential to observe elementary safety rules and precautions. DO NOT operate or permit anyone to operate or service this machine until you or the other persons have read and understand the safety, operation, and maintenance instructions in this manual. Use only trained operators who have demonstrated the ability to operate and service this machine correctly and safely.

The information in this manual is provided on the basis of information that was available at the time that the manual was printed. Settings, procedures, part numbers, software, and other items can change. These changes can affect the service that is given to the machine. Ensure that you have the complete and most current information from your **CASE** Dealer before you start any machine operation.

The Operator's Manual is to be stored in the manual compartment equipped on this machine. Make sure this manual is complete and in good condition. Consult your **CASE** Dealer to obtain additional manuals.

Contact your **CASE** Dealer for any further information or assistance about your machine. Your **CASE** Dealer has Company approved service parts. Your **CASE** Dealer has technicians with special training that know the best methods of repair and maintenance for your machine.

Intended use

This machine has been built with the most advanced technology and in accordance with recognized safety rules. The machine must be used according to its intended use only, respecting the safety, precautions and operating instructions. Any functional disorders, especially those affecting the safety of the machine, should therefore be rectified immediately.

WARNING

Avoid injury!

Using the machine for purposes other than or beyond the intended use is not allowed; for example:

- **for the transportation of persons,**
- **as a working platform,**
- **for pulling attached loads,**
- **for pulling or transporting loads without the intended working equipment.**

Failure to comply could result in death or serious injury.

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The manufacturer/supplier cannot be held responsible for any damage resulting from unintended use. The risk involved in such misuse lies entirely with the user.

NOTE: For clarity, some figures in this manual show the machine with protection panels or covers removed. Never operate the machine with any protection panels or covers removed.

NOTICE: It is absolutely forbidden to tamper with and/or change the setting of any of the hydraulic system valves to avoid damaging machine components, with a consequent risk of personal safety.

The current operator's manual is the user's guide for correct run-in, use and maintenance of the machine. Carefully read this operator's manual and store it in the cab for quick reference. Instructions concerning safety, operation and maintenance have been developed to permit safe service and operation of this machine.

In the event of queries or suggestions relevant to your machine do not hesitate to address to your **CASE** Dealer. **CASE** Dealers have qualified and trained personnel at disposal along with original spares, means and equipment suitable to carry out all necessary maintenance.

Any modifications or adaptations which are not approved by the manufacturer may invalidate the machine's original conformity with safety requirements.

NOTICE: The engine and fuel system on your machine are designed and built to government emissions standards. Tampering by **CASE** Dealers/customers/operators/users are strictly prohibited by law. Failure to comply with this prohibition could result in government fines, rework charges, invalid warranty, legal action and possible confiscation of the machine until rework to original condition is completed. Engine service and/or repairs must be carried out by a certified technician only.

Before entrusting this machine to an operator, make sure that:

- The operator is qualified to operate the machine correctly and safely.
- The operator has read and completely understood the instructions given in this manual.

Consult your **CASE** Dealer to obtain any other technical manuals or manuals in other languages.

Your **CASE** Dealer is at your disposal for any further information you may need.

Spare parts

The "non-genuine" spare parts have not been checked and authorized by the manufacturer. The assembly and/or use of such products may have negative effects on the machine design features and could impair its operation safety. The manufacturer is not liable for any damage caused by "non-genuine" spare parts or accessories.

Warranty

The warranty applicable for each model 570T Backhoe Loader manufactured by Case New Holland Construction Equipment (India) Pvt. Ltd. (the company) will be as given under:

1. Each backhoe loader (equipment) manufactured by the Company/ **CASE** Dealer shall be devoid of defects in material and workmanship.

1 - GENERAL INFORMATION

2. All goods will be warranted against defective material and workmanship for a period of Twelve months or **2000 h** of operation, whichever is earlier from the date of commissioning.
3. The Company's/ **CASE** Dealer's liability will be limited to the repair or replacement of the parts which are proved defective within the aforesaid warranty period in normal operation, proper use and service when owned by the original buyer only.
4. The warranty will not cover electrical items, FM Radio, speakers, rubber items such as dampers, seals, O-rings and consumables like tooth points and filter elements.
5. The warranty will not cover normal wear and tear, failures due to improper operation, poor maintenance and/or improper handling of the equipment.
6. The warranty will not cover any damages caused while the equipment is in storage or under transit during the period of the warranty.
7. The above warranty will be, in each instance on the warranties extended to the Company/ **CASE** Dealer by his suppliers, in case of such bought-out items as electric motors, alternators, tires & tubes and batteries.
8. Under no circumstances whatsoever shall the Company/ **CASE** Dealer be responsible for defects in quality, Workmanship or performance beyond the guarantee of Company's/ **CASE** Dealer's suppliers in respect of such items.
9. The Company's/ **CASE** Dealer's liability will be limited to the repair/replacement of the defective Parts and will not cover any direct or indirect losses suffered on this account and no claim for consequential damages will be entertained.
10. The warranty shall not cover the cost of removal and/or refitting of any Parts to the equipment.
11. The warranty shall also not cover the expenses or packing and freight in connection with replacement made to the buyer and the cost for the same shall be borne by the buyer.
12. All replacement supplied under this warranty will be on the basis of the **CASE** Dealer's option, subject to availability of required import license or customs clearance permit wherever applicable.
13. All parts found to be defective and replaced by the Company/ **CASE** Dealer shall become its property. In every instance, it shall be the buyer's responsibility to send the failed parts duly packed to the authorized **CASE** Dealer on freight paid basis. In case of default, no warranty shall be paid for the parts covered therein.
14. It shall be obligatory on the part of the buyer to use only genuine Case New Holland Construction Equipment spare parts, recommended hydraulic oil, transmission oil, grease and lubricants, etc. further, it shall also be obligatory to assemble parts in accordance with the guidelines given by the Company/ **CASE** Dealer.
15. Non-conformance of the above shall automatically and irrevocably void the warranty.
16. Please refer to the authorized **CASE** Dealer regarding free services available. Strict adherence to the instructions given therein is necessary.
17. NO WARRANTY is applicable for accidents and failures caused due to negligence of the machine operator.
18. The company reserves the right to make changes in design or improvements at any time without incurring any obligations to incorporate such changes or improvements on machine previously supplied by the company.

NOTE: Each machine is supplied complete with a copy of this manual. Descriptions and illustrations provided herein are not binding. The manufacturer, provided that the basic characteristics of machine types described and shown in this manual remain the same, reserves the right to change components, parts and accessories supplied without any commitment to timely update this publication, and this any time it deems it convenient for improvement purposes or due to commercial or manufacturing requirements. For exact information, please consult your **CASE** Dealer or contact the manufacturer's branch offices, who remain at your disposal for further help.

Electro-magnetic compatibility (EMC)

Interference may arise as a result of add-on equipment that may not necessarily meet the required standards. As such interference can result in serious malfunction of the unit and/or create unsafe situations, you must observe the following:

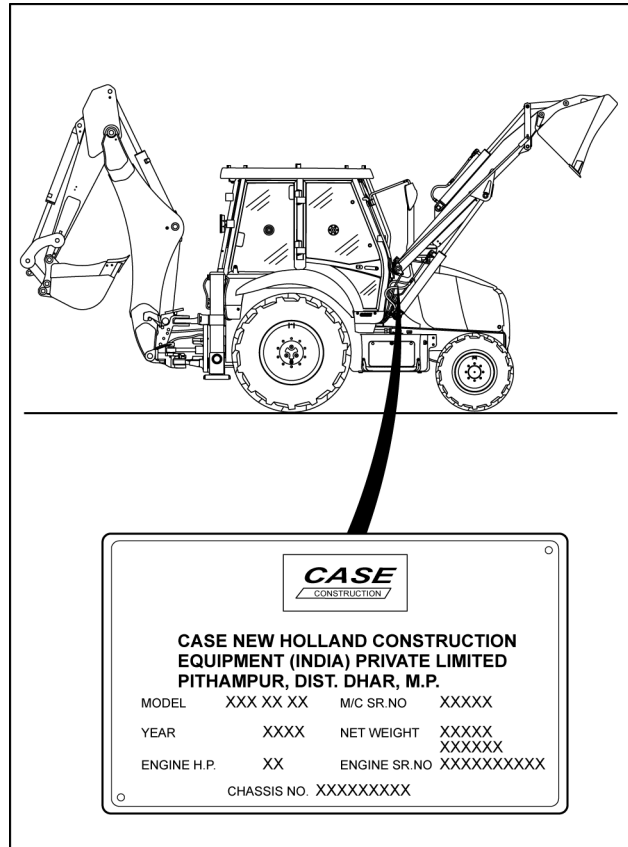
- The maximum power of emission equipment (radio, telephones, etc.) must not exceed the limits imposed by the national authorities of the country where you use the machine
- The electro-magnetic field generated by the add-on system should not exceed **24 V/m** at any time and at any location in the proximity of electronic components
- The add-on equipment must not interfere with the functioning of the on board electronics

Failure to comply with these rules will render the CASE CONSTRUCTION warranty null and void.

Product identification

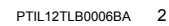
VIN plate location

The VIN plate is located on the right hand side of the chassis frame.

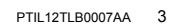


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The engine identification plate is on the tappet cover.

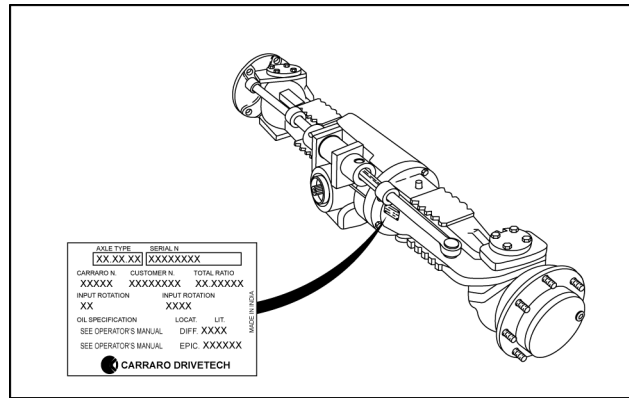


The transmission identification plate is on the right hand side of the oil sump.



Front axle (4WD if applicable) identification plate

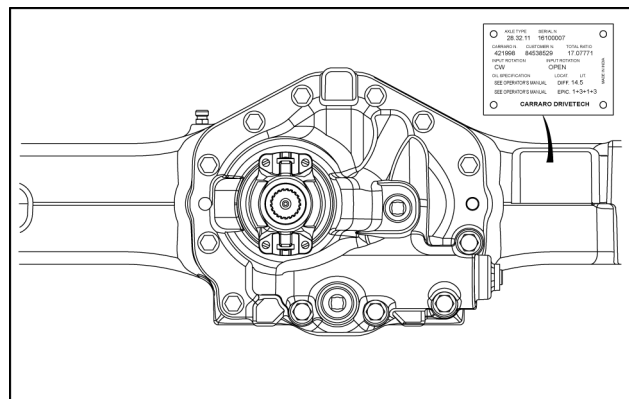
The front axle identification plate is located on right hand side of differential.



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Rear axle identification plate

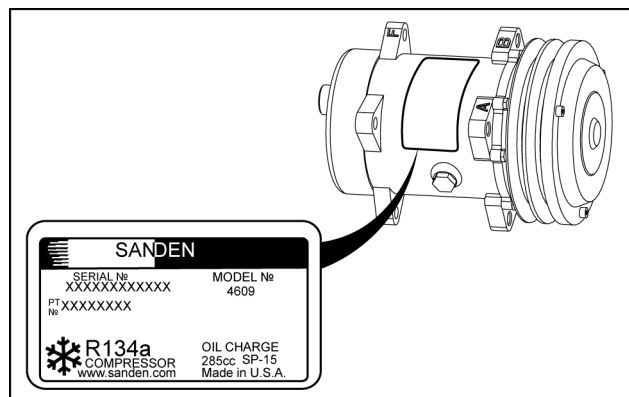
The rear axle identification plate is located on left hand side of differential.



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Compressor identification plate

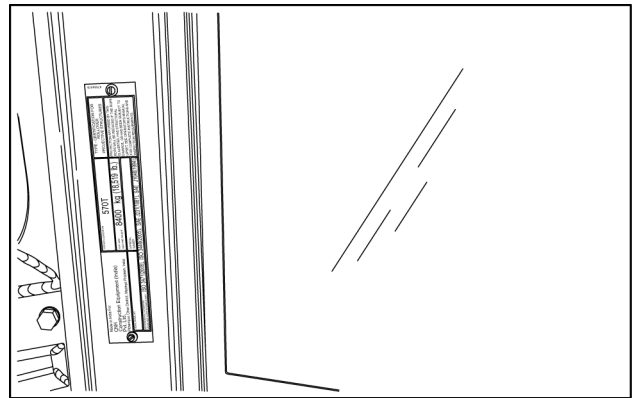
The compressor identification plate is located near the top mounting point of the compressor.



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ROPS identification plate

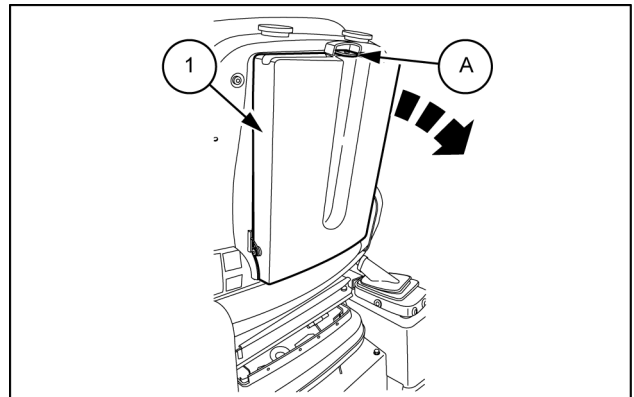
The **ROPS** identification plate is located on the right hand side B-pillar of the cabin.



PTIL14TLB0052AA 7

Operator's Manual storage on the machine

The Operator's Manual should always be in the machine. There is a provision made on the back side of the operator's seat to store the manual. Press the lock **(A)** to open the storage access door **(1)**.

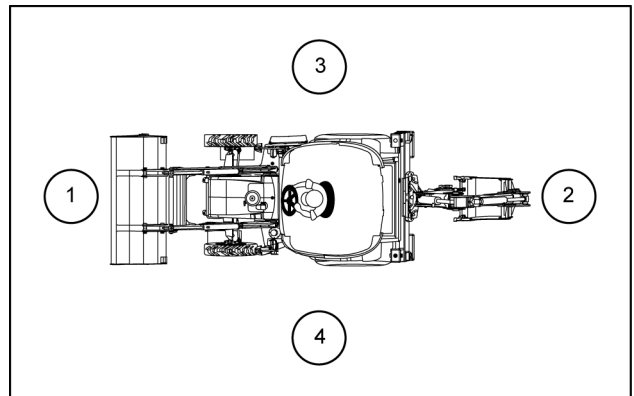


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Machine orientation

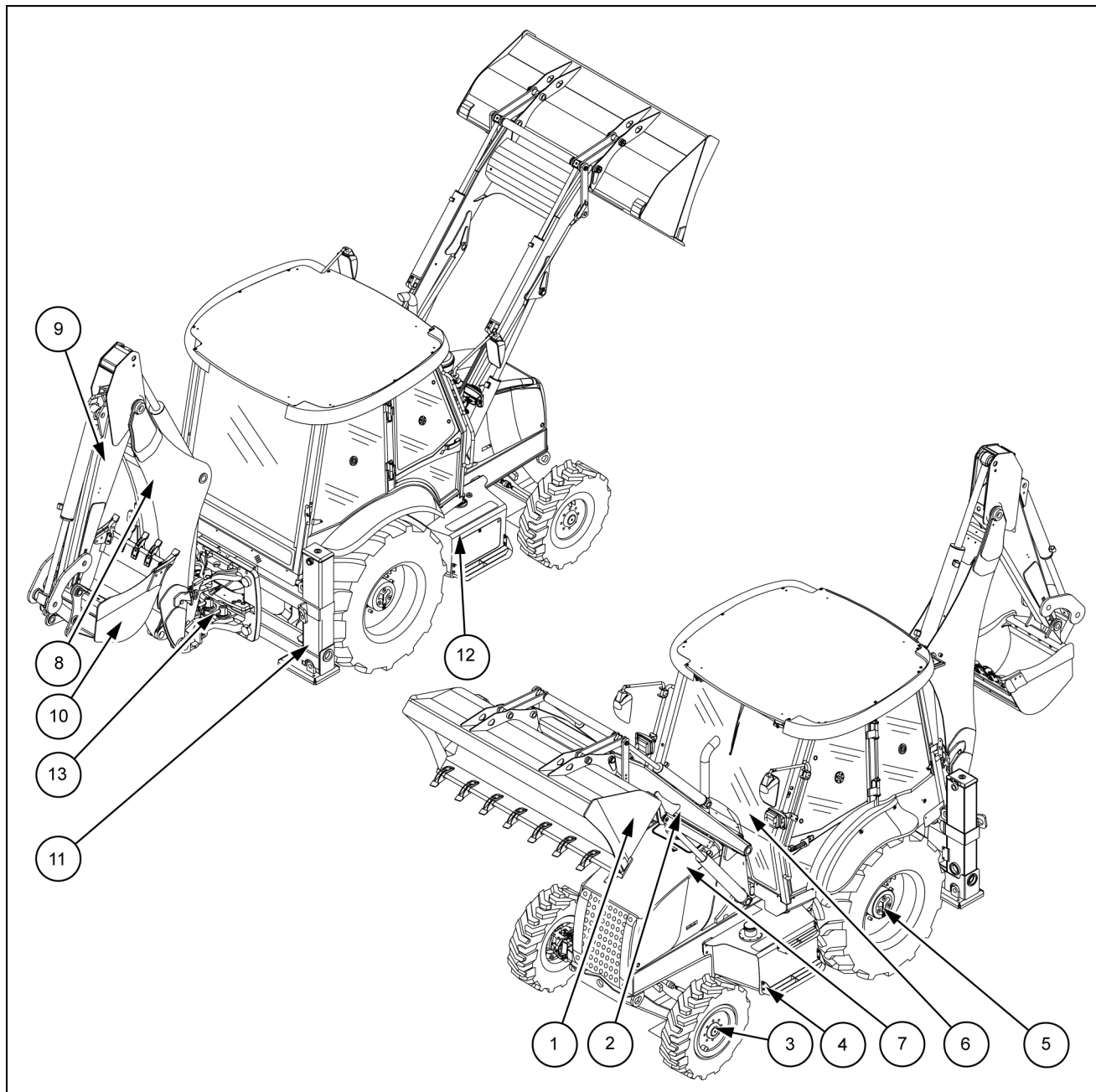
The orientation is explained considering that the operator is facing the steering wheel.

1. Front
2. Rear
3. Right
4. Left



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Component identification



PTIL14TLB0011GB 1

- | | |
|---------------------------------------|--|
| 1. Loader bucket (with BDB if fitted) | 8. Boom |
| 2. Loader arm | 9. Dipper arm |
| 3. Front wheel hub | 10. Backhoe bucket (with extendahoe if fitted) |
| 4. Fuel tank | 11. Stabilizer |
| 5. Rear wheel hub | 12. Hydraulic tank |
| 6. Windshield | 13. Side shift frame |
| 7. Engine hood | |

2 - SAFETY INFORMATION

Safety rules

Throughout this manual and on machine safety signs, you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 **DANGER** indicates a hazardous situation that, if not avoided, will result in death or serious injury. The color associated with DANGER is RED.

 **WARNING** indicates a hazardous situation that, if not avoided, could result in death or serious injury. The color associated with WARNING is ORANGE.

 **CAUTION** indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

Failure to follow danger, warning, and caution messages could result in death or serious injury.

Machine safety

NOTICE: Notice indicates a situation that, if not avoided, could result in machine damage or property damage. The color associated with Notice is BLUE.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine damage or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

General safety rules

Use caution when you operate the machine on slopes. Raised equipment, full tanks and other loads will change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Never permit anyone other than the operator to ride on the machine.

Never operate the machine under the influence of alcohol or drugs, or while you are otherwise impaired.

When digging or using ground-engaging attachments, be aware of buried cables. Contact local utilities to determine the locations of services.

Pay attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety.

Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin, causing serious injury or infection.

- DO NOT use your hand to check for leaks. Use a piece of cardboard or paper.
- Stop the engine, remove the key, and relieve the pressure before you connect or disconnect fluid lines.
- Make sure that all components are in good condition. Tighten all connections before you start the engine or pressurize the system.
- If hydraulic fluid or diesel fuel penetrates the skin, seek medical attention immediately.
- Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

2 - SAFETY INFORMATION

Keep clear of moving parts. Loose clothing, jewelry, watches, long hair, and other loose or hanging items can become entangled in moving parts.

Wear protective equipment when appropriate.

DO NOT attempt to remove material from any part of the machine while it is being operated or while components are in motion.

Make sure that all guards and shields are in good condition and properly installed before you operate the machine. Never operate the machine with shields removed. Always close access doors or panels before you operate the machine.

Dirty or slippery steps, ladders, walkways, and platforms can cause falls. Make sure these surfaces remain clean and clear of debris.

A person or pet within the operating area of a machine can be struck or crushed by the machine or its equipment. DO NOT allow anyone to enter the work area.

Raised equipment and/or loads can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath raised equipment during operation.

Never operate the engine in enclosed spaces as harmful exhaust gases may build up.

Before you start the machine, be sure that all controls are in neutral or park lock position.

Start the engine only from the operator's seat. If you bypass the safety start switch, the engine can start with the transmission in gear. Do not connect or short across terminals on the starter solenoid. Attach jumper cables as described in the manual. Starting in gear may cause death or serious injury.

Always keep windows, mirrors, all lighting, and Slow-Moving Vehicle (SMV) emblem clean to provide the best possible visibility while you operate the machine.

Operate controls only when seated in the operator's seat, except for those controls expressly intended for use from other locations.

Before you leave the machine:

1. Park the machine on a firm, level surface.
2. Put all controls in neutral or park lock position.
3. Engage the parking brake. Use wheel chocks if required.
4. Lower all hydraulic equipment - Implements, header, etc.
5. Turn off the engine and remove the key.

When, due to exceptional circumstances, you would decide to keep the engine running after you leave the operator's station, then you must follow these precautions:

1. Bring the engine to low idle speed.
2. Disengage all drive systems.

3. **WARNING**

**Some components may continue to run down after disengaging drive systems.
Make sure all drive systems are fully disengaged.
Failure to comply could result in death or serious injury.**

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Shift the transmission into neutral.

4. Apply the parking brake.

General maintenance safety

Keep the area used for servicing the machine clean and dry. Clean up spilled fluids.

Service the machine on a firm, level surface.

Install guards and shields after you service the machine.

Close all access doors and install all panels after servicing the machine.

Do not attempt to clean, lubricate, clear obstructions, or make adjustments to the machine while it is in motion or while the engine is running.

Always make sure that working area is clear of tools, parts, other persons and pets before you start operating the machine.

Unsupported hydraulic cylinders can lose pressure and drop the equipment, causing a crushing hazard. Do not leave equipment in a raised position while parked or during service, unless the equipment is securely supported.

Jack or lift the machine only at jack or lift points indicated in this manual.

Incorrect towing procedures can cause accidents. When you tow a disabled machine follow the procedure in this manual. Use only rigid tow bars.

Stop the engine, remove the key, and relieve pressure before you connect or disconnect fluid lines.

Stop the engine and remove the key before you connect or disconnect electrical connections.

Scalding can result from incorrect removal of coolant caps. Cooling systems operate under pressure. Hot coolant can spray out if you remove a cap while the system is hot. Allow the system to cool before you remove the cap. When you remove the cap, turn it slowly to allow pressure to escape before you completely remove the cap.

Replace damaged or worn tubes, hoses, electrical wiring, etc.

The engine, transmission, exhaust components, and hydraulic lines may become hot during operation. Take care when you service such components. Allow surfaces to cool before you handle or disconnect hot components. Wear protective equipment when appropriate.

When welding, follow the instructions in the manual. Always disconnect the battery before you weld on the machine. Always wash your hands after you handle battery components.

Cleaning the machine

Do not use cold water on a hot engine. Allow engine to cool to ambient temperature before cleaning, as damage to components such as fuel pump and other equipment may occur.

When the soft trim material inside the cab becomes dirty, it should be wiped clean. Dip a cloth in a warm water/detergent solution and wring out as much of the water as possible.

The floor matting should be cleaned with a vacuum cleaner and/or a stiff brush. If necessary a damp cloth may be used to remove obstinate stains. Allow the matting to dry naturally and avoid getting water under the mat.

External plastic parts such as fenders and the roof should be cleaned using warm and a little detergent and rinsed with water.

Protect FM radio and speaker from water and dust.

NOTE: *If using a high pressure washer to clean the machine, avoid aiming the jet directly at oil fill points, breathers, seats, instruments, decals, electrical connectors and other electrical connections.*

Wheels and tires

Make sure that tires are correctly inflated. Do not exceed any recommended load or pressure. Follow the instructions in the manual for proper tire inflation.

Tires are heavy. Handling tires without proper equipment could cause death or serious injury.

Never weld on a wheel with a tire installed. Always remove the tire completely from the wheel prior to welding.

Always have a qualified tire technician service the tires and wheels. If a tire has lost all pressure, take the tire and wheel to a tire shop or your **CASE** Dealer for service. Explosive separation of the tire can cause serious injury.

DO NOT weld to a wheel or rim until the tire is completely removed. Inflated tires can generate a gas mixture with the air that can be ignited by high temperatures from welding procedures performed on the wheel or rim. Removing the air or loosening the tire on the rim (breaking the bead) will NOT eliminate the hazard. This condition can exist whether tires are inflated or deflated. The tire MUST be completely removed from the wheel or rim prior to welding the wheel or rim.

Driving on public roads and general transportation safety

Comply with local laws and regulations.

Use appropriate lighting to meet local regulations.

Make sure that the SMV emblem is visible.

Make sure that the brake pedal latch is engaged. You must lock brake pedals together for road travel.

Use safety chains for trailed equipment when safety chains are provided with machine or equipment.

Lift implements and attachments high enough above ground to prevent accidental contact with road.

When you transport equipment or a machine on a transport trailer, make sure that it is properly secured. Be sure the SMV on the equipment or machine is covered while being transported on a trailer.

Be aware of overhead structures or power lines and make sure that the machine and/or attachments can pass safely under.

Travel speed should be such that you maintain complete control and machine stability at all times.

Slow down and signal before turning.

Pull over to allow faster traffic to pass.

Follow correct towing procedure for equipment with or without brakes.

Fire and explosion prevention

Fuel or oil that is leaked or spilled on hot surfaces or electrical components can cause a fire.

Crop materials, trash, debris, bird nests, or flammable material can ignite on hot surfaces.

Always have a fire extinguisher on or near the machine.

Make sure that the fire extinguisher(s) is maintained and serviced according to the manufacturer's instructions.

At least once each day and at the end of the day, remove all trash and debris from the machine especially around hot components such as the engine, transmission, exhaust, battery, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

At least once each day, remove debris accumulation around moving components such as bearings, pulleys, belts, gears, cleaning fans, etc. More frequent cleaning of your machine may be necessary depending on the operating environment and conditions.

Inspect the electrical system for loose connections and frayed insulation. Repair or replace loose or damaged parts.

Do not store oily rags or other flammable material on the machine.

Do not weld or flame cut any items that contain flammable material. Clean items thoroughly with non-flammable solvents before welding or flame-cutting.

Do not expose the machine to flames, burning brush, or explosives.

Promptly investigate any unusual smells or odors that may occur during operation of the machine.

General battery safety

Always wear eye protection when you work with batteries.

Do not create sparks or have open flame near a battery.

Ventilate the area when you charge a battery or use a battery in an enclosed area.

Disconnect the negative (-) terminal first and reconnect the negative (-) terminal last.

When you weld on the machine, disconnect both terminals of the battery.

Do not weld, grind, or smoke near a battery.

When you use auxiliary batteries or connect jumper cables to start the engine, use the procedure shown in the operator's manual. Do not short across terminals.

Follow the manufacturer's instructions when you store and handle batteries.

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

Battery acid causes burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for **15 min** and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.

Keep out of reach of children and other unauthorized persons.

Reflectors and warning lights

You must use hazard lights when you operate equipment on public roads.

Seat belts

Seat belts must be worn at all times.

Seat belt inspection and maintenance:

- Keep seat belts in good condition.
- Keep sharp edges and items that can cause damage away from the belts.
- Periodically check belts, buckles, retractors, tethers, slack take-up system, and mounting bolts for damage and wear.
- Replace all parts that have damage or wear.
- Replace belts that have cuts that can make the belt weak.
- Check that bolts are tight on the seat bracket or mounting.
- If the belt is attached to the seat, make sure that the seat or seat brackets are mounted securely.
- Keep seat belts clean and dry.
- Clean belts only with soap solution and warm water.
- Do not use bleach or dye on the belts because this can make the belts weak.

Backup alarm system

The backup alarm system starts buzzing when the machine moves in reverse direction to alert bystanders.

Personal Protective Equipment (PPE)

Wear Personal Protective Equipment (PPE) such as hard hat, eye protection, heavy gloves, hearing protection, protective clothing, etc.

Do Not Operate tag

Before you start servicing the machine, attach a 'Do Not Operate' warning tag to the machine in an area that will be visible.

Hazardous chemicals

If you are exposed to or come in contact with hazardous chemicals you can be seriously injured. The fluids, lubricants, paints, adhesives, coolant, etc. required for the function of your machine can be hazardous. They may be attractive and harmful to domestic animals as well as humans.

Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product, safe handling and storage procedures, first aid measures, and procedures to take in the event of a spill or accidental release. MSDS are available from your **CASE** Dealer.

Before you service your machine check the MSDS for each lubricant, fluid, etc. used in this machine. This information indicates the associated risks and will help you service the machine safely. Follow the information in the MSDS, and on manufacturer containers, as well as the information in this manual, when you service the machine.

Dispose of all fluids, filters, and containers in an environmentally safe manner according to local laws and regulations. Check with local environmental and recycling centers or your **CASE** Dealer for correct disposal information.

Store fluids and filters in accordance with local laws and regulations. Use only appropriate containers for the storage of chemicals or petrochemical substances.

Keep out of reach of children or other unauthorized persons.

Applied chemicals require additional precautions. Obtain complete information from the manufacturer or distributor of the chemicals before you use them.

Utility safety

When digging or using ground-engaging equipment, be aware of buried cables and other services. Contact your local utilities or authorities, as appropriate, to determine the locations of services.

Make sure that the machine has sufficient clearance to pass in all directions. Pay special attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety. Contact local authorities or utilities to obtain safe clearance distances from high voltage power lines.

Retract raised or extended components, if necessary. Remove or lower radio antennas or other accessories. Should a contact between the machine and an electric power source occur, the following precautions must be taken:

- Stop the machine movement immediately.
- Apply the parking brake, stop the engine, and remove the key.
- Check if you can safely leave the cab or your actual position without contact with electrical wires. If not, stay in your position and call for help. If you can leave your position without touching lines, jump clear of the machine to make sure that you do not make contact with the ground and the machine at the same time.
- Do not permit anyone to touch the machine until power has been shut off to the power lines.

Electrical storm safety

Do not operate machine during an electrical storm.

If you are on the ground during an electrical storm, stay away from machinery and equipment. Seek shelter in a permanent, protected structure.

If an electrical storm should strike during operation, remain in the cab. Do not leave the cab or operator's platform. Do not make contact with the ground or objects outside the machine.

Mounting and dismounting

Mount and dismount the machine only at designated locations that have handholds, steps, and/or ladders.

Do not jump off of the machine.

Make sure that steps, ladders, and platforms remain clean and clear of debris and foreign substances. Injury may result from slippery surfaces.

Face the machine when you mount and dismount the machine.

Maintain a three-point contact with steps, ladders, and handholds.

Never mount or dismount from a moving machine.

Do not use the steering wheel or other controls or accessories as handholds when you enter or exit the cab or operator's platform.

Working at heights

When the normal use and maintenance of the machine requires you to work at heights:

- Correctly use installed steps, ladders, and railings.
- Never use ladders, steps, or railings while the machine is moving.
- Do not stand on surfaces that are not designated as steps or platforms.

Do not use the machine as a lift, ladder, or platform for working at heights.

Lifting and overhead loads

Never use loader buckets, forks, etc. or other lifting, handling, or digging equipment to lift persons.

Do not use raised equipment as a work platform.

Know the full area of movement of the machine and equipment and do not enter or permit anyone to enter the area of movement while the machine is in operation.

Never enter or permit anyone to enter the area underneath raised equipment. Equipment and/or loads can fall unexpectedly and crush persons underneath it.

Do not leave equipment in raised position while parked or during service, unless securely supported. Hydraulic cylinders must be mechanically locked or supported if they are left in a raised position for service or access.

Loader buckets, forks, etc. or other lifting, handling, or digging equipment and its load will change the center of gravity of the machine. This can cause the machine to tip on slopes or uneven ground.

Load items can fall off the loader bucket or lifting equipment and crush the operator. Care must be taken when lifting a load. Use proper lifting equipment.

Do not lift load higher than necessary. Lower loads to transport. Remember to leave appropriate clearance to the ground and other obstacles.

Equipment and associated loads can block visibility and cause an accident. Do not operate with insufficient visibility.

Ecology and the environment

Soil, air, and water are vital factors of agriculture and life in general. When legislation does not yet rule the treatment of some of the substances required by advanced technology, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

NOTE: The following are recommendations that may be of assistance:

- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use, and dispose of these substances.
- Agricultural consultants will, in many cases, be able to help you as well.

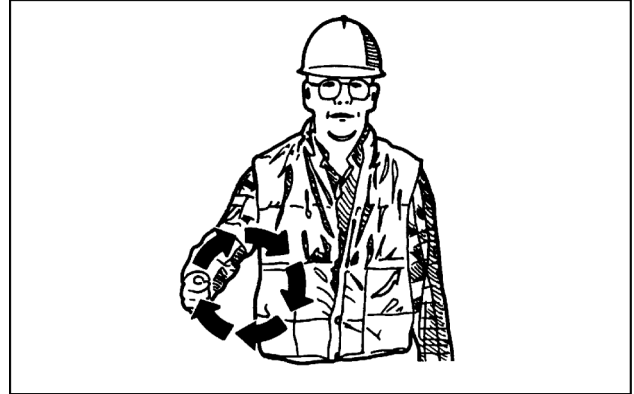
Helpful hints

- Avoid filling tanks using cans or inappropriate pressurized fuel delivery systems that may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when draining off used engine coolant mixtures, engine, gearbox and hydraulic coils, brake fluids, etc. Do not mix drained brake fluids or fuels with lubricants. Store them safely until they can be disposed of in a proper way to comply with local legislation and available resources.
- Modern coolant mixtures, i.e. antifreeze and other additives, should be replaced every two years. They should not be allowed to get into the soil, but should be collected and disposed of properly.
- Do not open the air-conditioning system yourself. It contains gases that should not be released into the atmosphere. Your **CASE** Dealer or air-conditioning specialist has a special extractor for this purpose and will have to recharge the system properly.
- Repair any leaks or defects in the engine cooling or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, allowing the loss of oils, coolant, etc.

Hand signals

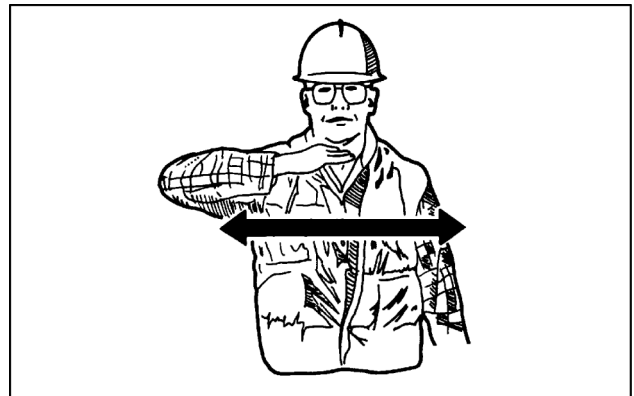
When operating the machine, never attempt to carry out tasks calling for fine control or to work in areas with poor visibility or during reverse travel, without seeking the assistance of a flagman. Make perfectly sure that you and the flagman understand the signals to be used. The flagman must always keep out of the machine's working area. The operator must always keep visual contact with the flagman, stop the machine immediately if the contact is lost.

1. Start the engine.



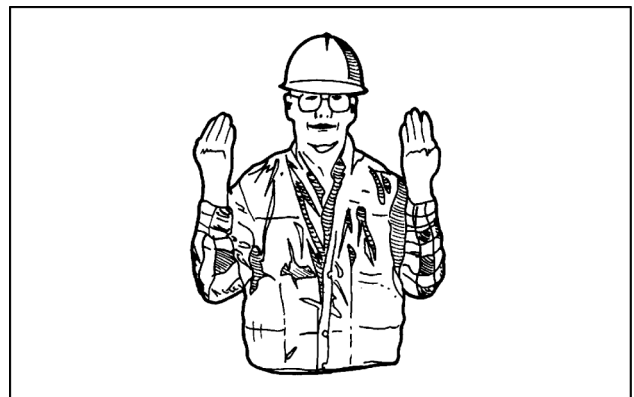
PTIL12TLB0342AA 1

2. Stop the engine.



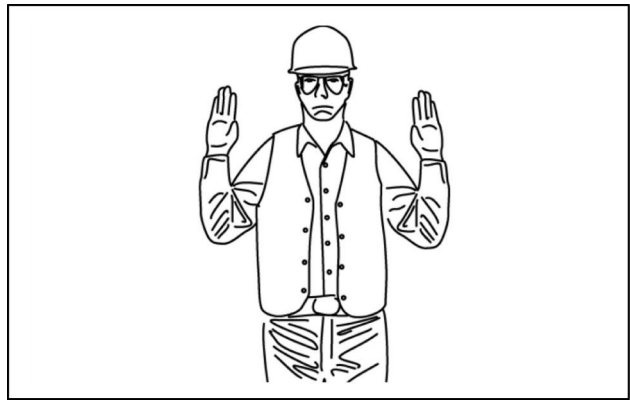
PTIL12TLB0345AA 2

3. Come to me.



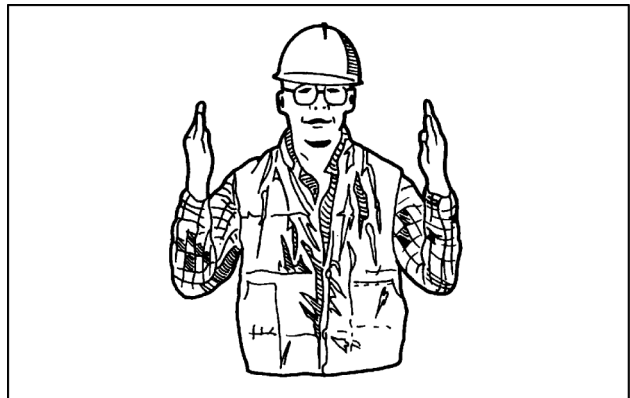
PTIL12TLB0323AA 3

4. Move away from me.



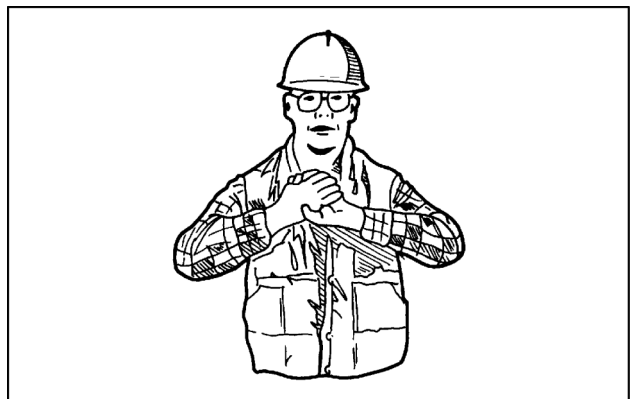
PTIL12TLB0329AA 4

5. Go this far.



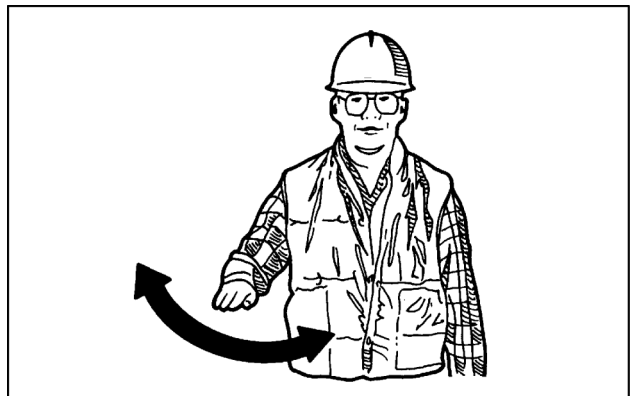
PTIL12TLB0337AA 5

6. Stop all and hold.



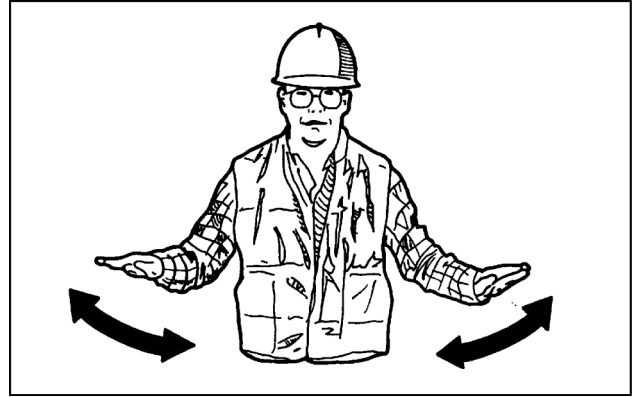
PTIL12TLB0344AA 6

7. Stop.



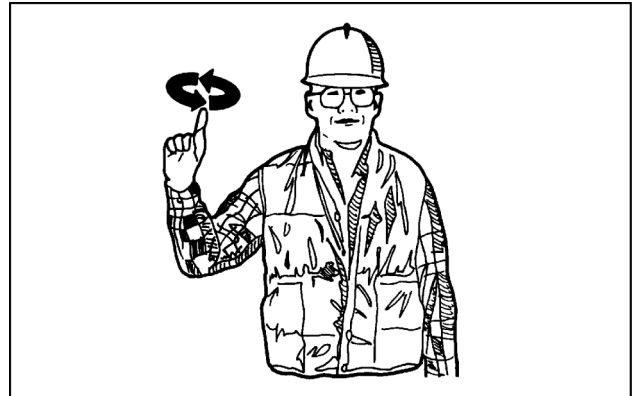
PTIL12TLB0343AA 7

8. Emergency stop.



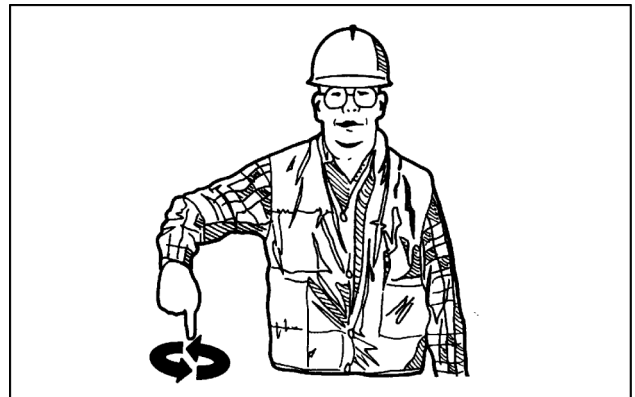
PTIL12TLB0331AA 8

9. Raise load or bucket.



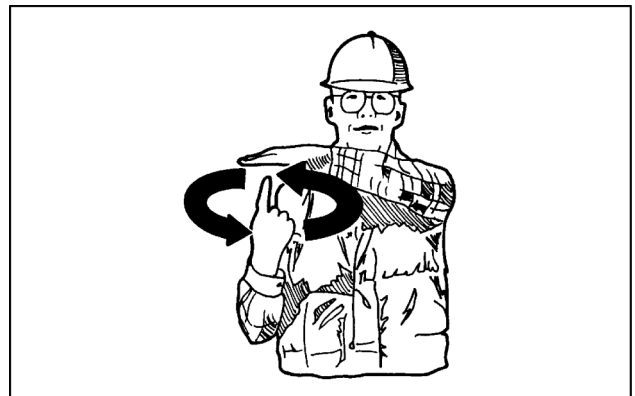
PTIL12TLB0339AA 9

10. Lower load or bucket.



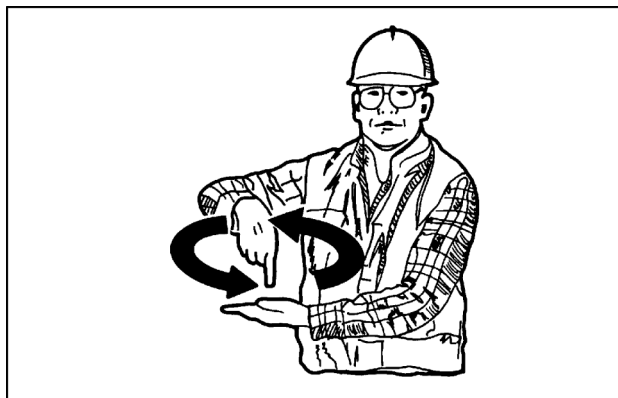
PTIL12TLB0334AA 10

11. Raise load or bucket slowly.



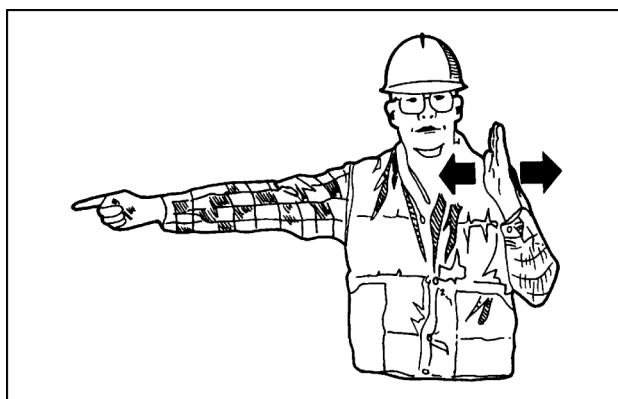
PTIL12TLB0340AA 11

12. Lower load or bucket slowly.



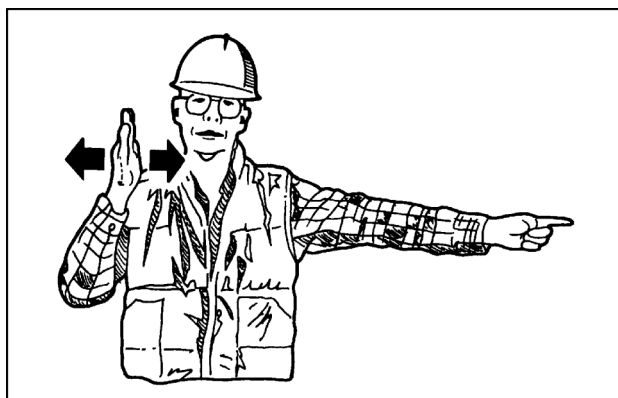
PTIL12TLB0335AA 12

13. Turn machine left.



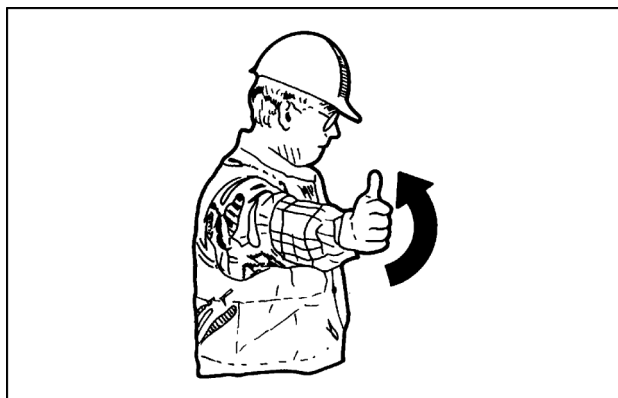
PTIL12TLB0346AA 13

14. Turn machine right.



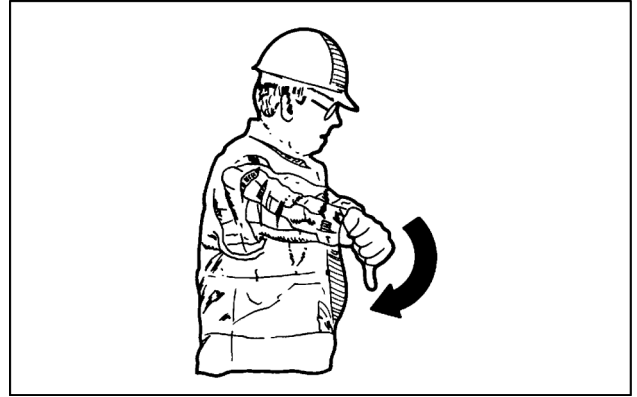
PTIL12TLB0347AA 14

15. Roll back loader bucket.



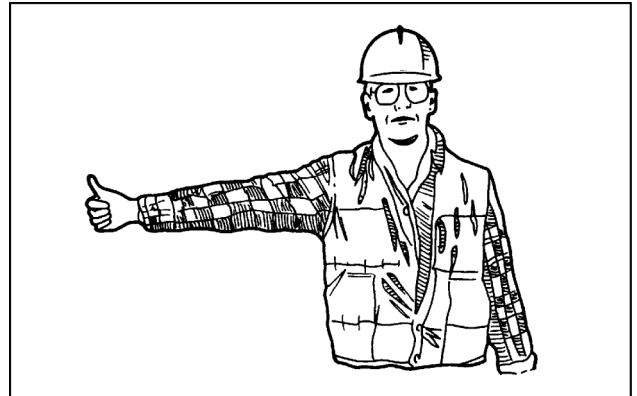
PTIL12TLB0341AA 15

16. Dump loader bucket.



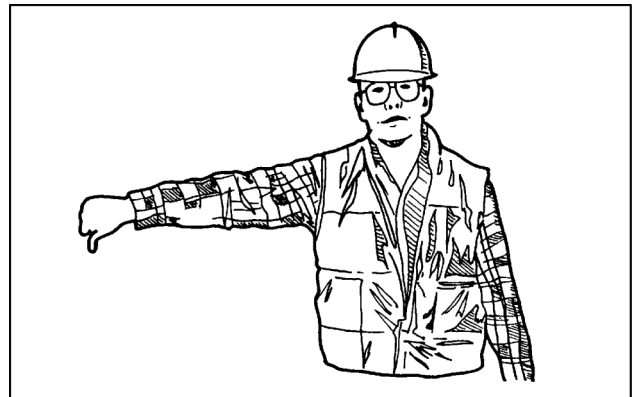
PTIL12TLB0330AA 16

17. Raise backhoe boom.



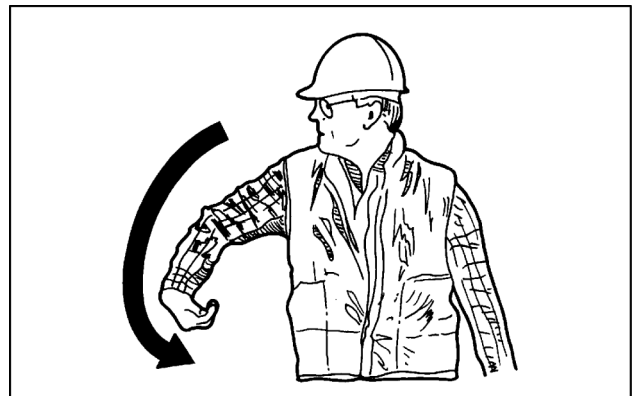
PTIL12TLB0338AA 17

18. Lower backhoe boom.



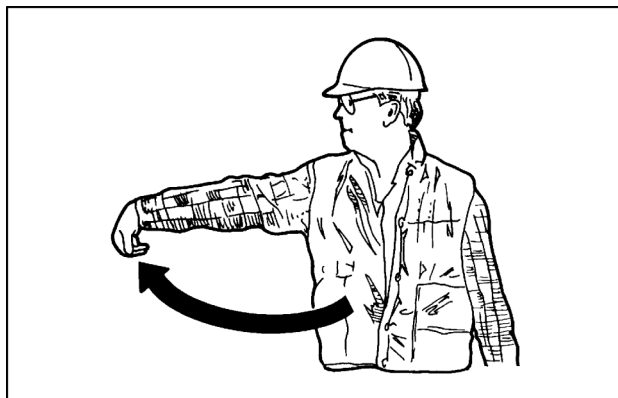
PTIL12TLB0333AA 18

19. Backhoe dipper in.



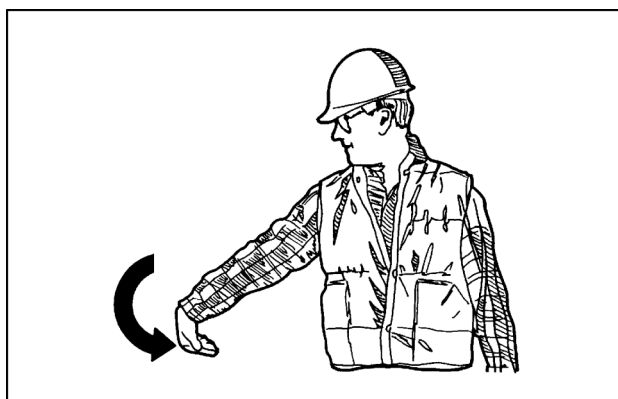
PTIL12TLB0324AA 19

20. Backhoe dipper out.



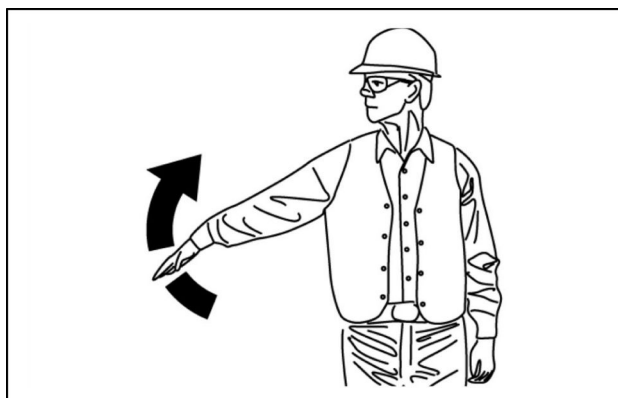
PTIL12TLB0327AA 20

21. Backhoe bucket dig.



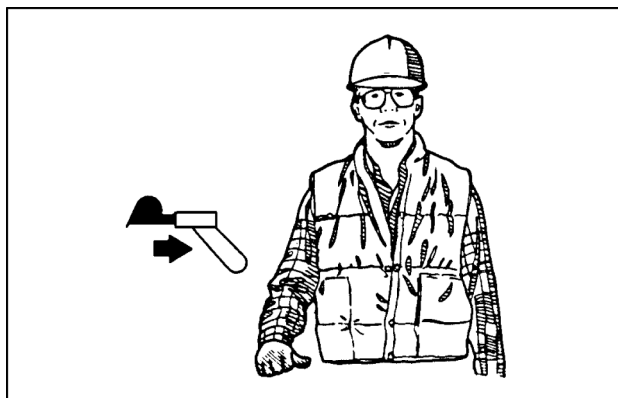
PTIL12TLB0326AA 21

22. Backhoe bucket dump.



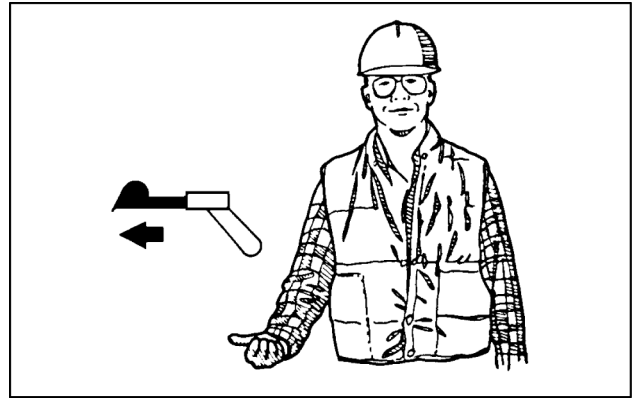
PTIL12TLB0325AA 22

23. Retract telescopic dipper (If fitted).



PTIL12TLB0322AA 23

24. Extend telescopic dipper (If fitted).



PTIL12TLB0332AA 24

Safety signs

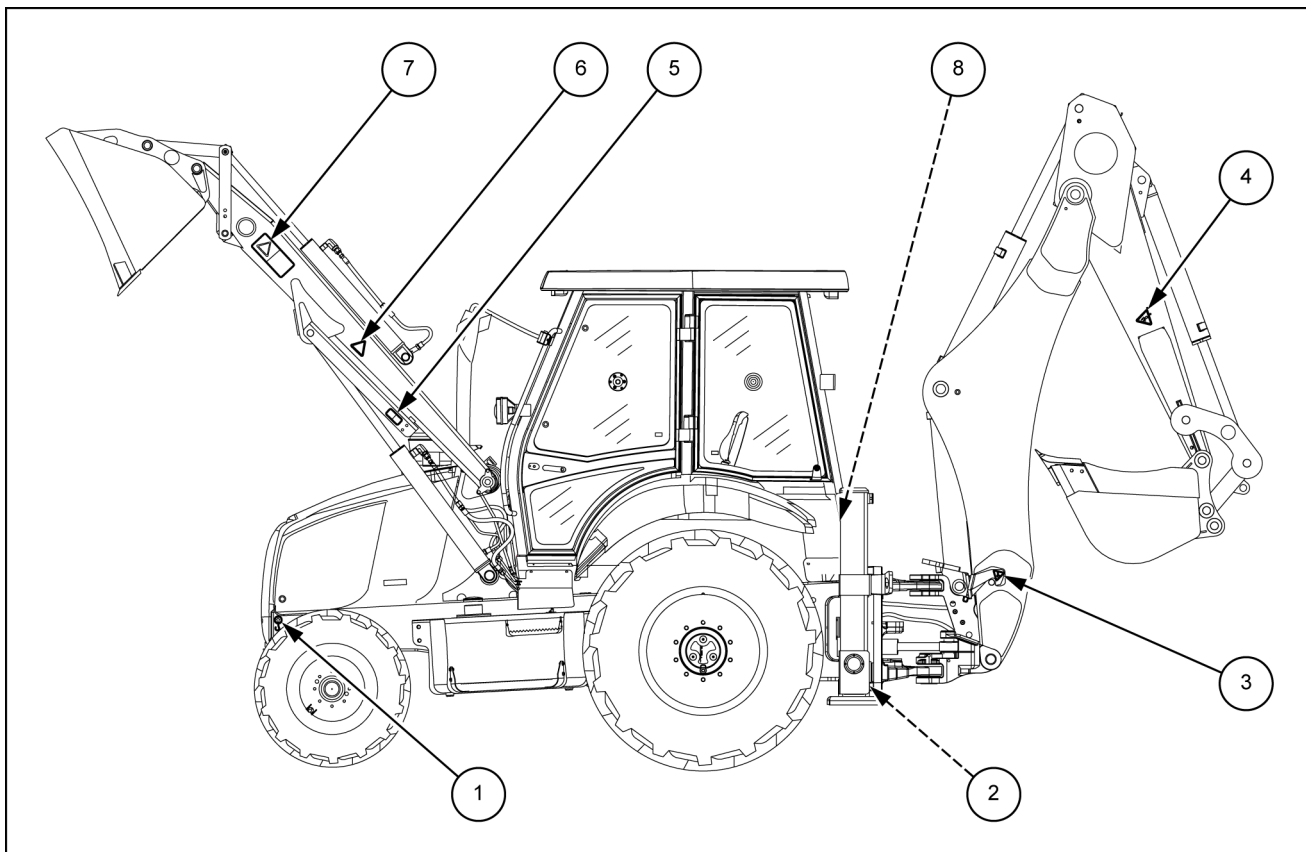
External decals

The following safety signs are placed on your machine as a guide for your safety and for those working with you. Walk around the machine and note the content and location of these safety signs before operating your machine.

Keep safety signs clean and legible. Clean safety signs with a soft cloth, water, and a gentle detergent. Do not use solvent, gasoline, or other harsh chemicals. Solvents, gasoline, and other harsh chemicals may damage or remove safety signs.

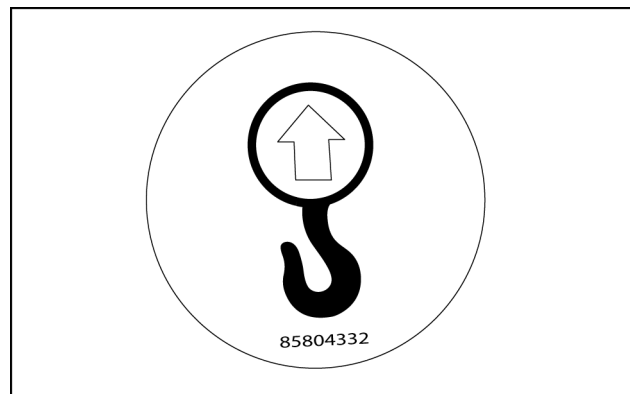
Replace all safety signs that are damaged, missing, painted over, or illegible. If a safety sign is on a part that is replaced, make sure the safety sign is installed on the new part. See your dealer for replacement safety signs.

Safety signs that display the "Read Operator's Manual" symbol are intended to direct the operator to the operator's manual for further information regarding maintenance, adjustments, or procedures for particular areas of the machine. When a safety sign displays this symbol, refer to the appropriate page of the operator's manual.



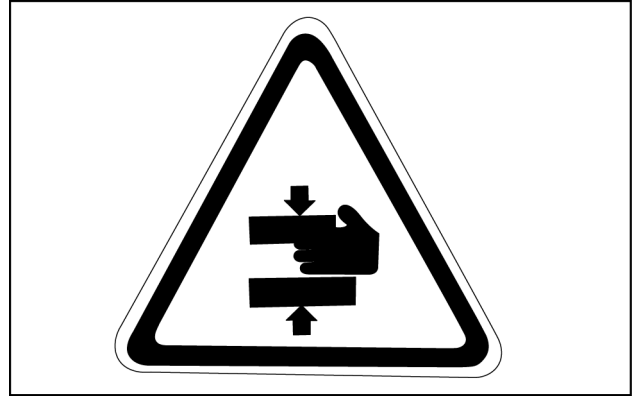
PTIL14TLB0012FB 1

1. Tow hook point



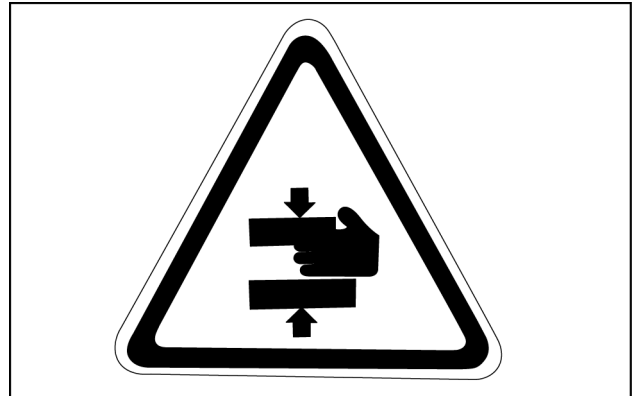
PTIL13TLB1445AA 2

2. Crushing hazard



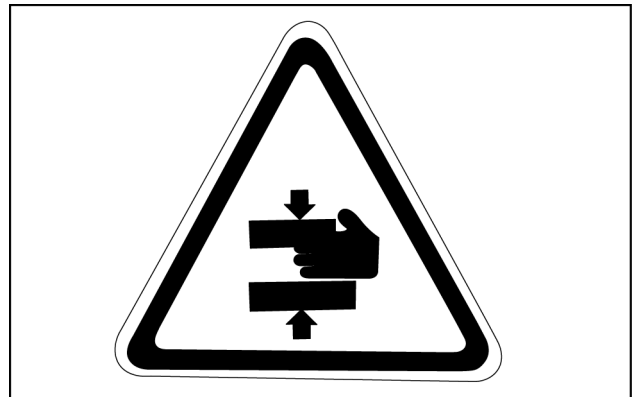
PTIL13TLB1433AA 3

3. Crushing hazard



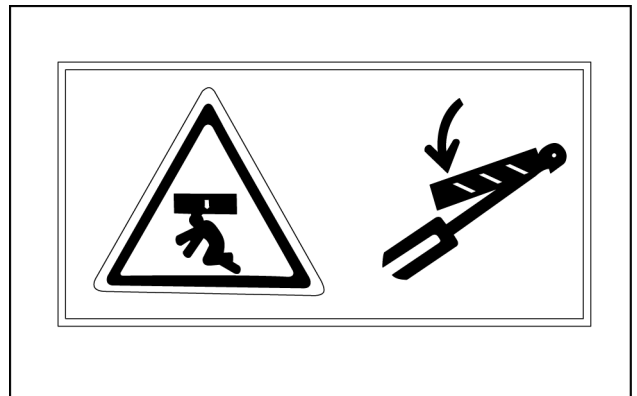
PTIL13TLB1433AA 4

4. Crushing hazard



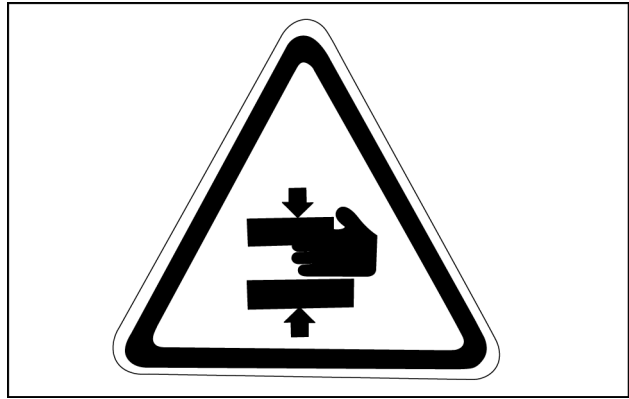
PTIL13TLB1433AA 5

5. Objects falling hazard



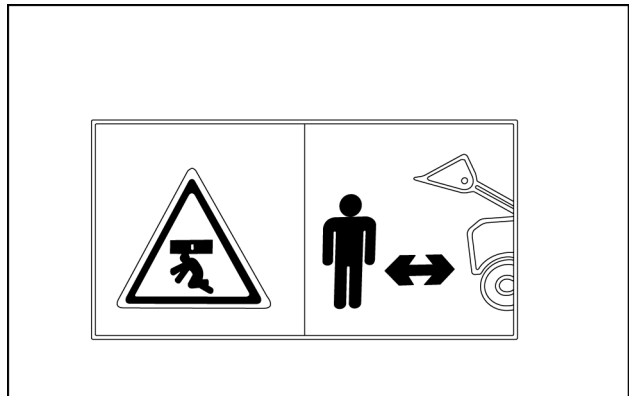
PTIL13TLB1434AA 6

6. Crushing hazard



PTIL13TLB1433AA 7

7. Falling objects, keep distance

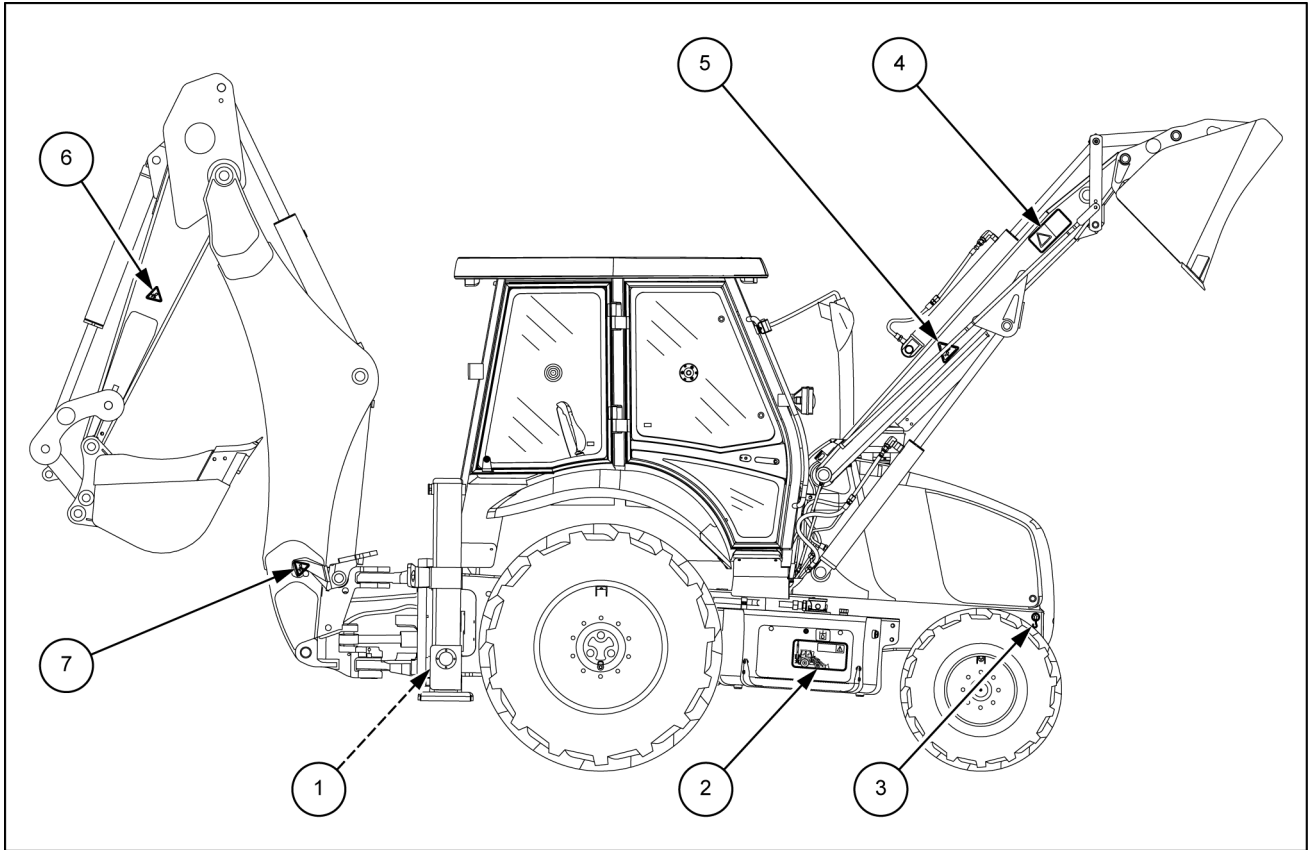


PTIL13TLB1437AA 8

8. Falling hazard

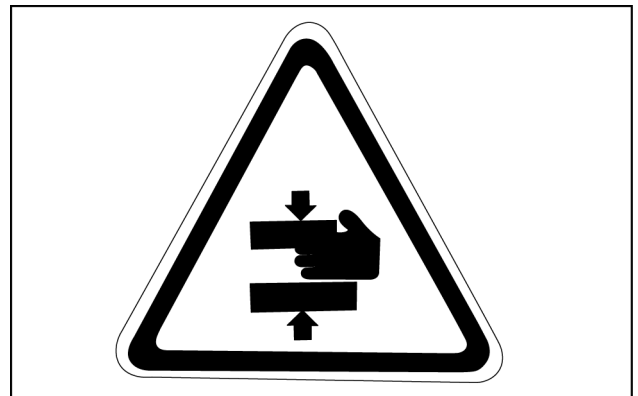


PTIL14TLB0053AA 9



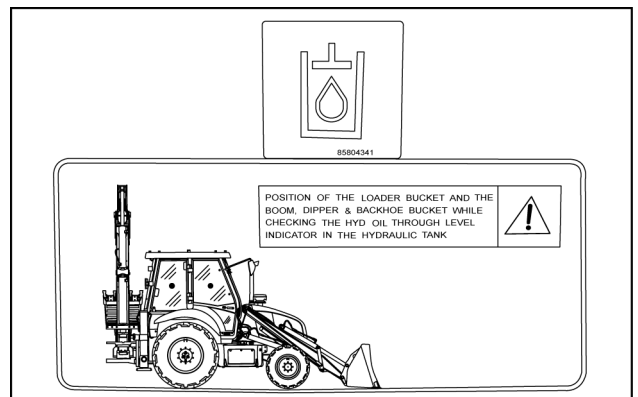
PTIL14TLB0013FB 10

1. Crushing hazard



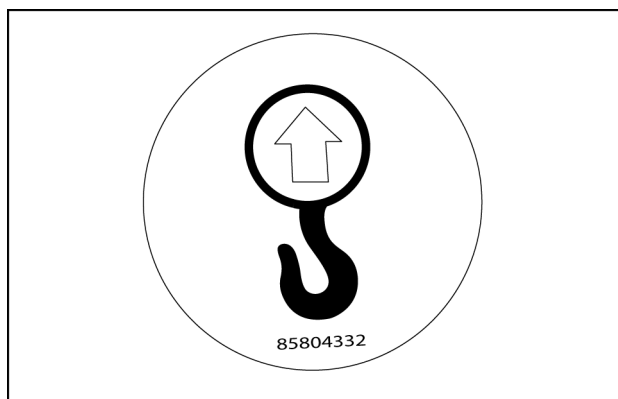
PTIL13TLB1433AA 11

2. Hyd oil level check



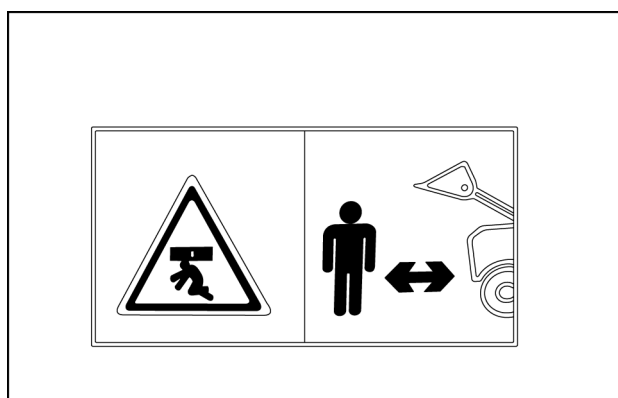
PTIL14TLB0014AA 12

3. Tow hook point



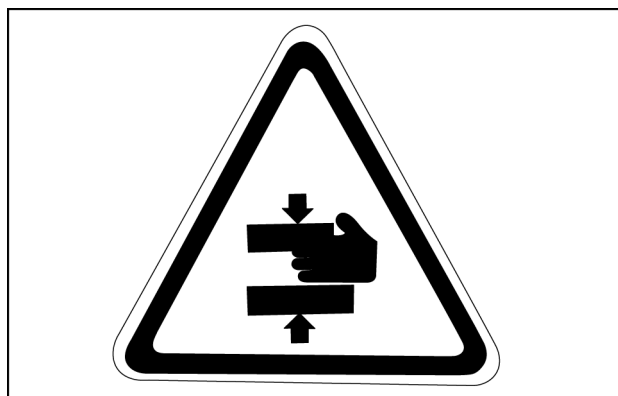
PTIL13TLB1445AA 13

4. Falling objects, keep distance



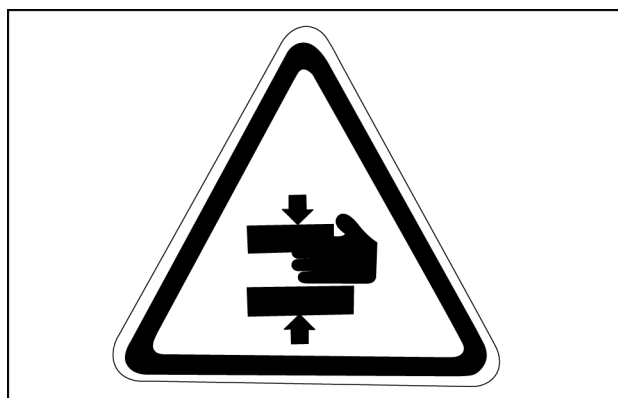
PTIL13TLB1437AA 14

5. Crushing hazard



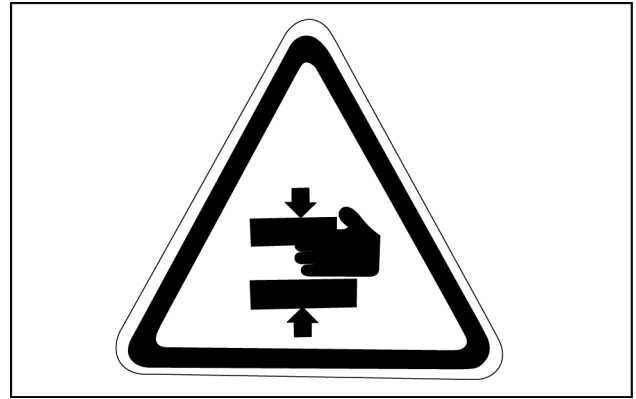
PTIL13TLB1433AA 15

6. Crushing hazard



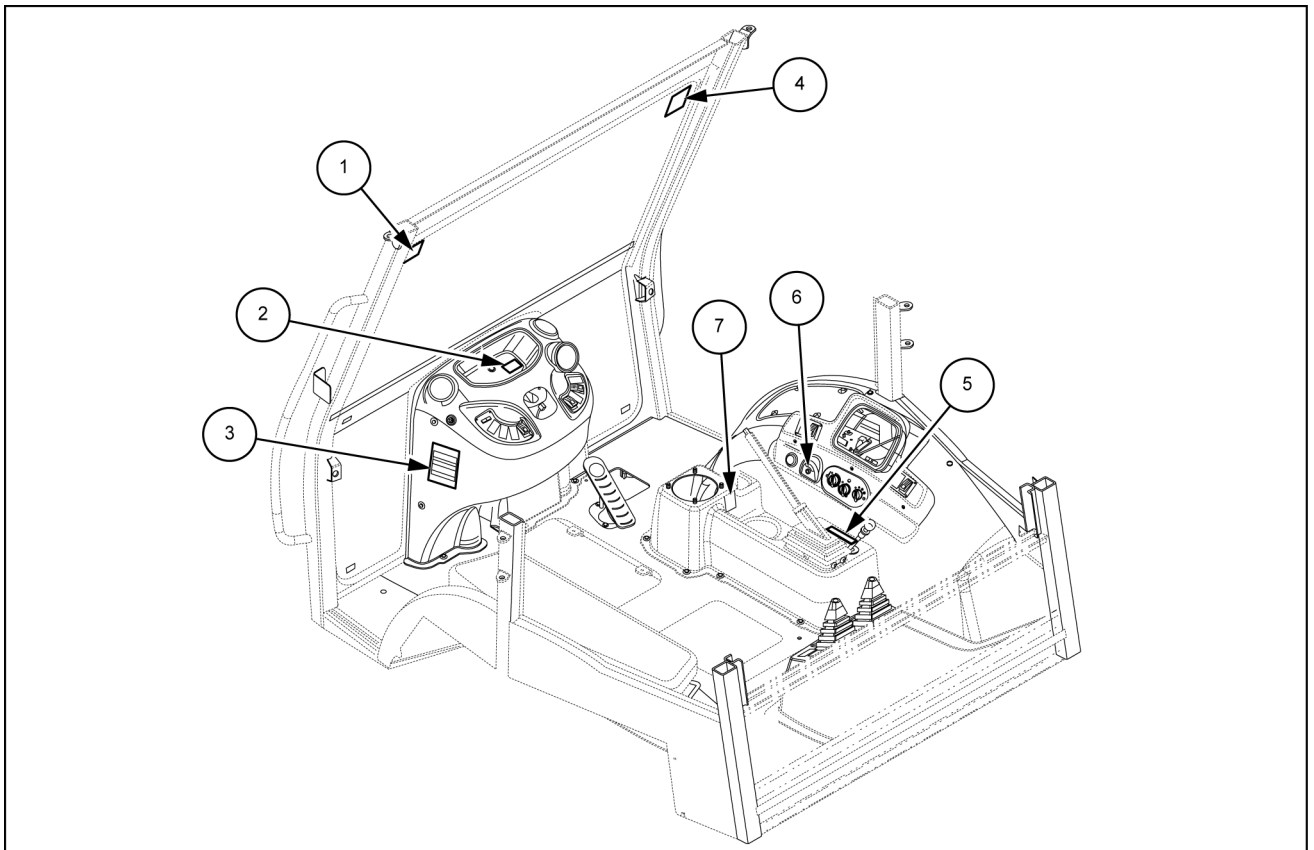
PTIL13TLB1433AA 16

7. Crushing hazard



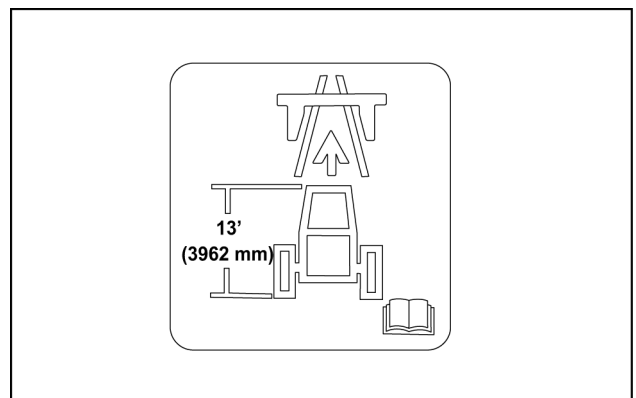
PTIL13TLB1433AA 17

Internal decals



PTIL14TLB0061FB 18

1. Height warning

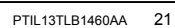


PTIL14TLB0059AA 19

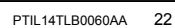
2. Brake fluid level warning



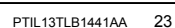
3. Maintenance information



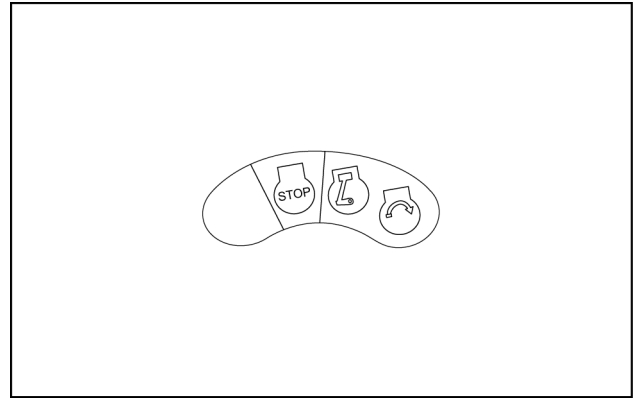
4. Refer operator's manual



5. Throttle lever position

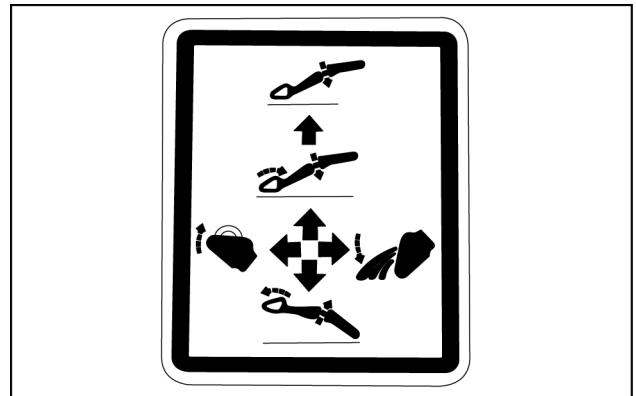


6. Ignition key position

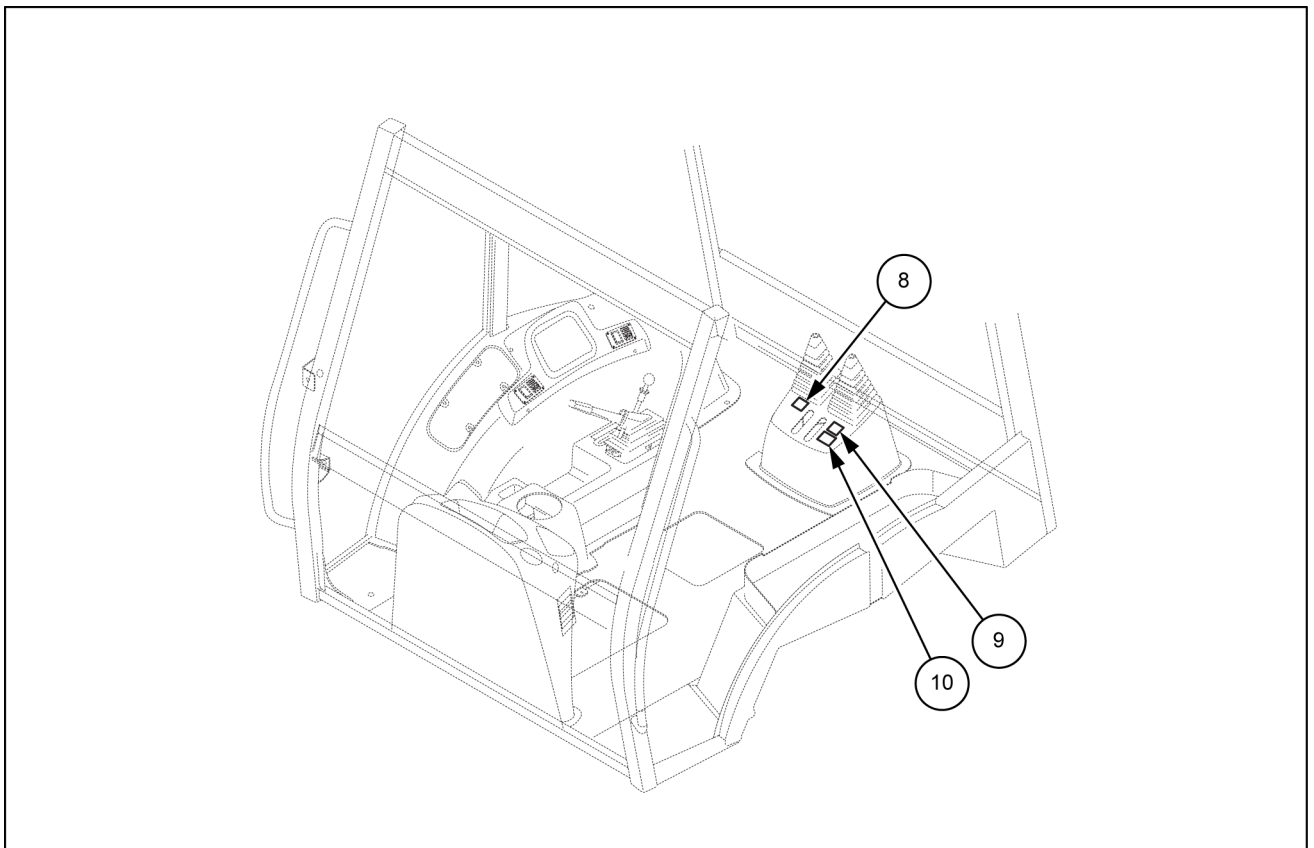


PTIL12TLB0490AA 24

7. Loader operation

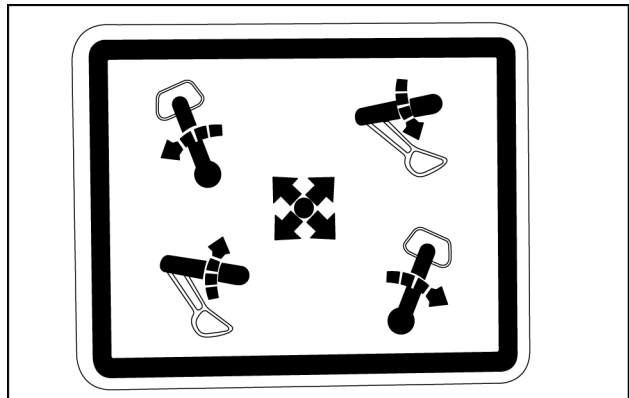


PTIL13TLB1444AA 25



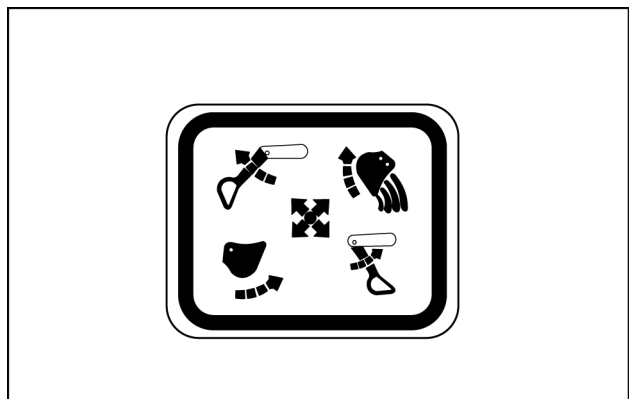
PTIL12TLB0472FB 26

8. Boom control



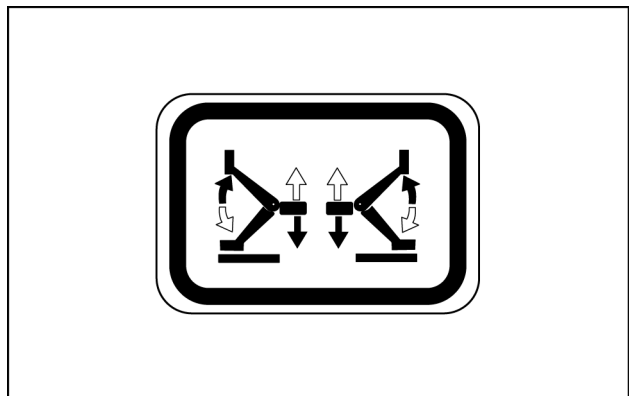
PTIL13TLB1443AA 27

9. Dipper control



PTIL12TLB0488AA 28

10. Stabilizer control



PTIL12TLB0489AA 29

3 - CONTROLS AND INSTRUMENTS

ACCESS TO OPERATOR'S PLATFORM

Access to operator's platform

Use the steps (1) and access handles (2) when entering or leaving the operator's compartment.

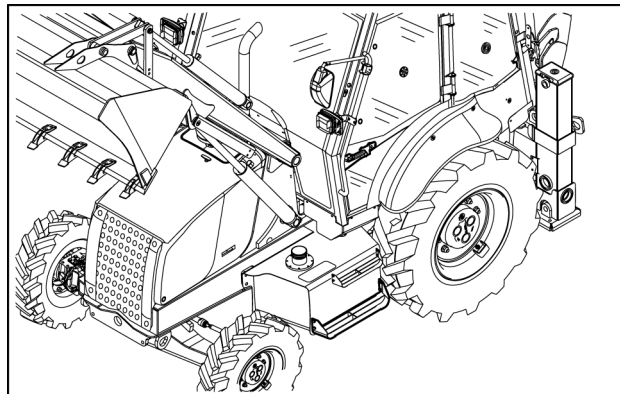
⚠ CAUTION

Fall hazard!

When entering or exiting the cab, never use the control levers as handholds. Always mount and dismount the machine in a safe way. Maintain a three-point contact with steps, ladders, and/or handholds.

Failure to comply could result in minor or moderate injury.

C0075B



PTIL14TLB0015AB 1

⚠ WARNING

Fall hazard!

Clean the steps and access handles to remove all traces of grease, oil, mud, and ice (in winter).

Failure to comply could result in death or serious injury.

W0139A

Doors

To open the doors from the outside, push the lock (1) fully and simultaneously pull the handle (2). Lift the handle (3) to open the doors from the inside.

NOTICE: Use the left-hand door for entering or leaving the operator's compartment. Use the right-hand door only in case of an emergency.

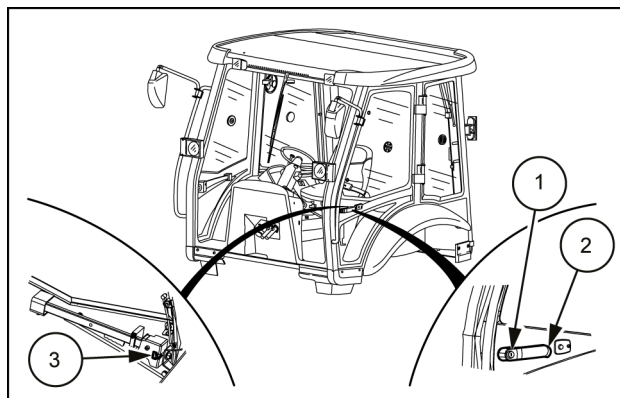
⚠ WARNING

Moving parts!

Make sure all entry and mechanical access doors are properly closed before operating the machine.

Failure to comply could result in death or serious injury.

W0238A



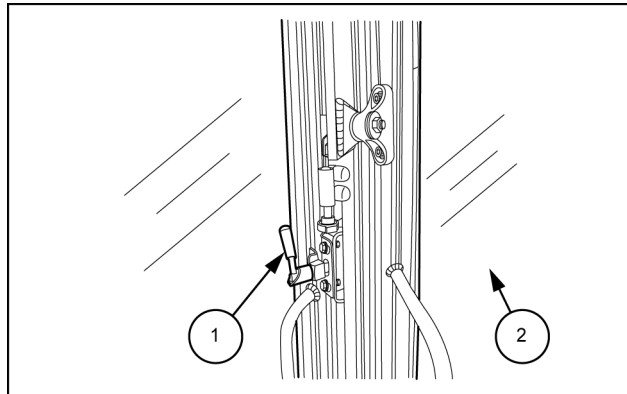
PTIL14TLB0016AB 2

NOTE: Use the starter switch key to lock the doors.

Windows

Rear windows

Turn the handle (1) on either side to unlock the window (2). Push the window outwards and upwards simultaneously to open it until it engages with the locking device.



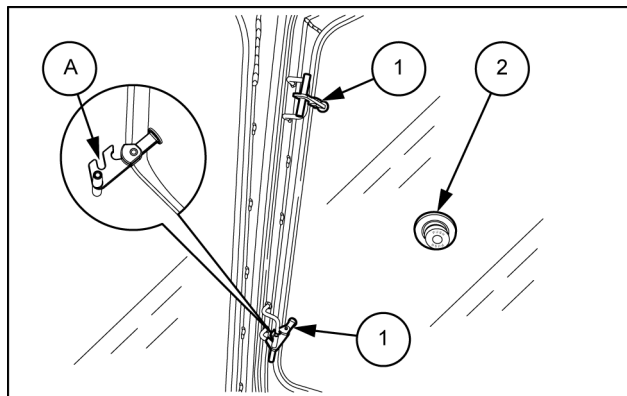
PTIL12TLB0189AB 3

Side windows

Unlock the top and bottom locks (1) and swing the window outwards. The windows can be partially opened and locked to the door with the help of the slot (A) in the lock.

The windows can also be completely opened and locked to the side rear windows with the help of a locking mechanism (2).

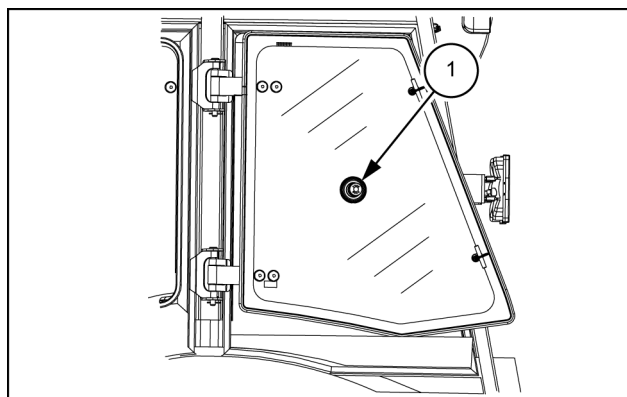
NOTICE: Make sure the window is completely locked.



PTIL14TLB0055AB 4

Press the lock (1) to release the window from the locking mechanism. Swing the window inwards and lock the window to the door.

NOTICE: Make sure the window is completely locked.

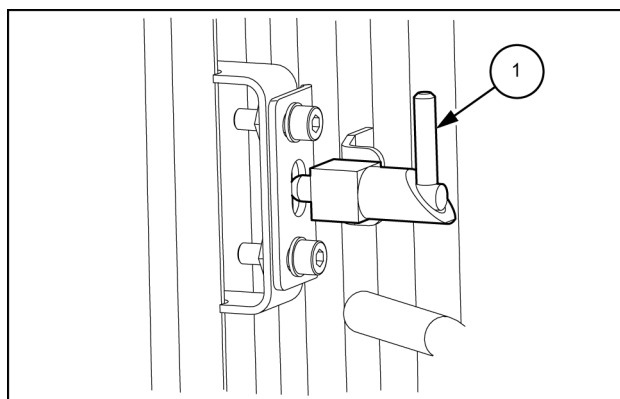


PTIL14TLB0054AB 5

Side rear windows

Turn the lock (1) downwards and swing the window outwards using handle. The windows can be completely opened and locked to the front windows with the help of a locking mechanism.

NOTICE: Make sure the window is completely locked.



PTIL12TLB0045AB 6

OPERATOR'S SEAT

Operator's seat

To operate the machine correctly with maximum efficiency and comfort, check that the operator's seat and its adjustment controls are in good condition and then adjust the seat to suit the operator's height.

NOTE: Before using the controls, make sure that the seat is adjusted and positioned correctly.



PTIL12TLB0047AB 1

Standard seat

Armrest angle adjustment

Raise the armrest, turn the knob (1) to obtain the desired armrest position and then lower the armrest.

Seat belt

To attach the seat belt (7), insert the buckle into the socket (2). To release the belt, press the button on the socket.

NOTICE: Always fasten your seat belt before starting the engine. The seat belt will protect you efficiently if you attach it correctly and if you always wear it. The seat belt must not be too loose. It must not be twisted or caught in the seat.

Seat back angle adjustment

To adjust the seat back angle push and hold the lever (3) down and move the seat back to obtain the desired position and then release the lever.

Height adjustment

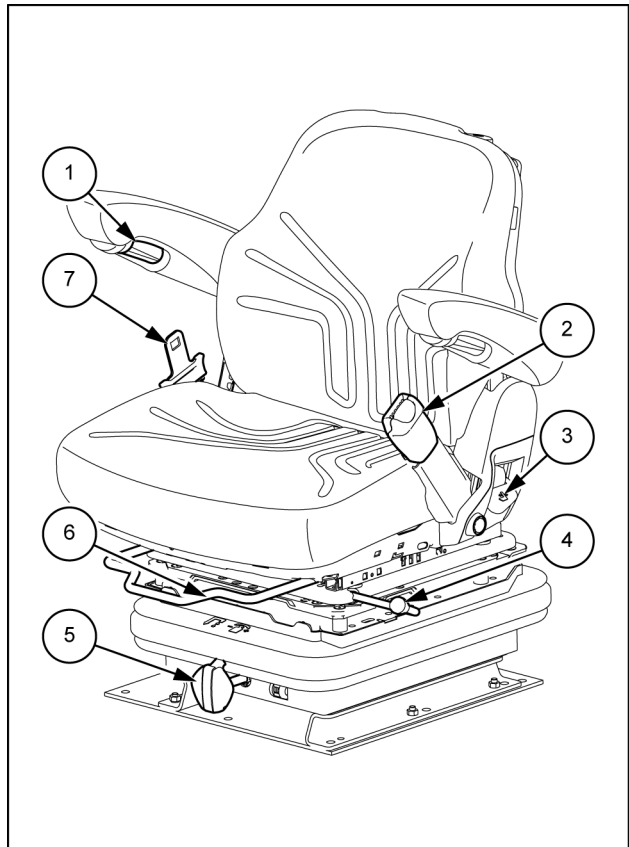
Adjustment may be made to suit the operator's height. Turn the control (5) to obtain the desired height.

Seat fore-and-aft adjustment

Hold the lever (6) in raised position, slide the seat until the desired position is reached and then release the lever.

Swing

Release the seat using lever (4) and swing it round. Release the lever and make sure the seat is locked correctly in place.



PTIL14TLB0050BB 2

FORWARD CONTROLS

Front controls

Starter switch key

⚠ WARNING

Misuse hazard!

Before starting the engine, make sure you are fully aware of the location and the function of each control.

Failure to comply could result in death or serious injury.

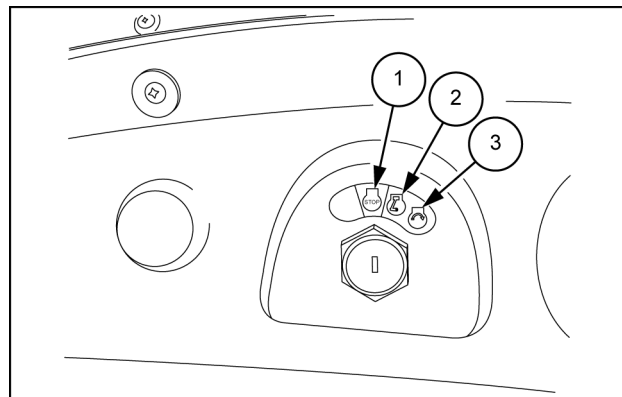
W0226A

Located on the right of the operator's seat (with seat in loader attachment position), this switch has three positions:

Position "1": OFF

Position "2": Ignition ON

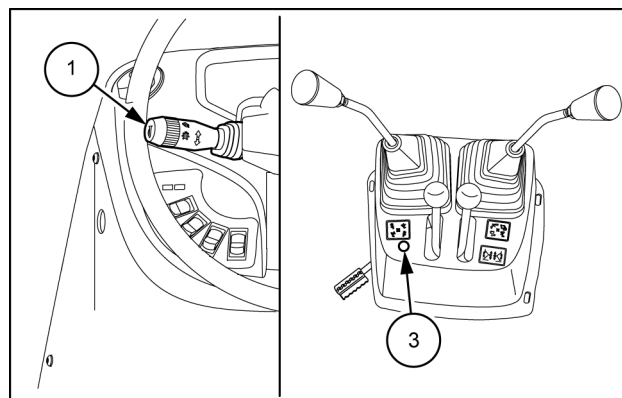
Position "3": START



PTIL12TLB0056AB 1

Horn button

To sound the horn, press the button (1) on the combination switch (3) on the backhoe lever console.



PTIL12TLB0057AB 2

Throttle lever

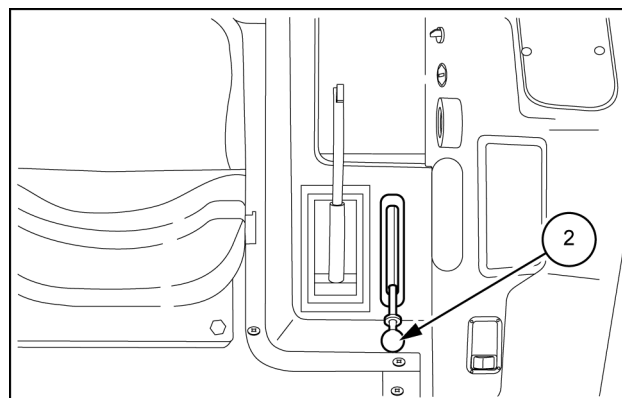
The throttle lever (2) enables the engine speed to be increased or decreased during backhoe operation.

The knob provided at the top of the lever acts as a lock.

Lift the knob and move the lever to increase the speed.

Release the knob and lower the lever to decrease the speed.

NOTICE: Never use the throttle lever (2) during travel on public highways.



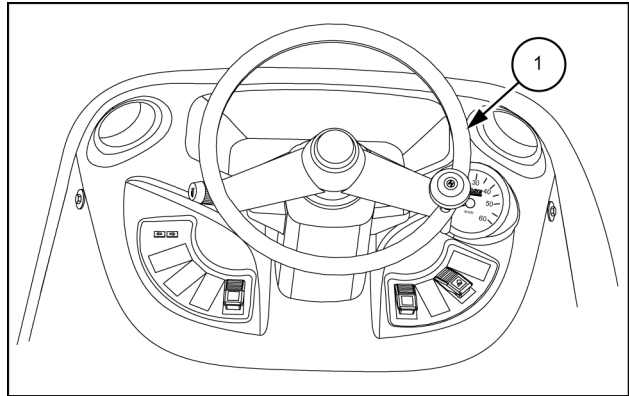
PTIL12TLB0430AB 3

Steering column

The machine is equipped with a hydrostatic power steering, which considerably reduces the effort necessary to turn the steering wheel (1). Familiarize yourself with the effort required to turn the wheel before driving the machine for the first time.

NOTICE: Because your machine is equipped with hydrostatic power steering, never hold the steering wheel against either of the steering stops. Failure to observe this precaution may result in damage to the steering system components.

NOTICE: In case of a broken steering hose, the machine cannot be steered, stop the machine immediately and contact your **CASE Dealer**.



PTIL12TLB0059AB 4

In the event of loss of power to steering due to engine failure, the machine can still be towed to a place of safety. The force necessary to turn the steering wheel and steer the machine will, however, be much higher.

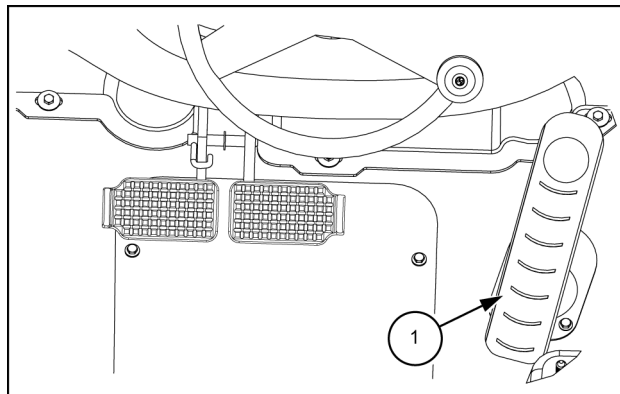
Pedal controls

Engine accelerator

This pedal (1) enables the engine speed to be increased or decreased. Press the pedal to increase the engine speed. Release the pedal to reduce the engine speed. This pedal is used for travel and for operating the loader attachment.

NOTE: This pedal is coupled with the engine accelerator lever. Before using the pedal, make sure that the accelerator lever is in the minimum speed position.

NOTE: Never use this pedal when working with the backhoe attachment.



PTIL12TLB0061AB 1

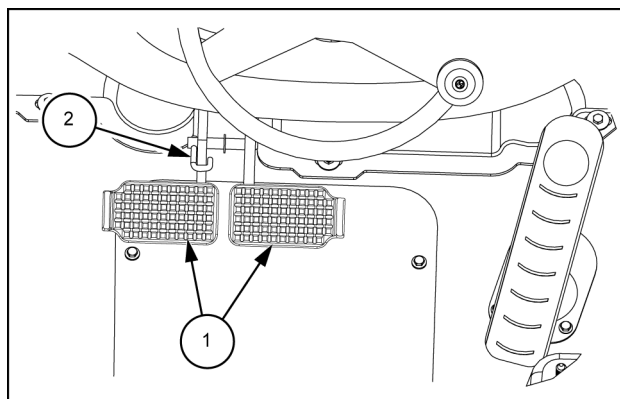
Brake pedals

Located next to the accelerator pedal, these two pedals (1) are equipped with a lock (2) which enables them to be locked together. This enables the operator to brake both the wheels together when locked or individually when unlocked.

In unlocked position pressing the left pedal will brake only the left wheel and pressing the right pedal will brake only the right wheel.

Braking with only one pedal should be carried out at low speeds. This system enables to take sharp turns in tight circle.

To lock the two pedals together, tilt the latch so it engages on the right-hand pedal.



PTIL12TLB0062AB 2

Parking brake lever

The parking brake is a mechanical link with lever type.

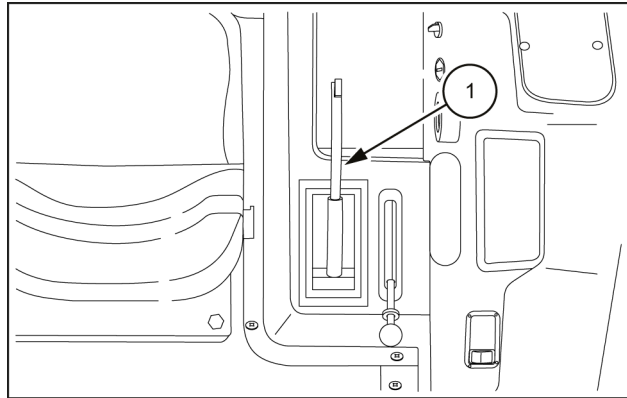
⚠ WARNING

Loss of control hazard!

To prevent inadvertent machine movement, take care to avoid accidental contact with the gearshift levers. Always stop the engine, firmly apply the parking brake, and place all gearshift levers in neutral before leaving the machine.

Failure to comply could result in death or serious injury.

W0130A



PTIL12TLB0439AB 3

The parking brake should be applied if the engine is stopped. Lift the lever (1) up and backwards to engage the parking brake. The warning light on side instrument control will come on.

Press the button on top of the lever and slide the lever down to disengage the parking brake. The warning lamp (2) on the side instrument turns Off.

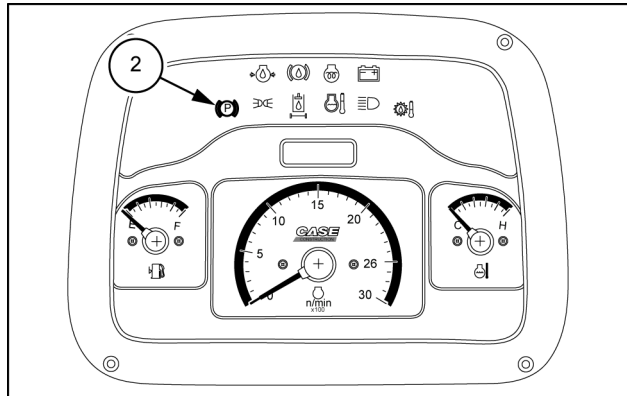
⚠ WARNING

Avoid injury and/or machine damage!

Apply the parking brake only when the machine is stationary. While driving, apply the parking brake only in an emergency. The braking action is abrupt.

Failure to comply could result in death or serious injury.

W1132A



PTIL14TLB0003AB 4

Transmission controls

Power-Shuttle

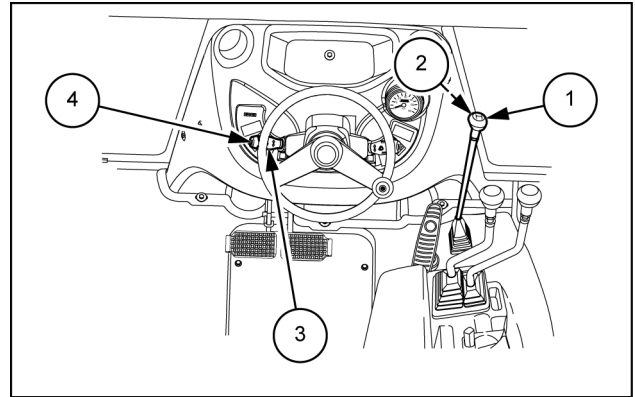
1. Gearshift lever: It is possible to select four forward and four reverse travel gears.
2. Transmission disconnect button (on gearshift lever): Prior to changing gear press and hold down this switch which disengages transmission drive, select the required gear with the gearshift lever and release the switch to reengage drive.
3. Direction lever: The movement of this lever from the neutral position will engage the forward or reverse travel.

NOTE: In reverse gear a reverse buzzer sounds. Also the warning lights are "ON" in the tail lamp.

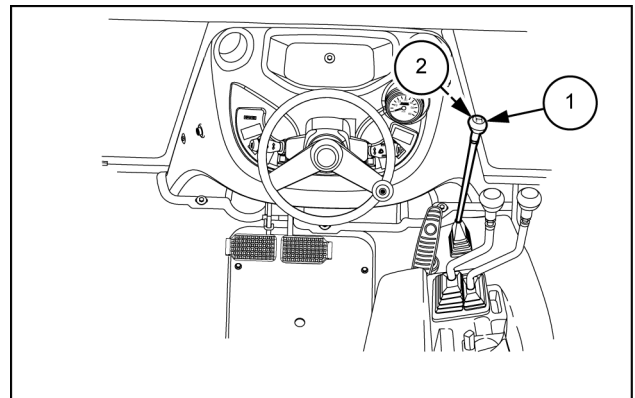
4. Horn button.

A device for "transmission disconnection" is activated by pushing button (2), placed on the gearshift lever (1).

NOTICE: Always apply the parking brake whenever the machine is parked as the machine is free to roll even though the transmission gearshift lever may be "In Gear" and the engine is turned "OFF".



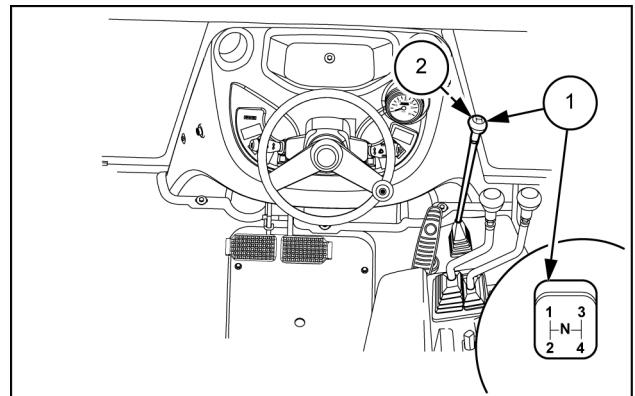
PTIL14TLB0223AB 1



PTIL14TLB0224AB 2

Gearshift lever

The single gearshift lever (1) is used to select any of the four gear ratios. The transmission disconnect button (2) is depressed and held as the lever is shifted from one gear to another and then released to re-connect transmission drive.



PTIL14TLB0225AB 3

Forward/reverse Power-Shuttle lever (travel direction change)

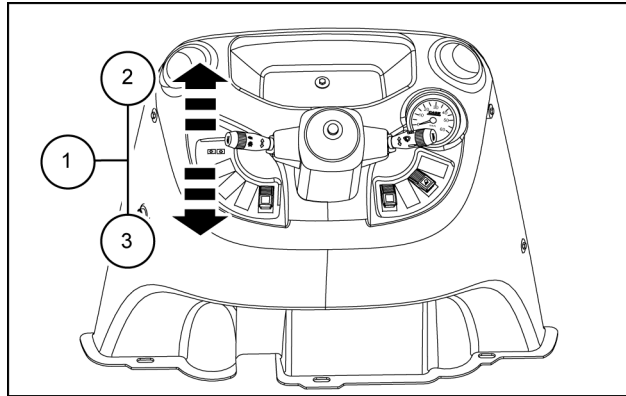
To select the forward travel, engage the required gear ratio with the gearshift lever, with the engine idling, shift the Power-Shuttle lever from the neutral lock position (1) to the forward position (2). Use the accelerator pedal to control the engine rpm and the ground speed.

To reverse the direction of travel, reduce engine speed and shift the Power-Shuttle lever from the neutral lock position (1) rearwards (3). For reverse travel an audible alarm device sounds.

NOTICE: The Power-Shuttle lever is equipped with a neutral lock to prevent an accidental engagement of the transmission. With this design, the Power-Shuttle lever moves through a "T" slot to the forward or reverse positions.

NOTICE: When operating at low environmental temperatures with cold transmission oil, allow the oil to warm up before attempting to shift the Power-Shuttle lever. The transmission can be shifted normally after the oil warms up.

NOTICE: The Power-Shuttle lever can be shifted at any engine speed, however, as a safety and precautionary measure, the engine must run at approximately **1200 RPM**. This action is easily controlled by using the foot accelerator.



PTIL12TLB0067AB 4

Transmission disconnection

The 4F - 4R transmission provides for easy upward and downward gear ratio changes on the move. However, as a clutch is not used between the engine and transmission, the power flow from the engine to the transmission must be interrupted to shift from one gear ratio to another. This is accomplished by using a transmission disconnect (dump) button. The finger operated button (2) on the main gearshift lever knob (1) is easy to operate.

⚠ WARNING

Loss of control hazard!

Do not depress the transmission pressure release button or attempt to take the machine out of gear when going up or down a hill. Avoid "free wheeling."

Failure to comply could result in death or serious injury.

W1222A

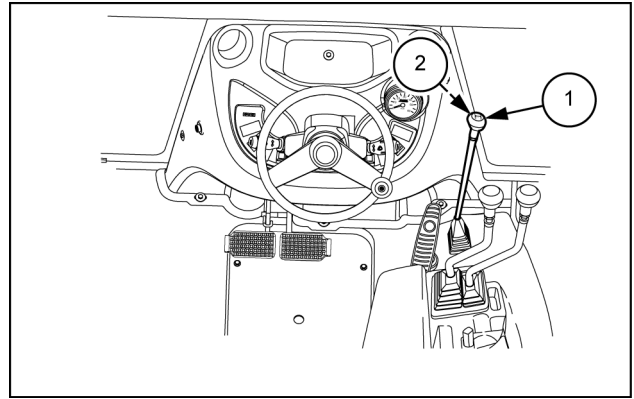
To make upward gear ratio changes simply press and hold the button (2) on the gearshift lever knob (1), while moving the lever from one gear ratio to another. When the desired gear ratio has been selected, release the button and allow the unit to gain speed. If another ratio is required repeat the procedure.

NOTICE: To prevent possible damage to the transmission hydraulic clutches, never use the disconnect switch for inching the machine forward. Inching the machine forward with the button will cause the clutches to slip excessively and overheat.

To make downward gear ratio changes or reduce ground speed, simply lower the engine speed, depress and hold the gearshift lever button and downshift the transmission. When the desired gear ratio has been selected release the button and adjust the engine speed to suit ground speed required. Operating the machine in too high a gear under a heavy load will cause the torque converter to slip excessively and overheat. If engine is overloaded the converter will slip and stall bringing the machine to a complete stop. If the machine is overloaded, the engine speed will not exceed a range of **1800 - 2200 RPM** at maximum accelerator and the torque converter will “stall”, bringing the machine to a complete stop.

If “stall” does occur, there is still sufficient engine power to operate the loader attachment, however, to prevent the transmission from overheating, either reduce the load on the machine or select a lower gear ratio.

NOTICE: Operating in stalled condition for more than **20 s** can cause the transmission to overheat and possibly damage the transmission. Shift both the Power- Shuttle lever and the gearshift lever to neutral. Let the engine run at idle until transmission oil cools down enough to have the transmission temperature warning light go off, all operations can now be resumed.



PTIL14TLB0224AB 5

RIGHT-HAND SIDE CONTROLS

Right hand side controls

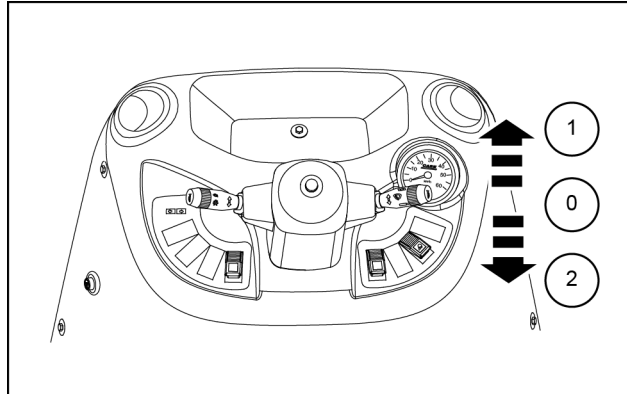
Lever for direction indicators, main beam and front windshield wiper

Located on the right of the steering wheel, this lever has four positions:

Position "0": Neutral

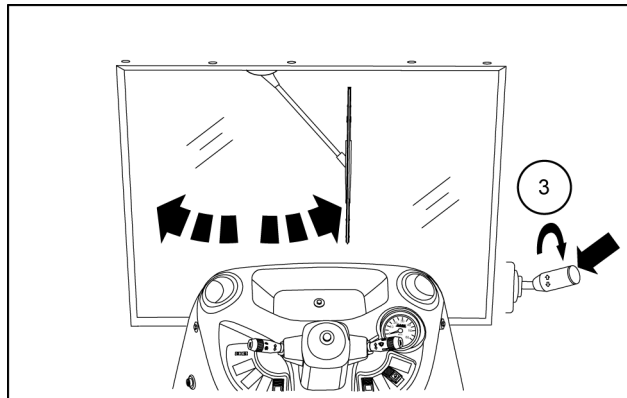
Position "1": The left-hand direction indicators and the direction indicator lamp under the steering wheel flash at the same speed.

Position "2": The right-hand direction indicators and the direction indicator lamp under the steering wheel flash at the same speed.



PTIL12TLB0071AB 1

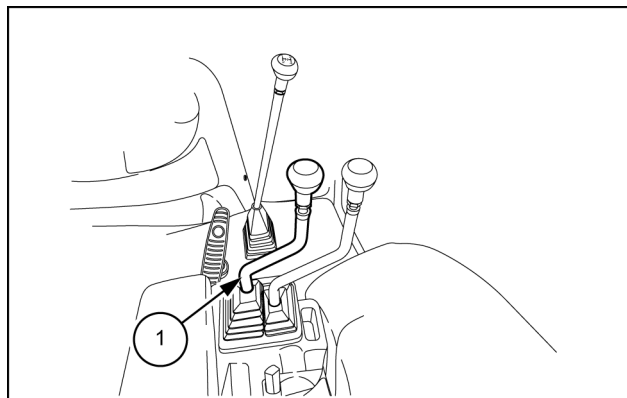
Position "3": Turn the knob of the handle clockwise to activate the front windshield wiper.



PTIL12TLB0072AB 2

Loader attachment control lever

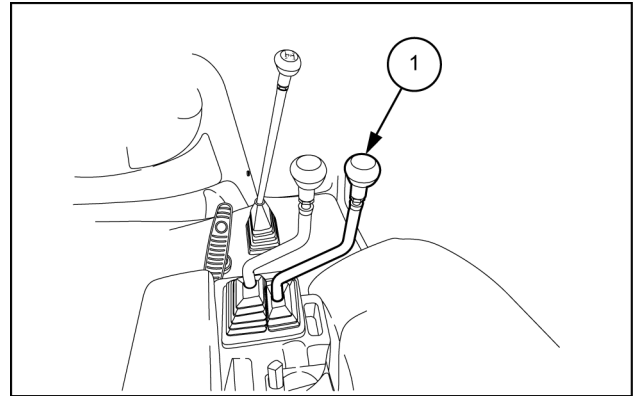
1. Loader attachment control lever.



PTIL14TLB0221AB 3

Bottom dump bucket control lever (optional)

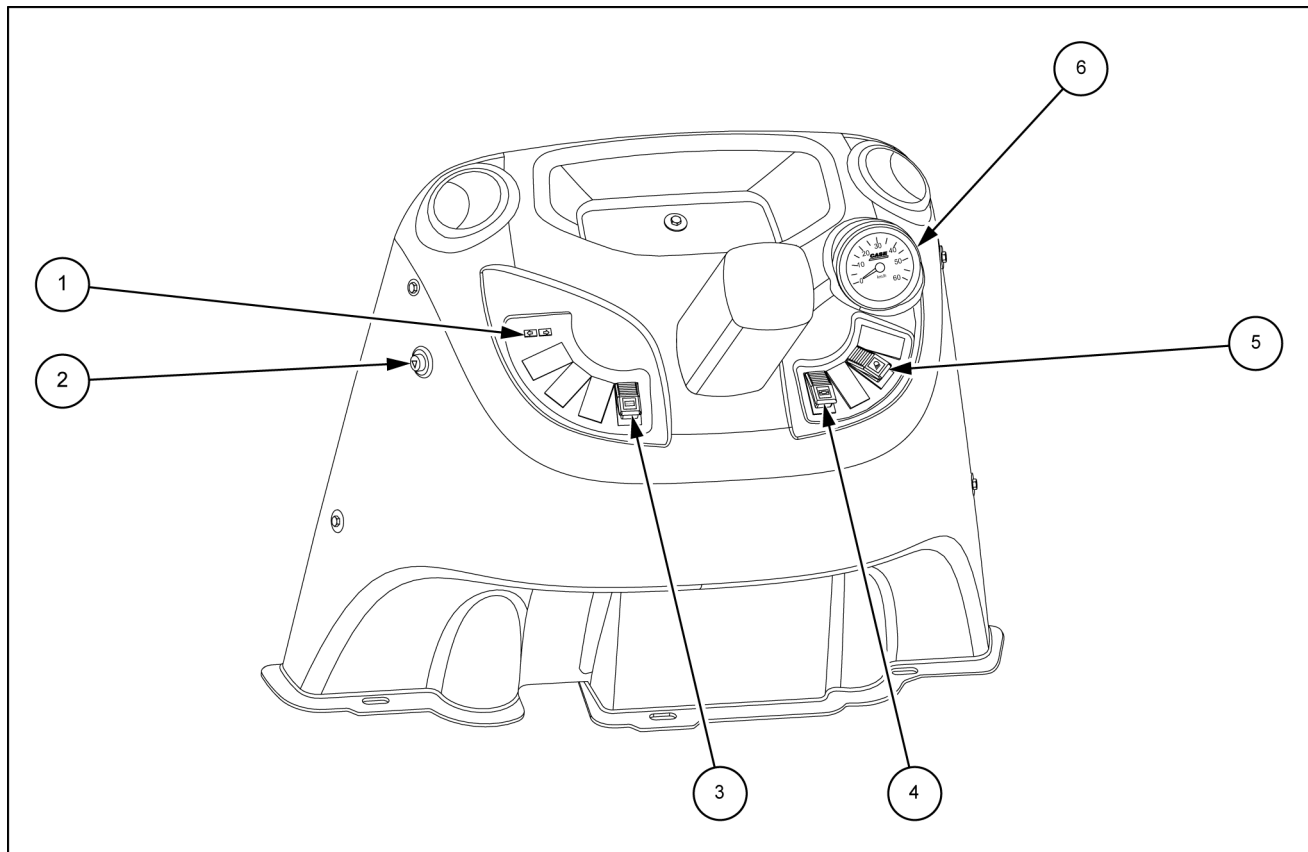
1. Bottom dump bucket dumping control lever



PTIL14TLB0222AB 4

INSTRUMENT CLUSTER

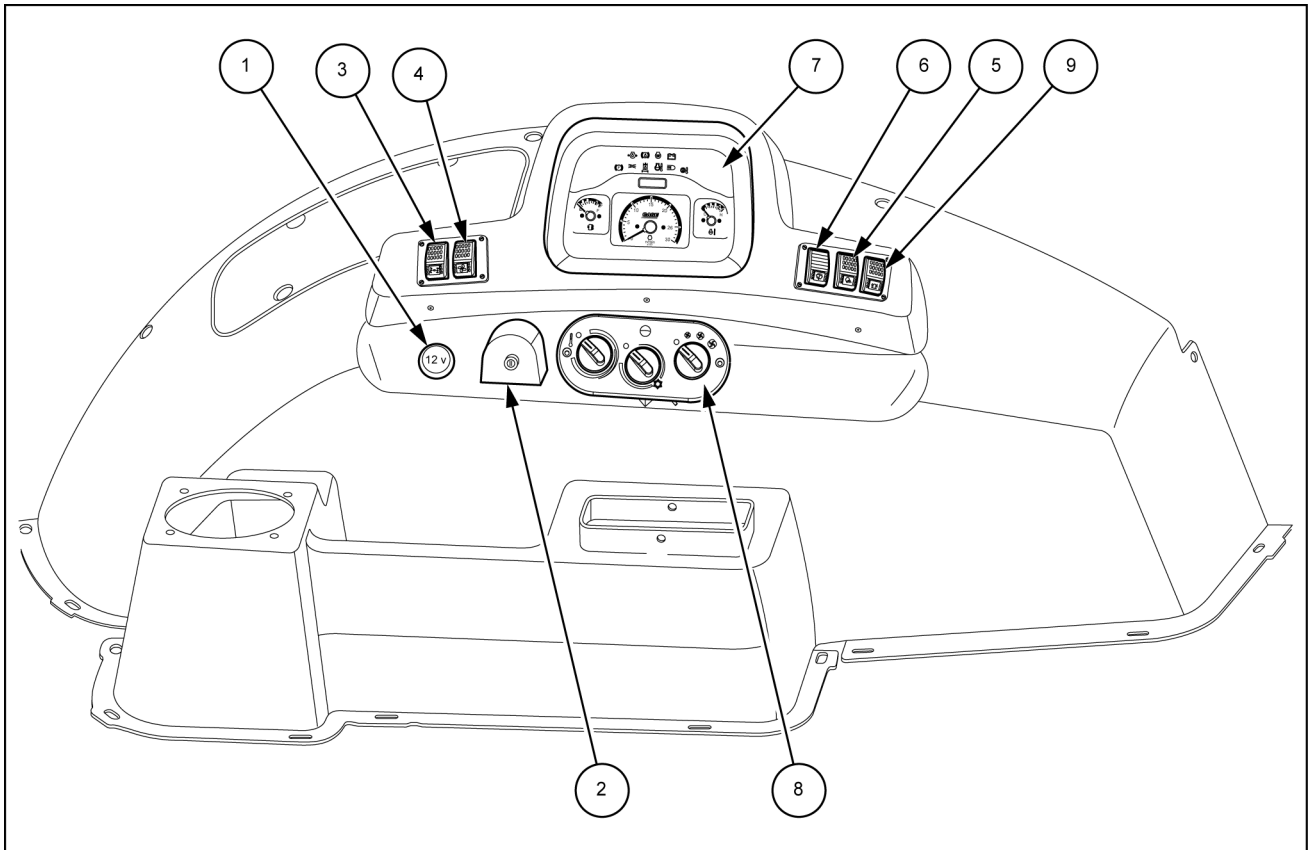
Instrument cluster - Front



PTIL12TLB0074FB 1

1. Direction indicator lamp: This lamp turns on when the direction indicators are working
2. Hazard light switch
Press the button till it is locked. The direction indicators and the hazard light switch will flash simultaneously. Press the button again to turn it Off.
3. Brake de-clutch switch
4. Radio switch
5. Front work light switch
6. Speedometer

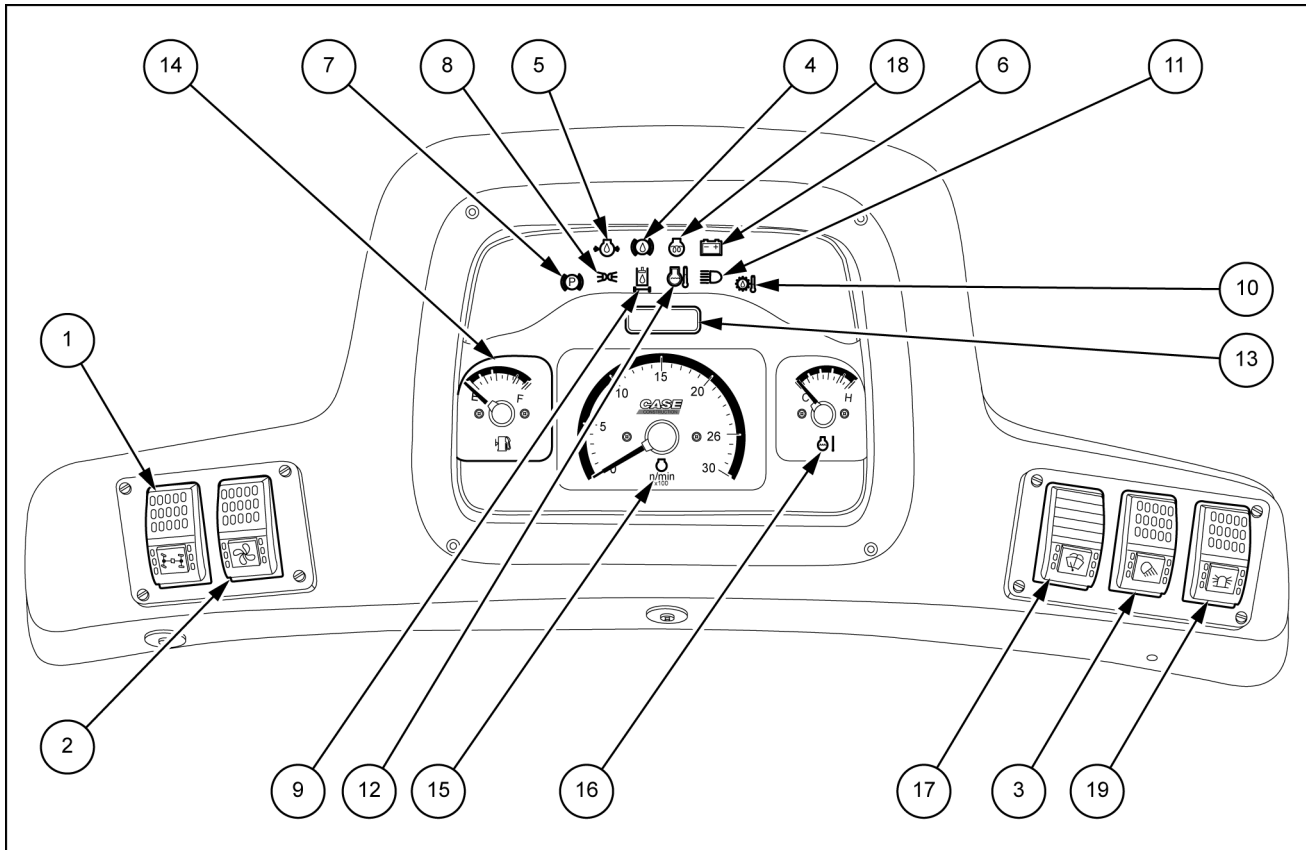
Instrument cluster panel – Side



PTIL14TLB0067FB 1

1. Power point/mobile charger socket: Provides **12 V** output
2. Ignition key switch
3. 4WD switch (if equipped): Switch it "ON" to engage the 4WD on your vehicle
4. Fan switch
5. Rear work light
6. Rear windshield wiper switch
7. Instrument cluster: The cluster incorporates warning and informatory visual signals
8. HVAC control
9. Beacon

Instrument cluster



PTIL14TLB0068FB 1

1. 4WD switch (If equipped)
Engage 4WD by pressing this switch.
2. Cabin fan switch
3. Rear work lights
Switch "ON" the rear work light with this switch.
4. Brake oil level low warning lamp (Red Color)
Turns "ON" when brake oil level is low. When this light is On, stop the vehicle and fill the brake fluid reservoir to the recommended level.
5. Engine oil pressure warning lamp (Red Color)
This warning lamp turns "ON" and the audible warning device sounds when the engine oil pressure is too low.
6. Battery charge warning lamp (Red Color)
This warning lamp turns "ON" when the alternator/fan belt is broken or when the alternator is not charging the battery.
7. Parking brake warning lamp (red color)
This indicator lamp turns "ON" when the parking brake is engaged.
8. Position lamp (Green color)

Turns "ON" when parking lamp is On.
9. Hydraulic filter restriction lamp (Red color)
Turns "ON" when there is a restriction in the hydraulic filter obstructing the flow of oil.
10. Transmission oil temperature lamp (Red color)
Turns "ON" when the transmission oil temperature becomes high. If this turns "ON" then stop all working of the loader and backhoe. DO NOT SWITCH OFF THE ENGINE. Let the engine idle till the light goes "OFF". You can proceed once it is "OFF". If it occurs frequently then contact your **CASE** Dealer.
11. High beam indicator (Blue color)
Turns "ON" when the head lamp is in high beam mode.

12. High coolant temperature lamp (Red color)
This turns "ON" when the engine coolant temperature is very high. Stop the vehicle immediately to prevent damage to the engine and contact your **CASE** Dealer for help.
13. The LCD display
Displays the hours of usage of the machine hh:mm format.
14. The fuel gauge
Displays the fuel level in the fuel tank.
15. Tachometer
Displays engine RPM.
16. Coolant temperature gauge
Displays the coolant temperature.
17. Rear windshield wiper switch
18. Cold start indicator
19. Beacon
Turn "ON" the switch to activate the rear windshield wiper.

Warning alarm

Audible alarm gets activated when any of the below mentioned warning lamp come "ON":

1. Engine coolant temperature warning lamp.
2. Engine oil pressure warning lamp.
3. Transmission oil temperature warning lamp.
4. Hydraulic filter restriction lamp.
5. Brake oil level warning lamp
6. Parking brake warning lamp.
7. Left and right turn indicator lamp.

Heating, Ventilation, Air Conditioning (HVAC) controls

Cab with HVAC

1. Blower speed control knob: Turn the three-speed control knob **(1)** to set the desired blower speed.
2. HVAC control knob: Turn the knob **(2)** to switch on the HVAC system.

NOTE: Moisture accumulation starts on the windshield if heater is activated for a long period of time.

⚠ CAUTION:

If front windshield fogs-up, switch "ON" the AC and turn the adjustable front AC vent to the front windshield. Operate the wiper for better visibility.

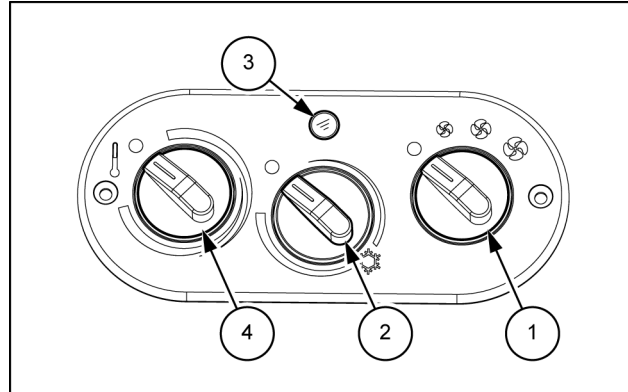
⚠ CAUTION:

If rear windshield fogs-up, operate the rear windshield wiper for visibility. Stop operating the backhoe work immediately if visibility starts decreasing. Failure to comply could result in minor or moderate injury.

3. HVAC indicator lamp: Once the HVAC is switched On, the indicator lamp **(3)** will glow green.

NOTE: If only the blower is set on, the indicator lamp will not illuminate.

4. Temperature control knob: Turn the knob **(4)** to control the temperature of air coming into the cabin.



PTIL14TLB0062AB 1

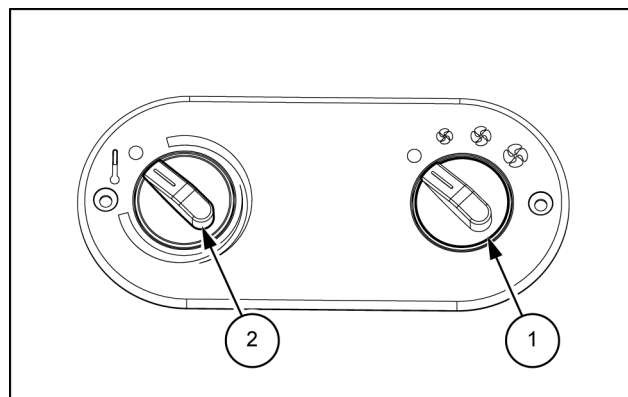
Cab with only heater

1. Blower speed control knob: Turn the three-speed control knob **(1)** to set the desired blower speed.
2. Heater control knob: Turn the knob **(2)** to switch on the heater.

NOTE: Moisture accumulation starts on the windshield upon continuous usage of heater for long time.

⚠ CAUTION:

If windshield fogs-up, operate the windshield wipers for visibility. Stop operating backhoe work immediately if visibility decreases. Failure to comply could result in minor or moderate injury.



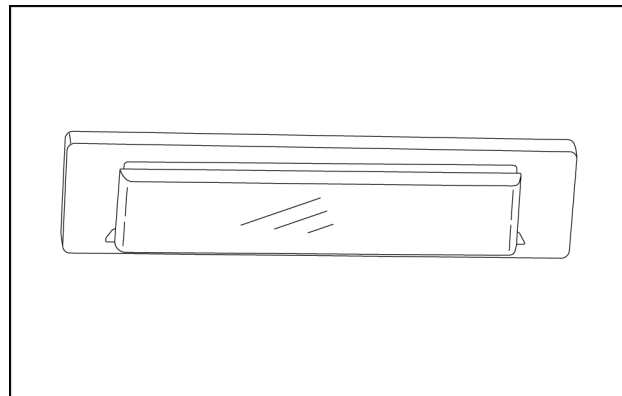
PTIL14TLB0070AB 2

CAB CONTROLS AND ADJUSTMENTS

Cab and platform - control identification

Operator's compartment light

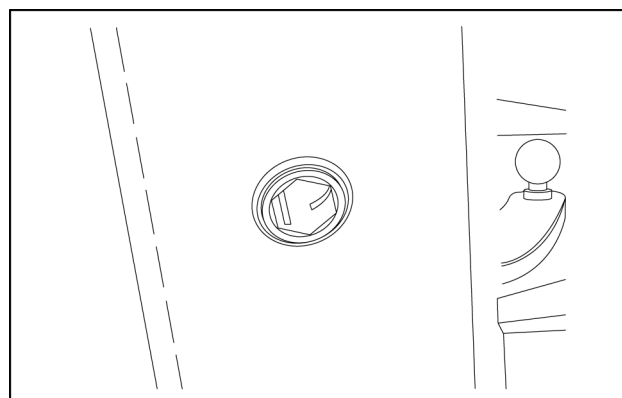
This light is mounted on the roof. It can be turned "ON" by pressing the light and switched "OFF" by pressing the light again.



PTIL12TLB0077AB 1

Auxiliary 12 V socket

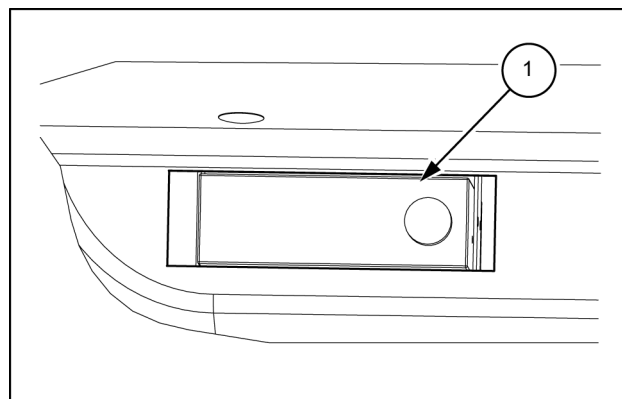
An auxiliary 12 V power socket (1) is located on the side instrument panel.



PTIL12TLB0078AB 2

Radio compartment

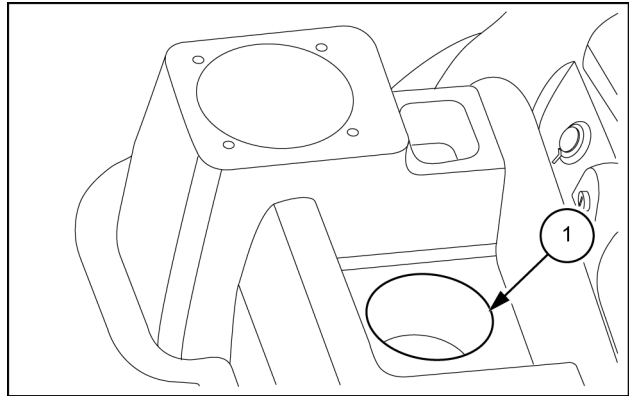
The radio (1) is mounted on the left-hand side of the over-head panel.



PTIL12TLB0080AB 3

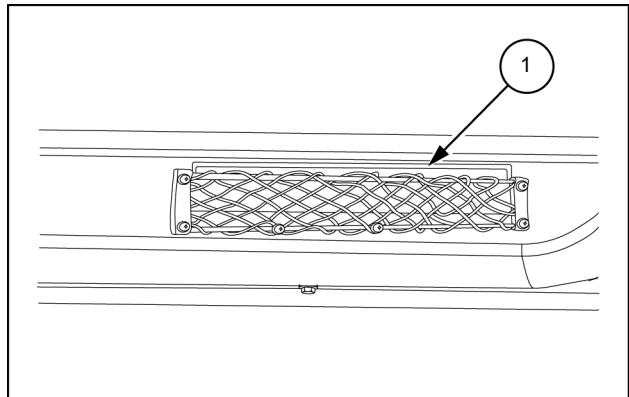
Storage areas

Located at the side instrument panels, these areas **(1)** can be used for cups, bottles etc.



PTIL12TLB0081AB 4

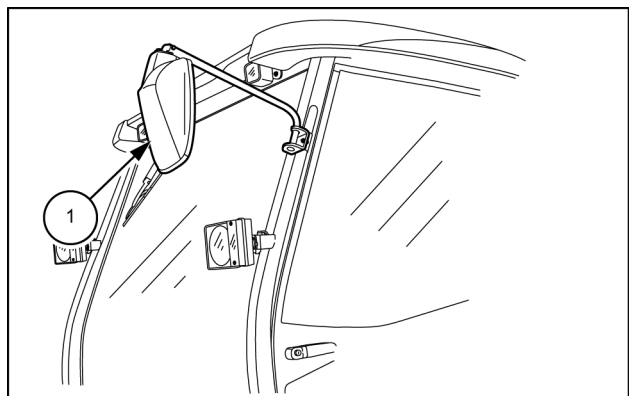
There is a provision made on the right hand side of the overhead panel in the cabin for storage. The storage **(1)** is provided with a netting to prevent stored objects from falling during machine operation.



PTIL12TLB0079AB 5

Rear view mirrors

Make sure the right-hand and left-hand rear view mirrors **(1)** are correctly adjusted before undertaking any travel.



PTIL12TLB0083AB 6

LOADER ATTACHMENT CONTROLS

Loader attachment controls

WARNING

Misuse hazard!

Before starting the engine, make sure you are fully aware of the location and the function of each control.

Failure to comply could result in death or serious injury.

W0226A

NOTICE: *Before using the controls make sure that the operator's seat is correctly adjusted in the loader attachment position.*

With standard loader bucket

Located on the right of the steering wheel, this seven position lever operates all the loader attachment controls. The speed of movement of each control depends on the angle to which the lever is tilted. In the intermediate position, two movements can be obtained simultaneously.

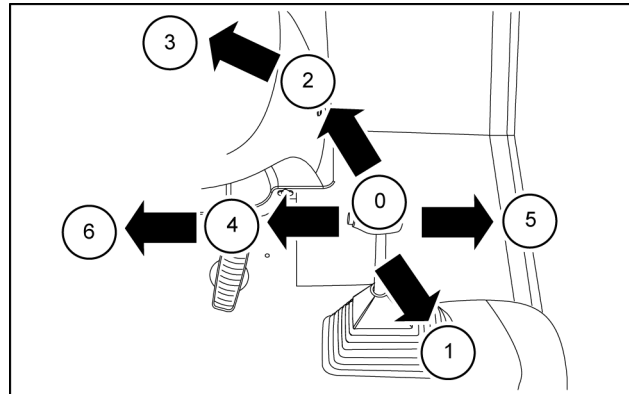
With bottom dump bucket (optional)

Located next to the loader bucket control lever. The dumping and loading operation are performed with this lever more effectively. Single touch opening and closing of the loader bucket, reduces operators fatigue resulting in enhanced productivity.

Loader attachment – Operation

Neutral and hold

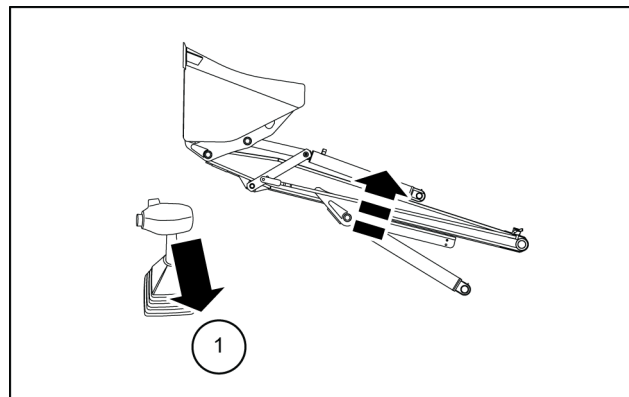
With the lever in the neutral/hold position “0”, the attachment movement can be stopped. As soon as the lever is released, it automatically returns to the neutral position “0” and the attachment remains in the position where it was when movement stopped.



PTIL12TLB0084AB 1

Raising the loader attachment

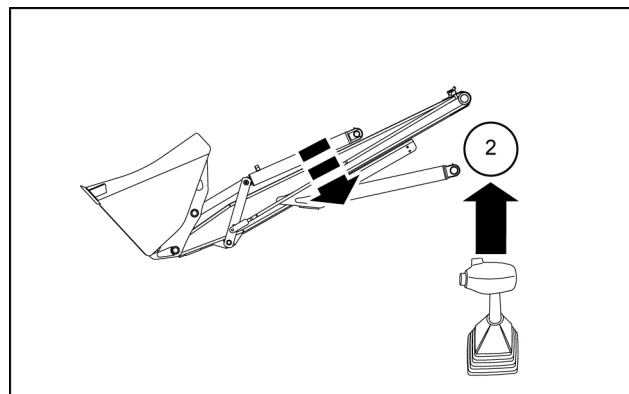
With the lever in position “1”, the attachment rises.



PTIL12TLB0523AB 2

Lowering the loader attachment

With the lever in position “2”, the attachment lowers.

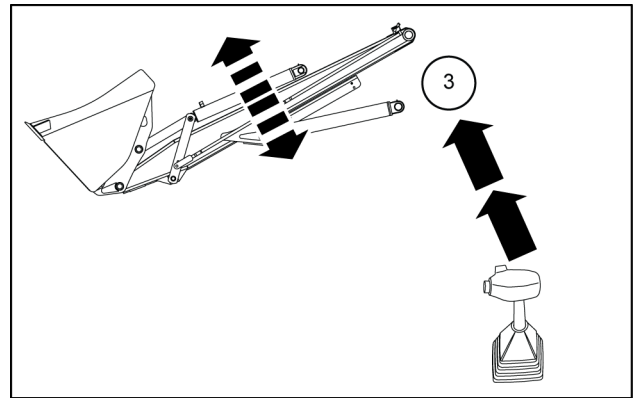


PTIL12TLB0524AB 3

Loader bucket float control

With the lever in position “3”, the bucket follows the contours of the ground without it being necessary to operate the lever.

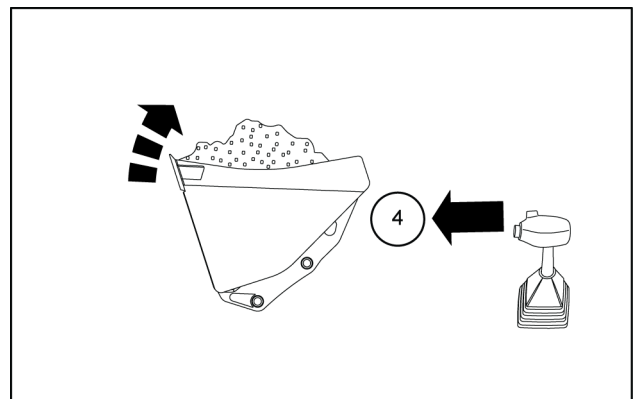
NOTE: In this position the lever does not automatically return to neutral when it is released. It is necessary to move it manually.



PTIL12TLB0525AB 4

Filling the loader bucket

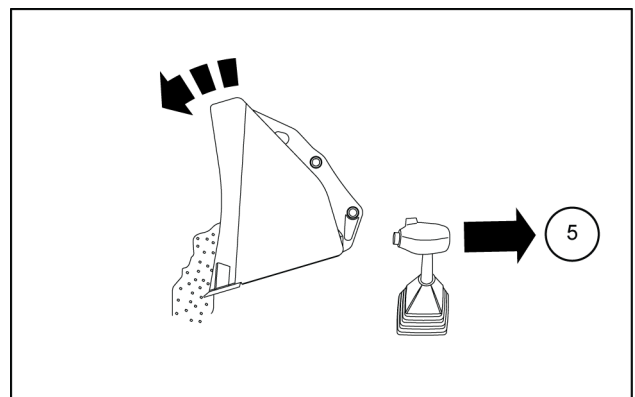
With the lever in position “4”, the bucket rolls back (fills).



PTIL12TLB0526AB 5

Dumping the loader bucket

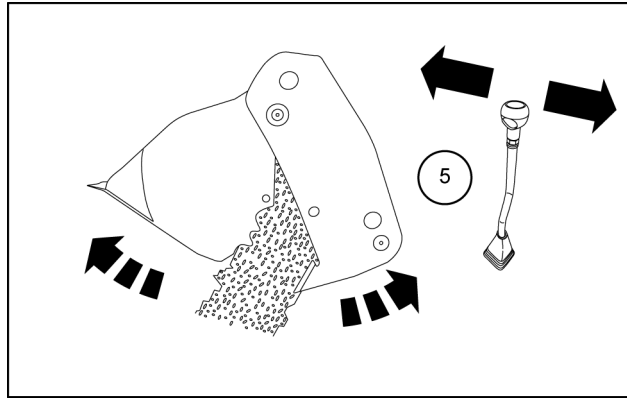
With the lever in position “5”, the bucket rolls forward (dumps).



PTIL12TLB0527AB 6

Dumping with bottom dump bucket (if fitted)

With the bottom dump bucket lever in reverse position “5”, the bucket opens (dumps).

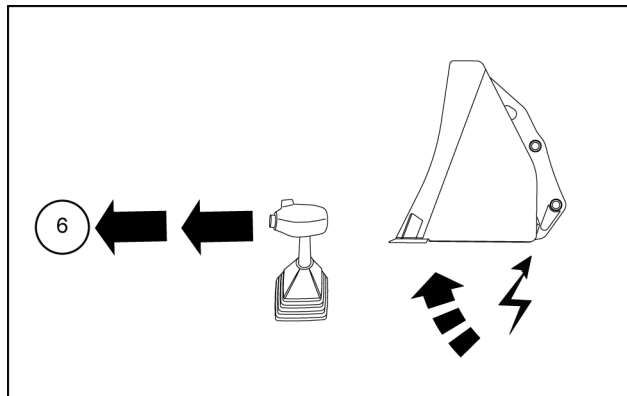


PTIL13TLB1751AB 7

Automatic return to dig

Lever must be moved to float (position 3) and roll back (position 6) at the same time, diagonal operation. If moved to the indicated position “6” the bucket will roll back but the loader will not lower.

NOTE: It is possible to adjust the tilt angle for bucket filling.



PTIL12TLB0528AB 8

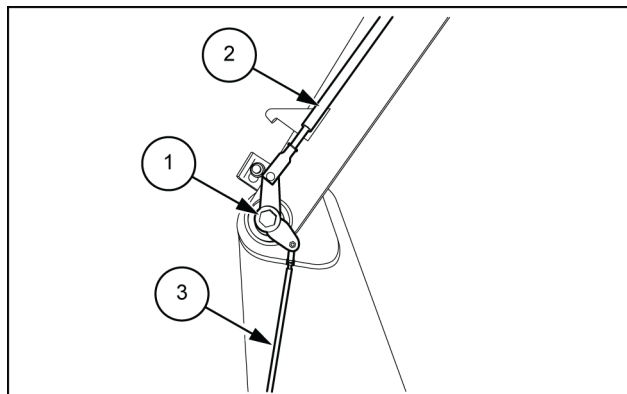
Hydro mechanical self-leveling

The self leveling linkage mounted on the right hand loader arm and frame automatically controls the angle of the loader bucket during the raising cycle of the lift arms to maintain a constant bucket level.

The self leveling mechanism

Self leveling begins at the point where the tube (2) on the loader arm contacts the washer on the bell crank (1) and lifts the vertical linkage rod (3).

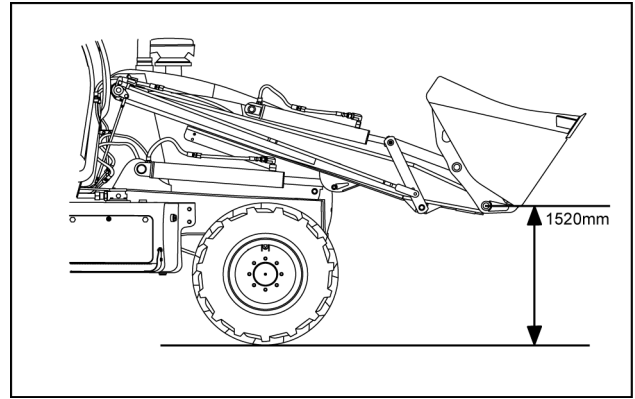
The linkage then moves the bucket control valve into the roll out position to level the bucket.



PTIL13TLB0499AB 9

Adjustment of self leveling linkage

1. Lower the loader to the ground.
2. Disconnect vertical linkage (3) at upper bell crank (1).
3. Raise loader arms so that the bottom hinge pin is **1520 mm (60 in)** above the ground and fully roll back the bucket.
4. Rotate the bell crank (1) to touch the tube (2) on the loader arm.
5. Adjust the length of the vertical rod (3) so that when re-connected, the end of the loader arm tube remains in contact with bell crank.
6. Securely tighten locknuts on the vertical rod.



PTIL13TLB0500AB 10

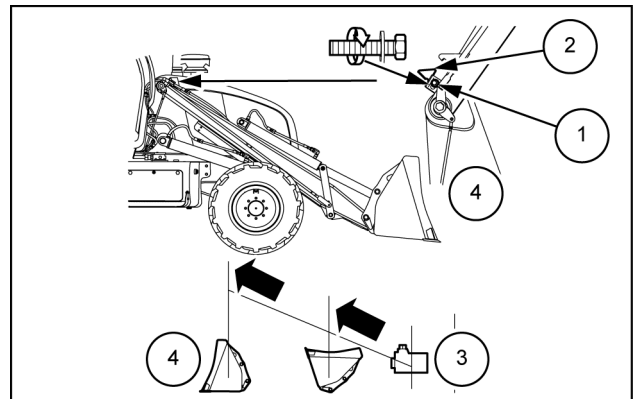
Return to dig system adjustment

The return to dig feature

Return to dig is an electrically activated feature which enables the operator to automatically return the bucket to a level digging position for a further work cycle with one simple movement of the loader control lever (3).

The return to dig system

The return to dig system consists of an electromagnet mounted on the bucket spool, a sensor (1) mounted on top of the loader arm and a pointer (2) attached to the tube of the bucket self-leveling linkage.



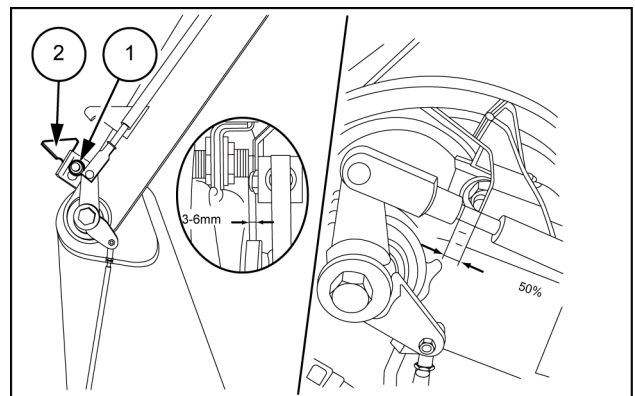
PTIL12TLB0501AB 11

Whenever the bucket is rolled forward to dump, the return to dig electrical circuit is completed and the solenoid on the bucket spool is energised.

When the loader bucket control lever (3) is moved diagonally left to the return to dig position (4) the electromagnet will hold the bucket spool in the roll back position until the bucket is in the level digging position at which time the indicator on the rod of the bucket self-leveling linkage will pass in front of the sensor which de-energises the electromagnet on the bucket spool enabling the spool to return to the neutral position.

Adjustment of the return to dig sensor

1. Place the bucket on the ground in the preferred digging position.
2. Adjust the position of the sensor such that when the bucket is in digging position and loader arms are lowered, half (50%) of the sensor face is obscured by the self-leveling linkage pointer.
3. Ensure the face of the sensor (1) is **3.00 - 6.00 mm (0.12 - 0.24 in)** from the pointer (2) on the self-leveling linkage.



PTIL12TLB0499AB 12

As a visual aid for the operator, while seated in the cab, the pointer mounted on the loader arm can be seen to align with the pointer on the self-leveling linkage, when the loader arms are lowered and the bucket is in the level digging position.

BACKHOE ATTACHMENT CONTROLS

Booms, dippers, and buckets - Control identification

NOTICE: Before using the backhoe attachment, make sure the stabilizers are completely lowered.

Backhoe boom and backhoe attachment left-hand control lever

The lever has five positions:

Position "0": Neutral/hold. This position enables the attachment movement to be stopped. As soon as the lever is released, it automatically returns to the neutral position "0" and the attachment remains in the position where it was when movement stopped.

Position "A": Swing LEFT - RIGHT.

Position "B": Swing RIGHT - LEFT.

Position "C": Dipper EXTEND.

Position "D": Dipper RETRACT.

Backhoe dipper and backhoe attachment right-hand control lever

The lever has five positions:

Position "0": Neutral/hold. This position enables the attachment movement to be stopped. As soon as the lever is released, it automatically returns to the neutral position "0" and the attachment remains in the position where it was when movement stopped.

Position "E": Bucket CURL IN.

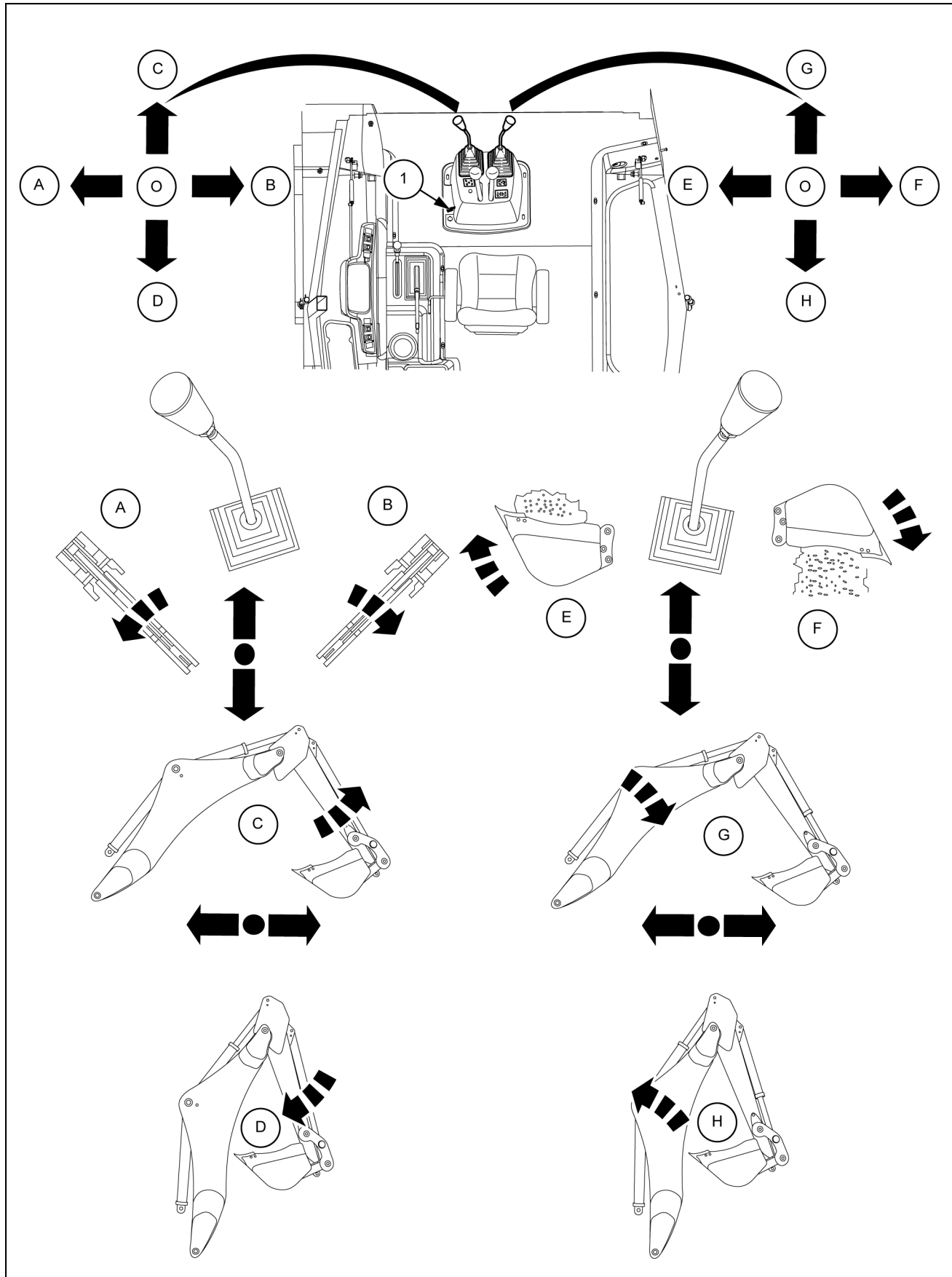
Position "F": Bucket DUMP.

Position "G": Boom DOWN.

Position "H": Boom UP.

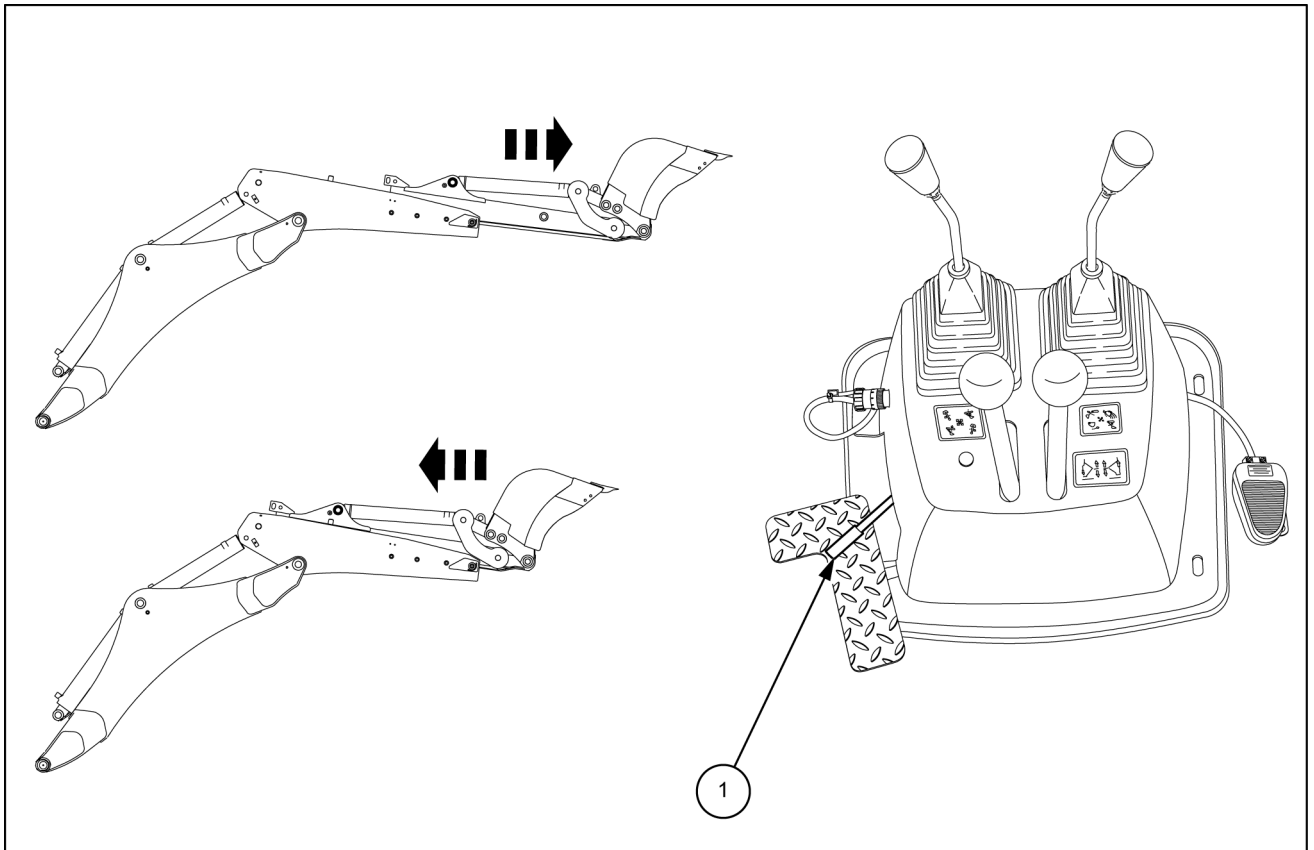
Slider frame control

Press and hold the pedal **(1)** to unlock the slider frame and using a combination of both the control levers, move the slider on the "H" frame.



PTIL14TLB0066HB 1

Extendahoe operation (optional)



PTIL14TLB0071FB 2

Extendahoe control foot pedal (1).

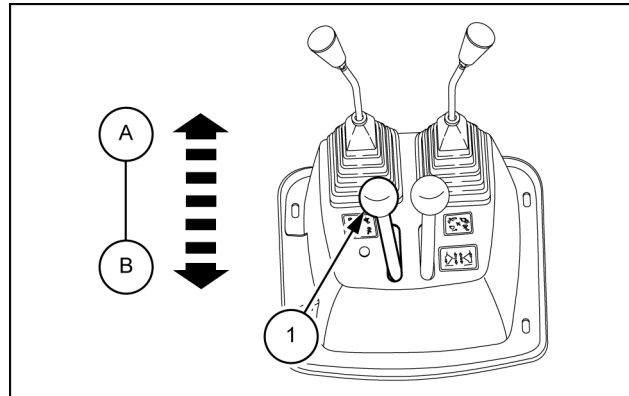
STABILIZER MECHANICAL CONTROLS

Left-hand stabilizer left-hand control lever

The lever (1) has two positions:

Position “A”: The left-hand stabilizer lowers.

Position “B”: The left-hand stabilizer rises.



PTIL12TLB0092AB 1

Right-hand stabilizer right-hand control lever

The lever (1) has two positions:

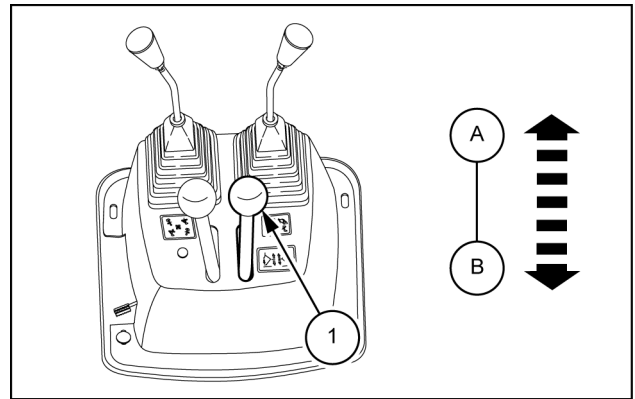
Position "A": The right-hand stabilizer lowers.

Position "B": The right-hand stabilizer rises.

NOTE: To raise or lower the two stabilizers at the same time, operate the two levers simultaneously.

NOTICE: Before machine travel or before using the loader attachment, make sure the stabilizers are completely raised.

During road travel, the stabilizers must be completely raised.



PTIL12TLB0492AB 1

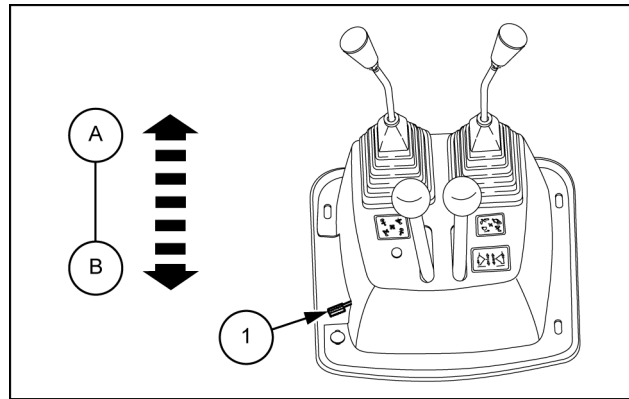
Slider frame control pedal

The pedal **(1)** has two positions:

Position “**A**”: The slider frame is free to slide.

Position “**B**”: The slider frame is locked in position.

Press and hold the pedal in position **A** to unlock the slider frame. Use the boom and dipper to move the slider frame to the desired position. Release the pedal (position **B**) to lock the slider frame in the desired position.



PTIL14TLB0002AB 1

4 - OPERATING INSTRUCTIONS

COMMISSIONING THE UNIT

Commissioning the machine

NOTICE: *Read and familiarize yourself with the instructions and warnings shown in this manual before operating the machine.*

Before using the machine, some precautions are necessary. Check the levels (engine oil, hydraulic fluid and coolant fluid) and make sure that the various fluids correspond to the conditions of use. Carry out the daily maintenance operations. Walk round the machine, look for any leaks and inspect the hoses. Tighten or replace any items as required.

Before undertaking road travel, unlock the attachments, completely raise the stabilizers and install the safety systems required by the regulations. Before road travel or night work, check that the lighting and signaling systems are correctly operating and correctly adjusted. Check the condition of the tyres and the tyre pressure. Clean the steps and access handles. The presence of oil, mud or ice (winter) can cause accidents. Make sure they are always clean. Clean or replace safety decals which are no longer legible.

Make sure that the engine guard is closed and latched correctly. Remove anything which might hinder visibility. Clean the windows and the rear view mirrors. Make sure that no objects or tools are left on the machine or in the operator's compartment. Make sure you know how to evacuate the machine (emergency exit via the right-hand door) in case exit through the left-hand door is not possible. Make sure that the right-hand door is not locked. Make sure that nobody is under or on the machine. The operator should be the only person on the machine. Make sure that nobody is within the working range of the machine.

Operating the machine

WARNING

Driving hazard!

Check all controls and safety devices in a safe, open area before starting work.

Failure to comply could result in death or serious injury.

W0248A

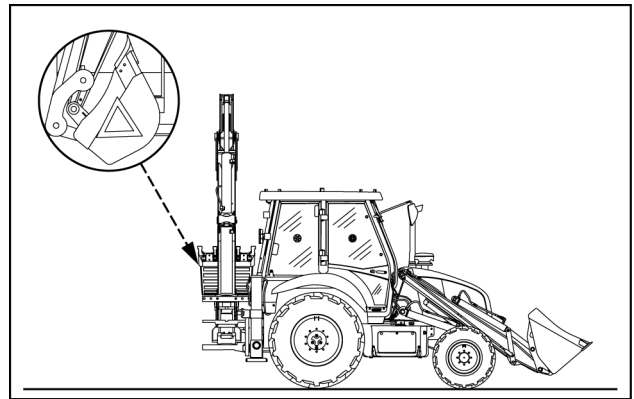
When using the machine, some precautions are necessary. Start the engine taking into account weather conditions. Regularly check the hour-meter to ensure servicing intervals are observed. If you are using the machine under dusty or largely corrosive atmosphere, the servicing intervals should be reduced. Make sure that the operator's seat is correctly adjusted and positioned. Never operate any control or driving component unless you are seated correctly in the operator's seat with the seat belt adjusted and attached correctly. Avoid running the engine in an enclosed space. If required, ensure good ventilation under all circumstances.

Dust, smoke or fog can reduce visibility and cause an accident. Stop the machine until normal visibility is restored. If there is any operating problem, immediately lower the loader equipment to the ground, engage the parking brake and stop the engine. Find the cause or inform responsible persons and take the necessary measures to forbid the use of the machine. When stopping the engine take account of weather conditions.

Road operation

NOTICE: Road speed is subject to restrictions. It is the operator's responsibility to limit his speed accordingly.

Before carrying out any road travel, lock the attachments and install the safety systems required by regulations. The machine must be within the maximum dimensions permitted on the road in accordance with local road traffic regulations. Completely raise the stabilizers. Check that the lighting and signaling systems operate correctly. Check that the brakes and steering operate correctly. Check the condition of the tires and the tire pressure. Never leave the operator's compartment when the engine is running.



PTIL14TLB0018AB 1

Job site operation

On job sites on the public highway, use regulation signals, taking into account the working range of the machine. Local regulations define the number, type and location of reflective strips. Be vigilant, be aware of places where other persons are working close to your working area. Keep other persons away from the machine. Serious injury can result if these instructions are not observed.

Adapt your driving style to suit the conditions of work (sloping ground or rough ground), the state of the road and weather conditions. Operate all controls consistently so the machine works smoothly.

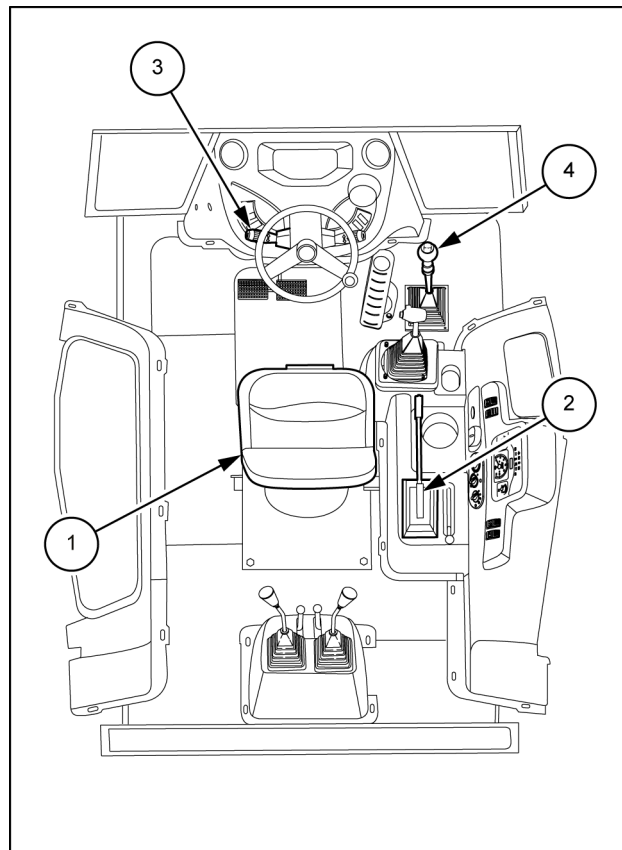
When travelling at right angles to the slope keep the loader bucket at ground level. When travelling in the same direction as the slope, move onto the slope in low gear (first gear). Never travel downhill with the gearshift lever in neutral position. When working on a slope, engage the front drive axle (4WD) if available. Holes, obstacles, debris and other hazards in the working area can cause serious injury.

Always walk around and identify all possible hazards before operating the machine in a new working area. Make sure you know the location of underground pipes or cables before beginning work. Electrical cables, gas pipes, water pipes or other underground installations can cause serious injury. Do not work close to live overhead electric lines without first making sure that the minimum distance of **13 ft** are observed.

STARTING THE UNIT

Starting the engine

1. Check that the seat **(1)** is properly locked in the loader attachment working position.
2. Adjust the seat and fasten the seat belt.
3. Check that the parking brake lever **(2)** is in raised position.
4. Check that the engine accelerator lever is in idle position.
5. Check that the direction-of-travel lever **(3)** is in neutral position.
6. Check that the gearshift lever **(4)** is in neutral position.



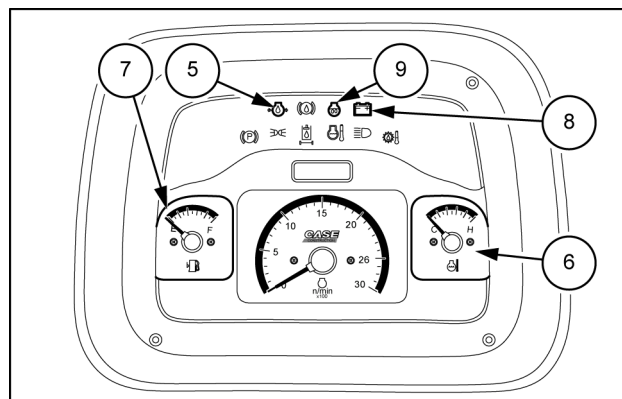
PTIL14TLB0056BB 1

Turn the starter switch key to the “ON” position. Only battery lamp **(8)**, engine oil pressure warning lamp **(5)**, and cold start indicator **(9)** will remain on along with gauges **(6)** and **(7)** set to position. Press the accelerator pedal down about a quarter of the way. Wait till the cold start indicator **(9)** goes off and then turn the key to the starting position. Release the key as soon as the engine starts. If the engine fails to start, turn the starter switch key to “OFF” position and wait about **1 min** before starting the operation again.

After starting the engine run it at low idle for at least **1 min** to ensure lubrication to turbo charger.

NOTICE: Do not operate the starter motor for more than **20 s** at a time. Do not operate the starter motor when the engine is running.

When the engine is running, check the indicators and indicator lamps to make sure that all systems are operating correctly. Using the accelerator pedal, run the engine at half speed until it has reached normal operating temperature.

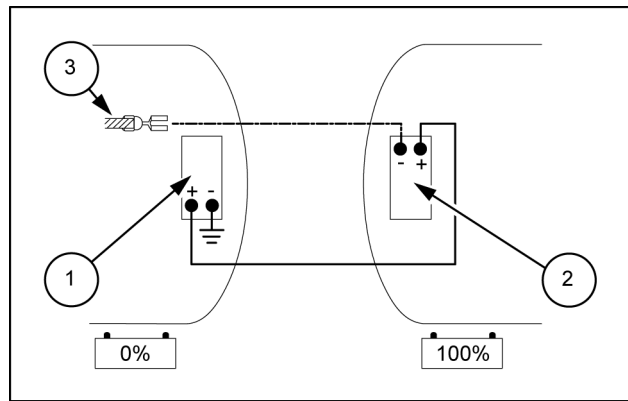


PTIL14TLB0005AB 2

Assisted starting (Jump-starting)

Never try to start the machine when the batteries are defective or frozen. You can perform assisted starting or jump starting from other battery or machine.

Only connect batteries (battery assemblies) with the same voltage. Only use tested jumper cables with insulated terminal clips and an adequate lead diameter. A high current flows on connection of the ground cable. Ensure that the bodies of the supplying and receiving machines are not in contact. Otherwise a current flow might result from connecting the positive poles. Sparks occurring at the contact point may ignite gases at the discharged battery. Connect the ground cable to the frame as far as possible away from the discharged battery. During assisted starting operations (by means of an external battery), do not lean over the batteries. Wear goggles.



PTIL12TLB0101AB 1

Risk of short-circuiting

When performing assisted starting, never use power supplies creating an over-voltage, such as two or three batteries in series or devices generating voltages above **12 V**. Never use welding generators or welding transformers.

Position the jumper cables in such a way that they cannot be caught by rotating engine components. Check whether the battery of the receiving machine (discharged battery) is in working order:

- Switch Off electrical accessories (lights, fans).
- Insert the key into the switch and turn it "ON", the warning lamps for the engine check must turn On.
- If warning lamps do not turn On, the battery is faulty (completely discharged or with short-circuit inside).

In this case the machine must not be started, as the alternator would then be damaged. Install a functional battery before jump-starting.

Connecting cables

Switch Off all electrical accessories in receiving machine and turn the key to "0". Switch Off all accessories in supplying machine (booster battery) and shutoff engine. Connect the red jumper cable to the positive clamp of the discharged battery (1) and then to the positive clamp of the booster battery (2). Connect the black jumper cable first to the negative clamp of the booster battery (2) and then to the frame (3) on the receiving machine.

Starting the engine

Start the engine of the supplying machine. Increase rpm. Start the engine of the receiving machine. If the engine does not start, wait for **1 min** and repeat the starting procedure. Once the engine is started, switch "ON" some of the accessories with high current absorption, such as complete lighting. This prevents voltage peaks, from occurring when the jumper cables are disconnected. Disconnect the jumper cables in reverse order as used when installing.

Run the engine at moderate speed for about half an hour. The batteries recharge partially. Have the electrical system of the machine checked, to determine why the battery was discharged.

Starting the engine - At low temperatures

When starting a cold engine at temperatures below **5 °C (41 °F)**, open the throttle fully. Turn the key to "ON" until the engine starts, then release the key. If the engine fails to start, wait for one minute and repeat the starting procedure.

STOPPING THE UNIT

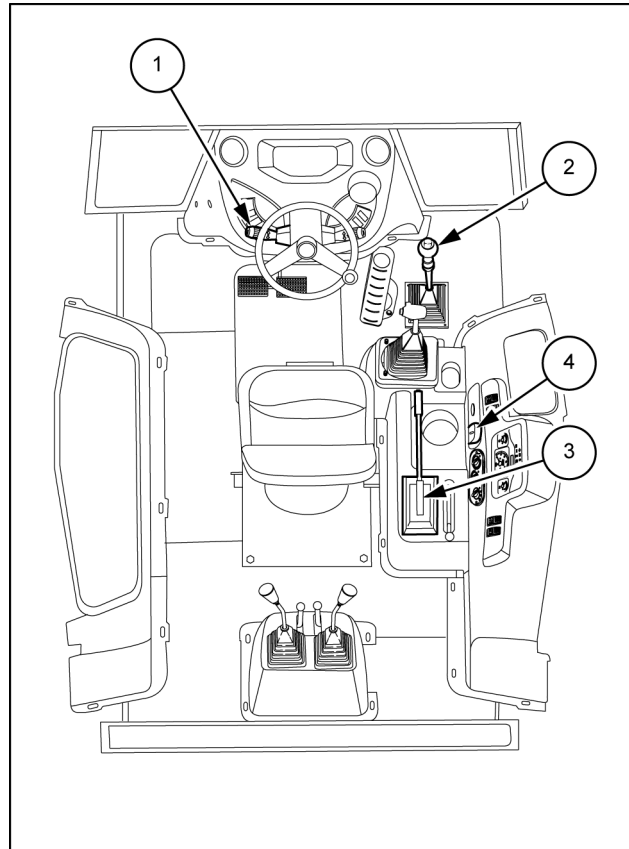
Stopping the engine

Ensure the direction-of-travel control lever **(1)** is in the neutral position. Place the gearshift lever **(2)** in neutral position. Engage the parking brake **(3)**. Allow the engine to run at idle speed for about **1 min** in order for the turbocharger to be lubricated correctly.

NOTICE: In cold weather, run the engine at low idle speed for **3 - 5 min**.

Turn the starter switch key **(4)** to the "OFF" position, and then remove it.

NOTICE: If it is necessary to stop the engine for a long-time, place the machine in safety conditions.



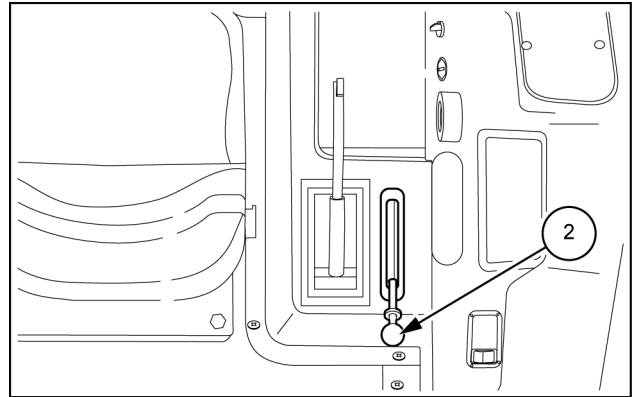
PTIL14TLB0057BB 1

MOVING THE UNIT

Moving the unit

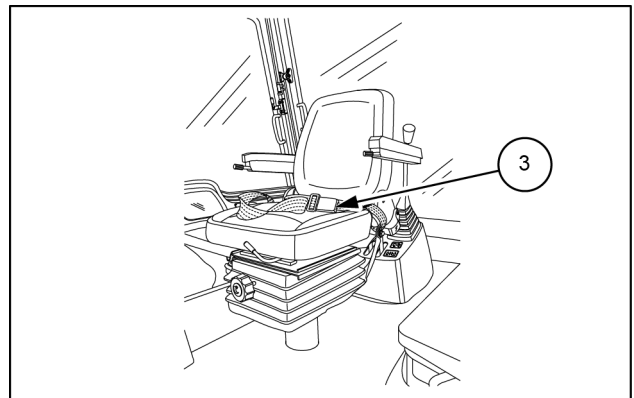
NOTE: After road travel, remove all road safety devices before carrying out any job site travel.

1. Make sure that the engine accelerator lever **(2)** is in low idle position.
2. Make sure the stabilizers are completely raised.
3. Make sure the doors are properly closed and the engine tilt hood is closed and locked.



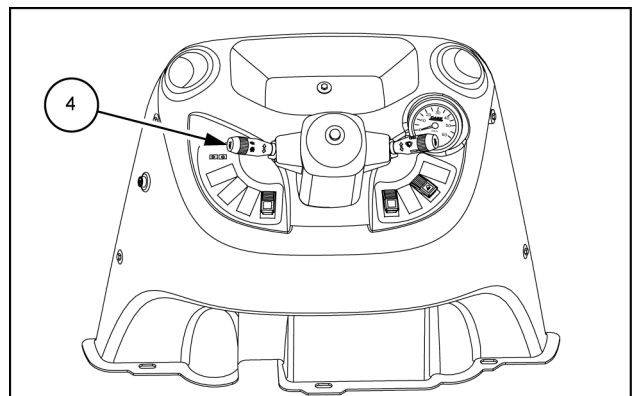
PTIL12TLB0430AB 1

4. Adjust the operator's seat correctly.
5. Fasten the seat belt **(3)** correctly and then adjust it.



PTIL12TLB0104AB 2

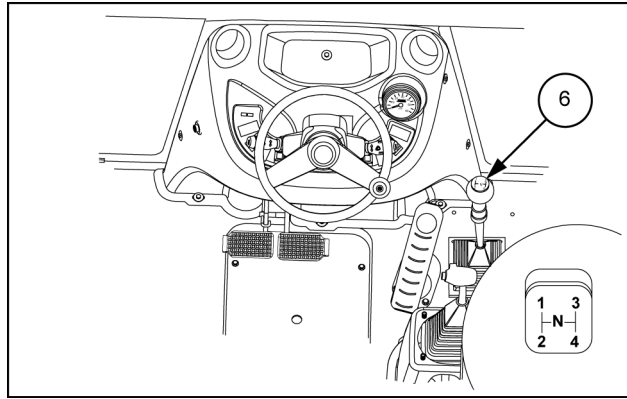
6. Check that the direction of travel lever **(4)** is in neutral position.
7. Start the engine. Raise the loader attachment about **20 cm (7.9 in)** off the ground.



PTIL12TLB0105AB 3

4 - OPERATING INSTRUCTIONS

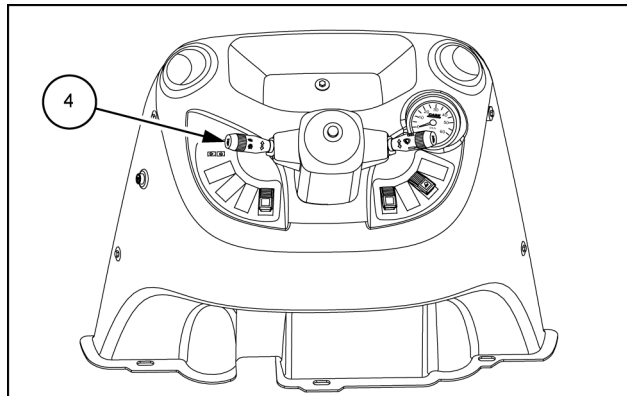
8. Press the transmission disconnect button **(5)** and place the gearshift lever **(6)** in first gear.
9. Press the brake pedals down and release the parking brake.



PTIL12TLB0106AB 4

10. Place the direction of travel control lever **(4)** in the desired position.
11. Release the brake pedals and control the travel speed by means of the accelerator pedal.

NOTE: While travelling, check all gauges and indicator/warning lamps frequently.



PTIL12TLB0107AB 5

2WD or 4WD

NOTE: The engagement or disengagement of the 4WD must be carried out with a stopped machine.

NOTE: Machines with or without four wheel drive should not be allowed to exceed **40 km/h (24.9 mph)**.

A freewheel descent or towing the machine at excessive speed may cause loss of control, personal injury to the operator or damage the transmission. Drive the machine in the same gear going downhill as would be used when going uphill.

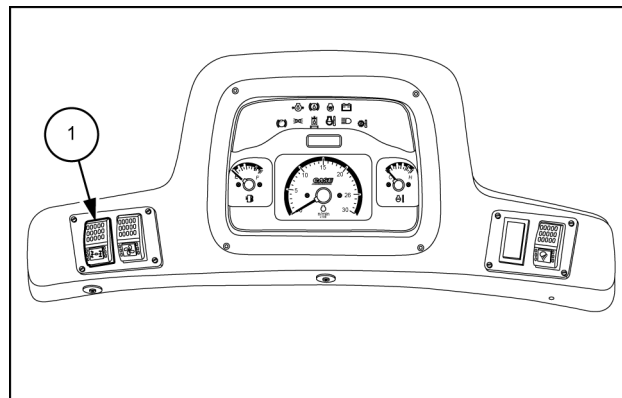
4WD Switch (1)

This switch has two positions:

“OFF”: Rear wheel drive

“ON”: 4 wheel drive

NOTE: To prevent undue tire wear when travelling on public highways or on any hard surface, it is recommended that the four wheel drive be disengaged.



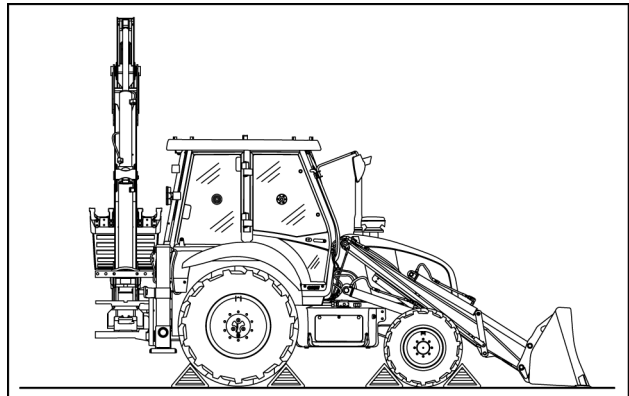
PTIL14TLB0006AB 1

PARKING THE UNIT

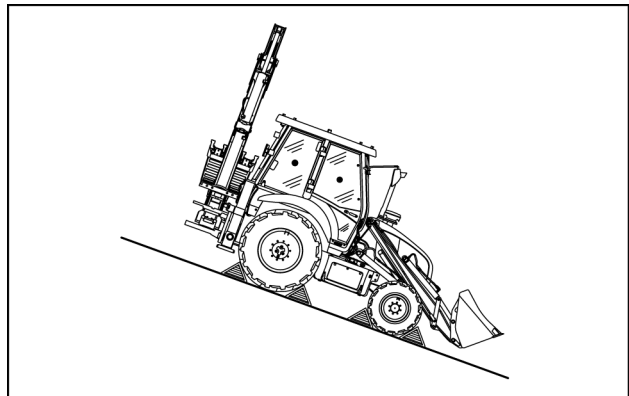
Parking the unit

When parking the machine, some precautions are necessary.

1. Move the machine to a level and firm ground, away from any soft ground, excavations or poorly shored cavity.
2. Lower the loader attachment to the ground.
3. Place the backhoe attachment in the road travel position.
4. Place the direction-of-travel lever and gearshift lever in neutral position.
5. Immobilize the machine by means of the parking brake.
6. Completely raise the stabilizers.
7. Stop the engine and remove the starter switch key.
8. Release the hydraulic pressure by operating the control levers in all directions.
9. If the unit is on a slope, place chocks under the wheels in order to prevent the machine from rolling.
10. Check that no part of the machine is protruding onto the road.
11. If this cannot be avoided, install signs in compliance with the relevant regulations.
Lock all the lockable compartments and the cabin.



PTIL14TLB0019AA 1



PTIL14TLB0020AA 2

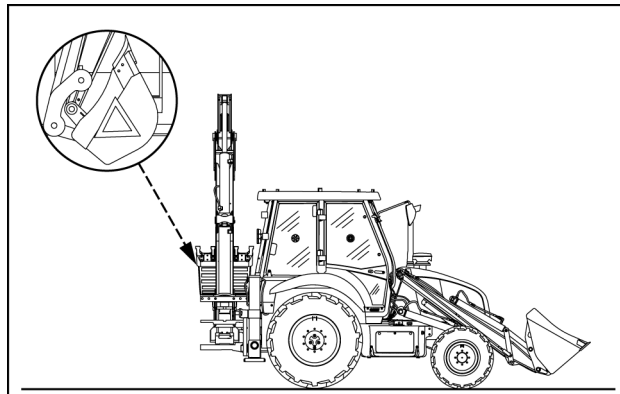
5 - TRANSPORT OPERATIONS

ROAD TRANSPORT

Requirements for road travel

Install the safety systems in compliance with legal requirements. Make sure your machine complies with the local legislation.

1. Backhoe attachment locking pin, install the pin in the locking bar.
2. Slow moving vehicle tag mounted either on the chassis or on the bucket.



PTIL14TLB0018AB 1

Precautions for road travel

⚠ WARNING

Avoid injury!

Before starting the engine, securely fasten the seat belt. The seat belt can help ensure your safety if it is properly used and maintained. Never wear a seat belt loosely or with slack in the belt system.

Never wear the belt if it is twisted or pinched between the seat structures.

Failure to comply could result in death or serious injury.

W0142A

⚠ WARNING

Collision hazard!

Collision of high speed road traffic and slow moving machines can cause death or personal injury.

On roads use transport lighting according to local laws. Make sure the Slow Moving Vehicle (SMV) emblem is visible.

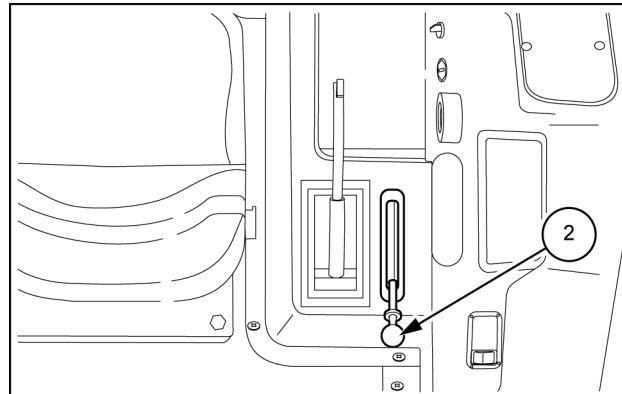
Failure to comply could result in death or serious injury.

W0115A

PREPARING FOR ROAD TRANSPORT

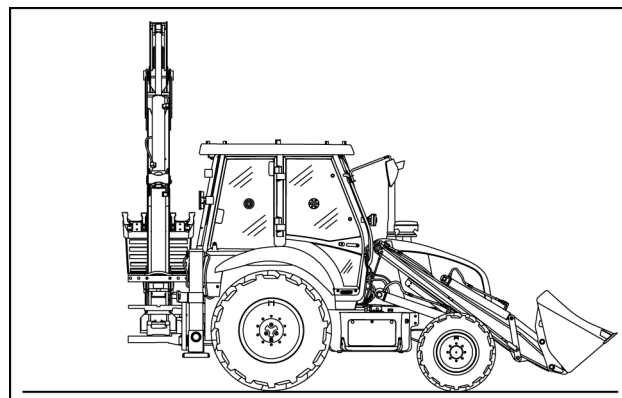
Preparing the machine for road travel

1. Make sure that the engine accelerator lever **(2)** is in low idle position.



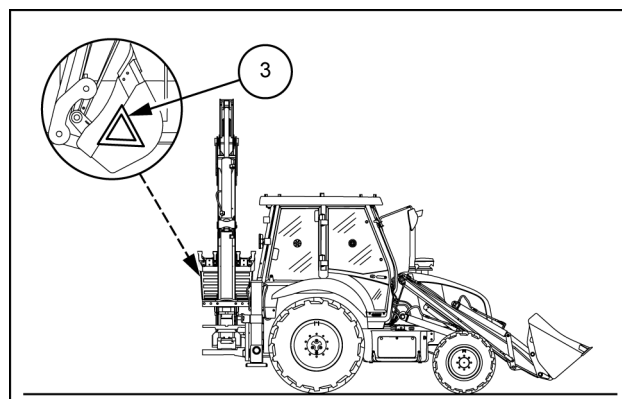
PTIL12TLB0430AB 1

2. Place the seat in the backhoe attachment position.
3. Place the backhoe attachment in road travel position.



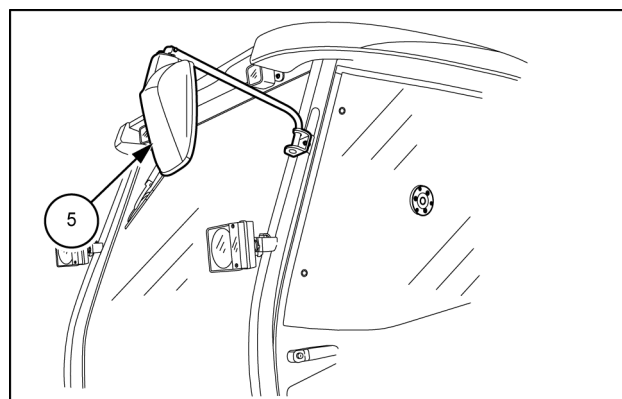
PTIL14TLB0021AA 2

4. Stop the engine and remove the starter key. Turn the seat back to loader attachment position.
5. Apply the warning plate **(3)** to the bucket cylinder rod or chassis.



PTIL14TLB0022AB 3

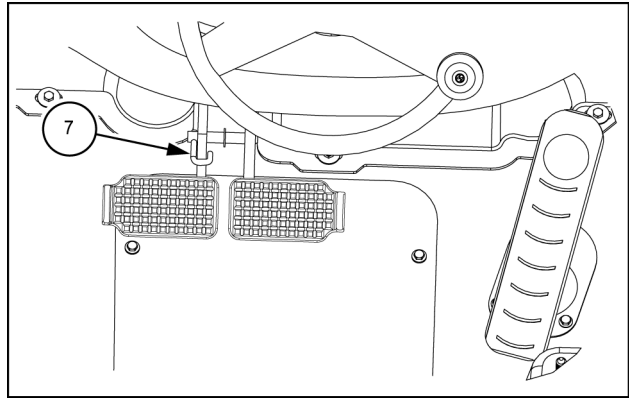
6. Correctly adjust the rear view mirrors **(5)**.



PTIL14TLB0023AB 4

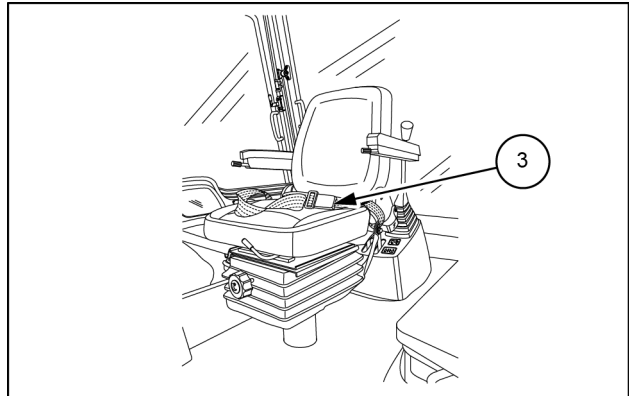
5 - TRANSPORT OPERATIONS

7. Clean the license plates if necessary.
8. Make sure the doors are properly closed and that the engine guard is locked.
9. Make sure that the two brake pedals are locked together by means of the relevant pin (7).



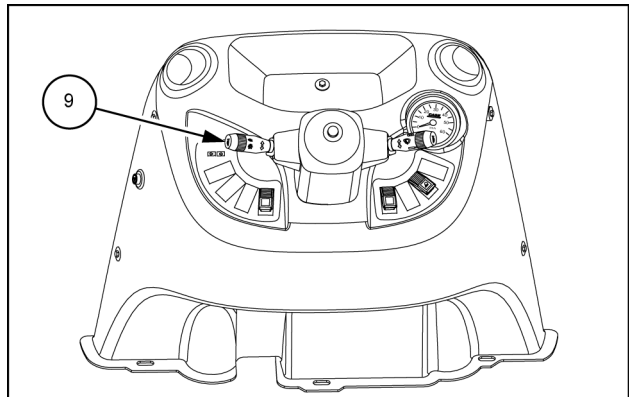
PTIL12TLB0114AB 5

10. Adjust the operator's seat correctly. Fasten and adjust the seat belt (3).



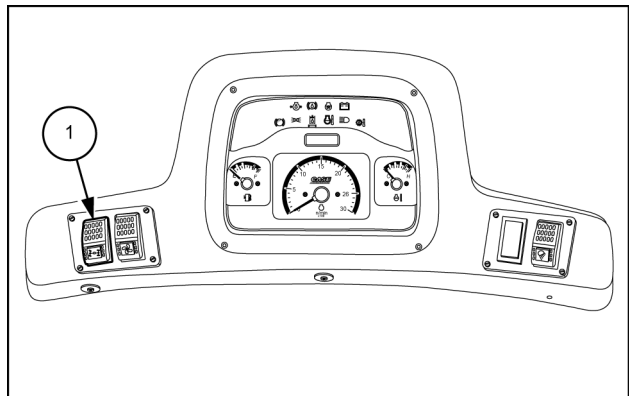
PTIL12TLB0104AB 6

11. Check that the direction-of-travel lever (9) is in neutral position.



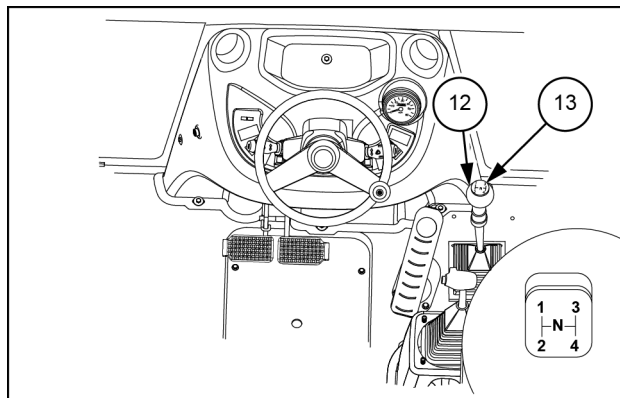
PTIL12TLB0116AB 7

12. Start the engine.
13. Make sure that the 4WD (if applicable) (1) switch is in the "OFF" position.



PTIL14TLB0006AB 8

14. Press the transmission disconnect button **(12)** and then push the gearshift lever **(13)** in first gear.
15. Release the button **(12)**.

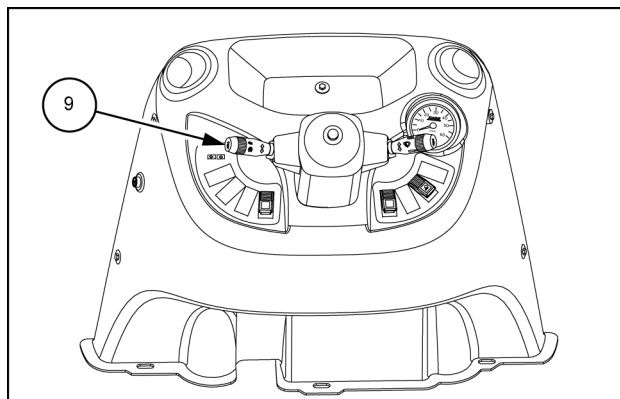


PTIL12TLB0118AB 9

16. Press the brake pedals and release the parking brake.
17. Position the direction-of-travel control lever **(9)** forwards.
18. Release the brake pedals and adjust the travel speed by means of the accelerator pedal.

NOTICE: In the event of a braking system failure, immediately engage the parking brake switch.

NOTE: Check all gauges and indicator/warning lamps frequently.



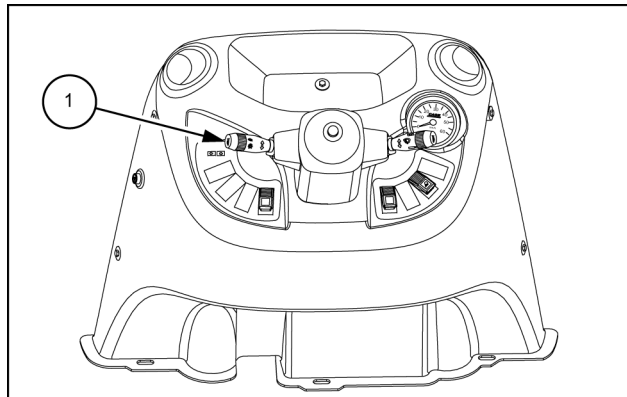
PTIL12TLB0120AB 10

Setting the backhoe attachment in road travel position

NOTE: The instruments represented may not exactly correspond to the instruments on your machine.

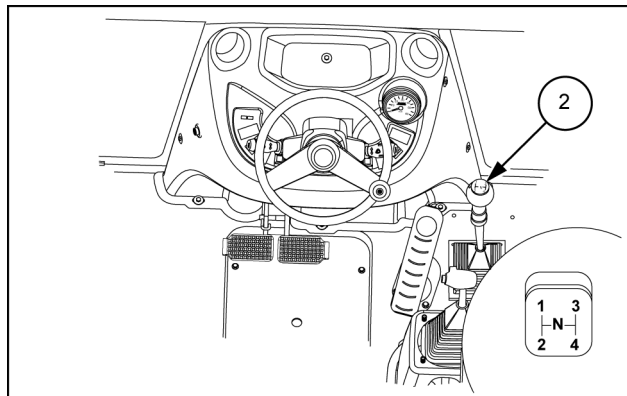
NOTICE: This procedure must be used for road travel, for operating the loader attachment, when transporting the machine on a trailer and when parking the machine.

1. Check that the direction-of-travel control lever (1) is in the neutral position.



PTIL12TLB0122AB 1

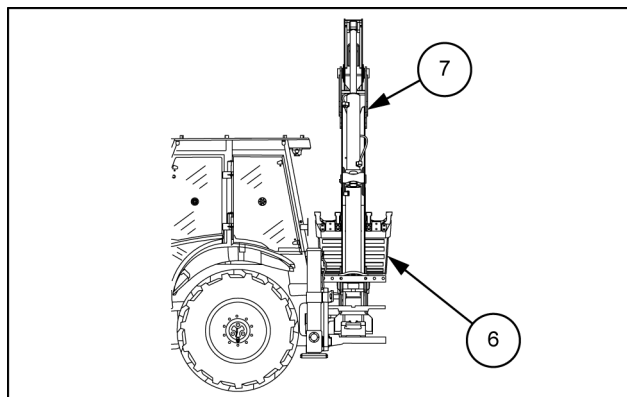
2. Make sure that the gearshift lever (2) is in neutral position.
3. Make sure that the operator's seat is correctly positioned.



PTIL12TLB0123AB 2

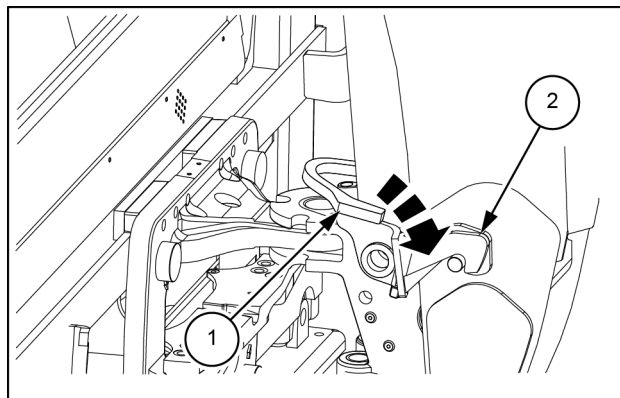
4. Make sure that the machine is resting on the stabilizers and the loader bucket.
5. Place the backhoe attachment in line with the machine.
6. Run the engine at about **900 RPM**.
7. Completely retract the backhoe bucket (6).
8. Completely retract the boom (7) and side shift the swing to the right hand side.

NOTE: Retract boom on the other side to side shift the swing to left hand side.



PTIL14TLB0024AB 3

10. Lock the backhoe attachment.
11. Raise the stabilizers completely.
12. Run the engine at low idle speed.
13. Turn the seat round to the loader attachment position.
14. Raise the loader bucket.
15. Stop the engine and remove the starter switch key.

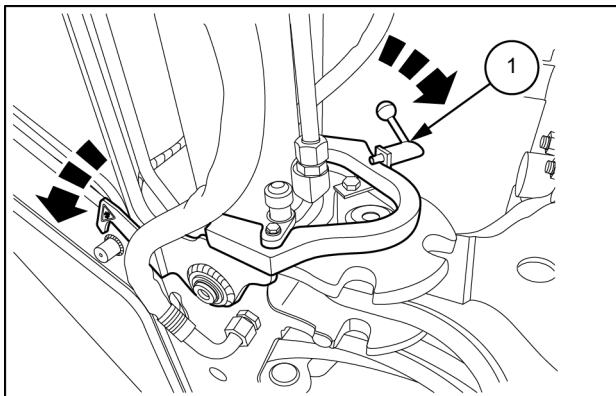


PTIL12TLB0125AB 4

Locking or unlocking the backhoe attachment

Before undertaking any road travel, the backhoe attachment must be “locked” in transport position. In order to do this, retract the dipper completely against the boom and then fully raise the boom so that the lock bar engages on the boom pins. Backhoe attachment can be locked mechanically as shown below.

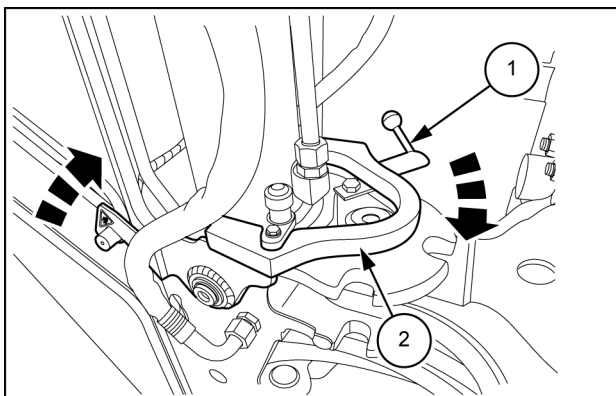
1. To engage the boom lock, turn the lock release (1) as shown.



PTIL12TLB0493AB 1

2. To disengage the boom lock, press down on the lever (2) till the lock release (1) reengages.

NOTICE: Do not attempt to use the backhoe attachment with the boom in locked position, as this could damage the locking system.



PTIL12TLB0495AB 2

SHIPPING TRANSPORT

Machine transport (on a trailer)

⚠ WARNING

Transport hazard!

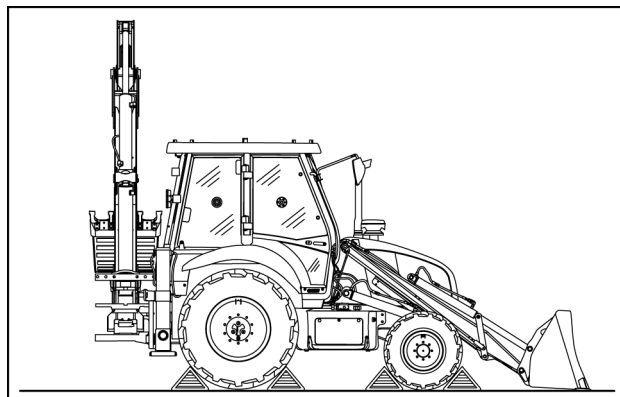
The machine can slip or fall from a ramp or trailer. Make sure the ramp and trailer are not slippery. Remove all oil, grease, ice, etc. Move the machine on or off the trailer with machine centered on the trailer or ramp.

Failure to comply could result in death or serious injury.

W0152A

Make sure you know the safety rules and regulations before transporting this machine. Make sure that the articulated vehicle and the machine are fitted with the correct safety equipment.

NOTICE: During machine loading and unloading operations, the brake pedals must be "locked" together.



PTIL14TLB0019AA 1

Loading

1. Place some wedges behind the trailer wheels and place the trailer enlargement ramps.
2. Place the backhoe attachment in the road travel position. Raise the loader bucket about **20 cm (7.9 in)** above the ramps.
3. Place the gearshift lever in first gear and load the machine carefully on to the trailer. Lower the loader attachment so that the bucket rests on the bed of the trailer.
4. Lower the backhoe attachment to the bed of the trailer.
5. Activate the parking brake and place the direction of travel control lever and gearshift lever in neutral position.
6. Stop the engine and remove the starter switch key.
7. Make sure the windows, the doors, the battery compartment, the fuel tank plug and the engine guard are properly closed and locked.
8. Turn the rear view mirrors inwards.
9. Use chocks and chains to immobilize the machine and the backhoe attachment on the trailer.
10. Measure the distance between the ground and the highest point. You must know the total height.

NOTE: After a few miles, check that the machine has not moved and that the chains are still under tension.

Unloading

1. Remove the chocks and the retaining chains.
2. Raise the loader attachment to bring the bucket a few centimeters above the bed of the trailer.
3. Disengage the parking brake switch and place the gearshift lever in first gear.
4. Slowly reverse the machine, at the same time raising the loader attachment so as to keep it a few centimeters above the bed of the trailer.
5. Return the rear view mirrors to their correct position.

RECOVERY TRANSPORT

Towing the machine

⚠ WARNING

Misuse hazard!

Towing is a delicate maneuver that is always carried out at the risk of the user. The manufacturer's warranty does not apply to incidents or accidents that occur during towing. Where possible, carry out the repairs at the site.

Failure to comply could result in death or serious injury.

W0286A

⚠ WARNING

Transport hazard!

When towing on rough terrain or between field operations, always do the following: Engage the transport pin. Install a safety chain between the machine and towed vehicle. This prevents accidental release of the towed vehicle.

Failure to comply could result in death or serious injury.

W1121A

⚠ WARNING

Hazard to bystanders!

The operator must be the only person on the machine when towing. Make sure that nobody else is on the machine or within its working range.

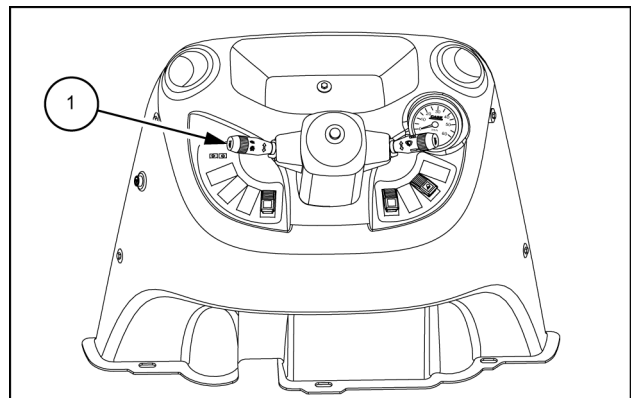
Failure to comply could result in death or serious injury.

W0259A

The machine should only be towed in case of failure. Before towing make sure that it can be towed without causing further damage. Whenever possible carry out the repair at the site or consult your **CASE** Dealer. If the machine is on the public road, make sure that no component of the machine projects onto the road. If this cannot be avoided, install signs in compliance with the relevant regulations. If the machine has to be towed with the engine shut down, it is necessary to uncouple the front (4WD) and rear transmission shafts.

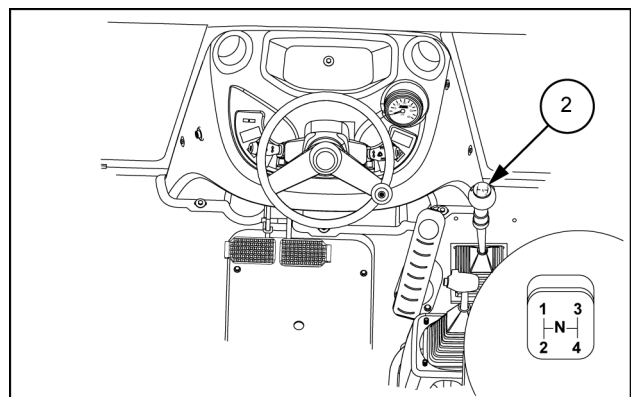
Before towing, be sure to do the following:

1. Check that steering can be used.
2. Check that the direction-of-travel control lever (1) is in the neutral position.



PTIL12TLB0126AB 1

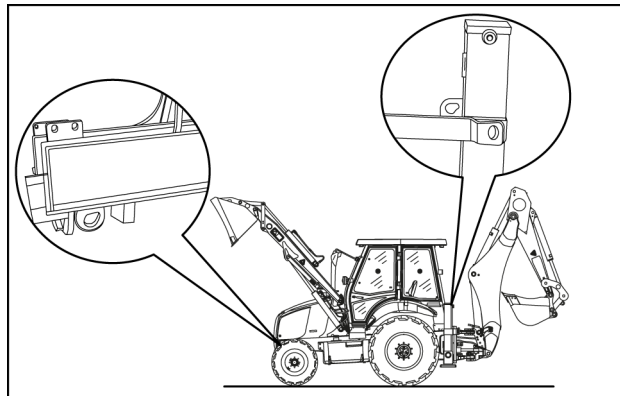
3. Place the gearshift lever (2) in neutral position.



PTIL12TLB0123AB 2

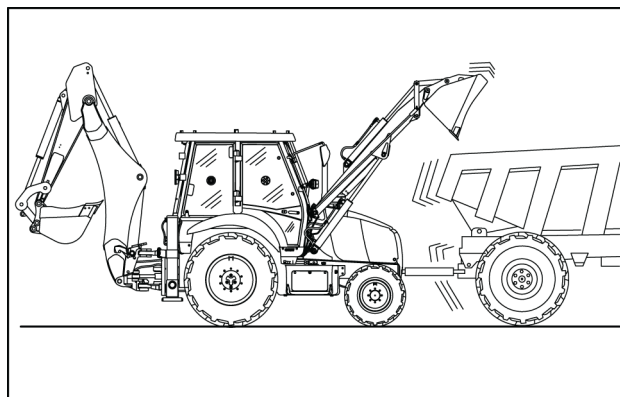
4. If the engine is running, make sure the 4WD (if applicable) is disengaged.

NOTICE: If the engine is not running, the force necessary to turn the steering wheel will be higher. To tow the machine, attach a towing bar to one of the hooking points shown by the decals.



PTIL14TLB0025AB 3

5. Make sure the attachments are raised sufficiently to avoid any interference with the ground or the trailer.
6. If it is not possible to raise the attachments sufficiently to avoid interference, then they must be removed.



PTIL14TLB0026AA 4

6 - WORKING OPERATIONS

GENERAL INFORMATION

Operating the machine in cold weather

NOTICE: Before operating at temperatures below **-1 °C (30.2 °F)**, operate the engine for approximately **15 min** at a speed below **1000 RPM** to warm the oil up to the normal operating temperature.

Fuel

Refill the fuel tank after each working day to prevent the formation of condensation and the entry of water into the fuel system.

Lubricating oil

Select oil viscosity (**SAE** grade) according to ambient temperature before starting engine. Increase oil change frequency when operating below **-10 °C (14 °F)**.

Coolant

Use coolant which is suitable and efficient to the ambient temperature of the machine. Using the correct coolant will provide smooth running of engine and radiator.

Battery

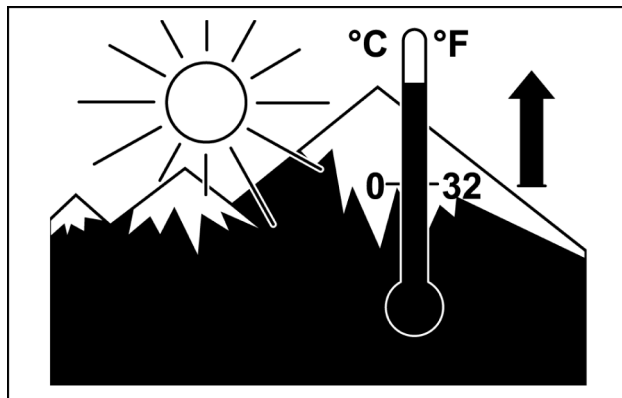
Efficient cold starting requires that battery is sufficiently charged. Warm up the batteries approximately up to **20 °C (68 °F)** (disassembly and storage in a warm place) in order to be able to start the engine at a temperature below **4 - 5 °C (39.2 - 41 °F)**.

Operating the machine in high altitude

Air density decreases as altitude or ambient temperature increases. As a result of this, the engine's maximum output, quality of exhaust gas, temperature level and, in extreme cases, starting behavior, are impaired. Engine can be used at altitudes up to **3000 m (9843 ft)** and temperatures up to **50 °C (122 °F)** for mobile operations. If the engine will be operated under severe conditions (at higher altitudes or temperatures) contact the **CASE** Dealer for further guidelines.

Observe the following recommendations:

1. Maintain the correct coolant level in the coolant reservoir.
2. Check the condition of the cooler plug before starting and replace it if necessary.
3. Carefully clean the radiator, cooler and the engine.
4. Check the condition of all drive belts.
5. Use lubricants with the recommended degree of viscosity.



PTIL12TLB0131AA 1

Operating the machine in high temperatures

Operating the machine in high temperature can cause damage to the machine if proper maintenance is not observed. Hot weather maintenance will extend the service life of your machine.

Always use the recommended brand of coolant. Never mix water with the coolant if premixed. Consult the **CASE** Dealer for the right brand and mixture.

Observe the following recommendations:

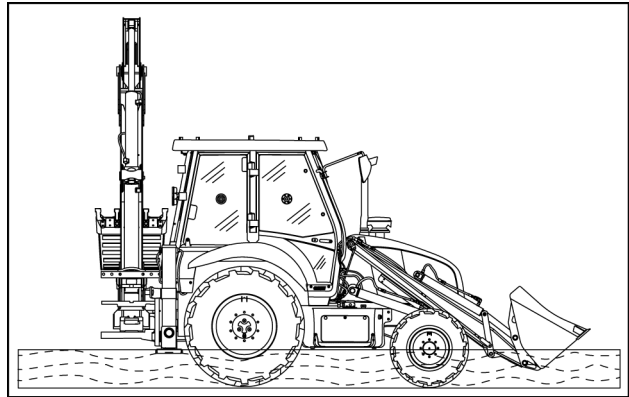
1. Keep the coolant at the correct level in the coolant reservoir and in the radiator.
2. Visit your **CASE** Dealer and have the de-aeration cap tested before hot weather starts.
Replace the cap as required.
3. Clean all dirt and debris from the radiator, coolers, and engine area.
4. Check the condition of the fan drive belt.
5. Use lubricants of the correct viscosity.

Operating the machine in water

Make sure that the bed of the stream or stretch of water can support the weight of the machine. The level of the water must not exceed the height of the centre of the front wheels.

NOTICE: *Never work in water if the water level is higher than the centre of the front wheels. Before taking the machine into the water, pump plenty of new grease into the machine's attachment linkages.*

NOTICE: *Never work in fast-flowing water.*



PTIL14TLB0027AA 1

Lifting the machine

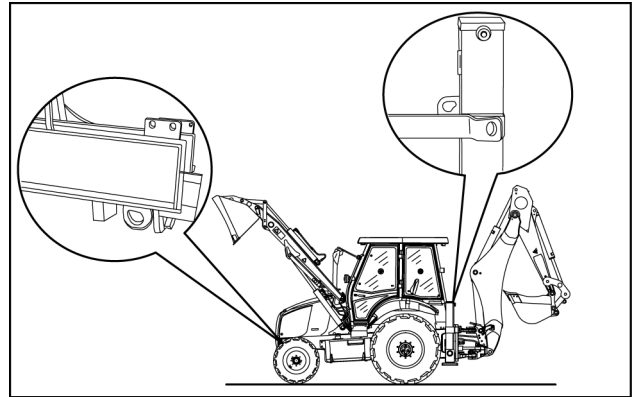
NOTICE: Before lifting the machine, it is essential to place the backhoe attachment in the road travel position.

The hooking points for the machine are shown by decals.

NOTICE: Never use any other hooking points than those shown by the decals.

Use suitable slings to lift the machine. Make sure that the slings are in perfect condition and that they can support the weight of the machine.

NOTE: Do not allow anybody within the machine's working range. Never suspend the machine over people who are in proximity.



PTIL14TLB0028AB 1

LOADER ATTACHMENT

Organizing the job site

Always use the shortest possible work cycles. The location provided for the trucks is an all important element. Spend a little time leveling the work area. A smooth working surface facilitates the work of the machine and moving and parking the trucks. It gives a shorter work cycle.

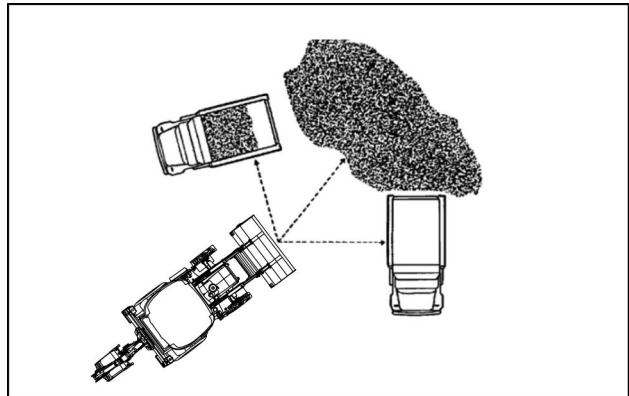
⚠ WARNING

Loss of control hazard!

A full bucket in the raised position may cause the machine to slide when operating over rough ground. Keep the bucket as low as possible during operation for better stability and visibility. Always operate the machine at slow speeds over rough ground.

Failure to comply could result in death or serious injury.

W0271A



PTIL12TLB0133AA 1

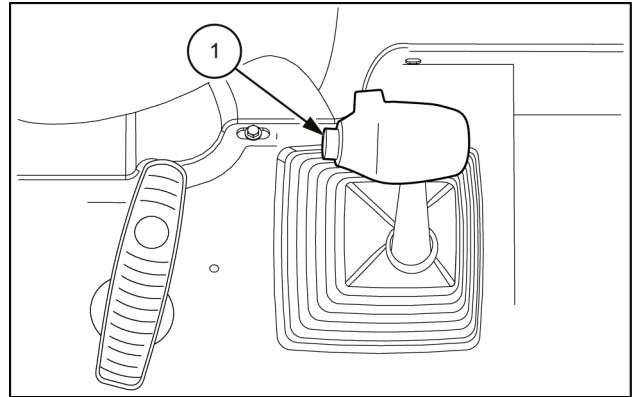
NOTE: On the job site, always keep the bucket as close as possible to the ground so as to increase the machine's stability to the maximum and to ensure perfect visibility.

NOTE: On rough or slippery ground, when the bucket is full, drive the machine as slowly as possible. There is a risk of accident if these instructions are not observed.

Transmission disconnect button

To give maximum power to the hydraulic system, press the disconnect button **(1)** and hold it down. This will cause the transmission to revert to neutral. Release the disconnect button to engage the transmission again.

NOTICE: When the button is pressed, the wheels of the machine are free. If necessary, use the brakes to stop the machine.



PTIL12TLB0134AB 1

Operating the loader attachment

⚠ WARNING

Unexpected movement!

Implements equipped with rear-mounted attachments or rear-towed equipment may tip back when disconnecting from the tractor in the transport position. Use a rear jack stand to prevent the implement from tipping back.

Failure to comply could result in death or serious injury.

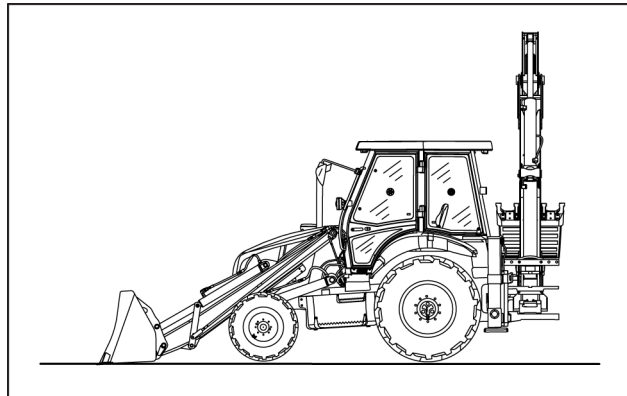
W0917A

The following instructions do not cover all possible conditions of use of the loader attachment. They only constitute basic information to enable the machine to be operated correctly. Where possible, always use the loader attachment at full engine speed. The first time it is operated, maneuver the machine in a clear area, at low speed.

NOTE: Always place the backhoe in transport position for better stability and traction whenever the loader is used.

Loading operations

To fill the bucket from a stock pile, set the bucket in the level position and lower the attachment with the control lever to “float” position.

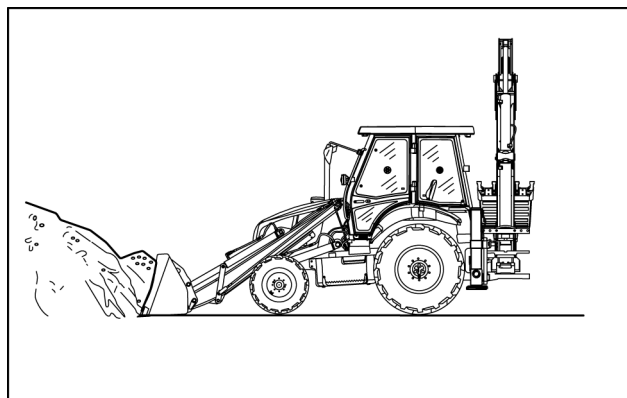


PTIL14TLB0029AA 1

When the loader has entered the pile, press down the transmission disconnect button, allow the control lever to move backwards and then simultaneously operate the controls to lift and roll back the bucket.

Lift and roll-back of the bucket will increase efficiency as a level bucket throughout the lifting cycle resists bucket lift and increases break away effort.

NOTE: Do not be concerned if the bucket is not completely filled during each pass. Maximum productivity is determined by the amount of material loaded in a given period of time. Time is lost if two or more attempts are made to fill the bucket on each pass.



PTIL14TLB0030AA 2

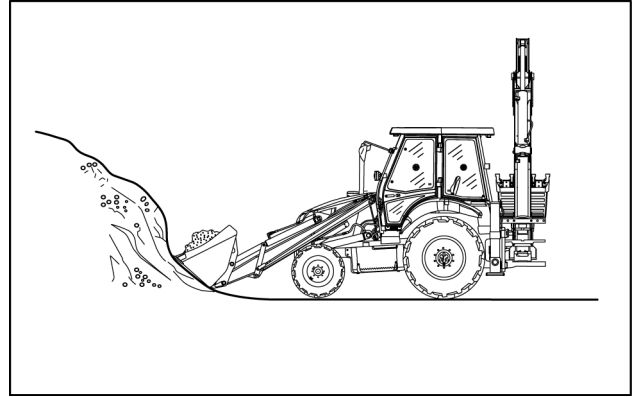
▲ WARNING**Falling objects!**

Dirt slides can be dangerous. Exercise extreme care when undercutting high banks. Watch for falling rocks and cave-ins. Failure to comply could result in death or serious injury.

W0021A

Dump the bucket completely, raise the attachment and then release the transmission disconnect button.

Keep the bucket position as low as possible, especially when working on sloping or rough ground.



PTIL14TLB0031AA 3

▲ WARNING**Loss of control hazard!**

A full bucket in the raised position may cause the machine to slide when operating over rough ground. Keep the bucket as low as possible during operation for better stability and visibility. Always operate the machine at slow speeds over rough ground. Failure to comply could result in death or serious injury.

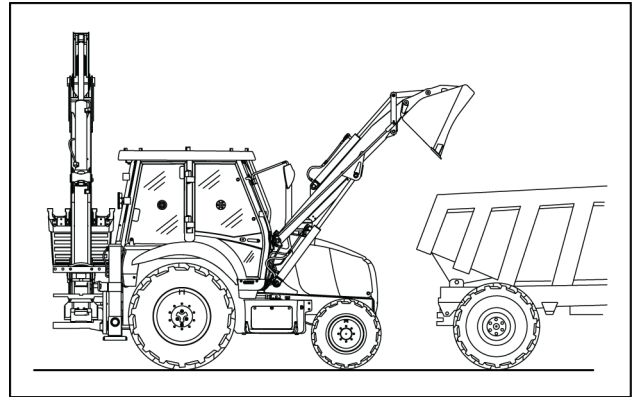
W0271A

Raise the loader high enough to clear any obstruction prior to dumping the load. Once the load is dumped, drive back while lowering and leveling the bucket. Use the return-to-dig feature, if required.

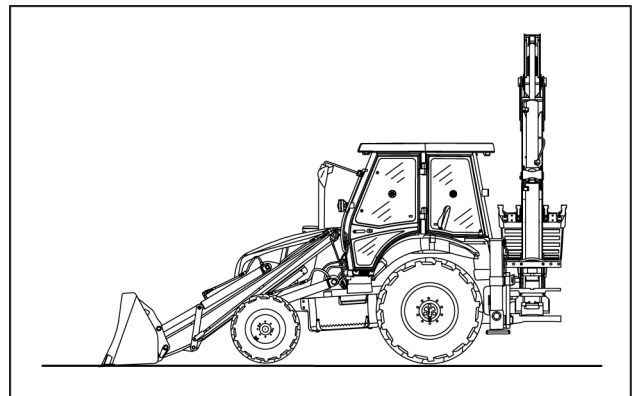
During hard surface operation, place the loader attachment lever in "float" position and keep the bucket level. This will permit the bucket to "float" on the contour of the working surface. If hydraulic down pressure is exerted, the bucket will wear faster than normal. The "float" position will prevent the mixing of surface material with stock-pile material. It will also reduce the chance of surface gouging when removing snow or other material. When loading from a bank select the highest forward gear which will provide the most efficient loading operation without going into a "stall". Keep the working area free of ruts and holes occasionally back grading with the bucket using the low rear edge of the bucket.

For site stripping peeling or scraping, use down pressure with the loader attachment lever in the lowered position, and a slight bucket angle to start the cut. Begin the cut at the notch approximately **50 mm (1.97 in)** deep and hold the depth by feathering the bucket to adjust the cutting lip up or down as required.

When the machine front tires enter the cut, adjust the lift arms to maintain the correct depth. Make additional cuts until the desired depth is reached. Back grade the working area occasionally with the bucket flat and slight down pressure to keep the working area smooth and free from ruts or holes. If the loader attachment lever is moved for lift cylinder action without controlling the bucket angle, the bucket may gouge and leave a series of ruts in the surface.



PTIL14TLB0032AA 4



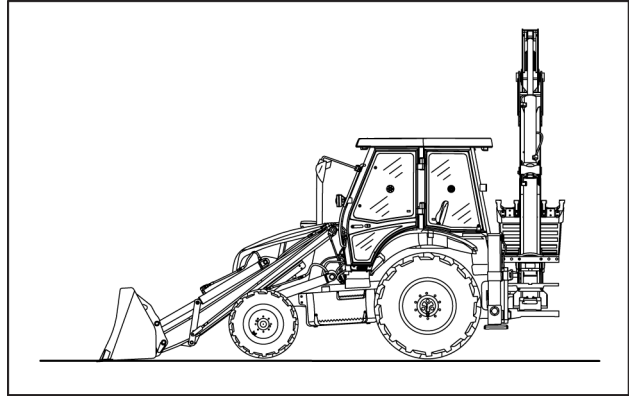
PTIL14TLB0029AA 5

6 - WORKING OPERATIONS

To backfill a trench efficiently it is necessary to move the maximum amount of soil without losing speed. If “stall” occurs downshift or reduce the depth of cut. If the machine is not working at capacity in the gear selected, increase the depth of cut. Operate at right angles to the trench with the loader bucket level. Leave the soil in the bucket as emptying the bucket on each pass is time-consuming, and leave soil that drifts over the side of the bucket for the final clean up. One lengthwise cleanup is usually sufficient to gain an acceptable grade after backfilling. When backfilling from a large pile, shovel the top of the pile by pushing toward the excavation. Drag some soil rearwards to form a work ramp of the convenient grade. If during the backfill operation the machine front wheels get stuck in a trench dump the bucket and apply down pressure to lift the front wheels from the trench. Actuate the bucket as engine power is applied to move the machine rearwards.

NOTE: Maximum bucket down pressure may be obtained by progressively shifting the loader attachment lever to the right.

NOTICE: The safe working load of the loader attachment is calculated using a standard bucket, therefore, when using another bucket or attachment for lifting or handling a load, the weight of the bucket or attachment must be taken into account when calculating the rated load of the loader attachment. Safe working load = **1000 kg (2205 lb)**.



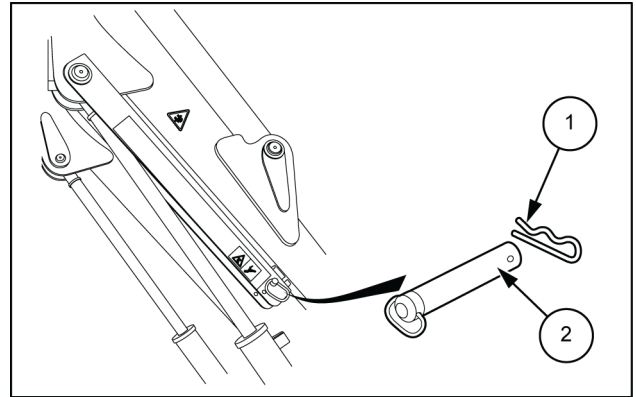
PTIL14TLB0029AA 6

Loader attachment safety strut

Located on the left-hand side of the loader attachment, this safety strut enables the loader attachment to be locked in the raised position for maintenance or servicing the unit.

Locked position

1. Completely raise the loader attachment.
2. Stop the engine and remove the starter switch key.
3. Remove the split pin (1) and the lock pin (2).

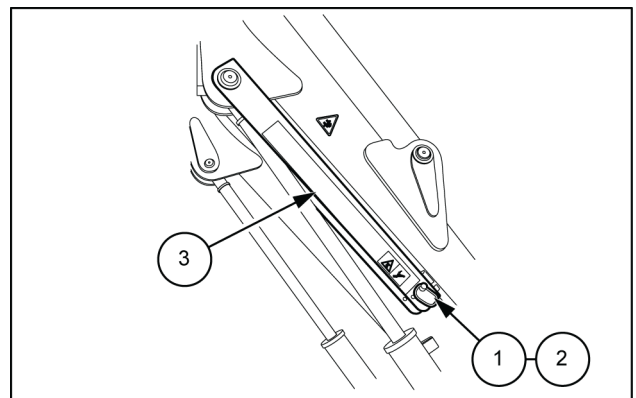


PTIL12TLB0534AB 1

4. Place the strut (3) on the cylinder rod and install the pin (2) and the split pin (1) back into the holes in the strut.

NOTICE: It is mandatory to install the safety strut when carrying out any operation requiring the loader attachment to be in the raised position.

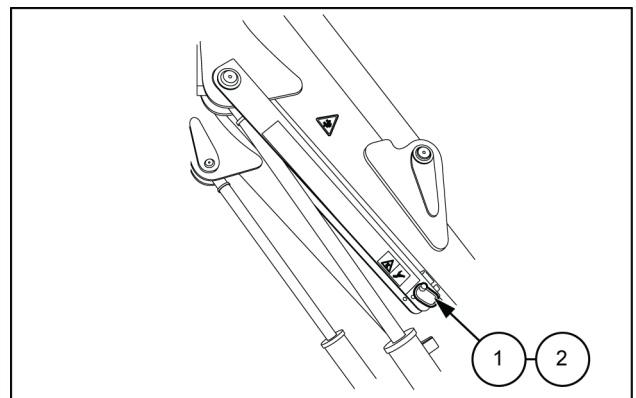
5. Lower the loader attachment until the safety strut is firmly against the cylinder.



PTIL12TLB0535AB 2

Unlocked position

1. Completely raise the loader attachment and stop the engine.
2. Remove the split pin (1) and the lock pin (2).
3. Remove the strut (3) from the attachment and install the pin (1) and the split pin (2) back into the holes in the strut.
4. Start the engine and lower the loader attachment.



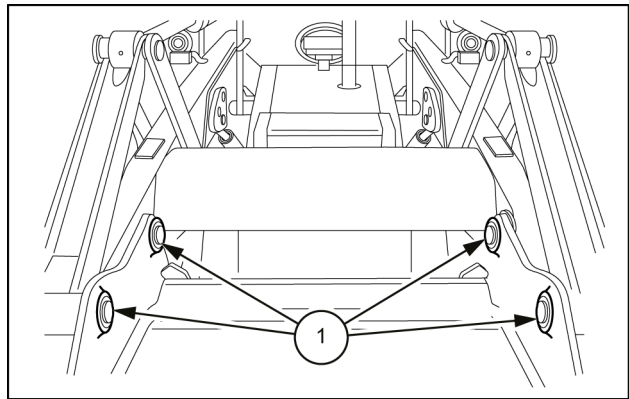
PTIL12TLB0536AB 3

Loader bucket – Removal

1. Move the machine to a level and firm ground.
2. Lower the bucket to the ground in dump position (tilted completely forward).
3. Stop the engine and remove the starter switch key.
4. If the machine is fitted with a 4x1 bucket, release the pressure from the bucket circuit.
5. Remove the retaining rings and pins and drive out the pins **(1)**.

NOTE: Always wear eye protection when using a tool which might project metal particles. Use a hammer with a soft face, such as copper, for pins assembly/disassembly.

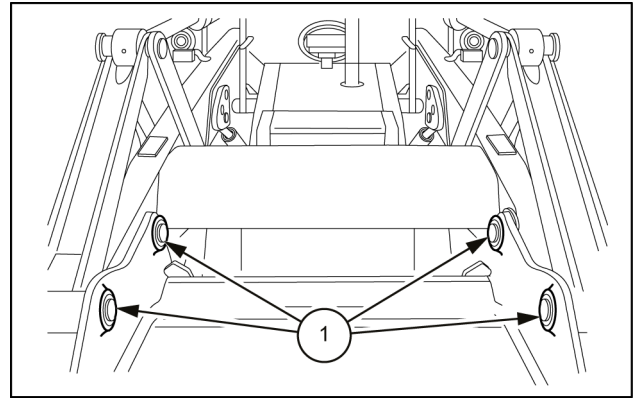
6. For bottom dump bucket (if fitted) disconnect and plug the hydraulic supply lines.
7. Start the engine.
8. Operate the attachment controls so as to release the bucket.
9. Reverse the machine from the bucket.



PTIL12TLB0149AB 1

Loader bucket – Install

1. Make sure all bushings are completely clean.
2. Remove any dirt or foreign matter, if necessary.
3. Start the engine.
4. Use the attachment controls to engage the attachment between the bucket lugs.
5. Reinstall the arm/bucket pins **(1)** and then install the relevant retaining pins and rings.
6. Use the bucket controls to align the connecting rod holes with the bucket lugs.
7. Stop the engine and remove the starter switch key.
8. For bottom dump bucket (if fitted) release the pressure from the bucket circuit.
9. Install the rod/bucket pins and then install the relevant retaining pins and rings.
10. For bottom dump bucket (if fitted) remove the plugs and reconnect the hydraulic lines.



PTIL12TLB0149AB 1

BACKHOE ATTACHMENT

Backhoe attachment

The following instructions do not cover all possible conditions of use of the backhoe attachment. They only constitute basic information to enable the machine to be operated correctly.

NOTE: *The first time it is operated, maneuver the machine in a clear area and at low speed.*

Make sure that no other person is in the working range of the machine.

Never dig near or under the stabilizers, since the machine could fall into the excavation.

When working in an area of reduced visibility, for example next to a building, place a safety barrier and sign panels to prevent anyone coming near the machine.

The backhoe attachment will dig more quickly if the work cycle is short and uninterrupted. Organize your work site so as to obtain a smooth work cycle.

NOTICE: *The backhoe attachment should be operated between **1425 - 1475 RPM** as measured by a tachometer. Please contact **CASE Dealer** for assistance.*

If you try to use the backhoe bucket for digging too wide a trench, you may cause a stall situation (where the dipper control lever is tilted towards the rear but nothing happens). The hydraulic system main relief valve makes a noise when a hydraulic stall occurs. This overload causes the work cycle to be prolonged and it increases the hydraulic fluid temperature.

Setting the backhoe attachment in working position

⚠ WARNING

Overturning hazard!

Be careful when you operate the machine on a hillside. You must be in the operator's seat (loader operation position) when you move the machine forward. Always engage the parking brake and shift the direction control lever and the transmission to neutral before you operate the backhoe.

Failure to comply could result in death or serious injury.

W0220A

⚠ WARNING

Equipment failure could cause accident or injury!

Always fasten the seat belt securely before you operate the machine. Inspect seat belt parts for wear and damage. Replace any and all worn or damaged parts of the seat belt prior to operation.

Failure to comply could result in death or serious injury.

W0046C

1. Ensure that the direction-of-travel control lever is in neutral position.
2. Ensure the gearshift lever is in neutral position.
3. Make sure that the parking brake is engaged.
4. Start the engine.
5. Lower the loader bucket to the ground and ensure that front tires are raised approximately **20.0 cm (7.9 in)** from the ground.
6. Turn the seat round to the backhoe attachment position and adjust it correctly.
7. Accelerate and run the engine at the required speed.
8. Lower the stabilizers till the rear wheels are raised.

NOTE: *Whenever the backhoe attachment is used, the machine must always be resting on the stabilizers.*

⚠ WARNING

Hazard to bystanders!

The operator must be the only person on the machine when towing. Make sure that nobody else is on the machine or within its working range.

Failure to comply could result in death or serious injury.

W0259A

9. Release the safety lock and operate the boom.

⚠ WARNING

Hazard to bystanders!

Always sound the horn before starting the machine. Make sure the work area is clear of other persons, domestic animals, tools, etc. before you operate the machine. Never allow anyone in the work area during machine operation.

Failure to comply could result in death or serious injury.

W0304A

⚠ WARNING

Avoid injury!

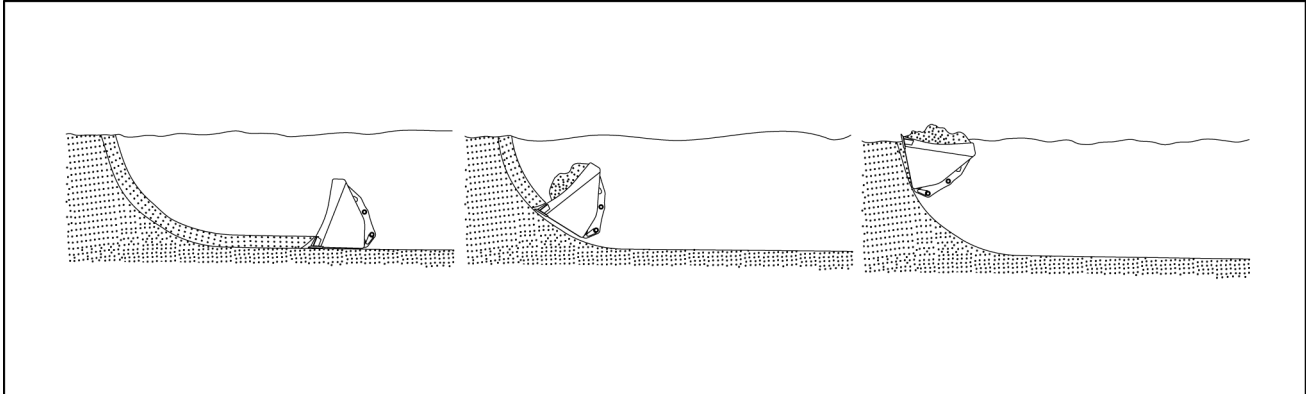
Operate controls only when seated in the operator's seat.

Failure to comply could result in death or serious injury.

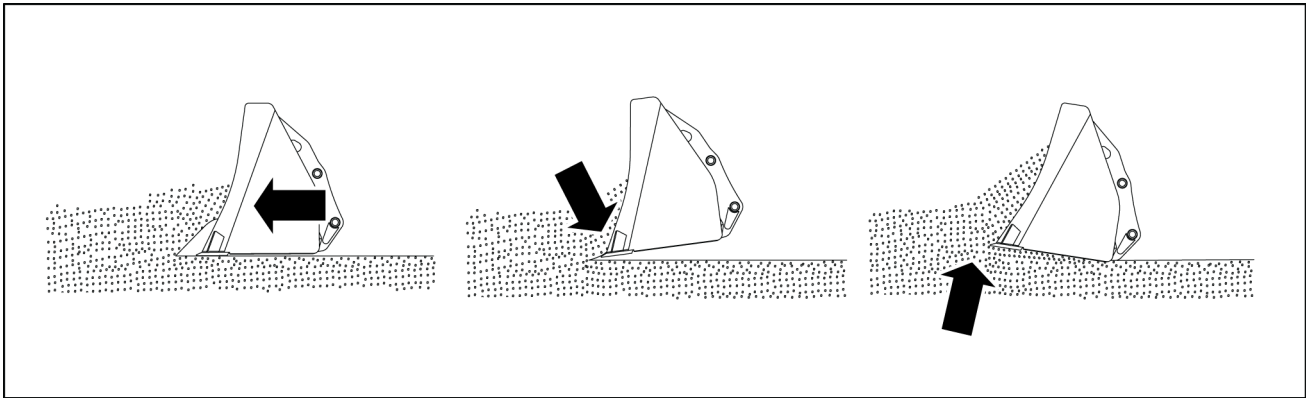
W0956A

Operating the backhoe attachment

Digging method



PTIL12TLB0154EA 1



PTIL12TLB0383EB 2

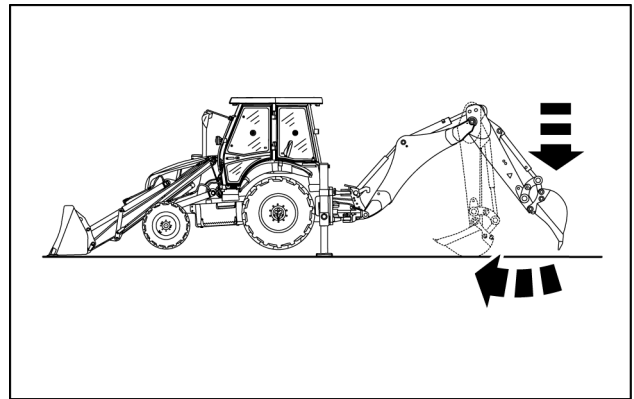
Correct	Wrong	Wrong
	The backhoe attachment will dig in and cause a stall	The bucket is pushed upwards. This will increase the cycle time

NOTICE: Never operate any of the backhoe attachment control levers with arm locked in transport position.

NOTICE: The safe working load of the backhoe attachment is calculated using a standard bucket, therefore, when using another bucket or attachment for lifting or handling a load, the weight of the bucket or attachment must be taken into account when calculating the rated load of the backhoe attachment. Safe working load = **1000 kg (2205 lb)**.

Filling the backhoe bucket

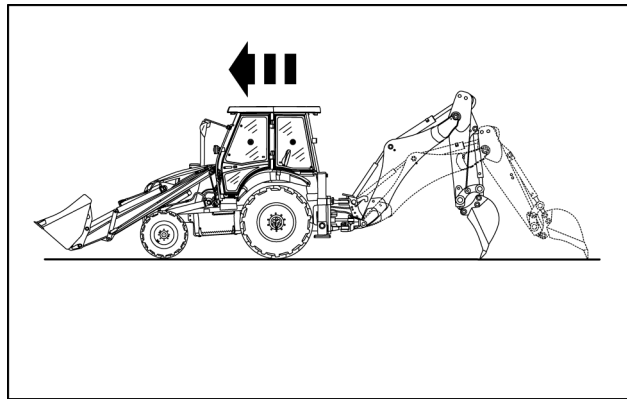
Fill the backhoe bucket by maneuvering the dipper. Keep the bottom of the backhoe bucket parallel to the cut. The backhoe bucket teeth and blade must cut the ground like the blade of a knife. The depth of dig varies depending on the type of material. Dump the bucket contents onto the spoil pile, rolling out the bucket as the pile is approached. Avoid constant jarring or hammering-type contact between the spoil pile and bucket as this will cause wear to the bucket pins and bushings.



PTIL14TLB0033AB 1

Moving the machine forwards when working

1. It is possible to use the backhoe attachment to move the machine forward at the same time as the excavation.
2. Make sure that the front wheels are straight.
3. Set the engine speed to **1000 RPM**.
4. Release the parking brake.
5. Raise the boom and retract the dipper, then move the boom so as to place the backhoe bucket teeth on stable ground.
6. Raise the stabilizers and the loader bucket about **20 cm (7.87 in)** from the ground.
7. Use the boom and dipper to move the machine.
8. After moving the machine, lower the stabilizers and place the loader bucket on the ground, then level the machine.
9. Engage the parking brake.



PTIL14TLB0034AB 1

NOTICE: This procedure can only be used on level ground. Never use it on sloping ground. On sloping ground it is mandatory to turn the operator's seat to the loader attachment position to move the machine by the normal procedure.

The machine can be moved sideways in the same fashion, except that the bucket must be flat to support the weight of the machine. Use the swing control to move the machine sideways to the required position.

Trenching

Trenching is the basic backhoe excavating operation. Other digging operations are merely variations of this basic function (filling the bucket, dumping the bucket and moving the machine forward). While trenching, it is generally important to maintain a level trench bottom. This is accomplished by setting the bucket at the correct angle of approach.

Pull on the dipper lever **(1)** to maintain the correct cutting angle as the bucket is crowding in applying light pressure to the right.

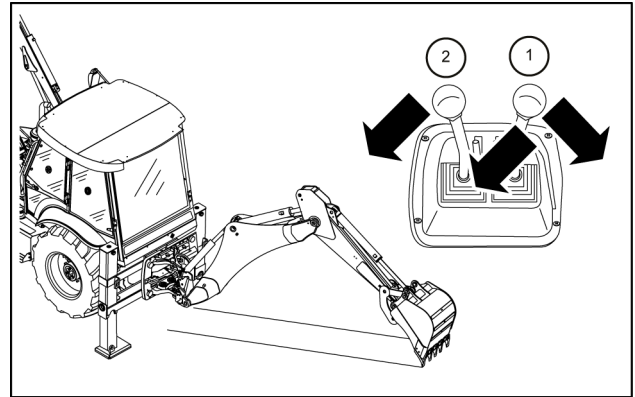
At the same time, pull on the lift lever **(2)** to relieve down pressure and keep the bucket in the same plane.

Continue the trench by moving forward. Moving too far will require excessive down pressure for digging, plus hand clean-up of the trench bottom. It is better to move a lesser amount than to move too far.

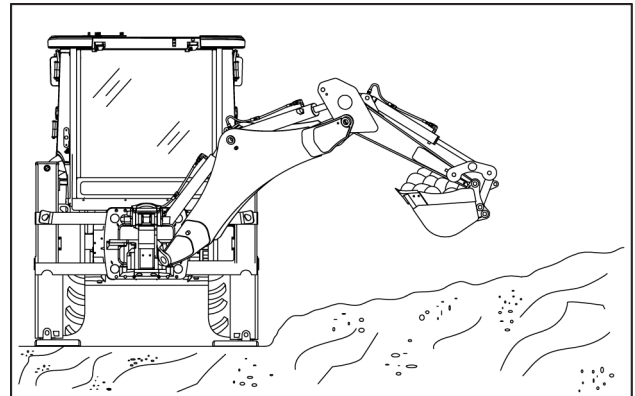
However, if this is not practicable, use the loader or backhoe attachment to cut a level surface into the slope for the uphill wheel and stabilizer, and deposit the spoil from the slot onto the downhill side for the opposite wheel and stabilizer. When digging always deposit the spoil from the trench on the uphill side.

NOTICE: When excavating across a slope it is not possible to make use of the loader bucket for added stability. Do not overload the bucket and avoid swinging a loaded bucket to the downhill side of the slope.

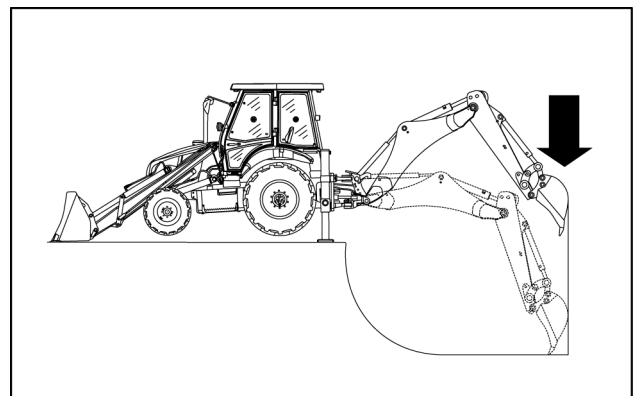
To finish the far wall on a straight-walled excavation crowd out the bucket while forcing the bucket down the excavation from the boom.



PTIL14TLB0035AB 1



PTIL12TLB0159AB 2



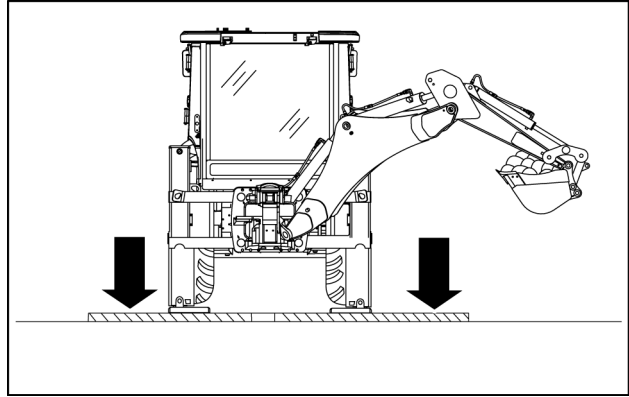
PTIL14TLB0036AB 3

6 - WORKING OPERATIONS

To finish the rear wall crowd in the bucket, while lifting with the boom, keeping the edges of the bucket horizontal.

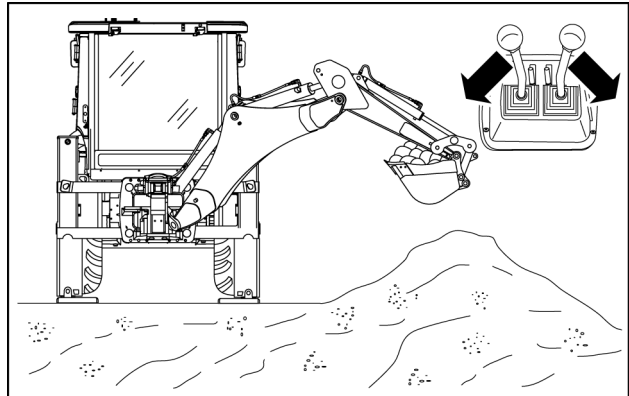
The platform will also reduce the possibility of the machine creeping rearwards if hard digging is encountered.

NOTICE: Do not backfill a trench using the swing device to swing the bucket sideways. Doing so can damage the dipstick, boom, swing cylinders or mainframe.



PTIL12TLB0161AB 4

To backfill a trench, lift the bucket over the spoil pile and then crowd in the dipper and lift the boom. Pull both the crowd and boom levers simultaneously for smooth even backfilling.



PTIL12TLB0162AB 5

Backhoe bucket Remove

1. Move the machine to a level and firm ground.
2. Lower the stabilizers and place the bucket on the ground.
3. Stop the engine and remove the starter switch key.
4. Remove the lock rings and pins and the rod/bucket link pin (1).

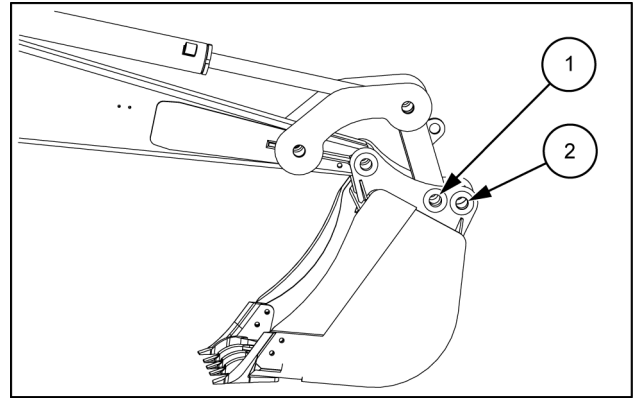
⚠ CAUTION

Flying objects!

Wear eye protection. Do not strike steel parts with a steel hammer. Parts may break.

Failure to comply could result in minor or moderate injury.

C0024A

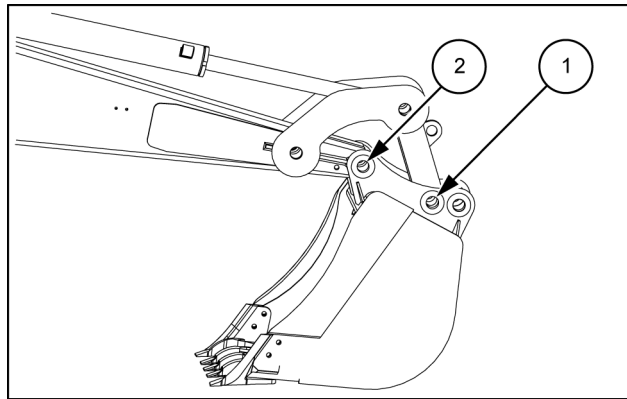


PTIL12TLB0166AB 1

5. Start the engine.
6. Retract the bucket cylinder rod.
7. Operate the attachment controls so that the dipper/bucket pin is not supporting the load of the dipper.
8. Stop the engine and remove the starter switch key.
9. Remove the lock rings and pins and the arm/bucket link pin (2).
10. Start the engine.
11. Operate the attachment controls so as to disconnect the dipper from the bucket.

Backhoe bucket Install

1. Start the engine.
2. Extend the bucket cylinder rod to bring the connecting rod to their housing.
3. Reinstall the arm/bucket link pin **(1)** and install the lock rings and pins.
4. Slightly raise the attachment and operate the bucket and dipper control to align the dipper hole with the bucket lugs.
5. Reinstall the rod/bucket link pin **(2)** and install the lock rings and pins.



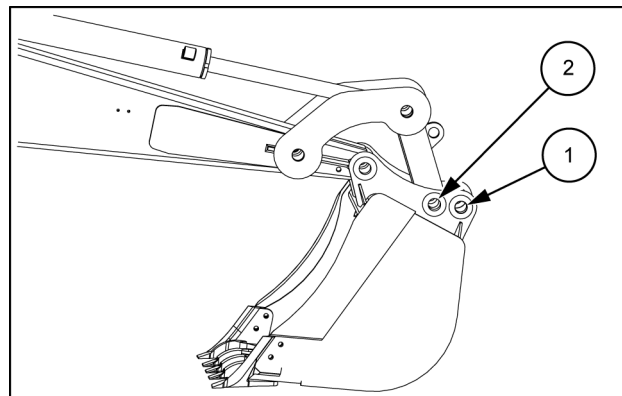
PTIL12TLB0165AB 1

Backhoe bucket – Digging angle

It is possible to change the backhoe bucket opening angle, depending on the work which is to be carried out.

Position **(1)**: Bucket maximum power.

Position **(2)**: Enables the bucket to open by 10° more and, therefore, to dig vertical side trenches closer to the machine.



PTIL12TLB0508AB 1

7 - MAINTENANCE

GENERAL INFORMATION

Fluids and lubricants

S.N.	Usage	Specification	Brand	570T
1	Transmission oil 2WD	SAE 15W30	CASE TRANSPower	16.00 l (4.23 US gal)
2	Transmission oil 4WD	SAE 15W30	CASE TRANSPower	18.50 l (4.89 US gal)
3	Rear axle oil	SAE 30	CASE AXLPower	17.10 l (4.52 US gal)
4	4WD front axle oil	SAE 30	CASE AXLPower	9.00 l (2.38 US gal)
5	Engine oil - BS III	API CI4, SAE 15W-40	Servo Pride Supreme	11.00 l (2.91 US gal)
6	Brake fluid	ISO 7308	Servo Transtrac HVI	0.67 l (0.18 US gal)
7	Hydraulic oil	ISO VG-68 IS:10522	CASE HYDRAPower	Tank: 65 l (17.17 US gal) System: 65 l (17.17 US gal) Total: 130 l (34.34 US gal)
8	Coolant	-	COOL POWER	20 l (5.28 US gal)
9	Grease	EP GREASE GRADE 2 (IS:7623)	ServoGem EP2	1.7 kg (3.75 lb)
10	GREASE (front axle), #2 MOLYDISULFIDE	MAT3550 GR C	Petronas	0.532 kg (1.1 lb)
11	Refrigerant	HFC-134a	-	To be entered
12	PAG oil (Compressor)	SP-15	-	270.0 - 300.0 mL (9.1 - 10.1 US fl oz)

Fuel

The use of improper or adulterated fuel can result in a loss of power of the engine, damage to fuel system and engine and may cause high fuel consumption. If the temperature falls below the fuel cloud point (point at which wax begins to form) the wax crystals will cause power loss or will prevent the engine from starting. In cold weather, fill the fuel tank at the end of the day's work in order to prevent the formation of condensation.

Fuel storage

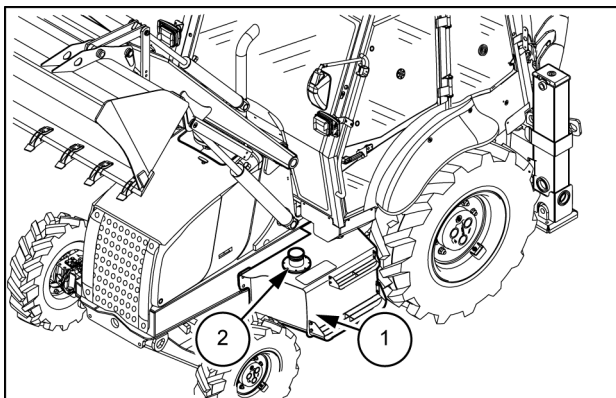
Prolonged storage of fuel can lead to the accumulation of impurities and condensation in the fuel. Engine trouble can often be traced to the presence of water in the fuel. The storage tank must be placed outside and the temperature of the fuel should be kept as low as possible. Drain off water and impurities regularly.

Fuel tank

The fuel tank (1) is located on the left-hand side of the machine, under the cab.

NOTE: Tank capacity 142 l (38 US gal).

It is possible to fill fuel through the plug (2). In cold weather, use a fuel suitable to the ambient temperature and refill at the end of each working day, in order to prevent condensation. During assembly, make sure it is correctly fitted before locking it.



PTIL14TLB0037AB 1

Hydraulic oil

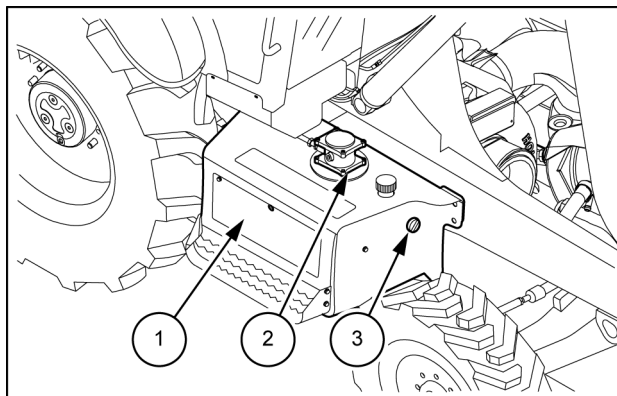
Hydraulic oil is not water- soluble, this can cause the formation of condensation water in the hydraulic oil tank, especially after the machine has been left unused for a long time. If water contamination is noticed then replace the hydraulic oil. Refer to **Hydraulic systems - Replace**. Dispose of the drained liquid as per local regulations.

Hydraulic oil tank

The hydraulic oil tank (1) is located on the right-hand side of the machine, under the cab.

NOTE: Tank capacity 65 l (17 US gal).

The oil level can be checked through the sight glass (3). Remove the breather with oil filling cap (2), by means of the special wrench supplied with the machine to topup the oil.



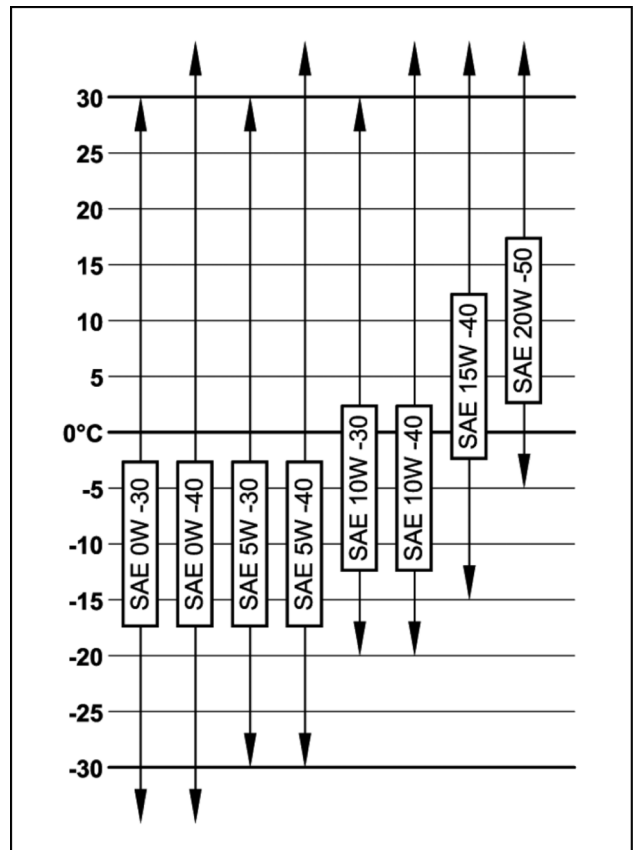
PTIL12TLB0541AB 1

Engine oil viscosity

As a general rule, multi-grade oils must be used. In closed rooms heated to temperatures $> 5^{\circ}\text{C}$ (41°F), it is also possible to use single-grade oils. As the viscosity of lubricating oils varies according to the temperature, the temperature of the place where the engine will be used is decisive for choosing the oil viscosity grade (**SAE** grade). According to the diagram reported here to the side, it is possible to choose the necessary oil viscosity for each temperature in order to guarantee an optimum operation of the engine. If a certain oil type is used to temperatures lower than those indicated in the diagram, it could negatively affect the starting capacity of the engine, but without damaging the engine itself.

The use of a certain type of oil at temperatures above those indicated in the diagram must be limited as much as possible, in order to minimize the possible wear damage caused to the engine.

Synthetic oils provide a better performance because of their better stability as regards temperature and oxidation.



PTIL12TLB0173BA 1

Safety instructions

Perform checks and maintenance operations only after reading and learning the instructions and the warnings contained in this manual.

NOTE: *There is a risk of serious injury if maintenance or repairs are not performed correctly. If you do not understand the maintenance procedures, consult your **CASE Dealer**.*

Make sure you know the position and function of every control. Operating the controls wrongly can cause serious physical injury. Any modification to this machine without prior authorization could cause serious injury. Do not make any modifications without authorization. Consult your **CASE Dealer**. Carefully observe the maintenance intervals indicated in this manual.

NOTICE: *If you use the machine under particularly severe conditions (dusty or corrosive atmosphere, etc.), the maintenance intervals should be reduced.*

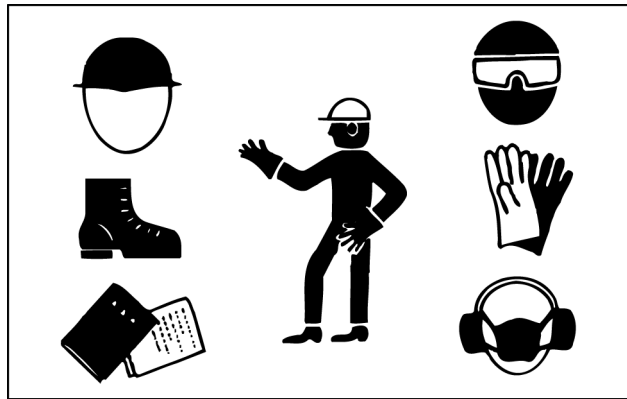
Before performing any operation on the machine, wear tight clothes and personal safety devices appropriate for the operation to be carried out:

- Safety helmet
- Safety shoes
- Heavy gloves
- Reflective clothing
- Wet weather clothing

If the environment conditions make it necessary, the following personal safety equipment should be at hand:

- Respirators (or dust proof masks)
- Ear plugs or acoustic ears protections
- Goggles with lateral shield or masks for eyes protection

Before performing any maintenance operation, wait for the engine and all hydraulic systems and components to cool down. Clean the grease fittings before lubrication. Before filling oil, clean the area around plugs and necks. Prevent that dust or dirt from entering the hydraulic systems or components.



PTIL12TLB0174AA 1

Machine safety

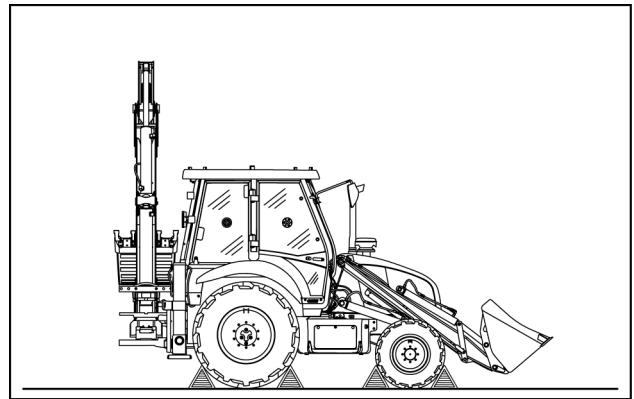
Before performing any maintenance or repair operation, make sure the conditions are safe to perform any task on the machine.

1. Move the machine to a level and firm ground, away from soft ground, excavations or poorly shored cavity.
2. Lower the loader attachment. Place the backhoe attachment in the road travel position.
3. Ensure the direction-of-travel lever and gearshift lever are in neutral position.
4. Engage the parking brake.
5. Stop the engine.
6. Release the hydraulic pressure by operating the control levers in all directions.
7. Disconnect the electrical system by disconnecting the battery.
8. Place some wedges under the wheels in order to prevent the machine from moving if required.

NOTE: For all maintenance operations which require the loader attachment to be raised, install the safety support strut.

Personnel

The personnel in charge of the checks and maintenance operations must be sufficiently skilled to perform these operations on this machine. This skill may be obtained by being trained for several days by a technician or by attending a training course.



PTIL14TLB0038AA 1

Work hours and intervals

Work hours and intervals

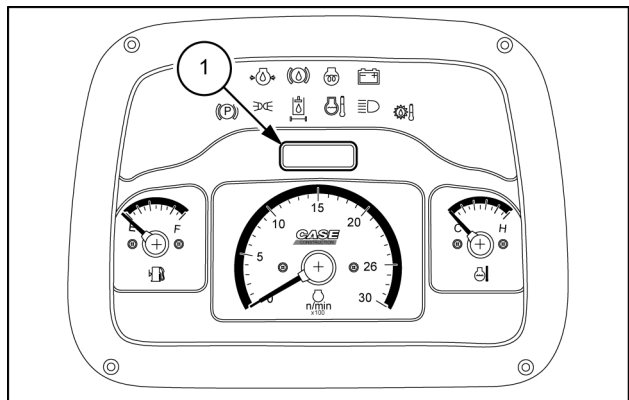
One of the premises for the manufacturer to satisfy the warranty obligations is the regular performance of all inspection, maintenance and repair operations prescribed, according to the instructions given in this manual, as well as the use of original spare parts.

During the warranty period, all inspection, maintenance and repair operations, except for the daily and weekly inspection and maintenance, must be carried out by the service department or an authorized workshop. In order to guarantee the good operation and a long life of the machine and its components, some intervals have been defined for the performance of maintenance operations, these intervals must be carefully observed. The maintenance intervals indicated in this manual apply to normal operating conditions. If operating conditions are more severe, the intervals will have to be accordingly reduced.

Hour meter

Observe the maintenance intervals by daily consulting the work hours displayed by the hour meter located in the side instrument.

The hours are shown on the display **(1)** located in the side instrument console.



PTIL14TLB0007AB 1

Intervals

Servicing and inspection intervals are variable. All operations are scheduled on the following basis:

1. **10 h** or daily
2. **50 h** or weekly
3. **250 h** or monthly
4. **500 h** or 3 months
5. **1000 h** or 6 months
6. **2000 h** or one year
7. Maintenance as required.

MAINTENANCE CHART

Maintenance Chart

Maintenance action	Adjust	Cleaning
	Replace	Drain fluid
	Lubricate	Tighten
	Check	Grease
		Page no.
EVERY 10 HOURS		
FIRST 50 HOURS		
EVERY 100 HOURS		
EVERY 250 HOURS		
EVERY 500 HOURS		
EVERY 1000 HOURS		
EVERY 1200 HOURS		
EVERY 2000 HOURS		
AS REQUIRED		

EVERY 10 HOURS

Service brake

Check the operation of the service (pedal) brakes on a hard level surface after the first **10 h** of operation.

1. Make sure the area is clear of other workers or bystanders.
2. Lock both pedals together with the brake pedal lock.
3. Shift the transmission to 2nd gear.
4. Drive the machine forward at full throttle.
5. When the machine is moving at full speed, remove your foot from the throttle and stop the machine.
6. The machine must stop smoothly in a straight line and the brake pedal effort must feel firm.

NOTICE: If the machine does not stop in a straight line or if the brake pedal effort feels soft, contact your **CASE Dealer** for service.

Parking brake

The parking brake is not serviceable. If a reduction of the braking action is detected, contact your **CASE** Dealer.

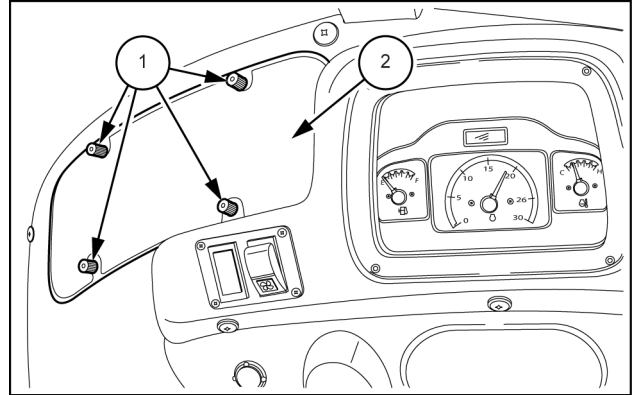
Fuses and lamps

Fuse details

The machine is equipped with a fuse located on the side console.

Side console box

1. Turn the thumb screws **(1)** to loosen the panel cover **(2)** for the fuse box. Remove the panel cover.
2. Remove the fuse box covers as needed.
3. Refer to the decal on top of the panel cover for fuse, relay, and/or diode functions.



PTIL13TLB0302AB 1

SI No.	Fuse details	Fuse rating
1	Front work light	15 A
2	12 V power output	10 A
3	Rear work light	15 A
4	Horn, hazard light control	15 A
5	Cabin, fan, radio	10 A
6	Installer ignition	10 A
7	Wiper	10 A
8	Driving lamp LOW	15 A
9	Driving lamp HIGH	15 A
10	Cabin dome light	10 A
11	HVAC (If fitted)	20 A
12	Loader self level	10 A
13	Side shift lock	10 A
14	Cluster	10 A
15	Speedometer	10 A
16	Stop lamps	10 A
17	Hazard lights control ignition	10 A
18	Fuel shutoff	10 A
19	4WD (If fitted)	10 A
20	Shuttle control	10 A

The fuses are arranged as shown.

1	15 A	10 A	15 A	15 A	10 A	10 A	10 A	15 A	15 A	10 A	10
31	FRONT WORK LIGHT	MOBILE CHARGER	REAR WORK LIGHT	HORN, HAZARD LTS CTL	CABIN FAN, RADIO	INSTALLER IGN	WIPER	DRIVING LAMP LOW	DRIVING LAMP HIGH	CABIN DOME LIGHT	40
21	20 A	10 A	10 A	10 A	10 A	10 A	10 A	10 A	10 A	10 A	30
11	HVAC	LOADER SELF LEVEL	SIDE SHIFT LOCK	CLUSTER	SPEEDO METER	STOP LAMPS	HAZARD LTS CTL IGN	FUEL SHUTOFF	4WD	SHUTTLE CONTROL	20

PTIL12TLB0441AA 2

Lamp details

Before using the machine, it is recommended to check that all lights are clean and correctly operating.

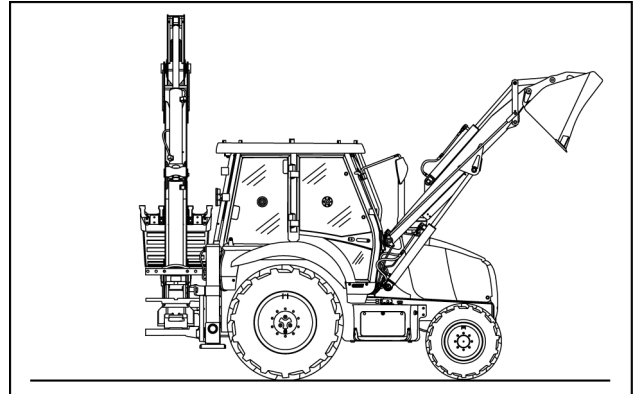
SI No.	Lamp description	Lamp wattage
1	Head lamp	65 W/ 55 W
2	Front work light	55 W
3	Rear work light	55 W
4	Stop lamp	21 W
5	Park lamp	10 W
6	Revers lamp	21 W
7	Turn lamp	21 W
8	Direction indicators	5 W
9	License plate lamp	5 W

Functionality of controls and lamps

Before using the machine, it is recommended to check that all controls, instruments and lamps in the operator's compartment are correctly operating.

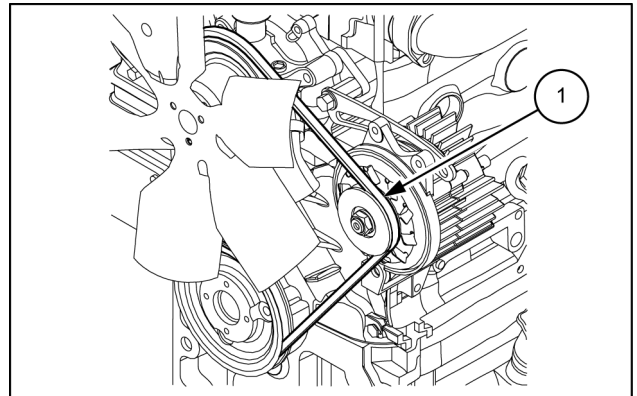
Drive belts - Check

1. Move the machine to a level and firm ground.



PTIL14TLB0009AA 1

2. Visually check the condition of the belt **(1)**.
3. Replace if it is worn or damaged as described in the section "As required".

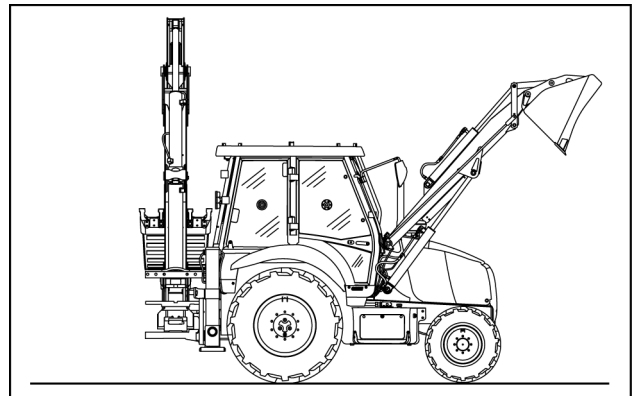


PTIL12TLB0178AB 2

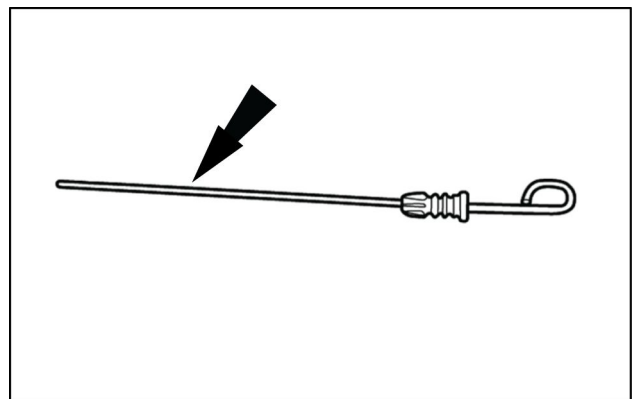
Engine oil level - Check

Engine oil level check

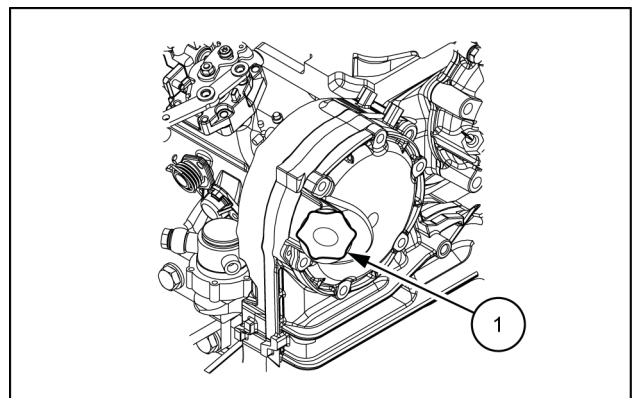
1. Move the machine to a level and firm ground.
2. Raise the loader attachment and install the safety support strut.
3. Place the backhoe attachment in the road travel position.
4. Place the direction-of-travel lever and gearshift lever in neutral position.
5. Immobilize the machine by means of the parking brake.
6. Stop the engine, wait for it to cool down and remove the starter key.
7. Wait for **30 min.**
8. Pull out the dipstick, clean it with a clean cloth and completely insert it into the hose, then take it out again.
9. If the oil level is below the mark, remove the filler cap **(1)** and fill oil up to the full mark on the dipstick.
10. Retighten the filler cap **(1)**.
11. Lower and lock the engine tilt hood.
12. Remove the safety support strut and lower the loader attachment.



PTIL14TLB0009AA 1



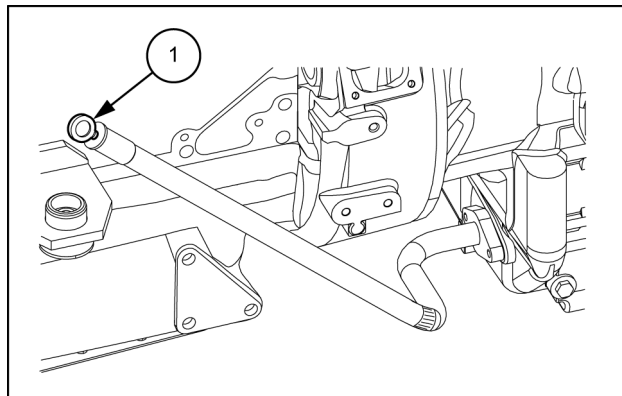
PTIL12TLB0184AB 2



PTIL12TLB0475AB 3

Transmission oil level - Check

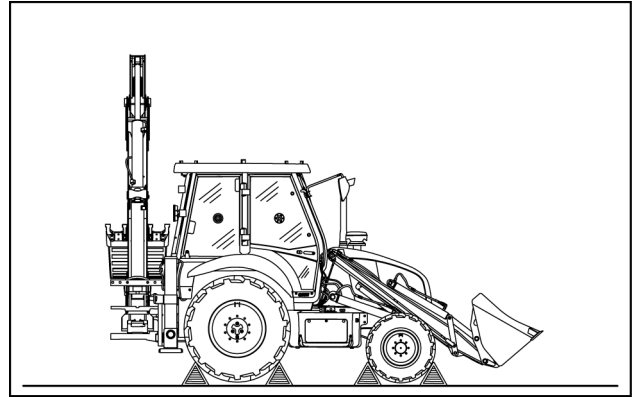
1. Move the machine to a level and firm ground.
2. Raise the loader attachment and install the safety support strut.
3. Ensure the direction-of-travel lever and gearshift lever are in neutral position.
4. Engage the parking brake.
5. Allow the engine to idle.
6. Remove the dipstick **(1)** and check the oil level. The oil level should be near to maximum and if necessary, add more oil.



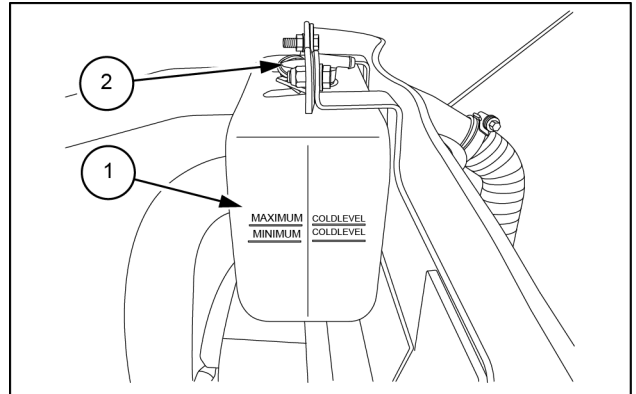
PTIL12TLB0206AB 1

Engine coolant level - Check

1. Move the machine to a level and firm ground.
2. Lower the loader attachment to the ground.
3. Place the backhoe attachment in the road travel position.
4. Place the direction-of-travel lever and gearshift lever in neutral position.
5. Immobilize the machine by means of the parking brake.
6. Stop the engine and remove the starter key.
7. Wait for the machine to cool down.
8. Open and raise the engine tilt hood.
9. Check the level of fluid by directly checking the reservoir **(1)**.
10. The level in the coolant reservoir **(1)** must be between the two marks.
11. If necessary, remove the cap **(2)** and add more coolant.



PTIL14TLB0039AA 1



PTIL12TLB0265AB 2

⚠ CAUTION

Burn hazard!

Take care if removing the filler cap while the system is hot. Before removing the cap: completely cover the cap using a thick cloth, and slowly open the filler cap to allow the pressure to escape. Do not add cold water to a hot coolant reservoir.

Failure to comply could result in minor or moderate injury.

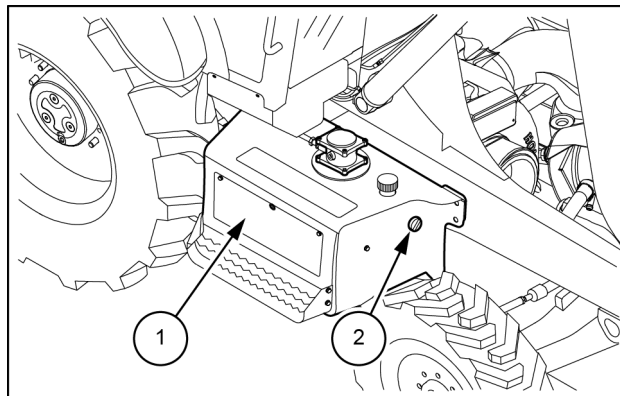
C0031A

12. Lower and lock the engine tilt hood.

Hydraulic oil level - Check

1. Follow machine safety position. (Refer **Engine - Safety rules**)
2. Release any possible residual pressure from the hydraulic system by moving the control levers in all directions.
3. Check the hydraulic oil level in the tank **(1)** by means of the level gauge **(2)** after waiting for the oil to reach the ambient temperature.
4. The hydraulic oil level must reach at least the half of the gauge **(2)**.
5. If necessary, top up.

NOTE: Even when its level is insufficient, a small quantity of hydraulic oil remains in the lower part of the gauge. This does not mean that the level is sufficient.



PTIL12TLB0555A 1

Fuel tank level - Check – Level

⚠ WARNING

Fire hazard!

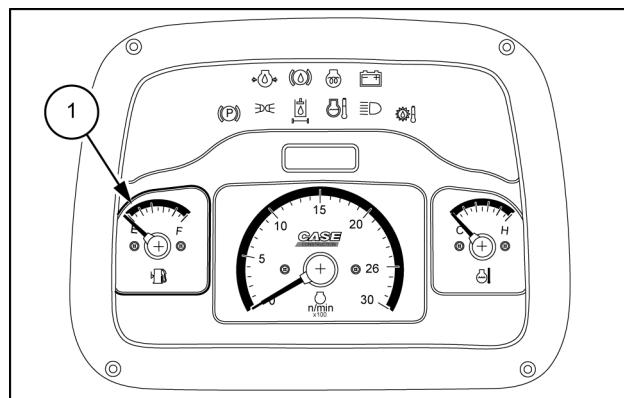
When handling diesel fuel, observe the following precautions:

1. **Do not smoke.**
 2. **Never fill the tank when the engine is running.**
 3. **Wipe up spilled fuel immediately.**
- Failure to comply could result in death or serious injury.**

W0099A

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Now it is possible to check the quantity of fuel in the tank by looking at the relevant gauge **(1)** in the side instrument panel.

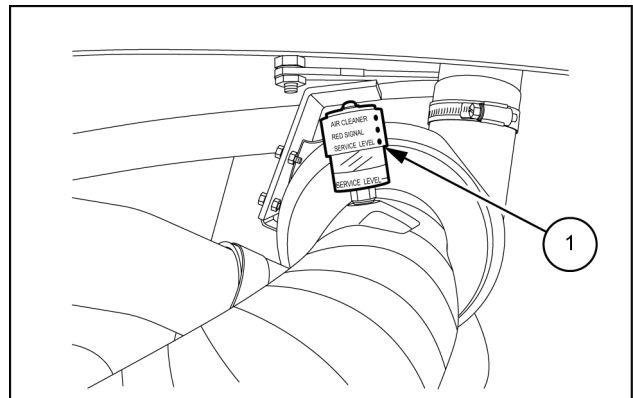
NOTE: *It is recommended to fill fresh fuel at the end of the day or shift.*



PTIL14TLB0008AB 1

Restriction Indicator– Check

1. Move the machine to a level and firm ground.
2. Raise the loader attachment and install the safety support strut.
3. Place the backhoe attachment in the road travel position.
4. Ensure the direction-of-travel lever and gearshift lever are in neutral position.
5. Engage the parking brake.
6. Stop the engine and remove the key.
7. Visually inspect the restriction indicator **(1)** mounted on the intake hose.
8. Check if any red coloured band is surrounding the spring within the indicator.
9. If red coloured band is visible then clean the air filter as described in “As Required”.



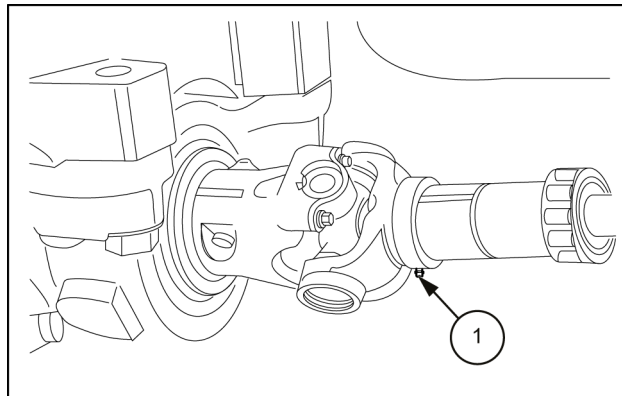
PTIL12TLB0448AB 1

NOTE: Wait until the machine components attain normal temperature before proceeding to clean the air filter.

Grease points – Lubricate

Drive shaft's coupling

Grease fittings (1).

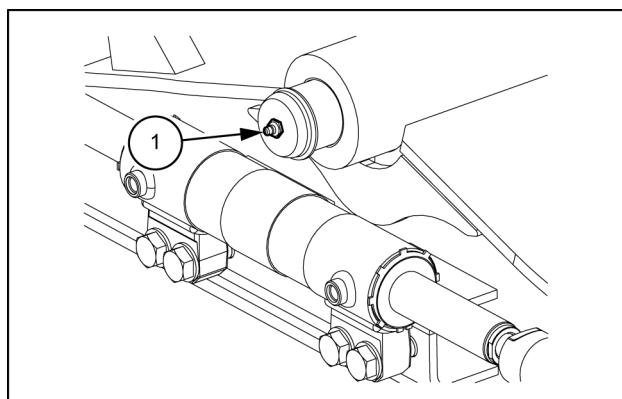


PTIL12TLB0219AB 1

Front axle swivel bearing

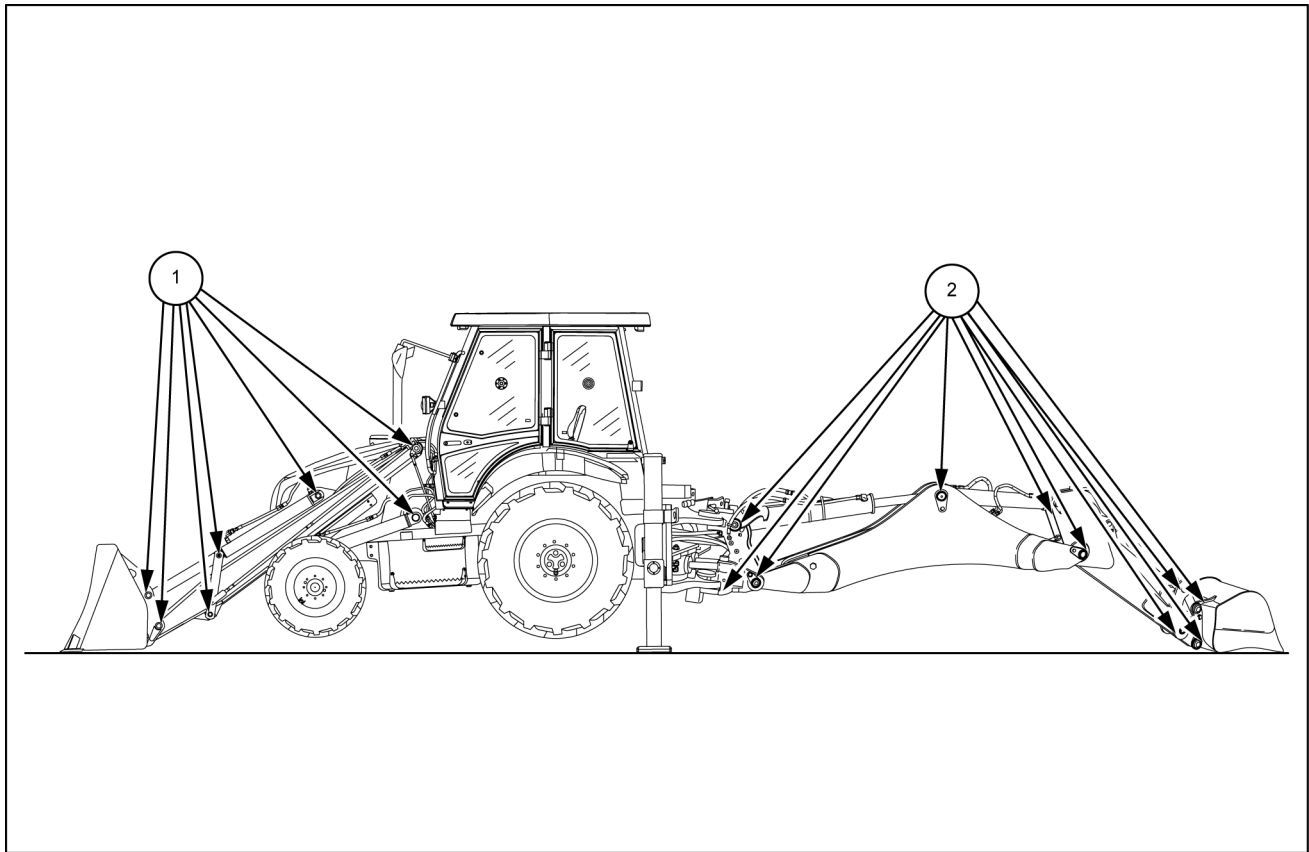
Grease fittings (1).

NOTE: The number of grease points may vary depending on the type of accessory installed.



PTIL12TLB0212AB 2

Loader and backhoe attachment



PTIL14TLB0040FB 3

1. Loader attachment
2. Backhoe attachment

FIRST 50 HOURS

Engine oil and oil filter – Change

1. Follow Machine safety position (Refer **Engine - Safety rules**)
2. Open and raise the engine tilt hood.
3. Place a container with suitable capacity under the engine.
4. Remove the cap of the filler neck.
5. Remove the engine crankcase drain valve.

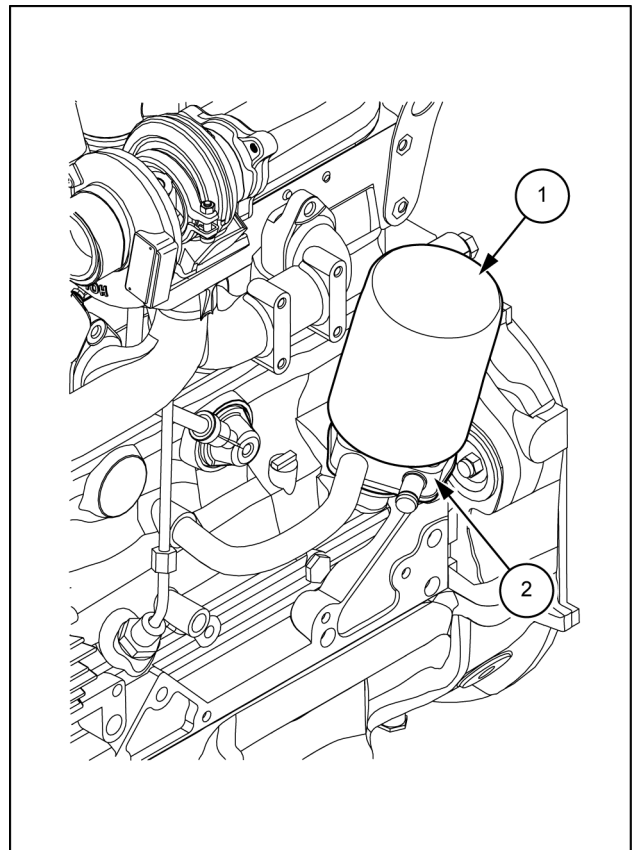
NOTE: Drain the engine oil when it is still hot. The oil will flow more easily.

6. Now wait for the oil to completely flow out of the engine.
7. Tighten the drain plug. Torque: **95 N·m (70 lb ft)**.
8. Unscrew and remove the cartridge **(1)**.
9. Apply a thin layer of clean oil on the seal of the new cartridge.

NOTE: Do not fill the new filter with oil before installing it.

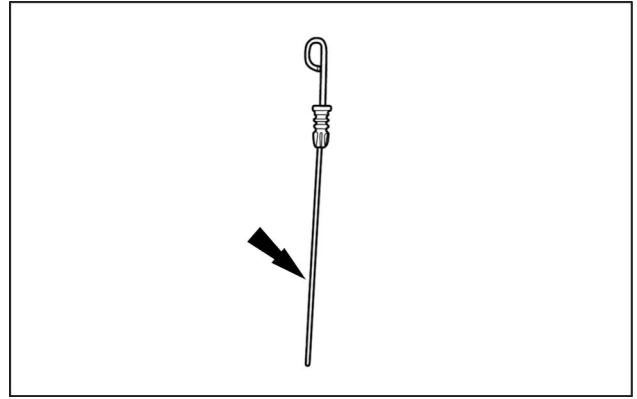
10. Assemble the new cartridge **(1)**.
11. Manually screw in the cartridge until the seal touches the support **(2)**.
12. Tighten it further by 3/4 of a turn.

NOTE: Over tightening can damage the filter seal. Do not use non genuine spare parts. Engine may get damaged by using a non genuine filter and non approved oil.



PTIL12TLB0228BB 1

13. Fill **11 l (3 US gal)** engine oil.
14. Start the engine and let it run for several minutes and then check the level again by means of the dipstick.
15. If necessary, top up to compensate the quantity of oil used for filling the cartridge.
16. Lower and lock the engine tilt hood.
17. Remove the safety support strut and lower the loader attachment.



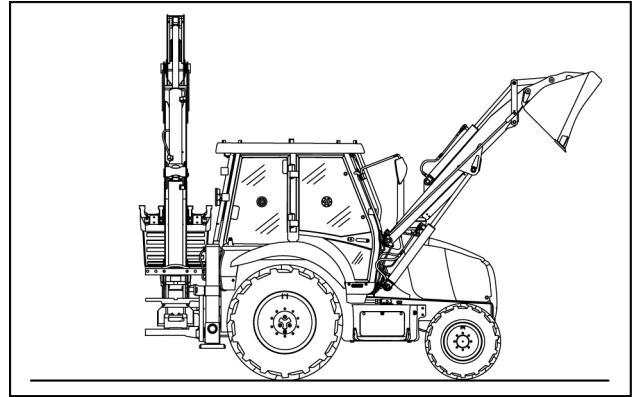
PTIL12TLB0226A 2

Fan / alternator belt tension

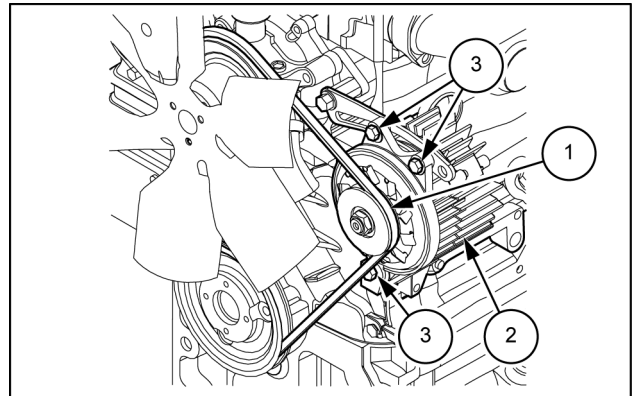
1. Move the machine to a level and firm ground.
2. Raise the loader arm and put the safety strut.
3. Place the backhoe attachment in the road travel position.
4. Ensure the direction-of-travel lever and gearshift lever are in neutral position.
5. Engage the parking brake.
6. Stop the engine and remove the key.
7. Wait until the engine reaches ambient temperature before performing any maintenance activity.
8. Open and raise the engine hood.
9. Inspect the fan belt (1) thoroughly. Check and correct if the belt is found to be hanging loose on the pulleys to avoid power loss and engine damage.

NOTE: Do not tighten the fan belt to full tension. Tighten the alternator mounting bolts after maintaining a slack of **25.40 mm (1 in)** by pressing with thumb on the longest span of belt.

10. To adjust the belt (1), loosen the alternator mounting bolts (3).
11. Slide the alternator (2) away from the engine to tighten the belt.
12. Tighten the alternator mounting bolts (3).
13. Lower and lock the engine hood.
14. Release the safety strut and lower the loader attachment.



PTIL14TLB0009AA 1



PTIL12TLB0178AB 2

Battery electrolyte level - Check

Open the battery compartment cover.

Remove the vent plugs and check the level in each battery cell.

Ensure to maintain the electrolyte level up to the MAX mark.

Top up if necessary.

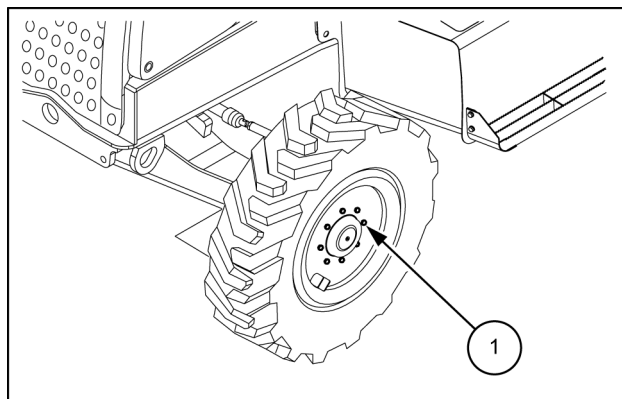
EVERY 100 HOURS

Wheels re-torque

1. Move the machine to a level and firm ground.
2. Lower the loader attachment to the ground.
3. Place the backhoe attachment in the road travel position.
4. Place the direction-of-travel lever and gearshift lever in neutral position.
5. Immobilize the machine by means of the parking brake.
6. Stop the engine and remove the starter key.
7. Check the tightening torque of the nuts **(1)** fastening the wheels.

Front wheel nuts - **196 N·m (145 lb ft)**

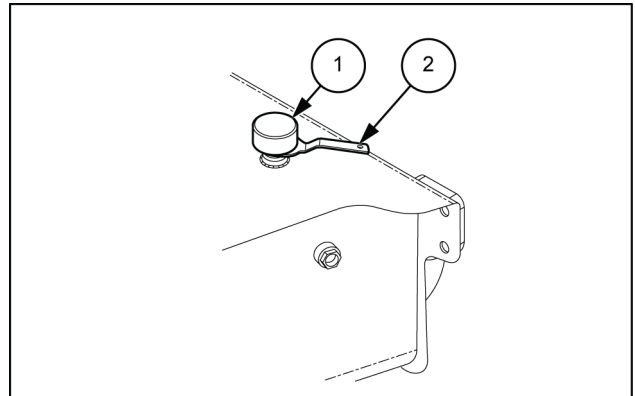
Rear wheel nuts - **490 N·m (361 lb ft)**



PTIL12TLB0190AB 1

Hydraulic system breather - Clean

1. Follow Machine safety position. (Refer **Engine - Safety rules**).
2. Clean the area around the cap.
3. Remove the cap **(1)** using the wrench **(2)** supplied with the machine.
4. Make sure that no dirt enter the hydraulic oil tank.
5. Use a suitable grease solvent to wash the cap **(1)**.
6. Air-dry the cap.
7. Retighten the plug.



PTIL12TLB0512AB 1

⚠ CAUTION

Flying debris!

Compressed air can propel dirt, rust, etc. into the air. Wear eye and face protection when using compressed air.

Failure to comply could result in minor or moderate injury.

C0049A

Battery check

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Open the battery compartment cover.
3. Disconnect the negative terminal.
4. Disconnect the positive terminal.
5. Remove the vent plugs and check the level in each battery cell.
6. Ensure to maintain the electrolyte level up to the MAX mark.
7. Using a hydrometer, check the electrolyte concentration. Use the below table as reference to determine the condition of the battery.

Electrolyte concentration		
in kg/dm ³ (lb/foot ³)		Charge
Normal	Tropical	
1.28 (80)	1.23 (77)	Good
1.20 (75)	1.12 (70)	Reduced: charge
1.12 (70)	1.08 (67)	Low: immediately charge

8. Top up if necessary.
9. Clean the area around the vents.
10. Wipe the battery with a clean cloth dipped in water.
11. Wipe the terminals with clean cloth dipped in water.

NOTE: Clean the sulphate deposited on the terminals thoroughly and completely.

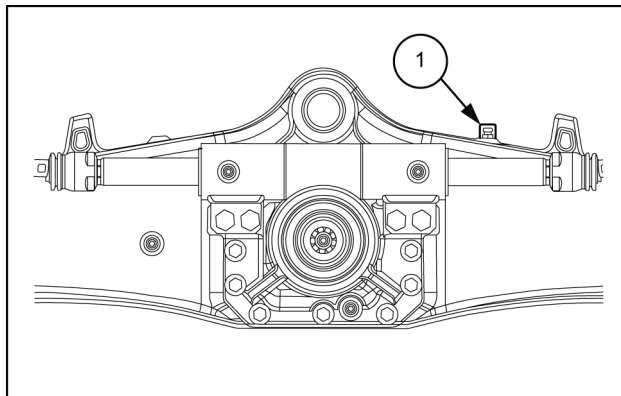
12. Connect the positive terminal.
13. Connect the negative terminal.
14. Tighten the terminals properly.
15. Apply petroleum jelly or terminal spray on the terminals.

Front axle breather (4WD Only) - Clean

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Clean the area around the breather valve **(1)**.
3. Loosen and remove the valve.
4. Clean the breather valve **(1)** with a detergent solution.

NOTE: Follow the instructions for the detergent solution.

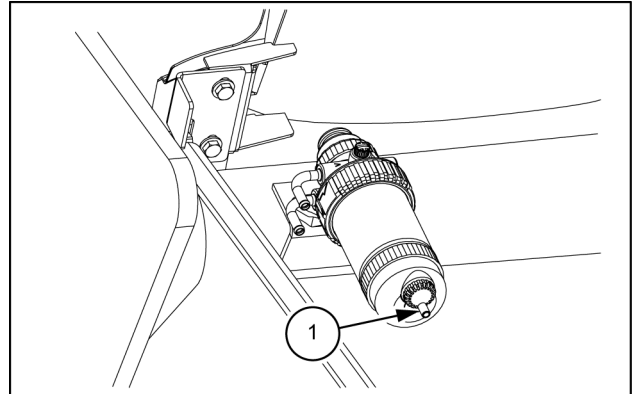
5. Carefully dry the breather valve **(1)** with compressed air and reinstall it.
6. Screw in the breather valve again.



PTIL12TLB0478AB 1

Water separator drain

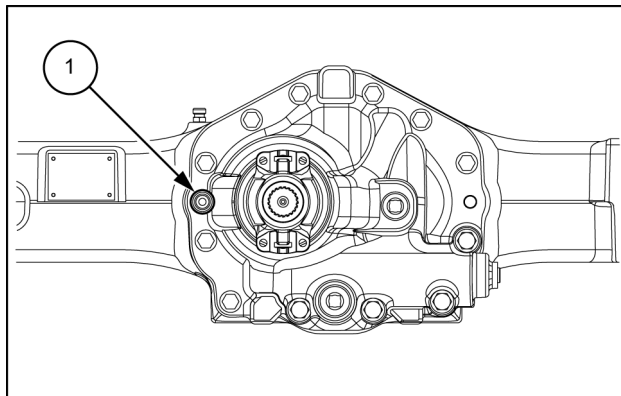
1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Place a container underneath the water draining plug.
3. Unscrew the plug **(1)** and drain the water.
4. Tighten the plug.



PTIL12TLB0194AB 1

Rear axle differential oil - Check

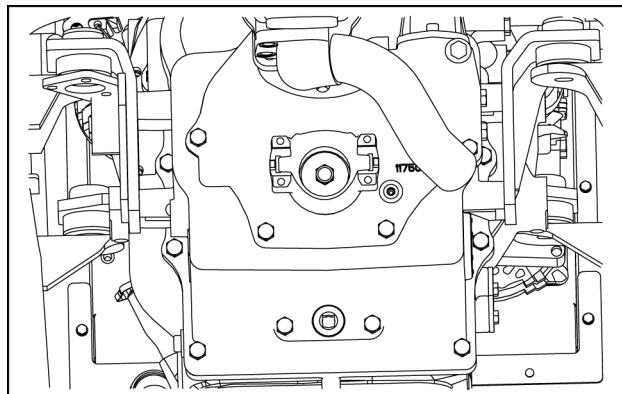
1. Follow Machine safety position. (Refer **Engine - Safety rules**).
2. Unscrew and remove the plug **(1)**.
3. Check the level by checking if the oil reaches the height of the plug hole.
4. If necessary, top up.
5. Retighten the plug **(1)**. Torque: **60 N·m (44 lb ft)**.



PTIL12TLB0214AB 1

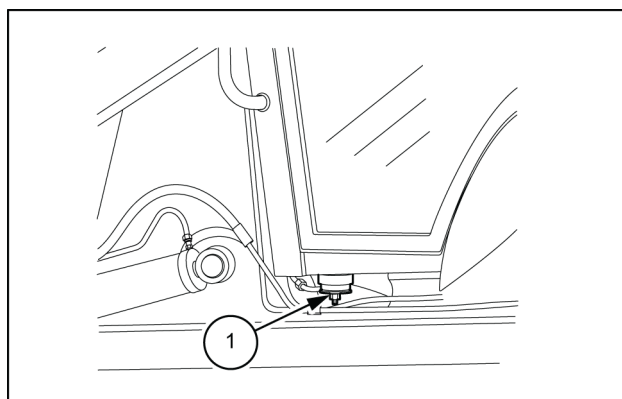
Engine and cabin mounting bolts re-torque

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Retorque the engine mounting bolts to torque of **90.00 - 100.00 N·m (66.38 - 73.76 lb ft)**.



PTIL13TLB0730AA 1

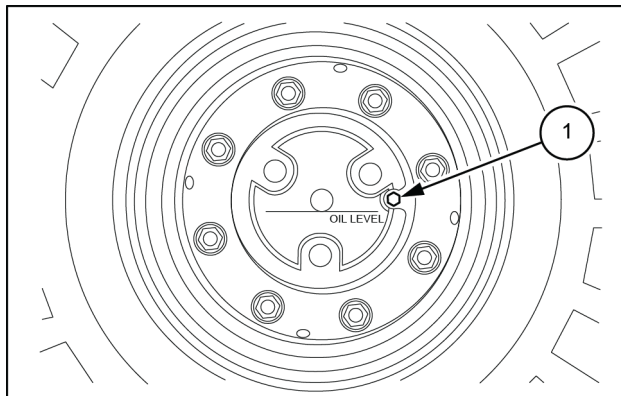
3. Retorque the cabin mounting bolts (**1**) to a torque of **301 N·m (222.01 lb ft)**.



PTIL12TLB0482AB 2

Front axle hub oil level (4WD only) – Check

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Unscrew and remove the plug **(1)**.
3. Check the level by checking if the oil reaches the height of the plug hole.
4. If necessary, top up.
5. Retighten the plug **(1)**.



PTIL12TLB0215AB 1

EVERY 250 HOURS

Stabilizer wear pads adjust

Your machine is fitted with stabilizer sleeve locking with plastic pad arrangement to provide comfort to the operator during backhoe operation by reducing the play between sleeve & vertical outer.

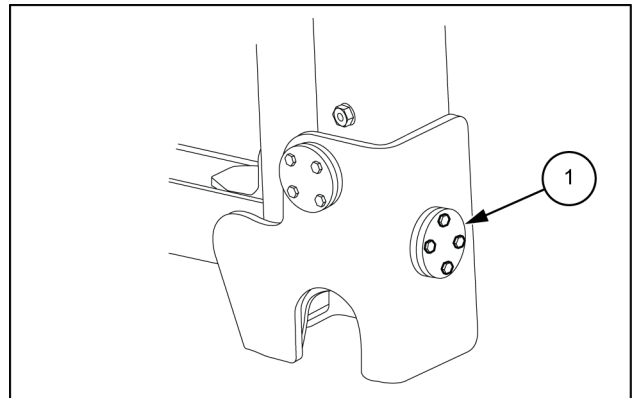
When machine is in operation there is a defined clearance between vertical outer & inner sleeve.

This gap increases as the machine continues to operate.

This dangling of the machine can be controlled by plastic pads provided inside the H-frame which pushes against the inner sleeve to maintain minimum clearance between the vertical outer resulting minimum play.

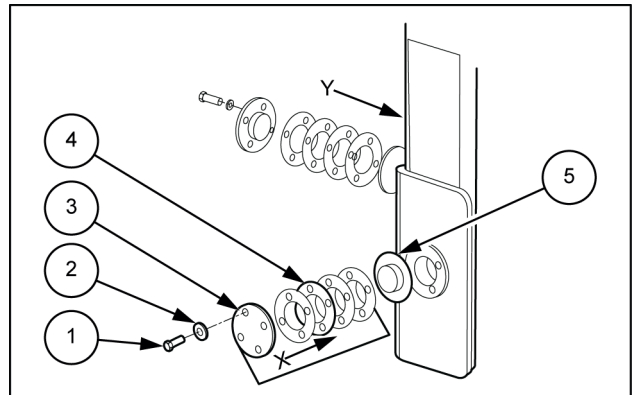
As the inner sleeve comes out of the vertical outer during backhoe operation every time it wears out plastic pad resulting in building of clearance & subsequent dangling of the machine. The pads must be replaced if found worn out or damaged.

1. Unscrew the 4 numbers **M10** bolts (1) along with conical washers (2) & take out cover sleeve locking (3) along with shims (4).



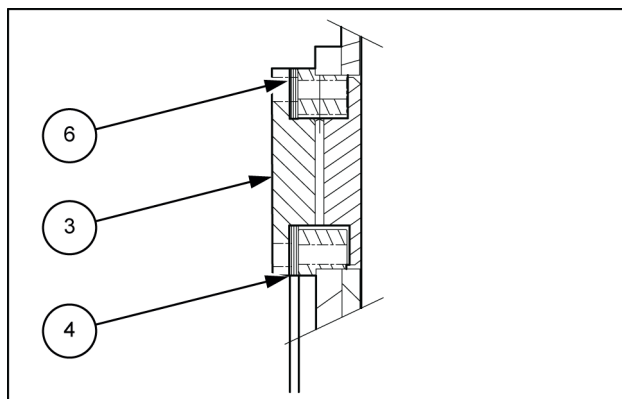
PTIL12TLB0483AB 1

2. Insert cover sleeve locking (3) along X-direction only behind the pad (5) from outside & press firmly with hand.



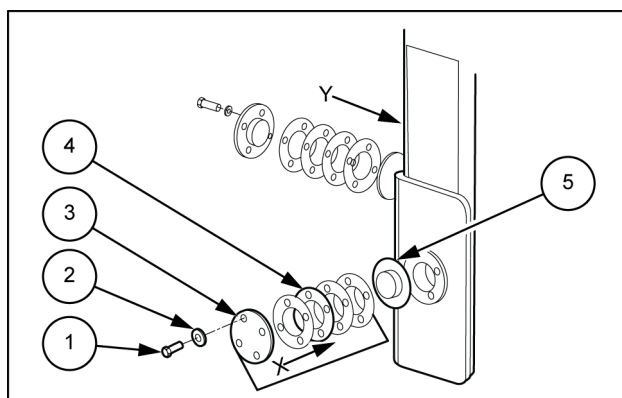
PTIL12TLB0486AB 2

3. Insert & count the number of shims (4) in step created between sleeve locking (3) & welded boss (6) in pressed condition as shown in figure.
4. Add one more shim (4) to the number of shims (4) count in Step 3 to front of cover sleeve locking (3).
5. Place the remaining shims (4) on back of cover sleeve locking (3).

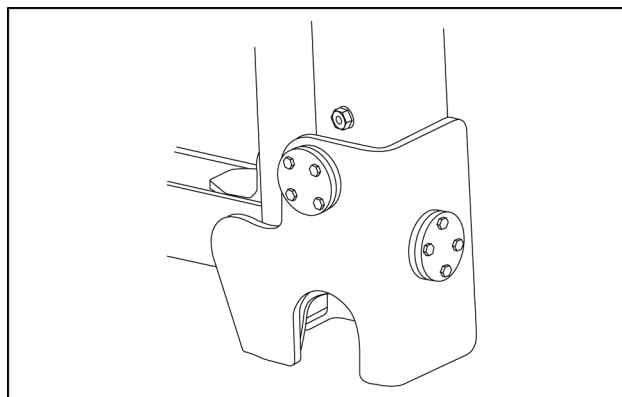


PTIL12TLB0485AB 3

6. Assemble the whole arrangement inside the hole & tight it through 4 numbers M10 bolts (1) & conical washers (2).



PTIL12TLB0484AB 4



PTIL12TLB0487AA 5

7. Follow the same procedure for the other location also.

Follow the same procedure whenever do the setting for stabilizers.

EVERY 500 HOURS

Engine oil and oil filter – Change

1. Follow Machine safety position (Refer **Engine - Safety rules**)
2. Open and raise the engine tilt hood.
3. Place a container with suitable capacity under the engine.
4. Remove the cap of the filler neck.
5. Remove the engine crankcase drain valve.

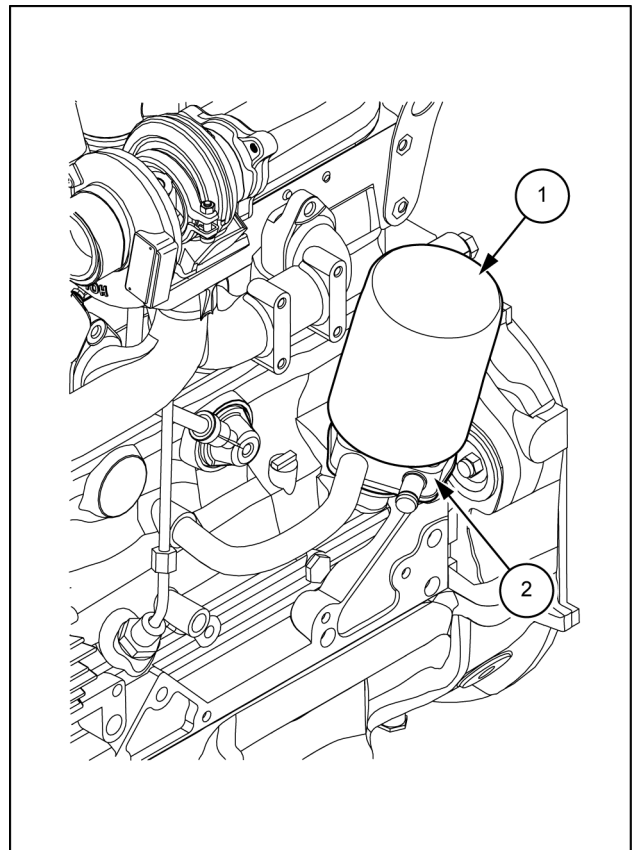
NOTE: Drain the engine oil when it is still hot. The oil will flow more easily.

6. Now wait for the oil to completely flow out of the engine.
7. Tighten the drain plug. Torque: **95 N·m (70 lb ft)**.
8. Unscrew and remove the cartridge **(1)**.
9. Apply a thin layer of clean oil on the seal of the new cartridge.

NOTE: Do not fill the new filter with oil before installing it.

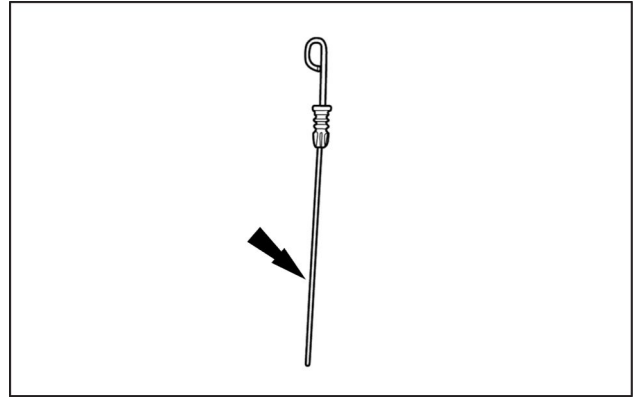
10. Assemble the new cartridge **(1)**.
11. Manually screw in the cartridge until the seal touches the support **(2)**.
12. Tighten it further by 3/4 of a turn.

NOTE: Over tightening can damage the filter seal. Do not use non genuine spare parts. Engine may get damaged by using a non genuine filter and non approved oil.



PTIL12TLB0228BB 1

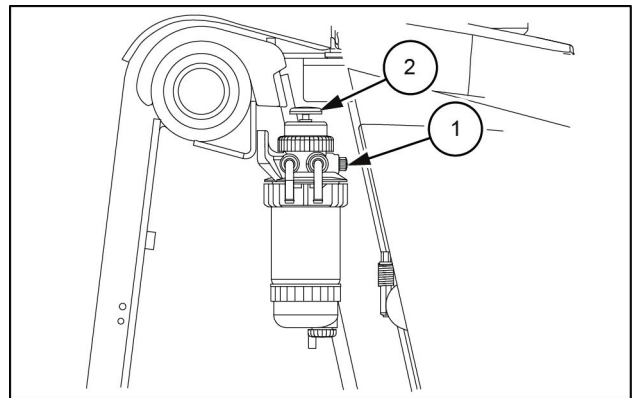
13. Fill **11 l (3 US gal)** engine oil.
14. Start the engine and let it run for several minutes and then check the level again by means of the dipstick.
15. If necessary, top up to compensate the quantity of oil used for filling the cartridge.
16. Lower and lock the engine tilt hood.
17. Remove the safety support strut and lower the loader attachment.



PTIL12TLB0226A 2

Mud filter - Change

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Open and raise the engine tilt hood
3. Place a container with suitable capacity under the filter.
4. Hold the primer (2) and loosen the breather screw (1).



PTIL12TLB0235AB 1

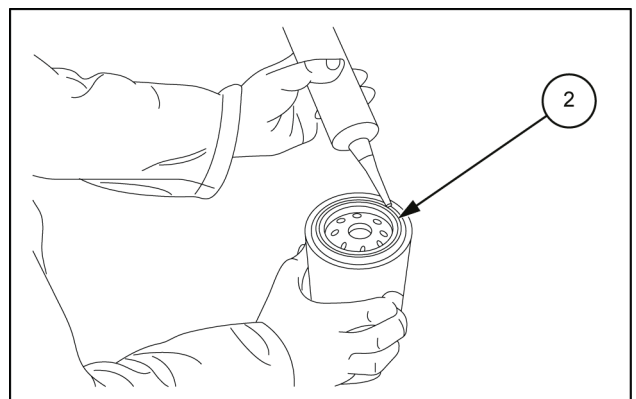
5. Unscrew and remove the cartridge.
6. Apply a thin layer of clean oil on the seal (2) of the new cartridge.

NOTE: Do not use non genuine spare parts. Injection pump may get damaged by using a in genuine filter.

7. Assemble the new cartridge.
8. Manually screw in the cartridge until the seal touches the filter head.
9. Tighten further by 3/4 of a turn.

NOTE: Over tightening can damage the filter seal (2).

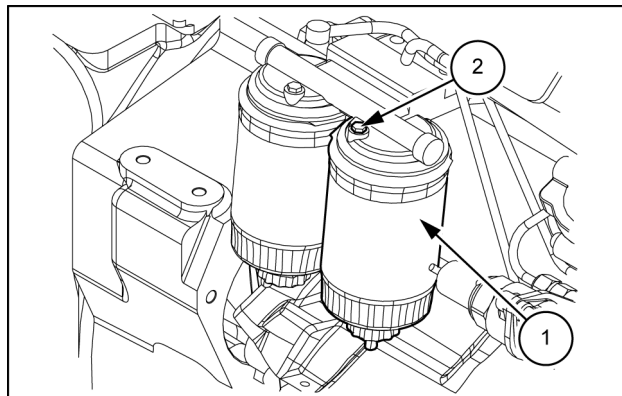
10. Bleed the fuel system.



PTIL12TLB0231AB 2

Fuel filter - Change

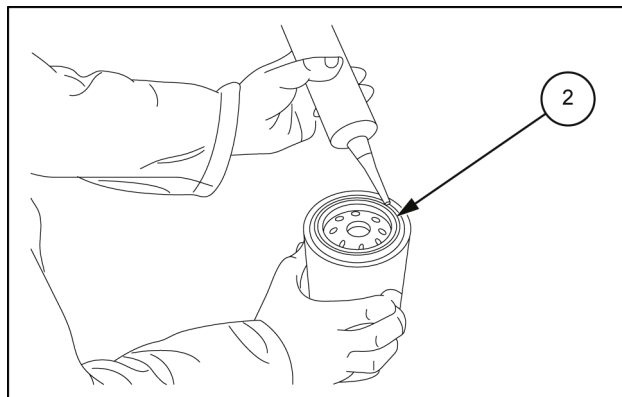
1. Follow machine safety position. (Refer **Engine - Safety rules**)
2. Open and raise the engine tilt hood.
3. Clean the filter assembly externally.
4. Loosen the bleed screw (2).
5. Unscrew the fuel filters (1) and discard.
6. Clean the filter mounting surface.



PTIL12TLB0445AB 1

7. Apply a thin film of clean oil on the new oil filter sealing ring (2) and install the filter.
8. Turn until the sealing ring contacts the mounting surface, then tighten an additional 3/4 to 1 full turn.
9. Do not over tighten.
10. With the bleed screw loose, prime the fuel system with the help of priming pump.
11. Start the engine and ensure no fuel is leaking.

NOTE: Do not use non genuine spare parts. Injection pump may get damaged by using a non genuine filter.



PTIL12TLB0231AB 2

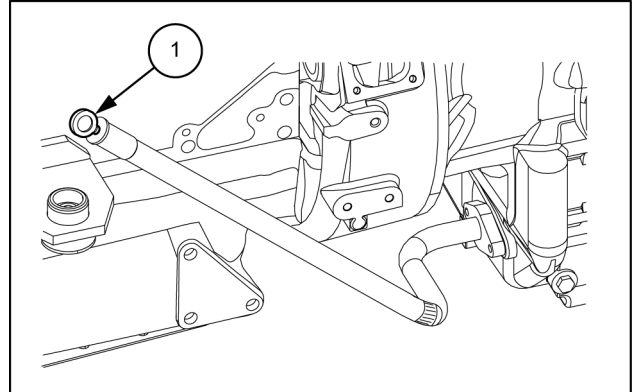
EVERY 1000 HOURS

Powershuttle transmission – oil change

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Open and raise the engine tilt hood.
3. Remove the dipstick (1).

NOTE: Change the oil while the transmission is still warm, the oil will flow easily.

4. Place a container with suitable capacity under the drain plug (2).

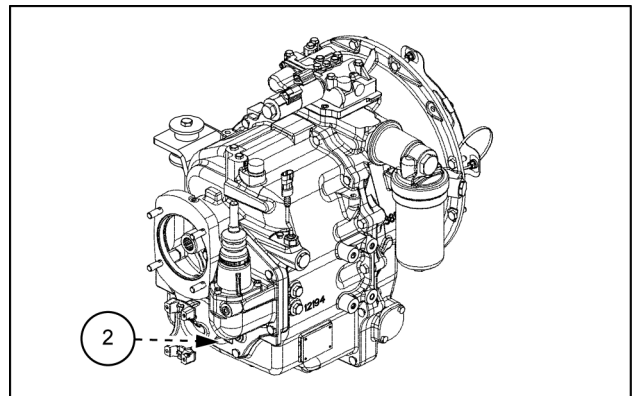


PTIL12TLB0206AB 1

5. Loosen and remove the drain plug (2).
6. Let the transmission oil drain.
7. Install the drain plug (2). Torque: **80.0 N·m (59.0 lb ft)**.
8. Fill with new oil of specified type through the dipstick sheath.

NOTE: Transmission oil capacity. Refer to fluid supply summary table.

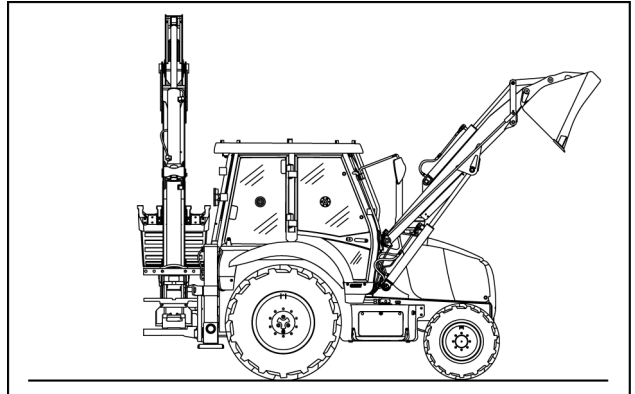
9. Insert the dipstick (1).
10. Check the oil level by means of the dipstick and, if necessary, add more oil.
11. Lower and lock the engine tilt hood.
12. Remove the safety support strut and lower the loader attachment.
13. Drive the machine for a few minutes in first and second gear, then stop the machine.
14. Keep the engine running and transmission in neutral gear.
15. Engage the parking brake.
16. Check the oil level again by means of the dipstick and, if necessary, add more oil.



PTIL12TLB0248AB 2

Transmission oil filter - Replace

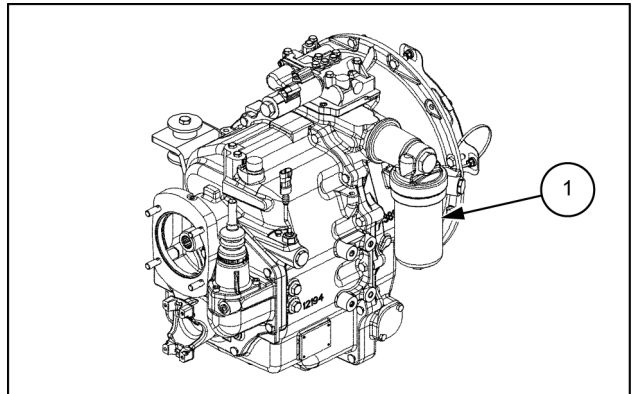
1. Follow machine safety position. (Refer **Engine - Safety rules**)
2. Open and raise the engine tilt hood.
3. Clean the area around the filter head.



PTIL14TLB0009AA 1

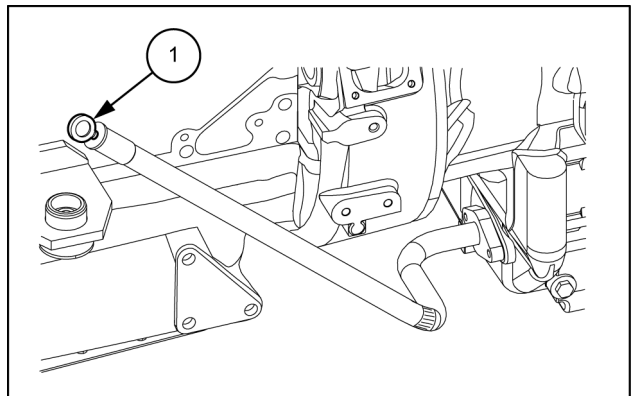
4. Place a container with suitable capacity under the filter (1).
5. Loosen and remove the filter element.
6. Apply a thin layer of oil on the new filter seal.
7. Manually screw in the filter element until the seal touches the filter head.
8. Tighten by 2/3 of a turn.

NOTICE: Over-tightening can damage the filter seal.



PTIL12TLB0244AB 2

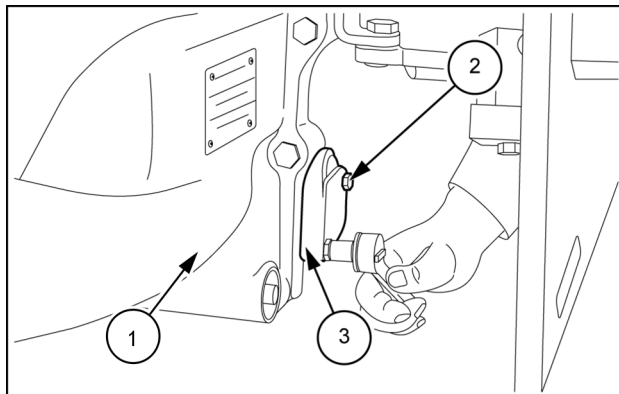
9. Starting the engine.
10. Remove the dipstick (1) and top up the oil through the dipstick hole.
11. Insert the dipstick (1) into place.
12. Check the oil level and if necessary, add more oil.
13. Lower and lock the engine tilt hood.
14. Remove the safety support strut and lower the loader attachment.



PTIL12TLB0206AB 3

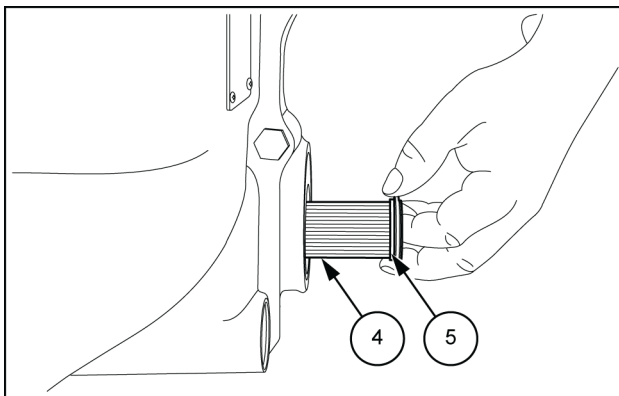
Transmission suction strainer - Cleaning

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Remove the cap screws (2) from transmission assembly (1).
3. Remove the screen cover (3).



PTIL13TLB0202AB 1

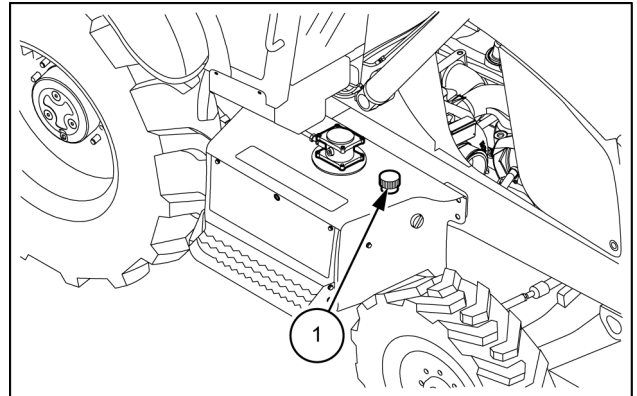
4. Remove the strainer (4) and O-ring (5).
5. Clean the strainer using dry compressed air.
6. Install the strainer (4) and O-ring (5).
7. Install the screen cover and cap screws.



PTIL13TLB0203AB 2

Hydraulic oil filter - Replace

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Clean top portion of the tank.
3. Remove breather **(1)** with a special tool to release pressure inside tank.

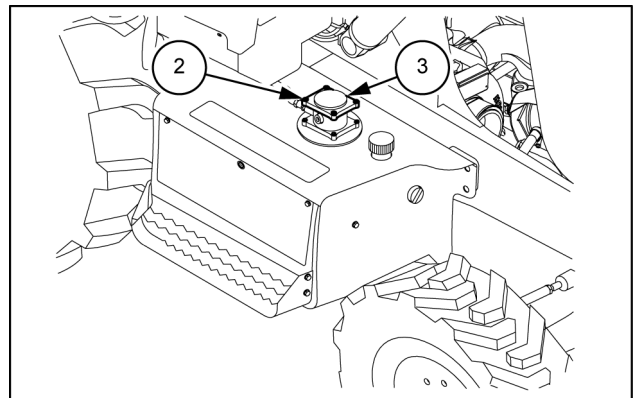


PTIL12TLB0457AB 1

4. Dismantle bolts and nuts **(2)** of the top cover **(3)** of filter assembly and remove the top cover.

NOTE: Ensure that sensor & O-ring do not get damaged.

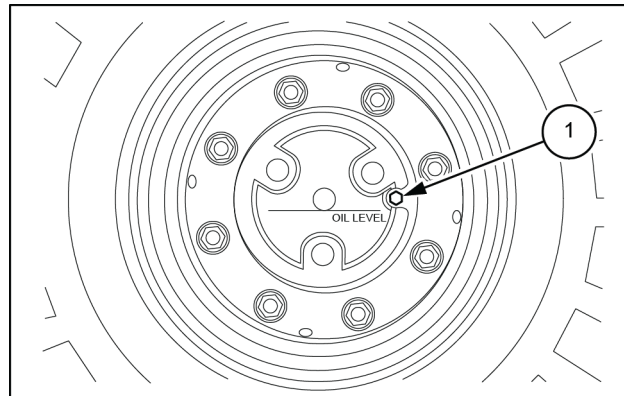
5. Clean magnets on inner surface of this top cover.
6. Remove the spring from filter assembly.
7. Remove the filter and separate the cap from it.
8. Take a new filter and fit the cap on it.
9. Put the filter inside the filter assembly.
10. Install spring on it.
11. Install top cover with the O-ring and bolts and nuts.
12. Install breather **(1)** with a special tool.



PTIL12TLB0551AB 2

Front axle hub oil (4WD Only) - Replace

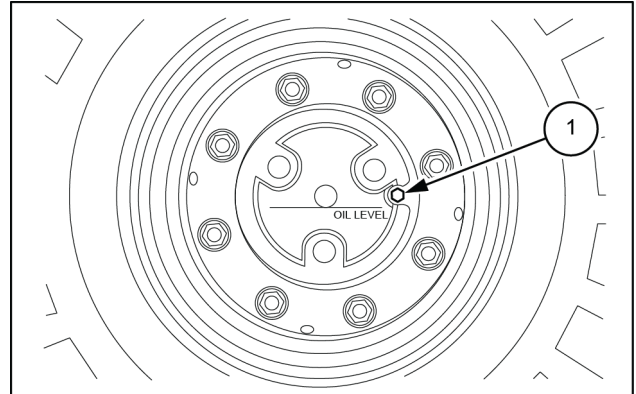
1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Slightly raise the front part of the machine by means of the loader attachment, until the front wheels are no longer in contact with the ground.
3. Place a suitable support under the front axle.
4. Manually position the wheel until the hole of the plug **(1)** is at the bottom.
5. Unscrew and remove the plug **(1)**.
6. Drain the oil completely.
7. Manually position the wheel to horizontal position.
8. Fill the oil until the level reaches the plug hole.
9. Retighten the plug **(1)**. Torque: **80 N·m (59 lb ft)**.
10. Repeat for the other reduction gear as well.
11. Lower the machine to the ground.



PTIL12TLB0215AB 1

Rear axle hub oil - Replace

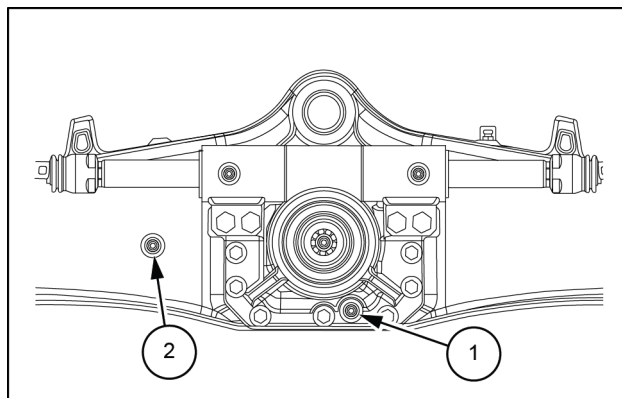
1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Lower the stabilizer and raise the machine until the rear wheels are no longer in contact with the ground.
3. Manually position the wheel until the hole of the plug **(1)** is at the bottom.
4. Unscrew and remove the plug **(1)**.
5. Drain the oil completely.
6. Manually position the wheel to horizontal position.
7. Fill the oil until the level reaches the plug hole.
8. Retighten the plug **(1)**. Torque: **60 N·m (44 lb ft)**.
9. Repeat for the other reduction gear as well.
10. Lower the machine to the ground.



PTIL12TLB0215AB 1

Front axle differential oil (4WD Only) - Replace

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Place a container with suitable capacity under the plug **(1)**.
3. Unscrew and remove the plugs **(1)** and **(2)**.
4. Let the oil drain completely **(1)**.
5. Screw in the plug **(1)**. Torque: **60 N·m (44 lb ft)**.
6. Fill with clean oil through the hole of the plug **(2)** until the level reaches the hole.
7. Retighten the plug **(2)**.



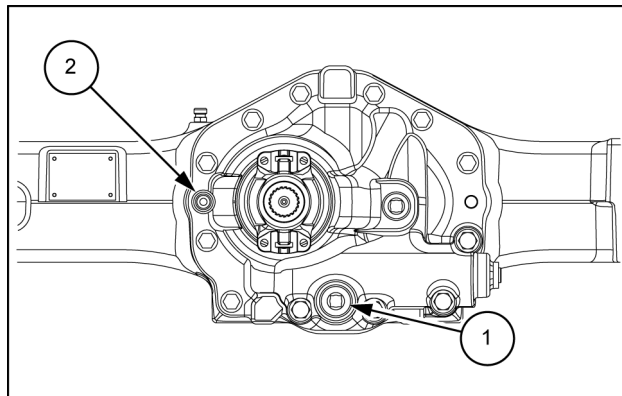
PTIL12TLB0250AB 1

NOTE: Differential oil capacity. Refer to fluid and lubricants supply summary table.

Rear axle differential oil - Replace

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Place a container with suitable capacity under the plug (1).
3. Unscrew and remove the plugs (1) and (2).
4. Let the oil drain completely (1).
5. Screw in the plug (1). Torque: **60 N·m (44 lb ft)**.
6. Fill with clean oil through the hole of the plug (2) until the level reaches the hole.
7. Retighten the plug (2).

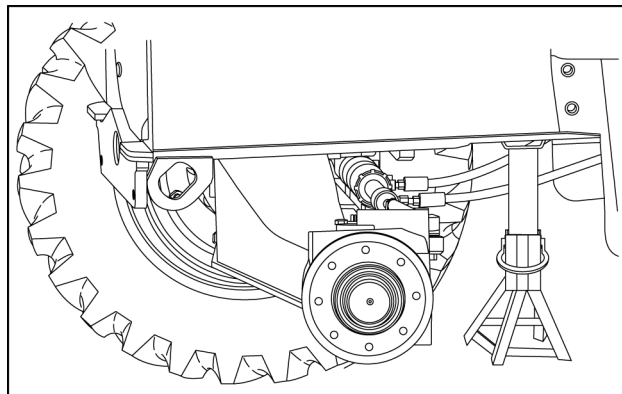
NOTE: Differential oil capacity. Refer to fluid and lubricants supply summary table.



PTIL12TLB0254AB 1

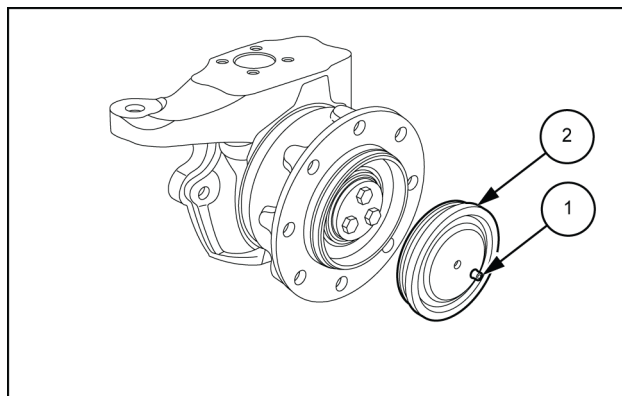
Front axle - Hub greasing 2WD

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Support the vehicle and remove front wheel.



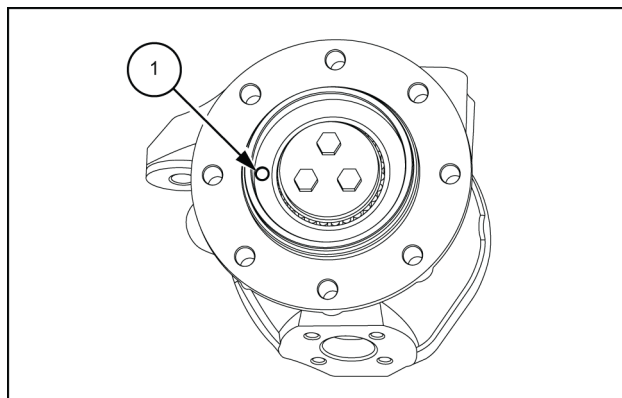
PTIL13TLB0732AA 1

3. Open the plug (1) and the cover (2).



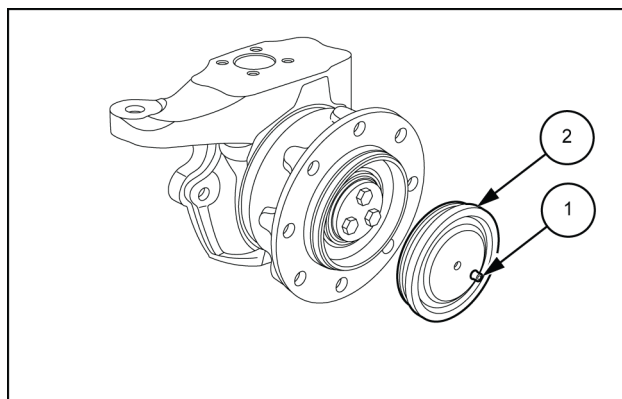
PTIL12TLB0557AB 2

4. Fill grease in the hole (1) until the excess grease purges from the bearing rollers.



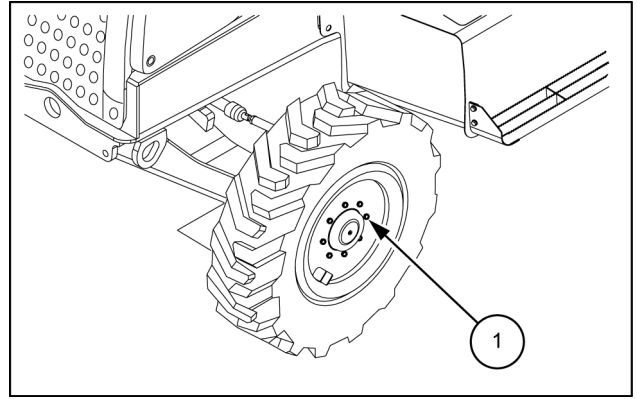
PTIL12TLB0556AB 3

5. Install the cover (2) and the plug (1). Tighten it to a torque of **20 - 30 N·m (15 - 22 lb ft)**.



PTIL12TLB0557AB 4

6. Install front wheel.
7. Tighten the wheel nuts (**1**) to a torque of **196.13 N·m**
(**144.66 lb ft**).



PTIL12TLB0190AB 5

EVERY 1200 HOURS

Check the fuel injector

NOTE: *Injector check procedure needs to be done only by an authorised personnel. Kindly contact your nearest CASE Dealer for further details. Failure to comply may lead to machine failure.*

EVERY 2000 HOURS

Brake oil - Replace

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Remove the brake oil reservoir inspection cover.
3. Unlock the locking pin on the brake pedal to make them independent of each other.
4. Provide a plastic tube into a clean container from the brake bleeding nipple on the rear axle on one side.
5. Have an assistant pump the corresponding pedal.
6. Intermittently loosen the nipple nut and tighten to facilitate removal of air.
7. The brake oil should be topped up whenever the level reached MIN mark in the reservoir.
8. Continue the process till all air is bled out and new fluid comes out of the nipple.
9. Tighten the nipple locking nut and check if the pedal holds when pressed completely.
10. If not repeat the procedure.
11. Repeat the procedure on the other side.
12. Raise the loader arm and remove the wheel chocks.
13. Move the vehicle and check the braking efficiency.

Hydraulic oil - Replace

NOTE: When draining, the hydraulic oil must be at operating temperature.

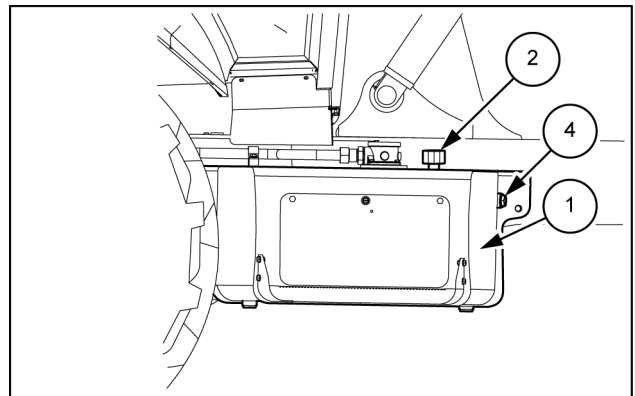
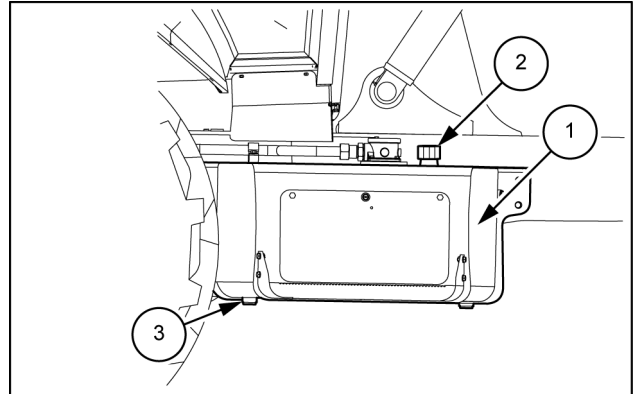
Raise the loader and backhoe completely. Switch Off the engine and allow the oil to drain to hydraulic tank and then drain the oil.

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Place a container with suitable capacity under the hydraulic oil tank (1).
3. Unscrew and remove the filler cap (2) and the drain plug (3).
4. Let the oil drain completely.
5. Install and tighten the drain plug (3). Torque: **151 - 174 N·m (111 - 128 lb ft)**.

NOTICE: Hydraulic oil should be drained at the hydraulic oil tank only.

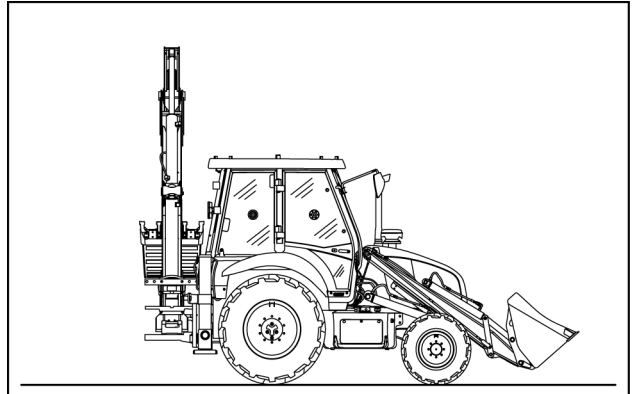
6. Fill with clean oil until the level reaches the middle of the gauge (4).
7. Close the cap.
8. Start the engine and operate the loader attachment and backhoe attachment functions for **3 - 4 min**.
9. Bring the loader attachment back to the ground and the backhoe attachment in road travel position.
10. Stop the engine and remove the key.
11. Check the level.
12. The oil must be at the middle of the gauge (4). Top up if necessary.

NOTICE: A small quantity of hydraulic oil remains in the lower part of the gauge. This does not mean that the level is sufficient.



Engine coolant - Replace

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Place a container with sufficient capacity under the radiator drain cock.



PTIL14TLB0042AA 1

3. Unscrew and remove the cap (2) from the radiator (1).

⚠ CAUTION

Burn hazard!

Hot coolant can spray out if you remove the filler cap while the system is hot. After the system has cooled, turn the filler cap to the first notch and wait for all pressure to release before proceeding.

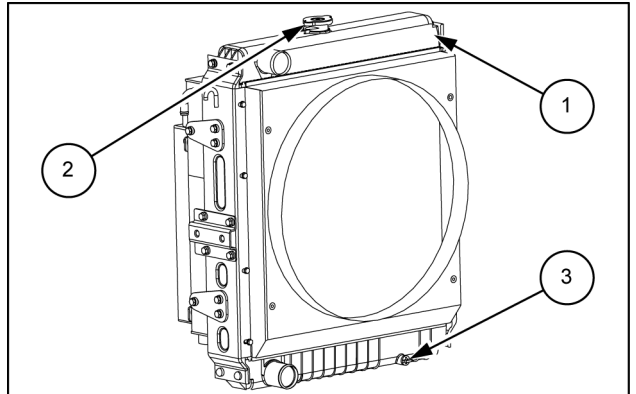
Failure to comply could result in minor or moderate injury.

C0043A

4. Install a drain pipe on the drain cock (3) and put the other end into a container.
5. Open the radiator drain cock (3) and drain the coolant.
6. After the system is completely drained, close the drain cock (3).
7. Rinse the system with fresh water, drain again and then fill the system

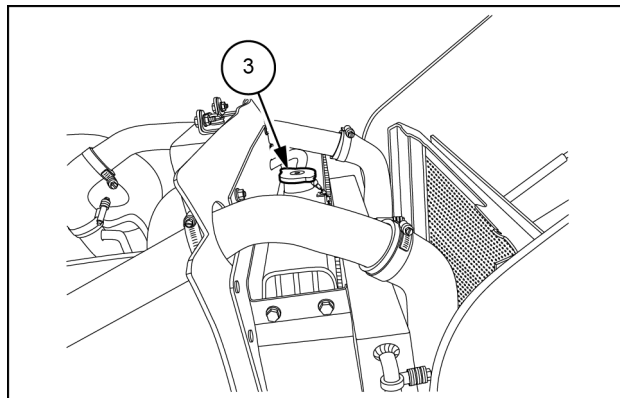
NOTE: if you use a detergent solution for rinsing, follow the instructions for preparing the solution. After draining the detergent solution, rinse again with fresh water.

8. Check the condition of the hoses, connections and the water pump.
9. Make sure that the external surfaces of the engine and the radiator are clean.



PTIL12TLB0446AB 2

10. Remove the cap (3) and fill the coolant.
11. Retighten the cap on the radiator.



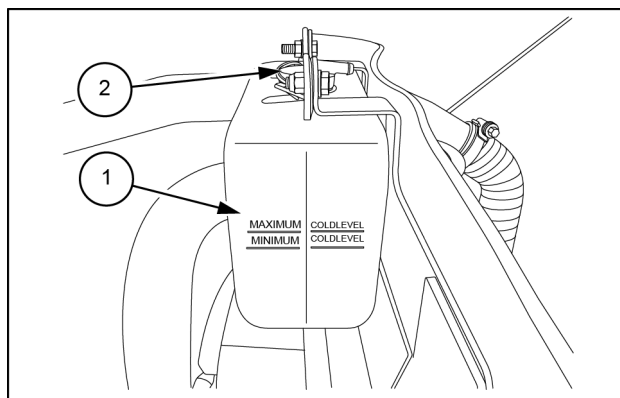
PTIL12TLB0498AB 3

12. Fill the coolant reservoir (1) with coolant solution.

NOTE: Always use genuine and approved lubricants. Consult your **CASE** Dealer for any further information.

NOTE: Always fill the cooling system with coolant slowly to prevent the formation of air bubbles.

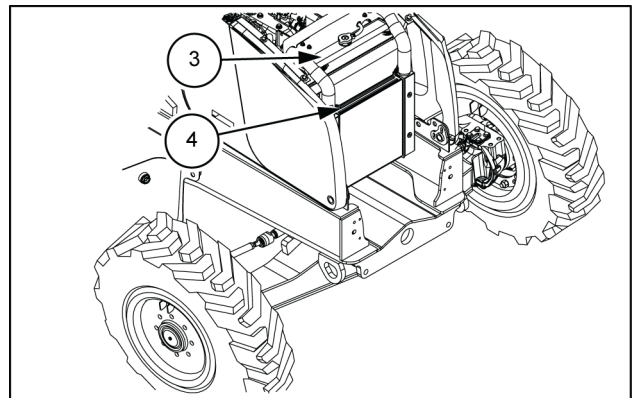
13. Retighten the cap on the reservoir.
14. Run the engine for a few minutes and then check the level in the coolant reservoir again.
15. Check for leakage and check the coolant level.
16. Top up if necessary.
17. Lower and lock the engine tilt hood.
18. Remove the safety support strut and lower the loader attachment.



PTIL12TLB0265AB 4

Radiator and oil cooler fin - Cleaning

1. Follow Machine safety position. (Refer **Engine - Safety rules**)
2. Raise the loader and put safety strut.
3. Remove the front grille.
4. Unscrew the fixing screw and remove the intercooler.
5. Clean the intercooler **(3)** and radiator **(4)** using:
 - A. Compressed air with a pressure lower than **7.0 bar (101.5 psi)** to remove dry dust.
 - B. Water jet to remove mud.
 - C. A detergent-based solution, preferably applied with a low-pressure cleaner, to remove oily dust.
6. Make sure all dirt and debris have been removed especially in the area between the radiator and the inter-cooler.
7. Reassemble the intercooler **(3)** and related piping.
8. Reassemble the front grille.
9. Remove the safety support strut and lower the loader attachment.



PTIL12TLB0204AB 1

AS REQUIRED

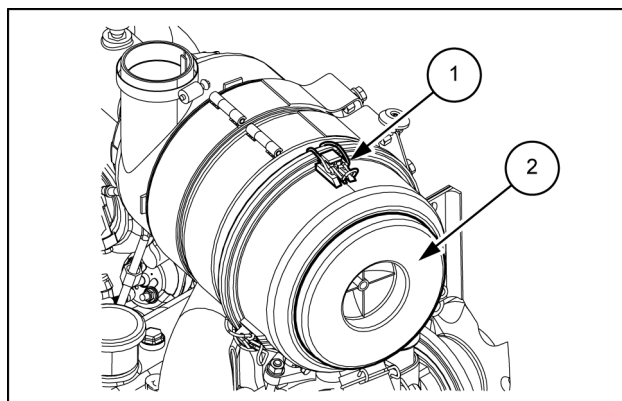
Engine air filter

Servicing instructions

- A. Clean primary element: When service indicator shows red band.
- B. Replace primary element: When servicing indicator shows red band even after cleaning or after two cleaning intervals if holes or tears are found in element.
- C. Replace safety element: when replacing primary element.

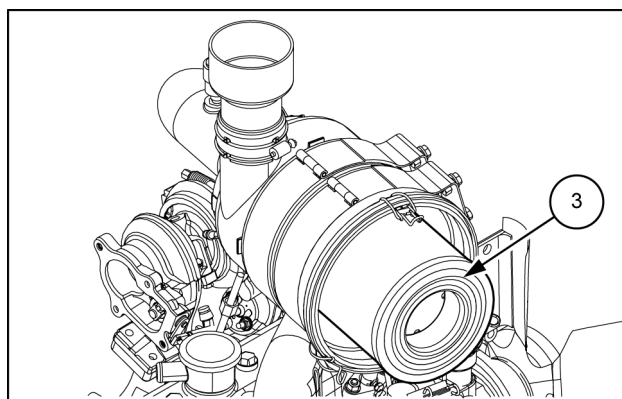
NOTE: Do not tap or hammer element on ground.

1. Follow machine safety position. (Refer **Engine - Safety rules**)
2. Open and raise the engine tilt hood.
3. Unhook 3 clips **(1)** around perimeter of filter cover **(2)** and remove the filter cover.



PTIL12TLB0239AB 1

4. Extract the main filter element **(3)**.



PTIL12TLB0240AB 2

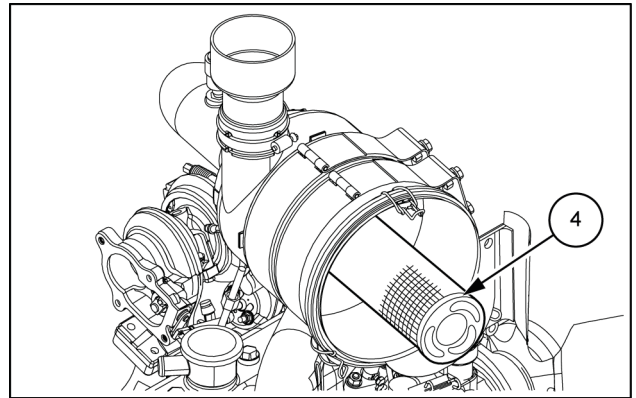
5. Extract the safety filter element **(4)**.

NOTICE: The safety filter element must not be cleaned. It must be replaced once per year, or when main element is replaced.

6. Clean the inside of the filter body by means of a clean cloth.
7. Clean the main filter element using compressed air from inside.
8. Assemble the new safety filter element **(4)**.
9. Assemble the main filter element **(3)**.

NOTICE: The evacuator valve on the cover of air filter housing should be positioned vertically so that the dust accumulated inside the valve gets released automatically when the engine is in shut-off condition.

10. Install the filter cover.
11. Start the engine, run it at low idle speed.
12. Lower and lock the engine tilt hood.
13. Remove the safety support strut and lower the loader attachment.



PTIL12TLB0241AB 3

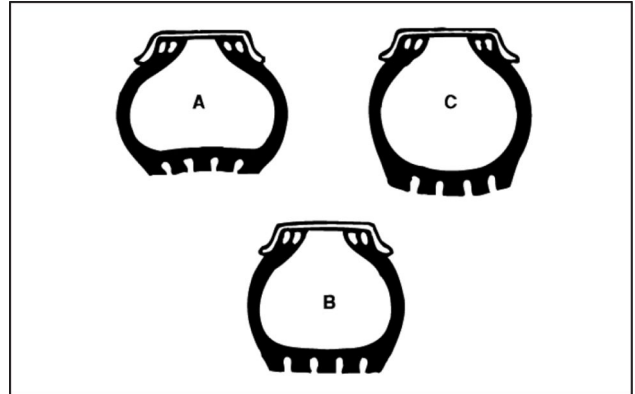
Tires pressure - Check

NOTE: Regularly check the conditions of the tires and always observe the inflating pressure. Before inflating, check that the tires, rims and their components are not damaged and are securely fastened.

Check pressure only with cold tires, when tires are warm, the pressure values detected are higher. Inflate tires with normal compressed air only. When inflating tires, stay at due distance and constantly observe the pressure gauge of the inflating device, in order not to exceed the prescribed pressure. While inflating, make sure nobody stays close to the tire. If available, place a protection cage around the tire. Always inflate the tires to the prescribed pressure "B". A too low pressure "A" can reduce the machine's stability and overheat the tires, and could cause:

- Tyre wall crack.
- Tyre tread damage.
- Internal damage.
- Irregular wear and shortened life.

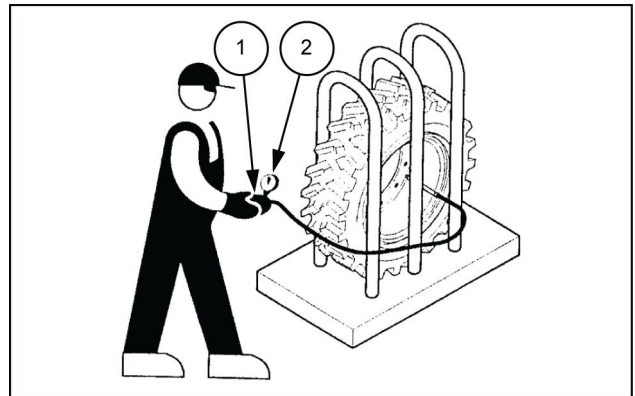
An excessive pressure "C" determines a higher sensitive-ness to damage in case of shocks and in extreme conditions, the rim could get deformed or the tire may burst.



PTIL12TLB0195AA 1

Inflating procedure

1. Move the machine to a level and firm ground.
2. Lower the loader attachment to the ground.
3. Place the backhoe attachment in the road travel position.
4. Ensure the direction-of-travel lever and gearshift lever are in neutral position.
5. Engage the parking brake.
6. Stop the engine and remove the key.
7. Insert the self-locking spout of the inflating device (1) into the tire valve.
8. The inflating device is equipped with a pressure gauge (2) which enables, as soon as it is connected, to check the pressure value.
9. If pressure is lower than the recommended pressure, inflate.



PTIL12TLB0196AB 2

Tire size details

2WD		
Type of rear tire	Front tires	Rear tires
Standard Rear	9.00-16, 16 PR	16.9-28, 12 PR
Heavy duty rear	9.00-16, 16 PR	14.00-25, 20 PR

4WD		
Type of rear tire	Front tires	Rear tires
Standard Rear	12.5-18, 12 PR	16.9-28, 12 PR
Heavy duty rear	12.5-18, 12 PR	14.00-25, 20 PR

Inflating pressure details

2WD		
Type of rear tire	Front tires	Rear tires
Standard Rear	5.52 bar (80 psi)	1.79 bar (26 psi)
Heavyduty rear		2.76 bar (40 psi)

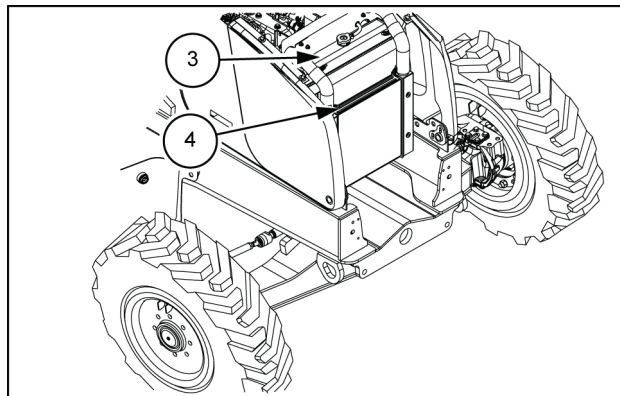
4WD		
Type of rear tire	Front tires	Rear tires
Standard Rear	2.41 bar (35 psi)	1.79 bar (26 psi)
Heavyduty rear		2.76 bar (40 psi)

Radiator - Cleaning

1. Follow Machine safety position. (Refer **Engine - Safety rules**).
2. Raise the loader and put safety strut.
3. Remove the front grille.

ATTENTION: Before using compressed air, take the necessary precautions to protect your face.

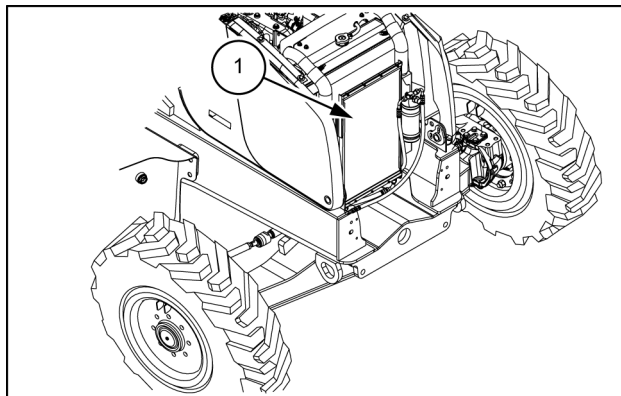
4. Clean the intercooler **(3)** and radiator **(4)** using:
 - A. Compressed air, blowing in the direction from the fan to outside with a pressure lower than **7.0 bar (101.5 psi)** to remove dry dust.
 - B. Water jet to remove mud.
5. Reassemble the front grille.
6. Remove the safety support strut and lower the loader attachment.



PTIL12TLB0204AB 1

Condenser - Cleaning

1. Follow Machine safety position. (Refer **Engine - Safety rules**).
2. Raise the loader and put safety strut.
3. Remove the front grille.
4. Clean the condenser **(1)** with water jet to remove dust and mud.
5. Reassemble the front grille.
6. Remove the safety support strut and lower the loader attachment.



PTIL14TLB0065AB 1

Pollen filter - Cleaning

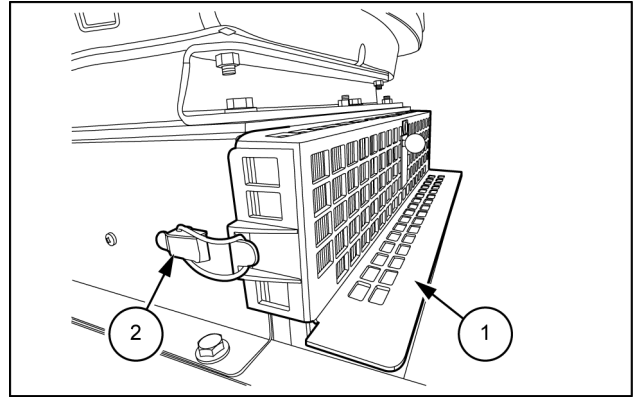
1. Follow Machine safety position. (Refer **Engine - Safety rules**).
2. Before servicing the pollen filter located under the operator's seat, switch off the blower and close all windows and one door.

ATTENTION: In humid conditions, do not switch on the blower prior to servicing the pollen filter. Damp particles drawn into the filter may solidify and prove difficult to remove without washing.

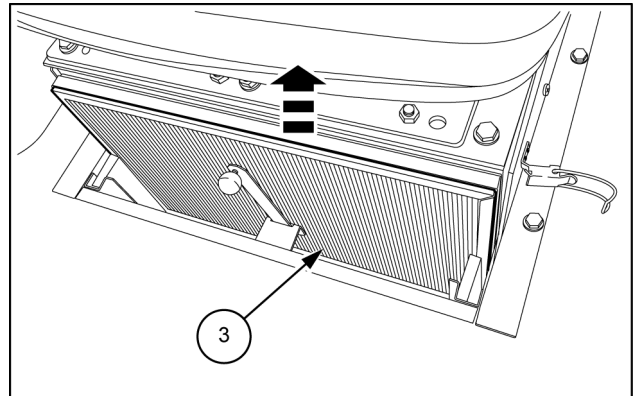
3. Forcibly close the other door. The resulting back pressure will dislodge the loose dirt from the underside of the pollen filter.
4. Remove the two clips (2) from the sides and remove the cover (1) from below the seat.
5. Pull out the pollen filter (3) straight.

ATTENTION: The filter elements are made of specially treated paper with a sealing strip bonded to the outer face. So make sure that the filter element and the sealing faces are not damaged on removal.

6. Clean the pollen filter by blowing with the compressed air from the clean side through to the dirty side with a pressure lower than **2 bar (29 psi)**.
7. Install the pollen filter and close the cover.



PTIL14TLB0063AB 1



PTIL14TLB0064AB 2

STORAGE

Storing the machine

Geographic, environmental and actual storage conditions make it difficult to follow a set storage procedure for all areas and conditions. The following procedure is for a storage period of six months or longer. This procedure is a good starting point but may not be all inclusive. If you have questions about storing your machine, contact your **CASE Dealer**.

1. Prior to storing, inspect the machine for visible signs of wear, breakage or damage. Order any parts required and make the necessary repairs to avoid delays when starting the next operating period.
2. Prior to storing, wash the machine.
3. Lubricate the entire machine.
4. Paint any areas where the paint has been damaged.
5. Move all hydraulic controls through their complete ranges several times to relieve any pressure in the circuits.
6. Change the engine oil and replace the filter.
7. Drain the cooling system. Leave the drains open and do not tighten the radiator cap.
8. Put a DO NOT OPERATE tag.
9. Cover the exposed cylinder rods, and valve spools and any other bare metal parts with a rust and corrosion preventive.
10. Remove and clean the battery. Fully charge the battery. Store the battery in a cool dry place where it will not freeze.
11. Cover exhaust outlet.
12. Park the machine inside a building. If a building is not available, park the machine in a dry area on planks and cover with a waterproof cover.
13. Do periodic checks for protection. Look for corrosion.

Short term storage

If the machine is to remain unused for a period exceeding 30 days, store it under cover or cover it with a waterproof tarpaulin. Clean the machine completely. Paint all surfaces of the machine where the paint work is damaged, to avoid rust.

Check the machine for worn or damaged parts and replace as necessary.

Lubricate the machine and drain the transmission, hydraulic oil tank, rear axle and engine and refill with the correct grades of oil.

Check the radiator coolant level. If the machine is within **100 h** before the scheduled maintenance after **2000 h**, or within 2 months before the maintenance scheduled after 2 years, perform the prescribed maintenance operations.

Operate the loader attachment so that all its cylinders are in fully retracted position and rest the bucket on a block of wood.

Place the backhoe attachment in the road travel position.

Stop the engine and operate all the hydraulic controls to release all residual pressure from the hydraulic circuits.

Coat the exposed portions of the cylinder rods and control valve spools with grease.

Remove the battery from the machine and store it. Place blocks under the axles to remove the weight from the tyres.

Cover the exhaust pipe opening.

Perform the engine protection operations.

Storing the engine

If the engine is to be left unused for a long time, it is necessary to conserve it against rust formation.

1. Clean the engine with a high-pressure device.
2. Take the engine to the operating pressure, then stop it.
3. Drain the engine oil and fill it with oil.
4. Fill fuel tank.
5. Let the engine run for approximately **10 min.**
6. Stop the engine.
7. Manually rotate the engine several times for cylinder and combustion chamber preservation.
8. Disassemble the belts and store them packed.
9. Spray some anti-corrosive grease in the pulley races.
10. Close the suction and the drain openings.

Battery storage

Remove the batteries from the machine. Store them on a wooden table in a dry, cool, well ventilated room, if possible at a temperature above **0 °C (32 °F)** [optimum temperature **20 °C (68 °F)**].

Perform the following operations:

- Clean the battery.
- Check the acid concentration and the electrolyte level every two weeks.
- Fully recharge the battery when the acid concentration drops to **1.23 kg (2.71 lb)**.
- Keep the outside of the batteries clean and dry.

Taking the machine back to service

To take the machine back to service after a long storage period, it is necessary to take some precautions:

- Eliminate all engine protections. Fill in engine oil.
- Fill the fuel tank.
- Reassemble and connect the batteries. Check the charge and the electrolyte level.
- Check all oil levels.
- Check the level of the coolant solution.
- Check the condition of the tyres and the tyre pressure.
- Remove the cover from the exhaust pipe opening.
- Remove the anti-corrosive grease from the cylinder rods and the other coated areas.
- Check the operation of the electrical system.
- Bleed air from the hydraulic system.
- Check the operation of the steering system and braking system.

Remove the engine protections

1. Remove the anti-corrosive grease from the pulley races.
2. Assemble the belts and adjust the tension after brief operation.
3. Reopen the suction and drain lines.
4. Operate the engine.

NOTE: Check the machine for leaks and for broken, defective or missing parts.

WARNING

Unexpected machine movement!

Before starting the engine, be sure all controls are in neutral or disengaged. This prevents the accidental start up of power-driven equipment. Failure to comply could result in death or serious injury.

W0169A

WARNING

Inhalation hazard! Risk to operators and bystanders.

Avoid running the engine in confined areas. Make sure there is adequate ventilation at all times.

Failure to comply could result in death or serious injury.

W0156A

Removal from storage

1. Change the fuel filters and fill the fuel tank if needed.
2. Tighten the cooling system drain valves.
3. Fill engine coolant system.
4. Check engine oil level.
5. Check the condition of the engine fan belt. Replace it if required.
6. Check the hydraulic fluid level.
7. Lubricate the machine grease fittings.
8. Use a petroleum base solvent and remove the rust and corrosion preventive from the hydraulic cylinder rods and spools, ect.
9. Install a fully charged battery.

NOTE: Check the battery periodically for the correct electrolyte level. Wear face protection and test the electrolyte with a hydrometer. When the hydrometer reading is near 1.215, charge the battery.

10. Remove air from the engine fuel lines.

NOTE: Before starting the engine, make sure there are no leaks, missing or broken parts.

11. Start the engine and run at idle speed for **2 min.** Check for leaks around the filters and drain plugs.
12. Operate all the hydraulic controls to ensure normal flow of hydraulic oil to all components.
13. Stop the engine and check the all fluid levels of the engine cooling system and drive chain compartments. See the engine cooling system and drive chain compartment sections for the correct procedure on checking the fluid levels.

8 - TROUBLESHOOTING

SYMPTOM(S)

Engine - Troubleshooting

Problem	Possible Cause	Correction
The engine does not start	Partially discharged batteries	Check, charge the batteries and, if necessary, replace them
	Corroded or loose connections to the battery terminals	Clean, inspect, tighten the nuts and, if necessary, replace the excessively corroded terminals and nuts
	Dirt or water accumulations in fuel lines	Disconnect the lines and the injection pump and carefully clean them; if necessary, clean and dry the fuel tank
	No fuel in the tank	Fill the tank
	No supply to the injection pump	Check and, if necessary, replace the supply pump
	Air in the fuel system	Check the lines, the fittings, the supply pump, the filters and the injection pump for the presence of air, then bleed the system
	Damaged starter motor	Repair or replace the starter motor
The engine stops	Irregular delivery of the supply pump	Check delivery on the workbench
	Dirt or water accumulations in fuel lines	Disconnect the lines and the injection pump and carefully clean them; if necessary, clean and dry the fuel tank
	Restricted fuel filters	Replace the filter cartridges
	Burned or cracked valves	Replace the valves
	Air in the fuel system	Check the lines, the fittings, the supply pump, the filters and the injection pump for the presence of air, then bleed the system
	Damaged injection pump controls	Replace the damaged parts
The engine overheats	The centrifugal pump of the cooling system is faulty	Overhaul the pump and, if necessary, replace it
	Faulty temperature switch	Replace the temperature switch
	Radiator partially faulty	Eliminate possible scales by washing, check and repair possible tube leaks
	Scales in coolant passage compartments in cylinder heads and crankcase	Carefully wash
	Centrifugal pump drive belt and fan drive belt too slack	Check and adjust belt tension
	Coolant (insufficient quantity)	Restore the level in the expansion tank by adding the prescribed fluid
	Incorrect timing of the engine	Check and correctly time the engine
	Restricted air filter	Clean the assembly and, if necessary, replace the filter element
The engine has anomalous knocks	Partially obstructed or damaged injectors	Clean, overhaul and correctly calibrate the injectors
	Dirt accumulations in fuel lines	Clean the lines and replace the visibly dented pipes; if necessary, clean the injection pump
	Drive shaft knocks caused by an excessive clearance of one or more crankshaft bearings or big end bearings or excessive shoulder clearance	Rectify the drive shaft pins, assemble bigger shoulder bearings and rings
	Unbalanced drive shaft	Check the alignment and the balance of the drive shaft and, if necessary, replace it
	Loose flywheel retaining screws	Replace the loose screws and tighten all screws to the prescribed torque + angle

8 - TROUBLESHOOTING

Problem	Possible Cause	Correction
	Connecting rod axes not parallel	Straighten the connecting rods, check that the axes are parallel and, if necessary, replace the connecting rods
	Cylinder knocks due to anomalous wear	Bore the cylinder barrels and assemble bigger cylinders
	Noisy cylinder pin due to excessive clearance in hub and connecting rod bushing. Bushings free in their seat on the connecting rod	Replace the pin with a bigger one, reprocess the hubs on the cylinder and the bushing on the connecting rod. Replace the bushing
	Ticking due to noisy distribution	Check that there are no broken springs, that there is no excessive clearance between the rods and the rails, tappets and seats; adjust the clearance between valves and rockers
Anomalous engine smoke		Contact your CASE Dealer
Difficult starting and poor performance under all conditions	High-pressure pump faulty	Contact your CASE Dealer
Difficult start, poor performance, the engine runs with one cylinder less	Injector with shutter or solenoid core (mechanical part) stuck open.	Contact your CASE Dealer
Starting takes tens of seconds, much white exhaust smoke, smell of fuel	Injector (irreversibly) stuck open	Contact your CASE Dealer
Broken high-pressure line from pump to common rail	Anomalous vibrations caused by a loose line clamping	Contact your CASE Dealer
The engine operates with a cylinder less, without saving failures in the control unit	Injector stuck closed	Contact your CASE Dealer

Starter motor - Troubleshooting

Problem	Possible Cause	Correction
The starter motor does not run	Too low specific gravity and battery level	Inspect the battery
	Poor ignition switch circuit connection or contact	Replace the wiring harness and the ignition switch or starter motor runs too slowly
	Malfunction of the coil or of the magnetic switch pull-in cylinder	Replace the magnetic switch
The starter motor running cannot crank the engine	The pinion gear does not engage with the ring gear	Repair or replace the clutch and the control lever
	Sliding clutch	Replace the clutch
Anomalous noise	Anomalous bushing wear	Replace starter
	Wear on pinion gear or ring gear tooth tips	For ring gear damage contact CASE Dealer
	Poor pinion gear sliding	Replace starter
The pinion gear springs	Poor ignition switch return	Replace the ignition switch
Field coil loss. Magnetic switch coil burnt, etc.	Pinion gear disengagement fault caused by a coil short circuit in the magnetic switch	Replace the magnetic switch

Alternator - Troubleshooting

Problem	Possible Cause	Correction
Not recharged	Recharge circuit interrupted (warning lamp, fuse, connector, etc.)	Check the connections of the recharge circuit, clean and tighten the alternator and battery terminals
	Voltage regulator inefficient	Replace alternator
	Rotor winder interrupted	Replace alternator
	Worn brushes	Replace alternator
Recharge insufficient	Slackened fan belt	Supply the correct tension
	Voltage regulator faulty	Replace alternator
	Excessive wear of rotor rings or brushes	Replace alternator
	Short-circuited diodes	Replace alternator
	Short-circuited stator winders or rotor winder	Replace alternator
Excessive recharge	Loose circuit connections	Check the connections of battery terminals, starter motor terminals and alternator
	Voltage regulator inefficient	Replace alternator
	Ground connection faulty	Check connections for leaks

Transmission - Troubleshooting

Problem	Possible Cause	Correction
The vehicle does not move	Control valve supply problem	Check and, if necessary, replace the control valves
	Damaged connections of transmission and vehicle wiring harness	Repair and, if necessary, replace the wiring harness
	Oxidation in the contacts of the electric cables of the wiring harness	Clean the contacts
	Interruption of the electric cable	Replace the electric cable
	Damage to the solenoids/solenoid valves	Replace the solenoids
	Damage to sensors	Replace sensors
	Short circuits or bad contact	Check and, if necessary, replace the fuses
	Incorrect oil level	Restore the oil level
	Check for possible oil leaks	Eliminate the leaks and restore the oil level
	Suction strainer restriction	Clean the suction strainer
	Damaged oil pump	Replace the oil pump
	Damaged oil pump pressure relief valve	Replace the oil pump
	Damaged/restricted filter	Replace the filter
	Damaged / stuck control valve	Replace the control valve
	Damaged converter	Replace the converter
	Oil temperature below 0 °C (32 °F)	Wait for the operating temperature to be reached (stall test)
	Damaged rotating seals	Replace the rotating seals
	Stuck shuttle lever	Repair the shuttle lever
	Excessively worn-out clutch assembly	Repair and, if necessary, replace the clutch assembly
	Lack of motion transmission (broken gears, shafts, bearings, etc)	Check, repair and, if necessary, replace
The vehicle has a reduced power transmission	Incorrect oil temperature	Wait for the operating temperature to be reached (stall test)
	Transmission oil overheating	Restore acceptable temperature values
	Incorrect operating pressures	Check the hydraulic circuit and replace (oil pump, filters, control valve)
	Damaged converter	Replace the converter
	Incorrect oil level	Restore the oil level
	Worn-out clutch assembly	Replace/repair
	4WD fails to engage	Repair/replace the 4WD shaft assembly
	Overheated solenoids/solenoid valves	Replace
Overheating	Damage to sensors	Replace sensors
	Damaged cooling system	Repair the cooling system
	Dirty heat exchanger	Clean the heat exchanger
	Unintentionally activated parking brake	Deactivate the parking brake
	Excessive soil deposit on axle wheel hubs	Clean the axle wheel hubs
	Seizure (broken gears, shafts, bearings, etc)	Check, repair and, if necessary, replace
	Braking force external to transmission: axle operating problem	Check and repair the axle
	Dragging of clutch disks	Repair and, if necessary, replace the clutch disks
	Damaged converter	Replace the converter
	Damaged oil thermostat	Replace the oil thermostat
	Incorrect oil level	Restore the oil level
Wheel rotation with lifted vehicle	Worn-out oil pump	Replace the oil pump
	Dragging of clutch disks	Repair and, if necessary, replace the clutch disks
	Low oil temperature (high oil viscosity)	Wait for the operating temperature to be reached (stall test)
	Incorrect oil gradient	Change oil and filters
	Damaged control valve	Replace the control valve

8 - TROUBLESHOOTING

Problem	Possible Cause	Correction
	Stuck shuttle lever	Repair and, if necessary, replace the shuttle lever
Noise	Damaged converter	Replace the converter
	Damaged oil pump	Replace the oil pump
	Ventilation/Cavitation	Check the oil level. Check the oil gradient
	Seizure (broken gears, shafts, bearings, etc)	Check, repair and, if necessary, replace
	Worn-out clutch disks	Replace the clutch disks
Irregular connection	Damaged hydraulic control valve	Replace the control valves
	Electrical system fault	Repair the electrical system
	Worn-out clutch disks	Replace the clutch disks
	Damaged converter	Replace the converter
	Low oil temperature (high oil viscosity)	Wait for the operating temperature to be reached (stall test)
	Overheating	See "Overheating"
	Damaged hydraulic system	Repair the hydraulic system
The gear remains engaged	Damaged/stuck shuttle lever	Repair and, if necessary, replace the shuttle lever
	Electrical system fault	Repair the electrical system
	Damaged control valve	Replace the control valve
	Damaged hydraulic system	Repair the hydraulic system
	Damaged clutch assembly	Repair and, if necessary, replace the clutch assembly
Lack of 4WD power transmission	Damaged 4WD connection assembly	Replace the 4WD connection assembly
	Hydraulic system fault	Repair the hydraulic system
	Damaged control valve	Replace the control valve
	Braking sensor fault	Check and, if necessary, replace the braking sensors
	Electrical system fault	Repair the electrical system

Axles - Troubleshooting

Problem	Possible Cause	Correction
Wheel vibrations	Incorrect installation	Correct the installation
	Defective axle	Inspect and repair the axle
	Wrong weight distribution	Distribute the weight differently
	Overload	Remove the excessive load
	Incorrect tire rotation radius	Replace the tire or adjust pressure on both tires
	Bent axle beam	Replace the axle beam
Tire resistance	Incorrect installation	Correct the installation
	Defective axle	Inspect and repair
	Wrong weight distribution	Distribute the weight differently
	Overload	Remove the excessive load
	Incorrect tire rotation radius	Replace the tire or adjust pressure on both tires
	Bent axle beam	Replace the axle beam
Broken axle shaft	Incorrect installation	Correct the installation
	Defective axle	Inspect and repair
	Wrong weight distribution	Distribute the weight differently
	Overload	Remove the excessive load
	Incorrect tire rotation radius	Replace the tire or adjust pressure on both tires
	Bent axle beam	Replace the axle beam
Difficult steering, the machine travels in a straight line while steering	Incorrect installation	Correct the installation
	Defective axle	Inspect and repair
	Wrong weight distribution	Distribute the weight differently
	Overload	Remove the excessive load
	Incorrect tire rotation radius	Replace the tire or adjust pressure on both tires
	Bent or broken axle shaft	Replace the axle beam
No differential action, jamming while steering	Incorrect installation	Correct the installation
	Bent or broken axle shaft	Replace the axle beam
Excessive noise	Incorrect installation	Correct the installation
	Defective axle	Inspect and repair
	Wrong weight distribution	Distribute the weight differently
	Overload	Remove the excessive load
	Incorrect tire rotation radius	Replace the tire or adjust pressure on both tires
	Bent or broken axle shaft	Replace the axle beam
	Incorrect wheel alignment	Check that the structure and the bearings are in good conditions
	Incorrect axle part installation	Check the installation
Excessive wear of the tire	Incorrect installation	Correct the installation
	Defective axle	Inspect and repair
	Wrong weight distribution	Distribute the weight differently
	Overload	Remove the excessive load
	Incorrect tire rotation radius	Replace the tire or adjust pressure on both tires
	Bent or broken axle shaft	Replace the axle beam
	Blocked differential	Check the installation
	Excessive steering angle	Reduce the steering angle
	Incorrect wheel alignment	Check that the structure and the bearings are in good conditions
Friction noise	Incorrect installation	Correct the installation
	Bent or broken axle shaft	Replace the axle beam
	Damaged or worn axle parts	Replace the damaged axle parts
	Incorrect axle part installation	Check the installation
	Incorrect adjustment of the bevel gear set	Adjust the bevel gear set

8 - TROUBLESHOOTING

Problem	Possible Cause	Correction
Vibrations during travel	Incorrect installation	Correct the installation
	Defective axle	Inspect and repair
	Wrong weight distribution	Distribute the weight differently
	Bent or broken axle shaft	Replace the axle beam
Break towards the outer end of the ring gear tooth	Excessive gear load compared to the prescribed one	Replace the bevel gear
	Incorrect gear adjustment (excessive backlash). Loose pinion nut	Carefully follow the recommended adjustment operations for ring gear and pinion backlash and for tooth mark detection
Break towards the inner end of the ring gear tooth	Load crash	Replace the bevel gear
	Incorrect gear adjustment (insufficient backlash). Loose pinion nut	Carefully follow the recommended adjustment operations for ring gear and pinion backlash and for tooth mark detection
Worn-out or scored Pinion teeth and ring gear teeth	Insufficient lubrication	Replace the bevel gear
	Contaminated lubricant. Incorrect lubricant or poor additives	Replace the pinion bearings, paying attention to correctly position the ring gear, the pinion and the bearing preloading
	Worn-out pinion bearings that cause an incorrect pinion axial backlash and wrong contact between pinion and ring gear	Use proper lubricant, fill up to the correct level and change at recommended intervals
Overheated ring gear teeth or pinion teeth. Check if gear teeth have faded	Prolonged operation at high temperature	Replace the bevel gear
	Unsuitable lubricant. Low oil level. Contaminated lubricant	Use proper lubricant, fill up to the correct level and change at recommended intervals
Pitted drive pinion teeth	Extremely intense use	Replace the bevel gear
	Insufficient lubrication	Use proper lubricant, fill up to the correct level and change at recommended intervals
Bent axle beam body	Overloaded vehicle. Vehicle's accident. Load crash	Replace the axle beam body
Worn-out or pitted bearings	Insufficient lubrication	Replace bearings
	Contaminated lubricant. Extremely intense use. Normal wear. Loose pinion nut	Use proper lubricant, fill up to the correct level and change at recommended intervals
Gaskets leak oil	Prolonged operation at excessive oil temperature	Replace the gasket and matching surface if damaged
	Oil gasket wrongly installed. Gasket edge cut or scored. Contaminated lubricant	Use proper lubricant, fill up to the correct level and change at recommended intervals
Excessive wear of input flange spline	Intense use	Replace the flange
	Loose pinion nut	Check that the pinion spline is not excessively worn out
	Axial backlash of pinion	Replace the bevel gear, if necessary
Fatigue break of pinion gear tooth. Check if the fracture line is wavy or clearly delineated (stop line)	Intense use. Continuous overload	Replace the bevel gear
Break of pinion teeth and ring gear teeth	Crash load of differential components	Check and/or replace other differential components
Splines of planetary gear worn-out (excessive backlash)	Intense use	Replace differential gear assy. Replace the axle beam, if necessary

8 - TROUBLESHOOTING

Problem	Possible Cause	Correction
Worn or scratched washer surfaces	Insufficient lubrication	Replace all scratched washers and those with a thickness by 0.1 mm (0.004 in) lower than the new ones
	Incorrect lubrication. Contaminated lubricant	Use proper lubricant, fill up to the correct level and change at recommended intervals
Worn-out inner diameter of pinion tapered roller bearing	Intense use	Replace bearing
	Excessive pinion axial play	Check pinion axial backlash
	Unsuitable lubrication. Contaminated lubricant	Use proper lubricant, fill up to the correct level and change at recommended intervals
Twisted or broken axle beam	Intense vehicle operation, overload	Replace the axle beam
Broken axle beam at wheel flange	Loose wheel support	Replace the axle beam
	Bent axle beam body	Check the bending of the axle beam body. Make sure that the wheel support is not worn out or wrongly adjusted
Noise during travel	Excessive backlash between ring gear and pinion	Adjust the backlash between the ring gear and the pinion
	Worn-out pinion and ring gear	Replace pinion and ring gear
	Worn-out pinion bearings	Replace pinion bearings
	Loose pinion bearings	Adjust pinion bearings
	Excessive pinion axial play	Adjust the axial play of the pinion
	Worn-out differential bearings	Replace differential bearings
	Loose differential bearings	Adjust the bearings
	Ring gear excessively off-set	Replace the ring gear
	Low lubricant level	Restore the level
	Poor or incorrect lubricant grade	Change lubricant
	Bent axle beam	Replace the axle beam
Noise during idling	Noises emitted by the axle when the vehicle is moving are usually heard during idling, even though they are not too loud	Adjust the backlash between the ring gear and the pinion or replace pinion and ring gear
	Incorrect backlash between pinion and ring gear (the noise heard while decelerating disappears when speed is increased)	Adjust the backlash between the pinion and the ring gear
	Worn-out pinion spline or input flange	Replace the pinion
Intermittent noise	Damaged ring gear	Replace the bevel gear
	Loose differential box screws	Tighten the screws to torque
Constant noise	Damaged ring gear teeth or pinion teeth	Replace the bevel gear
	Worn-out bearings	Replace the bearings
	Worn-out pinion splines	Replace the pinion
	Bent axle beam	Replace the axle beam
Noise while steering	Worn-out differential planetary gears	Replace the planetary gears
	Worn-out differential box and/or pins	Replace the differential box
	Worn-out differential washers	Replace the washers
	Worn-out axle beam splines	Replace the axle beam

Steering System - Troubleshooting

Problem	Possible Cause	Correction
No steering or excessive effort required to steer	Incorrect oil level in the tank	Fill with the correct oil type and quantity
	Air in the system	Check the system pressure
	Pump relief valve faulty	Replace the relief valve
	Worn pump	Replace the pump
	Leaking power cylinder	Eliminate the leak
	Damaged valve spool	Replace the spool
	Broken or damaged steering column	Inspect and repair
	Damaged or worn metering element	Replace the metering element
The steering wanders	Excessive clearance in the ball joints of the steering connecting rods	Inspect and replace
	Leaking power cylinder	Eliminate the leak
	Control valve spool stuck or worn	Replace the spool
	Damaged or worn metering element	Replace the metering element
Front wheels oscillating when steering	Leaking power cylinder	Eliminate the leak
	Control valve spool stuck	Replace the spool
	Damaged or worn metering element	Replace the metering element
Noisy pump	Incorrect oil level in the tank	Fill with the correct oil type and quantity
	Air in the system	Check for loose connections or damaged lines Drain the oil from the system
	Water in oil	Drain and change the oil
	Worn pump	Replace the pump

Hydraulic systems - Troubleshooting

Problem	Possible Cause	Correction
All circuits fail to operate	Pump drive inoperative	Check and repair as necessary
	Low oil level	Check the level and top up
	Restricted pump suction line	Inspect the suction line and the tank and repair as necessary
Slow operation or loss of power in all circuits	Worn pump	Make a pump performance test, replace and reseal as necessary
	Restricted pump suction line	Inspect the suction line and the tank and repair as necessary
	Load sensing pressure relief valve incorrectly adjusted	Make a system pressure test
	Hydraulic speed solenoid valve inoperative	Make a system pressure test

Loader attachment - Troubleshooting

Problem	Possible Cause	Correction
The lifting circuit fails to operate, is slow or loses power	Valve spool leaking	Inspect the spool and check it for wear or scratches
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder
The bucket fails to operate, is slow or loses power	The relief valves are stuck open, set to a too low value or there is a leak in the seat	Check the bucket circuit relief valve
	Valve spool leaking	Inspect the spool and check it for wear or scratches
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder
Cylinder leak (spools in neutral)	Damaged cylinder barrel	Inspect and reseal the cylinder
	Internal valve leak	Inspect the spool and check it for wear or scratches
Hesitation in the raising movement of the loader attachment or of the bucket cylinders when the control is initially actuated	Load check valve between control valve sections damaged	Disassemble and inspect

Backhoe attachment - Troubleshooting

Problem	Possible Cause	Correction
The lifting system is inoperative, is too slow, loses power or does not hold	The lifting circuit relief valve is stuck open, set to a too low value or there is a leak in the seat	Test the pressure of the lifting circuit relief valve
	Valve spool leaking	Inspect the spool and check it for wear or scratches
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder
The digging control fails to operate, is slow or loses power	The digging circuit relief valve (cylinder end) is stuck open, set to a too low value or there is a leak in the seat	Test the pressure of the digging circuit relief valve
	Valve spool leaking	Inspect the spool and check it for wear or scratches
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder
The bucket fails to operate, is slow or loses power	The bucket relief valve (rod end) is stuck open, set to a too low value or there is a leak in the seat	Test the pressure of the bucket relief valve
	Valve spool leaking	Inspect the spool and check it for wear or scratches
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder
The telescopic dipper fails to operate, is slow or loses power	The telescopic dipper circuit relief valve (cylinder end) is stuck open, set to a too low value or there is a leak in the seat	Test the pressure of the telescopic dipper relief valve
	Valve spool leaking	Inspect the spool and check it for wear or scratches
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder
Stabilizer pads leaking	Stabilizer safety valve leaking	Inspect and overhaul the stabilizer safety valve
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder

Swing - Troubleshooting

Problem	Possible Cause	Correction
Right or left swing is inoperative, is too slow or loses power	The swing circuit relief valves are not seating, set to a too low value or there is a leak in the seat	Test the swing circuit relief valve
	Valve spool leaking	Inspect the spool and check it for wear or scratches
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder and the ring nut
The swing fails to slow down (bearing stop) at stroke end	Built-in sliding limiter damaged	Disassemble and inspect
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder
The swing does not stop when the control lever returns to neutral (one direction only)	The circuit relief valve (return side) is stuck open, set to a too low value or there is a leak in the seat	Test the swing circuit relief valve
	Valve spool leaking	Inspect the spool and check it for wear or scratches
Cylinder leak (spools in neutral)	Internal valve leak	Inspect the spool and check it for wear or scratches
	Cylinder seals leaking or cylinder barrel damaged	Inspect and reseal the cylinder
A circuit temporarily lowers when given the control to lift	Load check valve between control valve sections damaged	Disassemble and inspect

Hydraulic pump - Troubleshooting

Problem	Possible Cause	Correction
Noisy system	Worn or damaged pump gears or pressure plates	Make a hydraulic pump performance test
	Aeration: air entering the systems at: suction tube, pump shaft, fittings or cylinder ring nuts	Make a hydraulic pump performance test
	Cavitation: System restrictions in the suction line or in the tank filter	Make a visual check and/or a hydraulic pump performance test
	Water in the system	Check for possible leaks and eliminate them
	The system relief valve vibrates	Check the system relief valve; adjust and overhaul, if necessary
	Vibrations in the lines	Visually check
	Cold hydraulic oil	Check the hydraulic oil operating temperature
	Wrong oil type	Change the hydraulic oil
Hydraulic oil drain through tank breather	Tank overfilled	Check the hydraulic oil level
	Aeration: Air entering the system at: suction tube, pump shaft, fittings or cylinder ring nuts	Make a hydraulic pump performance test
	Cavitation: Restriction of the suction filter in the tank	Make a visual check and/or a hydraulic pump performance test
Oil heating	Low oil quantity	Fill the tank
	Contaminated oil	Drain the tank and refill with clean oil
	Too high/low setting of the relief valve	Drain the tank and refill with clean oil. Test relief valves
	Oil in system too light	Drain the tank and refill with oil with the correct viscosity
	Oil cooler fins obstructed	Clean the oil cooler
Oil leaks through the shaft seal	Worn shaft seal	Replace the shaft seal and inspect the pump
Foamy oil	Low oil level	Fill the tank
	Air in the suction system	Check and tighten the suction lines
	Wrong oil type	Change the hydraulic oil

Electrical systems - Troubleshooting

Problem	Possible Cause	Correction
The electrical system is inoperative	Loose or oxidised battery connections	Check that the battery voltage with open circuit is at least 12.6 V
	Clean and tighten the connections	Check the electrolyte level and density
	Sulphated batteries	
	The main connection fuse of the machine is blown	Find the reason of the failure and replace the connection fuse
Starter motor speed too low, the engine cranks slowly	Loose or corroded connections	Clean and tighten loose connections
	Low battery output voltage	Check that the battery voltage with open circuit is at least 12.6 V . Check the electrolyte level and density
	Incorrect viscosity of the engine oil	Use an oil with correct viscosity for the temperature conditions
Starter motor inoperative	Transmission gearshift lever engaged	Move gearshift lever to neutral
	Loose or corroded connections	Clean and tighten loose connections
	Dead batteries	Charge or replace the batteries
The charge indicator lamp stays on with the engine running	Low engine idle speed	Increase idle speed
	Loose belt	Check belt tension
	Malfunctioning battery	Check that the battery voltage with open circuit is at least 12.6 V . Check the electrolyte level and density
	Malfunctioning alternator	Check the alternator and repair, if necessary
Batteries will not charge	Loose or corroded battery connections	Clean and tighten the connections
	Sulphated batteries	Check that the battery voltage with open circuit is at least 12.6 V . Check the electrolyte level and density
	Loose or worn belt	Check the automatic belt tensioner. If necessary, replace the belt
The charge indicator flashes, indicating excessive charging voltage	Malfunctioning alternator	Check the alternator and repair, if necessary

Heating, ventilation, air conditioning (HVAC) - Troubleshooting

Problem	Possible Cause	Correction
Dust enters the cab	Improper seal around filter element	Check seal condition
	Blocked filter	Clean or replace filter
	Defective filter	Replace filter
	Excessive air leak(s) around doors and windows	Repair and seal air leak(s)
Blower motor air flow low	Blocked filter or recirculation filter	Clean or replace filter(s)
	Heater radiator core blocked	Clean radiator core thoroughly
Blower motor not working	Fuse blown	Replace fuse
Cabin does not heat up	Engine not reaching operating temperature. Thermostat stuck open	Replace thermostat
	Heater hose from engine to cab radiator, kinked or blocked	Ensure water flow to heater radiator is adequate and not restricted
Cabin does not cool	Heater control turned on	Turn the temperature control knob fully counterclockwise for maximum cooling
	Heater control valve stuck in open position	Free up valve or change as required
Temperature not stable	Low engine coolant	Top up coolant recovery tank

9 - SPECIFICATIONS

Specifications

Engine

Specifications	570T (63 kW (86 Hp))
Model	S8000 BS-3 Certified-8045.45.735
Firing order	1-3-4-2
Bore and stroke	104 mm (4.09 in) x 115 mm (4.53 in)
Displacement	3.9 l (1.0 US gal)
Compression ratio	18.3:1
Fuel injection	Mechanical
Horsepower	63 kW (86 Hp)
Peak torque at 1300 RPM	393 N·m (290 lb ft)
Fuel	Diesel as per IS 1460
Engine speeds	
Rated speed, full load	2200 RPM
Low idle speed at no load	900 - 1000 RPM
High idle speed at no load	2330 - 2430 RPM
Maximum speed at full load	
Backhoe stall	1290-1360
Converter stall	2000-2150
Loader stall	2225-2325
Combined stall	1350-1550

Transmission - Power-Shuttle

Specifications	570T (63 kW (86 Hp))
2WD/2WS	
Model	CARRARO 2WD TLB1
Type	4 forward and 4 reverse travel gears
Torque converter ratio	3.01:1
Transmission ratios:	1 st gear forward travel 1:5.603 - reverse travel 1:4.643
	2 nd gear forward travel 1:3.481 - reverse travel 1:2.884
	3 rd gear forward travel 1:1.585 - reverse travel 1:1.313
	4 rd gear forward travel 1:0.793 - reverse travel 1:0.657
4WD/2WS	
Model	CARRARO 4WD TLB1
Type	4 forward and 4 reverse travel gears
Torque converter ratio	3.01:1
Transmission ratios:	1 st gear forward travel 1:5.603 - reverse travel 1:4.643
	2 nd gear forward travel 1:3.481 - reverse travel 1:2.884
	3 rd gear forward travel 1:1.585 - reverse travel 1:1.313
	4 rd gear forward travel 1:0.793 - reverse travel 1:0.657
Speed	
1 st Forward/Reverse	6.2 km/h/ 7.4 km/h
2 nd Forward/Reverse	10 km/h/ 12 km/h
3 rd Forward/Reverse	20.7 km/h/ 24.8 km/h
4 th Forward/Reverse	39.2 km/h/ Not recommended

Front axle

Specifications	570T (63 kW (86 Hp))
2WD	
Model	CNH PS1300
Type	Steering
4WD	

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Specifications	570T (63 kW (86 Hp))
Model	Carraro 26.17
Type	Steering

Rear axle

Specifications	570T (63 kW (86 Hp))
2WD	
Model	CARRARO 28.32M
Type	Rigid
4WD	
Model	CARRARO 28.32M
Type	Rigid

Service brakes

Specifications	570T (63 kW (86 Hp))
Type	Wet multi-discs, 6 x axle (3 x half axle)
Braking surface	1092 cm ² (169 in ²)

Parking brake

Specifications	570T (63 kW (86 Hp))
Type	Manual, with lever

Steering

Specifications	570T (63 kW (86 Hp))
Type	Power steering with gear pump
Model	DANFOSS
System pressure	140 bar (2030 psi)
Displacement	125 cm ³ (7.6 in ³)
Shock valve adjustment	200 bar (2900 psi)
Pressure relief valve adjustment	140 bar (2030 psi)

Hydraulics

Specifications	570T (63 kW (86 Hp))
Type	Gear pump
Model	PARKER 33/23 W/ PRIORITY
Flow rate	121 l/min (32 US gpm) @ 2200 RPM
Main relief valve pressure setting	210 bar (3045 psi)

Front counterweight

Specifications	570T (63 kW (86 Hp))
Standard	211 kg (465 lb)
Medium	355 kg (783 lb)

Loader buckets

Type	Standard	BDB
Heaped capacity	1 m ³ (35.3 ft ³)	1 m ³ (35.3 ft ³)
Width	2277 mm (89.65 in)	2300 mm (90.55 in)
Weight	400 kg (882 lb)	560 kg (1235 lb)

Backhoe buckets

Type	Standard	Extendahoe
Heaped capacity	0.26 m ³ (9.2 ft ³)	0.26 m ³ (9.2 ft ³)
Width	762 mm (30.00 in)	762 mm (30.00 in)
Weight	240 kg (529 lb)	240 kg (529 lb)

9 - SPECIFICATIONS

Tire size details

2WD		
Type of rear tire	Front tires	Rear tires
Standard Rear	9.00-16, 16 PR	16.9-28, 12 PR
Heavy duty rear	9.00-16, 16 PR	14.00-25, 20 PR

4WD		
Type of rear tire	Front tires	Rear tires
Standard Rear	12.5-18, 12 PR	16.9-28, 12 PR
Heavy duty rear	12.5-18, 12 PR	14.00-25, 20 PR

Inflating pressure details

2WD		
Type of rear tire	Front tires	Rear tires
Standard Rear	5.52 bar (80 psi)	1.79 bar (26 psi)
Heavy duty rear		2.76 bar (40 psi)

4WD		
Type of rear tire	Front tires	Rear tires
Standard Rear	2.41 bar (35 psi)	1.79 bar (26 psi)
Heavy duty rear		2.76 bar (40 psi)

Nut torques

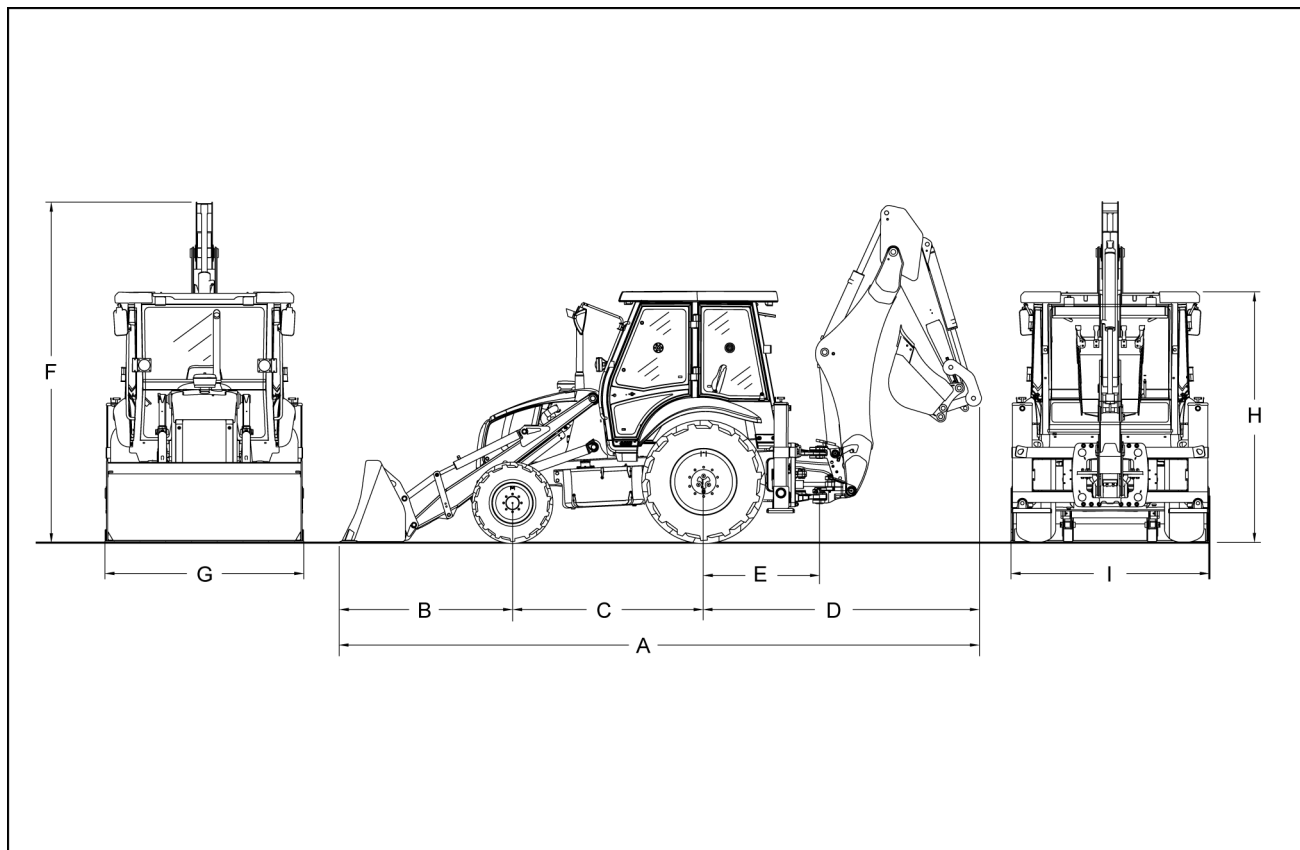
Front nuts	Rear nuts
196 N·m (145 lb ft)	490 N·m (361 lb ft)

Weight

570T
7710 kg (16998 lb)

9 - SPECIFICATIONS

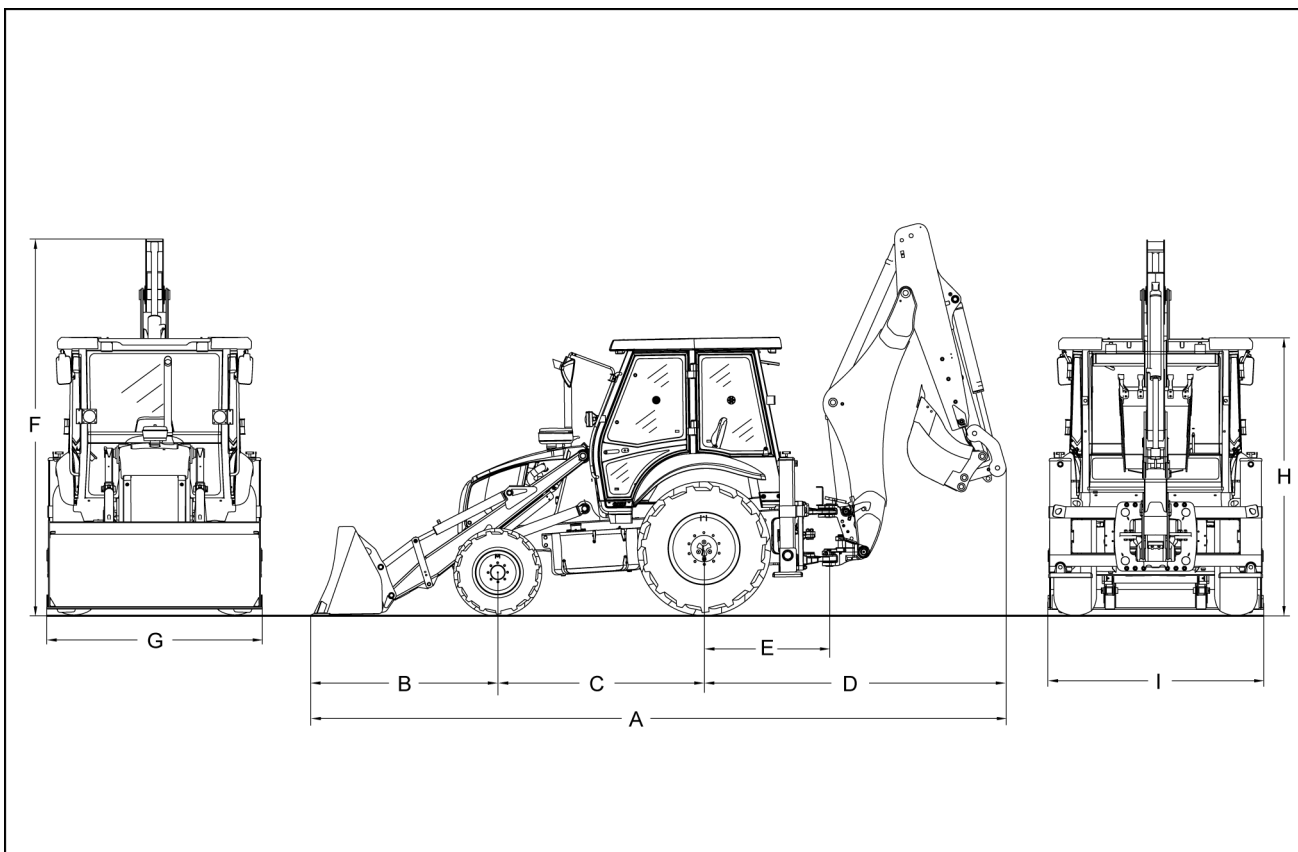
Machine dimension



PTIL14TLB0043FA 1

S. No.	Description	Dimension
A	Overall machine length	7332 mm (288.66 in)
B	Loader bucket reach	1980 mm (77.95 in)
C	Wheelbase	2181 mm (85.87 in)
D	Backhoe bucket dimensions	3171 mm (124.84 in)
E	Rear wheel base - backhoe attachment swing support	1332 mm (52.44 in)
F	Maximum machine height	3901 mm (153.58 in)
G	Loader bucket width	2277 mm (89.65 in)
H	Cab height	2869 mm (112.95 in)
I	Stabilizer width	2271 mm (89.41 in)

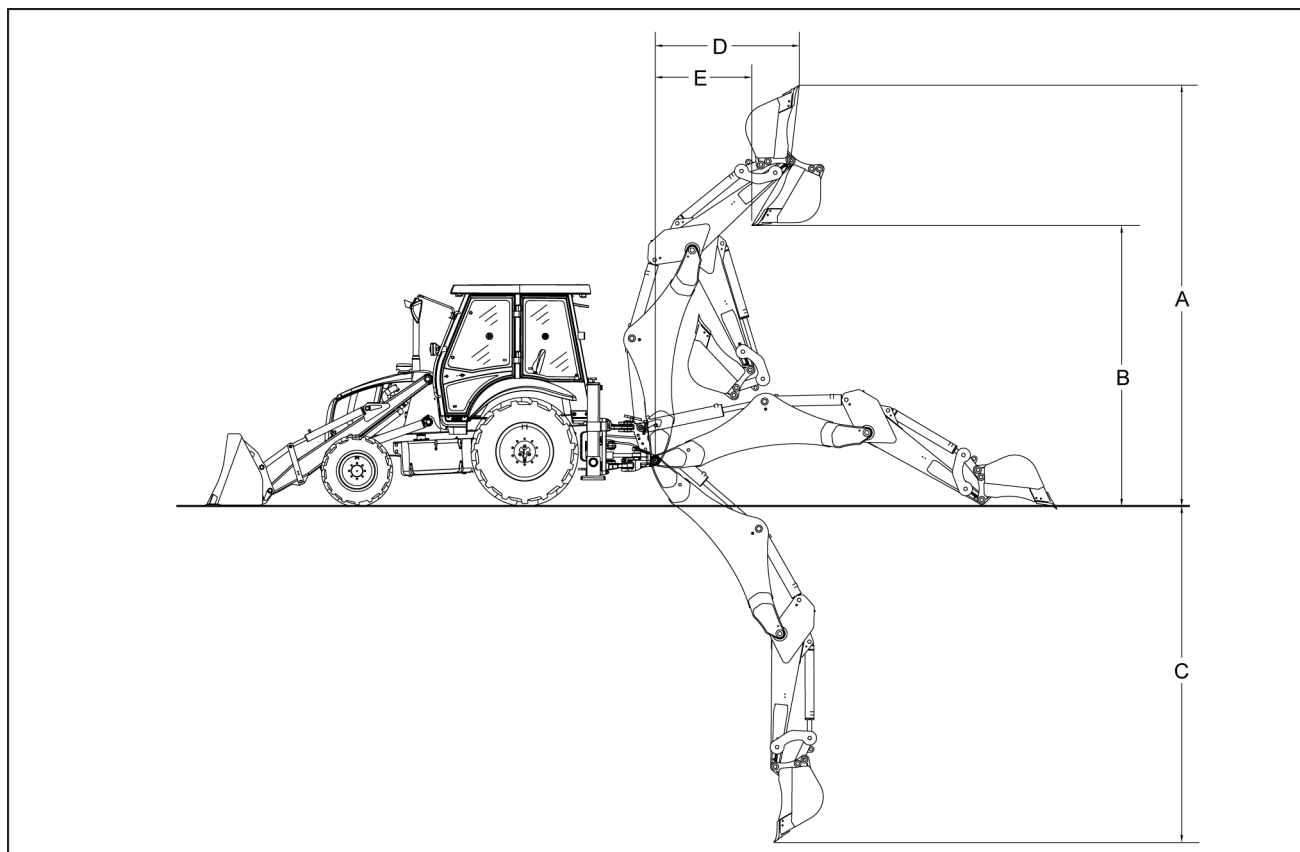
Machine dimension (optional)



PTIL14TLB0044FA 2

S. No.	Description	Dimension
A	Overall machine length	7269 mm (286.18 in)
B	Loader bucket reach	1980 mm (77.95 in)
C	Wheelbase	2181 mm (85.87 in)
D	Backhoe bucket dimensions	3109 mm (122.40 in)
E	Rear wheel base - backhoe attachment swing support	1332 mm (52.44 in)
F	Maximum machine height	3901 mm (153.58 in)
G	Loader bucket width	2277 mm (89.65 in)
H	Cab height	2869 mm (112.95 in)
I	Stabilizer width	2271 mm (89.41 in)

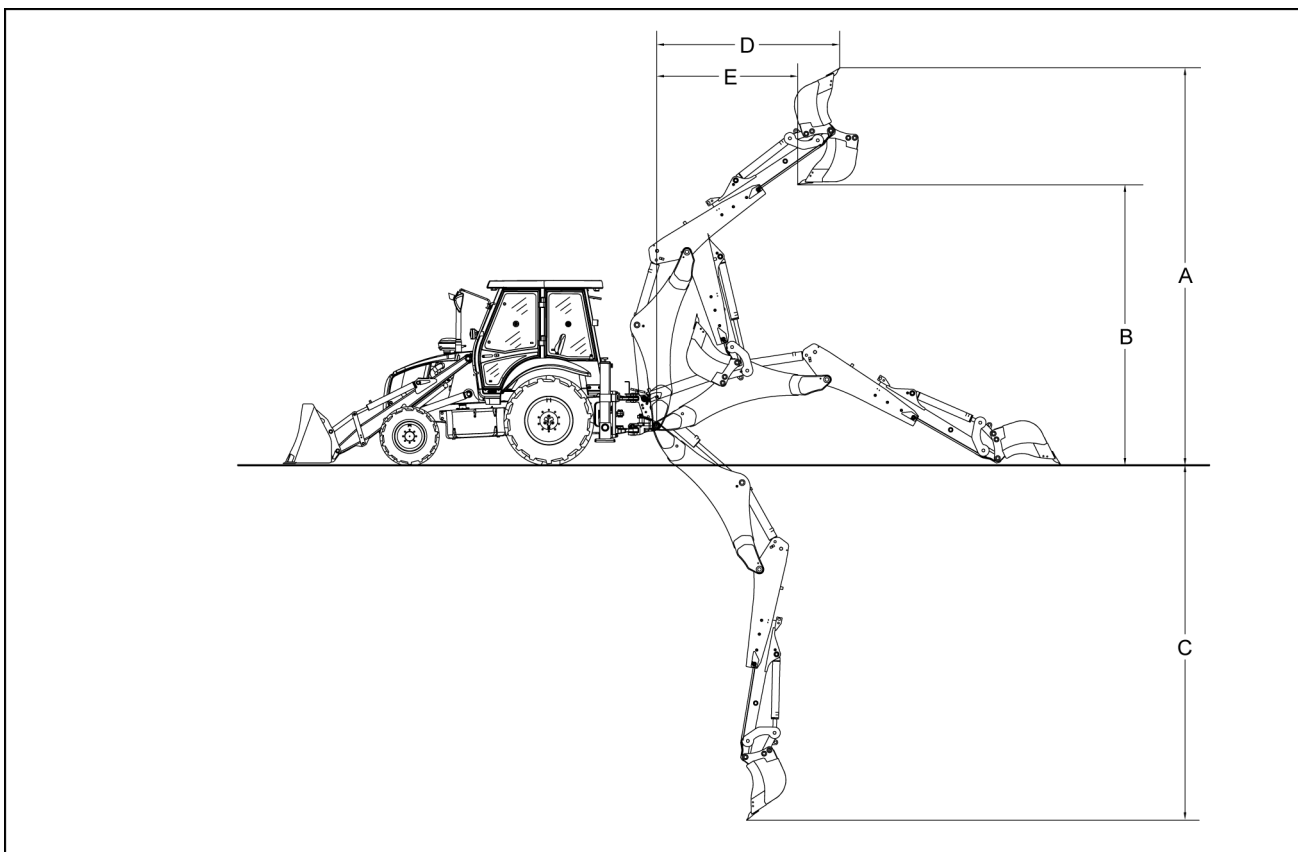
Backhoe performance



PTIL14TLB0045FA 3

S. No.	Description	Dimension
A	Maximum digging height	5455 mm (214.76 in)
B	Maximum height at full load	3636 mm (143.15 in)
C	Maximum digging depth	4363 mm (171.77 in)
D	Digging reach at maximum height	1868 mm (73.54 in)
E	Maximum reach when loaded	1252 mm (49.29 in)

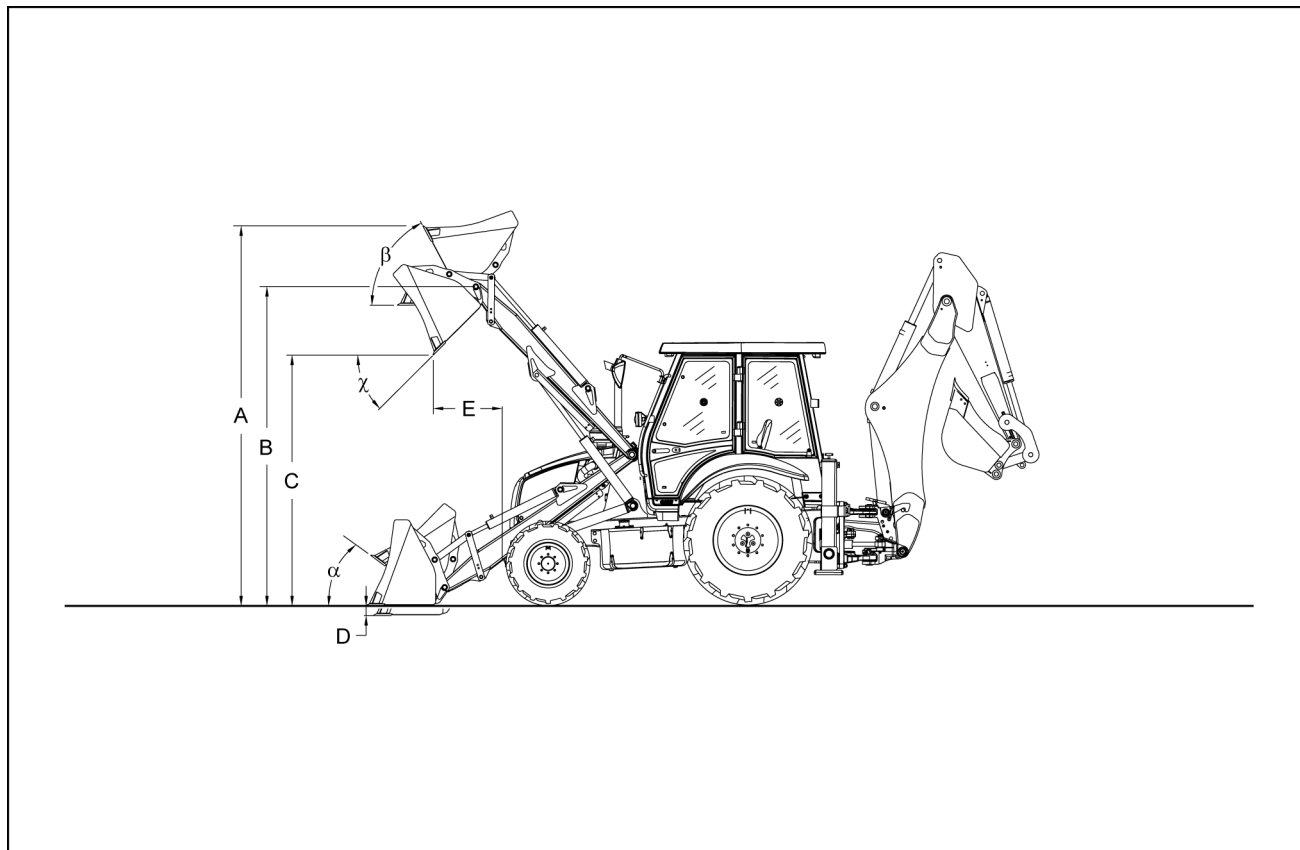
Backhoe performance with extendahoe (if fitted)



PTIL14TLB0046FA 4

S. No.	Description	Dimension
A.	Maximum digging height	6195 mm (243.90 in)
B.	Maximum height at full load	4376 mm (172.28 in)
C.	Maximum digging depth	5583 mm (219.80 in)
D.	Digging reach at maximum height	2871 mm (113.03 in)
E.	Maximum reach when loaded	2210 mm (87.01 in)

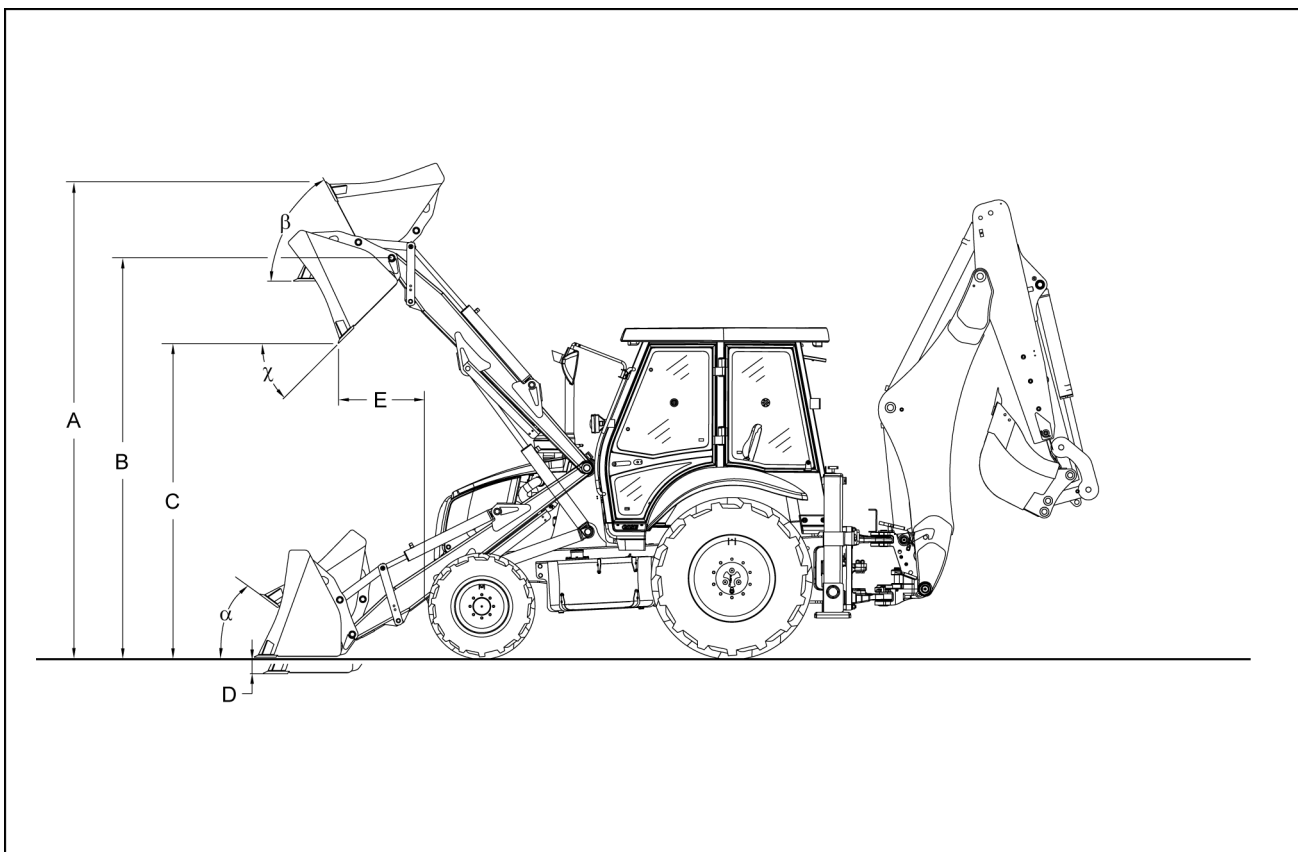
Loader performance



PTIL14TLB0047FB 5

S. No.	Description	Dimension
A	Maximum height	4140 mm (162.99 in)
B	Maximum height of loader bucket pin/pivot	3478 mm (136.93 in)
C	Maximum dumping height	2732 mm (107.56 in)
D	Digging depth	106 mm (4.17 in)
E	Loader attachment reach when raised in dumping position	751 mm (29.57 in)
α	Angle of lowered closed bucket	37 °
β	Angle of closed bucket at maximum height	62 °
χ	Dumping angle	45 °

Loader performance with bottom dump bucket (if fitted)



PTIL14TLB0048FA 6

S. No.	Description	Dimension
A	Maximum height	4140 mm (162.99 in)
B	Maximum height of loader bucket pin/pivot	3478 mm (136.93 in)
C	Maximum dumping height	2732 mm (107.56 in)
D	Digging depth	106 mm (4.17 in)
E	Loader attachment reach when raised in dumping position	751 mm (29.57 in)
α	Angle of lowered closed bucket	37 °
β	Angle of closed bucket at maximum height	62 °
χ	Dumping angle	45 °

Material weights – Material

Alum	
Lump	881 kg/m ³ (1485 lb/yd ³)
Pulverized	769 kg/m ³ (1296 lb/yd ³)
Ashes	561 - 833 kg/m ³ (946 - 1404 lb/yd ³)
Bauxite	1202 - 1922 kg/m ³ (2026 - 3240 lb/yd ³)
Beans	769 kg/m ³ (1296 lb/yd ³)
Charcoal	368 kg/m ³ (620 lb/yd ³)
Chips	288 kg/m ³ (485 lb/yd ³)
Coal	1282 kg/m ³ (2161 lb/yd ³)
Coke - Lump - Loose	849 - 1009 kg/m ³ (1431 - 1701 lb/yd ³)
Clay	368 - 513 kg/m ³ (620 - 865 lb/yd ³)
Concrete	1378 - 1778 kg/m ³ (2323 - 2997 lb/yd ³)
Copper Ore	1666 kg/m ³ (2808 lb/yd ³)
Corn-Shelled	673 kg/m ³ (1134 lb/yd ³)
Cottonseed	401 kg/m ³ (676 lb/yd ³)
Earth	
Dry loam	929 - 1089 kg/m ³ (1566 - 1836 lb/yd ³)
Wet	1602 - 1666 kg/m ³ (2700 - 2808 lb/yd ³)
Earth - Sand Gravel	1570 kg/m ³ (2646 lb/yd ³)
Ensilage	577 kg/m ³ (973 lb/yd ³)
Granite	1490 - 1778 kg/m ³ (2511 - 2997 lb/yd ³)
Gravel	
Dry	1522 kg/m ³ (2565 lb/yd ³)
Wet	1906 kg/m ³ (3213 lb/yd ³)
Ice - Crushed	593 kg/m ³ (1000 lb/yd ³)
Iron Ore	2323 kg/m ³ (3916 lb/yd ³)
Limestone - Loose - Crushed	1538 - 1602 kg/m ³ (2592 - 2700 lb/yd ³)
Oats	416 kg/m ³ (701 lb/yd ³)
Peanuts-Shelled	280 kg/m ³ (472 lb/yd ³)
Peas	769 kg/m ³ (1296 lb/yd ³)
Peat-Solid	753 kg/m ³ (1269 lb/yd ³)
Phosphate - Granular	1442 kg/m ³ (2431 lb/yd ³)
Potash	1089 kg/m ³ (1836 lb/yd ³)
Potatoes	769 kg/m ³ (1296 lb/yd ³)
Quartz-Granular	1762 kg/m ³ (2970 lb/yd ³)
Rice	769 kg/m ³ (1296 lb/yd ³)
Rye	705 kg/m ³ (1188 lb/yd ³)
Salt - Rock - Solid	2163 kg/m ³ (3646 lb/yd ³)
Sand - Gravel	
Dry	1730 kg/m ³ (2916 lb/yd ³)
Wet	2003 kg/m ³ (3376 lb/yd ³)
Sand - Foundry	1522 kg/m ³ (2565 lb/yd ³)
Shale	1410 kg/m ³ (2377 lb/yd ³)
Slag - Crushed	1121 kg/m ³ (1890 lb/yd ³)
Slate	2243 kg/m ³ (3781 lb/yd ³)
Snow	240 - 801 kg/m ³ (405 - 1350 lb/yd ³)
Soybeans	743 kg/m ³ (1252 lb/yd ³)
Sugar Beet Pulp - Wet	561 kg/m ³ (946 lb/yd ³)
Sugar - Raw	961 kg/m ³ (1620 lb/yd ³)
Sulphur - Lumpy	1330 kg/m ³ (2242 lb/yd ³)
Taconite	1714 kg/m ³ (2889 lb/yd ³)
Wheat	769 kg/m ³ (1296 lb/yd ³)

Torque chart – Metric non-flanged hardware

Nom. Size	Class 8.8 bolt and class 8 nut		Class 10.9 bolt and class 10 nut		Locknut CL.8 W/CL8.8 bolt	Locknut CL.10 W/CL10.9 bolt
	Unplated	Plated W/ZnCr	Unplated	Plated W/ZnCr		
M4	2.2 N·m (19 lb in)	2.9 N·m (26 lb in)	3.2 N·m (28 lb in)	4.2 N·m (37 lb in)	2 N·m (18 lb in)	2.9 N·m (26 lb in)
M5	4.5 N·m (40 lb in)	5.9 N·m (52 lb in)	6.4 N·m (57 lb in)	8.5 N·m (75 lb in)	4 N·m (39 lb in)	5.8 N·m (51 lb in)
M6	7.5 N·m (66 lb in)	10 N·m (89 lb in)	11 N·m (96 lb in)	15 N·m (133 lb in)	6.8 N·m (60 lb in)	10 N·m (89 lb in)
M8	18 N·m (159 lb in)	25 N·m (221 lb in)	26 N·m (230 lb in)	35 N·m (310 lb in)	17 N·m (150 lb in)	24 N·m (212 lb in)
M10	37 N·m (27 lb ft)	49 N·m (36 lb ft)	52 N·m (38 lb ft)	70 N·m (52 lb ft)	33 N·m (24 lb ft)	48 N·m (35 lb ft)
M12	64 N·m (47 lb ft)	85 N·m (63 lb ft)	91 N·m (67 lb ft)	121 N·m (89 lb ft)	58 N·m (43 lb ft)	83 N·m (61 lb ft)
M16	158 N·m (117 lb ft)	210 N·m (155 lb ft)	225 N·m (166 lb ft)	301 N·m (222 lb ft)	143 N·m (105 lb ft)	205 N·m (151 lb ft)
M20	319 N·m (235 lb ft)	425 N·m (313 lb ft)	440 N·m (325 lb ft)	587 N·m (433 lb ft)	290 N·m (214 lb ft)	400 N·m (295 lb ft)
M24	551 N·m (406 lb ft)	735 N·m (542 lb ft)	762 N·m (562 lb ft)	1016 N·m (749 lb ft)	501 N·m (370 lb ft)	693 N·m (511 lb ft)

NOTE: M4 through M8 hardware torque specifications are shown in pound-inches. M10 through M24 hardware torque specifications are shown in pound-feet.

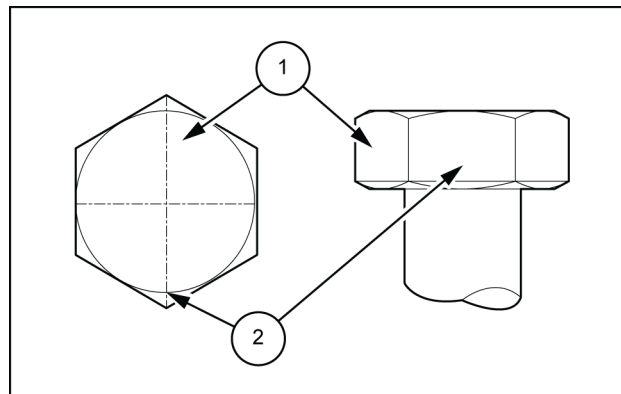
Torque chart – Metric flanged hardware

Nom. Size	Class 8.8 bolt and class 8 nut		Class 10.9 bolt and class 10 nut		Locknut CL.8 W/CL8.8 bolt	Locknut CL.10 W/CL10.9 bolt
	Unplated	Plated W/ZnCr	Unplated	Plated W/ZnCr		
M4	2.4 N·m (21 lb in)	3.2 N·m (28 lb in)	3.5 N·m (31 lb in)	4.6 N·m (41 lb in)	2.2 N·m (19 lb in)	3.1 N·m (27 lb in)
M5	4.9 N·m (43 lb in)	6.5 N·m (58 lb in)	7 N·m (62 lb in)	9.4 N·m (83 lb in)	4.4 N·m (39 lb in)	6.4 N·m (57 lb in)
M6	8.3 N·m (73 lb in)	11 N·m (96 lb in)	12 N·m (105 lb in)	16 N·m (141 lb in)	7.5 N·m (66 lb in)	11 N·m (96 lb in)
M8	20 N·m (177 lb in)	27 N·m (239 lb in)	29 N·m (257 lb in)	39 N·m (345 lb in)	18 N·m (159 lb in)	27 N·m (239 lb in)
M10	40 N·m (30 lb ft)	54 N·m (40 lb ft)	57 N·m (42 lb ft)	77 N·m (57 lb ft)	37 N·m (27 lb ft)	53 N·m (39 lb ft)
M12	70 N·m (52 lb ft)	93 N·m (69 lb ft)	100 N·m (74 lb ft)	134 N·m (99 lb ft)	63 N·m (46 lb ft)	91 N·m (67 lb ft)
M16	174 N·m (128 lb ft)	231 N·m (170 lb ft)	248 N·m (183 lb ft)	331 N·m (244 lb ft)	158 N·m (117 lb ft)	226 N·m (167 lb ft)
M20	350 N·m (258 lb ft)	467 N·m (344 lb ft)	484 N·m (357 lb ft)	645 N·m (476 lb ft)	318 N·m (235 lb ft)	440 N·m (325 lb ft)
M24	607 N·m (448 lb ft)	809 N·m (597 lb ft)	838 N·m (618 lb ft)	1118 N·m (825 lb ft)	552 N·m (407 lb ft)	

Identification

Metric hex head and carriage bolts, classes 5.6 and up

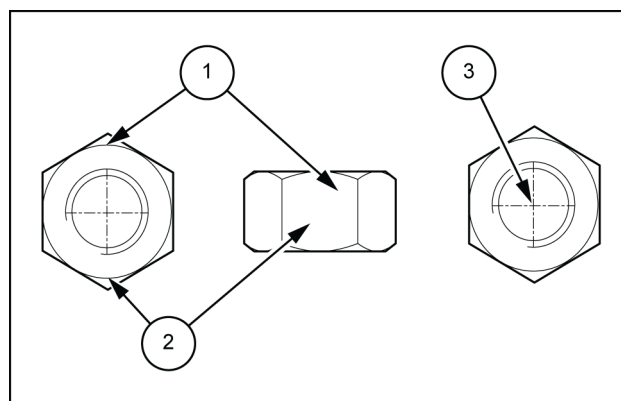
1. Manufacturer's identification
2. Property class



PTIL12TLB0452AB 1

Metric hex nuts and locknuts, classes 05 and up

1. Manufacturer's identification
2. Property class
3. Clock marking of property class and manufacturer's identification (optional), i.e. marks 60° apart indicate class 10 properties, and marks 120° apart indicate class 8.



PTIL12TLB0453AB 2

Torque chart – Inch non-flanged hardware

Nominal Size	SAE grade 5 bolt and nut		SAE grade 8 bolt and nut		Locknut GrB W/Gr5 bolt	Locknut GrC W/Gr8 bolt
	Unplated or plated silver	Plated W/ZnCr gold	Unplated or plated silver	Plated W/ZnCr gold		
1/4	8 N·m (71 lb in)	11 N·m (97 lb in)	12 N·m (106 lb in)	16 N·m (142 lb in)	8 N·m (75 lb in)	12.2 N·m (108 lb in)
5/16	17 N·m (150 lb in)	23 N·m (204 lb in)	24 N·m (212 lb in)	32 N·m (283 lb in)	17.5 N·m (155 lb in)	25 N·m (221 lb in)
3/8	30 N·m (22 lb ft)	40 N·m (30 lb ft)	43 N·m (32 lb ft)	57 N·m (42 lb ft)	31 N·m (23 lb ft)	44 N·m (32 lb ft)
7/16	48 N·m (35 lb ft)	65 N·m (48 lb ft)	68 N·m (50 lb ft)	91 N·m (67 lb ft)	50 N·m (37 lb ft)	71 N·m (52 lb ft)
1/2	74 N·m (55 lb ft)	98 N·m (72 lb ft)	104 N·m (77 lb ft)	139 N·m (103 lb ft)	76 N·m (56 lb ft)	108 N·m (80 lb ft)
9/16	107 N·m (79 lb ft)	142 N·m (105 lb ft)	150 N·m (111 lb ft)	201 N·m (148 lb ft)	111 N·m (82 lb ft)	156 N·m (115 lb ft)
5/8	147 N·m (108 lb ft)	196 N·m (145 lb ft)	208 N·m (153 lb ft)	277 N·m (204 lb ft)	153 N·m (113 lb ft)	215 N·m (159 lb ft)
3/4	261 N·m (193 lb ft)	348 N·m (257 lb ft)	369 N·m (272 lb ft)	491 N·m (362 lb ft)	271 N·m (200 lb ft)	383 N·m (282 lb ft)
7/8	420 N·m (310 lb ft)	561 N·m (414 lb ft)	594 N·m (438 lb ft)	791 N·m (583 lb ft)	437 N·m (322 lb ft)	617 N·m (455 lb ft)
1	630 N·m (465 lb ft)	841 N·m (620 lb ft)	890 N·m (656 lb ft)	1187 N·m (875 lb ft)	654 N·m (482 lb ft)	924 N·m (682 lb ft)

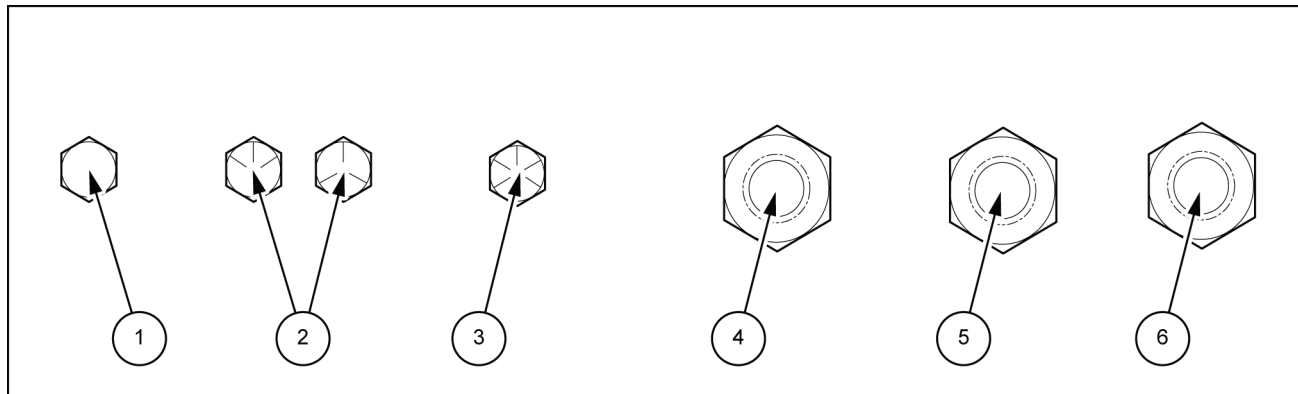
NOTICE: For imperial units, **1/4 in** and **5/16 in** hardware torque specifications are shown in pound-inches. **3/8 in** through **1 in** hardware torque specifications are shown in pound-feet.

Torque chart – Inch flanged hardware

Nominal size	SAE grade 5 bolt and nut		SAE grade 8 bolt and nut		Locknut GrB W/Gr5 bolt	Locknut GrC W/Gr8 bolt
	Unplated or plated silver	Plated W/ZnCr gold	Unplated or plated silver	Plated W/ZnCr gold		
1/4	9 N·m (80 lb in)	12 N·m (106 lb in)	13 N·m (115 lb in)	17 N·m (150 lb in)	8 N·m (71 lb in)	12 N·m (106 lb in)
5/16	19 N·m (168 lb in)	25 N·m (221 lb in)	26 N·m (230 lb in)	35 N·m (310 lb in)	17 N·m (150 lb in)	24 N·m (212 lb in)
3/8	33 N·m (24 lb ft)	44 N·m (32 lb ft)	47 N·m (35 lb ft)	63 N·m (46 lb ft)	30 N·m (22 lb ft)	43 N·m (32 lb ft)
7/16	53 N·m (39 lb ft)	71 N·m (52 lb ft)	75 N·m (55 lb ft)	100 N·m (74 lb ft)	48 N·m (35 lb ft)	68 N·m (50 lb ft)
1/2	81 N·m (60 lb ft)	108 N·m (80 lb ft)	115 N·m (85 lb ft)	153 N·m (113 lb ft)	74 N·m (55 lb ft)	104 N·m (77 lb ft)
9/16	117 N·m (86 lb ft)	156 N·m (115 lb ft)	165 N·m (122 lb ft)	221 N·m (163 lb ft)	106 N·m (78 lb ft)	157 N·m (116 lb ft)
5/8	162 N·m (119 lb ft)	216 N·m (159 lb ft)	228 N·m (168 lb ft)	304 N·m (224 lb ft)	147 N·m (108 lb ft)	207 N·m (153 lb ft)
3/4	287 N·m (212 lb ft)	383 N·m (282 lb ft)	405 N·m (299 lb ft)	541 N·m (399 lb ft)	261 N·m (193 lb ft)	369 N·m (272 lb ft)
7/8	462 N·m (341 lb ft)	617 N·m (455 lb ft)	653 N·m (482 lb ft)	871 N·m (642 lb ft)	421 N·m (311 lb ft)	594 N·m (438 lb ft)
1	693 N·m (511 lb ft)	925 N·m (682 lb ft)	979 N·m (722 lb ft)	1305 N·m (963 lb ft)	631 N·m (465 lb ft)	890 N·m (656 lb ft)

Identification

Inch bolts and free-spinning nuts



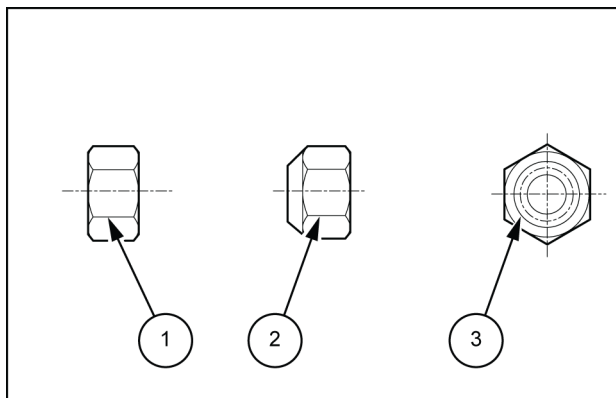
PTIL12TLB0454EB 1

Grade marketing examples

SAE grade identification			
1	Grade 2 - No marks	4	Grade 2 Nut - No marks
2	Grade 5 - Three marks	5	Grade 5 Nut - Marks 120° apart
3	Grade 8 - Five marks	6	Grade 8 Nut - Marks 60° apart

Inch lock nuts, all metal (three optional methods)

Grade	Corner marking method (1)	Flat marking method (2)	Clock marking method (3)
Grade A	No notches	No mark	No marks
Grade B	One circumferential notches	Letter B	Three marks
Grade C	Two circumferential notches	Letter C	Six marks



PTIL12TLB0455AB 2

Units of measure and conversion

Quantity	Typical application	From U.S. unit	To SI unit	Multiply by
Flow, volume	Liquid flow, pump capacity	US gpm	l/min	3.78541
Force, thrust, drag	Pedal, spring, belt, lever	lb	N	4.48222
Length or distance	Land distance, odometers	miles	km	1.60934
		yd	m	0.9144
		ft	m	0.3048
		in	mm	25.4
Torque bending moment	General engine torque, fasteners	lb in	N m	0.11298
		lb ft	N m	1.35582
		kgf cm	N m	0.09807
Power	Air conditioning, heating	btu/min	W	17.5843
		btu/h	W	0.29307
	Motors	Hp	kW	0.7355
	Engine	Hp	kW	0.7355
Power quotient	Engine performance	lb/hp	kg/kW	0.60803
Temp scale	General use	°F	°C	°C = (°F-32)/1.8
Velocity, linear	Vehicle	mph	km/h	1.60934
Volume	Bucket capacity	yd ³	m ³	0.76455
		ft ³	m ³	0.02832
		Bu	m ³	0.03524
		Bu	l	35.23907
	Liquid, fuel, lubricants	US gal	l	3.78541
		US qt	l	0.94635
		US pt	l	0.47318
		US fl oz	ml	29.5735
Flow, mass		psi	bar	0.06897
		psi	kPa	6.89476
		lb	kg	0.45359

9 - SPECIFICATIONS

ampere	A
volt	V
kilonewton	kN
newton	N
pound	lb
ounce	oz
newton meters	N m
pound inches	lb in
revolutions per minute	RPM
kilometer	km
meter	m
centimeter	cm
millimeter	mm
miles	miles
yard	yd
foot	ft
inch	in
kilogram	kg
kilowatts	kW
watt	W
horsepower	Hp
Btu per hour	Btu/hr
kiloPascal	kPa
pound per square inch	psi
degrees Celsius	°C
degrees Fahrenheit	°F
newton meters	N m
pound feet	lb ft
pound inches	lb in
kilometers per hour	km/h
miles per hour	mph
cubic meter	m ³
cubic yard	yd ³
liter	l
milliliters	ml
cubic inches	in ³
US gallons	US gal
US quarts	US qt
US fluid ounces	US fl oz

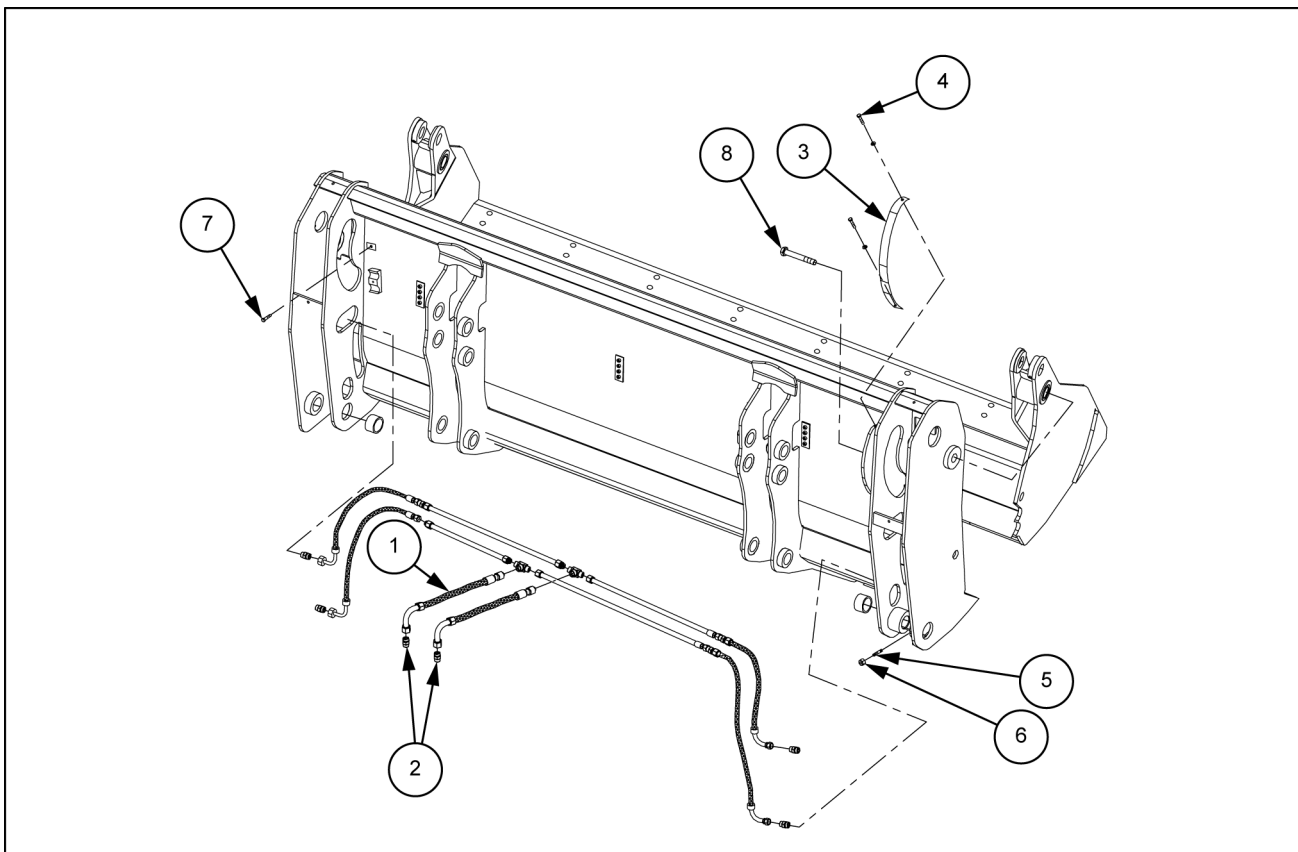
9 - SPECIFICATIONS

SI unit = (1 U.S. unit)	1 SI unit = (U.S. unit)
3.785 l/min (1 US gpm)	1 l/min (0.264 US gpm)
4.448 N (1 lb)	1 N (0.225 lb)
1.609 km (1 miles)	1 km (0.621 miles)
0.914 m (1 yd)	1 m (1.094 yd)
0.305 m (1 ft)	1 m (3.281 ft)
25.400 mm (1 in)	1 mm (0.039 in)
0.112 N·m (1 lb in)	1 N·m (8.851 lb in)
1.355 N·m (1 lb ft)	1 N·m (0.738 lb ft)
0.735 kW (1 Hp)	1 kW (1.360 Hp)
1.609 km/h (1 mph)	1 km/h (0.621 mph)
0.765 m ³ (1 yd ³)	1 m ³ (1.308 yd ³)
0.028 m ³ (1 ft ³)	1 m ³ (35.315 ft ³)
35.239 l (1 Bu)	1 l (0.028 Bu)
3.785 l (1 US gal)	1 l (0.264 US gal)
0.946 l (1 US qt)	1 l (1.057 US qt)
0.473 l (1 US pt)	1 l (2.113 US pt)
29.573 ml (1 US fl oz)	1 ml (0.034 US fl oz)
0.068 bar (1 psi)	1 bar (14.500 psi)
6.894 kPa (1 psi)	1 kPa (0.145 psi)
6.451 cm ² (1 in ²)	1 cm ² (0.155 in ²)
0.453 kg (1 lb)	1 kg (2.205 lb)

10 - ACCESSORIES

Loader bucket

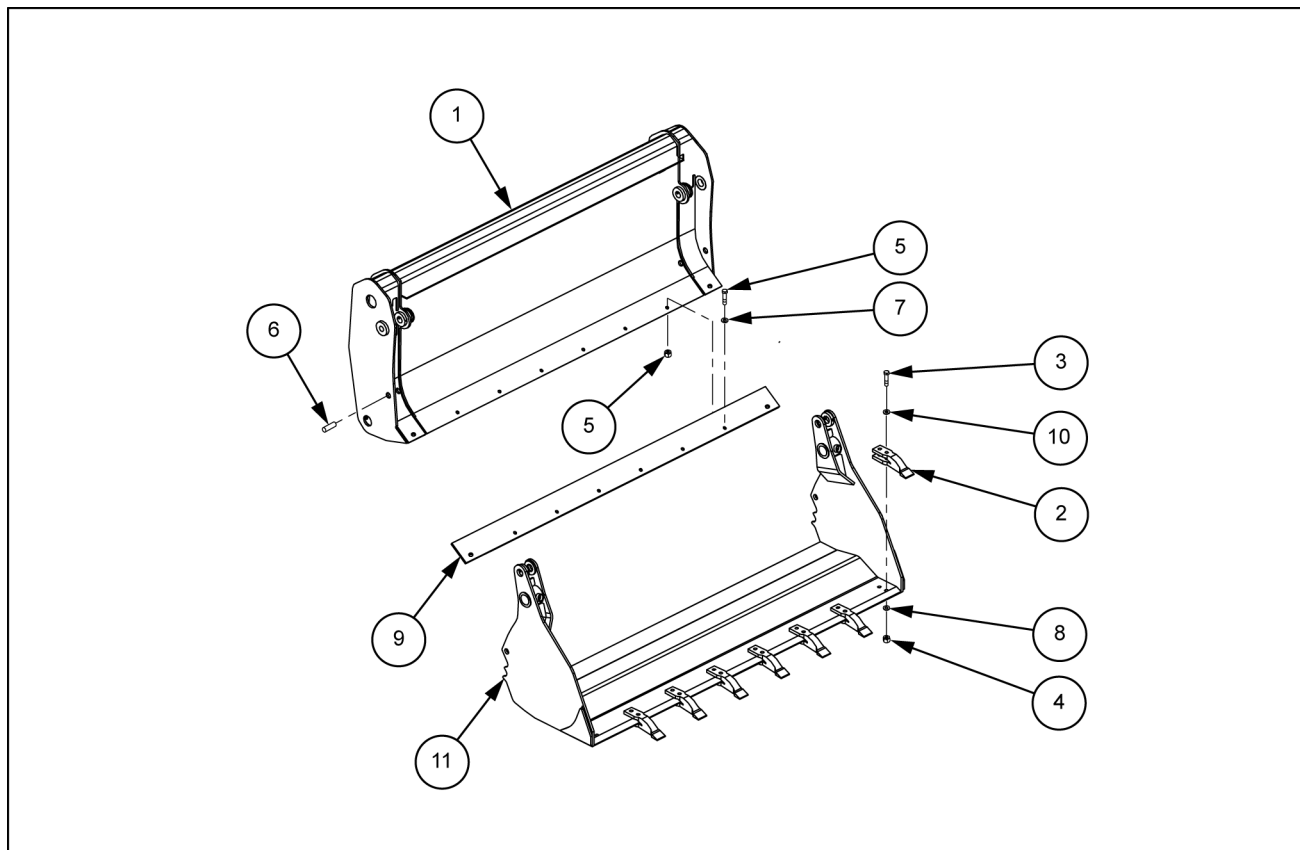
Loader bucket assy. bucket 6 in 1



PTIL12TLB0476FB 1

S.No	Description
1	Hose
2	Connector
3	Indicator strip
4	Hex bolt M6 x 16
5	Grub screw
6	Hex nut
7	Hex nut
8	Cap screw

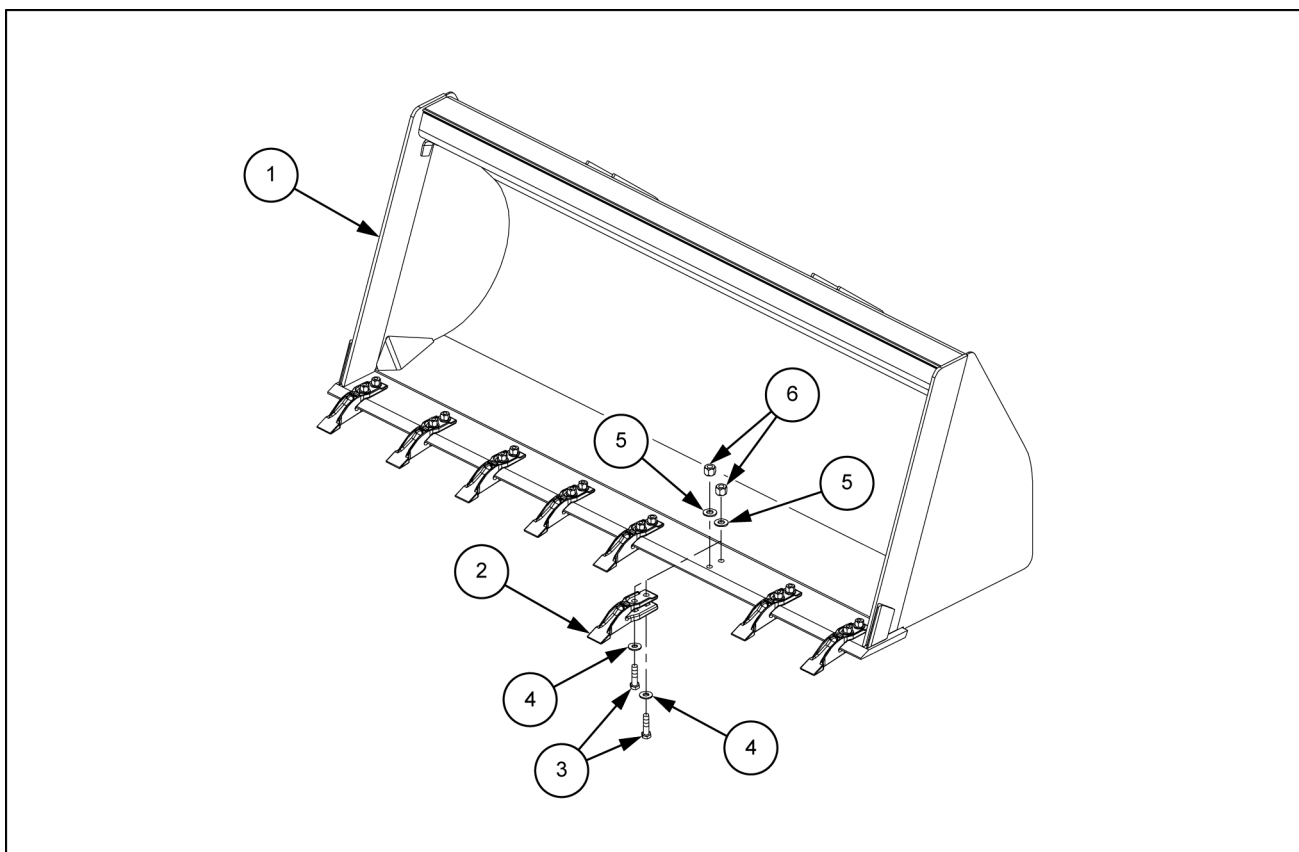
Loader bucket assy 6 in 1



PTIL12TLB0477FB 2

S.No	Description
1	Rear bucket - Blade
2	Centre tooth - Bucket
3	Bolt
4	Nylock nut
5	Hex screw
6	Pin-fork lift locking (BDB)
7	Washer
8	Washer
9	Dodging blade
10	Square hole washer
11	Bucket clamp

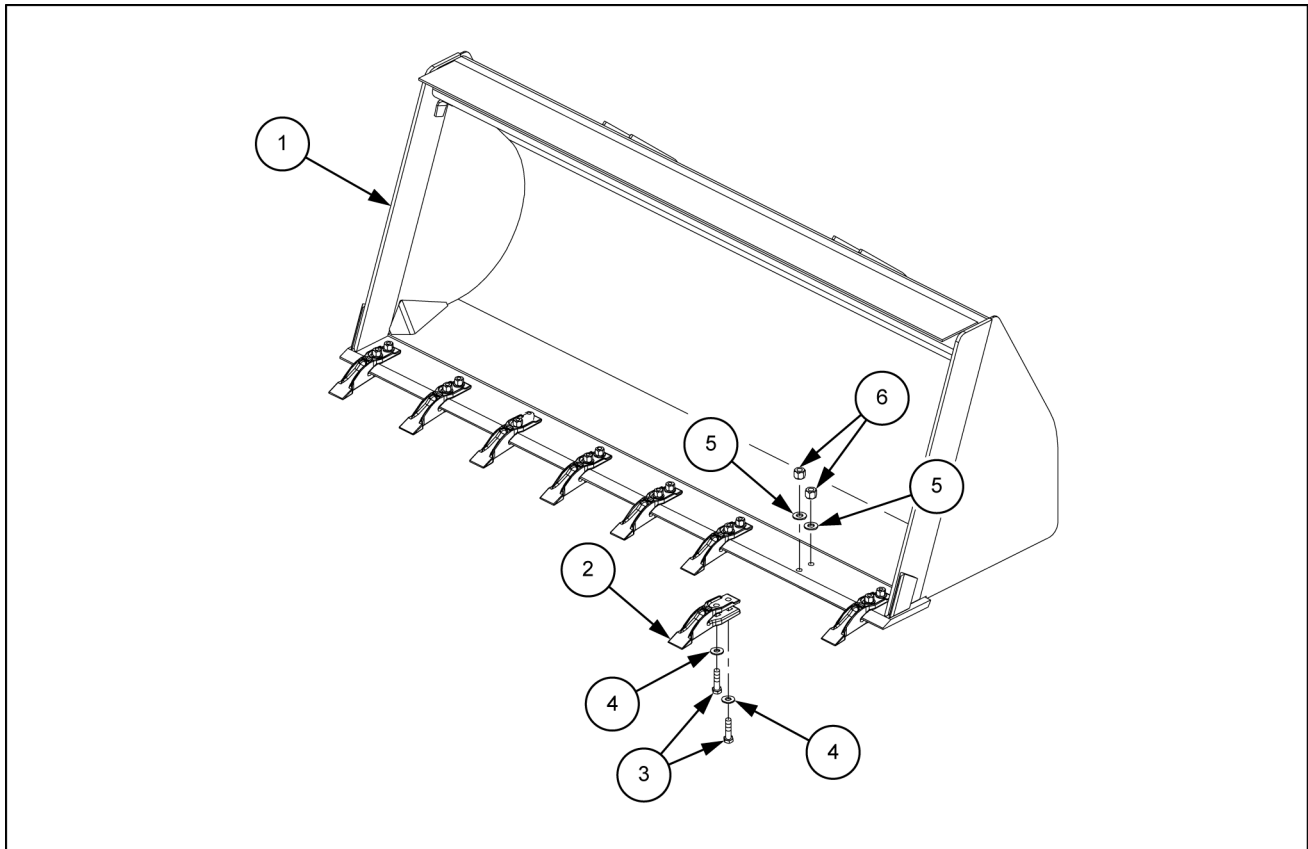
Loader bucket assy (1.00 m³ (35.31 ft³))



PTIL12TLB0465FB 3

S.No	Description
1	Loader bucket
2	Centre tooth - bucket
3	Bolt
4	Square hole washer
5	Washer
6	Nylock nut

Loader bucket spill guard assy.

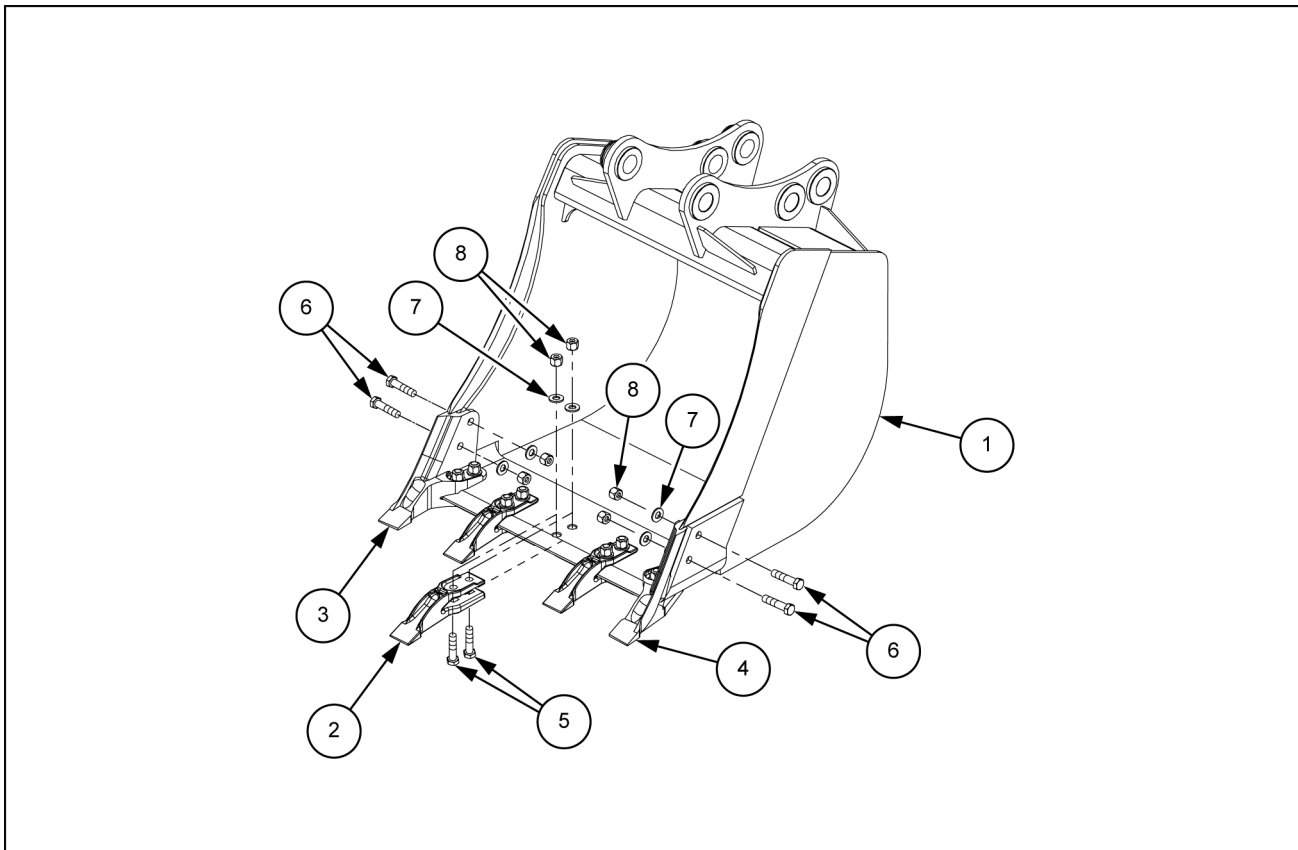


PTIL12TLB0466FB 4

S.No	Description
1	Bucket spill guard painted
2	Centre tooth - bucket
3	Bolt
4	Square hole washer
5	Washer
6	Nylock nut

Backhoe buckets

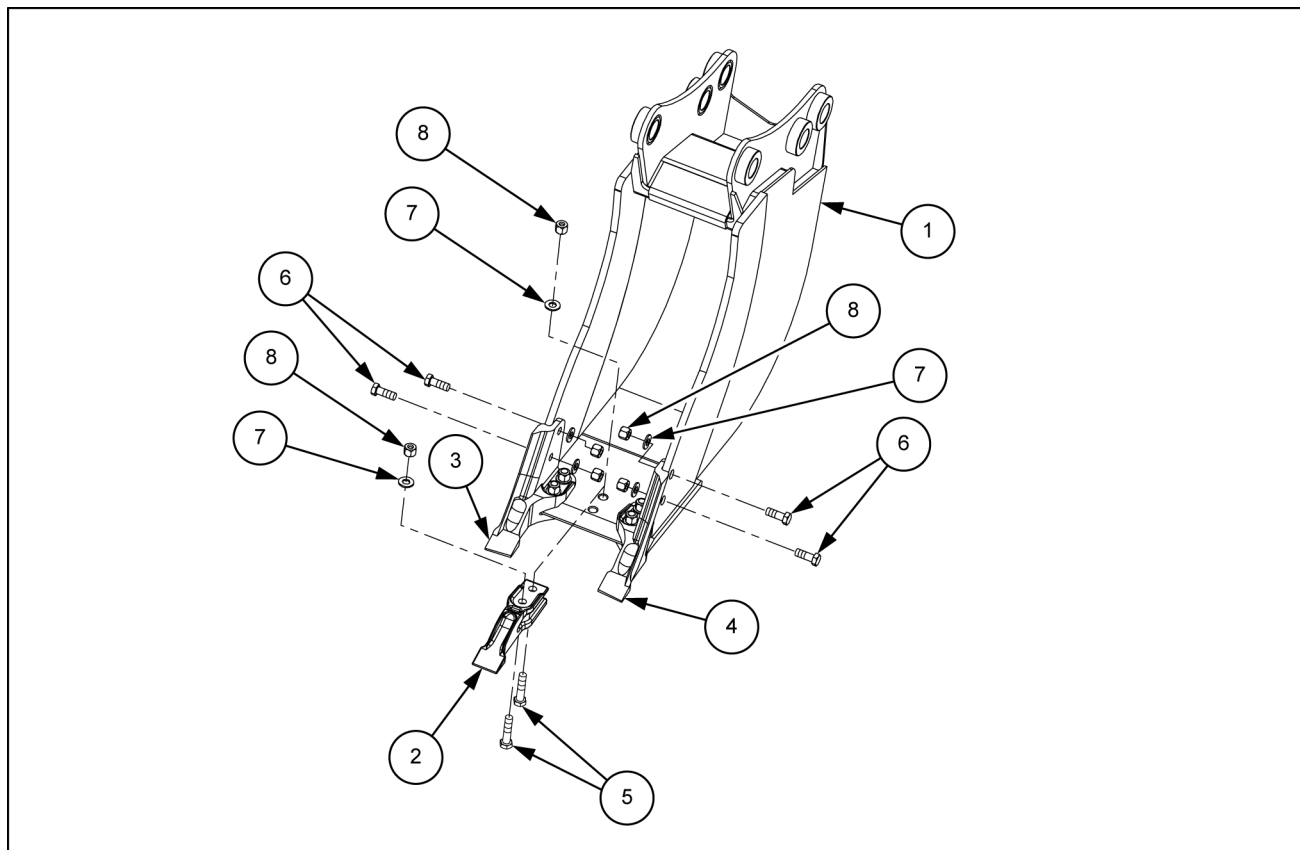
Backhoe bucket assy (0.26 m³ (9.2 ft³))



PTIL12TLB0460FB 1

S.No	Description
1	Backhoe bucket
2	Centre tooth - bucket
3	Side cutting tooth left-hand side
4	Side cutting tooth right-hand side
5	Bolt
6	Bolt
7	Washer
8	Nylock nut

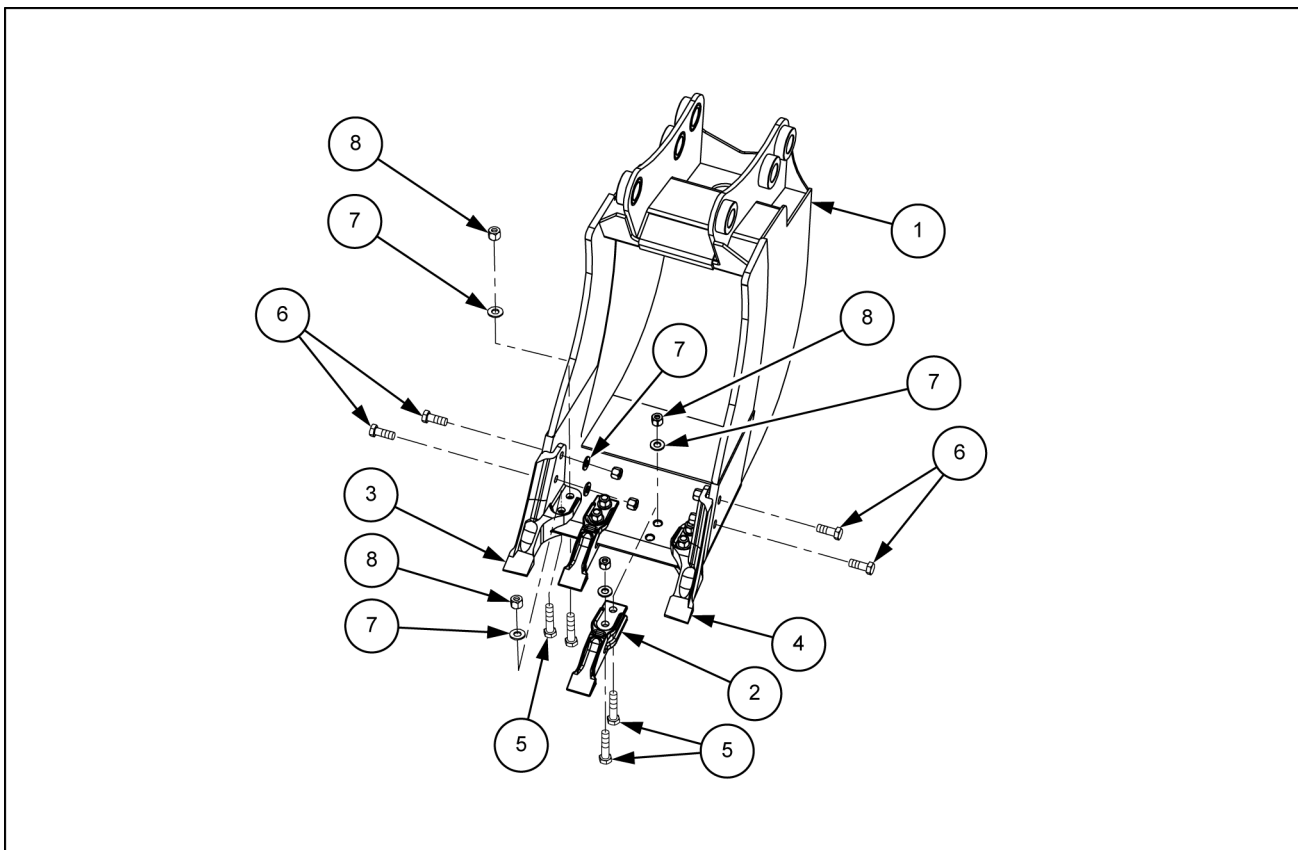
Backhoe bucket assy (30.5 cm (12.0 in))



PTIL12TLB0461FB 2

S. No	Description
1	Backhoe bucket
2	Centre tooth - bucket
3	Side cutting tooth left-hand side
4	Side cutting tooth right-hand side
5	Bolt
6	Bolt
7	Washer
8	Nylock nut

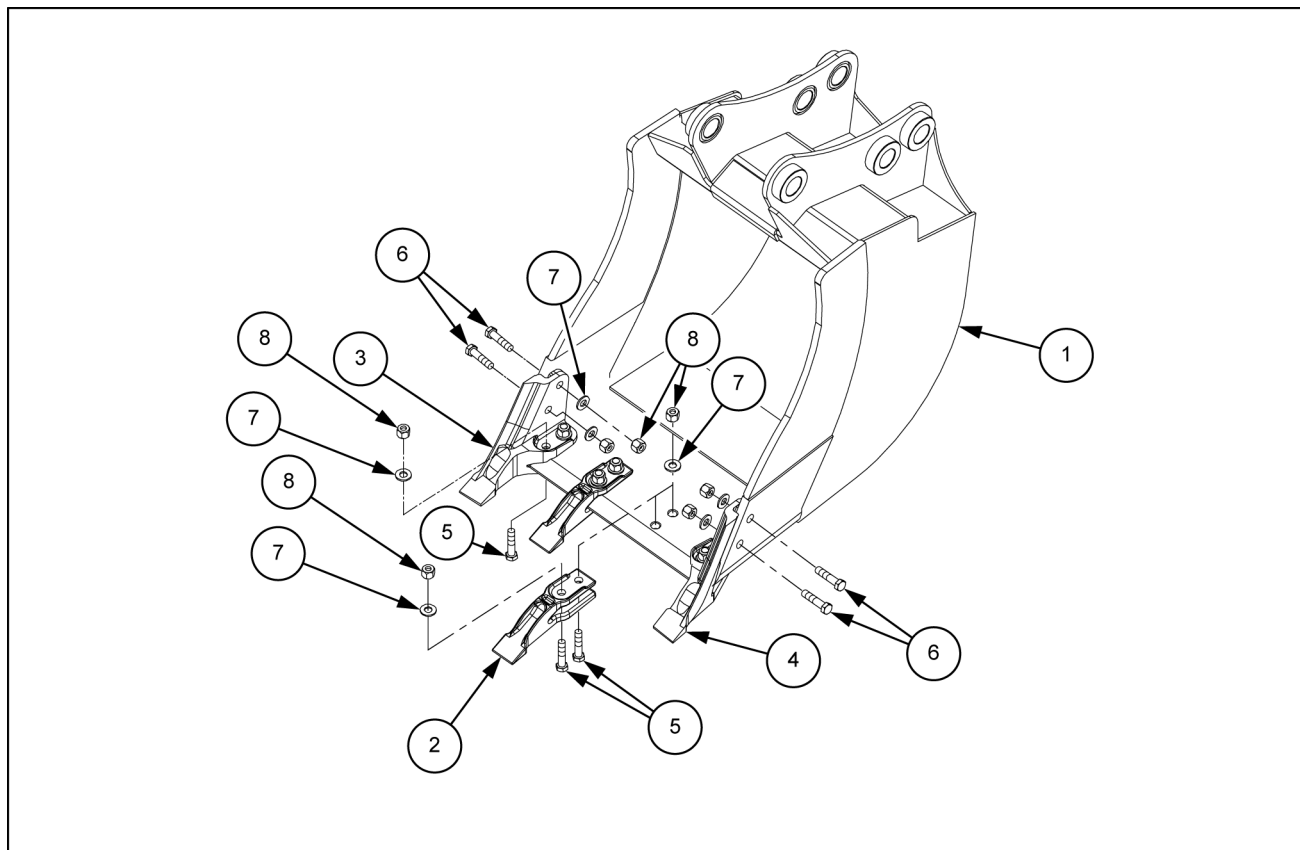
Backhoe bucket assy (45.7 cm (18 in))



PTIL12TLB0462FB 3

S. No	Description
1	Backhoe bucket
2	Centre tooth - bucket
3	Side cutting tooth left-hand side
4	Side cutting tooth right-hand side
5	Bolt
6	Bolt
7	Washer
8	Nylock nut

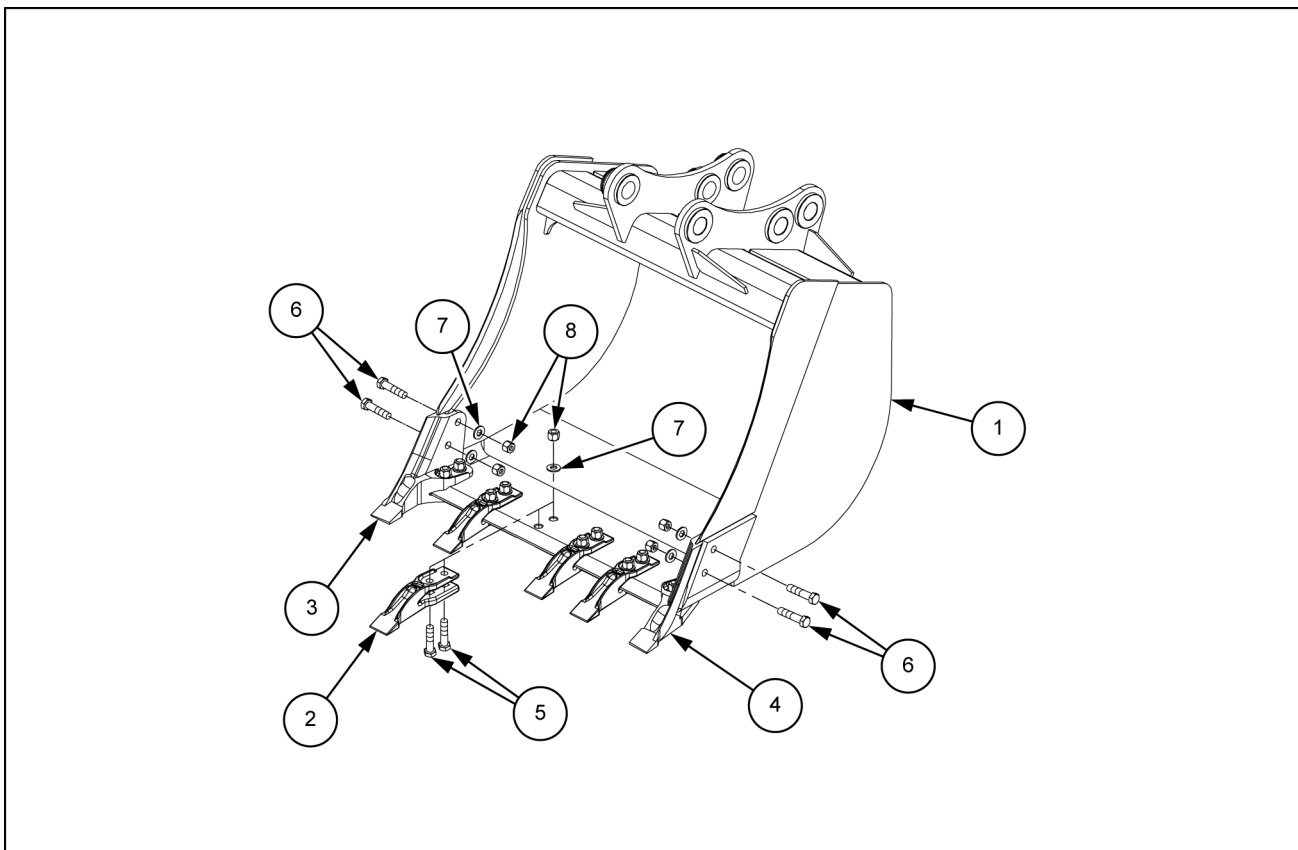
Backhoe bucket assy (61.0 cm (24 in))



PTIL12TLB0463FB 4

S. No	Description
1	Backhoe bucket
2	Centre tooth - bucket
3	Side cutting tooth left-hand side
4	Side cutting tooth right-hand side
5	Bolt
6	Bolt
7	Washer
8	Nylock nut

Backhoe bucket assy (91.4 cm (36 in))



PTIL12TLB0464FB 5

S.No	Description
1	Backhoe bucket
2	Centre tooth - bucket
3	Side cutting tooth left-hand side
4	Side cutting tooth right-hand side
5	Bolt
6	Bolt
7	Washer
8	Nylock nut

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