

TB175

TB175

Hydraulic Excavator

Serial No. 17512105~

Book No. AL3E016

OPERATOR'S MANUAL

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 WARNING

Read and understand these instructions.
Failure to do so can cause injury or death.

TAKEUCHI



TAKEUCHI

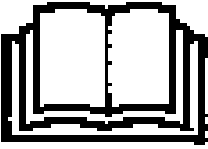


SAFETY ALERT SYMBOL

This symbol means Attention! Be Alert! Your Safety Is Involved.
The message that follows the symbol contains important information about safety.

Read and understand the message to avoid personal injury or death.

- **It is the owner or employer's responsibility to fully instruct each operator in the proper and safe operation of all equipment. All persons using this machine should thoroughly familiarize themselves with the following sections.**
- **All operators must be instructed on the proper functions of the excavator before running the machine.**
- **Learn and practice correct use of the machine controls in a safe, clear area before operating this machine on a job site.**

 CAUTION	
	Improper operation, inspection and maintenance of this machine can cause injury or death. Read and understand this manual before performing any operation, inspection or maintenance on this machine.

- **Always store this manual near at hand preferably on the machine itself. If it should be lost or damaged, immediately order a new one from your Takeuchi dealer.**
When transferring ownership of this machine, be sure to provide this manual to the next owner.
- **Takeuchi supplies machines complying to the local regulations and standards of the country of export. If your machine has been purchased in another country or from a person or company of another country, it may not have the safety devices or safety standards required for use in your country. Should you have any question about whether your machine complies with the regulations and standards of your country, contact a Takeuchi dealer.**
- **Please note that the contents and diagrams included in this manual may not match your machine exactly.**

CALIFORNIA

Proposition 65 Warning

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

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling battery.

It is your responsibility to observe all pertinent laws and regulations and to follow the manufacturer's instructions on machine operation, inspection and maintenance.

Virtually all accidents occur as the result of a failure to observe basic safety rules and precautions. An accident can often be avoided by recognizing potentially hazardous situations beforehand. Read and understand all of the safety messages which explain how to prevent these accidents from occurring. Do not operate the machine until you are sure that you have gained a proper understanding of its operation, inspection and maintenance.

■ SIGNAL WORDS

Safety messages appearing in this manual and on machine decals are identified by the words "DANGER", "WARNING" and "CAUTION". These signal words mean the following:

 DANGER	 WARNING	 CAUTION
The word "DANGER" indicates an imminently hazardous situation which, if not avoided, can result in serious injury or death.	The word "WARNING" indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.	The word "CAUTION" indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

IMPORTANT: The word "IMPORTANT" is used to alert against operators and maintenance personnel about situations which can result in possible damage to the machine and its components.

It is impossible to foresee every possible circumstance that might involve a potential hazard. The warnings in this manual or on the machine can not cover all possible contingencies. You must exercise all due care and follow normal safety procedures when operating the machine so as to ensure that no damage occurs to the machine, its operators or other persons.

■ EXPLANATION OF GRAPHICAL SYMBOLS

Following is an explanation of symbols used in this manual.

 , X prohibition

 /  Lock

 /  Unlock

INTRODUCTION

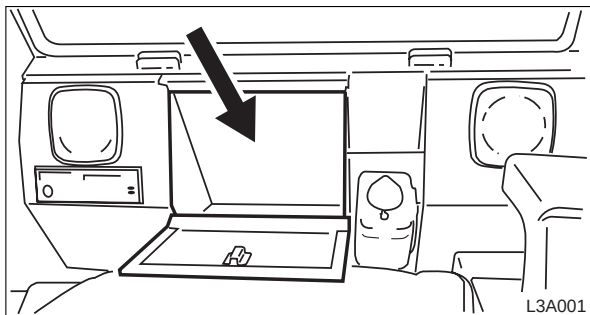
Foreword

This manual describes operation, inspection and maintenance of the machine, as well as safety instructions to be heeded during these operations.

If you have any questions about the machine, please contact a Takeuchi sales or service outlet.

■ Manual storage compartment

A compartment for storing this manual is provided at the position shown on the diagram below.

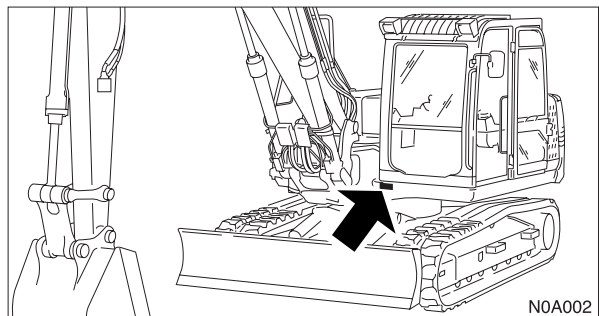


1. Open the cover behind the seat.
2. After using the manual, place it in the plastic pouch and store it back in the manual storage compartment.

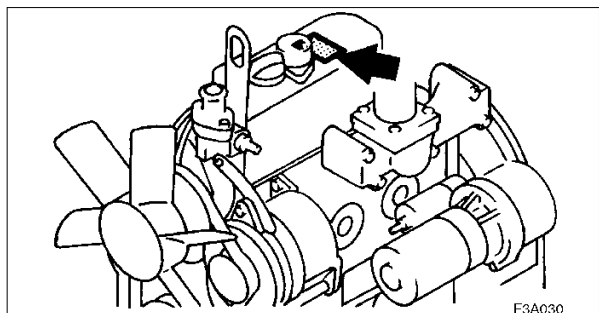
■ Serial numbers

Check the serial numbers of the machine and the engine and write them in the spaces provided below.

Machine number :



Engine number :



MACHINE DESCRIPTION

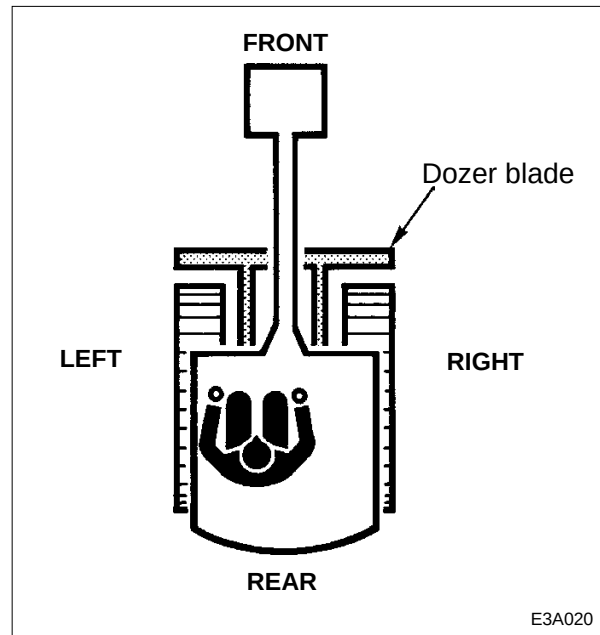
■ Front, rear, left and right

This manual refers the front, rear, left and right of the machine as seen when sitting in the operator's seat with the dozer blade visible to the front.

■ Designated operations

Use this machine primarily for the following operations:

- Excavating
- Digging ditches
- Digging side ditches
- Leveling
- Loading



■ Features

- Automatic travel shift-down system.
- Isolation mounted cab minimizes vibration.
- Short pitch rubber crawler.
- Low engine noise and exhaust emissions.
- Electro over hydraulic control of auxiliary hydraulic circuit.
- One touch engine deceleration button.
- Two-speed slew allows the operator to slow the excavators slew speed.
- Engine emergency stop/idle system.
- Self-adjusting hydraulic crawler tension system.
- Travel motor are equipped with shock less valves for smooth starts and stops.

■ Break-in period

When the machine is new, heed the instructions below when operating the machine for the first 100 hours (as indicated on the hour meter).

Using a new machine roughly without breaking it in will lead to quicker deterioration of machine performance and may shorten the machine's service life.

- Warm up the engine and hydraulic oil sufficiently.
- Avoid heavy loads and rapid operations. Operate with a load of about 80% the maximum load.
- Do not start up, accelerate, change directions, or stop abruptly unless necessary.

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SAFETY

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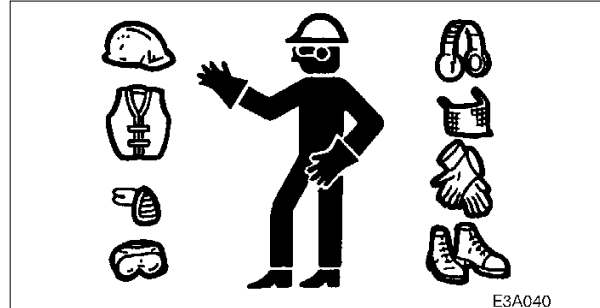


General Precautions

Observe all safety rules

- Operation, inspection and maintenance of this machine must be performed only by a trained and qualified person.
- All rules, regulations, precautions and safety procedures must be understood and followed when performing operation, inspection and maintenance of this machine.
- Do not perform any operation, inspection and maintenance of this machine when under the adverse influence of alcohol, drugs, medication, fatigue, or insufficient sleep.

Wear appropriate clothing and personal protective equipment

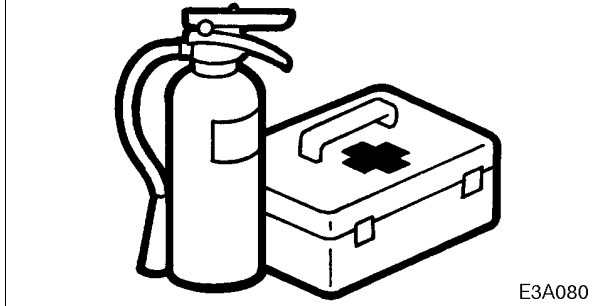


- Do not wear loose clothing or any accessory that can catch on controls or in moving parts.
- Do not wear oily or fuel stained clothing that can catch fire.
- Wear a hard hat, safety shoes, safety glasses, filter mask, heavy gloves, ear protection and other protective equipment as required by job conditions. Wear required appropriate equipment such as safety glasses and filter mask when using grinders, hammers or compressed air, as metal fragments or other objects can fly and cause serious injury.
- Use hearing protection when operating the machine. Loud prolonged noise can cause hearing impairments, even the total loss of hearing.



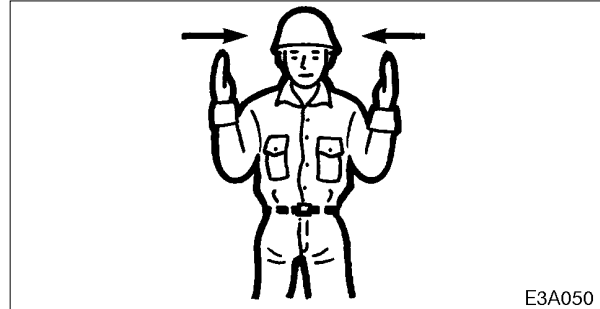
General Precautions

Provide a fire extinguisher and first aid kit



- Know where a fire extinguisher and first aid kit are located and understand how to use them.
- Know how to contact emergency assistance and first aid help.

Use a signal person and flagman

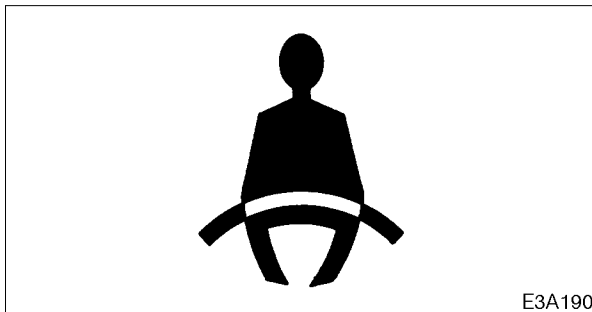


Know and use the hand signals required for particular jobs and make sure who has the responsibility for signaling.

- All personnel must fully understand all the signals.
- The operator shall respond to signals only from the appointed signal person, but shall obey a stop signal at any time from anyone.
- The signal person must stand in a clearly visible location when giving signals.

Never remove safety equipment

- Make sure all protective guards, canopies, doors, etc., are in place and secure. Repair or replace damaged components before operating the machine.

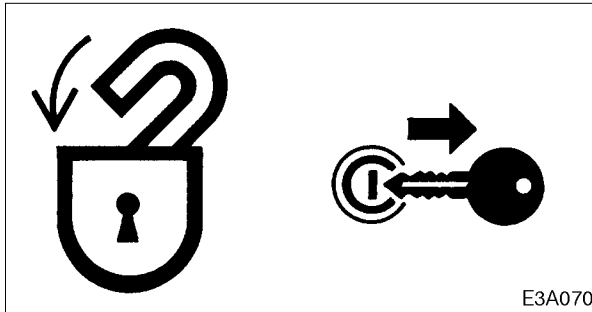


- Know how to use the safety lock lever, seat belt and other safety equipment and use them properly.
- Never remove any safety equipment except for service. Keep all safety equipment in good operating condition.



General Precautions

Be sure to lock the safety lock lever before leaving the operator's seat



- Before leaving the operator's seat, raise the safety lock lever to engage the lock and stop the engine. If any controls should be touched accidentally when the safety lock lever is lowered, the machine will move suddenly, and cause serious injury or death.
- Note that the dozer blade control is not locked, even when the safety lock lever is set to the lock position. Do not touch this control accidentally.
- Before leaving the operator's seat, lower the working equipment, raise the safety lock lever to engage the lock, and stop the engine. Also, be sure to remove the key and take it with you.

Avoid fire and explosion hazards



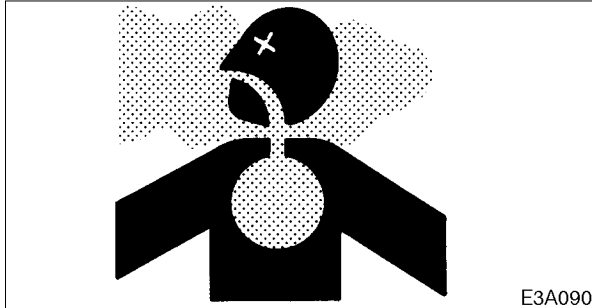
Keep flames away from fuel, hydraulic fluid, oil, grease and antifreeze. Fuel is particularly flammable and dangerous.

- When handling these combustible materials, keep lit cigarettes, matches, lighters and other flames or sources of flames away
- Do not smoke or permit open flames while fueling or near fueling operations.
- Never remove the fuel cap or refuel with the engine running or hot. Never allow fuel to spill on hot machine components.
- Clean up spilled fuel, oil or other flammable fluids immediately.
- Check for fuel, oil or hydraulic fluid leaks. Stop all leaks and clean the machine before operating.
- Do not cut or weld on pipes or tubes that contain flammable fluids. Clean thoroughly with nonflammable solvent before cutting or welding.
- Remove all trash or debris from the machine. Make sure that oily rags or other flammable material are not stored on the machine.
- Handle all solvents and dry chemicals according to procedures identified on manufacturers' containers. Work in a well-ventilated area.
- Never use fuel for cleaning purposes. Always use a nonflammable solvent.
- Store all flammable fluids and materials in a safe and well-ventilated place.



General Precautions

Exhaust fumes from the engine can kill



- Do not operate the engine in an enclosed area without adequate ventilation.
- If natural ventilation is poor, install ventilators, fans, exhaust extension pipes or other artificial venting devices.

Be careful not to get crushed or cut



Never put your hands, feet or other parts of your body between the upperstructure and the undercarriage or tracks, between the machine body and working equipment, or between a cylinder and moving part. The size of these gaps change when the machine moves and if caught a person can suffer severe injury or death.

Handling asbestos dust

Inhaling asbestos dust has been linked to lung cancer. When handling materials which may contain asbestos, take the following precautions:

- Never use compressed air for cleaning.
- Avoid brushing or grinding of the materials.
- For clean up, use wet methods or a vacuum equipped with a high efficiency particulate air (HEPA) filter.
- Wear an approved respirator if there is no other way to control the dust. When working indoors, install a ventilation system with a macro molecular filter.

Using optional products

- Consult with a Takeuchi dealer before installing optional attachments.
- Do not use attachments that have not been approved by Takeuchi or a Takeuchi dealer. Doing so may compromise safety or adversely affect the machine's operation or service life.
- Takeuchi will not be held responsible for any injuries, accidents or damage to its products caused by the use of a non-approved attachment.

Never modify the machine

Unauthorized modifications to this machine can cause injury or death. Never make unauthorized modifications to any part of this machine.



Preparing Precautions

Know the working area

Before starting operation, know the working area to ensure safety.

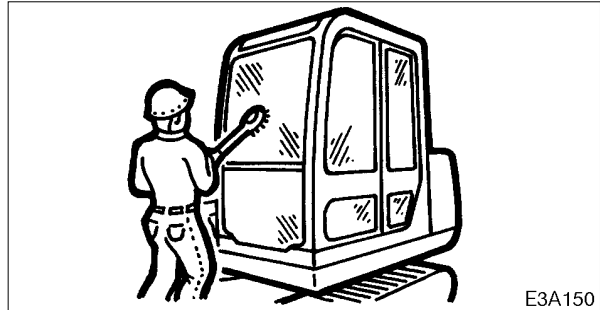
- Check the topography and ground condition of the working area, or the structure of the building when working indoors, and take the necessary safety measures in dangerous spots.
- Note and avoid all hazards and obstructions such as ditches, underground lines, trees, cliffs, overhead electrical wires or areas where there is danger of a slide.



- Check with the local utilities for the locations of buried gas and water pipes and buried power cables. Determine jointly what specific precautions must be taken to insure safety.
- When working on roads, be sure to take into account the safety of pedestrians and vehicles.
 - Use a flagman and/or signals.
 - Fence off the working area and prohibit entry to unauthorized persons.
- When working in water or crossing shallow streams or creeks, check the depth of the water, the solidity of the ground, and the speed of the current beforehand. Make sure the water is not deeper than the allowable depth.

Refer to the section titled "Cautions on Operating" for further instructions.

Always keep the machine clean

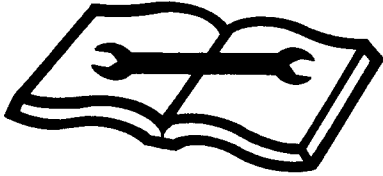


- Clean windows, mirrors and lights to ensure good visibility.
- Wipe off any oil, grease, mud, snow or ice, to prevent accidents due to slipping.
- Remove all loose objects stored in the machine and all objects which do not belong in or on the machine and its equipment.
- Remove any dirt, oil or grease from the engine area, to prevent fires.
- Clean the area around the operator's seat, removing any potential obstacles.



Preparing Precautions

Perform inspection and maintenance daily



E3A520

Failure to notice or repair machine irregularities or damage can lead to accidents.

- Before operating, perform the prescribed inspections and make repairs immediately should any irregularities be found.
- If a failure that causes loss of control such as steering, service brakes or engine occurs, stop the machine motion as quickly as possible, follow the shutdown procedure, and keep machine securely parked until the malfunction is corrected.



Starting Precautions

Maintain three point contact when mounting and dismounting

- Do not jump on or off the machine. Never attempt to mount or dismount a moving machine.
- When mounting and dismounting the cab, first open the door fully to the locked position and check that it does not move. (For machines with cabs)



- Always face the access system and maintain a three point contact with the recommended handrails and steps while getting on and off the machine. Keep steps and platform clean.
- Never use the safety lock lever or control levers as hand holds.

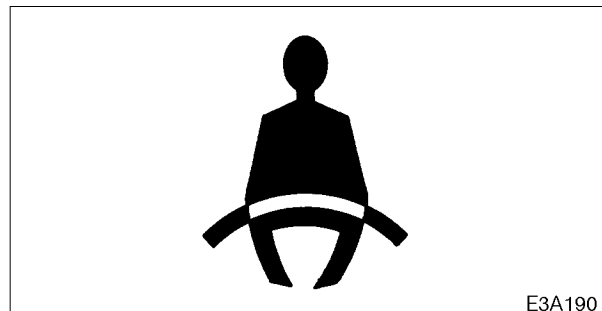
Clear the area of other persons before starting the machine

Do not start the engine until you are sure it is safe. Before starting, check or perform the following.

- Walk around the machine and warn all personnel who may be servicing the machine or are in the machine path. Do not start until all personnel are clearly away from the machine.
- Check for any "DO NOT OPERATE" tags or similar warning notices on the cab door, controls or starter switch.
- Sound horn to alert everyone around the machine.

Start the engine from the operator's seat

- Adjust, secure and latch the operator's seat.

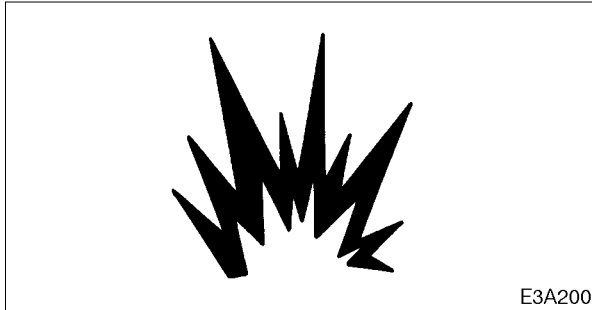


- Fasten the seat belt.
- Check that the parking device is applied and place all controls in the neutral position.
- Check that the safety lock lever is in the lock position.
- Clear the area of all persons.
- Start and operate the engine from the operator's seat only.
- Never attempt to start the engine by shorting across the starter terminals.



Starting Precautions

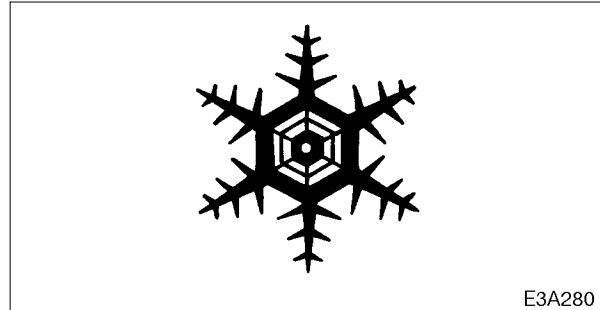
Starting with jumper cables



Use jumper cables only in the recommended manner. Improper use of jumper cables can result in battery explosion or unexpected machine motion.

Refer to the section titled “If the Battery Goes Dead” for proper instructions.

In cold weather



- Be careful of slippery conditions on freezing ground, steps and hand holds.
- In severe cold weather, do not touch any metal parts of the machine with exposed flesh, as flesh can freeze to the metal and Cause injury.
- Do not use ether or starting fluids on this engine. These starting aids can cause explosion and serious injury or death.
- Warm up the engine and hydraulic fluid before operating.

After starting the engine

After starting the engine, perform the following operations and checks in a safe place with no persons or obstacles in the area. If any malfunctions are found, follow the shutdown procedure and report the malfunction.

- Warm up the engine and hydraulic fluid.
- Observe all gauges or warning instruments for proper operation.
- Listen for unusual noises.
- Test engine speed control.
- Operate each control to insure proper operation.



Operating Precautions

Ensure good visibility

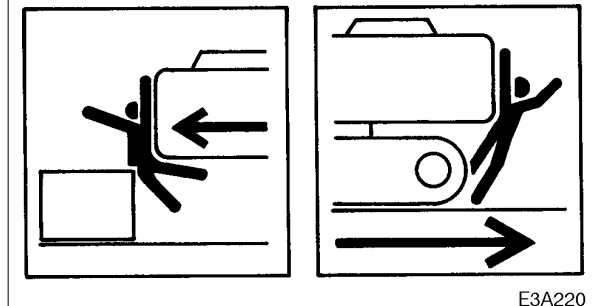
- When working in dark places, turn on the machine's working lights and headlights and/or provide extra stationary lighting if necessary.
- When visibility is poor due to severe weather (fog, snow or rain), stop operating the machine and wait until conditions improves.

Do not permit riders on the machine



- Do not allow anyone to ride on any part of the machine at any time while traveling.
- Do not allow anyone to be on any part of the machine while operating.

Check for safety in the surrounding area before starting

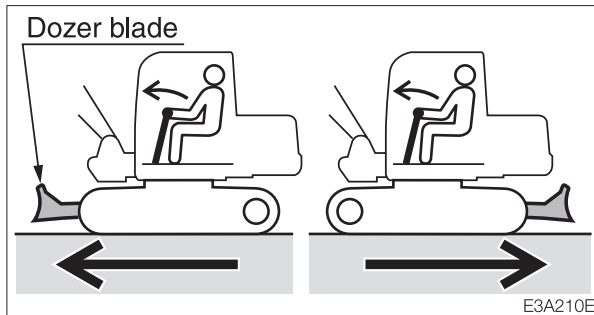


- Understand the machine limitations.
- Use a signal person where clearances are close or your vision is obstructed.
- Never allow anyone to enter the slewing (swing) radius and machine path.
- Signal your intention to move by sounding the horn.
- There are blind spots to the rear of the machine.
If necessary, swing the cab around before backing up to check that the area is safe and clear.



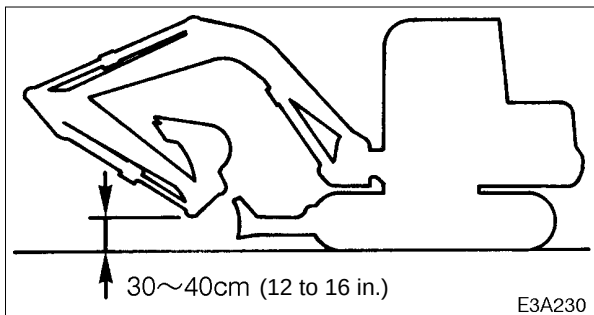
Operating Precautions

Check the position of the undercarriage (tracks) before traveling



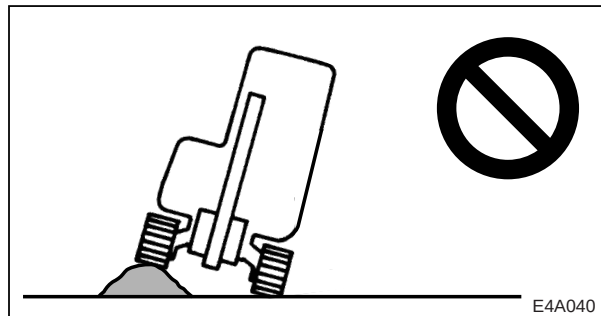
Before operating the travel levers, check to make sure that the dozer blade is to the front of the operator's seat. BE AWARE that when the dozer blade is to the rear of the operator's seat, the travel levers operate in the opposite direction to when the dozer blade is in the front.

Travel safety



- Travel with the dozer blade up, the hoe attachment folded as shown on the diagram, and the bucket raised 30 to 40 cm (12 to 16 in.) from the ground.
- Note that when the bucket is operated while making a right pivot turn (i.e., when only the left crawler is turning), the speed of the pivot turn may suddenly increase.

- Do not slew (swing) while traveling. If you must operate the hoe attachment while traveling, operate at speeds slow enough so you have complete control at all times.
- When a load greater than a set value is applied during 2nd speed (high speed) travel, the speed will automatically slow down by switching to 1st speed (low speed). Thereafter, when the load becomes lighter, the speed will increase by returning to 2nd speed (high speed). Exercise due caution since the travel speed changes automatically.



- Avoid crossing over obstacles whenever possible. If you must do so, keep the hoe attachment close to the ground and travel slowly. Never cross obstacles if they will seriously tilt the machine (to an angle of 10° or greater).
- On uneven ground, travel at low speed and avoid accelerating, stopping or changing directions abruptly.
- When roading a machine, know and use the signaling devices required on the machine. Provide an escort for road travel when required.

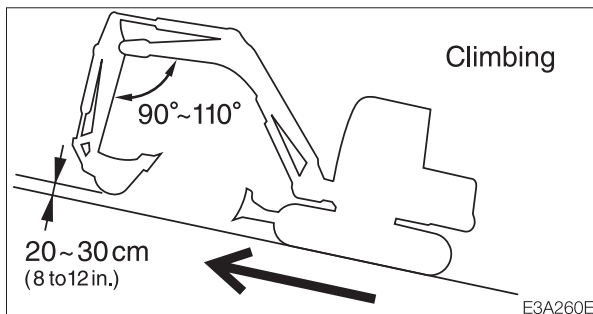
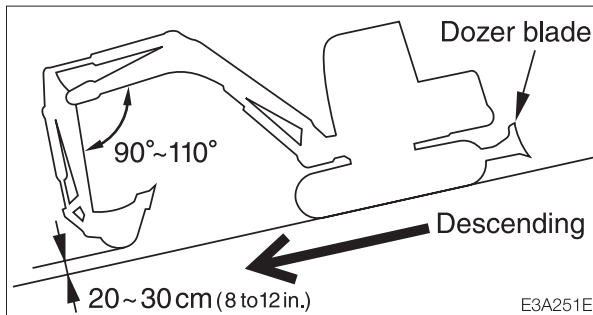


Operating Precautions

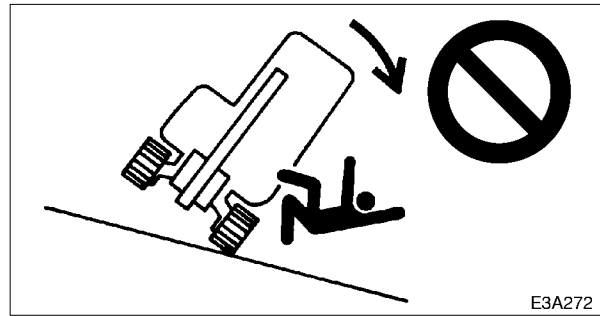
Cautions on traveling on slopes

When traveling on slopes or grades, be careful that the machine does not tip (roll) over or slide.

- Never exceed the machine's stability capabilities (maximum gradeability - 35°, lateral tipping angle - 15°). Also note that when actual working area conditions are poor the machine's stability capabilities may be lower.



- When traveling on slopes or grades, lower the bucket to a height of 20 to 30 cm (8 to 12 in.) off the ground. In emergencies, lower the bucket to the ground and stop the machine.
- When traveling on slopes or grades, move slowly in first gear (low speed).
- Do not travel down slopes in reverse.
- On grass, dead leaves, wet metal or frozen surfaces, the machine may slide sideways even on very gentle slopes. Make sure the machine never faces sideways with respect to the slope.



- Do not change directions or cross slopes sideways. First return to a flat surface then redirect the machine.

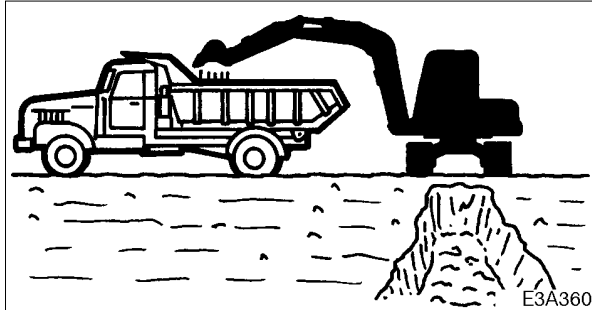
Operate on snow or ice with extra care

- When traveling on snow or frozen surfaces, keep the machine travel speed down and avoid accelerating, stopping or changing directions abruptly.
- Remember that the road shoulder, fences, etc., may be buried in the snow and not visible.
- Lower the dozer blade when parked on unsure ground conditions.



Operating Precautions

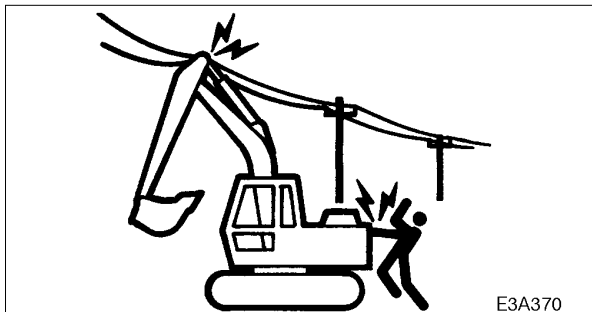
Insure driver safety before loading trucks



Do not load a truck unless the driver is in a safe place.

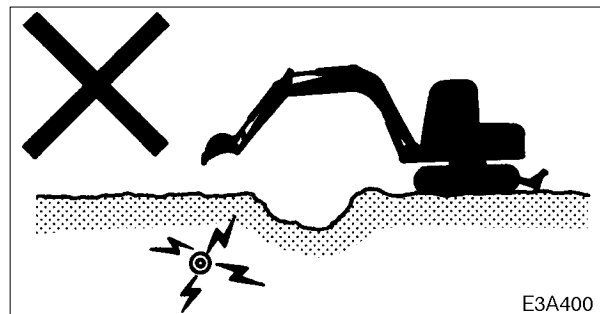
- Never swing or position the bucket over personnel or truck cabs.
- Load the truck from the rear.

Keep a safe distance from electrical power lines



Never approach power lines with any part of the machine and its load unless all local and national required safety precautions have been taken. Electrocuting and death can result from arcing, touching or even being close to a machine that is in contact with or near an electrical source.

- Maintain the maximum possible distance from power lines and never violate the minimum clearance.
- Always contact the nearest electric utility and determine jointly what specific precautions must be taken to insure safety.
- Consider all lines to be power lines and treat all power lines as energized even though it is known or believed that the power is shut off and the line is visibly grounded.
- Use a signal person to observe the approach of any part of the machine or load to the power line.
- Caution all ground personnel to stand clear of the machine and the load at all times.
- If the machine should come in contact with a live electrical source, do not leave the operator's seat. Do not allow anyone to approach or touch the machine.

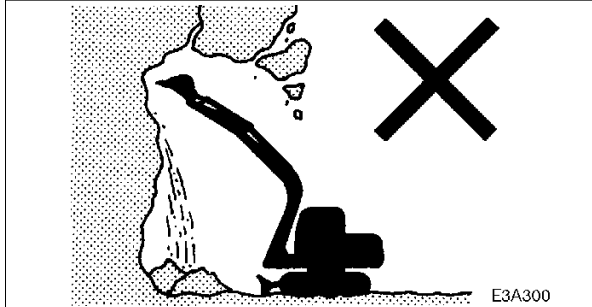


- Be especially careful of buried high voltage power lines.

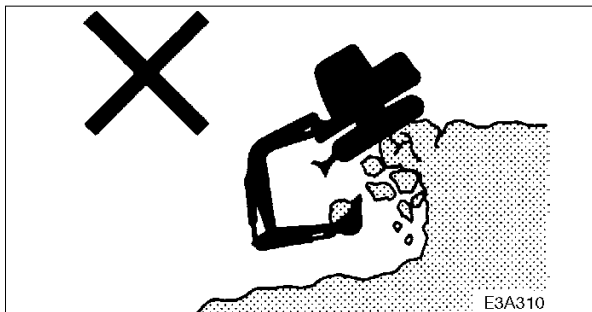


Operating Precautions

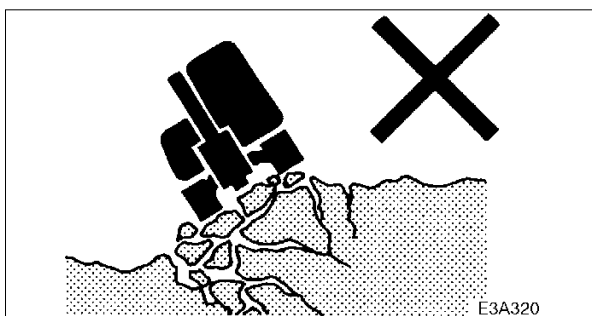
Watch out for hazardous working conditions



- Never undercut a high bank. Be particularly alert for the possibility of a cave-in.
- Do not operate in places where there is a danger of falling rocks.



- Keep machine well back from the edge of an excavation. Avoid undercutting the machine.

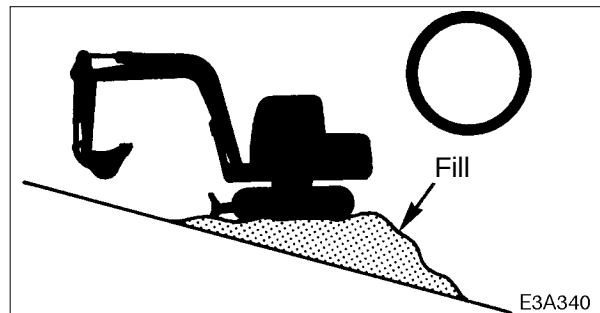


- Do not approach unstable surfaces (cliffs, road shoulders, deep trenches, etc.). The ground may give way under the machine's weight or vibrations, causing the machine to tip over.

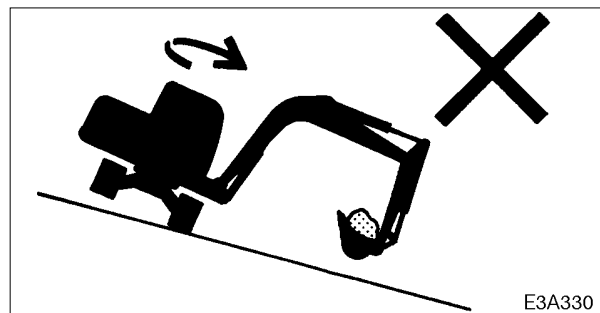
- The ground is weak after rain or explosions.
- The ground is also unstable on banks and near dugout trenches.

Operating on slopes is dangerous

When operating on slopes or grades, slewing (swinging) or operating working equipment may cause the machine to lose stability and tip over. Avoid operating on slopes whenever possible.



- Level off the work area.

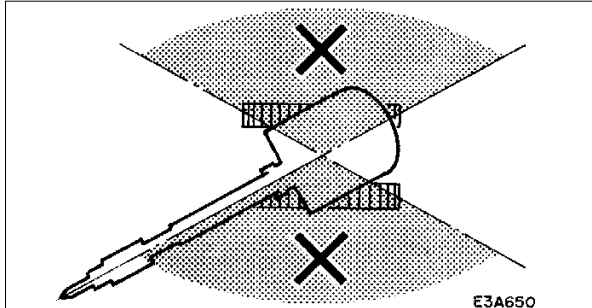


- Avoid swinging the loaded bucket in a downhill direction. This will reduce the stability of the machine.



Operating Precautions

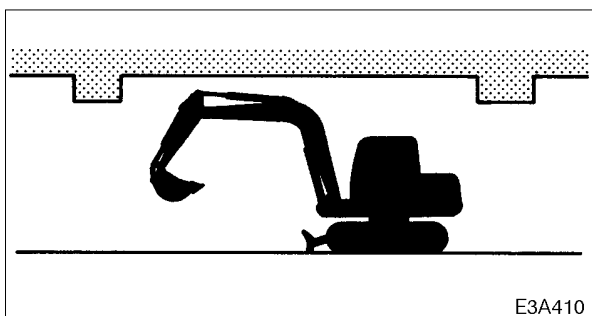
Never slew (swing) sideways with excessive weights



The machine can tip over more easily in the lateral direction than in the longitudinal direction.

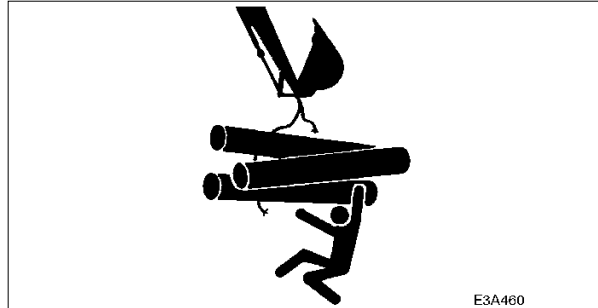
- Do not slew (swing) sideways with excessive weight at the front. In particular do not slew sideways on slopes.
- The front is heavier for machines equipped with breakers, crushers or telescopic arms than for machines equipped with the standard bucket. Do not operate such machines sideways especially with the digging arm (boom) downhill.

Watch boom clearance



When operating under bridges, in tunnels, near power lines or indoors, be careful not to hit the boom or arm against overhead objects.

Excavators are not designed for lifting loads



The machine is specifically designed for excavation work and has no safety devices for crane operation. Extreme caution should be used if the excavator is used for lifting.

- Never lift loads in excess of capacity. Overload will cause the machine to roll and can result in serious injury or death.
- All rated lift capacities are based on the machine being level and on a firm supporting surface. For safe working loads, the user is expected to make due allowance for the particular job conditions such as soft or uneven ground, non-level condition, side loads, dynamic or jerked loads, hazardous conditions, experience of personnel, etc. The operator and other personnel should fully acquaint themselves with the operator's manual before operating this machine, and rules for safe operation of equipment shall be adhered to at all times.
- Failure of the bucket linkage or slings could result if chains or slings are incorrectly attached, resulting in serious injury or death.
- Do not attempt to pull stumps out of the ground while using the machine as a crane. The loads imposed on the machine under this use are completely unknown.
- Never allow any personnel to stand on or under lifted loads or even within the maneuvering area.

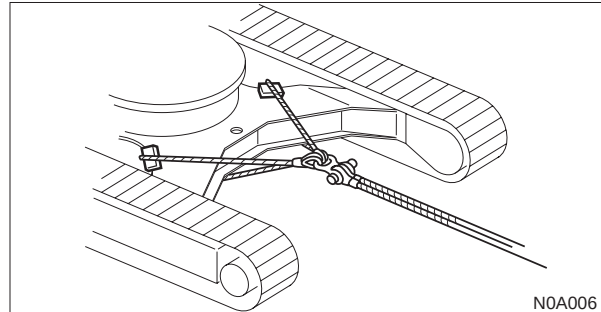


Operating Precautions

Danger of flying objects

This machine is not equipped with protective guards to protect the operator from flying objects. Do not use the machine in places where there are risks of the operator being hit by flying objects.

Cautions on Towing



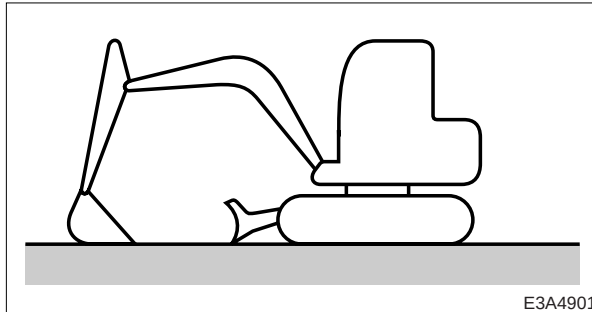
When towing, selecting the wrong wire rope, inspecting improperly, or towing in the wrong way could lead to accidents resulting in serious injury or death.

- The wire rope breaking or coming detached could be extremely dangerous. Use a wire rope suited for the required towing force.
- Do not use a wire rope that is kinked, twisted or otherwise damaged.
- Do not apply strong loads abruptly to the wire rope.
- Use safety gloves when handling the wire rope.
- Make sure there is an operator on the machine being towed as well as on the machine that is towing.
- Never tow on slopes.
- Do not let anyone near the wire rope while towing.

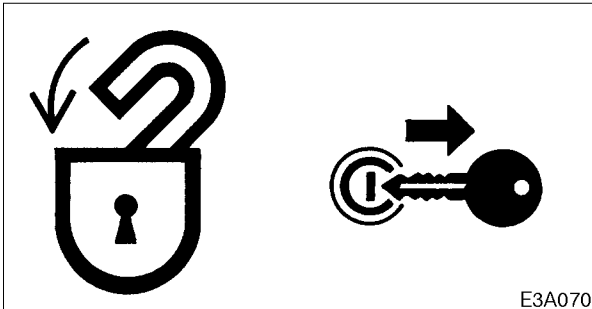


Stopping Precautions

Park safely



- Park the machine on firm, level ground and apply the parking device.
- When parking on streets, use barriers, caution signs, lights, etc., so that the machine can easily be seen even at night to avoid collision with other vehicles.

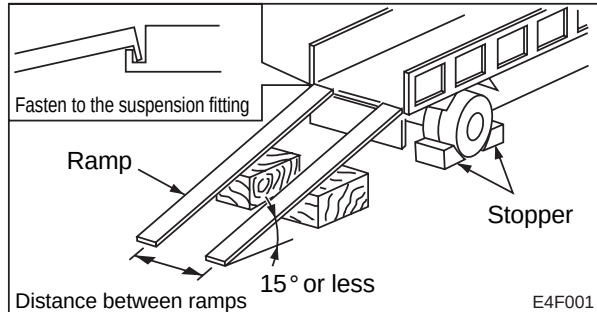


- Before leaving the machine, do the following:
 1. Lower the bucket and dozer blade to the ground.
 2. Raise the safety lock lever to engage the lock.
 3. Stop the engine and remove the key.
 4. Lock the cab and covers.



Transporting Precautions

Load and unload the machine safely



The machine may roll or tip over or fall while loading or unloading it. Take the following precautions:

- Select a firm, level surface and keep sufficient distance from road shoulders.
- Use loading ramps of adequate strength and size. Maintain the slope of loading ramps within 15 degrees.
- Secure the ramps to the truck bed.
- Keep the truck bed and loading ramps clean of oil, clay, ice, snow, and other materials which can become slippery. Clean the tracks.
- Block the transport vehicle so it can not move.
- Use a signal person when loading and unloading the machine, and travel slowly in first gear (low speed).
- Never change course on the ramp.
- Do not slew (swing) on ramps. The machine may tip over.
- When slewing (swinging) on the truck bed, do so slowly as the footing can be unstable.
- Engage the slew (swing) lock after loading.
- Block both tracks and secure the machine to the truck bed with load binders.

Hoist the machine safely

- Know and use correct crane signals.
- Inspect the hoisting equipment daily for damaged or missing parts.
- When hoisting, use a wire rope with sufficient strength with respect to the machine's weight.
- Do not hoist with the machine in a posture other than the one described in the procedure below. Doing so is dangerous as it may result in the machine losing its balance.

Refer to the section titled "Hoisting the Machine" for further instructions.

- Do not hoist the machine with an operator (s) on it.
- When hoisting, hoist slowly so that the machine does not tip.
- Keep all other persons out of the area when hoisting. Do not move the machine over the heads of the persons.

Transport the machine safely

- Know and follow the safety rules, vehicle code and traffic laws when transporting the machine.
- Consider the length, width, height and weight of the truck with the machine loaded on it when determining the best route.



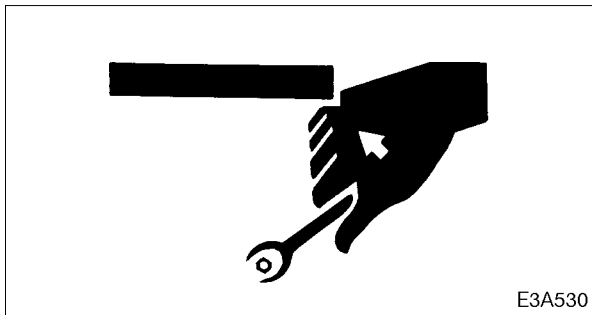
Maintenance Precautions

Attach a “DO NOT OPERATE” tag

Severe injury could result if an unauthorized person should start the engine or touch controls during inspection or maintenance.

- Stop the engine and remove the key before performing maintenance.
- Attach a “DO NOT OPERATE” tag to the starter switch or control lever.

Use the correct tools



Do not use damaged or weakened tools or tools designed for other purposes. Use tools suited for the operation at hand.

Replace important safety parts periodically

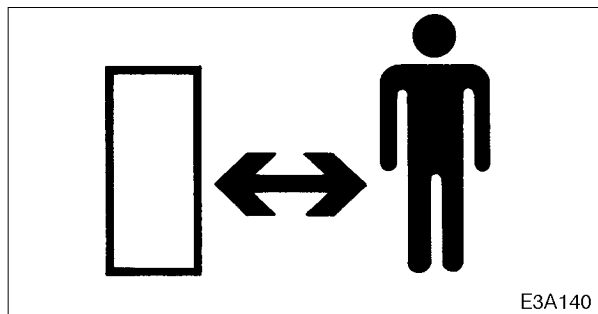
- Replace fuel hoses periodically. Fuel hoses become weaker over time, even if they appear to be in good shape.
- Replace important safety parts whenever an irregularity is found, even if it is before the normal time for replacement. Refer to the section titled “Important Parts” for further details.

Anti-explosive lighting



Use anti-explosive electrical fixtures and lights when inspecting fuel, oil, coolant, battery fluid, etc. If lighting that is not anti-explosive should break, the substance could ignite, resulting in serious injury or death.

Do not allow unauthorized personnel in the work area



Do not allow unauthorized personnel in the work area. Chips or other debris can fly off machine parts when grinding, welding or using a hammer.



Maintenance Precautions

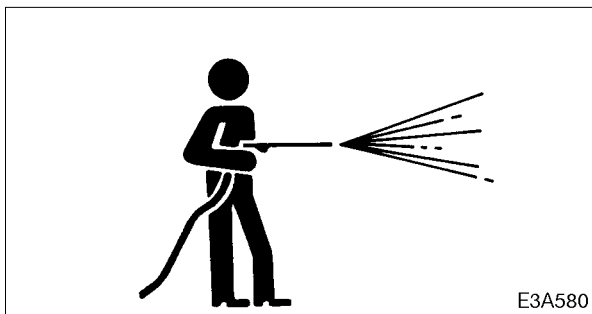
Prepare the work area

- Select a firm, level work area. Make sure there is adequate light and, if indoors, ventilation.
- Clear obstacles and dangerous objects. Eliminate slippery areas.

Stop the engine before performing maintenance

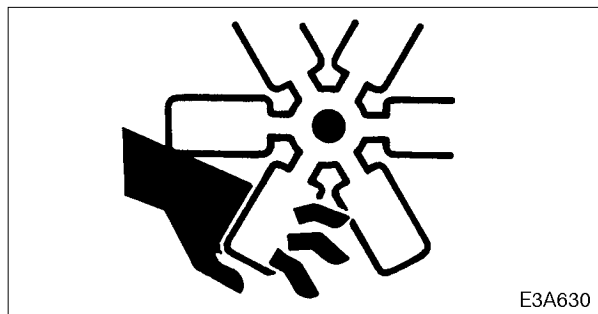
- Avoid lubrication or mechanical adjustments with the machine in motion or with the engine running while stationary.
- If maintenance must be performed with the engine running, always work as a two person team with one person sitting in the operator's seat while the other works on the machine.
- When performing maintenance, be sure to keep your body and clothing away from moving parts.

Always clean the machine



- Clean the machine before performing maintenance.
- Stop the engine and cover electrical parts when washing the machine. Water on electrical parts could cause short-circuits or malfunctions.
Do not use water or steam to wash the battery, sensors, connectors or the operator's compartment.

Stay clear of moving parts



- Stay clear of all rotating and moving parts. Wrapping or entanglement may result in serious injury or death.
- Keep hands, clothing and tools away from the rotating fan and running fan belts.



Maintenance Precautions

Securely block the machine or any component that may fall



- Before performing maintenance or repairs under the machine, set all working equipment against the ground or in the lowermost position.
- Securely block the tracks.
- If you must work beneath the raised machine or equipment, always use wood blocks, jack-stands or other rigid and stable supports. Never get under the machine or working equipment if they are not sufficiently supported. This procedure is especially important when working on hydraulic cylinders.

Cautions on working on the machine



- When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:
 - Do not spill oil or grease.
 - Do not leave tools laying around.
 - When walking, watch your step.
- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.
- Use protective equipment as required by job conditions.

Securely block the working equipment

To prevent unexpected movement, securely block the working equipment when repairing or replacing the cutting edges or bucket teeth.

Secure the engine hood or cover when opened

Be sure to secure the engine hood or cover when opening it. Do not open the engine hood or cover on slopes or in strong wind.

Place heavy objects in a stable position



When removing or installing the hoe attachment, place it in a stable position so that it does not tip over.



Maintenance Precautions

Use caution when fueling



- Do not smoke or permit open flames while fueling or near fueling operations.
- Never remove the fuel cap or refuel with the engine running or hot. Never allow fuel to spill on hot machine components.
- Maintain control of the fuel filler nozzle when filling the tank.
- Do not fill the fuel tank to capacity. Allow room for expansion.
- Clean up spilled fuel immediately.
- Tighten the fuel tank cap securely. Should the fuel cap be lost, replace it only with the original manufacturer's approved cap. Use of a non-approved cap without proper venting may result in pressurization of the tank.
- Never use fuel for cleaning purposes.
- Use the correct fuel grade for the operating season.

Handling of hoses

Fuel, oil or hydraulic fluid leaks can cause a fire.

- Do not twist, bend or hit the hoses.
- Never use twisted, bent or cracked hoses, tubes and pipes. They may burst.
- Retighten loose connections.

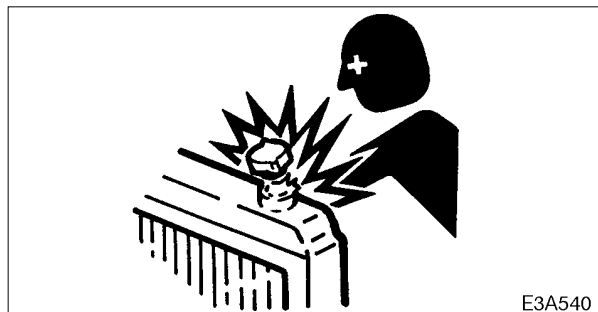
Be careful with hot and pressurized components



Stop the engine and allow the machine to cool down before performing inspection and maintenance.

- The engine, muffler, radiator, hydraulic lines, sliding parts and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.
- The engine coolant, oil and hydraulic fluid are also hot and under high pressure. Be careful when loosening caps and plugs. Working on the machine under these conditions could result in burns or injuries due to the hot oil spurting out.

Be careful with hot cooling systems



Do not remove the radiator cap or drain plugs when the coolant is hot. Stop the engine, let the engine and radiator cool and loosen the radiator cap or drain plugs slowly.

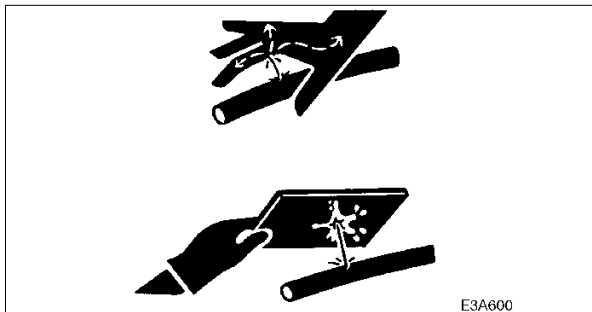


Maintenance Precautions

Be careful with fluids under pressure

Pressure can be maintained in the hydraulic circuit long after the engine has been shut down.

- Release all pressure before working on the hydraulic system.



- Hydraulic fluid under pressure can penetrate the skin or eyes and cause injury, blindness or death. Fluid escaping from a small hole can be almost invisible. Wear a safety goggles and heavy gloves and use a piece of cardboard or wood to search for suspected leaks. If fluid is injected into the skin, it must be removed within a few hours by a doctor familiar with this type of injury.

Release all pressure before working on the hydraulic system

Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.

- Gradually press the air breather button to relieve tank pressure.

- Stop the engine and turn the starter switch to the ON position and move all the control levers and pedals several times in all directions to release the pressure from the working equipment circuitry.
(When equipped with accumulator)
- When removing plugs or screws or disconnecting hoses, stand to the side and loosen slowly to gradually release the internal pressure before removing.

Handling of the Accumulator



High pressure nitrogen gas is enclosed in the accumulator and incorrect handling could possibly bring about serious personal injury due to explosion. The following matters should be strictly observed:

- Do not disassemble.
- Do not bring close to fire or throw into a fire.
- Do not make hole, weld, or fuse.
- Do not subject to shock such as hitting or rolling.
- At time of disposal, it will be necessary to release the enclosed gas. Please contact a Takeuchi sales or service outlet.



Maintenance Precautions

Disconnect the battery



Disconnect the battery before working on the electrical system or doing any welding. Remove the negative (–) battery cable first. When reconnecting the battery, connect the negative (–) battery cable last.

Avoid battery hazards

- Batteries contain sulfuric acid which will damage eyes or skin on contact.
 - If acid contacts eyes, flush immediately with clean water and get prompt medical attention.
 - If acid is accidentally swallowed, drink large quantities of water or milk and call a physician immediately.
 - If acid contacts skin or clothing, wash off immediately with clean water.
- Wear safety glasses and gloves when working with batteries.
- Batteries generate flammable and explosive gases. Keep arcs, sparks, flames and lighted tobacco away.
- Use a flashlight to check battery electrolyte level.
- Stop the engine and shut off electrical equipment while inspecting or handling the battery.
- Do not short circuit the battery posts with metal items.
- Always unfasten the negative (–) battery cable first when disconnecting the battery cable. Always connect the negative (–) battery cable last when fastening the battery cable.
- Loose battery terminals may result in sparks. Be sure to fasten terminals tightly.
- Make sure the vent caps are tightened securely.
- Do not charge a battery or jump-start the engine if the battery is frozen. Warm to 15°C (60°F) or the battery may explode.
- Do not use the battery when the fluid level is below the lower level. Doing so will hasten the deterioration of the internal portions of the battery and shorten the battery life, and can also cause rupturing (or an explosion).
- Do not fill the battery above the upper level. Doing so could cause the fluid to leak, contact and damage the skin, or cause parts to corrode.



Maintenance Precautions

Have a Takeuchi service agent repair welding cracks or other damage

Ask a Takeuchi service agent to repair any welding problems which are detected. If not feasible, make sure the welding is done by a qualified person in a properly equipped workplace.

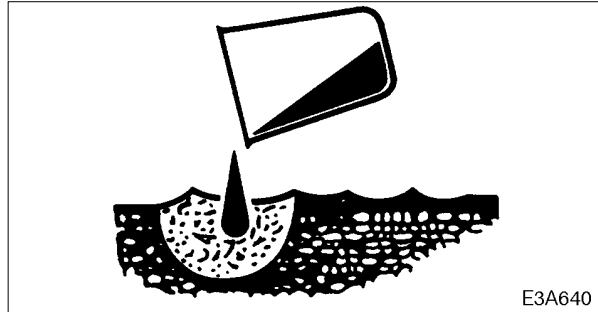
Vibrations to which the operator is subjected

According to the results of the tests carried out to determine the vibrations transmitted to the operator by the machine, the upper limbs are subjected to vibrations lower than 2.5 m (8.2 ft) / sq.sec. while the seated part of the body is subjected to vibrations lower than 0.5 m (1.64ft) / sq.sec.

Checks after maintenance

- Gradually raise the engine speed from a low idle to maximum speed and check that no oil or water is leaking from serviced parts.
- Move the controls and check that the machine is operating properly.

Disposing of wastes



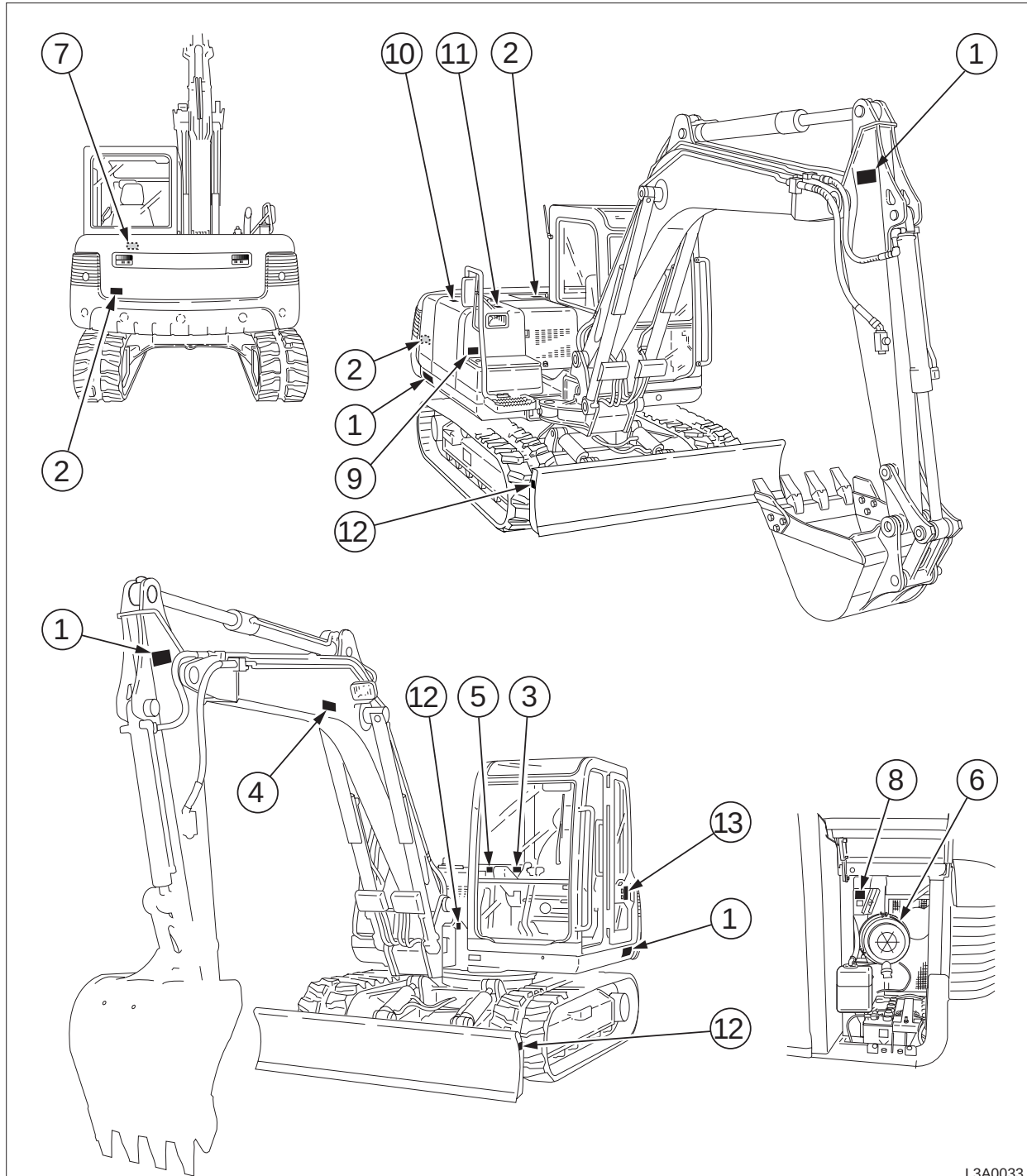
- Funnel spent fluids from the machine into containers. Disposing of fluids improperly destroys the environment.
- Follow the prescribed regulations when disposing of oil, fuel, engine coolant, refrigerant, solvents, filters, batteries or other harmful substances.



Safety Signs (Decals)

The following safety signs (decals) have been placed on your machine in the areas indicated. They are intended for the personal safety of you, and those working with you. Please take this manual, walk around your machine and note the content and location of these safety signs. Review these signs and the operating instructions in this manual with your machine operators.

- Keep the signs legible. If they are not, obtain replacements from your Service outlet.



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**Safety Signs (Decals)**

1. No.03593-06500



5. No.03593-47020



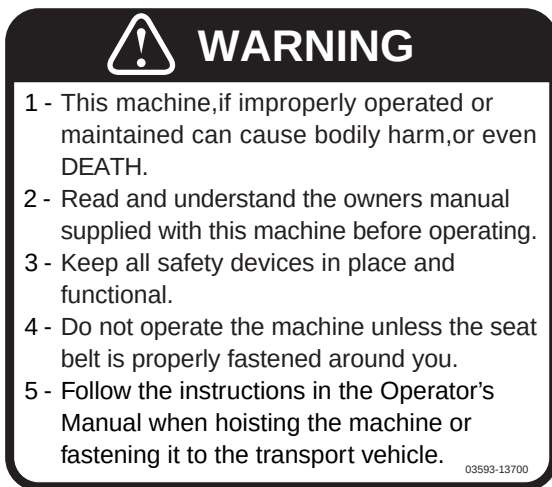
2. No.03593-07400



6. No.03393-75040



3. No.03593-13700



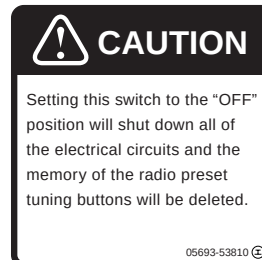
7. No.05693-21980



4. No.03593-47010

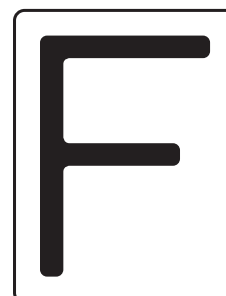


8. No.05693-53810



9. No.03993-00400

Position of Fire extinguisher



Except for UK

**Safety Signs (Decals)**

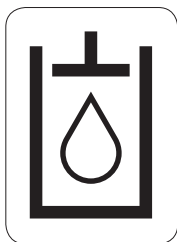
10. No.03593-06600

Diesel Fuel



11. No.03593-06700

Hydraulic oil



12. No.03993-00500

Position of Hoisting

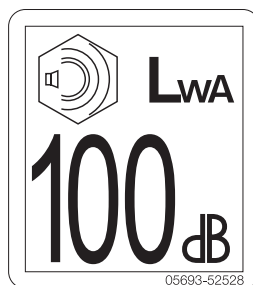


13. No.05693-52528

for EU

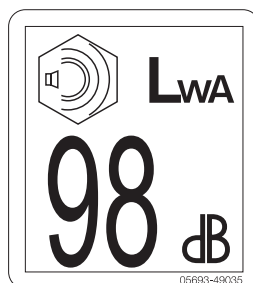
Noise Outside the Cab

This value indicates the noise level outside the machine and refers to the noise perceived by the persons who are in the vicinity of the work area.



Serial No. 17514412 ~

No.05693-49035





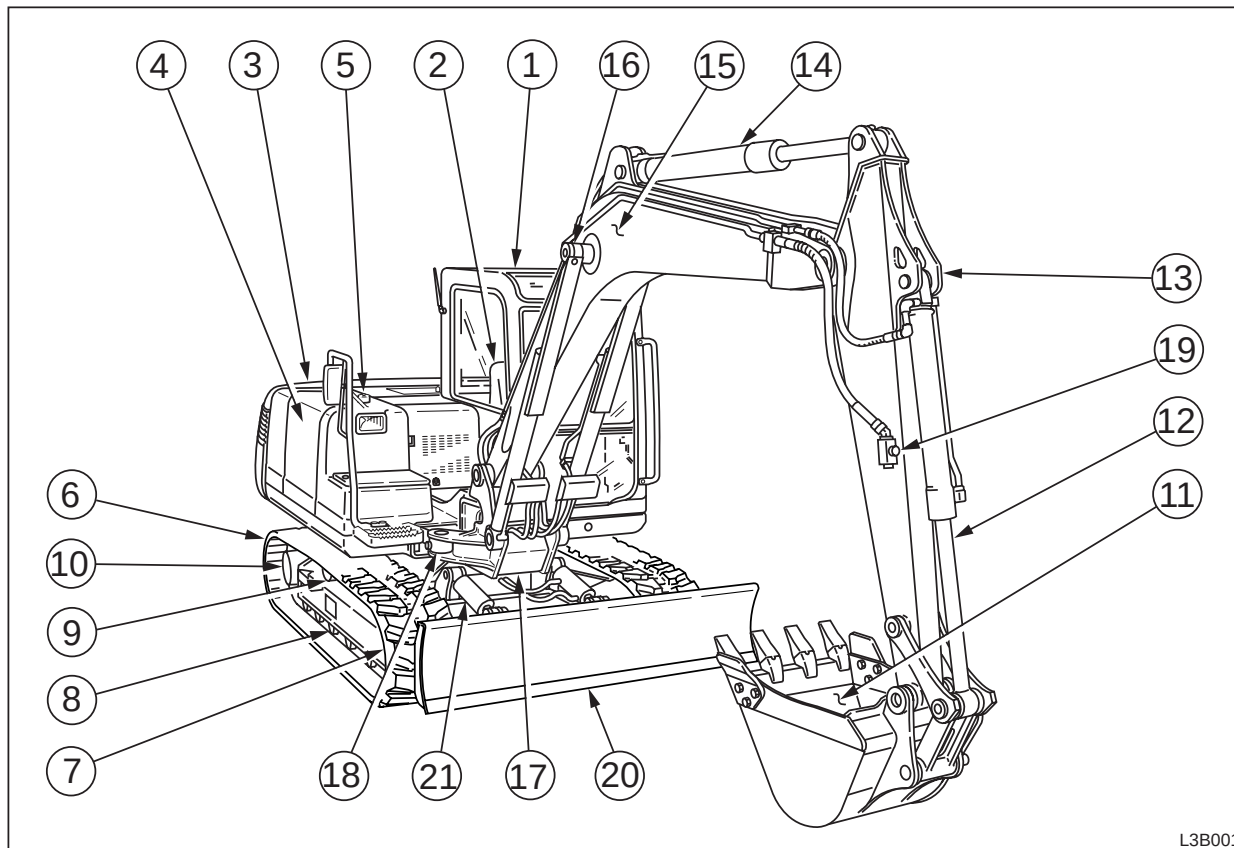
CONTROLS

Names of Components	36
Doors and Covers	38
Seat and Seat Belt	43
Instrument cluster	46
Switches	48
Levers and Pedals	53
Accessories	55



Names of Components

Mono-Boom



Upperstructure

1. Cab
2. Seat
3. Engine hood
4. Fuel tank
5. Hydraulic tank

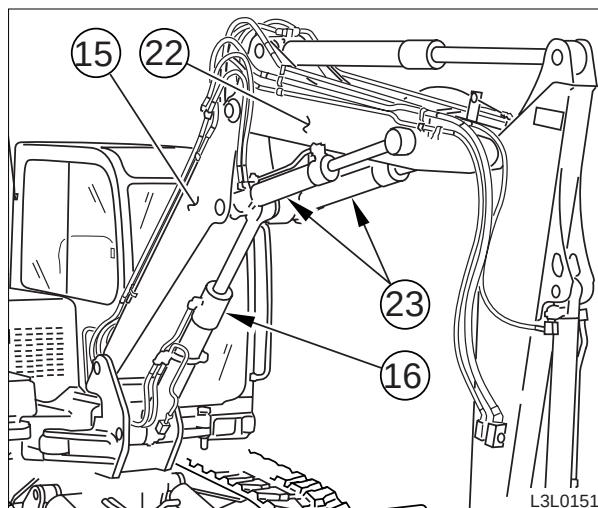
Undercarriage

6. Crawler belt
7. Idler
8. Track roller
9. Carrier roller
10. Travel motor

Working equipment

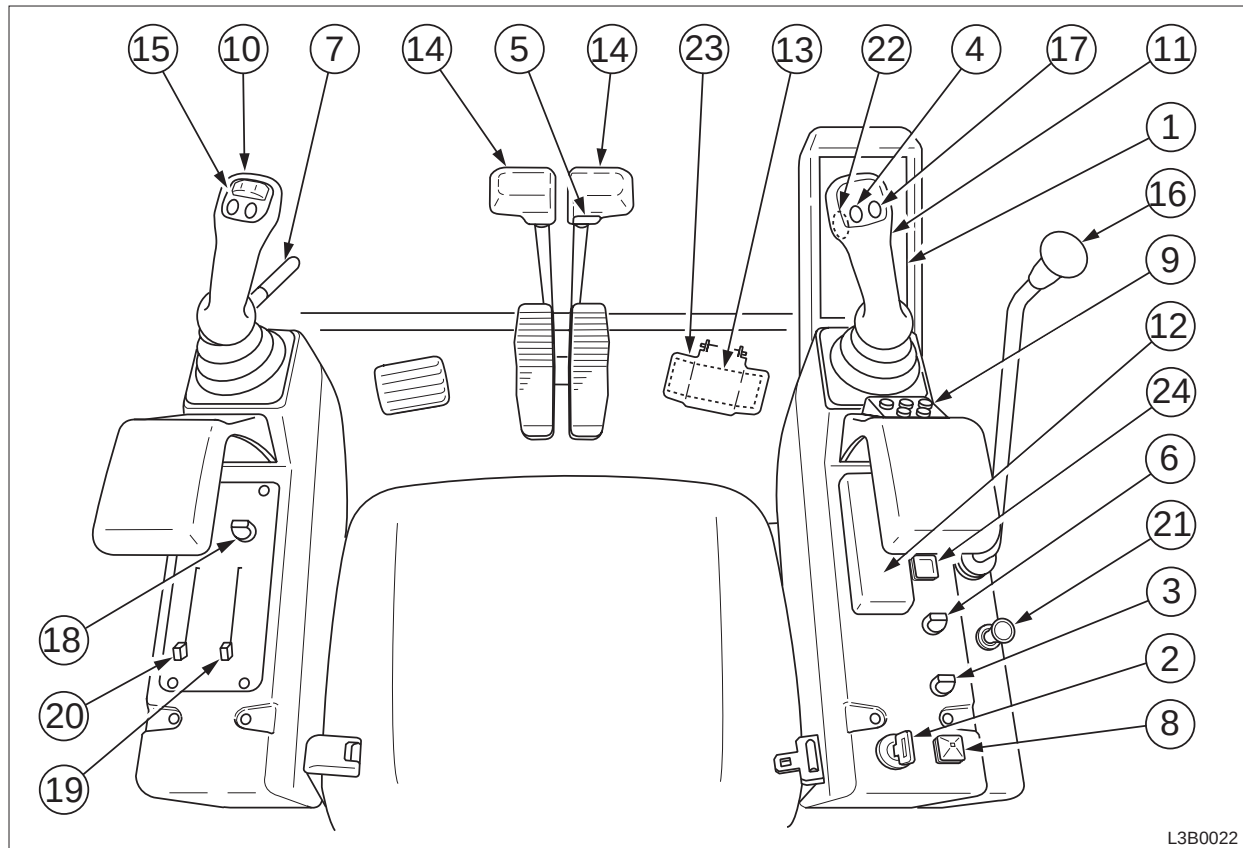
11. Bucket
12. Bucket cylinder
13. Arm
14. Arm cylinder
15. Boom
16. Boom cylinder
17. Boom bracket
18. Swing cylinder
19. Auxiliary hydraulic lines
20. Dozer blade
21. Blade cylinder
22. Intermediate boom
23. Boom adjustment cylinder

2-Piece Boom





Names of Components

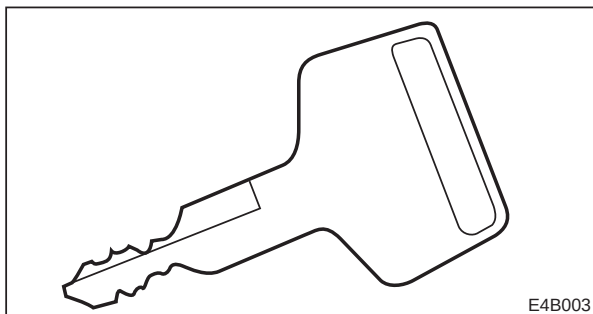


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- | | |
|---------------------------|---|
| 1. Instrument cluster | 13. Boom swing pedal |
| 2. Starter switch | 14. Travel lever |
| 3. Light switch | 15. Auxiliary hydraulic switches |
| 4. Horn button | 16. Blade lever |
| 5. Travel speed switch | 17. Decel. button |
| 6. Wiper switch | 18. Fan switch (Heater) |
| 7. Safety lock lever | 19. Heater / Defroster switch |
| 8. Slew speed switch | 20. Ventilation/Circulation switch |
| 9. Power mode buttons | 21. Cigarette lighter |
| Throttle buttons | 22. Selector Button (2-Piece boom) |
| 10. Left operating lever | 23. Pedal lock |
| 11. Right operating lever | 24. Intermediate boom operation indicator |
| 12. Fuse box | lamp (2-Piece boom) |



Starter Key



The starter key is used not only to start and stop the engine, but also to lock and unlock the following places:

- Fuel filler cap
- Cab door
- Covers

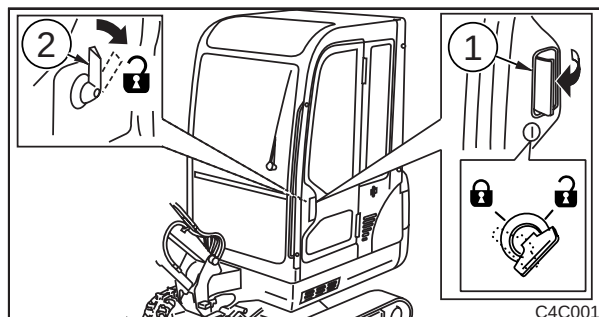
Cab Door

WARNING

When mounting and dismounting the cab, first open the door fully to the locked position and check that it does not move.

Open the door fully and press it against the catch at the back of the door to lock it in place. Always lock the door when mounting and dismounting and when operating the machine.

Lock and unlock



1. Insert the starter key and turn it.

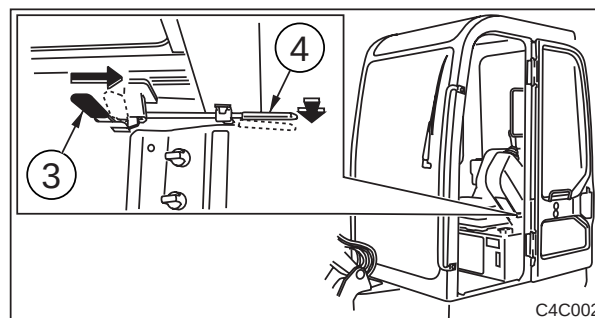
Opening

1. Pull the knob (1) towards you and open the door.

To open the door from inside the cab, push the lever (2) to the front.

2. Open the door fully and press it against the cab to lock it in place.

Closing



1. Either push release lever (3) to the front or lower release lever (4).
2. Close the released door.

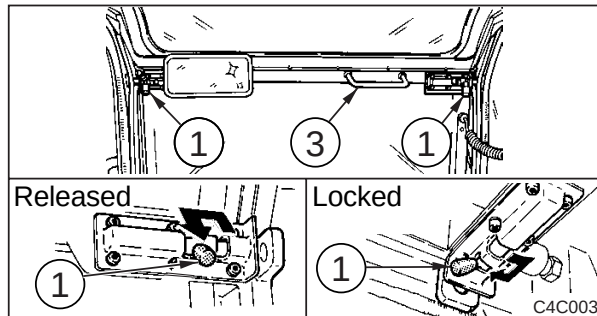
Front Window

WARNING

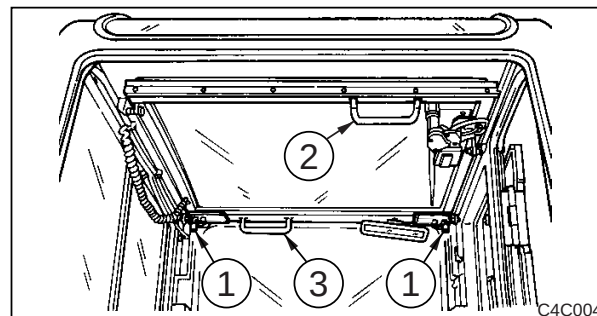
- Grasp the handles firmly with both hands when opening and closing the front window. Your head or hands may get caught if they slip.
- If you open the front window, be sure to lock it in place with the lock pins on the left and right sides. The window may fall if it is not locked in place.



Opening



1. Park on a level surface and stop the engine.
2. Set the safety lock lever to the locked position.
3. Pull the left and right lock pins (1) to the inside then turn them to the locked position to unlock the front window. If the lock pins (1) are partially sticking out they may cause damage.



4. Grasp the lower handle (2) with the left hand, the upper handle (3) with the right hand, then lift and slide to the rear.
5. Once the window frame is against the stopper, move the lock pins (1) to the outside to lock front window.

Closing



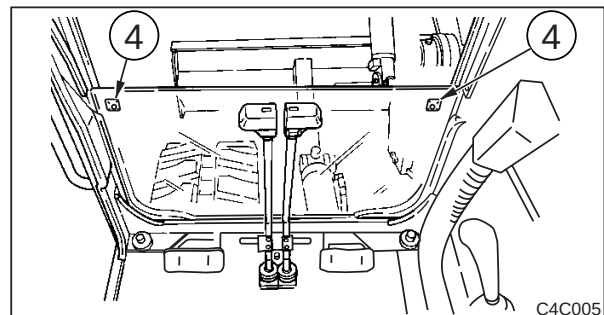
WARNING

When closing the front window, lower the window slowly so as not to hit your head. Lowering the window abruptly may result in injury or damage the front window.

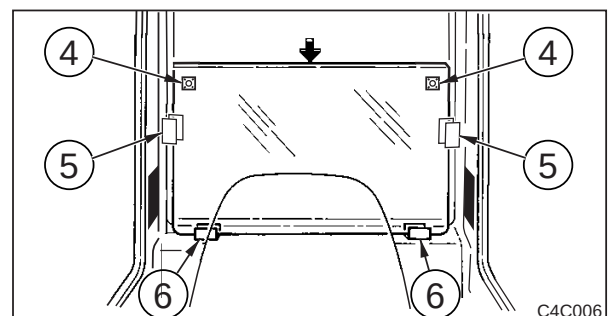
1. Pull the left and right lock pins (1) to the inside and turn them to the locked position to unlock the front window. If the lock pins (1) are partially sticking out they may cause damage.
2. Grasp the front (lower) handle (2) with the left hand, the rear (upper) handle (3) with the right hand, then slowly lower the front window.
3. Move the lock pins (1) to the outside to lock the front window.

Lower Front Window

Removing



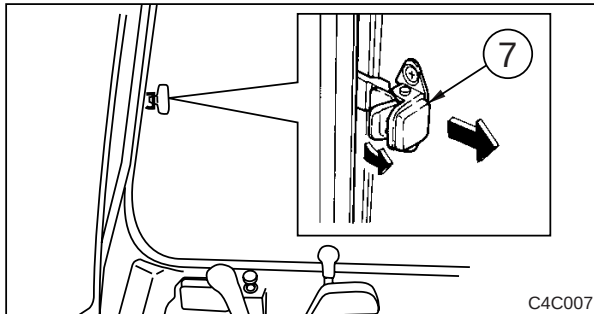
1. Open the front window and stow it in the ceiling.
2. Grasp the protruding parts (4) on the left and right with your fingers and slowly lift the lower front window off.



3. Hold the glass firmly, place the lower front window through the guides (5) at the rear, then set it on the supports (6) and fasten it in place.



Side Window



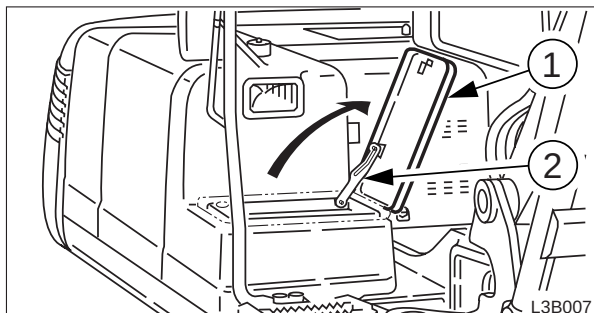
1. Grasp the catch (7), unlock it and open the side window.
2. To close the side window, close it until a click is heard.

Front Cover (Tool Box)

CAUTION

- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.
- When opening the front cover, open it firmly to the stopped position.
- When opening and closing the front cover, be careful not to get your hands or other parts of your body caught.

The grease gun and tools are stored under the cover.



Opening

1. Insert the starter key and turn it counterclockwise to unlock the front cover (1).
2. Tilt the front cover (1) until it stops.

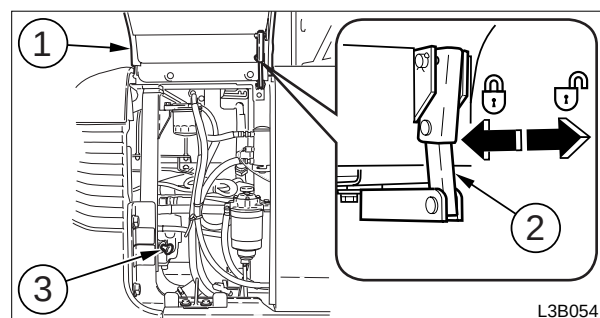
Closing

1. Support the front cover (1) by hand and release the stay (2).
2. Close the front cover (1).
3. Insert the starter key and turn it clockwise to lock the front cover (1).

Side Covers

CAUTION

- When opening the side cover, open it firmly to the locked position.
- When opening and closing the side cover, be careful not to get your hands or other parts of your body caught.



Opening

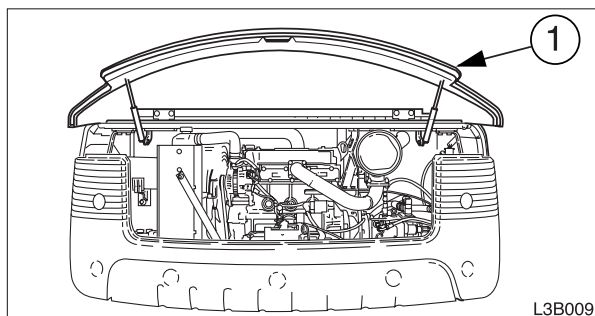
1. Insert the starter key and turn it counterclockwise to unlock the side cover.
 2. Lift the side cover fully until it stops.
 3. Press the stay (2) to fix the side cover.
- Engine hood unlock knob (3) is located behind the right side cover.

**Closing**

1. Support the side cover (1) by hand and release the stay (2).
2. Close the side cover (1) and press it down until a click is heard at the front.

Engine Hood **WARNING**

Before opening the engine hood, be sure to stop the engine. If your hands or tools should get caught in the fan or fan belt while the engine is running they may be severed.

**Opening**

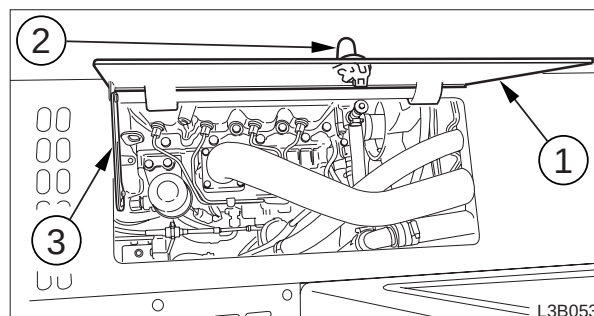
1. Open the right side cover and pull the unlock knob (3).
Refer to "Side Covers".
2. Lift the engine hood (1) fully.

Closing

1. Close the engine hood and press it down until a click is heard at the front.

Maintenance Cover **WARNING**

- Before opening the maintenance cover, stop the engine.
- When maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:
 - Do not spill oil or grease.
 - Do not leave tools laying around.
 - When walking, watch your step.
- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.
- Use protective equipment as required by job conditions.

**Opening**

1. Insert the starter key and turn it counterclockwise to unlock the maintenance cover (1).
2. Pull the knob (2), then lift the maintenance cover (1) fully until it stops.

Closing

1. Support the maintenance cover (1) by hand and release the stay (3).
2. Close the maintenance cover (1).
3. Insert the starter key and turn it clockwise to lock the maintenance cover (1).

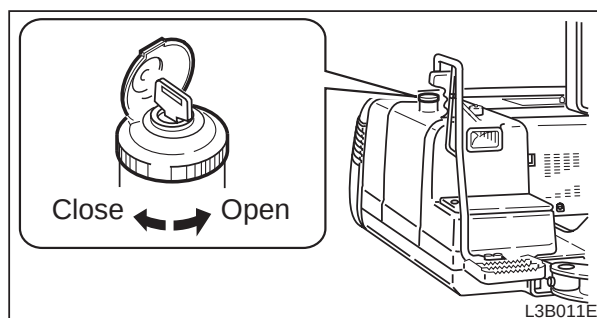


Fuel Filler Cap



WARNING

- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.
- Do not smoke or permit open flames while fueling or near fueling operations.
- Supply fuel in a well ventilated place and with the engine stopped.
- Clean up spilled fuel immediately.
- Do not fill the fuel tank to capacity. Allow room for expansion.
- Tighten the fuel filler cap securely.



Opening

1. Open the key cover, insert the key and turn it clockwise to unlock the fuel cap.
2. Turn the fuel cap counterclockwise and remove it.

Closing

1. Set the fuel cap in place and turn it clockwise.
2. Turn the key counterclockwise to lock the fuel cap, then remove the key.



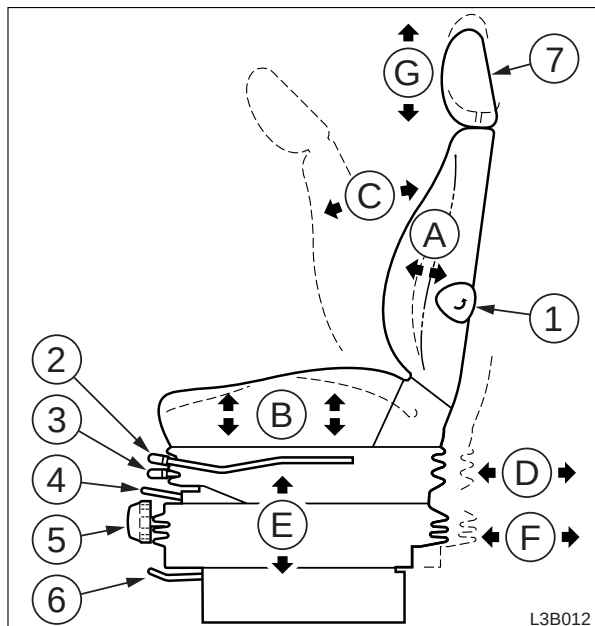
Seat and Seat Belt

Seat



WARNING

Adjust, secure and latch the operator's seat.



(A) Lumber adjustment

1. Turning knob (1) in the direction of the arrow causes the lumbar of the backrest to curve outwards for greater back support.
2. Turning the knob (1) further then removes the curve and returns the seat to its original position.
The knob (1) cannot be turned counter to the direction of the arrow.

(B) Seat cushion angle and height adjustment

- Lift lever (2) to adjust the rear angle of the seat cushion.
1. To raise the rear angle of the seat cushion, raise yourself slightly off the seat while lifting the lever.
 2. To lower the rear angle of the seat cushion, apply your weight to the rear of the seat cushion while lifting the lever.

- Lower lever (2) to adjust the front angle of the seat cushion.

1. To raise the front angle of the seat cushion, apply your weight to the backrest while holding the lever down.
2. To lower the front angle of the seat cushion, apply your weight to the front of the seat cushion while holding the lever down.

- To adjust the height of the seat, adjust the front and rear angles of the seat cushion alternately.
(5 steps, 60 mm (2.36 in.) adjustment range)

Example: First raise the front angle of the seat cushion, then raise the rear angle of the seat cushion by the same amount. This raises the height of the seat.

- After adjusting to the desired position, release the lever to lock it.

(C) Back angle adjustment



WARNING

- **Do not set the seat back to its maximum reclining position and slide the seat backwards at the same time. Doing so may break the rear window glass, resulting in injury.**
- **Be careful not to allow the force of the spring to bring the seat back sharply forward.**

1. Raising your torso, sitting down firmly in the seat.
2. Pulling lever (3) allows you to use the pressure of the springs in the seat pressing against your back to adjust the reclining angle of the seat back. Release the lever (3) at the desired angle and the seat back will remain fixed in that position.

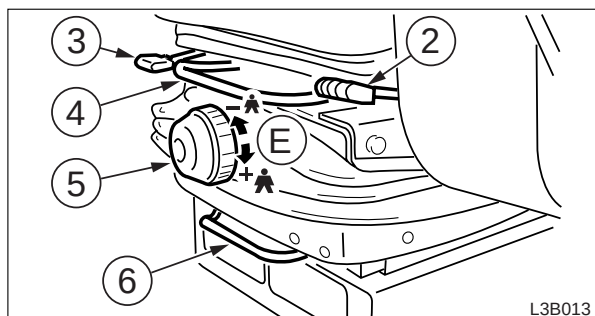


Seat and Seat Belt

(D) Fore-and-aft adjustment

1. Pull on lever (4) and slide the seat backward or forward to bring it to the optimum position for operating the machine.
2. Release the lever (4) at the desired position and the seat will remain fixed there.

Adjustment stroke: 17 steps, 160 mm (5.9 in.)



(E) Weight adjustment

1. Turn handle (5) and set it to indicate the weight of the person to operate the machine.

May be set to any value from 50 to 120 kg (110 to 265 lbs.)

(F) Lever stand adjustment

1. Pull on lever (6) and slide the lever stand backward or forward to bring it to the optimum position for operating the machine.
2. Release the lever at the desired position and the lever stand will remain fixed there.

Adjustment stroke: 70mm (2.8 in.)

(G) Headrest adjustment

The position of the headrest (7) can be adjusted in the up and down directions.

1. Grasp the headrest with both hands and move it upwards or downwards.



Seat and Seat Belt

Seat Belt

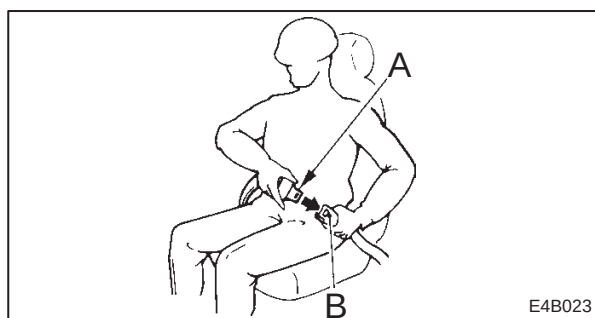


CAUTION

Always fasten the seat belt securely before starting the engine.

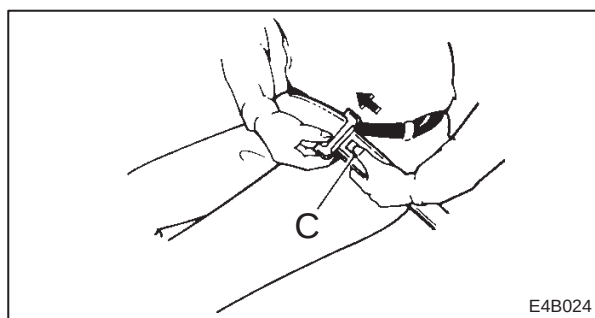
Fastening the seat belt

1. Adjust the seat to the optimum position for operating, raise your torso, and sit back firmly into the seat.
2. Pull the seat belt to the desired length.

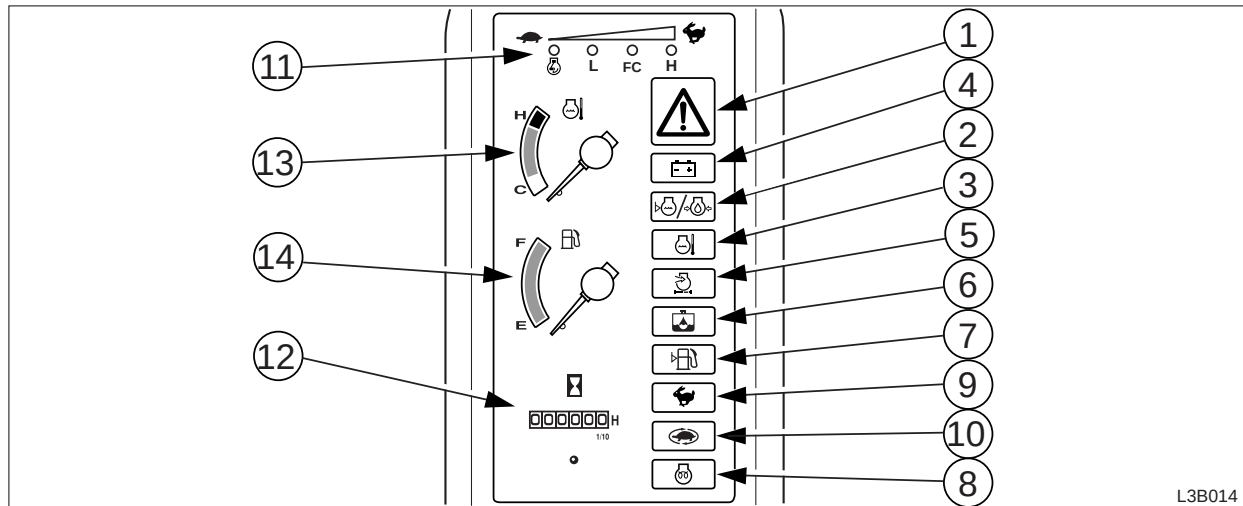


3. Make sure that the belt is not twisted and then insert the tongue plate (A) into the buckle (B) of the seat belt until you hear a clicking sound as it locks in place.

Releasing the seat belt



1. To remove the seat belt, simply press the button (C) located on the buckle. The seat belt is automatically stowed away.



L3B014

Warning Lamps

IMPORTANT: If a warning lamp flashes and an alarm is sounded, stop all operations immediately and inspect and maintain the appropriate part.

Refer to page 148 "Troubleshooting".

1. Engine Emergency Lamp



G4B009

This lamp flashes and an alarm is sounded if the engine oil pressure or the coolant level in the radiator

drops or the coolant temperature rises abnormally while the engine is running. After approximately 5 seconds, the engine stops or low idling automatically.

2. Engine Oil Pressure / Coolant Level Warning Lamp



L3B036

This lamp flashes and an alarm is sounded if the lubricant oil pressure or coolant level in the radiator drops abnormally while the engine is running.

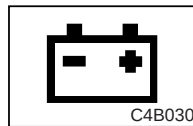
3. Coolant Temperature Warning Lamp



C4B012

This lamp flashes and an alarm is sounded if the engine coolant temperature rises abnormally while the engine is running.

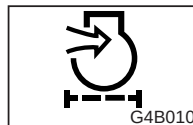
4. Battery Charge Warning Lamp



C4B030

This lamp flashes and an alarm is sounded if a problem arises in the charging system while the engine is running.

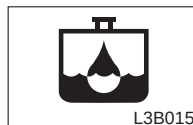
5. Air Cleaner Warning Lamp



G4B010

This lamp flashes and an alarm is sounded if the air cleaner filter is clogged while the engine is running.

6. Water Separator Warning Lamp



L3B015

This lamp flashes and an alarm is sounded if the water is detected within the water separator while the starter switch is in the ON position.

7. Fuel Level Warning Lamp



L3B016

This lamp lights when the fuel level is low while the starter switch is in the ON position.



Indicators

8. Glow Lamp



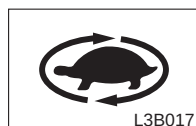
This lamp turns off when engine preheating is completed.

9. Travel Speed Lamp



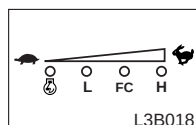
This lamp lights when the travel speed switch is set to 2nd (high speed).

10. Slow Speed Slew Lamp



This lamp lights when slow speed slew switch pressed, the slew speed decreases.

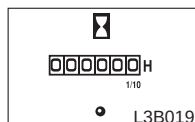
11. Power Mode Lamp



These lamps indicate the engine speed.

Meters

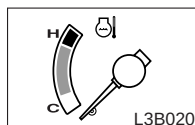
12. Hour Meter



This displays the total engine running time in hours. The rightmost digit indicates tenths of hours (6 minutes).

Set the inspection and maintenance intervals according to the time displayed on the hour meter.

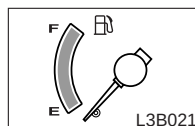
13. Water Temperature Gauge



This gauge indicates the temperature of the engine coolant water.

The needle should be within the green range during machine operation. The red range indicates overheating.

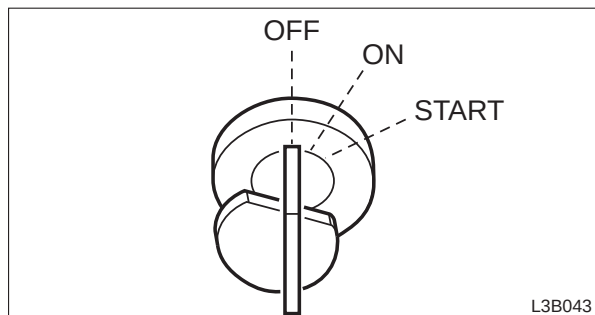
14. Fuel Gauge



This gauge indicates the amount of fuel in the tank. Be sure to top off the tank before running out of fuel.



Starter Switch



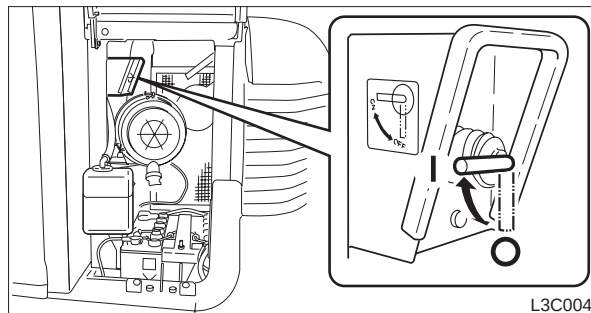
IMPORTANT: Do not repeatedly switch the key from OFF to ON and ON to OFF over a short period. Doing so will cause engine breakdown.

- OFF Position for stopping the engine and inserting or removing the key.
- ON Position in which the engine is running. At this position, all the electrical equipment is functional. When the coolant temperature is low, the air heater is energized and automatic preheating is done.
- START Position for starting the engine. When the key is released, the switch automatically returns to the ON position.

Battery Switch

IMPORTANT: Never set this switch to the OFF (O) position while the engine is running.

Doing so might cause damage to the electrical system.

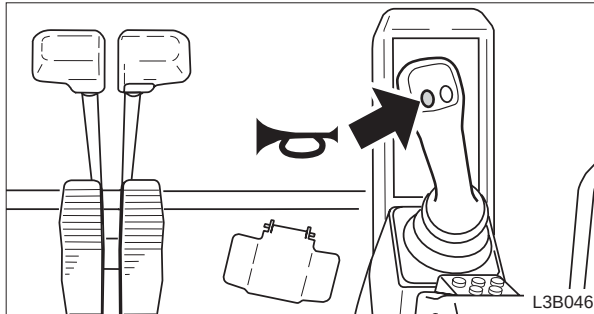


- OFF (O) .. Switches off the electrical circuit. Be sure to set this switch to the OFF (O) position when storing the machine for a long period, or when performing maintenance of the electrical system.
- ON (I) Connects the electrical system. Check that this switch is in the ON (I) position before starting the engine.

Supplement: Setting this switch to the OFF (O) position will shut down all of the electrical circuits and the memory of the radio preset tuning buttons will be deleted.



Horn Button



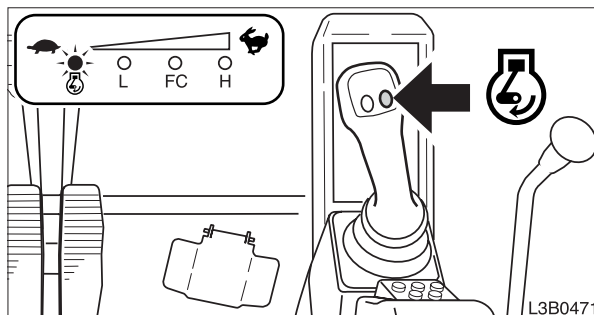
Press the button on the right operating lever to blow the horn.

Decel. Button



WARNING

Set the operating and travel levers to neutral before operating the decel. button. The machine's operating speed will change abruptly if the button is operated while the levers are engaged.



Press the button on the right operating lever to lower the engine speed to low idling. Press the button again to return to the engine speed set with the throttle or power mode buttons.

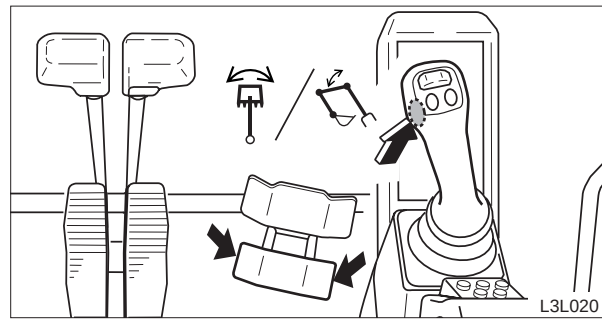
Note: The one-touch decelerator is a device for lowering the engine speed and reducing fuel consumption when little engine output is required, for example when the operating and travel levers are in neutral.

Selector Button (2-Piece boom)



WARNING

Pressing (switching ON or OFF) the selector button while the boom swing pedal is depressed is dangerous, since the attachment will move unexpectedly. Always set the boom swing pedal back to the neutral position before operating the selector button.

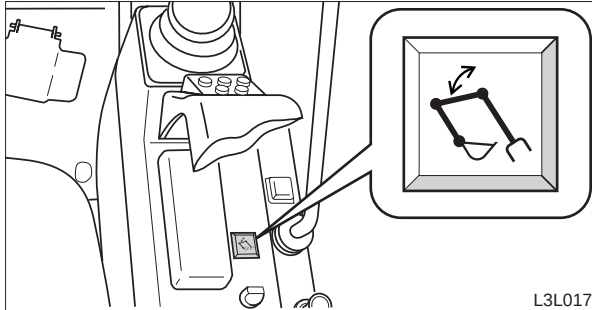


This button changes from the boom swing operation to the intermediate boom operation.

Press this button to change over to operation of the intermediate boom. The intermediate boom operation indicator lamp will light. One more press of this button will result in a return to boom swing operation. Actual operation is performed with the boom swing pedal.



Intermediate Boom Operation Indicator Lamp (2-Piece boom)



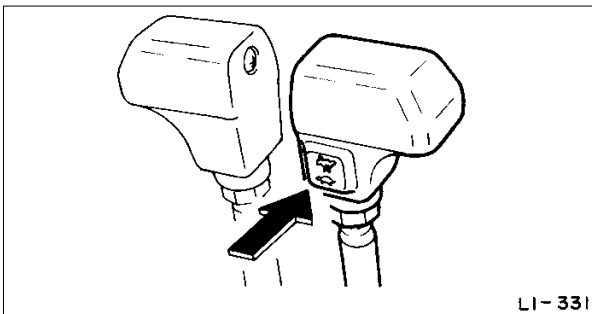
This lamp illuminates when the intermediate boom operation is chosen by the selector button.

Travel Speed Switch



WARNING

When a load greater than a set value is applied during 2nd speed (high speed) travel, the speed will automatically slow down by switching to 1st speed (low speed). Thereafter, when the load becomes lighter, the speed will increase by returning to 2nd speed (high speed). Exercise due caution since the travel speed changes automatically.



Press this switch to set the travel speed to 2nd speed (high speed). Press again to return to 1st speed (low speed).

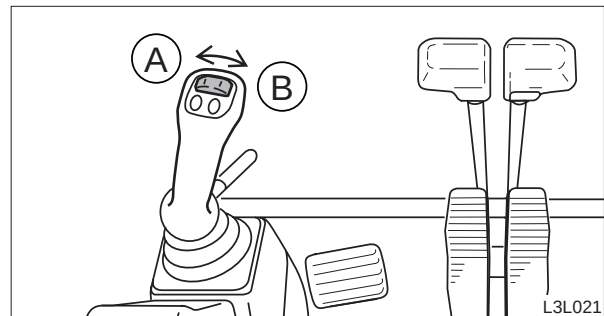
First Auxiliary Hydraulic Switches

Slider Switch

(Proportional control)

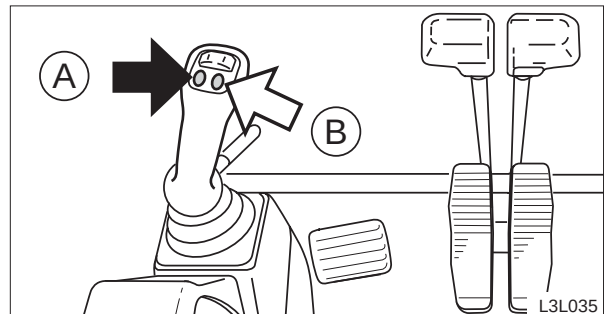
Proportional control allows for slow-to-fast movement of auxiliary functions.

Example: If you move the slider switch half way, the auxiliary function will move at approximately one-half speed.



Move this switch to control the flow of the oil in the first auxiliary hydraulic lines.

Auxiliary Hydraulic Buttons



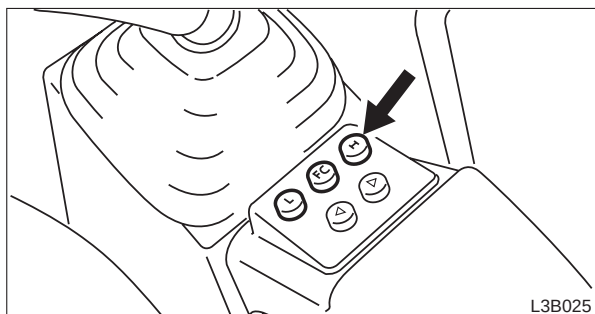
Press those buttons to control the flow of the oil in the first auxiliary hydraulic lines.

- Proportional control of the auxiliary hydraulic circuit is not possible.

- (A) Hydraulic oil flows to left auxiliary line(a)
(B) Hydraulic oil flows to right auxiliary line(b)

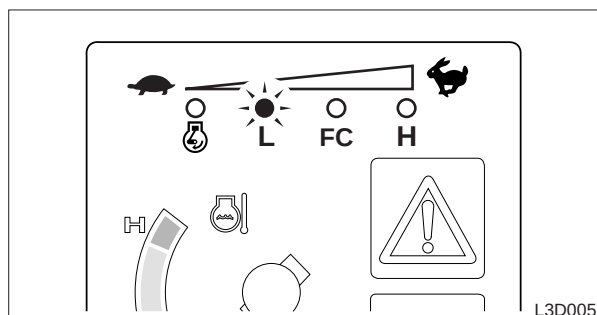


Power Mode Buttons



L3B025

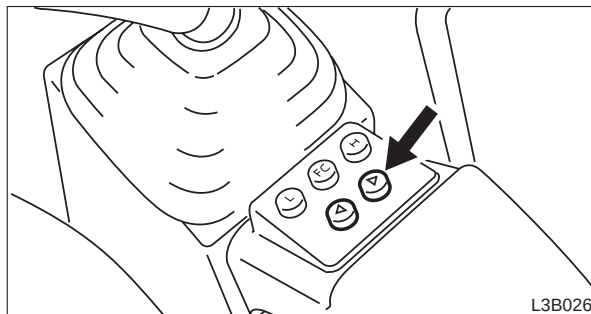
The engine speed can be changed at the touch of a button. When one of these buttons is pressed, the engine is set to the set speed and the power mode indicator lights.



L3D005

- L:** This mode is always set when the engine is started.
Use it for light and very light operations.
- FC:** Use this mode for light operations and leveling operations which do not require speed. Using this mode reduces fuel consumption and noise.
- H:** Use this mode for general digging and loading operations requiring power and speed.

Throttle Buttons



L3B026

The engine speed increases and decreases continuously while these buttons are pressed. When the button is released, the engine speed is set to the speed at the time the button is released.

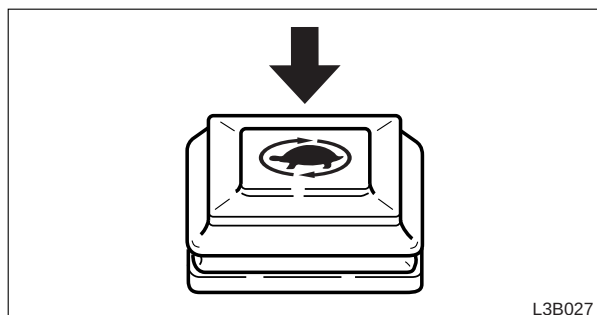
▶: Engine speed increases

◀: Engine speed decreases

When the throttle buttons are operated and the engine speed is at a point between the different modes, the lamps on both sides light. When the speed is changing, only the lamp for the nearest engine speed lights.



Slew Speed Switch



Pressing this switch shifts rotation into Slow speed, bringing its speed down to the minimum. Slow speed is useful for performing tasks that require precision handling even at the cost of speed or efficiency.

Slow speed

The lamps on the switch and instrument panel will light up. Used for low speed slew. The maximum set speed in slow speed can be adjustable.

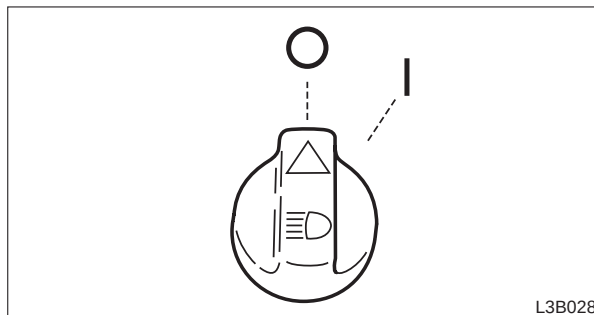
Upon shipment, it is set to 7.6 min^{-1} (7.6 rpm). Contact a Takeuchi sales or service outlet for change.

Normal speed

The lamps will go out and slew will return to its normal speed.

Supplement: As a safety precaution, the machine is designed so that you cannot switch to normal speed while slewing in slow speed. You must instead bring the rotation to a temporary halt and then press the slew speed switch to return to normal speed.

Light Switch



When this switch is turned while the starter switch is at ON, the lights turn on as follows:

O Off

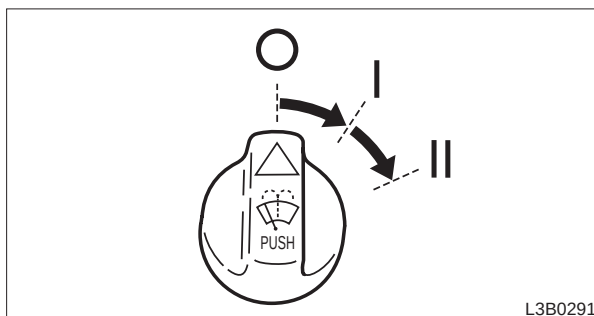
I Meter light, front light, side lights, tail lights and boom light turn on.

Wiper Switch

IMPORTANT: If no washer fluid is discharged, do not operate the washer. Doing so may damage the pump.

IMPORTANT: Operating the wiper with no moisture on the windshield will scratch the glass. Apply water or washer fluid when operating the wiper.

IMPORTANT: In cold seasons, the wiper blade may freeze to the glass. Operating the wiper forcibly may damage the wiper motor.



O Off

I Wiper INT

II Wiper

PUSH Washer

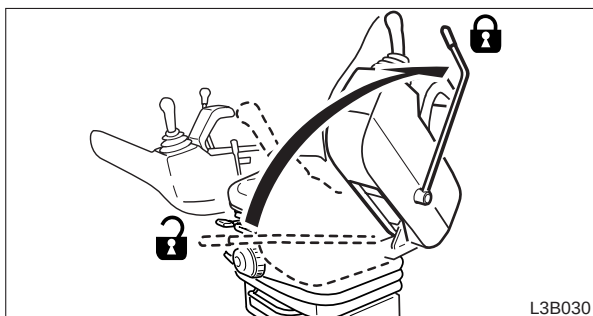


Levers and Pedals

Safety Lock Lever

WARNING

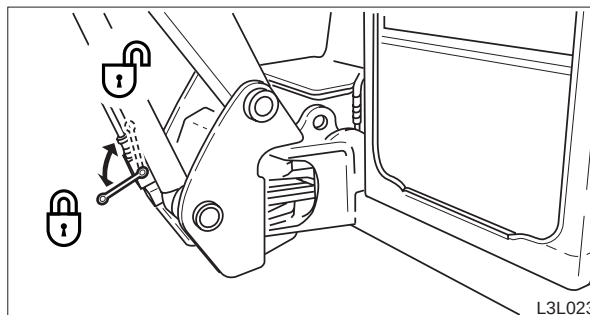
- Before leaving the operator's seat, raise the safety lock lever to engage the lock and stop the engine. If any controls should be touched accidentally when the safety lock lever is lowered, the machine will move suddenly, and cause serious injury or death.
- Note that the dozer blade control is not locked, even when the safety lock lever is set to the lock position. Do not touch this control accidentally.
- Be careful not to touch the operating levers when raising and lowering the safety lock lever.



This device is for locking the hoe attachment, auxiliary hydraulic control, slewing and traveling.

When the lever is raised, the lever stand springs up and the lever is locked.

Boom Lock Valve (2-Piece boom)



Serial No. 17510003 ~ 17512503

This valve blocks the hydraulic oil flow to prevent the boom from lowering.

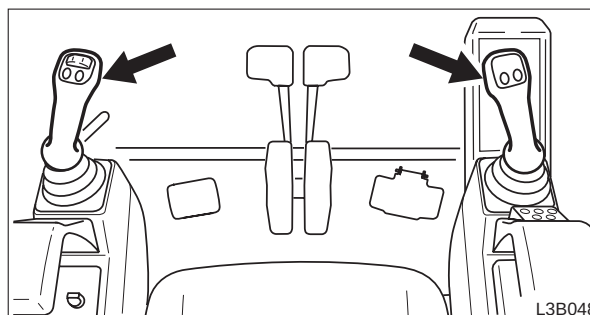
Lower the lever to engage the boom lock.

Raise the lever to disengage the boom lock.

Operating Levers

WARNING

- Be careful to check which pattern of lever control arrangement you are operating with before beginning operations.
- The explanations in this manual are for the ISO pattern.



Use these levers to operate the boom, arm, bucket and upperstructure (slew).

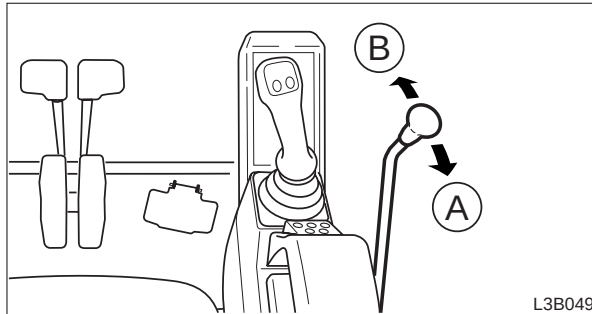
Refer to page 68 "Lever Pattern".

Refer to page 75 "Operating the Working Equipment".



Levers and Pedals

Blade Lever



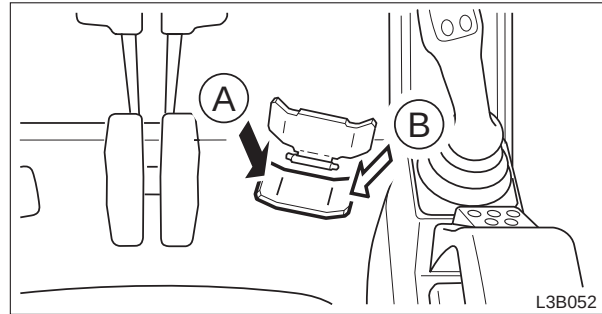
Use this lever to operate the dozer blade.

(A) Blade up

(B) Blade down

Refer to page 76 “Operating the Dozer Blade”.

Boom Swing Pedal



Use this pedal to operate the boom swing. Operation switches to the intermediate boom when the selector button is pressed.

(A) Boom swing left/Intermediate boom raise

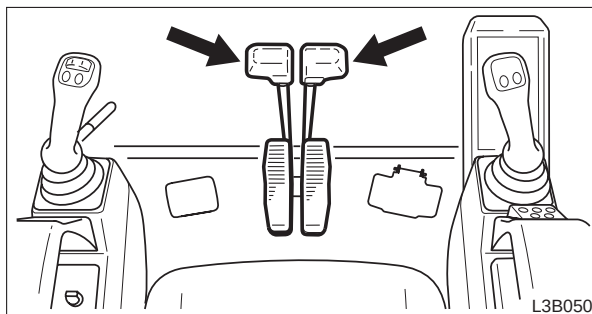
(B) Boom swing right/Intermediate boom lower

Refer to page 76 “Operating the Boom Swing” or “Operating the Intermediate Boom”.

Travel Levers

WARNING

Before operating the travel levers, check to make sure that the dozer blade is to the front of the operator's seat. **BE AWARE** that when the dozer blade is to the rear of the operator's seat, the travel levers operate in the opposite direction to when the dozer blade is in the front.



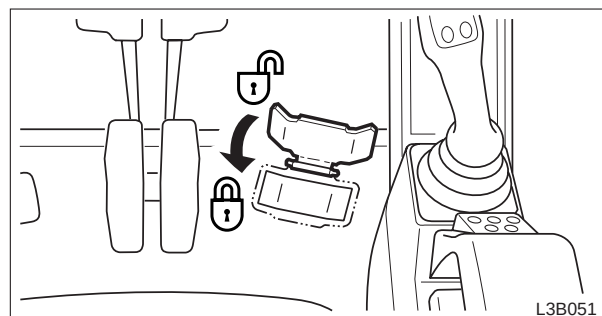
Use these levers to move forward and backward and to change directions.

Refer to page 72 “Operating the Travel Levers”.

Pedal Lock

WARNING

When not using the pedal, set the pedal lock to the locked position. Stepping on a pedal accidentally when it is not locked may lead to unexpected accidents.



This device is for locking the swing pedal. Set the pedal lock over the pedal to lock it.

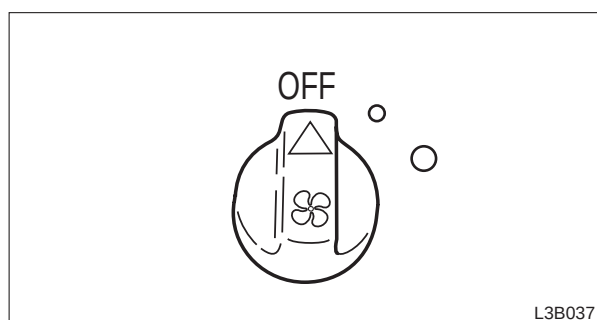


Heater

WARNING

- Always be sure to allow sufficient ventilation.
- Do not place combustible or explosive objects near the air outlets.

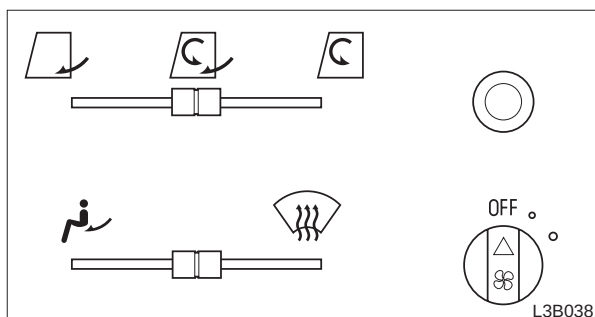
Fan Switch



OFF .. Off

- o Heater fan rotates at low speed.
- O Heater fan rotates at high speed.

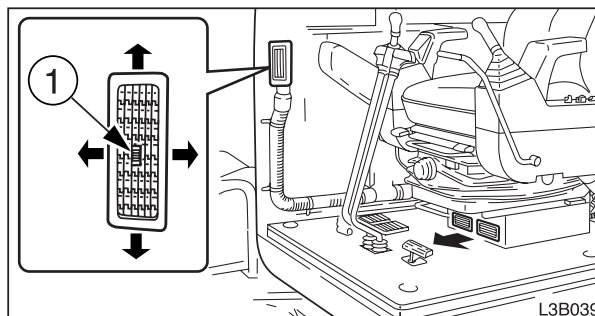
Heater / Defroster / Ventilation / Circulation Switch



Use this switch to heat the cab and to defrost the windshield.

-  Heater
-  Windshield defroster
-  Full ventilation
-  Half ventilation
-  Internal circulation

Outlets



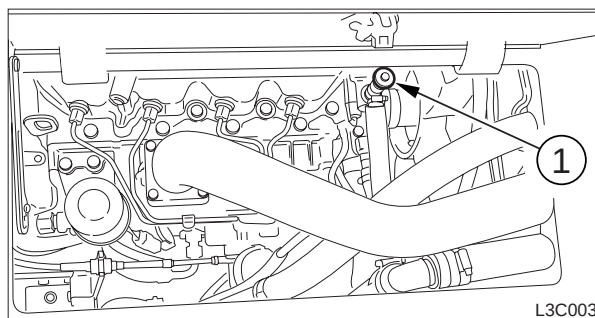
Move knob (1) up and down or left and right to adjust the direction of the air.

Supplement: Use the heater with care in warm seasons. Coolant circulates in the heater even when the heater switch is turned off.

When the heater is no longer needed, stop coolant circulation as follows:

IMPORTANT: Use the valve (1) either fully open or fully closed.

Cooling water could leak when the valve is set at a halfway position.



1. Park on a flat surface and stop the engine.
2. Open the maintenance cover.
3. Turn the valve (1) clockwise until it stops to close it.



First Auxiliary Hydraulic Lines

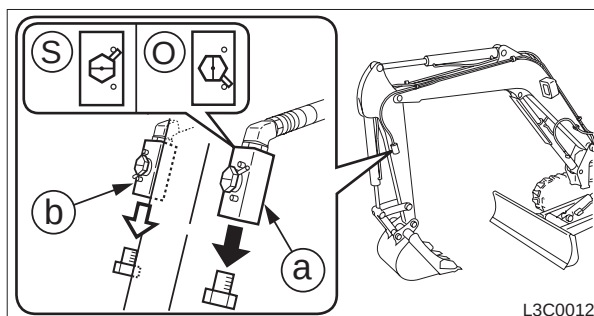


WARNING

Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.

- When disconnecting hoses, release the internal pressure before removing.

These lines deliver the hydraulic oil necessary for operating a hydraulic breaker, crusher or other attachments.



Stop valve (S) : Closed (O) : Open

Connecting the Hydraulic Circuits

To connect the attachment hydraulic lines, use the following procedures:

1. Release the pressure remaining in the lines then close the stop valve.
Refer to "Releasing the residual pressure".
2. Remove the plugs.
3. Connect the attachment hydraulic lines to ports (a) and (b).
When fitted with a hydraulic breaker, connect the return circuit to port (b) and the supply circuit to port (a).
4. Open the stop valves.
When fitted with a hydraulic breaker, open the selector valve (1).
Refer to page 57 "Selector Valve".
5. When connecting is complete, purge air from the hydraulic lines.
 - a. Start and run the engine at low idle with no load for 10 minutes.

- b. With the engine running at low idle operate the auxiliary hydraulic switches repeatedly (approx. 10 times) to purge air from the hydraulic lines.
- c. Stop the engine and wait for more than 5 minutes until bubbles escape from the hydraulic oil in the tank.

IMPORTANT: Follow the procedures for purging air as instructed by the attachment manufacturer if specified to do so.

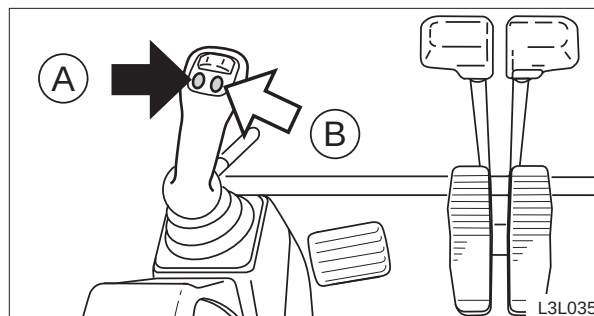
6. Check for leaks.

Disconnecting the hydraulic circuits

1. Release the pressure remaining in the lines then close the stop valve.
Refer to "Releasing the residual pressure".
2. Disconnect the lines from ports (a) and (b).
3. Install the plugs.

Releasing the residual pressure

After using the auxiliary hydraulic circuits, pressure remains in the circuits. This is called the residual pressure. Release this residual pressure before disconnecting the lines.

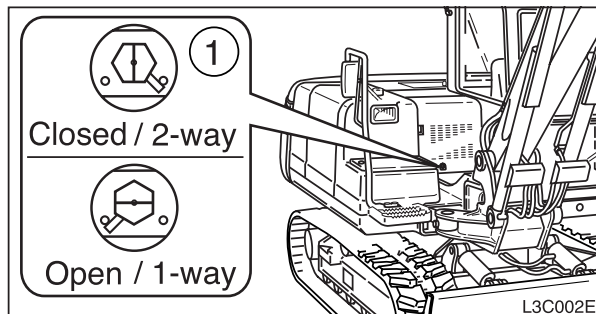


1. Start the engine and press the auxiliary hydraulic button (B).
(The residual pressure is released from the (a) port line, and pressure is generated in the (b) port line.)
2. Stop the engine and open the selector valve (1) on the machine body.
(The residual pressure is released from the (b) port line.)

When equipped with accumulator (option):
Refer to page 199 "Accumulator".



Selector valve



Open When using a hydraulic breaker (1-way flow)

Closed When using a reversible attachment (2-way flow)

Change the direction of the hydraulic oil flow by opening or closing the selector valve on the machine body.

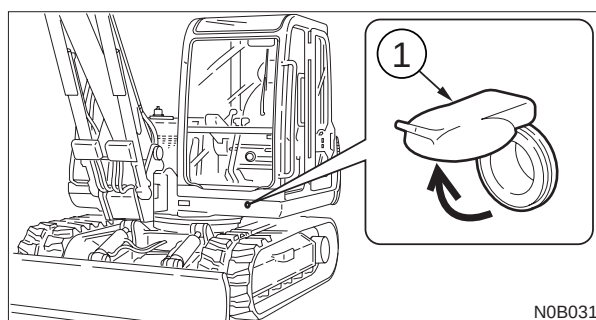
Use these sockets as an external power supply. When using this socket, be careful not to exceed 24V/5A.

To use, raise the cap (1).

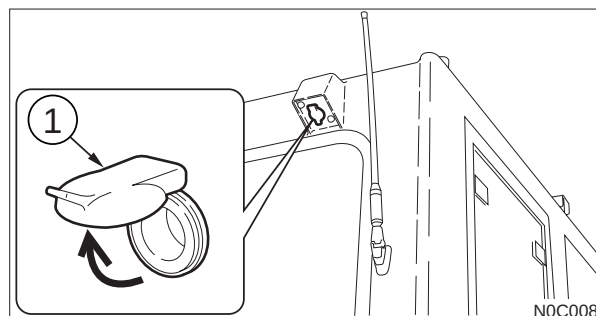
External Power Sockets (for EU)

WARNING

Only use applicable electric products with these sockets.

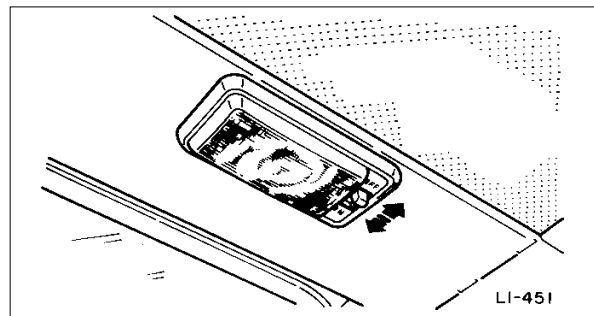


for Beacon



Interior Light

IMPORTANT: The battery capacity will decrease if the interior light is left on for long periods of time the engine stopped. Turn the lamp off when leaving the machine.



OFF Lamp is turned off all the time, with no regard for the door being opened or closed.

Neutral Lamp is turned on when the door is opened, and it turned off when the door is closed.

ON Lamp is turned on all the time, with no regard for the door being opened or closed.



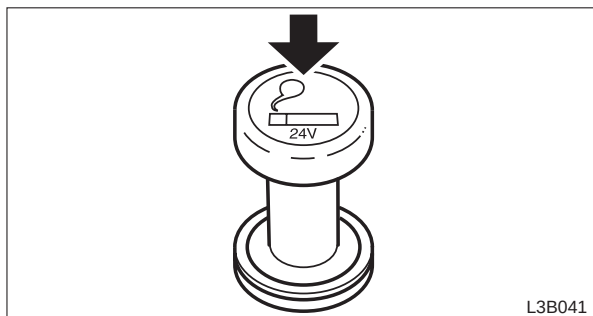
Cigarette Lighter

WARNING

- Do not leave the cigarette lighter's knob pressed in. Doing so heats up the lighter, and could be dangerous.
- If the knob does not pop out after 30 seconds, it may be broken. Pull it out by hand.
- Do not use other cigarette lighters, as they may get stuck.
- Only use applicable electric products with this socket.
- Do not touch metal parts of the lighter. Doing so could cause burns.

This is the cigarette lighter and internal power supply socket.

When using this socket, be careful not to exceed 24V/5A.

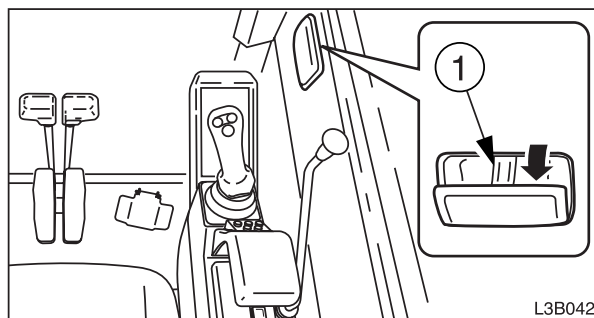


1. Press the lighter in.
2. Release the lighter and wait for it to pop out. The lighter pops out automatically when the heater becomes red.
3. Once the lighter pops out, pull it out.

Ashtray

WARNING

- Be sure to extinguish cigarettes and matches completely before putting them in the ashtray, and always close the ashtray afterwards.
- Do not overfill the ashtray with cigarette butts or put in paper or other easily burnable objects. Doing so could lead to fire.



Pull the ashtray out towards you to use it. To clean, press the ash discharge button (1) and pull out the ashtray.

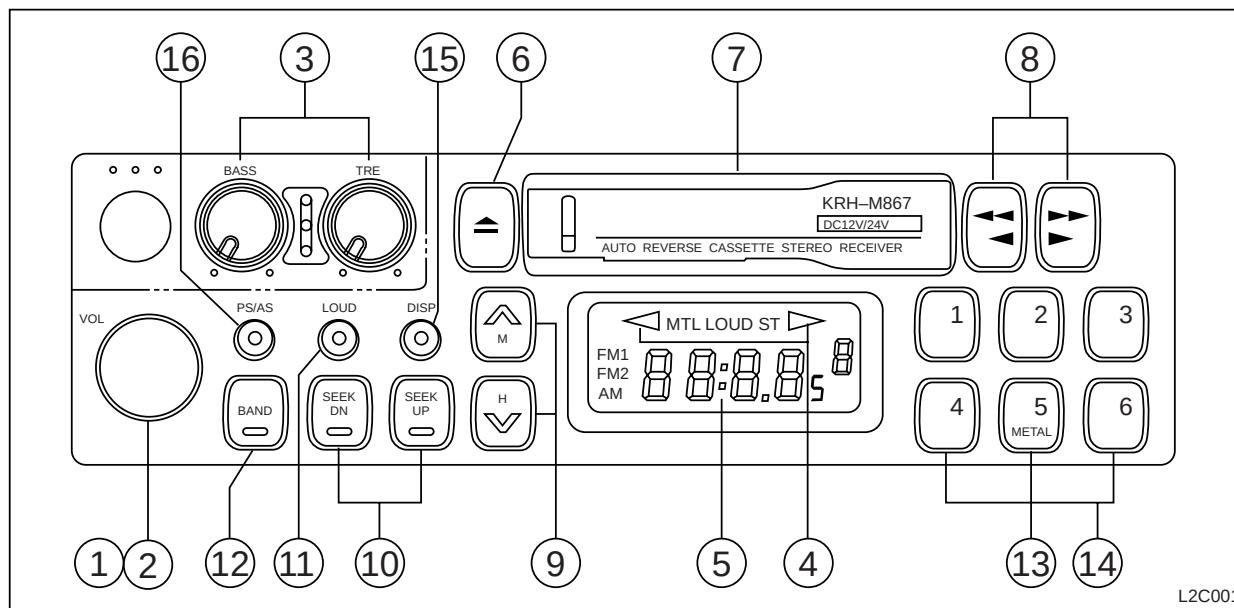


Radio

Operating precautions

- To ensure safe operation of the machine, always be sure to keep the volume of the radio down to a level where you can easily hear sounds from outside the machine.
- Do not keep the radio playing for long periods of time with the engine stopped. Doing so will drain the battery of its charge and make it difficult or impossible to restart the engine.
- Be careful not to allow water or other liquids to come into contact with the radio. Doing so may result in it being rendered inoperable.
- Be careful not to insert cassette tapes backward. Doing so may damage the cassette player. Insert tapes with the head of the tape facing to the right.
- Always remove the cassette from the player when not in use.

Names of components



L2C001

(1) (2) Power switch / volume control knob

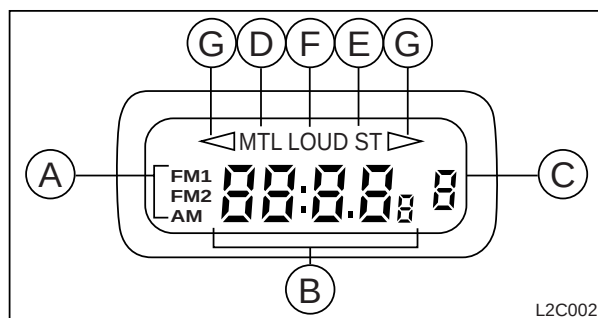
Turn this knob clockwise. The “click” sound indicates that the power supply is turned on. Further turning increases the speaker volume. If a tape is loaded in the radio, eject the tape to switch to the radio.

(3) Tone control

- Bass control knob
- Treble control knob

**(4) Program indicators**

Indicates tape direction. When ► lamp is on. Upper side of a tape is playback, ◀ indicates playback of lower side.

(5) Display

- (A) Band
- (B) Time/Frequency
- (C) Memory channel(1-6)
- (D) Metal
- (E) FM Stereo
- (F) Loudness
- (G) Tape direction

(6) Eject button

Push this button to eject the cassette tape.

- To change over to radio while listening to a cassette tape, press the EJECT button to stop the tape and the system will automatically change over to radio.

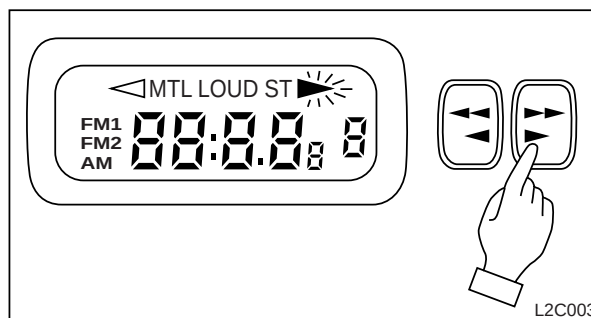
(7) Cassette door

Insert the cassette tape with the exposed magnetic tape side facing to the right.

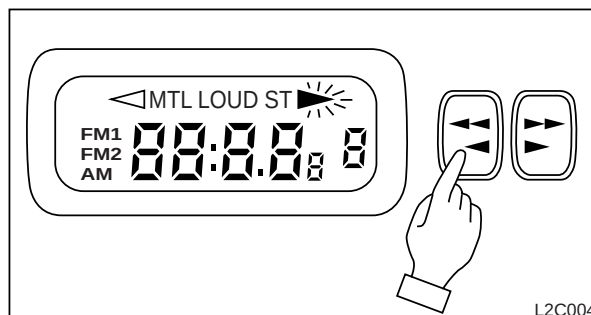
- Simply insert a tape to change over to the cassette tape mode while listening to the radio.

(8) Fast-forward / rewind / program changeover button

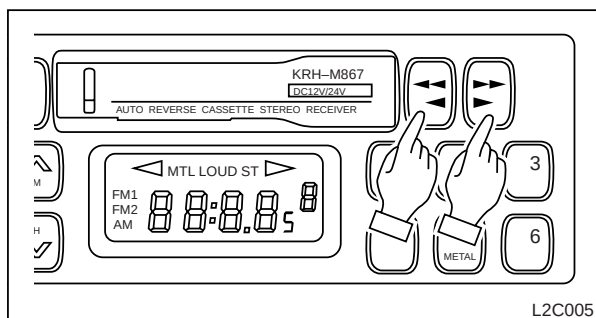
Fast-forward



Fast-rewind / Stop



To fast-forward the tape, push the button matching the direction of program indication and to rewind, push the other button. To stop fast-forwarding or rewinding, lightly press the button which is not locked to cancel the operation. The system will then start playing the tape again normally.



To change the program, press the fast-forward and rewind buttons simultaneously. The direction of tape feed will reverse.

- When the tape ends in one direction, the system automatically reverses the tape and plays the other side.
- To stop fast-forwarding or rewinding, lightly touch the unlocked key. This frees the locked key and normal playing resumes.

(9) Tuner switch (Manual tuning)

Pressing the $\wedge$ shaped TUNER button raises the receiving frequency. Pressing the $\vee$ shaped TUNER button lowers the receiving frequency similarly. Pressing either of these buttons continuously shifts the receiving frequency continuously.

(10) SEEK switch

Pressing the “SEEK” button shifts the receiving frequency in the higher or lower frequency direction before automatically stopping at a position where a station is picked up.

(11) LOUD switch

This button is used to operate the system at a lower sound volume but with enhanced bass and treble sound. (“LOUD” indication appears on the display.)

(12) Band select switch

Pressing the “BAND” button changes over between FM1, FM2 and AM (MW) bands. The display indicates the receiving band name and frequency.

(13) Metal switch

Press the “MTL” (5) button before playing a metal or CrO₂ tape.

The “MTL” indication appears on the display.

(14) Preset switch keys

One station each in the FM1, FM2 and AM(MW) bands, respectively, can be preset for each of these preset keys.

When listening to a preset station, select either of the AM, FM1, FM2 bands using the band select switch, then simply press the number key corresponding to the preset selected station.

The system can memorize 6 stations in AM band and 12 stations in FM bands (FM1: 6 stations and FM2: 6 stations).

Manual Memory

Use manual tuning button or seek tuning button to choose a radio station if a broadcasting station is wanted to be recorded. For 2 seconds press 1–6 preset key when the indication of frequency has already shown and the frequency is recorded. Flash stops and channel starts functioning.

- If the main power supply is interrupted, such as when exchanging machine battery, all presettings will be erased. Repeat the presetting procedure in such case.

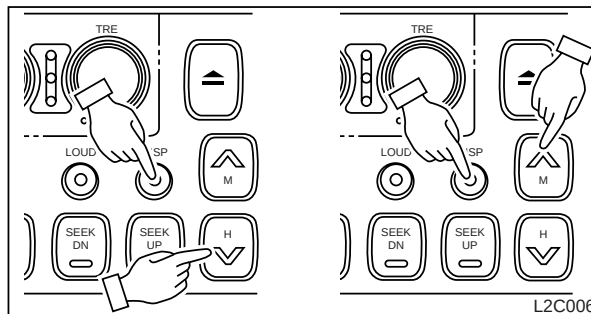
**(15) DISP(Time/Frequency) button**

This system is equipped with a clock which can show the accurate time. Even if the radio is off, the clock still shows the time.

(16) PS/AS switch

Push this button 2 sec below will automatically operates to show the memorized station from 1 to 6. The signal scanning start by pushing this button momentarily. When a station is received the scanning automatically stops there for 5 seconds FLASHLY and then resumes scanning. As soon as the desired station is found, press the this button again.

If you will auto memory push this button over 5 sec so initiates a scan of the band. Station frequencies are either stored in order of low of frequency for FM, or in sequence for AM, starting from preset channel 1. If all of the preset channels have not been filled up after one scan, the remaining preset channels are left unchanged, and channel 1 is recalled. Channel 8 flashes during A.

● Set the time

After pressing DISP button, press tuner button ∇ or Δ to correct the time. Press tuner button ∇ to set the "hour" and tuner button Δ for setting the "minute". Set the time when the time is shown.



OPERATION

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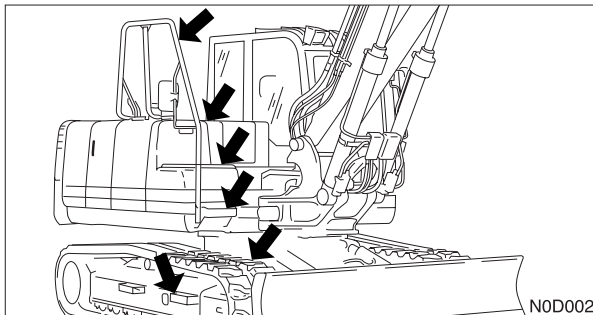
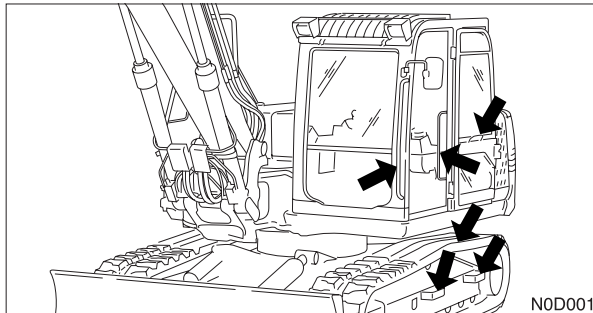
Before Starting Operation

Mounting and Dismounting



WARNING

- Do not jump on or off the machine. Never attempt to mount or dismount a moving machine.
- When mounting and dismounting the cab, first open the door fully to the locked position and check that it does not move.



- Always face the access system and maintain a three point contact with the recommended handrails and steps while getting on and off the machine. Keep steps and platform clean.
- Never use the safety lock lever or control levers as hand holds.

Walk-Around Inspection

Perform the walk-around inspections before starting the engine the first time that day. Perform the inspections as described under "Maintenance - Walk-Around Inspection" (pages 105 and 106).

Daily Inspection

Perform the daily inspections once a day before starting the engine the first time that day.

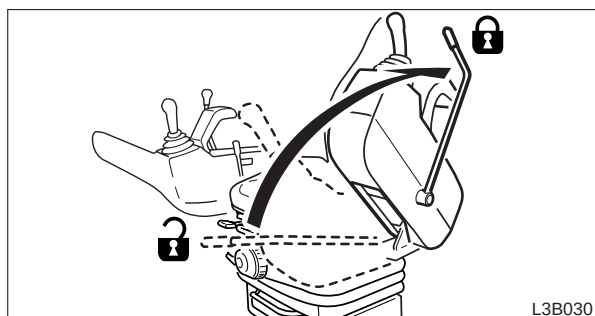
Perform the inspections as described under "Maintenance - Daily Inspection" (pages 107 to 111).



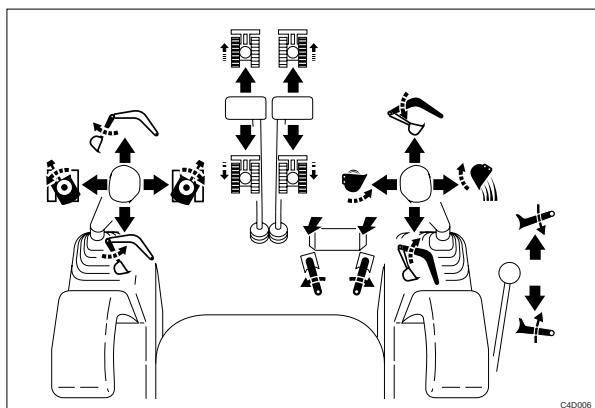
Starting and Stopping the Engine

Before Starting the Engine

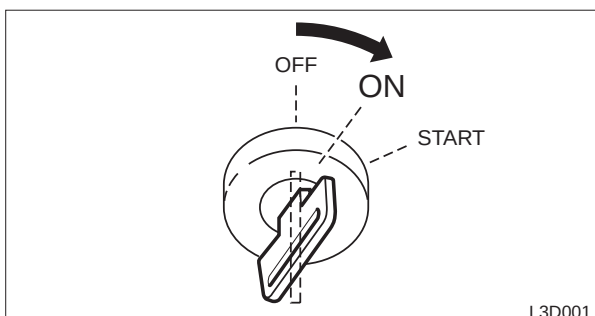
1. Adjust the seat for a comfortable operating position.
2. Fasten the seat belt.



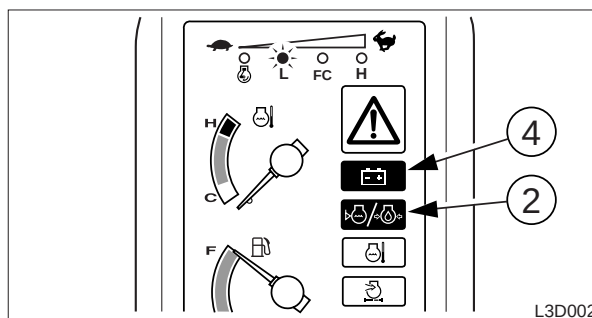
3. Check that the safety lock lever is in the locked position.



4. Check that all the levers and pedals are in the neutral position.



5. Insert the key into the starter switch, turn it to the ON position, then perform the following inspection:



IMPORTANT: Do not start the engine before the power mode lamp (L) lights.

- Check that the power mode lamp (L) is lit.
- All the warning lamps flash and an alarm is sounded for 2 seconds. The meters also start functioning. After 2 seconds, only the battery charge warning lamp (4) and engine oil pressure / coolant level warning lamp (2) flash, and the other lamps turn off.
- Turn the light switch to check that the boom light, front light, side lights, tail lights and meter light turn on.
- Check the fuel level.

If a lamp does not light or the alarm is not sounded, the bulb may be burnt out or a wire may be damaged. Contact a Takeuchi sales or service outlet for repairs.



Starting and Stopping the Engine

Starting the Engine

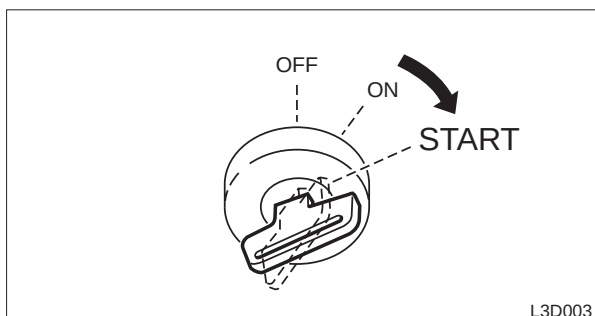


WARNING

- Clear the area of all persons.
- Sound horn to alert everyone around the machine.

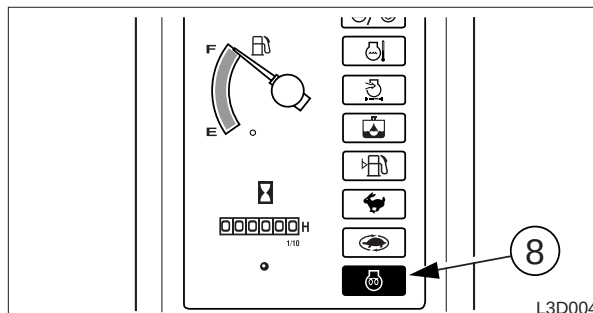
IMPORTANT: Do not run the starter motor for more than 15 consecutive seconds. If the engine fails to start, wait for 30 seconds to protect the battery, and then try again to start the engine.

Normal Starting

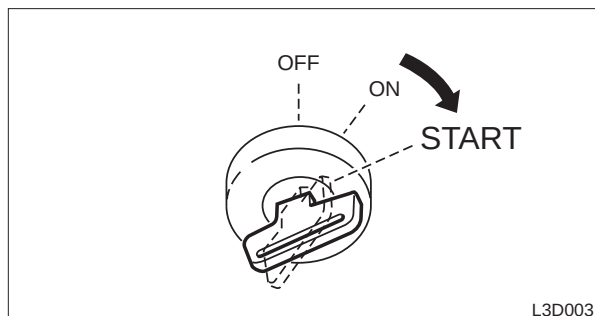


1. Turn the key to the START position and start the engine.
2. Once the engine starts, release the key. The key automatically returns to the ON position.
3. Check that the warning lamps are off.
4. Warm up the engine.
Refer to page 67 "Warming Up the Engine".

Starting in Cold Weather



1. Make sure that the glow lamp (8) is lit.
(The glow lamp lights for 15 seconds when coolant temperature is at -10°C (14°F)).



2. After the glow lamp (8) turns off, then turn the key to the START position and start the engine.
3. Once the engine starts, release the key. The key automatically returns to the ON position.
4. Check that the warning lamps are off.
5. Warm up the engine.
Refer to page 67 "Warming Up the Engine".

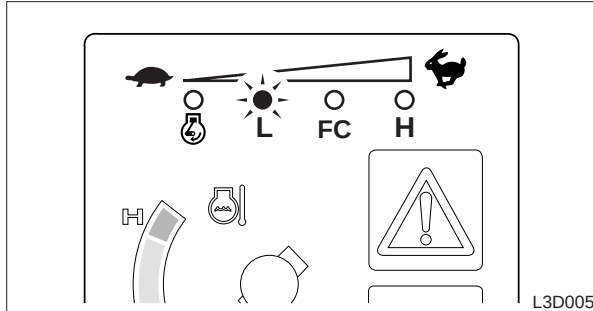


Starting and Stopping the Engine

Warming Up the Engine

IMPORTANT: Avoid racing the engine until it is warmed up.

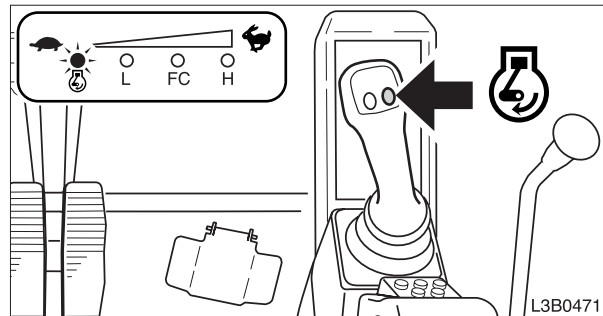
Do not warm up the engine for long periods of time (20 minutes or more).



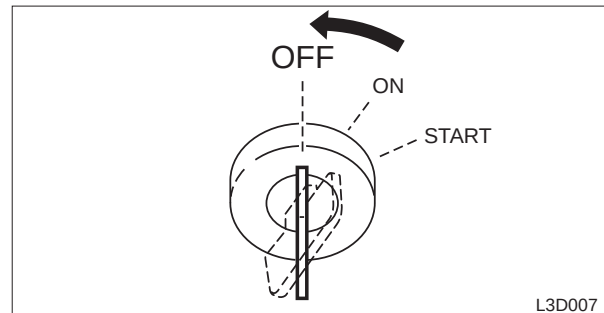
1. Make sure that the power mode lamp (L) lights, then idle the engine and run it for about 5 minutes with no load.

Stopping the Engine

IMPORTANT: Do not stop the engine suddenly when operating with heavy loads or at maximum speed. Doing so may cause the engine to overheat or seize. Never bring the engine to a sudden stop except in the case of emergency.



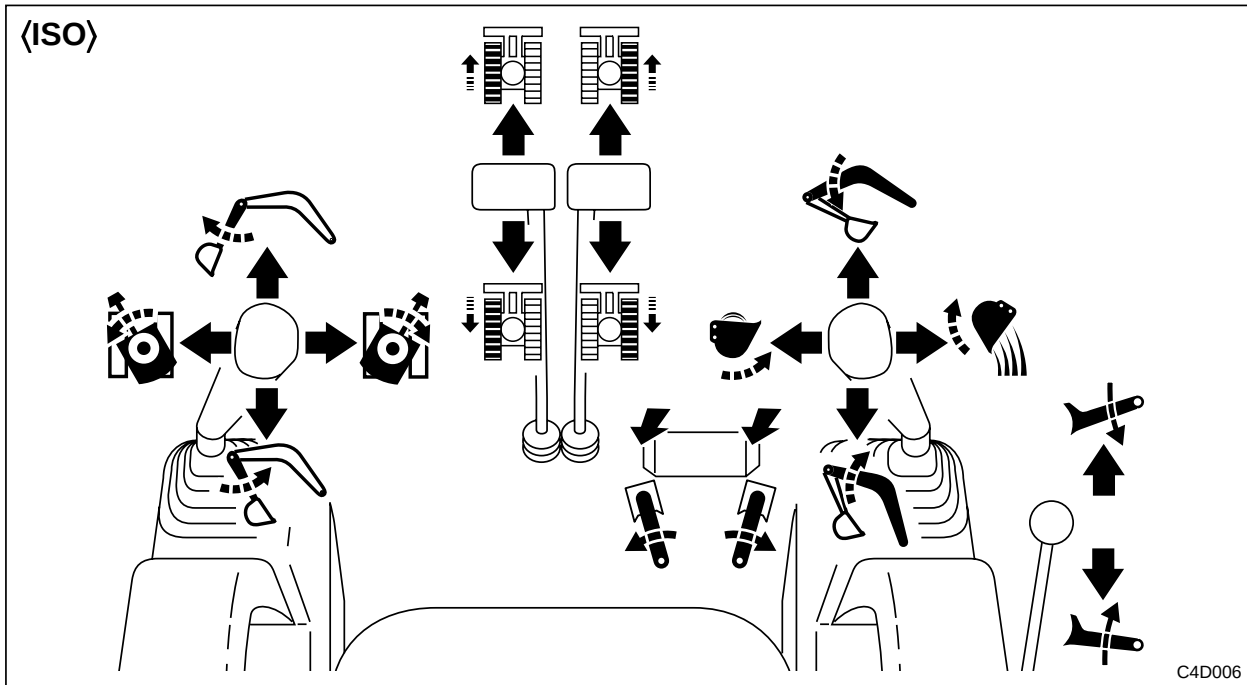
1. Press the decel. button.
2. Idle the engine for about 5 minutes to gradually let it cool.



3. Turn the key to the OFF position to stop the engine.

**Lever Pattern (ISO Pattern)****WARNING**

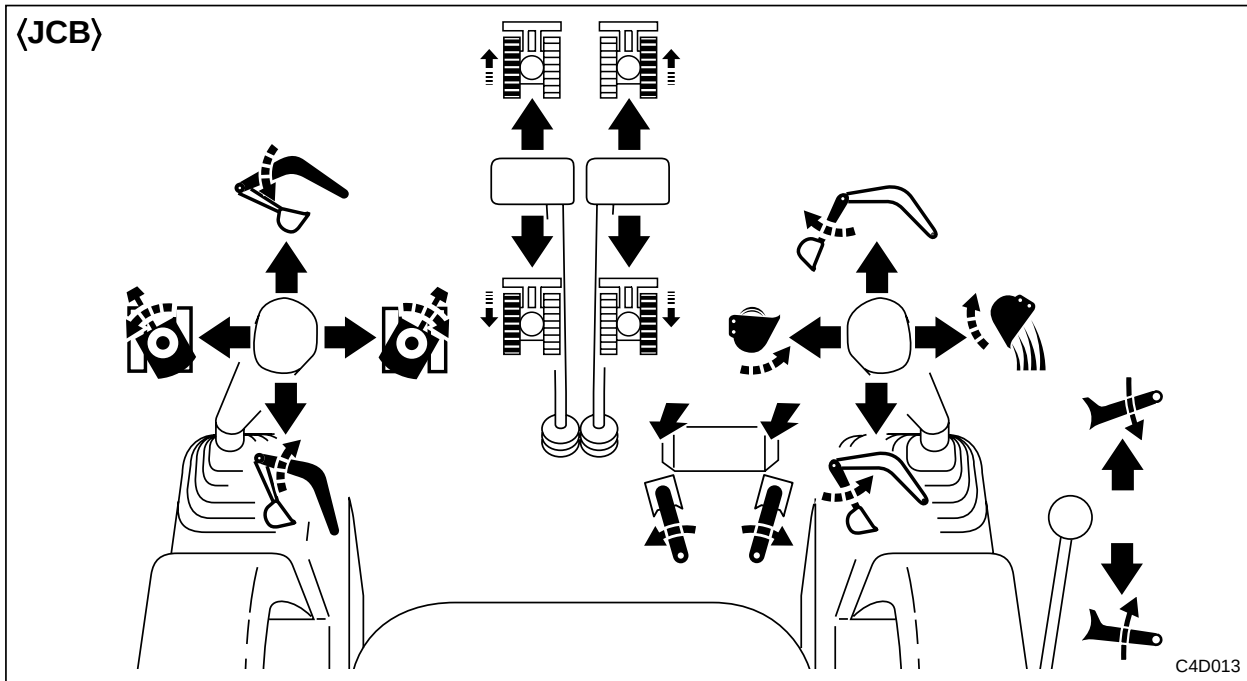
- Be careful to check which pattern of lever control arrangement you are operating with before beginning operations.
- The explanations in this manual are for the ISO pattern.



	Left Crawler Forward		Right Crawler Forward
	Left Crawler Reverse		Right Crawler Reverse
	Arm Out		Boom Lower
	Arm In		Boom Raise
	Upperstructure Slew Left		Bucket Load
	Upperstructure Slew Right		Bucket Dump
	Boom Swing Left		Dozer Blade Lower
	Intermediate Boom Raise		Dozer Blade Raise
	Boom Swing Right		
	Intermediate Boom Lower		

**Lever Pattern (JCB Pattern)****WARNING**

- Be careful to check which pattern of lever control arrangement you are operating with before beginning operations.
- The explanations in this manual are for the ISO pattern.



	Left Crawler Forward		Right Crawler Forward
	Left Crawler Reverse		Right Crawler Reverse
	Boom Lower		Arm Out
	Boom Raise		Arm In
	Upperstructure Slew Left		Bucket Load
	Upperstructure Slew Right		Bucket Dump
	Boom Swing Left Intermediate Boom Raise		Dozer Blade Lower
	Boom Swing Right Intermediate Boom Lower		Dozer Blade Raise



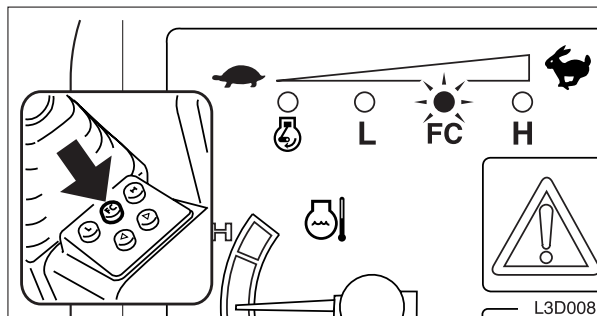
Warming Up the Machine (Hydraulic Oil)

**WARNING**

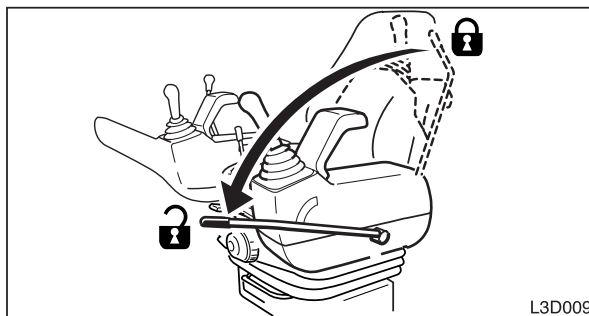
Operating the working equipment without warming up the machine (hydraulic oil) is dangerous, as response will be slow and the equipment may move in unexpected ways and safety devices may not operate properly. Be sure to sufficiently warm up the machine.

IMPORTANT: Do not operate the levers suddenly when the hydraulic oil temperature is below 20 °C (68 °F). The proper hydraulic oil temperature during operation is 50 to 80 °C (122 to 176 °F), but if operations must be performed at lower temperatures, heat up the hydraulic oil to at least 20 °C (68 °F).

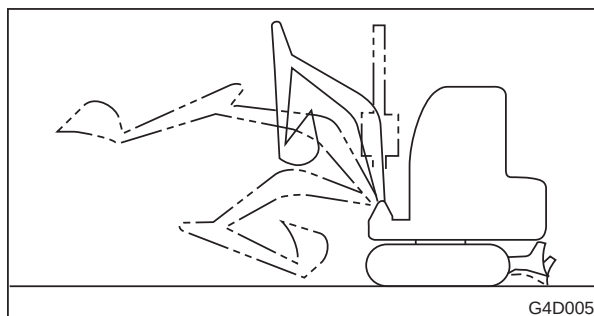
Normal Warm-up



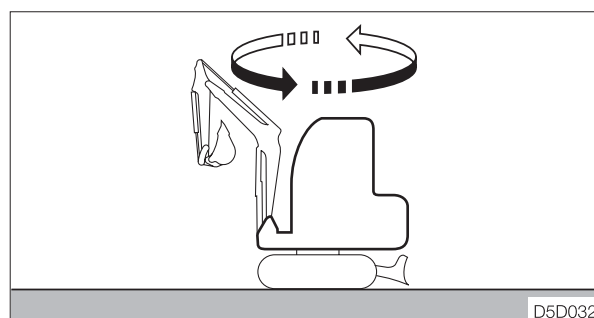
1. Run the engine at medium speed (FC mode) for about 5 minutes with no load.



2. Fully lower the safety lock lever to disengage the lock and lift the bucket from the ground.



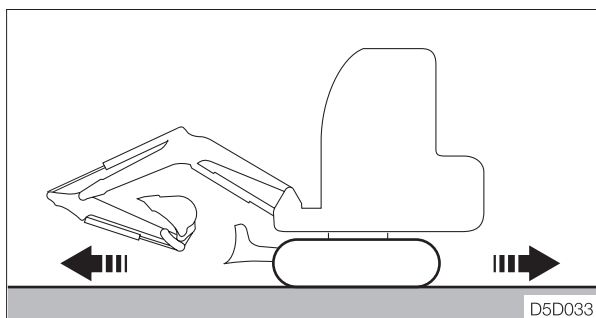
3. Extend and retract each of the cylinders several times with no load.



4. Slew slowly left and right several times.



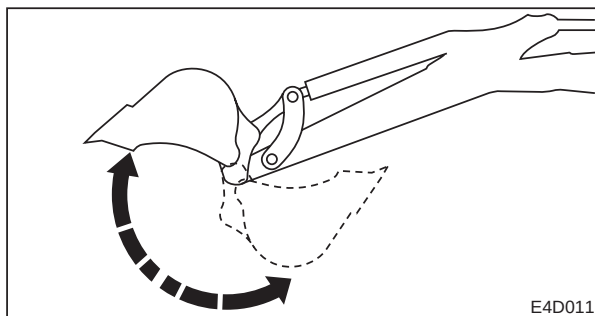
Machine Operation



5. Travel slowly forward and backward several times.

Warming Up in Cold Weather

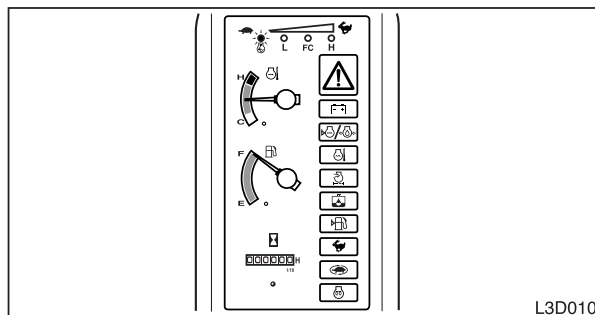
1. Perform the normal warm-up procedure.



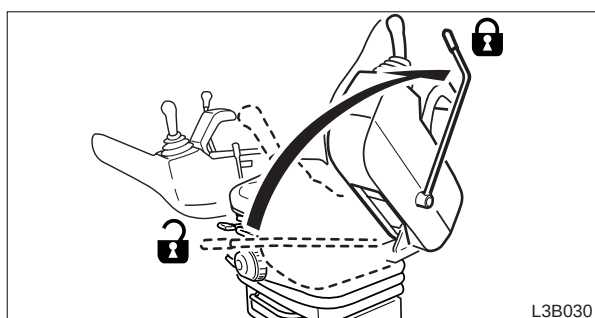
2. Set the bucket cylinder at the stroke end and keep it there.
Do not do this for more than 30 seconds.
3. Repeat step 2 until the bucket operating speed is normal.

Inspection After Warm-up

After warming up the engine and hydraulic oil, perform the checks and inspections described below, and repair if there is a problem.



1. Check that the warning lamps and meters are as follows:
 - Are all the warning lamps off?
 - Is the water temperature gauge's needle within the green range?
2. Check that there are no irregularities in the exhaust color, sound and vibrations.



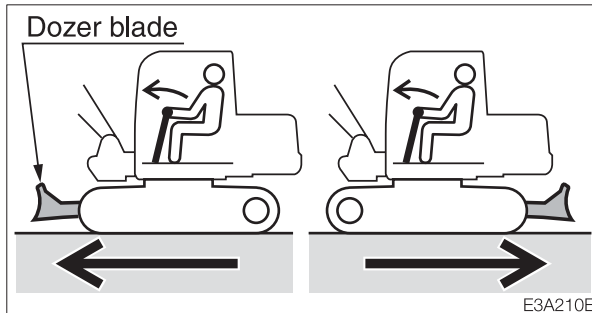
3. Raise the safety lock lever to engage the lock and check that the boom swing pedal, operating and travel levers are locked.



Operating the Travel Levers

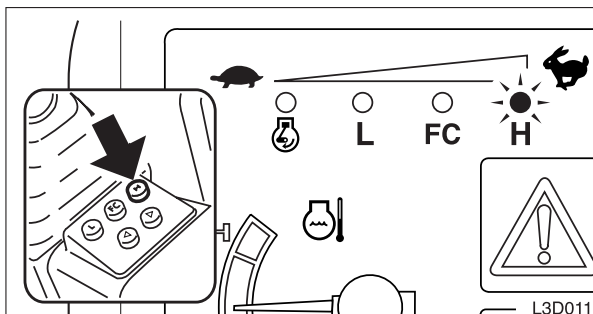
WARNING

- Never allow anyone to enter the slewing (swing) radius and machine path.
- Signal your intention to move by sounding the horn.
- There are blind spots to the rear of the machine.
If necessary, swing the cab around before backing up to check that the area is safe and clear.

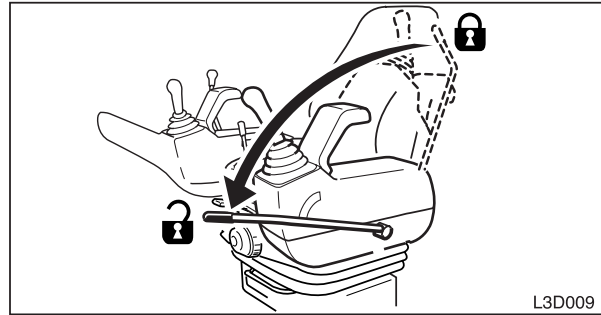


- Before operating the travel levers, check to make sure that the dozer blade is to the front of the operator's seat. **BE AWARE** that when the dozer blade is to the rear of the operator's seat, the travel levers operate in the opposite direction to when the dozer blade is in the front.
- Remove any obstacles in the machine's path.

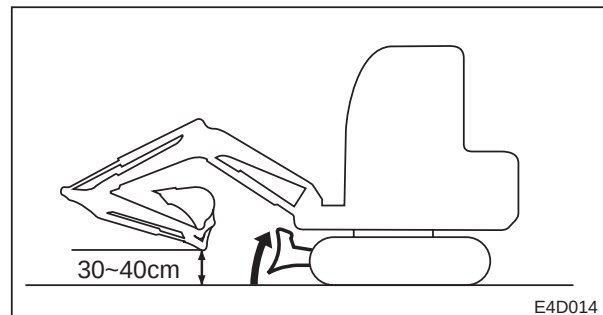
Traveling Forward and Backward



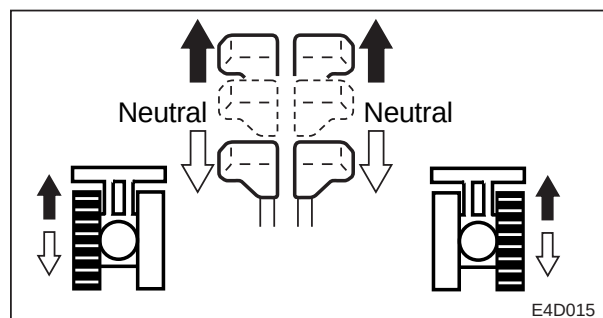
1. Increase the engine speed.



2. Fully lower the safety lock lever to disengage the lock.



3. Fold the hoe attachment and lower it to 30 to 40 cm (12 to 16 in.) above the ground.
4. Lift the dozer blade.
5. Operate the left and right travel levers as described below.

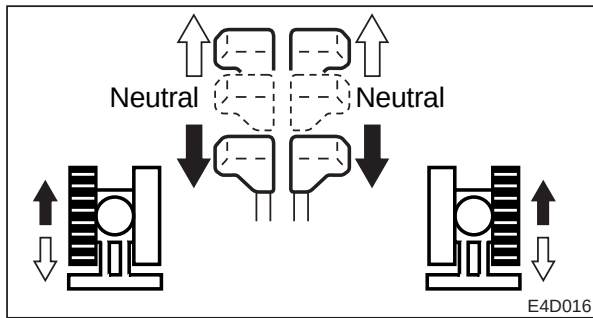


When the dozer blade is in front of the operator's seat:

- ➡ To move forward:
Tilt the levers forward.
- ⇐ To move backward:
Tilt the levers backward.



Machine Operation



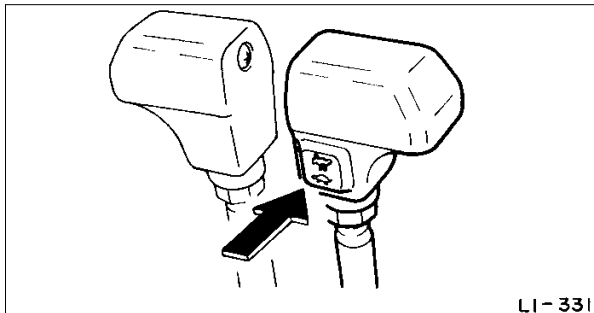
When the dozer blade is behind the operator's seat:

- ➔ To move forward:
Tilt the levers backward.
- ⇨ To move backward:
Tilt the levers forward.

Traveling in 2nd (High) Speed

WARNING

When a load greater than a set value is applied during 2nd speed (high speed) travel, the speed will automatically slow down by switching to 1st speed (low speed). Thereafter, when the load becomes lighter, the speed will increase by returning to 2nd speed (high speed). Exercise due caution since the travel speed changes automatically.

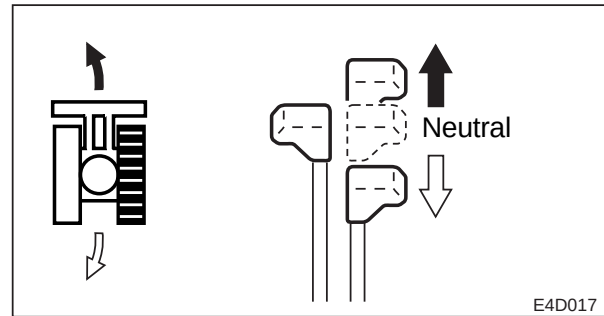


Press the travel speed switch on the right travel lever to switch to 2nd (high) speed, and press it again to return to 1st speed (low speed).

Pivot Turn

WARNING

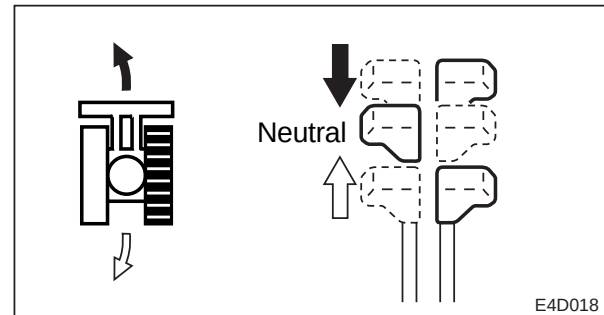
Note that when the bucket is operated while making a right pivot turn (i.e., when only the left crawler is turning), the speed of the pivot turn may suddenly increase.



Turning to the left when stopped:

- ➔ To turn forward to the left:
Tilt the right lever forward.
- ⇨ To turn backward to the left:
Tilt the right lever backward.

To turn to the right, operate the left lever in the same way.



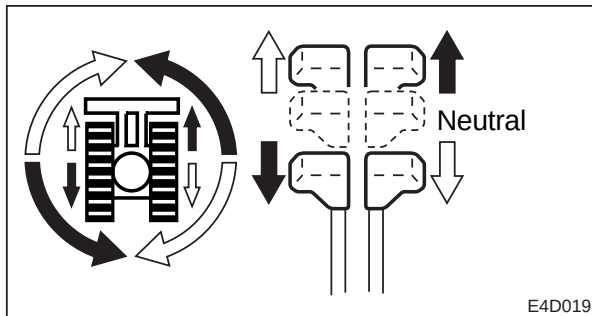
Turning to the left while traveling:

- ➔ To turn left while traveling forward:
Set the left lever to neutral.
- ⇨ To turn left while traveling backward:
Set the left lever to neutral.

To turn to the right while traveling, operate the right lever in the same way.



Spin Turn



- ➔ To spin left:
Tilt the left lever backward and the right lever forward.
- ➔ To spin right:
Tilt the right lever backward and the left lever forward.

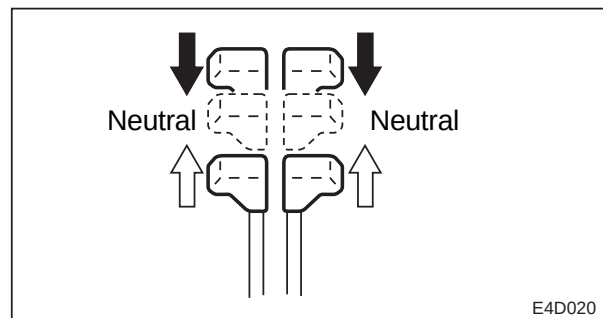
Stopping Travel

WARNING

- Park the machine on firm, level ground and apply the parking device. If you must park on a slope or incline, block the machine securely to prevent movement.
- If any controls should be touched accidentally when the safety lock lever is lowered, the machine will move suddenly, and cause serious injury or death.
- Note that the dozer blade control is not locked, even when the safety lock lever is set to the lock position. Do not touch this control accidentally.

CAUTION

Never bring the machine to a sudden stop except in the case of a true emergency. Stop as gently as possible.



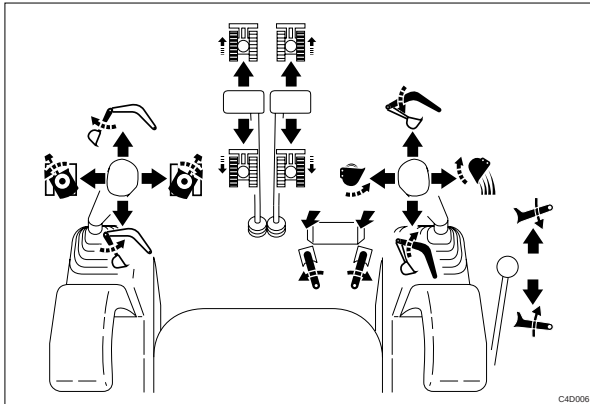
1. Slowly set the left and right travel levers to the neutral position. The machine stops.



Operating the Working Equipment

WARNING

- Be careful to check which pattern of lever control arrangement you are operating with before beginning operations.
- The explanations in this manual are for the ISO pattern.



Use the right operating lever to operate the boom and bucket.

Use the left operating lever to operate the arm and for slewing.

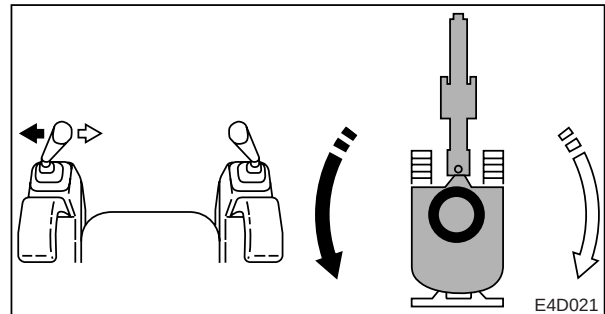
Return the operating levers to the neutral position to stop the hoe attachments.

1. Set the safety lock lever to the released position.
2. Set the pedal lock to the released position.

Slewing

WARNING

Check the surrounding area for safety before slewing.



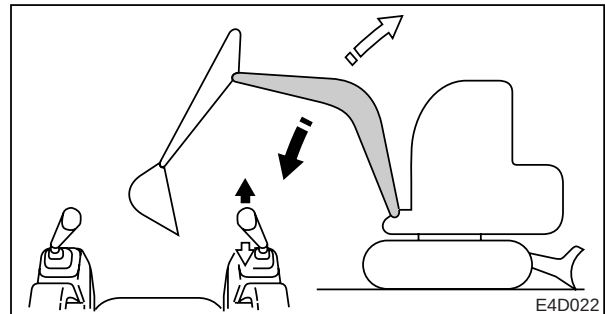
➡ To slew left:

Tilt the left operating lever to the left.

➡ To slew right:

Tilt the left operating lever to the right.

Operating the Boom



➡ To lower the boom:

Tilt the right operating lever forward.

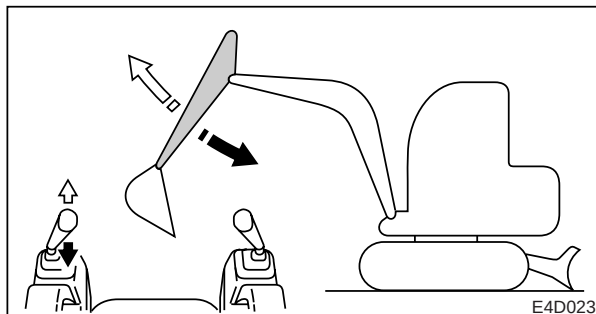
➡ To raise the boom:

Tilt the right operating lever backward.



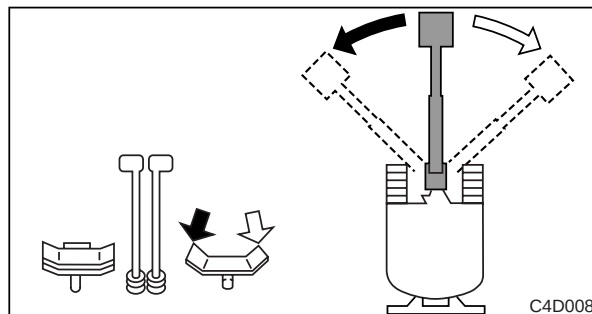
Machine Operation

Operating the Arm



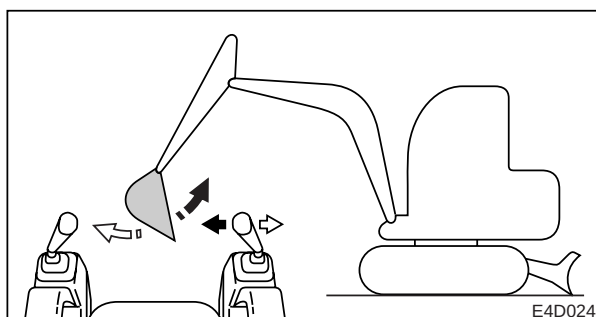
- ➔ To contract the arm:
Tilt the left operating lever backward.
- ⇨ To extend the arm:
Tilt the left operating lever forward.

Operating the Boom Swing



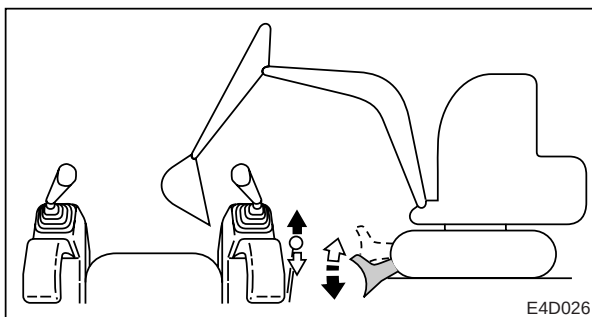
- ➔ To swing left:
Press the left side of the pedal.
- ⇨ To swing right:
Press the right side of the pedal.

Operating the Bucket



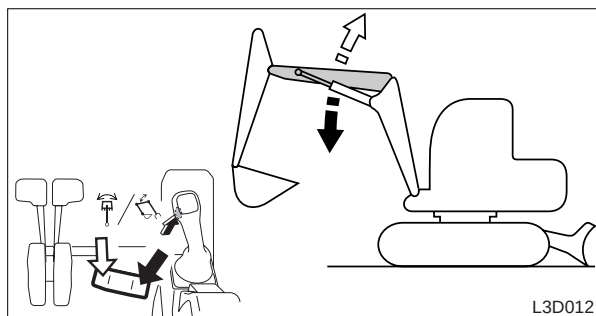
- ➔ To dig:
Tilt the right operating lever to the left.
- ⇨ To dump:
Tilt the right operating lever to the right.

Operating the Dozer Blade



- ➔ To lower the dozer blade:
Tilt the lever forward.
- ⇨ To raise the dozer blade:
Tilt the lever backward.

Operating the Intermediate Boom



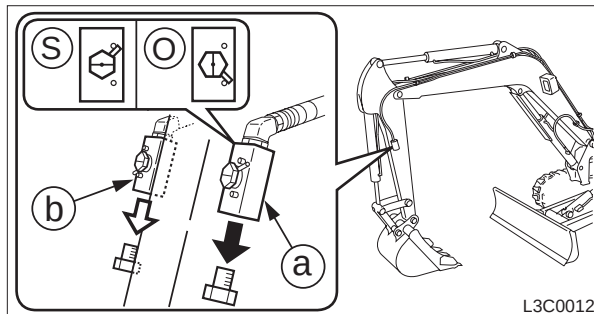
- ➔ To lower the intermediate boom:
Press the selector button and step on the right side of the pedal.
- ⇨ To raise the intermediate boom:
Press the selector button and step on the left side of the pedal.



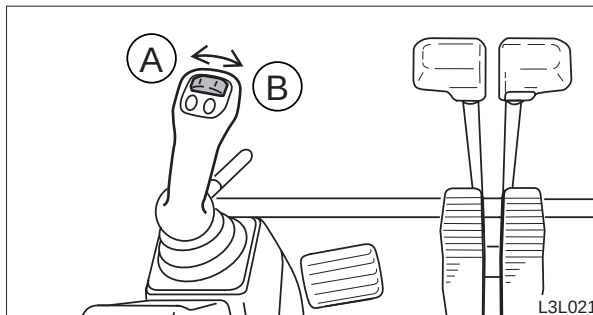
Operating the First Auxiliary Hydraulics

Use this to operate a breaker, crusher or other attachment.

Two methods of operation are permitted: operation with the auxiliary hydraulic buttons and operation with the slider switch (proportional control).

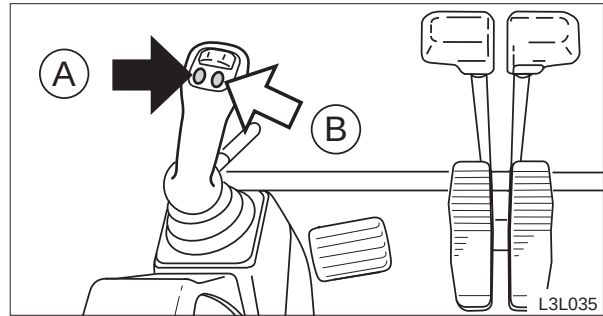


Operating With the Slider Switch (Proportional Control)



- ➡ To deliver hydraulic oil to port (a):
Move the switch to the left (A).
- ⇨ To deliver hydraulic oil to port (b):
Move the switch to the right (B).

Operating With the Auxiliary Hydraulic Buttons

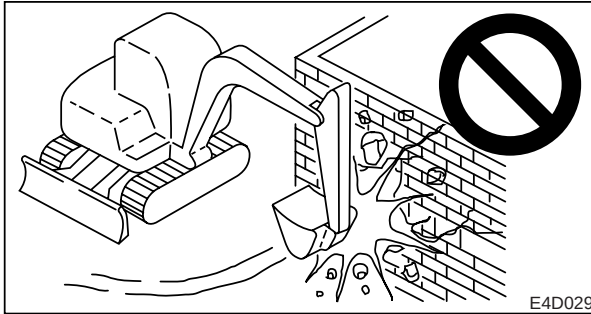


- ➡ To deliver hydraulic oil to port (a):
Press (A).
- ⇨ To deliver hydraulic oil to port (b):
Press (B).

**Prohibited Operations****WARNING**

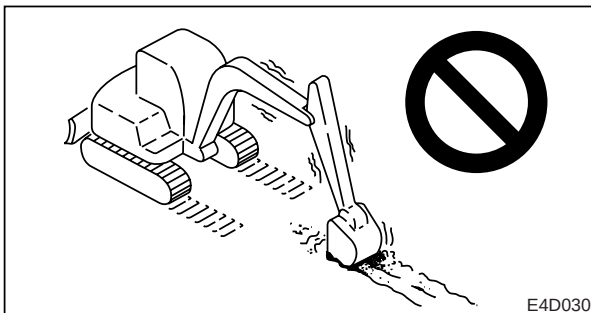
- Do not operate on base rock (hard or soft).
- Do not slew (swing) while traveling. If you must operate the hoe attachment while traveling, operate at speeds slow enough so you have complete control at all times.

Do not perform breaking or leveling operations using slew force

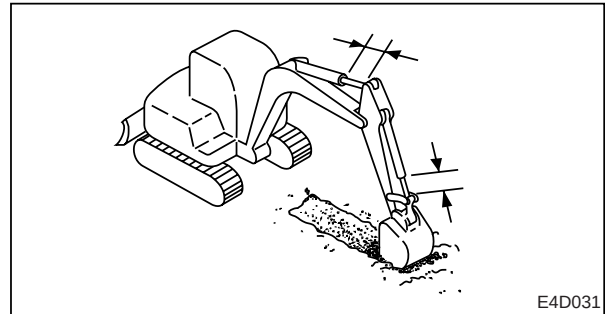


Do not break down walls or level ground using slew force. Also, do not dig the bucket teeth into the ground during slewing. Doing so will damage the hoe attachment.

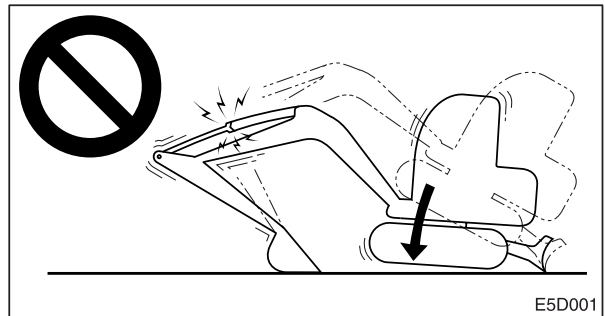
Do not Dig while Traveling



Do not dig the bucket into the ground and use the traveling force to dig.

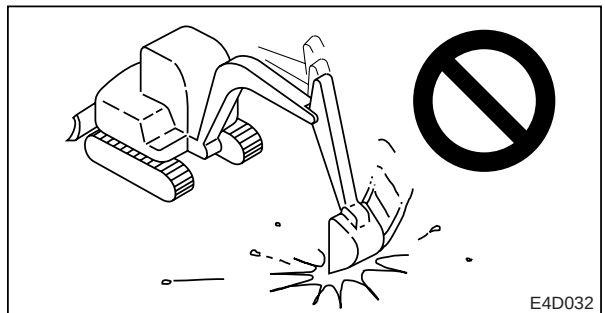
Be Gentle on the Hydraulic Cylinders

Do not extend the hydraulic cylinders to the stroke ends. Operate them with leeway.



Do not support the machine body with the hoe attachment as it is lowering with the arm cylinder fully extended. Doing so concentrates the load on the arm cylinder and could damage the arm cylinder.

Do not Drive Piles with the Bucket or Dig with it Using Shock Force

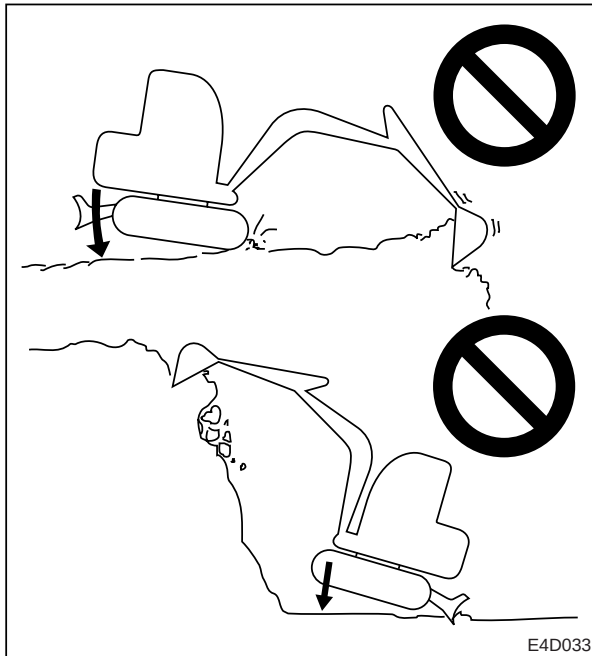


Doing so will shorten the service life of the hoe attachment. Use hydraulic force to dig.



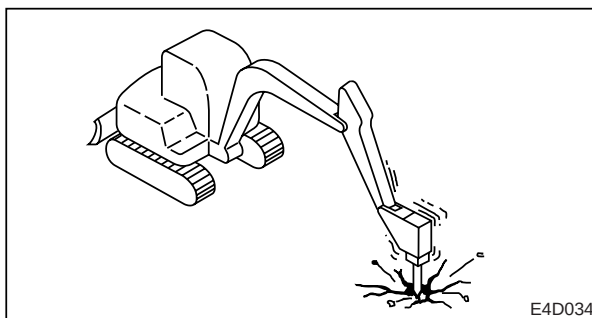
Operating Procedures

Do not Perform Operations Using the Machine's Dropping Force



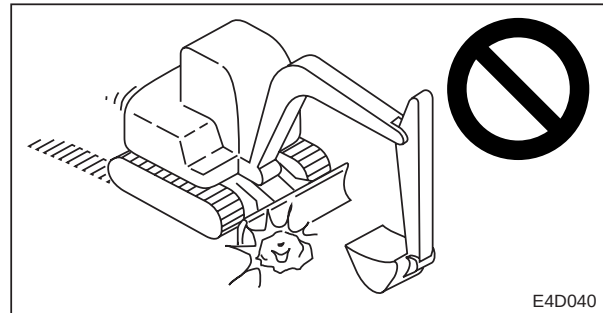
Putting excessive strain on the machine will shorten its service life. Use the hydraulic force of the cylinders and always dig with shallow, long strokes.

Digging Base Rock



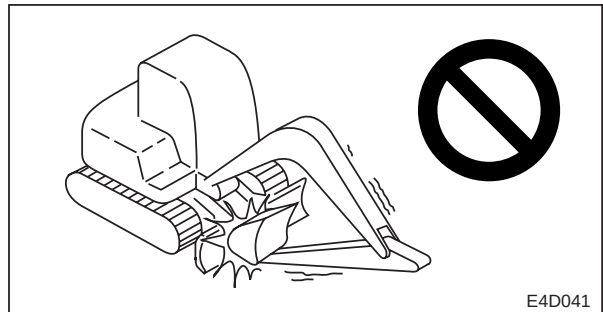
For hard base rock, break the rock up into small pieces with a breaker, etc., before digging. This prevents damage to the machine and is thus more economical in the end.

Caution on Exposing the Dozer Blade to Shocks



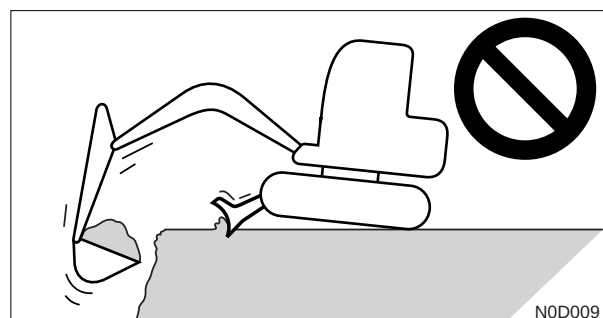
Hitting the dozer blade against rocks, etc., could damage the dozer blade or the blade cylinder.

Caution on Folding the Hoe Attachment



Be careful not to hit the bucket or dozer blade when folding the hoe attachment.

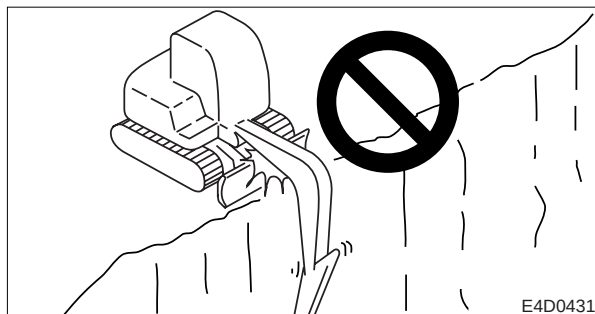
Do not use the Dozer Blade as an Outrigger





Operating Procedures

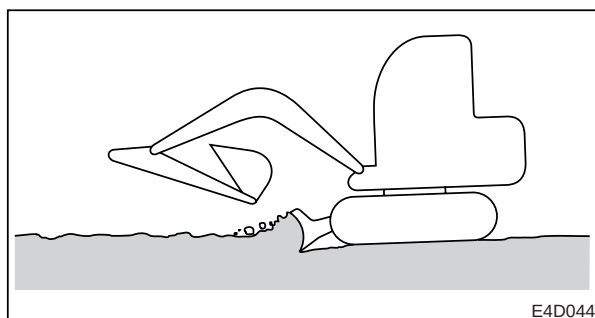
Pay Attention to the Dozer Blade when Digging



When digging deeply with the dozer blade positioned at the front, be careful that the boom cylinder and bucket do not hit the dozer blade.

Operate with the dozer blade at the rear whenever possible.

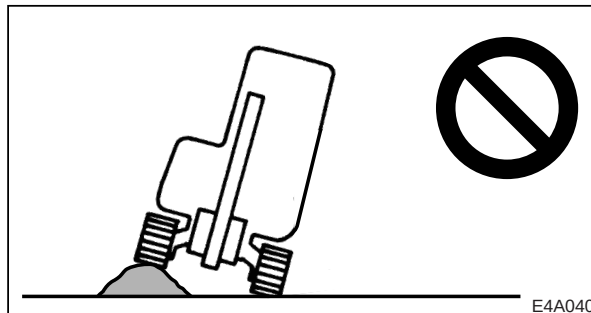
Caution on Digging Down with the Dozer Blade



This dozer blade is designed for simple earth pushing. Do not dig down deeply with the dozer blade. Doing so could damage the dozer blade and lower body.

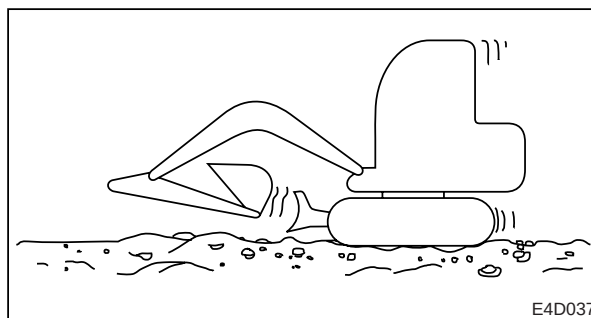
Cautions on Operating

Cautions on Traveling



Traveling over obstacles (rocks, stumps, etc.) may subject the body to strong shocks and result in damage. Avoid traveling over obstacles whenever possible. If you must do so, keep the hoe attachment near the ground, travel at low speed, and go over the obstacle at the center of the crawler.

Cautions on Traveling in 2nd (High) Speed

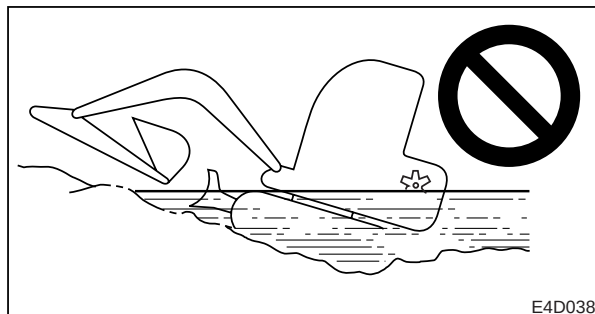


- On uneven ground, travel at low speed and avoid accelerating, stopping or changing directions abruptly.
- When a load greater than a set value is applied during 2nd speed (high speed) travel, the speed will automatically slow down by switching to 1st speed (low speed). Thereafter, when the load becomes lighter, the speed will increase by returning to 2nd speed (high speed). Exercise due caution since the travel speed changes automatically.
- When traveling in 2nd speed, do so with the dozer blade at the front.

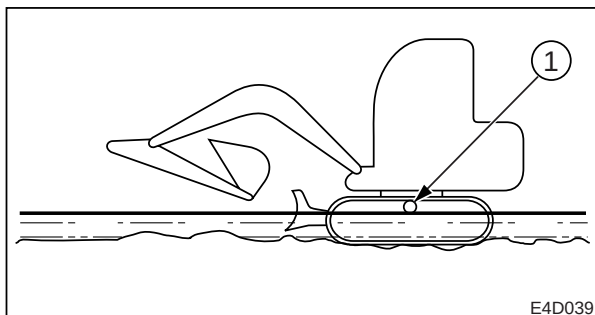


Operating Procedures

Cautions on Use in Water



If you leave water at a sharp angle, the rear of the machine may be submerged, exposing the radiator fan to water and damaging them. Do not let the rear of the machine get submerged.



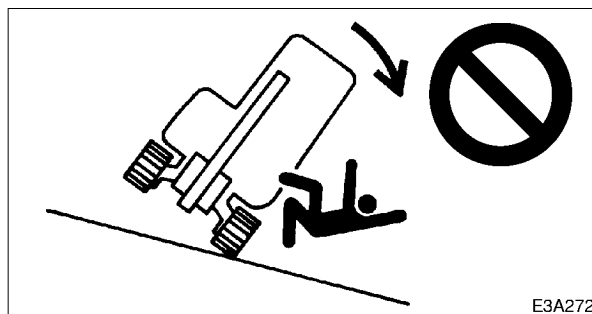
- Allowable water depth.
In water, only use the machine up to a depth at which the water comes up to the middle of the carrier roller (1).
- When greasing places used under water for long periods of time, apply enough grease so that the old grease is expelled.
- Never submerge the slew bearing or main body in water or sand. If the slew bearing or main body should get submerged, contact a Takeuchi sales or service outlet for inspection.

Cautions on Traveling on Slopes

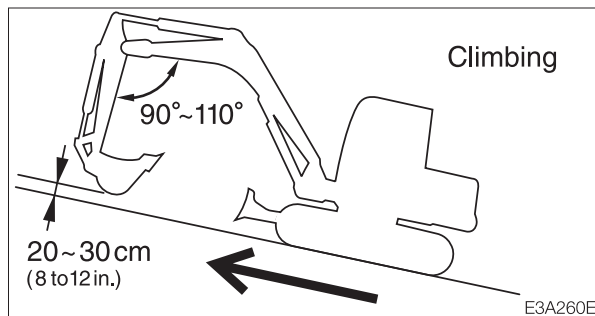


WARNING

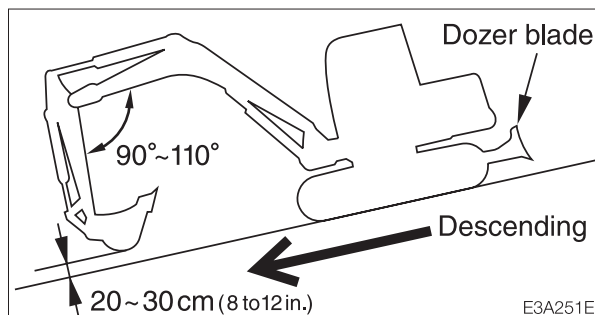
- Never exceed the machine's stability capabilities (maximum gradeability - 35°, lateral tipping angle - 15°). Also note that when actual working area conditions are poor the machine's stability capabilities may be lower.
- When traveling on slopes or grades, lower the bucket to a height of 20 to 30 cm (8 to 12 in.) off the ground. In emergencies, lower the bucket to the ground and stop the machine.
- When traveling on slopes or grades, move slowly in first gear (low speed).
- Do not travel down slopes in reverse.



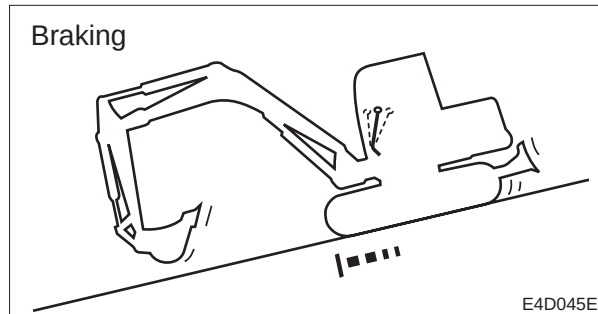
- Do not change directions or cross slopes sideways. First return to a flat surface then redirect the machine.
- On grass, dead leaves, wet metal or frozen surfaces, the machine may slide sideways even on very gentle slopes. Make sure the machine never faces sideways with respect to the slope.

**Traveling Posture**
Traveling up slopes

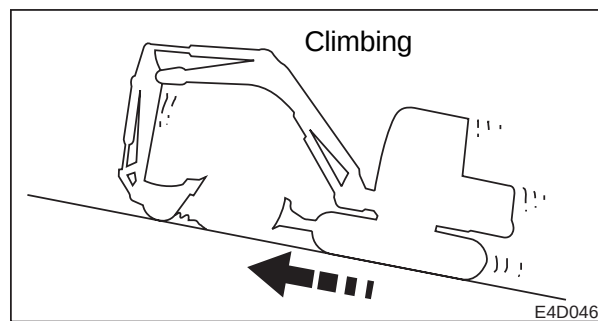
When traveling up slopes at an angle of 15° or greater, travel in the posture shown in the diagram above.

Traveling down slopes

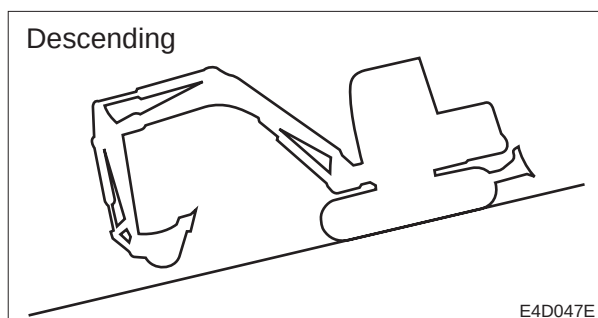
When traveling down slopes at an angle of 15° or greater, lower the engine speed and travel in the posture shown in the diagram above.

Braking when traveling down slopes

When traveling down slopes, the brakes are applied automatically when the travel levers are returned to the neutral position.

If the crawlers slip

If the crawlers slip while traveling up a slope, use the pulling force of the arm to climb the slope.

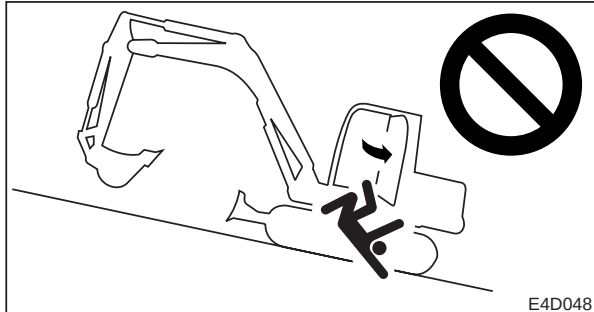
If the engine stops

If the engine stops when traveling down a slope, set the travel levers to the neutral position, stop the machine, then start the engine.



Operating Procedures

Do not open the door while traveling on slopes

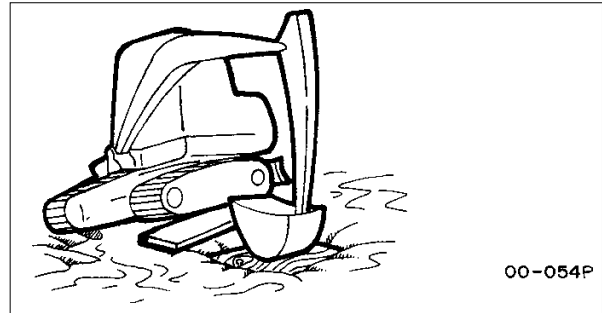


Opening the door while traveling on slopes is dangerous, as the force required to open and close the door changes abruptly. Always keep the door closed when traveling on slopes.

Getting Out of Mud

If the machine gets stuck in mud, use the procedure below to get it out.

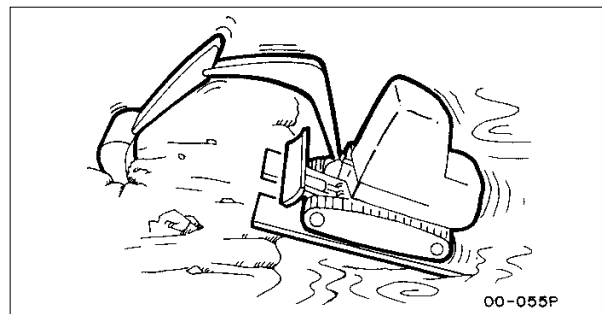
If one crawler is stuck



1. Slew the bucket to the side which is stuck.
2. Set the arm and boom to an angle of 90 to 110°.
3. Press the bottom of the bucket (not the teeth) against the ground.
4. Place a plank, etc., under the lifted crawler.
5. Lift the bucket and slowly move out of the mud.

If both crawlers are stuck

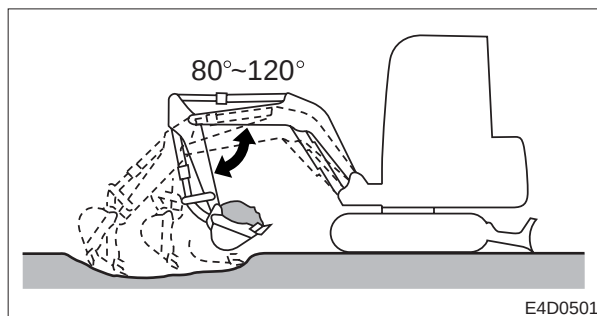
1. Perform steps 1 to 4 above for both crawlers.
2. Dig the bucket into the ground in front of the machine.
3. Pull with the arm and travel forward simultaneously to slowly move out of the mud.





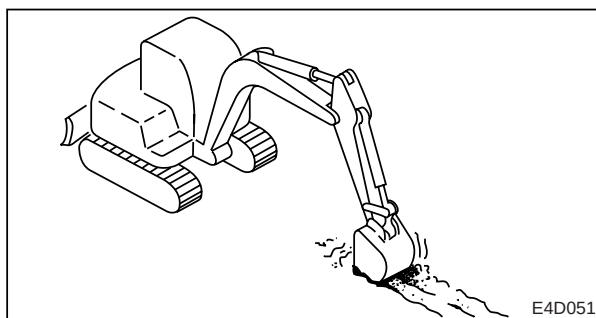
Operations Possible with this Machine

Excavating



1. Set the dozer blade on the side opposite the side you want to dig on.
2. Use the arm and bucket and dig with shallow, long strokes. The digging force is strongest when the boom and arm angle is 80 to 120°. Use this angle for effective digging.

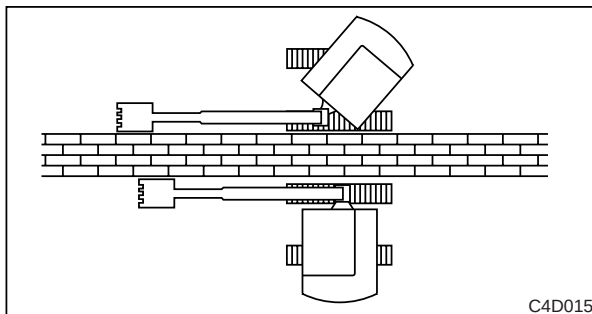
Digging Ditches



Mount a bucket suited for digging ditches and set the crawlers parallel to the ditch to be dug for greater efficiency.

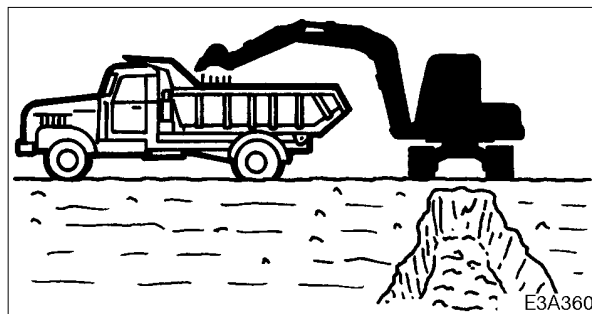
When digging wide ditches, dig the sides first, the center later.

Digging Side Ditches



Use the boom swing function to dig side ditches as shown in the diagram.

Loading



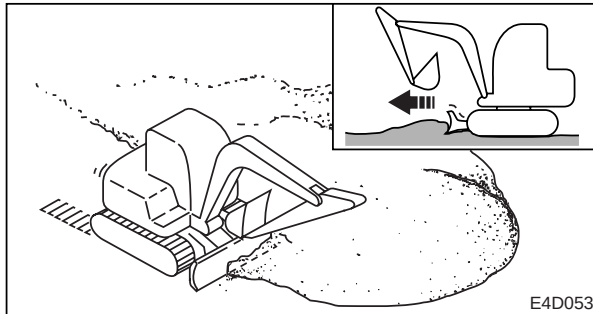
When loading dirt in a truck, starting from the back of the truck's bed makes for easier loading and increases the amount of dirt that can be loaded.

Also, use a small slewing angle for greater efficiency.



Operating Procedures

Leveling



1. Bring the hoe attachment close to the body.
2. Gradually remove the dirt from the side of the mound.
3. Once the mound is low, remove the dirt from the top. If the load on the body is too heavy, adjust by raising or lowering the dozer blade.

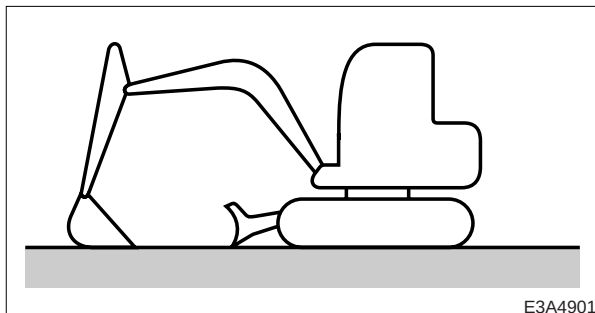


Parking the Machine

Parking



WARNING



E3A4901

- Park the machine on firm, level ground and apply the parking device.
- Before leaving the operator's seat, raise the safety lock lever to engage the lock and stop the engine. If any controls should be touched accidentally when the safety lock lever is lowered, the machine will move suddenly, and cause serious injury or death.

1. Set the left and right travel levers to the neutral position.
2. Press the decel. button and idle the engine at low speed.
3. Lower the bucket and dozer blade to the ground.
4. Raise the safety lock lever to engage the lock.
5. Stop the engine and remove the key.
Refer to page 67 "Stopping the Engine".

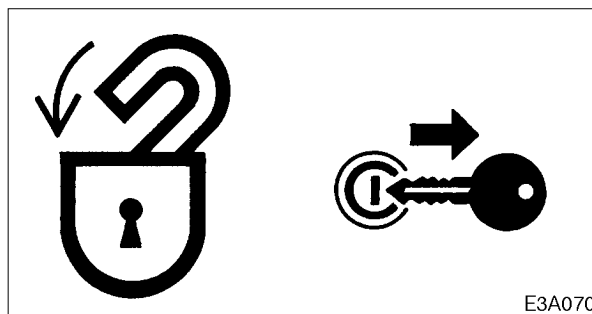
When equipped with accumulator (option):
Refer to page 199 "Accumulator".

Inspection and Checks After Stopping the Engine

1. Check for oil and water leakage and inspect the working equipment, covers and lower body. If any irregularities are found, repair.
2. Fill the fuel tank.
Refer to page 109 "Inspecting the Fuel Level".
3. Remove any paper scraps or dirt from the engine room.
4. Remove any mud from the lower body.

Locking

Be sure to lock the following places:



E3A070

- Cab door
- Fuel filler cap
- Covers



Handling in Cold Weather

Preparing for Cold Weather

In cold weather, it may be difficult to start the engine and the coolant may freeze. Make the preparations described below.

Changing the Fuel and Lubricant

Change the fuel, hydraulic oil and engine oil to types suited for cold conditions.

Refer to page 98 "Fuel and Lubricant Chart".

Engine Coolant



WARNING

The coolant is combustible. Keep flames away.

Use long-life coolant (antifreeze) and tap water for the engine coolant.

Supplement: New machines are delivered with JIS Type 2 long-life coolant (antifreeze) at a concentration of 50%.

Refer to page 98 "Fuel and Lubricant Chart".

Battery

As the temperature drops, the battery performance decreases.

Inspect the battery. If the charge is low, contact a Takeuchi sales or service outlet to have the battery charged.

Refer to page 117 "Inspecting the Battery Fluid Level and Replenishing".

Cautions after Completing Operations

Heed the following in order to prevent dirt, water, or other objects stuck on the machine as well as the lower body from freezing:

- Remove any dirt or water from the body.
In particular, water droplets on the hydraulic cylinder rod surfaces could freeze, and if dirt enters into the seals along with this, the seals could break.
- Park the machine on a dry, hard surface.
If no appropriate place can be found, put boards down and park the machine on them.
- Drain any water from the fuel tank to prevent freezing.
Refer to page 118 "Draining the Fuel Tank".
- To prevent decreased battery performance, place a cover over the battery or remove it from the machine and store it in a warm place.
Also add battery fluid before starting the next morning. If battery fluid is added after completing operations, the distilled water may not mix, resulting in freezing.

After Cold Weather is Over

Perform the following after cold weather is over:

- Change the fuel and the oils for the different devices with those specified on the Fuel and Lubricant Chart.
Refer to page 98 "Fuel and Lubricant Chart".
- When using one-season type antifreeze coolant, completely drain the antifreeze coolant, carefully clean the inside of the coolant system, then add tap water.
Refer to page 124 "Cleaning the Engine Cooling System".

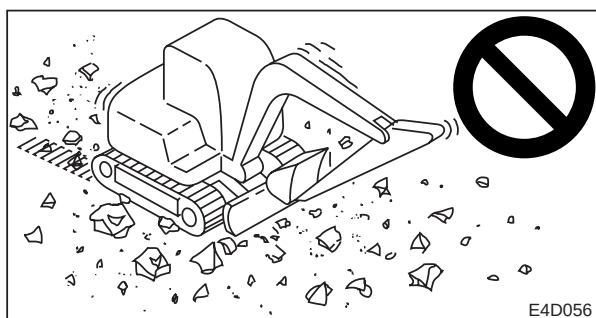


Handling Rubber Crawlers

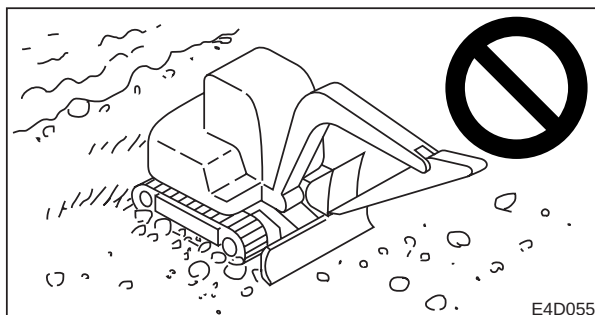
Rubber crawlers have an inherent weakness due to their use of rubber. Be sure to heed the prohibitions and cautions below so as to prevent damage to the crawlers and crawler slippage.

Prohibited Actions

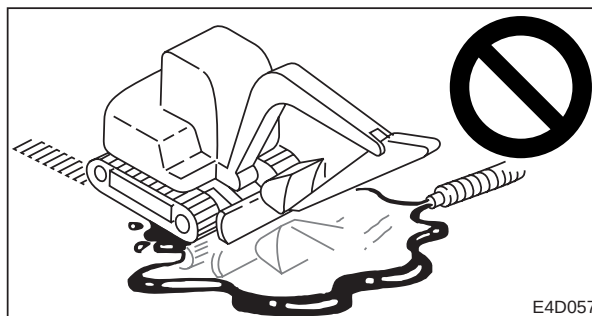
Do not travel or operate the machine in the following places:



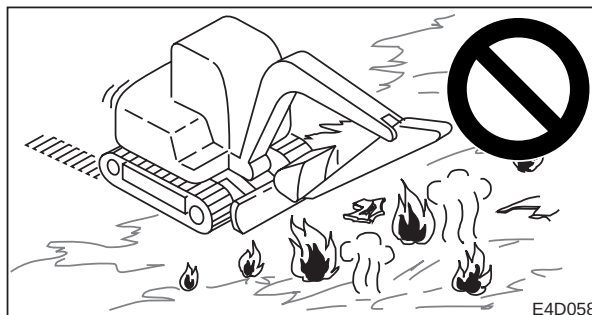
- Traveling or slewing on broken stone, jagged base rock, iron rods, iron scraps or the edges of iron sheets may damage or cut the crawlers.



- Traveling on riverbeds or places with many soft rocks may cause the crawlers to slip off or be damaged due to rocks getting stuck in them.
- Do not use on the seashore. The salt may corrode the metal cores.



- Do not let fuel, oil, salt or chemical solvents get on the crawlers. These substances may corrode the couplings of the crawlers' metal cores, resulting in rust or peeling. If these substances should get on the crawlers, wipe them off immediately using water.



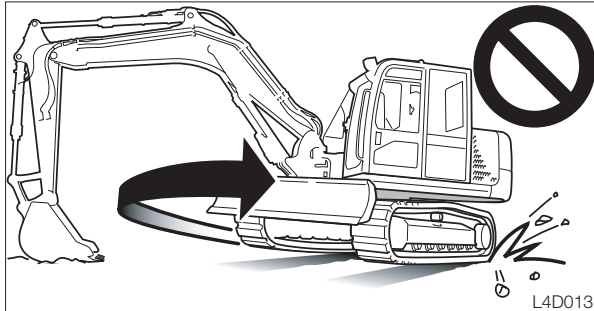
- Traveling on roads directly after asphaltting or on hot surfaces such as over fires or on iron sheets under strong sunlight may result in irregular wear or damage of the lugs.
- Do not move earth in places where the rubber crawlers may slip. Doing so may speed up lug wear.



Handling Rubber Crawlers

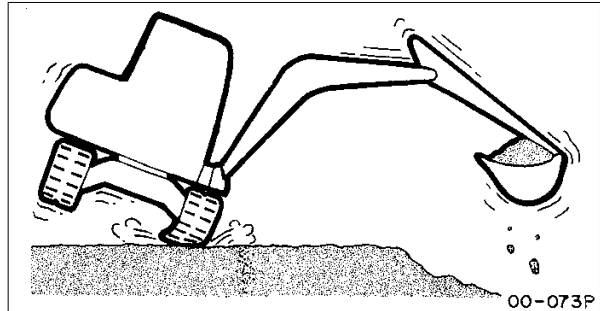
Cautions

Heed the following cautions when operating the machine:



- Do not turn the undercarriage with the front of the machine body lifted using the hoe attachment and the upperstructure left in this posture. Doing so will twist the crawler with the load concentrated on a single point on the crawler belt, rapidly leading to damage.
- Avoid changing course abruptly and spinning on concrete surfaces whenever possible.
Doing so may wear or damage the rubber crawlers.
- Avoid drops that may expose the rubber crawlers to strong shocks.
- Salt, potassium chloride, ammonium sulfate, potassium sulfate, and triple superphosphate of lime can damage the crawler belts. If any of these substances should get on the crawler belts, wash them off thoroughly with water.
- Do not let the sides of the rubber crawlers rub against concrete or walls.
- Do not damage the rubber crawlers by hitting the bucket against them.
- Be especially careful in the winter on snowy or frozen surfaces as the crawler belts tend to slip.

- Use rubber crawler belts at temperatures between -25°C to $+55^{\circ}\text{C}$ (-14°F to 131°F).
- When storing the rubber crawlers for long periods of time (3 months or more), do so indoors in a place not exposed to direct sunlight or rain.

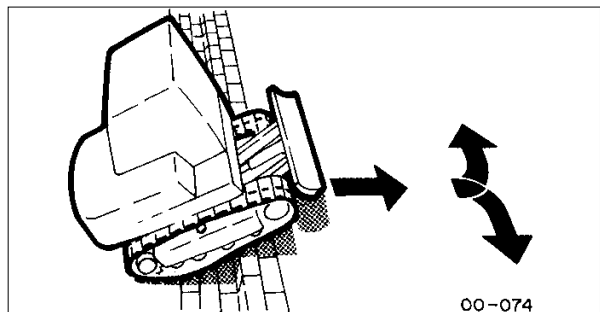


- Rubber crawler belts are not as stable as steel crawler belts since the entire lug is rubber. Be very careful when slewing and swinging sideways.

Preventing the Rubber Crawlers from Slipping Off

Heed the following in order to prevent the rubber crawlers from slipping off:

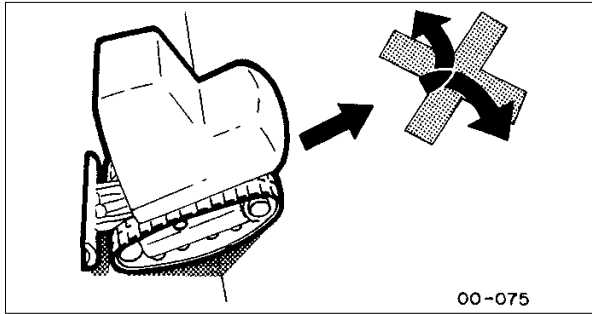
- Always keep the crawlers at the proper tension.



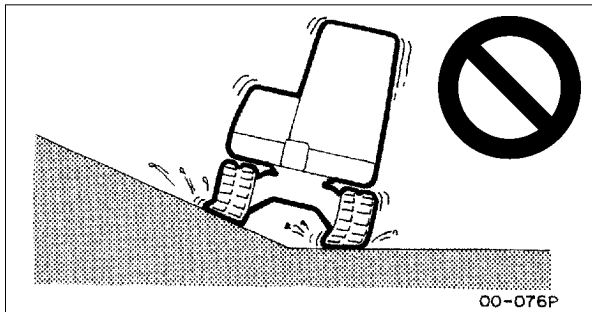
- When traveling up large cobblestone or rock steps (20 cm (8 in.) or greater), climb up the step at a direct angle and do not change course on top of the step.



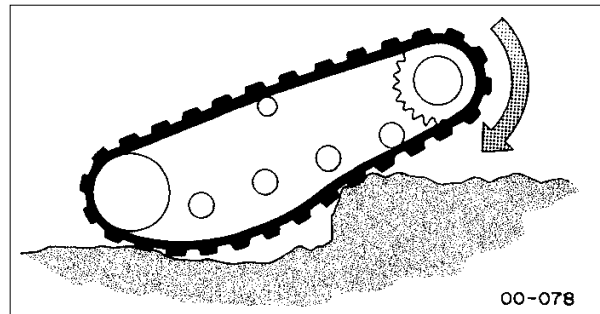
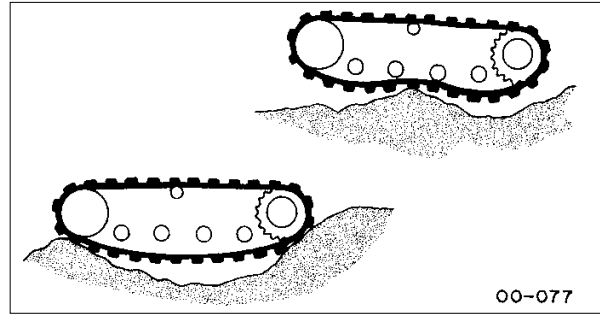
Handling Rubber Crawlers



- When climbing in reverse, do not change course at the point where the slope starts.



- Avoid traveling with one crawler on a slope or projecting object and the other crawler on a flat surface (with the machine at a tilt of 10° or greater). Travel with both crawlers on flat surfaces.



- Do not change directions when the crawler belts are slack as shown in the diagram.



TRANSPORT

Loading and Unloading	92
Hoisting the Machine	93
Securing the Machine	94
Cautions on Transporting	94



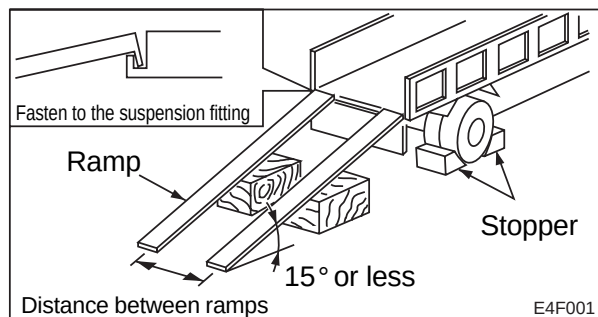
Loading and Unloading

WARNING

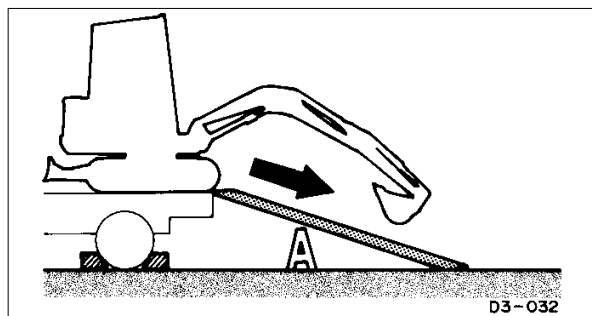
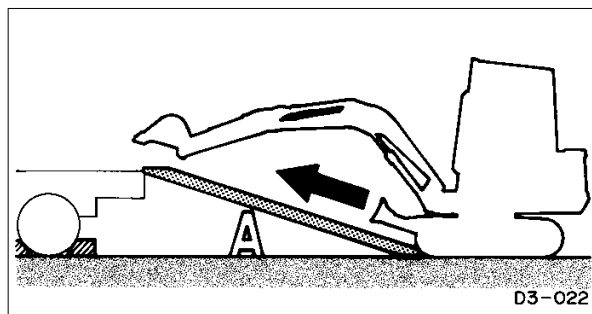
The machine may roll or tip over or fall while loading or unloading it. Take the following precautions:

- Select a firm, level surface and keep sufficient distance from road shoulders.
- Use loading ramps of adequate strength and size. Maintain the slope of loading ramps within 15 degrees.
- Keep the truck bed and loading ramps clean of oil, clay, ice, snow, and other materials which can become slippery. Clean the tracks.
- Never change course on the ramp.
- Do not slew (swing) on ramps. The machine may tip over.
- When slewing (swinging) on the truck bed, do so slowly as the footing can be unstable.

When loading or unloading the machine, be sure to use ramps and following the procedure below.



1. Apply the truck's parking brake and place stoppers against its tires.
2. Fasten the ramps securely to the truck bed so that they will not come off. Set the ramps to an angle of 15° or less.
3. Line up the center of the truck bed with the center of the machine and the center of the ramps with the center of the crawlers.
4. Make sure the dozer blade does not hit the ramps.
5. Lower the hoe attachment as much as possible, making sure it will not hit the truck.
6. Lower the engine speed.



7. Determine the direction on the ramps, then slowly travel up or down the ramps in 1st speed (low speed), following the signals of a flagman.
8. Load the machine properly at the prescribed position on the bed. Refer to page 94 "Transporting Posture".



Hoisting the Machine

WARNING

- Know and use correct crane signals.
- Inspect the hoisting equipment daily for damaged or missing parts.
- When hoisting, use a wire rope with sufficient strength with respect to the machine's weight.
- Do not hoist with the machine in a posture other than the one described in the procedure below. Doing so is dangerous as it may result in the machine losing its balance.
- Do not hoist the machine with an operator (s) on it.
- When hoisting, hoist slowly so that the machine does not tip.
- Keep all other persons out of the area when hoisting. Do not move the machine over the heads of the persons.

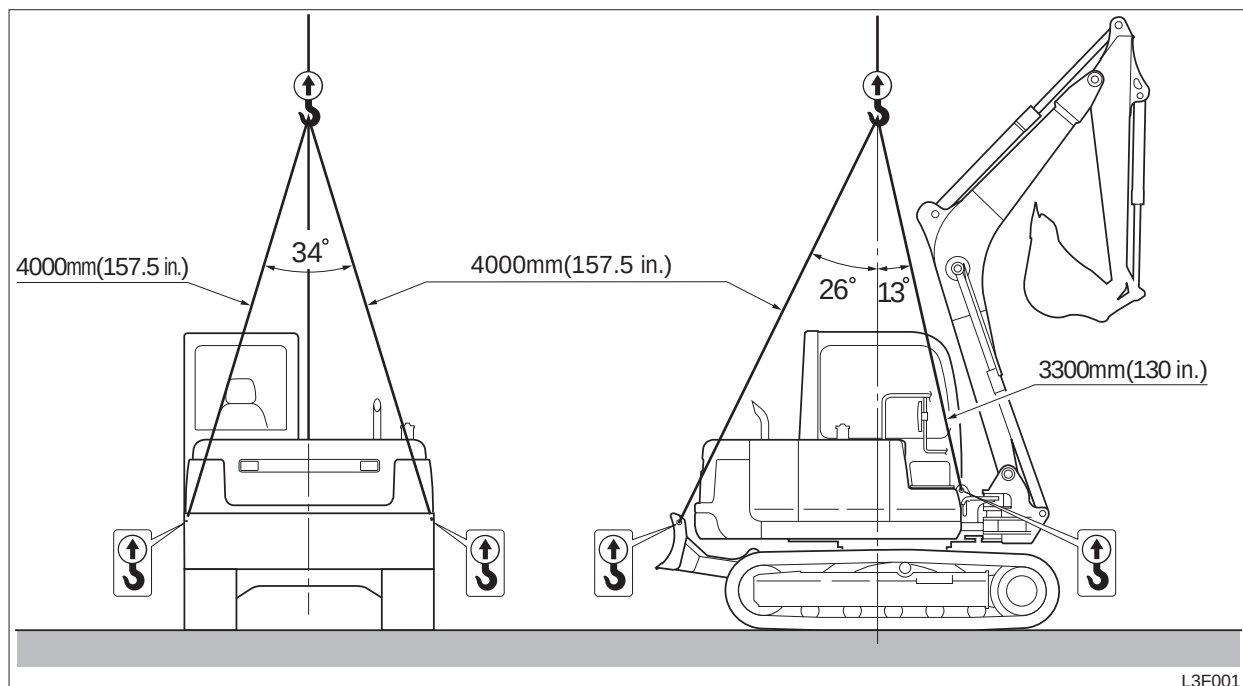
IMPORTANT: This hoisting method applies to machines with standard specifications. The center of gravity differs according to the attachments and options that are mounted.

Consult a Takeuchi sales or service outlet.

Hoisting

1. Slew the upper structure so that the dozer blade is positioned to the rear of the body (so that the crawler frame and upper structure are parallel).
2. Raise the dozer blade fully.
3. Fully extend the bucket and arm cylinders and fully raise the boom.
4. If the boom is swung to either the left or right side, set it so that it is straight ahead.
5. Raise the safety lock lever to engage the lock.
6. Stop the engine and remove the starter key and get off the machine.
7. Install the sling as shown on the diagram below.
Suspend in such a way that the sling and Lifting tool do not touch the body.
8. Hoist slowly until the machine just leaves the ground.
9. Stop hoisting until the machine is stable and hoist slowly.

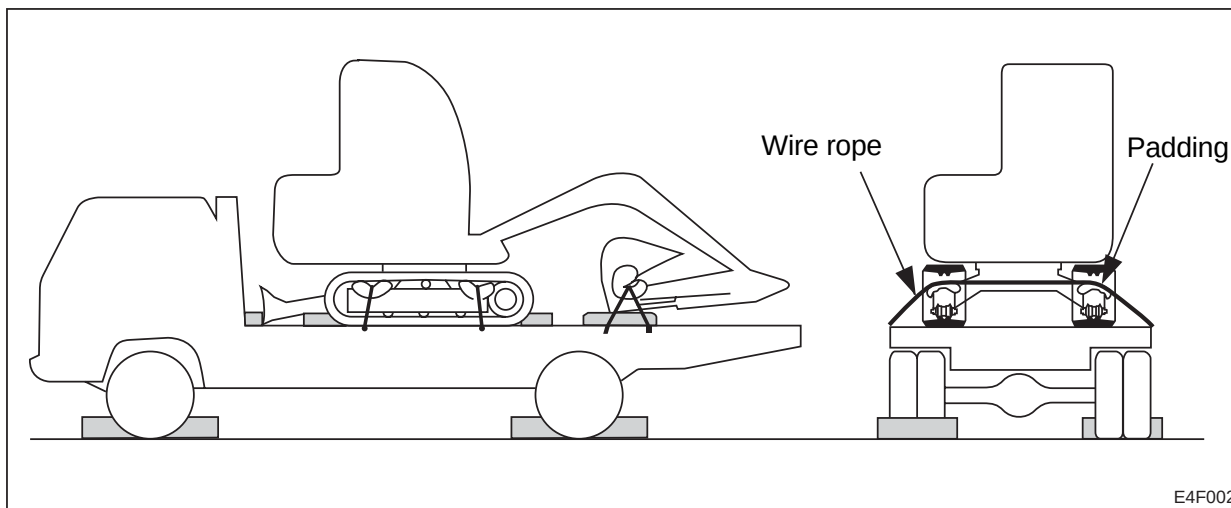
Hoisting posture





After loading the machine in the designated position, secure it as described below.

Transporting Posture



1. Lower the dozer blade.
2. Fully extend the bucket and arm cylinders, then lower the boom.
3. Stop the engine and remove the starter key.
4. Raise the safety lock lever to engage the lock.
5. Set stoppers in front and behind the crawlers.
6. Put a chain or wire rope over the lower frame and fasten it securely to prevent sideways slippage.
7. Secure the bucket with a chain or wire rope.

IMPORTANT: Place a wooden block under the bucket so that it is not damaged by hitting the floor.



WARNING

- Know and follow the safety rules, vehicle code and traffic laws when transporting the machine.
- Consider the length, width, height and weight of the truck with the machine loaded on it when determining the best route.



MAINTENANCE

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Maintenance Description

For long-term use of the machine under good conditions, perform the inspection and maintenance procedures properly and safely as recommended in this manual.

The inspection and maintenance items are divided according to the machine's total operating time (inspection and maintenance to be performed every 10 hours (walk-around and daily inspection), every 50 hours, every 250 hours, etc.). Refer to the hour meter to determine when it is time to perform inspection and maintenance. Items for which it is not possible to determine the inspection and maintenance interval are included under "When Required".

When operating the machine in extremely harsh environments (with high dust levels or high temperatures), inspection and maintenance should be performed earlier than the times indicated on the Maintenance Chart.

Cautions on Maintenance

Do not perform inspection and maintenance procedures not prescribed in this manual. Have inspection and maintenance procedures not prescribed in this manual performed by a Takeuchi sales or service outlet.

Always keep the machine clean.

- Always keep the machine clean, and wash it before performing inspection and maintenance.
- When washing the machine with water, stop the engine and cover the electrical system with plastic to protect it from water. Exposing the electrical system to water is dangerous and could result in short-circuits or malfunction. Do not wash the battery, sensors, connectors or the inside of the cab with water or steam.

Fuel, lubricant and grease

- For fuels, lubricant and grease, follow the instructions on the "Fuel and Lubricant Chart".
- Use pure fuels, lubricants and greases which do not contain water, and be careful to keep dirt out when changing or replenishing fuel, lubricant or grease.
- Store fuels, lubricants and greases in the prescribed places and in such a way that no water or dirt can get in them.

Cautions on fueling

- If the port includes a strainer, do not remove the strainer when fueling.
- After fueling, be sure to securely tighten the cap, etc.
- Do not add more than the prescribed amount of fuel.



General

Do not clean parts with fuel.

Do not use fuel to clean parts. Use a non-combustible cleaning agent.

Keep dirt out.

When mounting and removing parts, do so in a place where there is no dust, clean the working area and the part, and keep dirt out.

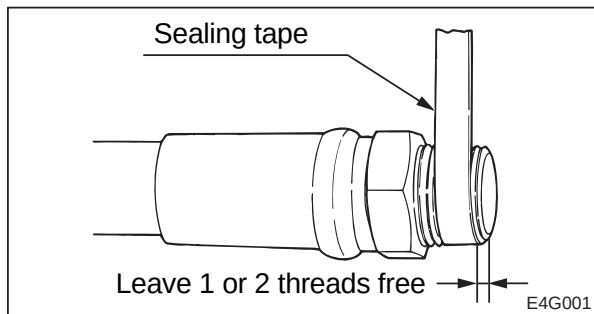
Clean mounting surfaces.

When mounting and removing parts, be sure that the surfaces of contact of the parts are clean. If the sealing grooves of the surface of contact are damaged, consult a Takeuchi sales or service outlet.

Seals and split pins

- Replace removed seals and split pins with new ones.
- When mounting, be careful not to damage or twist the seal.

Sealing tape



- When wrapping sealing tape around plugs, etc., remove any old sealing tape from the threads and clean the threads.
- Wrap the sealing tape tight, leaving 1 or 2 threads at the tip free.

Disposing of wastes

- Collect spent fluids from the machine in containers. Disposing of wastes irresponsibly damages the environment.
- Dispose of oil, fuel, cooling water, coolant, filters, batteries and other harmful substances as prescribed by law.

Check after maintenance

- Gradually increase the engine speed from a low idle to maximum speed and check that there is no oil or water leaking from serviced parts.
- Operate all the operating levers and check that the machine is operating properly.

Cautions on handling of battery cables

- Disconnect the battery cables (+,-) before working on the electrical system or doing any welding.
Remove the negative (-) battery cable first. When reconnecting the battery, connect the negative (-) battery cable last.
- Do not disconnect the battery cables while the engine is running. Doing so could damage the electronic circuitry of the alternator and other parts.



Fuel and Lubricant Chart

Use different fuels, lubricants and greases according to the temperature, referring to the chart below.

- Change the lubricant earlier than as shown in the table if it is extremely dirty or its performance has deteriorated severely.
- Whenever possible, use the same brand of lubricant as before. If changing with a different brand, replace the entire quantity – do not mix different brands.

Part	Type	Type by temperature										Replacement interval	Capacity Lit. (US. qt.)
		-22	-4	14	32	50	68	86	104	F	°C		
Engine oil pan	Diesel engine oil API-CD											After first 50 hrs. Every 250 hrs.	Upper limit: 10.2 (10.8) Lower limit: 5.7 (6)
Hydraulic tank	Antiwear hydraulic oil (Option: Biodegradable oil)											Every 2000 hrs.	System: 132 (34.9 US.gal.) Tank: 68 (18 US.gal.)
Fuel tank	Diesel fuel	Use a clean, Quality fuel for good performance and optimum engine life. • To prevent fuel flow problems in cold weather, use diesel fuel with a pour point of at least -12°C (10°F) below the lowest expected ambient temperature. • Minimum cetane number is 45. Low temperature or high altitude operation may require the use of fuel with a higher cetane number.											120 (31.7 US.gal.)
Engine cooling system	Coolant (water + coolant)**											Every 1000 hrs.	9.5 (10) 11.2 (11.8)***
Travel reduction gear	Gear oil API-GL-4	SAE 90										After first 250 hrs.* Every 1000 hrs.	1.5 (1.6)
Slew bearing	Lithium based grease EP-2	—										Every 50 hrs.	As required
Working equipment	NLGI No. 2											Daily or every 10 hrs.	
Levers												When required	

* : If the percentage of the traveling time within the total operating time is high, replace the gear oil earlier than the specified time.

** : For water, use tap water (soft). Do not use well or river water.
When the ambient temperature drops below 0°C, supply coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

*** : Serial No. 17514412 ~



Replace the hydraulic oil regularly!

When using a hydraulic breaker, the oil deteriorates quicker than during normal digging. Be sure to replace the hydraulic oil and return filter element.

- Failure to replace these in time can lead to damage to the machine and breaker's hydraulic systems. In order to improve the service life of the hydraulic systems, be sure to replace the hydraulic oil and return filter element according to the following chart of the replacement interval.

- Clean the suction strainer when changing the return filter element.

Replacement Interval (Hours)

Item	Hydraulic Oil	Filter Element
1st time	———	25
2nd time	———	100
Periodically	600	200

When the breaker operating ratio is 100% Refer to page 193 "Hydraulic Breaker".

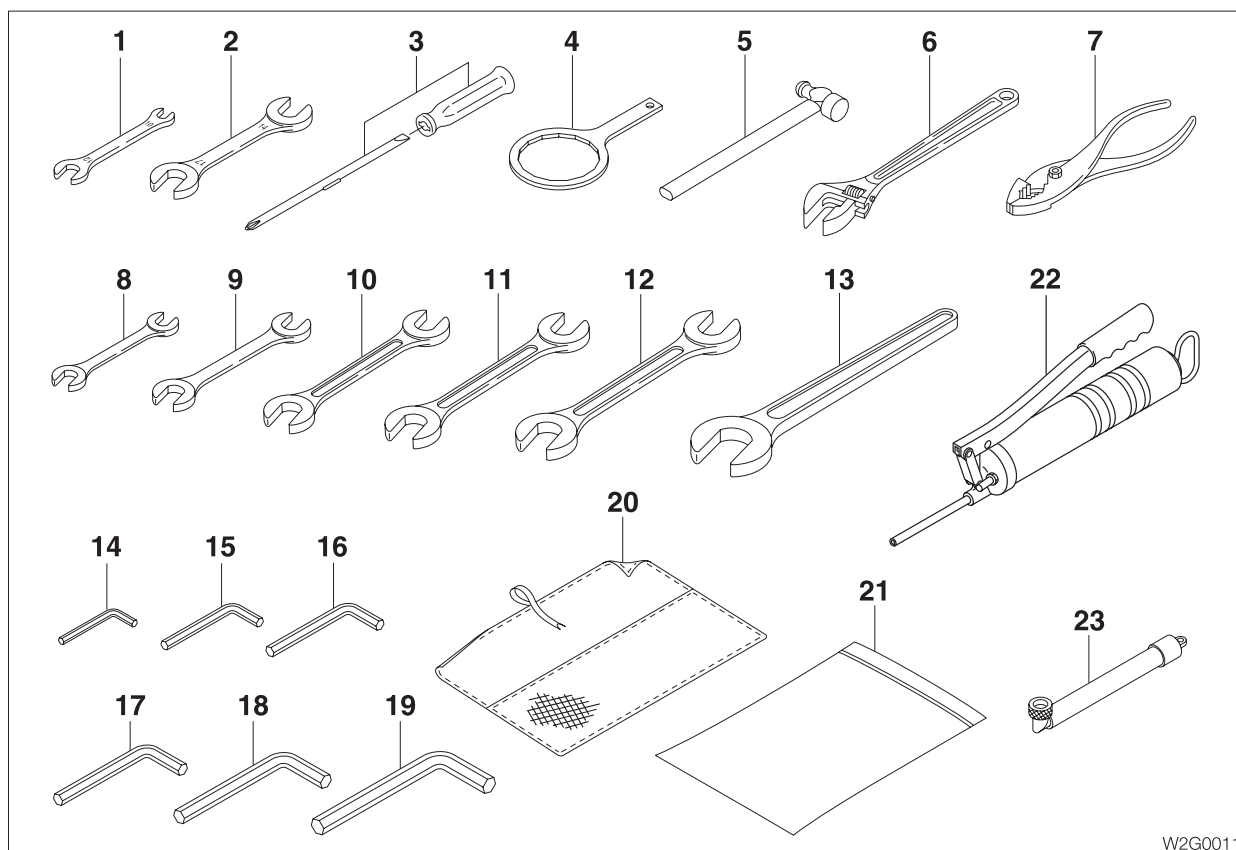
Expendables

Replace expendables such as filters and elements periodically, referring to the table below.

Item	Part name	Part No.	Replacement interval
Hydraulic oil return filter	Element	15511-02600	After first 50 hrs. Every 500 hrs.
Fuel filter	Cartridge	119802-55800	Every 500 hrs.
Water separator filter	Cartridge	129901-55850	
Engine oil filter	Cartridge	129150-35152	After first 50 hrs. Every 250 hrs.
Air cleaner	Outer Element	129062-12560	Every 1000 hrs. or after 6 cleanings (whichever comes first)
	Inner Element	119005-12571	Every 1000 hrs. or after 3 cleanings of the outer element (whichever comes first)
Air breather filter	Element	15520-00902	Every 1000 hrs.



Tools



W2G0011

No.	Part name	Part No.	Remarks
1	Spanner	19100-47081	10-12
2	Spanner	19100-47082	14-17
3	Screwdriver	19100-06112	(+) (-)
4	Filter wrench	19100-65081	
5	Hammer	16903-00330	3/4
6	Monkey wrench	16904-00250	250mm
7	Pliers	16905-00200	200mm
8	Spanner	16900-01013	10-13
9	Spanner	16900-01922	19-22
10	Spanner	16900-02427	24-27
11	Spanner	16900-02730	27-30
12	Spanner	16900-03236	32-36

No.	Part name	Part No.	Remarks
13	Spanner	16901-00041	41
14	Hex. wrench	16906-00250	2.5mm
15	Hex. wrench	16906-00500	5mm
16	Hex. wrench	16906-00600	6mm
17	Hex. wrench	16906-00800	8mm
18	Hex. wrench	16906-01000	10mm
19	Hex. wrench	16906-01200	12mm
20	Tool case	16914-00001	
21	Case	16919-00001	
22	Grease gun	16910-60600	600cc
23	Drain connector	15545-12601	

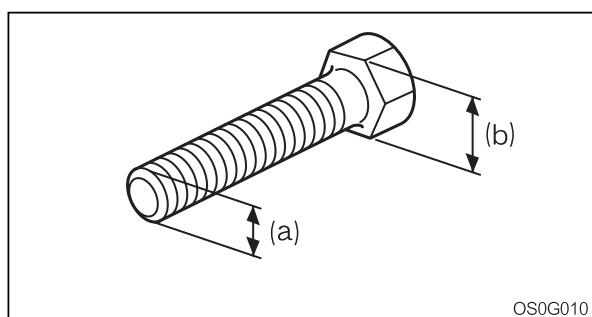
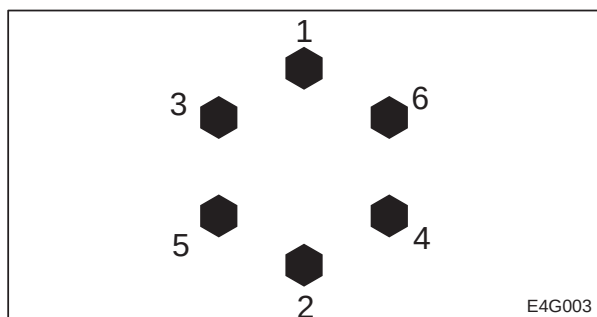


Tightening Torques

Nuts and Bolts (for ISO strength category 10.9)

Tighten nuts and bolts at the torques shown on the table below, unless otherwise specified in the text.

- Tightening torques when mounting plastic covers differ from the values on the table below. Consult a Takeuchi sales or service outlet. Tightening too strongly will break the cover.
- When replacing nuts and bolts, replace them with nuts and bolts of the same size and standards.
- Tighten nuts and bolts alternately (top, bottom, left then right) or in 2 or 3 times so that they are tightened uniformly.



Thread	Head width (b) mm	Size (a) X Pitch mm	Torque	
			General Connection Points	
			N·m	ft-lb
Coarse	10	M6 X 1.0	9.8 ± 0.5	7.2 ± 0.4
	12, 13	M8 X 1.25	22.6 ± 1.1	16.6 ± 0.8
	14, 17	M10 X 1.5	47.1 ± 2.4	34.7 ± 1.7
	17, 19	M12 X 1.75	83.4 ± 4.1	61.5 ± 3.0
	19, 22	M14 X 2.0	134.4 ± 6.7	99.1 ± 4.9
	22, 24	M16 X 2.0	207.9 ± 10.4	153.3 ± 7.7
	27, 30	M20 X 2.5	410.9 ± 20.5	303.1 ± 15.1
Fine	12, 13	M8 X 1.0	24.5 ± 1.2	18.1 ± 0.9
	14, 17	M10 X 1.25	50 ± 2.5	36.9 ± 1.8
	17, 19	M12 X 1.5	87.3 ± 4.3	64.4 ± 3.2
	19, 22	M14 X 1.5	135.3 ± 6.8	99.8 ± 5.0
	22, 24	M16 X 1.5	220.6 ± 11	162.7 ± 8.1
	27, 30	M20 X 1.5	452.1 ± 22.6	333.4 ± 16.6

**Important Parts**

For safe use, the machine must be serviced periodically. To increase safety, periodically replace the parts listed in the following table of important parts. Serious injury or a fire could result if they deteriorate or are damaged.

Table of Important Parts

Unit		Important parts to be replaced periodically	Replacement Interval
Fuel system		Fuel hoses	Every 2 years
		Packing in fuel filler cap	
Engine connection		Engine oil filter hoses	
Heater & AC systems		Heater hoses	
		Air conditioner hoses	
Hydraulic system	Machine body	Hydraulic hoses (Pump - delivery)	
		Hydraulic hoses (Pump - suction)	
		Hydraulic hoses (Slew motor)	
		Hydraulic hoses (Travel motor)	
	Working equipment	Hydraulic hoses (Boom cylinder lines)	
		Hydraulic hoses (Boom adjustment cylinder lines)	
		Hydraulic hoses (Arm cylinder lines)	
		Hydraulic hoses (Bucket cylinder lines)	
		Hydraulic hoses (Swing cylinder)	
		Hydraulic hoses (Blade cylinder)	
		Hydraulic hoses (Tension cylinder)	
		Hydraulic hoses (Pilot valve)	
		Hydraulic hoses (Auxiliary lines)	
		Seat belt	Every 3 years

Above important parts are vulnerable to aging and wear or deterioration and it is difficult to determine the degree to which they have deteriorated on the occasion of periodic service. To maintain their proper function at all times, therefore, replace them with new ones after using them for a specific period of time even if no abnormality is found with the parts. If you find abnormalities in these parts before their scheduled replacement time is reached, repair or replace them immediately. If a hose clamp is deformed or cracked, replace it immediately. When replacing the important parts, please contact a Takeuchi sales or service outlet.

Also check the hydraulic hoses other than the above important parts. If any abnormality is found in them, retighten them or replace them immediately.

When replacing the hydraulic hoses, replace the O-rings and seals at the same time.

Check the fuel and hydraulic hoses according to the periodic schedule described below. Refer to "Maintenance".

Type of inspection	Inspection item
Daily inspection	Leakages from joints, hydraulic or fuel hoses.
Monthly inspection	Leakages from joints, hydraulic or fuel hoses. Damaged hydraulic or fuel hoses(cracks, wear and tear).
Annual inspection	Leakages from joints, hydraulic or fuel hoses. Deteriorated, twisted, damaged hydraulic or fuel hoses (cracks, wear and tear) or hoses in contact with other parts of the machine.

**Maintenance Chart**

Maintenance Items	See page
Walk-Around Inspection	
Inspecting by opening the engine hood and covers	105
Inspecting by walking around the machine	106
Inspecting while sitting in the operator's seat	106
Daily Inspection (Every 10 Hours)	
Inspecting and replenishing the coolant	107
Inspecting and replenishing the engine oil	108
Inspecting the water separator	108
Inspecting the fuel level	109
Inspecting the hydraulic oil level and replenishing	109
Lubricating the working equipment	111
After First 50 Hours (New Machines Only)	
Replacing the hydraulic oil return filter	112
Replacing the engine oil and oil filter	113
Inspecting and adjusting the fan belt	114
Every 50 Hours	
Inspecting the crawler tension	115
Lubricating the slew bearing	116
Inspecting the battery fluid level and replenishing	117
Draining the fuel tank	118
After First 250 Hours (New Machines Only)	
Replacing the travel motor gear oil*	119
Every 250 Hours	
Replacing the engine oil and oil filter	120
Inspecting and adjusting the fan belt	120
Cleaning the air cleaner	120
Cleaning the radiator fins and oil cooler fins	121

* If the percentage of the traveling time within the total operating time is high, replace the gear oil earlier than the specified time.

**Maintenance Chart**

Maintenance Items	See page
Every 500 Hours	
Replacing the hydraulic oil return filter	122
Replacing the fuel filter	122
Replacing the water separator filter	123
Every 1000 Hours	
Cleaning the engine cooling system	124
Replacing the air cleaner elements	125
Replacing the travel motor gear oil	126
Replacing the air breather filter	126
Inspecting and adjusting the engine valve clearance	126
Retightening the engine cylinder head bolts	126
Inspecting the engine fuel injection pressure and spray condition	126
Every 2000 Hours	
Replacing the hydraulic oil and cleaning the suction strainer	127
Inspecting the engine fuel injection timing	129
Inspecting the engine fuel injection valve	129
When Required	
Replacing the bucket teeth and the side cutters	130
Adjusting the gap between the bucket and arm	132
Inspecting and replenishing the windshield washer fluid	133
Draining the water separator	133
Replacing the bucket	134
Lubricating the levers	136
Inspecting the rubber crawlers	137
Replacing the rubber crawlers	138



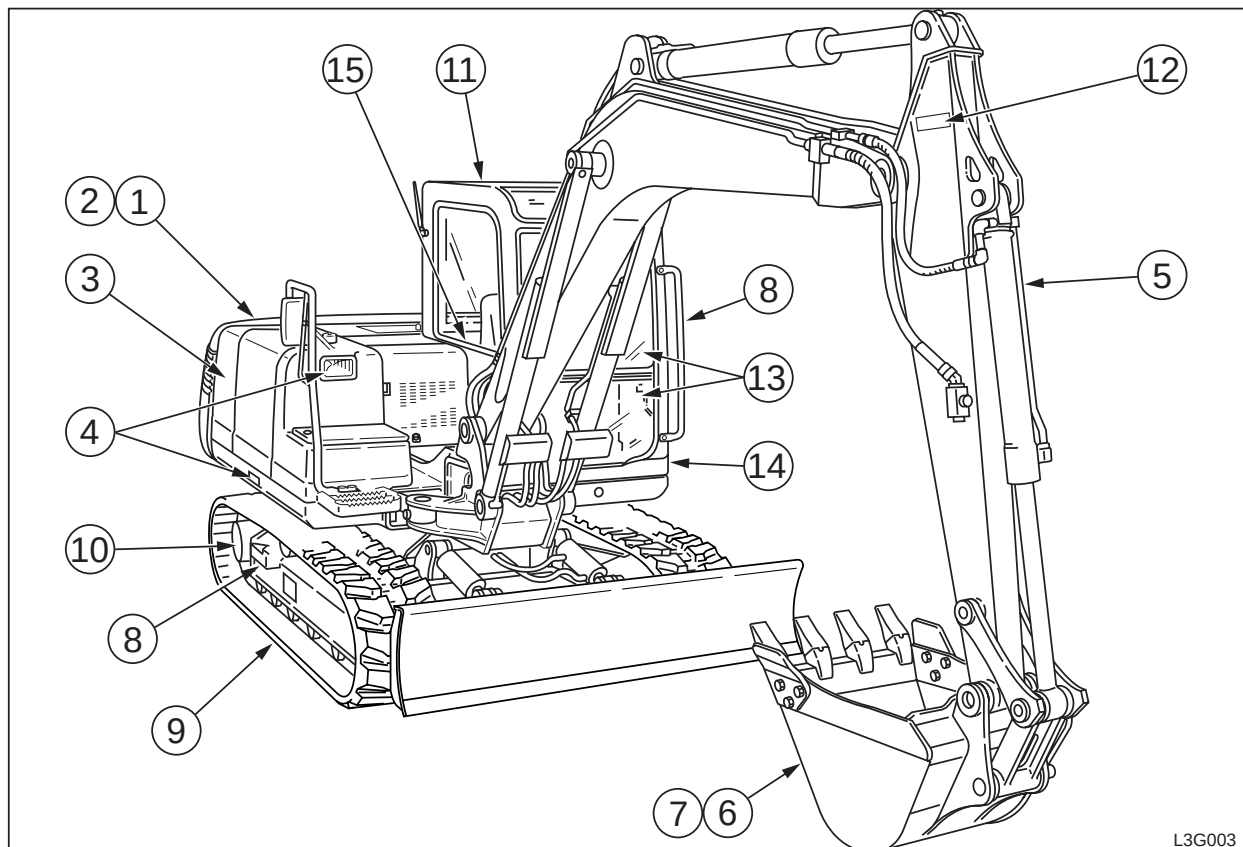
Walk-Around Inspection

Perform the following inspections once every day before starting the engine the first time.

WARNING

- Before operating, perform the walk-around inspections and make repairs immediately should any irregularities be found.
- Be sure to secure the engine hood or cover when opening it. Do not open the engine hood or cover on slopes or in strong wind.

Before starting the engine, look around the machine and lower body, clean any combustible materials off high temperature parts of the engine, and inspect for such irregularities as oil leakage, water leakage and looseness of nuts and bolts.



Inspecting by Opening the Engine Hood and Covers

1. Check for any twigs, leaves, oil or other combustible materials around the engine and battery.
2. Check for oil or engine coolant water leakage around the engine.
3. Check for oil leakage from the hydraulic tank, hydraulic devices, hoses and connections.



Walk-Around Inspection

Inspecting by Walking Around the Machine

4. Check lights for dirt, damage and burnt out bulbs.
5. Check attachments and hoses for damage.
6. Check the bucket, bucket teeth and side cutter for wear, damage and looseness.
7. Check the hook, slip stopper and hook mount of buckets with hooks for damage.
(Option)
8. Check the handrail and step for damage and loose bolts.
9. Check the crawler, carrier roller, track roller, idler and sprocket for damage, wear and loose bolts.
10. Check for oil leakage from the travel motor.
11. Check the canopy, cab and guard for damage and loose nuts and bolts.
Check the rear view mirror and room mirror for dirt, damage, and angle adjustment.
12. Check the labels for dirt and damage.

Inspecting While Sitting in the Operator's Seat

13. Check the windshield for dirt or damage.
14. Check the seat and seat belt for dirt or damage.
Check the operator's seat for dirt, oil or other combustible materials.
15. Check the monitor, instruments and switches for dirt or damage.



Daily Inspection (Every 10 Hours)

Perform the following inspections once every day before starting the engine the first time.

WARNING

- Before operating, perform the Daily inspections and make repairs immediately should any irregularities be found.
- Be sure to secure the engine hood or cover when opening it. Do not open the engine hood or cover on slopes or in strong wind.

Inspecting and Replenishing the Coolant

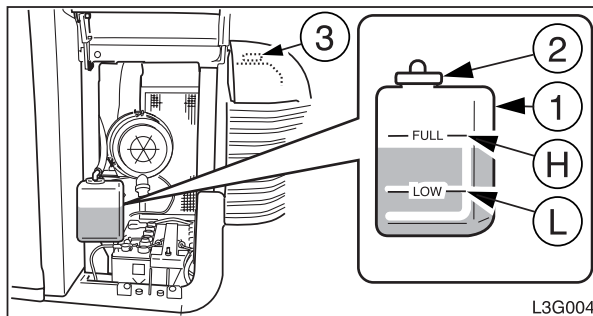
WARNING

Do not remove the radiator cap or drain plugs when the coolant is hot. Stop the engine, let the engine and radiator cool and loosen the radiator cap or drain plugs slowly.

Replenishing

1. Remove the reserve tank's cap (2).
2. Supply coolant up to the upper limit (H) of the reserve tank (1).
If the reserve tank is empty, inspect for fluid leakage, then inspect the radiator (3) coolant level. If it is low, supply water to the radiator (3) first, then to the reserve tank.
3. Install the cap (2).

Inspection



1. Open the engine hood and left side cover.
2. Inspect the quantity of coolant in the reserve tank (1).
The level should be between the upper limit (H) and lower limit (L).
If it is below the lower limit (L), replenish.



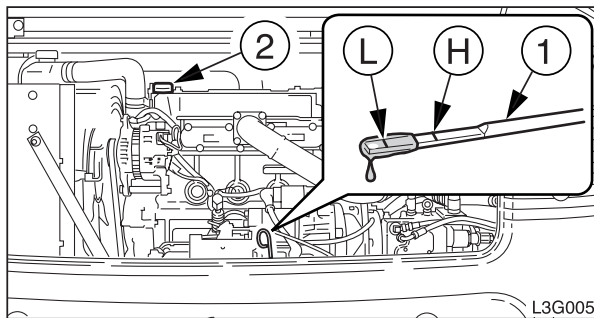
Daily Inspection (Every 10 Hours)

Inspecting and Replenishing the Engine Oil

WARNING

- Stop the engine and allow the machine to cool down before performing maintenance.
- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.

Inspection

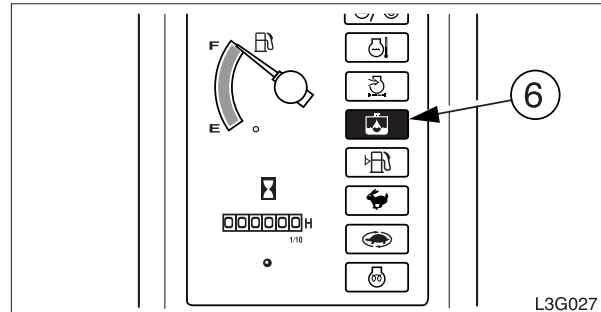


1. Open the engine hood.
2. Pull out the dipstick (1) and wipe off the oil with a rag.
3. Fully reinsert the dipstick (1), then pull it back out.
4. Check the oil on the dipstick (1).
The level should be between the upper limit (H) and lower limit (L).
If it is below the lower limit (L), replenish.

Replenishing

1. Remove the oil supply cap (2).
2. Supply oil up to the upper limit (H) of the dipstick (1).
Problems could arise if the oil level is either too low or too high.
3. Tighten the oil supply cap (2).
4. Start the engine, run it at low idle for about 3 minutes, then stop it.
5. After about 10 minutes, inspect the oil level.

Inspecting the Water Separator



1. Turn the starter switch to the ON position.
2. Inspect the water separator warning lamp (6).
3. If an alarm is sounded or a warning lamp starts flashing, drain the water.
Refer to page 133 "Draining the Water Separator".



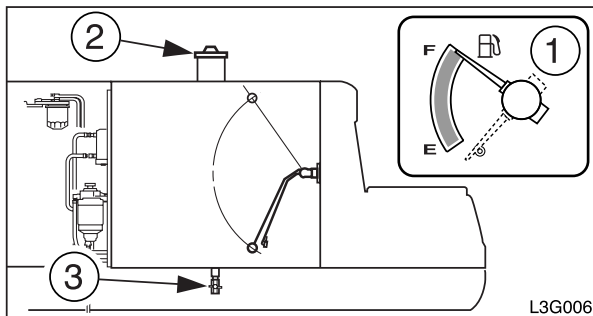
Daily Inspection (Every 10 Hours)

Inspecting the Fuel Level



WARNING

- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.
- Do not smoke or permit open flames while fueling or near fueling operations.
- Stop the engine in a well-ventilated place when supplying fuel.
- Clean up spilled fuel immediately.
- Do not fill the fuel tank to capacity. Allow room for expansion.
- Tighten the fuel filler cap securely.



1. Check the fuel level using the fuel gauge (1).
F: full
E: empty
2. If the level is low, supply fuel from the fuel port (2) while watching the fuel gauge (1). Refer to page 42 "Fuel Filler Cap".

Inspecting the Hydraulic Oil Level and Replenishing



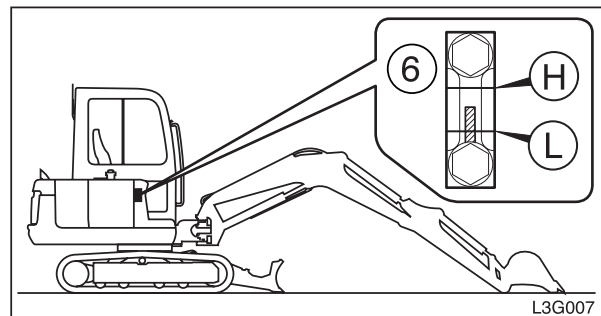
WARNING

- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.
- Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.
 - Gradually press the air breather button to relieve tank pressure.

Inspection

The oil level changes according to the oil temperature. Inspect the oil level in the hydraulic oil level inspection posture shown in the diagram.

- Hydraulic oil level inspection posture



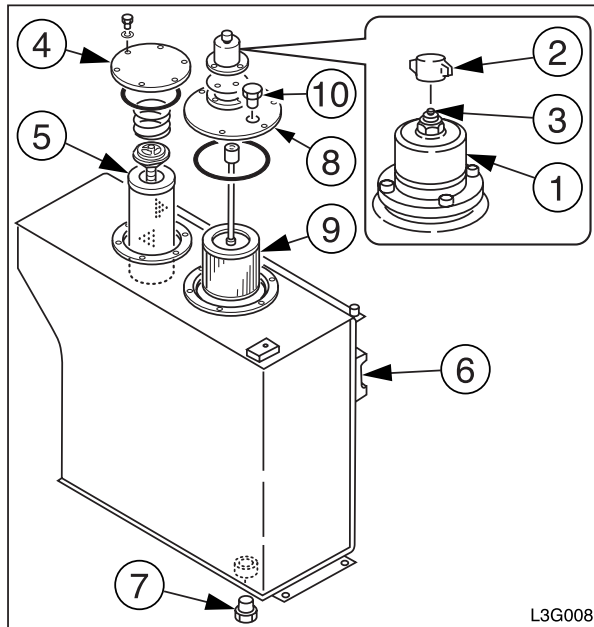
1. Start the engine and run it at low speed.
2. Fully retract the arm and bucket cylinders and ground the bucket.
3. Ground the dozer blade, then stop the engine.
4. Inspect the oil level using the sight gauge (6).
 - When the oil temperature is about 20°C (68°F):
The level should be halfway between the upper limit (H) and lower limit (L).
If it is below the lower limit (L), replenish.



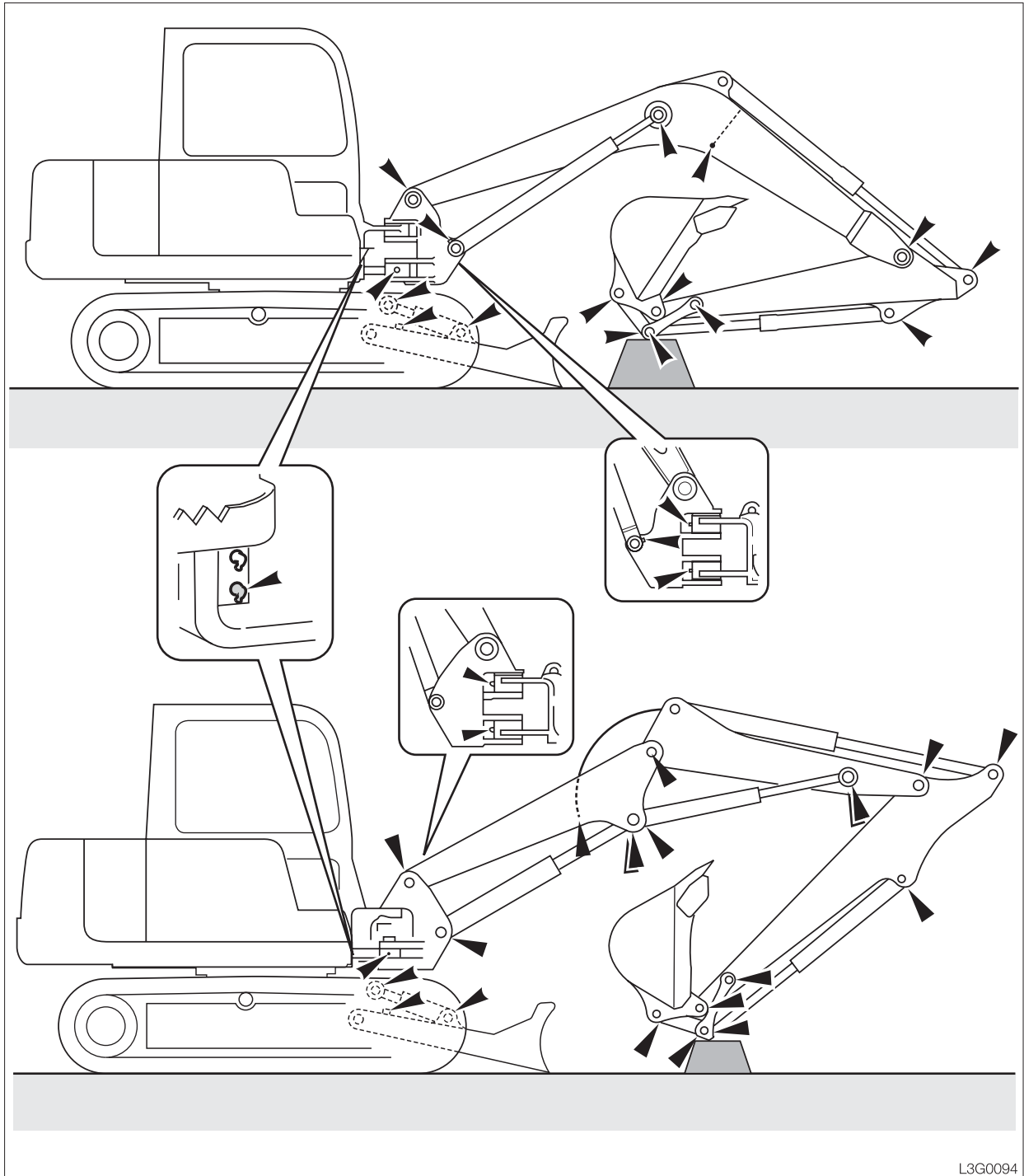
Daily Inspection (Every 10 Hours)

- When the oil temperature is about 50 to 80°C (122 to 176°F):
The level should be near the upper limit (H).

Replenishing



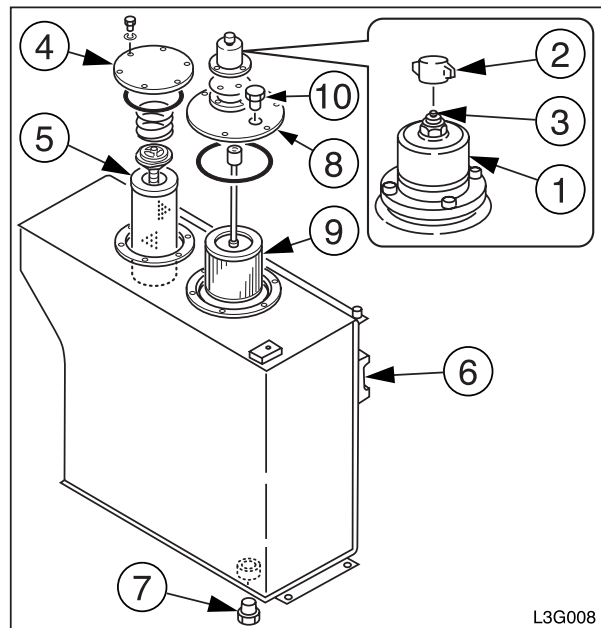
1. Remove cap nut (2).
2. Press button (3) and bleed the air from the tank.
3. Tighten securely by hand with cap nut (2).
4. Remove the plug (10).
5. Supply hydraulic oil up to the middle of the sight gauge (6).
6. Tighten the plug (10).

**Daily Inspection (Every 10 Hours)****Lubricating the Working Equipment**

1. Set the machine to the lubrication posture shown in the diagram above, ground the working equipment, then stop the engine.
2. Use the grease gun to lubricate the grease nipples.
3. Wipe off the expelled grease.

**After First 50 Hours (New Machines Only)****Replacing the Hydraulic Oil
Return Filter****WARNING**

- Stop the engine and allow the machine to cool down before performing maintenance.
- The engine, hydraulic lines and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.
- The hydraulic fluid is also hot and under high pressure. Be careful when loosening caps and plugs. Working on the machine under these conditions could result in burns or injuries due to the hot oil spurting out.
- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.
- Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.
- Gradually press the air breather button to relieve tank pressure.
- When removing plugs or screws or disconnecting hoses, stand to the side and loosen slowly to gradually release the internal pressure before removing.



1. Remove cap nut (2).
2. Press button (3) and bleed the air from the tank.
3. Tighten securely by hand with cap nut (2).
4. Loosen the bolts, and remove the flange (4).
5. Remove the return filter (5).
6. Install the new return filter.
7. Install the flange (4).
8. Inspect the level with the sight gauge (6), and replenish if the level is low. Refer to page 109 "Inspecting the Hydraulic Oil Level and Replenishing".



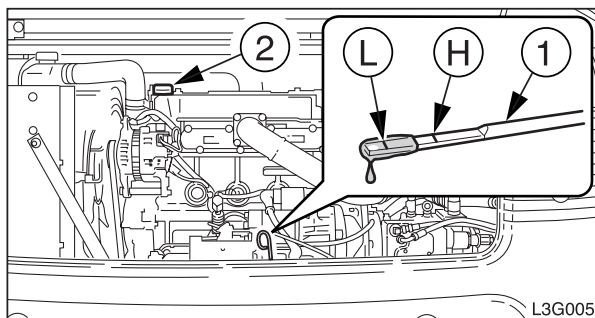
After First 50 Hours (New Machines Only)

Replacing the Engine Oil and Oil Filter

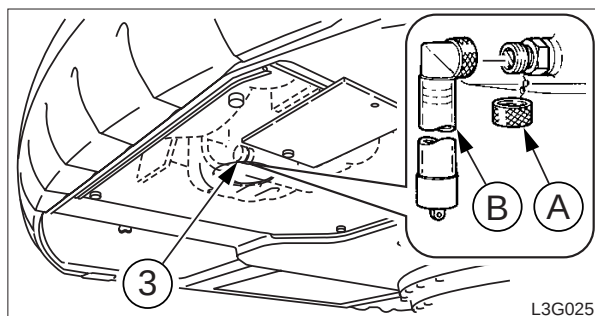


WARNING

- Stop the engine and allow the machine to cool down before performing maintenance.
- The engine, muffler, radiator and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.
- The engine oil is also hot. Be careful when loosening caps and plugs. Working on the machine under these conditions could result in burns.
- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.



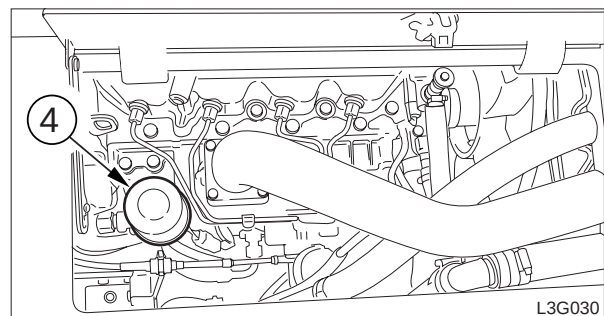
1. Open the engine hood and remove the oil supply cap (2).



2. Loosen the bolts and remove the under cover.
3. Place a pan for catching the spent oil under the drain plug (3).
4. Remove cap (A), install connector (B) and drain the oil. (The oil comes out when the screw is tightened.)
5. Remove connector (B) and install cap (A).

IMPORTANT: Check the spent oil. If it contains large amounts of metal powder, consult a Takeuchi sales or service outlet.

6. Install the under cover.



7. Open the maintenance cover.
8. Using a filter wrench, turn the filter (4) counterclockwise and remove it.
9. Clean the surface of installation of the filter stand.
10. Apply a thin layer of oil to the packing of the new filter.
11. Install the new filter by hand.
12. Tighten 3/4 more turn with the filter wrench after the filter packing comes in contact with the surface of installation.
13. Supply oil up to the upper limit (H) of the dipstick (1). Problems could arise if the oil level is either too low or too high.
14. Tighten the oil supply cap (2).
15. Start the engine, run it at low idle for about 3 minutes, then stop it.
16. After about 10 minutes, inspect the oil level.



After First 50 Hours (New Machines Only)

Inspecting and Adjusting the Fan Belt

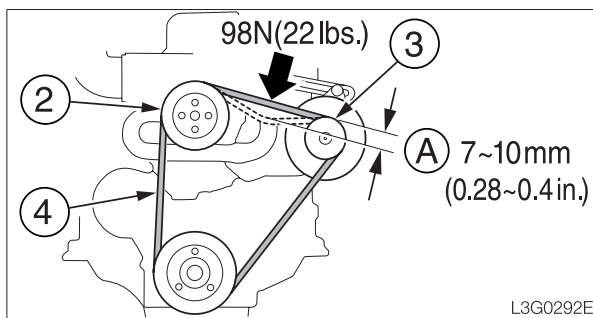
WARNING

Stop the engine and allow the machine to cool down before performing inspection and maintenance.

- The engine, muffler, radiator, hydraulic lines, sliding parts and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.

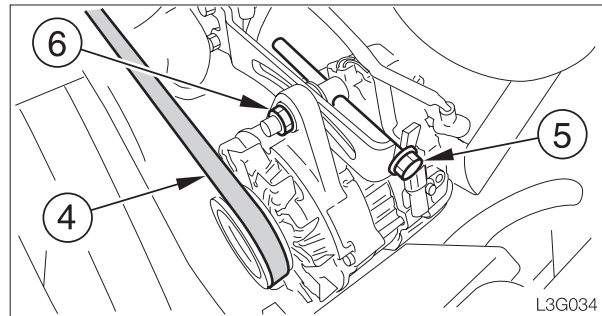
Inspection

1. Open the engine hood.



2. Press at the center of the fan pulley (2) and alternator pulley (3) and check the tension (about 98 N or 22 lbs.).
The slack (A) should be about 7 to 10 mm (0.28 to 0.4 in.).
3. Inspect the fan belt (4) and replace it if:
 - there are cuts or cracks.
 - the belt is worn and touches the bottom of the V groove in the pulley.
 - the belt stretches and cannot be adjusted.

Adjustment



1. Loosen the locking nut (6).
2. Turn the adjustment bolt (5) and adjust the fan belt (4).
 - Tighten: Clockwise
 - Loosen: Counterclockwise
3. Tighten the locking nut (6).



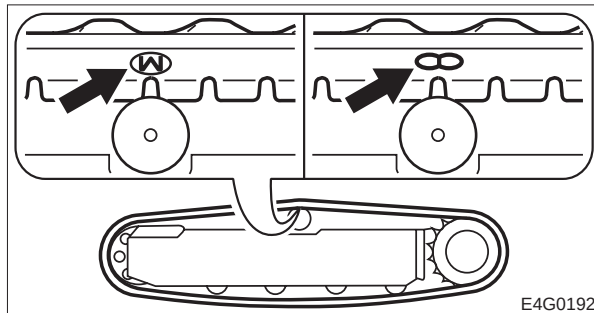
Inspecting the Crawler Tension



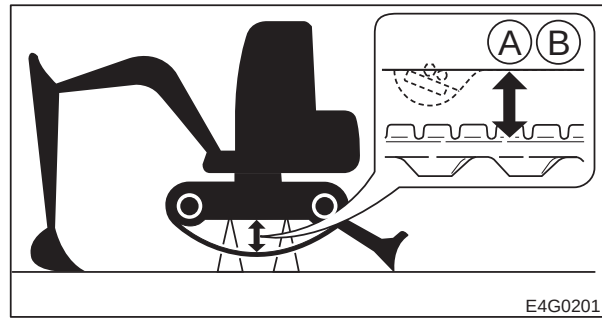
WARNING

If you must work beneath the raised machine or equipment, always use wood blocks, jack-stands or other rigid and stable supports. Never get under the machine or working equipment if they are not sufficiently supported. This procedure is especially important when working on hydraulic cylinders.

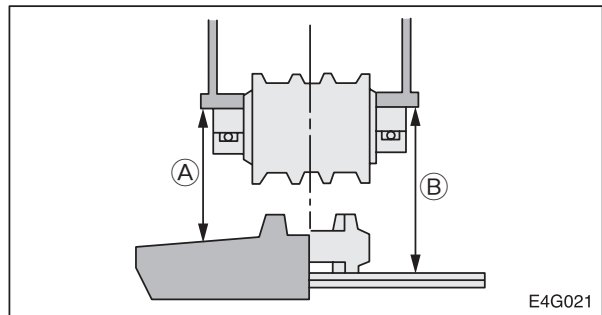
Inspection



1. For rubber crawlers, move the machine so that the “M” or “∞” mark at the coupling is at the top center of the crawler frame.



2. Use the operating devices to lift the body. Operate the levers slowly.



3. Inspect the gap (A or B) between the bottom surface of the frame at the center of the crawler frame and the top surface of the crawler.

The gap (A or B) should be within the following range:

(A) Rubber crawler:

160 to 180 mm (6.3 to 7.1 in.)

(B) Steel crawler:

260 to 280 mm (10.2 to 11.0 in.)

(B) Segment rubber crawler:

245 to 265 mm (9.6 to 10.5 in.)

Adjustment

This machine uses a hydraulic cylinder to adjust the tension of the crawler belts. Note that it is not necessary to regularly perform adjustments of the tension of the belt itself.



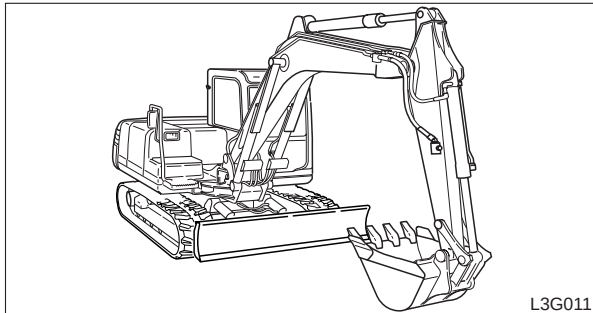
Lubricating the Slew Bearing



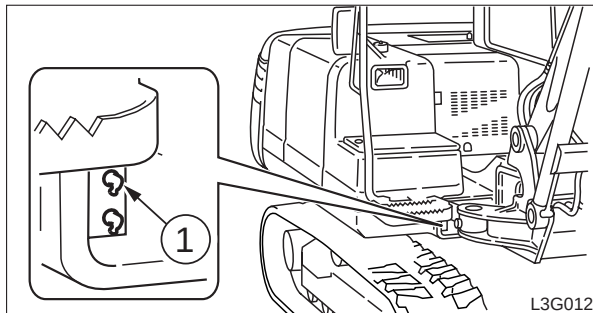
WARNING

Do not slew while lubricating. Doing so is dangerous, as you may get caught in the machine.

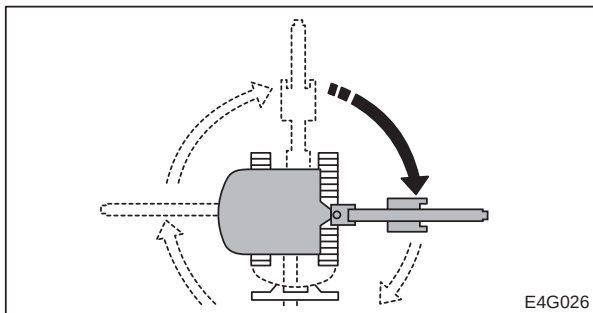
5. Repeat steps 2 to 4 above three times.
6. Wipe off the grease expelled from the slew bearing and grease nipple.



1. Stop the engine with the machine in the posture shown on the diagram above.



2. Use the grease gun to supply grease to the grease nipple (1).



3. Start the engine, lift the bucket and slew clockwise 90°.
4. Ground the bucket and stop the engine.



Inspecting the Battery Fluid Level and Replenishing



DANGER

- Do not use the battery when the fluid level is below the lower level. Doing so will hasten the deterioration of the internal portions of the battery and shorten the battery life, and can also cause rupturing (or an explosion).
- Batteries generate flammable and explosive gases. Keep arcs, sparks, flames and lighted tobacco away.
- Use a dampened cloth to clean the area of the fluid level lines and check the fluid level. Note that if this area is cleaned with a dry cloth, static electricity could cause ignition or explosion.



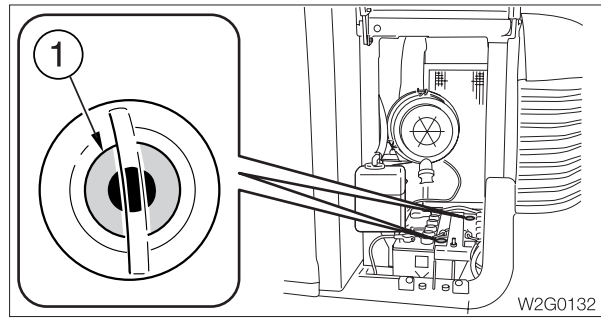
WARNING

- Do not fill the battery above the upper level. Doing so could cause the fluid to leak, contact and damage the skin, or cause parts to corrode.
- Batteries contain sulfuric acid which will damage eyes or skin on contact.
 - If acid contacts eyes, flush immediately with clean water and get prompt medical attention.
 - If acid is accidentally swallowed, drink large quantities of water or milk and call a physician immediately.
 - If acid contacts skin or clothing, wash off immediately with clean water.

Inspection

IMPORTANT: Check the fluid level of all cells, even when the fluid level can be checked by indicator.

1. Open the left side cover.



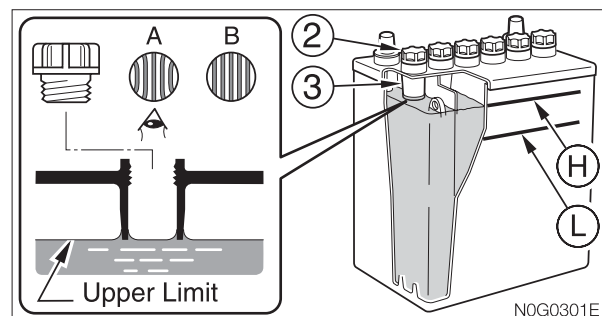
2. Inspect the indicator (1).

- Blue: Good
- White: Charging needed
- Red: Insufficient battery fluid

3. Inspect the fluid level.

The fluid level should be between the lines indicating the upper level (H) and lower level (L). If not, add distilled water up to line (H).

- If the fluid level can not be checked by fluid level lines.



Remove the caps (2) and look into the fluid supply holes to check the fluid level. If the fluid is below the sleeve (3), be sure to add distilled water up to the bottom edge of the sleeve (3).

Proper amount (A)

The fluid reaches up to the bottom edge of the sleeve (3), so the surface tension causes the fluid to swell and the plate appears distorted.

Level too low (B)

The fluid does not reach up to the bottom edge of the sleeve (3), so the plate appears laminar, not distorted.

4. Also check the terminals for looseness and dirt.



Replenishing

When adding distilled water, do so before starting operations in order to prevent freezing.

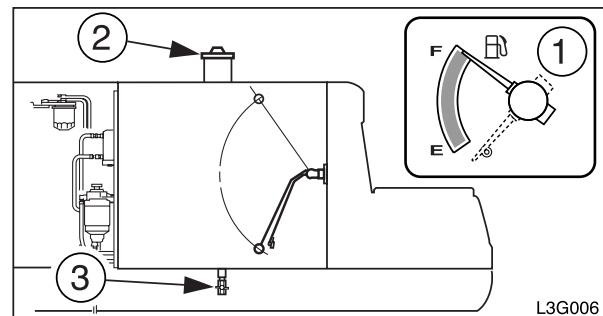
1. Remove the caps (2), and add distilled water until the upper level (H).
2. Inspect the indicator (1) then it turns blue.
3. Clean the cap's exhaust hole, then tighten the caps (2) securely.

Draining the Fuel Tank

WARNING

- **Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.**
- **Do not smoke or permit open flames while handling fuel or working on the fuel system.**
- **Stop the engine in a well-ventilated place and allow it to cool down before performing maintenance.**
- **Clean up spilled fuel immediately.**

Do this before operating the machine.



1. Remove the fuel filler cap (2).
2. Place a pan under the drain cock (3).
3. Open the drain cock (3) and drain the water and sediment from the bottom of the tank.
4. Close the drain cock (3).
5. While watching the fuel gauge (1), supply fuel.
6. Tighten the fuel filler cap (2) supply lock it with the key.
7. Bleed the air.

Bleeding the air from the fuel system

Refer to page 145 "Bleeding the Air from the Fuel System".

Supplement: Air in the fuel system can make it difficult to start the engine and cause engine problems. Also bleed the air when the fuel tank is emptied.



After First 250 Hours (New Machines Only)

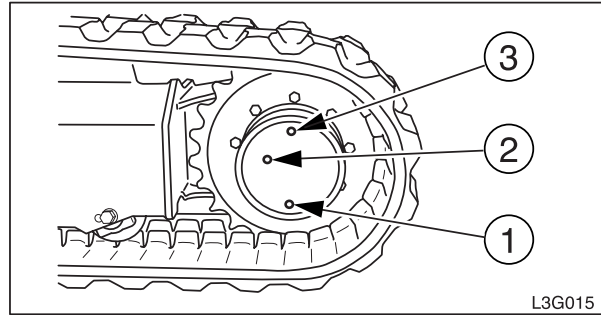
Replacing the Travel Motor Gear Oil



WARNING

- Stop the engine and allow the machine to cool down before performing maintenance.
 - The travel motors are hot directly after the engine is stopped. Touching them will cause burns.
 - The gear oil is also hot and under high pressure. Be careful when loosening plugs. Working on the machine under these conditions could result in burns or injuries.
- The pressure in the travel motor reduction gears case may cause oil or the plug to fly out. Loosen the plug slowly to release the pressure.

IMPORTANT: If the percentage of the traveling time within the total operating time is high, replace the gear oil earlier than the specified time.



1. Set the travel motor so that plug (1) is at the very bottom.
2. Place a pan for catching the spent oil under plug (1).
3. Remove plugs (1), (2) and (3) and drain the oil.
4. Wrap new sealing tape around the plugs.
5. Tighten plug (1).
6. Supply oil through the hole for plug (3) until oil flows out of the hole of plug (2).
7. Tighten plugs (2) and (3).



Replacing the Engine Oil and Oil Filter

Refer to page 113 "Replacing the Engine Oil and Oil Filter".

Inspecting and Adjusting the Fan Belt

Refer to page 114 "Inspecting and Adjusting the Fan Belt".

Cleaning the Air Cleaner



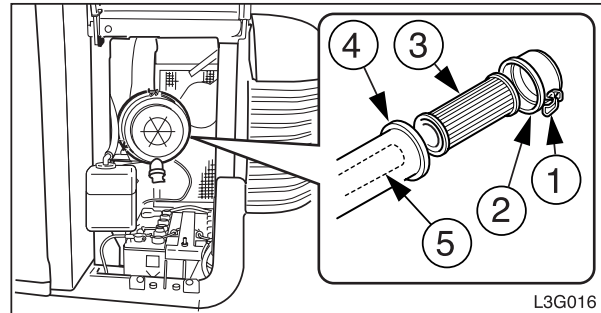
WARNING

- Stop the engine and allow the machine to cool down before performing maintenance.
- The engine, muffler, radiator and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.
- Wear required appropriate equipment such as safety glasses and filter mask when using compressed air, as metal fragments or other objects can fly and cause serious personal injury.

IMPORTANT: Be careful not to scratch the element. Do not use an element if it is damaged.

IMPORTANT: When operating the machine in very dusty places, inspection and maintenance should be performed every day.

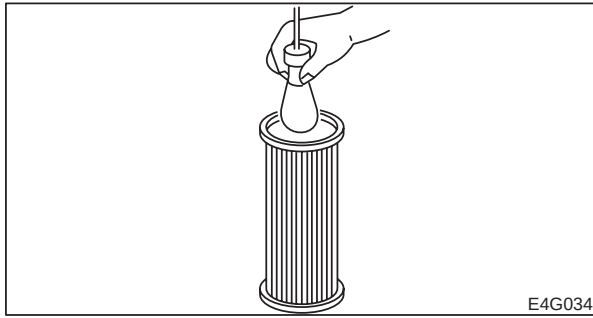
1. Open the left side cover.



2. Loosen the clamps (1) and remove the dust cup (2).
3. Clean the inside of the dust cup (2).
4. Remove the outer element (3).
Do not remove and clean the inner element (5).
5. Clean the inside of the body (4).



6. Clean the outer element (3) with dried compressed air {294 to 490 kPa (43 to 71 psi)}.
First blow the air from the inside of the element along the flutes, then blow the air from the outside, and finally from the inside again.

**Every 250 Hours**

7. Light up the inside of the outer element (3) with a bulb, inspect it, and replace it if there are small holes or thin spots.
8. Install the outer element (3).
9. Install the dust cup (2) with the "TOP" mark at the top, then fasten it with the clamps (1).

Cleaning the Radiator Fins and Oil Cooler Fins**! WARNING**

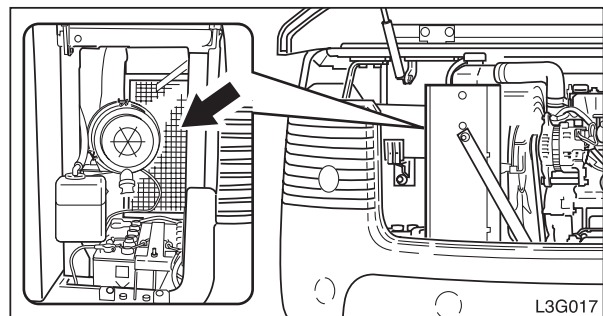
Wear required appropriate equipment such as safety glasses and filter mask when using compressed air, as metal fragments or other objects can fly and cause serious personal injury.

IMPORTANT: Be careful not to damage the radiator fins and oil cooler fins when cleaning them.

- When using compressed air or pressurized water, make sure the pressure is no higher than 200kPa (28 psi) and hold the nozzle sufficiently away from the fins.

IMPORTANT: When using water, cover the electrical system to prevent water from getting in.

IMPORTANT: When operating the machine in very dusty places, inspection and maintenance should be performed every day.



1. Open the left side cover and the engine hood.
2. Blow compressed air on the radiator fins and oil cooler fins to remove mud and dirt stuck on them.



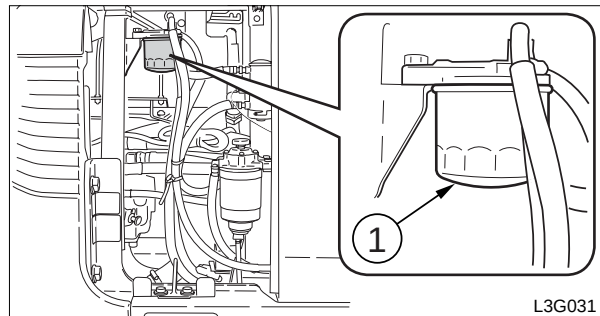
Replacing the Hydraulic Oil Return Filter

Refer to page 112 "Replacing the Hydraulic Oil Return Filter".

Replacing the Fuel Filter

WARNING

- Do not smoke or permit open flames while handling fuel or working on the fuel system.
- Stop the engine in a well-ventilated place and allow it to cool down before performing maintenance.
- Clean up spilled fuel immediately.



1. Open the right side cover.
2. Using a filter wrench, turn the filter (1) counterclockwise and remove it.
3. Clean the surface of installation of the filter stand.
4. Apply a thin layer of oil to the packing of the new filter.
5. Install the new filter by hand.
6. Tighten 2/3 more turn with the filter wrench after the filter packing comes in contact with the surface of installation.
7. Bleed the air.

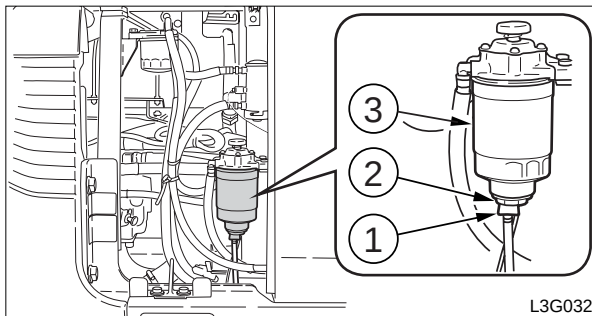
Refer to page 145 "Bleeding the Air from the Fuel System".



Replacing the Water Separator Filter

WARNING

- Do not smoke or permit open flames while handling fuel or working on the fuel system.
- Stop the engine in a well-ventilated place and allow it to cool down before performing maintenance.
- Clean up spilled fuel immediately.



1. Open the right side cover.
2. Place a pan under the drain hose.
3. Open the drain cock (1) and drain the fuel.
4. Remove the sensor (2).
5. Remove and discard the filter (3).
6. Install the sensor (2) on the new filter.
7. Clean the surface of installation of the filter stand.
8. Apply a thin layer of oil to the packing of the new filter.
9. Install the new filter by hand.
10. Tighten 2/3 more turn with the filter wrench after the filter packing comes in contact with the surface of installation.
11. Bleed the air.

Refer to page 145 "Bleeding the Air from the Fuel System".



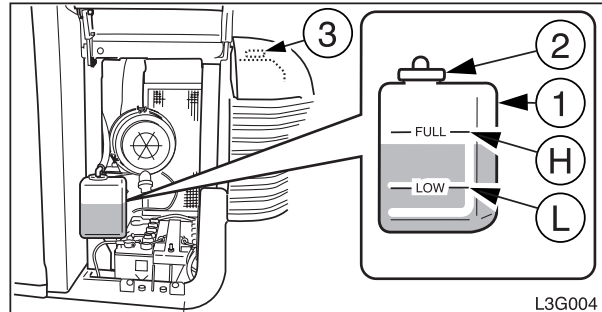
Cleaning the Engine Cooling System

WARNING

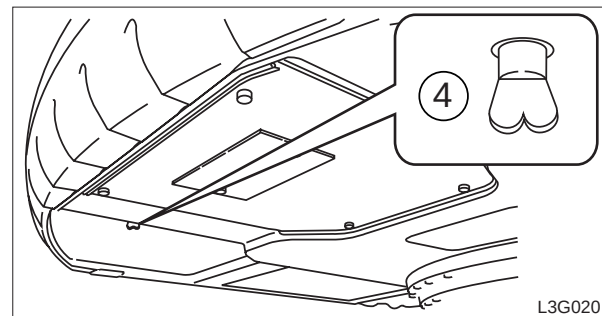
- Stop the engine and allow the machine to cool down before performing maintenance.
- The engine, muffler, radiator and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.
- The engine coolant is also hot and under high pressure. Be careful when loosening caps and plugs. Working on the machine under these conditions could result in burns or injuries due to the hot coolant spurting out.
- If maintenance must be performed with the engine running, always work as a two person team with one person sitting in the operator's seat while the other works on the machine.
- When performing maintenance, be sure to keep your body and clothing away from moving parts.
- Standing at the back of the machine while the engine is running is extremely dangerous, as the machine could move suddenly. Never stand at the back of the machine while the engine is running.
- Do not remove the radiator cap or drain plugs when the coolant is hot. Stop the engine, let the engine and radiator cool and loosen the radiator cap or drain plugs slowly.

When cleaning, if the temperature of the coolant is low, the thermostat will be closed and the coolant will not circulate in the radiator. Heat the coolant water to at least 90 °C before cleaning.

1. Open the left side cover and the engine hood.



2. Gradually loosen the radiator cap (3) to release the internal pressure, then remove.



3. Place a pan for catching the spent coolant under the drain plug (4), then loosen the drain plug (4) and drain the coolant.
4. Tighten the drain plug (4).
5. Add tap water through the radiator's coolant supply port up to the top of the port. Take your time doing this, adding the water slowly to avoid any air from entering the radiator.
6. Close the radiator cap (3).
7. Start the engine and run it at a speed slightly above low idling. Raise the water temperature to at least 90 °C, then run the engine for about 10 minutes with the thermostat open.
8. Stop the engine, let the water's temperature lower, then loosen the drain plug (4) and drain the water.



9. After draining the water, clean using cleaning agent. Clean following the instructions included with the cleaning agent you are using.
10. Repeat steps 4 to 8 to rinse the cooling system.
11. Tighten the drain plug (4).
12. Slowly add the new coolant (mixture of antifreeze and tap water) through the radiator's coolant supply port up to the top of the port. Take your time doing this.
13. Close the radiator cap (3).
14. Warm up the engine. Use the meters to check that there are no irregularities in the cooling system at this time.
15. Raise the water temperature to at least 90°C, then run the engine as such for about 10 minutes.
16. Stop the engine, let the water's temperature lower, then check the level of coolant in the radiator, and replenish up to the top of the coolant supply port.
17. Close the radiator cap (3).
18. Clean the interior of the reserve tank (1), then add coolant to the upper limit (H).
19. After replacing the coolant, inspect the coolant level once again after operating the machine.

The coolant permeates the entire system during operation, so the level decreases. Replenish by the amount the level has decreased.

Replacing the Air Cleaner Elements

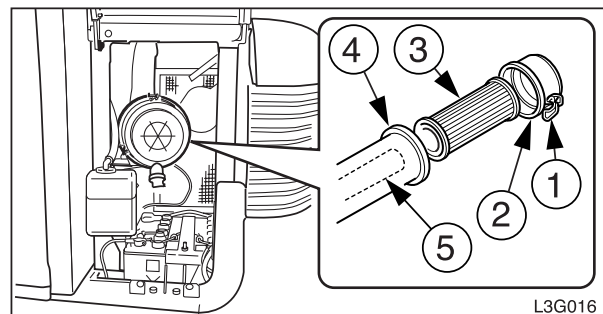
WARNING

Stop the engine and allow the machine to cool down before performing maintenance.

- **The engine, muffler, radiator and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.**

IMPORTANT: Do not use an element if its flutes, gaskets or seals are damaged.

1. Open the left side cover.



2. Loosen the clamps (1) and remove the dust cup (2).
3. Clean the inside of the dust cup (2).
4. Remove the outer element (3).
Do not yet remove inner element (5).
5. Clean the inside of the body (4).
6. Remove the inner element (5).
7. Install the new elements.
8. Install the dust cup (2) with the "TOP" mark at the top, then fasten it with the clamps (1).



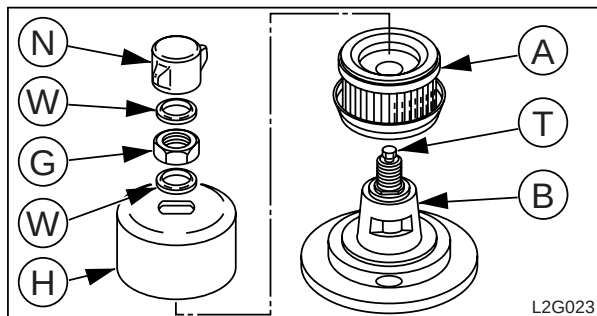
Replacing the Travel Motor Gear Oil

Refer to page 119 "Replacing the Travel Motor Gear Oil".

Replacing the Air Breather Filter

WARNING

- **Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.**
- **Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.**
 - **Gradually press the air breather button to relieve tank pressure.**



1. Remove cap nut (N) on the air breather.
2. Press button (T) and bleed the air from the tank.
3. Remove seal washers (W) and nut (G).
4. Remove cover (H).
5. Replace filter (A), making sure it is in the proper direction.
6. Line up the cut section of body (B) and cover (H) and install.
7. Install seal washers (W) and nut (G).
8. Tighten securely by hand with cap nut (N).

Inspecting and Adjusting the Engine Valve Clearance

This operation requires experience. Have it performed by a Takeuchi sales or service outlet.

Retightening the Engine Cylinder Head Bolts

This operation requires experience. Have it performed by a Takeuchi sales or service outlet.

Inspecting the Engine Fuel Injection Pressure and Spray Condition

This operation requires experience. Have it performed by a Takeuchi sales or service outlet.

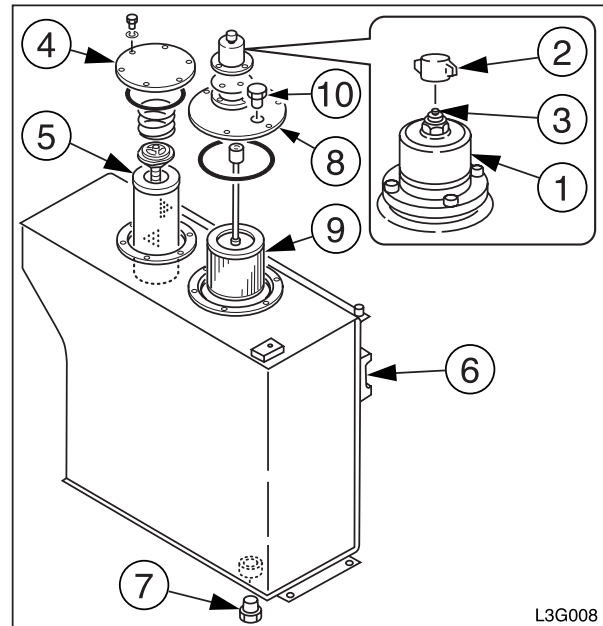


Replacing the Hydraulic Oil and Cleaning the Suction Strainer

WARNING

- Stop the engine and allow the machine to cool down before performing maintenance.
- The engine, hydraulic lines and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.
- The hydraulic fluid is also hot and under high pressure. Be careful when loosening caps and plugs. Working on the machine under these conditions could result in burns or injuries due to the hot oil spurting out.
- Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.
- Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.
- Gradually press the air breather button to relieve tank pressure.
- When removing plugs or screws or disconnecting hoses, stand to the side and loosen slowly to gradually release the internal pressure before removing.

1. Slew 45° clockwise and set the machine to the hydraulic oil level inspection posture. Refer to page 109 "Inspecting the Hydraulic Oil Level and Replenishing".



L3G008

2. Remove cap nut (2).
3. Press button (3) and release the pressure in the tank.
4. Replace the air breather filter (A). Refer to page 126 "Replacing the Air Breather filter".
5. Remove the plug (10).
6. Loosen the bolts, and remove the flange (4).
7. Remove the return filter (5).
8. Place a pan for catching the spent oil under the drain plug (7).
9. Loosen the drain plug (7) and drain the hydraulic oil.
10. Loosen the bolts, and remove the flange (8).
11. Remove the suction strainer (9) and clean it.
12. Clean the inside of the hydraulic tank.
13. Install the new return filter and suction strainer (9).
14. Install the flanges (4) and (8).
15. Tighten the drain plug (7).
16. Supply hydraulic oil up to the middle of the sight gauge (6) from the hole of plug (10).
17. Tighten the plug (10).

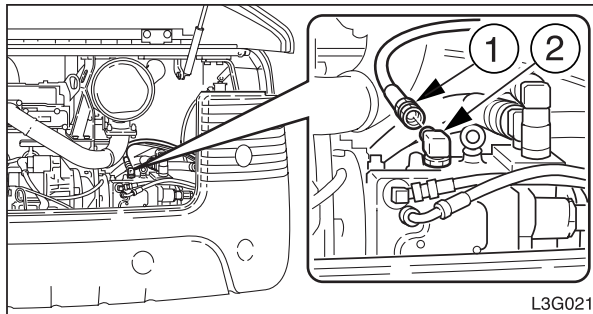


18. Follow the procedure next “Bleeding the air” to bleed the air from the hydraulic oil circuit.
19. Set the machine to the hydraulic oil level inspection posture and inspect the level once the temperature of the oil has dropped.
Refer to page 109 “Inspecting the Hydraulic Oil Level and Replenishing”.

Bleeding the air

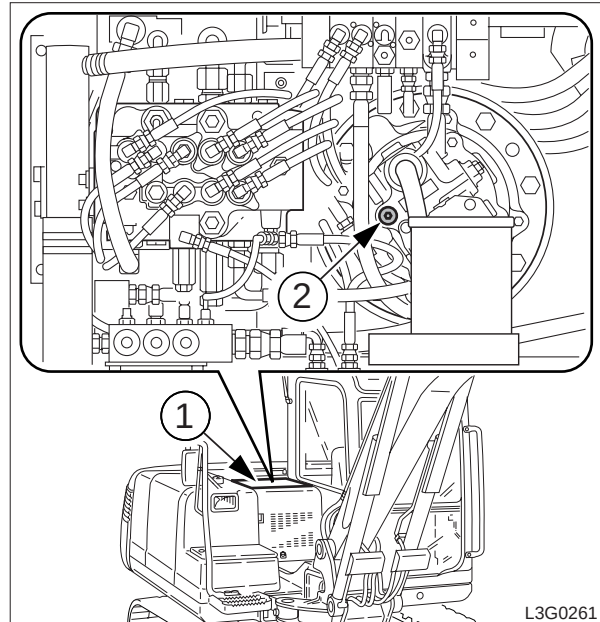
IMPORTANT: After replacing the hydraulic oil, bleed the air from the hydraulic circuit and hydraulic devices. Failure to do so may damage the hydraulic devices.

● Hydraulic pump



1. Open the engine hood.
2. Disconnect the drain hose (1) from the hydraulic pump.
3. Once hydraulic oil overflows from the elbow (2), connect the drain hose (1).

● Slew motor



1. Loosen the bolts and remove the center cover (1).
2. Remove the plug (2).
3. Once hydraulic oil overflows from the plug hole, tighten the plug (2).
4. Install the center cover (1).

● Cylinders

1. Start the engine and run it at low idle for 10 minutes.
2. Set the engine to a low idle, then extend and contract all the cylinders 4 or 5 times, without going to the stroke end.
3. Run the engine at high speed, then extend and contract all the cylinders 4 or 5 times, without going to the stroke end.
4. Set the engine back to a low idle, then extend and contract all the cylinders 4 or 5 times to the stroke ends.

**Every 2000 Hours**

**Inspecting the Engine Fuel
Injection Timing**

This operation requires experience. Have it performed by a Takeuchi sales or service outlet.

**Inspecting the Engine Fuel
Injection Valve**

This operation requires experience. Have it performed by a Takeuchi sales or service outlet.



When Required

Replacing the Bucket Teeth and the Side Cutters

Replace the bucket teeth and the side cutters when the tooth points or the side cutters are worn, before the adapter or the bucket is damaged.



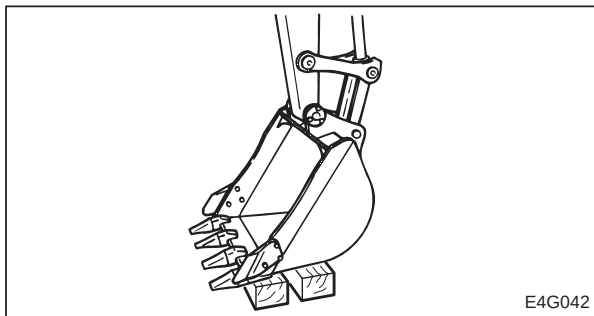
WARNING

- Before performing maintenance or repairs under the machine, set all working equipment against the ground or in the lowermost position.
- To prevent unexpected movement, securely block the working elements when repairing or replacing the bucket teeth and the side cutters.
- Wear required appropriate equipment such as safety glasses when using hammers, as metal fragments or other objects can fly and cause serious personal injury.
- Do not allow unauthorized personnel in the work area.

● Bucket tooth

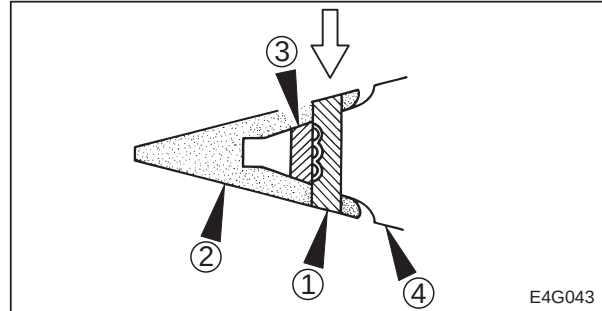
Removal

1. Clean the bucket and park the machine in a flat, safe place where the ground is hard.

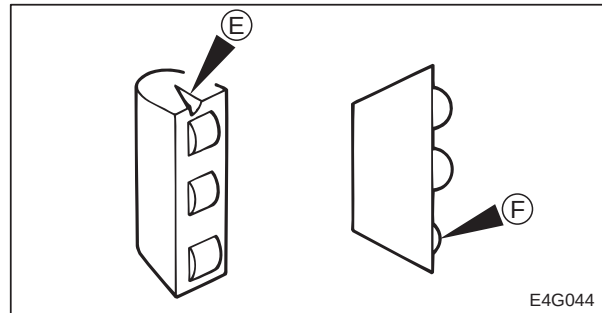


2. Set the bottom surface of the bucket flat and lower it on a block so that the locking pin can be knocked out.

3. Remove the key, then check that the bucket is stable.



4. Remove locking pin (1) and remove point (2).
5. Take out rubber pin lock (3) and check whether it is still usable.

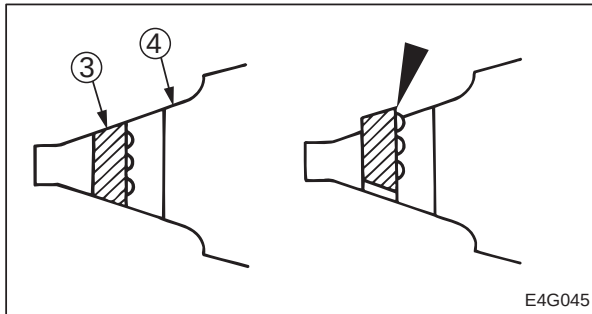


- E When these are cracks in the rubber and it seems like the roller is about to come off.
- F When the roller becomes dented when pressed with a finger.



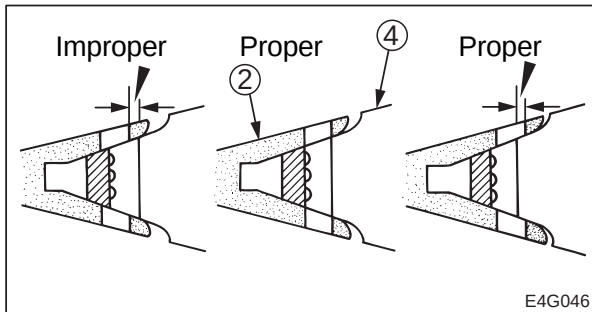
When Required

Installation

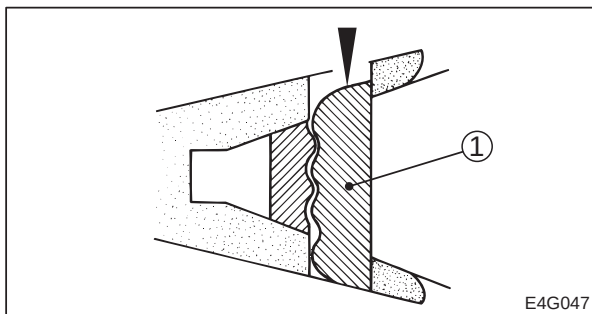


1. Push rubber pin lock (3) into welding adaptor (4).

Do not let the rubber pin lock stick out past the welding adaptor surface.



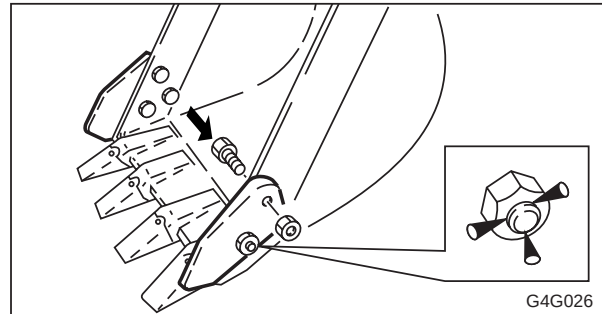
2. Install point (2) onto welding adaptor (4).
 - Insert the point so that the surface behind the point's pin hole is flush or deeper than the surface behind the welding adapter's pin hole.



3. Drive in locking pin (1).

After driving in the locking pin, use a pin with the same surface as the point surface. Do not use worn locking pins.

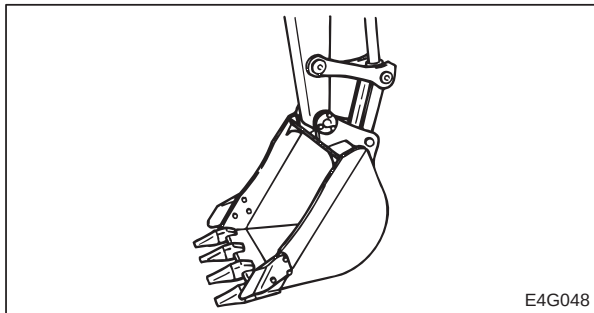
● Side cutter Installation



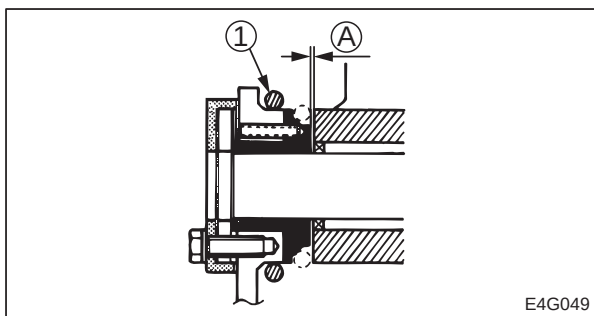
1. Insert the bolts from the inner of the bucket and tighten the nuts.
Tightening torque: 241 N·m (178 ft-lb)
2. Caulk the bolts with a punch at three spots along the periphery of the screw to prevent the nuts from coming loose.

**When Required****Adjusting the Gap Between the Bucket and Arm****! WARNING**

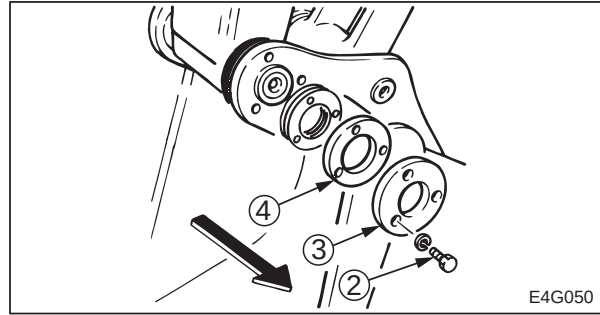
- Before performing maintenance or repairs under the machine, set all working equipment against the ground or in the lowermost position.
- To prevent unexpected movement, securely block the working equipment when adjusting.



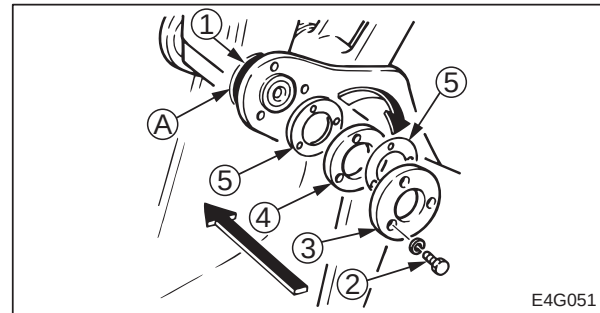
1. Ground the bucket as shown on the diagram above in a stable position.
2. Check that the bucket does not move, then set the safety lock lever to the locked position and stop the engine.



3. Slide the O-ring (1) to bring the gap (A) into view and measure the width of the gap (A).
The gap (A) should be 0.5 mm (0.02 in.)
Swing the bucket slightly to the left and lightly press the arm point to the left side of the bucket (the side without an adjuster).



4. Remove the three bolts (2), the end plate (3) and flange (4).



5. Extract adjustment shim (5) from between flange (4) and the bucket body according to gap (A).
Adjustment shim thickness : 0.5 mm (0.02 in.)
Be careful that the gap is no less than 0.5 mm (0.02 in.) after adjustment.

Supplement

Example (for a gap of 2 mm or 0.08 in.):
2 mm – 0.5 mm (standard value)
= 1.5 mm (0.06 in.)
In the above example, three shims (5) should be removed.

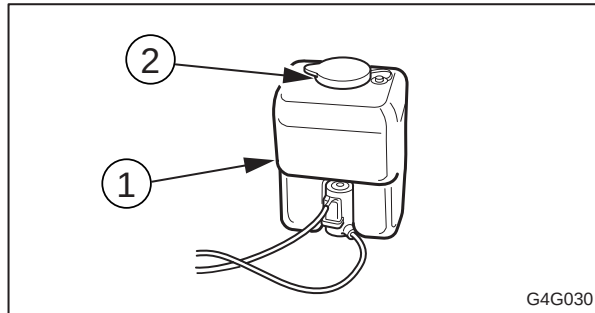
6. Insert adjustment shim (5) removed in step 5 above between end plate (3) and flange (4) and fasten it in place with the three bolts (2).
 - Tightening torque for bolts (2)
54.9 N·m (40.5 ft-lb.)
7. Return the O-ring (1) to their original position.



When Required

Inspecting and Replenishing the Windshield Washer Fluid

Use a windshield washer fluid designed specifically for motor vehicles. Follow the instructions including with the washer fluid.



Inspection

1. Open the cab door.
2. Inspect the washer tank (1) and add washer fluid if the level is low.

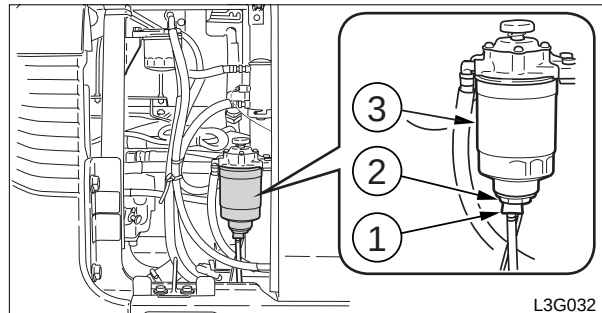
Replenishment

1. Mix the washer fluid to the prescribed concentration.
2. Remove the cap (2) and add washer fluid.
3. Reinstall the cap (2).

Draining the Water Separator

WARNING

- Do not smoke or permit open flames while handling fuel or working on the fuel system.
- Stop the engine in a well-ventilated place and allow it to cool down before performing maintenance.
- Clean up spilled fuel immediately.



1. Open the right side cover.
2. Place a pan under the drain hose.
3. Open the drain cock (1) and drain the water.
4. Close the drain cock (1).

Bleeding the air from the fuel system

Refer to page 145 "Bleeding the Air from the Fuel System".

Supplement: Air in the fuel system can make it difficult to start the engine and cause engine problems. Also bleed the air when the fuel tank is emptied.

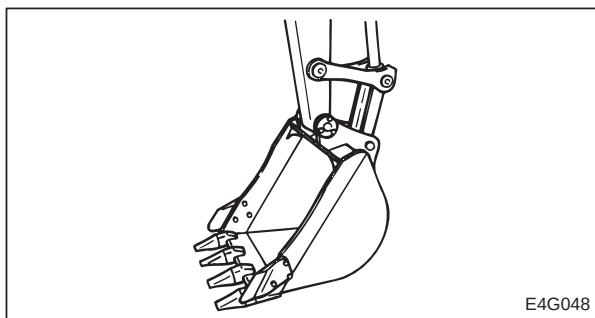


Replacing the Bucket

! WARNING

- Before performing maintenance or repairs under the machine, set all working equipment against the ground or in the lowermost position.
- If maintenance must be performed with the engine running, always work as a two person team with one person sitting in the operator's seat while the other works on the machine.
 - When performing maintenance, be sure to keep your body and clothing away from moving parts.
- Wear required appropriate equipment such as safety glasses and filter mask when using hammers, as metal fragments or other objects can fly and cause serious personal injury.
- When lining up the pin holes, always do so by sight. Your finger may be cut off if you stick it into the hole.

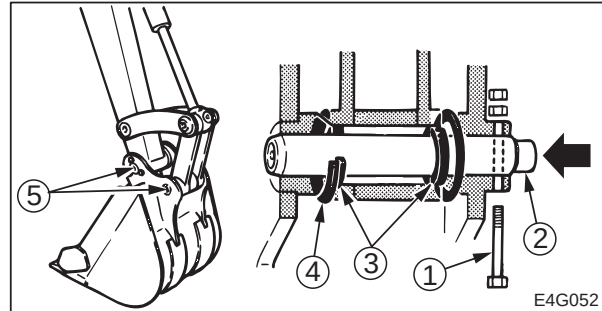
Removal



1. Ground the bucket as shown on the diagram above in a stable position.

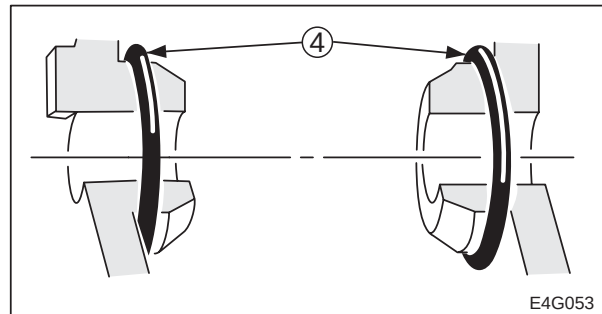
Supplement: When removing pins, set the bucket so that it is just gently against the ground. If it is strongly against the ground, the resistance will be great and it will be difficult to remove the pin.

2. Set the safety lock lever to the locked position and stop the engine.

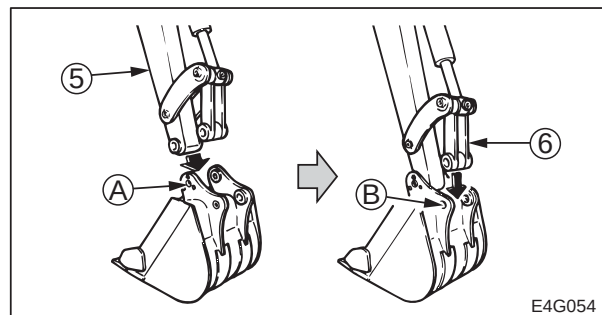


3. Remove the bolt (1).
4. Hammer pin (2) out of the bucket.
5. Remove the bucket.
Inspect the pin seal (3) and replace it if it is deformed or damaged. (See next page.)

Installation



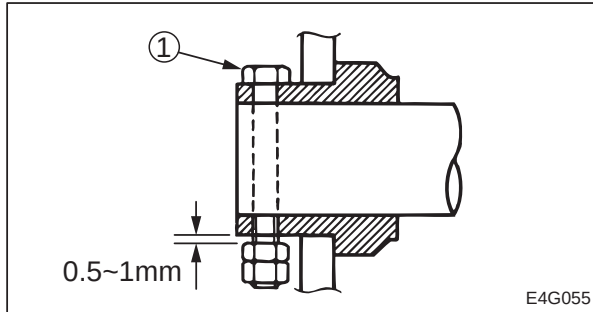
1. Set the bucket's O-ring (4) as shown on the diagram.



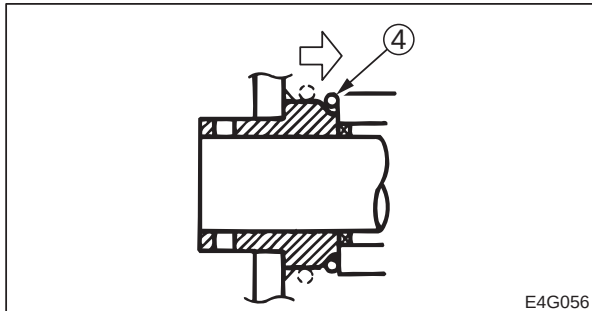
2. Line up pin hole (A) in the bucket with the pin hole in the arm (5), and install the pin (2).

**When Required**

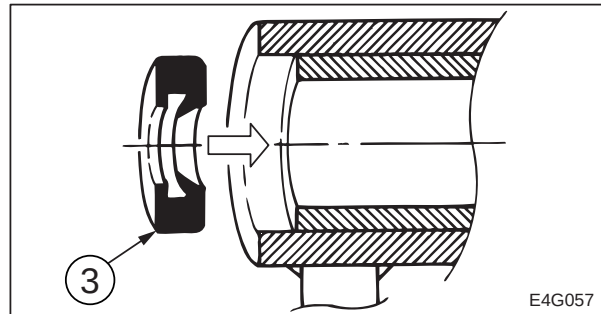
3. Operate the cylinder, line up pin hole (B) in the bucket with the pin hole in the link arm (6), and install the pin (2).



4. Line up the turn prevention holes, install the bolt (1), and the nuts.
Be sure to leave a gap of about 0.5 ~ 1 mm (0.02 ~ 0.04 in.) between the nut and bucket bush, or the nut will come loose.



5. Adjust the gap between the bucket and the arm. Refer to page 132.
6. Slide the O-ring (4).

Replacing the pin seal

1. Set the pin seal (3) in the direction shown on the diagram above.
2. Use a mallet to slowly press the pin seal in. Be careful not to damage the seal.



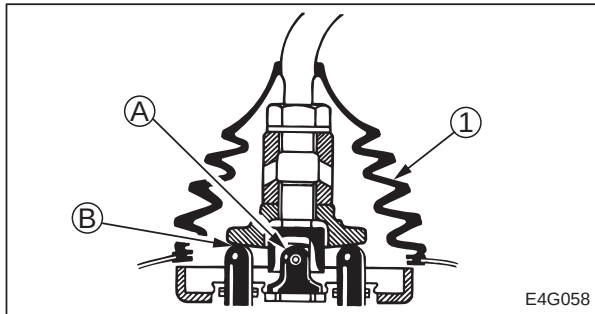
Lubricating the Levers

WARNING

Set the machine to the parking posture, stop the engine, remove the starter key and store it. Failure to do so may result in the machine moving abruptly, leading to serious injury or death.

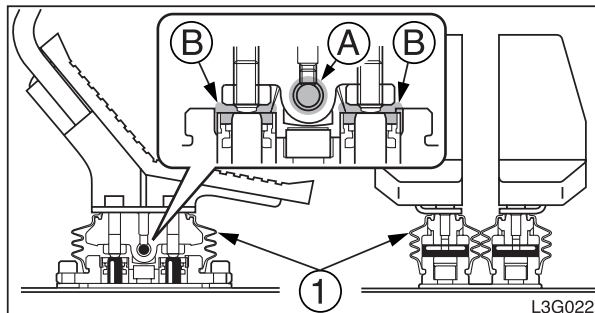
If the levers or pedals no longer move smoothly, supply grease.

Operating levers



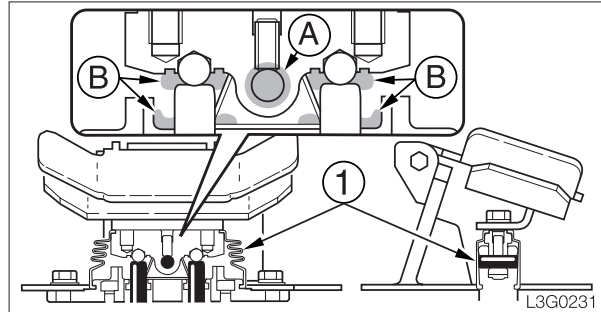
1. Remove the lower mount section of the boot (1) and turn it upwards.
2. Wipe off the old grease.
3. Supply grease to points (A) and (B).
4. Set the boot (1) back as it was.

Travel levers



1. Remove the lower mount section of the boot (1) and turn it upwards.
2. Wipe off the old grease.
3. Supply grease to points (A) and (B).
4. Set the boot (1) back as it was.

Boom swing pedal



1. Remove the lower mount section of the boot (1) and turn it upwards.
2. Wipe off the old grease.
3. Supply grease to points (A) and (B).
4. Set the boot (1) back as it was.



When Required

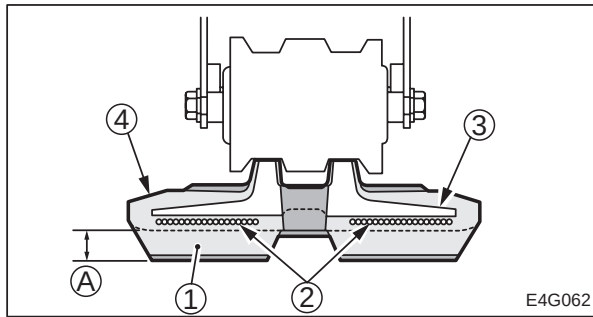
Inspecting the Rubber Crawlers

Repair or replace the rubber crawlers if their conditions are as described below. Consult a Takeuchi sales or service outlet about repairs or replacement.

Rubber crawler

Replace the crawler if the entire crawler is stretched and cannot be adjusted.

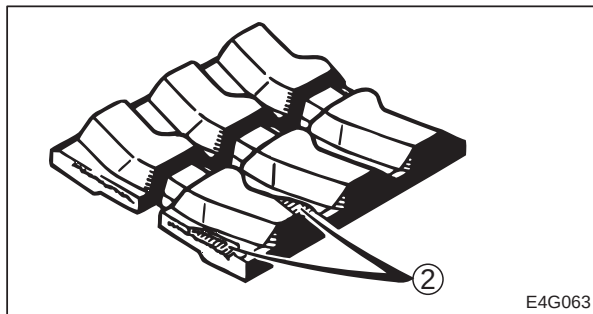
(1) Lug



E4G062

Replace if the height of (A) is 5 mm (0.2 in.) or below.

(2) Steel cord

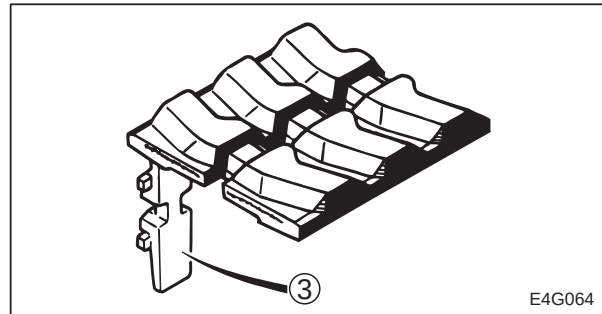


E4G063

Replace if the steel cord is exposed over 2 or more links.

Replace if half or more of the steel cords on one side are cut.

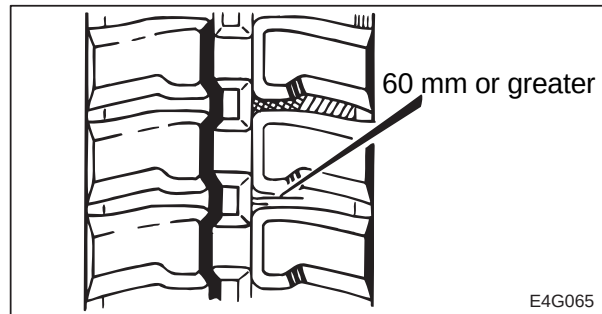
(3) Metal core



E4G064

Replace if even one metal core is off.

(4) Rubber



E4G065

Repair if there are cracks of 60 mm (2.4 in.) or greater in length.

If the steel cord is visible, repair as soon as possible, regardless of the length of the crack.



Replacing the Rubber Crawlers



WARNING

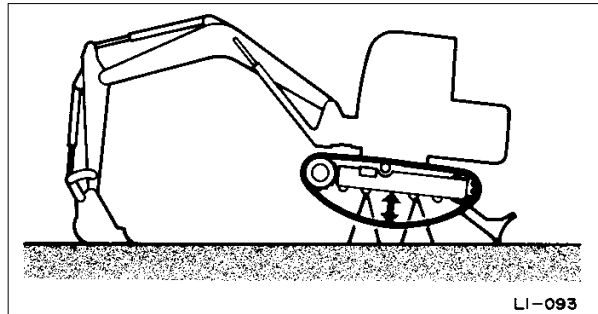
- If you must work beneath the raised machine or equipment, always use wood blocks, jack-stands or other rigid and stable supports. Never get under the machine or working equipment if they are not sufficiently supported. This procedure is especially important when working on hydraulic cylinders.
- If maintenance must be performed with the engine running, always work as a two person team with one person sitting in the operator's seat while the other works on the machine.
 - When performing maintenance, be sure to keep your body and clothing away from moving parts.

This machine uses a hydraulic cylinder to adjust the tension of the crawler belts. Note that it is not necessary to regularly perform adjustments of the tension of the belt itself.

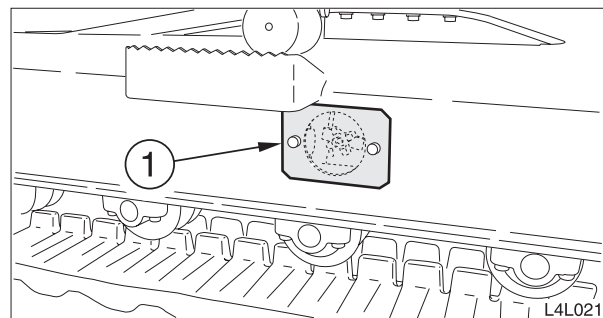
IMPORTANT: During the replacement procedure, only start the engine when raising and lowering the machine body. Otherwise, always keep the engine off.

IMPORTANT: When the travel speed switch is set to the 2nd speed side while the engine is running, the tensioning cylinder rods extend and the crawlers are tightened.

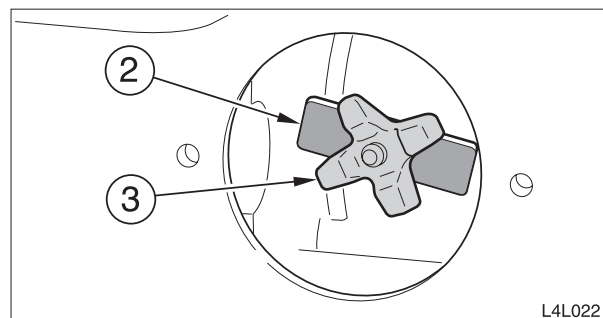
Removal



1. Start the engine and raise the machine body with the hoe attachment and dozer blade.
2. Stop the engine.



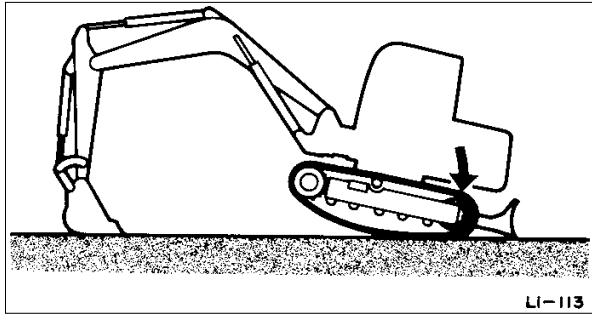
3. Remove the valve covers (1) at the center of the left and right crawler frames.



4. Loosen the lock plate (2) counterclockwise.
5. Turn the valve handle (3) counterclockwise to loosen the tension of the crawler.
6. Once the crawler is completely loose, tighten the valve handle (3).
7. Tighten the lock plate (2).
8. Do the same for the other side.



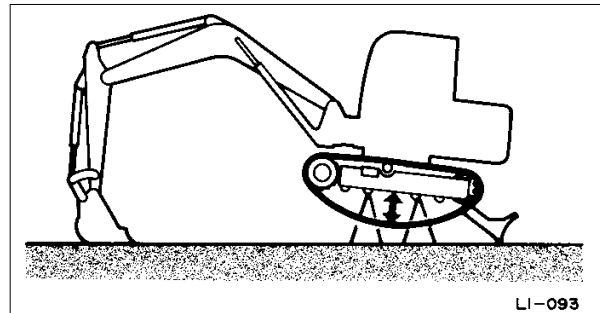
When Required



9. Slowly lower the dozer blade side of the machine body, by the dozer blade lever. (Do not start the engine.)
10. Ground the crawlers and lower the machine body so that the crawler slack is maximum.
11. When the crawlers come away from the idlers, slide the crawlers to the outside and remove them.
12. Disengage the crawlers and sprockets, then remove the crawlers from the crawler frames.

Installation

1. Engage the crawlers with the left and right sprockets.
2. Set the left and right crawlers on the idlers.
3. Start the engine.
4. Press the travel speed switch once and set it to the 2nd speed side. The left and right crawlers are tightened simultaneously.



5. Check that the crawlers are properly tightened. Standard value (A). Refer to page 115 "Inspecting the Crawler Tension".



Long-term Storage

Procedures for storage

If the machine is to be stored for 30 days or more, store it indoors. If it must be stored outdoors, stop it on wood laid out on a flat surface and place a waterproof cover over it so that it stays dry.

1. Clean the machine.
2. Inspect for oil leakage, water leakage and loose nuts and bolts.
3. Add fuel and replace the hydraulic oil and oil.
4. To prevent rusting and freezing, replace the engine coolant with long-life coolant (LLC).
Refer to page 124 "Cleaning the Engine Cooling System".
5. Use the grease gun to supply grease to the grease nipples.
6. Fully contract the bucket and arm cylinders and ground the bucket and dozer blade.
7. Apply rust-prevention oil to the hydraulic cylinder rods.
8. Disconnect the cable from the battery's "–" terminal and cover the battery to prevent freezing.

During storage

WARNING

- **Do not operate the engine in an enclosed area without adequate ventilation.**
- **If natural ventilation is poor, install ventilators, fans, exhaust extension pipes or other artificial venting devices.**

1. To prevent rusting, operate the machine once a month so that the oil is fully circulated.
2. Inspect the battery and recharge it if necessary.
Have the battery charged by a Takeuchi sales or service outlet.

Starting the machine after storage

IMPORTANT: If the "Procedures for storage" have not been performed and the machine has been stored for a long period of time, consult a Takeuchi sales or service outlet before reusing the machine.

1. Wipe off the rust-prevention oil that was applied to the hydraulic oil cylinders' piston rods.
2. Add fuel, oil and grease to all parts.



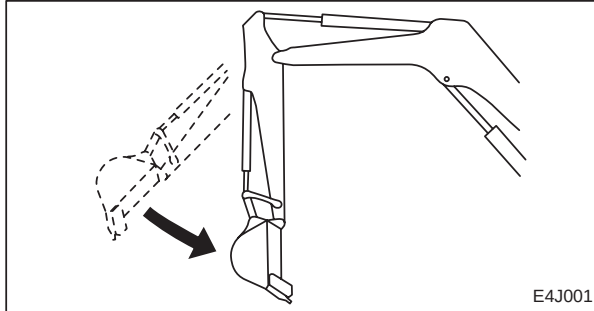
TROUBLESHOOTING

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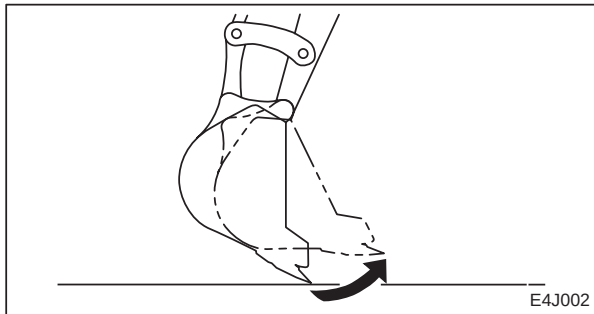


Symptoms that are not Malfunctions

The following symptoms are not malfunctions:



- When the arm reaches the vertical position while contracting it while the engine is running at low speed, the contracting speed slows down momentarily.



- When the bucket teeth reach the horizontal position while the engine is running at low speed, the speed of bucket movement slows down momentarily.
- The slew motor produces noise at the beginning and end of the slewing operation.
- The travel motor produces noise when stopped suddenly during high speed travel.
- The control valve produces noise if excessive force is applied to the working equipment and when the stroke end is reached.

- When the bucket is operated while making a right pivot turn (i.e., when only the left crawler is turning), the speed of the pivot turn may suddenly increase.
- Performance decreases when an attachment weighing more than a standard arm or bucket is mounted.

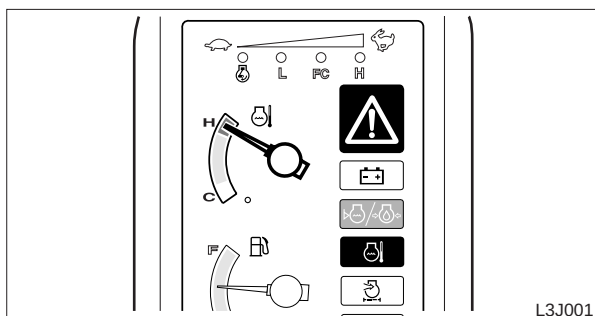


If the Engine Overheats

WARNING

- Do not open the engine hood when there is steam coming from the engine room. The steam or hot water may spurt out, resulting in burns.
- Do not remove the radiator cap or drain plugs when the coolant is hot. Stop the engine, let the engine and radiator cool and loosen the radiator cap or drain plugs slowly.
- Stop the engine and allow the machine to cool down before performing inspection and maintenance.

The following symptoms indicate overheating:



- An alarm is sounded and the coolant temperature warning lamp, engine emergency lamp flashes.
When the engine oil pressure/coolant level warning lamp is flashing simultaneously, the coolant level is low.
- The water temperature gauge is in the red zone.
- The engine slows down and the force decreases.
- Steam comes from the engine room.

Procedure

1. Park the machine in a safe place.
2. Inspect whether the engine oil pressure/coolant level warning lamp is flashing or if there is steam coming out when the engine hood is closed.
3. If there is steam, stop the engine immediately and contact a Takeuchi sales or service outlet for repairs.
If the engine oil pressure/coolant level warning lamp is off, run the engine at low idle and let the water temperature decrease.
4. Once the water temperature gauge drops to the green zone, stop the engine.
5. Once the engine is cool, perform the following inspections and procedures:
 - Fan belt slack Adjust.
Refer to page 114.
 - Coolant level Add.
Refer to page 107.
 - Water leakage Repair.
 - Radiator fins Clean.
Refer to page 121.
 - Sediment in cooling system Clean.
Refer to page 124.

If the problem persists after the above procedures are taken, contact a Takeuchi sales or service outlet for repairs.



If the Battery Goes Dead

The following symptoms indicate that the battery is dead:

- The starter motor does not turn or turns weakly, and the engine does not start.
- The horn is weak.

Procedure

Use jumper cables and start the engine using the rescue vehicle's battery.



WARNING

- Use jumper cables only in the recommended manner. Improper use of jumper cables can result in battery explosion or unexpected machine motion.
- Do not let the problem vehicle and rescue vehicle touch each other.
- Do not let the "+" and "-" clips of the jumper cables touch each other.
- Connect the jumper cables to the "+" terminals first, and disconnect them from the "-" terminals (ground) first.
- Connect the final clip of the jumper cable to a point as far away from the battery as possible.
- Use safety glasses when using jumper cables to start the machine.

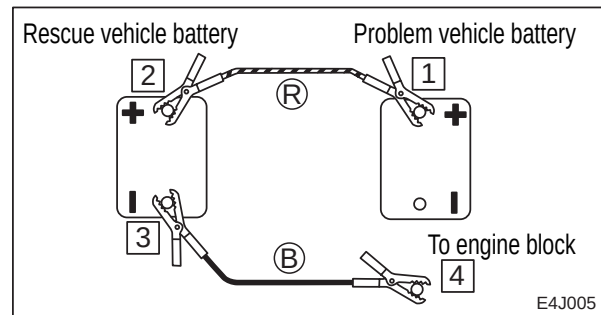
IMPORTANT: Use jumper cables and clips of a size suited to the battery's capacity. Do not use damaged or corroded jumper cables and clips.

IMPORTANT: The rescue vehicle's battery must have the same capacity as the problem vehicle's battery.

IMPORTANT: Connect the clips securely.

Connecting the jumper cables

IMPORTANT: Set the starter keys of both the rescue vehicle and problem vehicle to the OFF position.



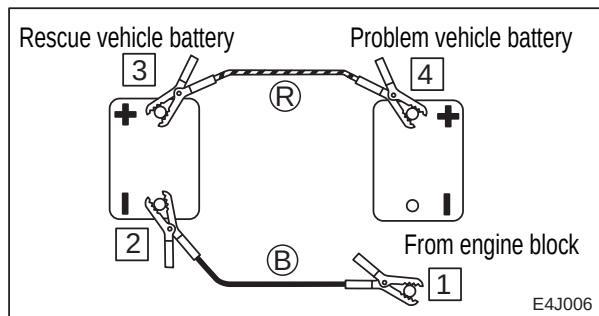
1. Connect the clip of jumper cable (R) to the problem vehicle's "+" terminal.
2. Connect the other clip of jumper cable (R) to the rescue vehicle's "+" terminal.
3. Connect the clip of jumper cable (B) to the rescue vehicle's "-" terminal.
4. Connect the other clip of jumper cable (B) to the problem vehicle's engine block. Connect the clip as far from the battery as possible.

Starting the engine

1. Check that the clips are securely connected to the terminals.
2. Start the rescue vehicle's engine and run it at high speed.
3. Start the problem vehicle's engine.

**Disconnecting the jumper cables**

Once the engine starts, disconnect the jumper cables following the connection procedure in reverse order.



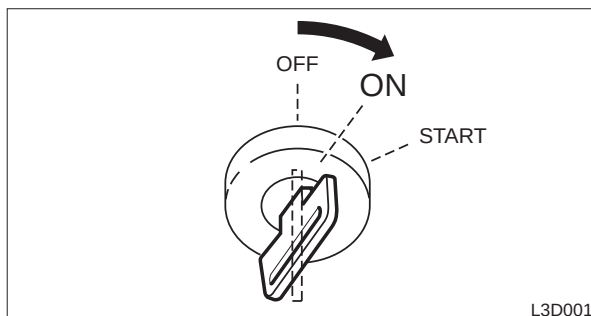
1. Disconnect the clip of jumper cable (B) from the problem vehicle's engine block.
2. Disconnect the other clip of jumper cable (B) from the rescue vehicle's "-" terminal.
3. Disconnect the clip of jumper cable (R) from the rescue vehicle's "+" terminal.
4. Disconnect the other clip of jumper cable (R) from the problem vehicle's "+" terminal.

Recharging

Have a Takeuchi sales or service outlet recharge batteries that have gone dead.

Bleeding the Air from the Fuel System

1. Supply fuel.



2. Turn the starter key to the ON position and hold it there for about 20 seconds.
The automatic air bleeder bleeds the air from the fuel system.

Supplement: Air in the fuel system can make it difficult to start the engine and cause engine problems. Also bleed the air when the fuel tank is emptied or air in the fuel system.



If a Fuse Blows

If a light does not turn on or the electric system does not operate, a fuse may be blown. Inspect the fuses.

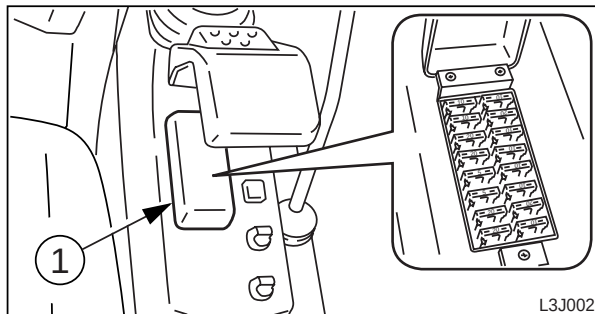
Inspecting and Replacing the Fuse



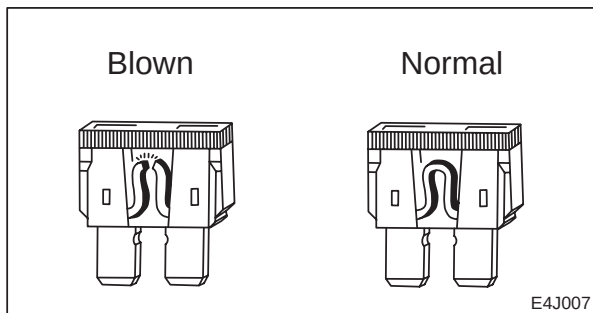
WARNING

If the fuse blows as soon as it is replaced, there is a problem with the electric system. Continued use may lead to fire. Consult a Takeuchi sales or service outlet.

1. Turn the starter key to the OFF position and stop the engine.



2. Open the fuse box cover (1).
3. Inspect for any blown fuses.



4. If a fuse is blown, replace it with a spare fuse of the same capacity.

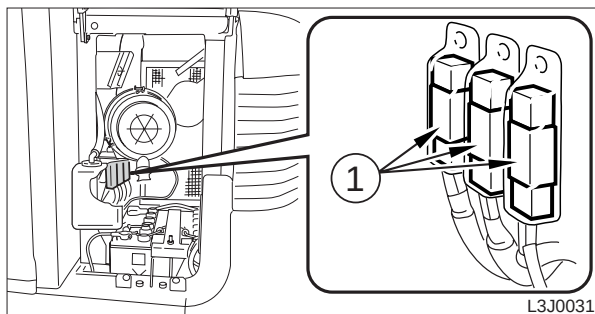
Fuse Layout and Circuits Protected

Capacity	Protected circuit	Capacity	Protected circuit
15A	Horn, Interior Light	3A	Throttle controller (B)
10A	Proportional control solenoid	1A	Stop solenoid hold
20A	Lights	10A	External power socket
20A	Wiper	10A	Cigarette lighter
5A	Radio	10A	Lever lock
5A	Heater	10A	Automatic-glow
30A	Air conditioner (option)	20A	Throttle controller (ACC)
20A	Instrument cluster, Lift alarm (option)	20A	Feed pump, Stop solenoid timer



If a Fuse Blows

Inspecting the Fusible Link



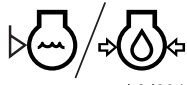
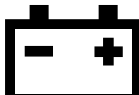
If the power is not switched on after turning the starter switch to the ON position, the cartridge type fusible links (1) might be blown open. Open the left side cover and inspect. If the fusible link is blown, please contact your dealer.

Supplement: A fusible link is a large piece of fuse wiring which is mounted in a circuit which carries a large electrical current. Link a regular fuse, the fusible link protects the electrical parts and wiring from damage due to abnormally large currents.



If a Warning Lamp Flashes

If an alarm is sounded or a warning lamp starts flashing during operation, park the machine in a safe place and perform the procedures described below.

Warning lamp	Lamp name	Procedure
 G4B009	Engine emergency lamp	A problem has occurred in the engine lubrication system or cooling system. • When there is a problem in the engine lubrication system or coolant level, the engine oil pressure/coolant level warning lamp flashes simultaneously. • When the coolant water temperature has risen irregularly, the coolant temperature warning lamp flashes simultaneously. For the procedures, refer to the respective warning lamps below.
 L3J004	Engine oil pressure/coolant level warning lamp	Inspect the engine oil level or coolant level. If the lamp is flashing even though the level is normal or if it continues flashing after oil or coolant are supplied, consult a Takeuchi sales or service outlet. Refer to page 107 or 108 "Inspecting and replenishing the coolant" or "Inspecting and Replenishing the Engine Oil".
 C4B012	Coolant temperature warning lamp	The coolant temperature has risen irregularly and the engine is overheating. Refer to page 143 "If the Engine Overheats".
 OSOB080	Battery charge warning lamp	There is a problem with the fan belt or charger. Inspect the fan belt for slack or breakage and adjust as necessary. If the lamp continues flashing after maintenance, there is a problem with the charger. Consult a Takeuchi sales or service outlet. Refer to page 114 "Inspecting and Adjusting the Fan Belt".
 G4B010	Air cleaner warning lamp	The air cleaner filter is clogged. Refer to page 120 "Cleaning the Air Cleaner".



If a Warning Lamp Flashes

Warning lamp	Lamp name	Procedure
 L3J005	Water separator warning lamp	Water has accumulated in the water separator. Drain the water. Refer to page 133 "Draining the Water Separator".
 L3J006	Fuel level warning lamp	The fuel level is low. Supply fuel. Refer to page 42 "Fuel Filler Cap".

**Other Symptoms**

For symptoms not included on the table below or if the problem persists after the proper procedures have been taken, consult a Takeuchi sales or service outlet.

Symptom	Main cause	Procedure
Left and right operating levers do not move smoothly	● Insufficient grease on left and right operating levers	● Supply grease. Refer to page 136.
Travel levers and boom swing pedal do not move smoothly	● Insufficient grease on travel levers and boom swing pedal	● Supply grease. Refer to page 136.
Hoe attachment, auxiliary hydraulics, slewing or traveling operation not possible	● Safety lock lever is raised ● Fuse is blown	● Lower the safety lock lever. Refer to page 53. ● Replace the fuse. Refer to page 146.
Digging force is insufficient	● Insufficient hydraulic oil level ● Hydraulic oil is not heated ● Air cleaner is clogged ● Hydraulic oil is not of suitable type	● Replenish to the prescribed level. Refer to page 109. ● Perform the warm-up procedure. Refer to page 70. ● Clean the air cleaner. Refer to page 120. ● Replace the hydraulic oil. Refer to page 127.
Traveling is not possible or not smooth	● Stones or foreign objects are stuck	● Remove the foreign object.
Machine does not travel straight forward	● Stones or foreign objects are stuck	● Remove the foreign object.
Slew speed cannot be shifted	● Fuse is blown	● Replace the fuse. Refer to page 146.
Travel speed cannot be changed	● Fuse is blown	● Replace the fuse. Refer to page 146.

**Other Symptoms**

Symptom	Main cause	Procedure
Slewing is not possible or not smooth	● Insufficient grease on slew bearing	● Supply grease. Refer to page 116.
Hydraulic oil temperature is too high	● Insufficient hydraulic oil	● Replenish to the prescribed level. Refer to page 109.
Starter motor turns but engine does not start	● Insufficient fuel ● Air in fuel system ● Water in fuel system	● Supply fuel. Refer to page 109. ● Bleed the air. Refer to page 145. ● Drain the water. Refer to page 133.
Crawlers slip off	● Crawlers are too loose Tensioning cylinder valve are too loose	● Increase the tension. Refer to page 138.
Engine exhaust is white or bluish	● Excessive engine oil ● Poor fuel	● Adjust to the prescribed level. Refer to page 108. ● Replace the fuel.
Engine exhaust is occasionally black	● Air cleaner is clogged	● Clean the air cleaner. Refer to page 120.
Irregular noise is produced from the engine (combustion or mechanical noise)	● Low quality fuel is being used ● Engine is overheating ● Damage in muffler	● Replace the fuel. ● If the Engine Overheats Refer to page 143. ● Replace the muffler. (Request at a sales or service outlet.)



To Lower the Boom

If the hoe attachment must be lowered to the ground while the engine is stopped, use the following procedure to do so.

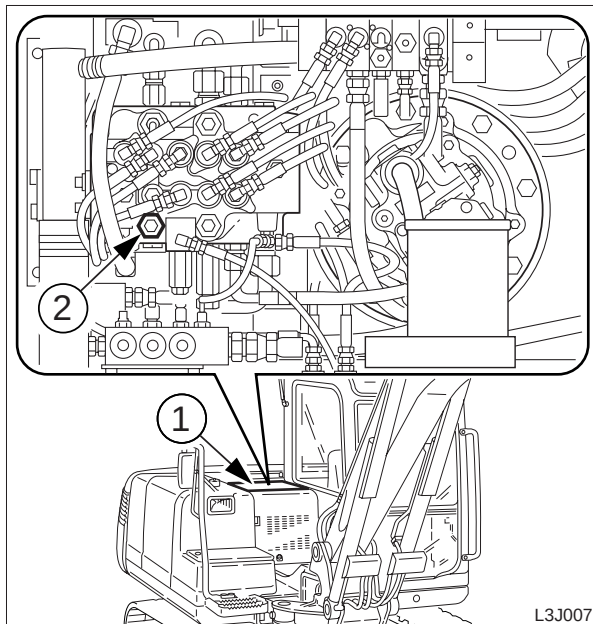
This operation is dangerous and requires experience. Have it performed by a Takeuchi sales or service outlet.

When equipped with accumulator (option):
Refer to page 199 "Accumulator".

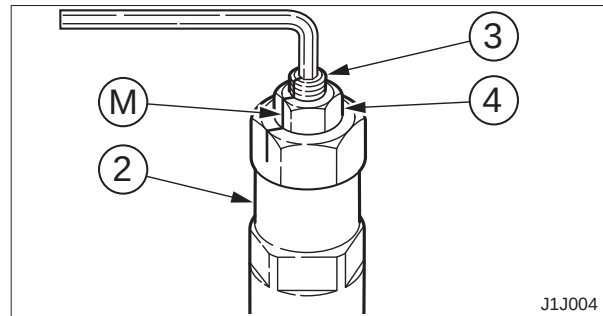
Procedure

WARNING

- **Never jump off the machine. Use the steps and handrails when climbing on and off the machine, and always support your body at three points with your hands and feet.**
- **Do not approach in the area of the ground where the hoe attachment is to be lowered. You may be hit by dirt falling out of the bucket or the hoe attachment as it drops.**
- **Turn the port relief valve's set screw slowly so that the boom lowers slowly. Do not turn the screw more than the specified amount.**



1. Loosen the bolts and remove cover (1).



2. Put mark (M) on the plug of the port relief valve (2) and set screw (3).
3. Gripping the set screw (3) with a hexagonal wrench so that it does not turn together with the lock nut (4), loosen the lock nut (4).
4. Turn the set screw (3) slowly one turn to lower the boom.
5. Check for safety and machine stability.
6. Turn the set screw (3) back to its original position.
7. Gripping the set screw (3) with a hexagonal wrench so that it does not turn together with the lock nut (4), tighten the lock nut (4).
Tightening torque:
27 to 31 N·m (20 to 23 ft-lb.)
8. Reinstall the cover (1).

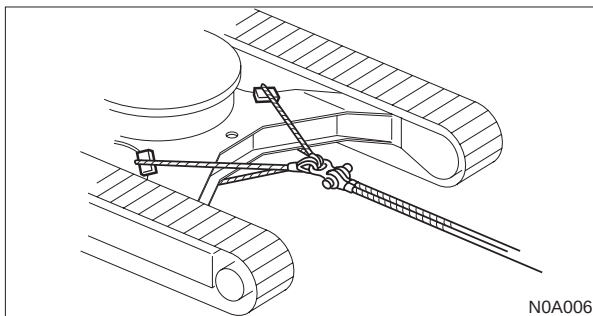
**WARNING**

When towing, selecting the wrong wire rope, inspecting improperly, or towing in the wrong way could lead to accidents resulting in serious injury or death.

- The wire rope breaking or coming detached could be extremely dangerous. Use a wire rope suited for the required towing force.
- Do not use a wire rope that is kinked, twisted or otherwise damaged.
- Do not apply strong loads abruptly to the wire rope.
- Use safety gloves when handling the wire rope.
- Make sure there is an operator on the machine being towed as well as on the machine that is towing.
- Never tow on slopes.
- Do not let anyone near the wire rope while towing.

Towing the Machine

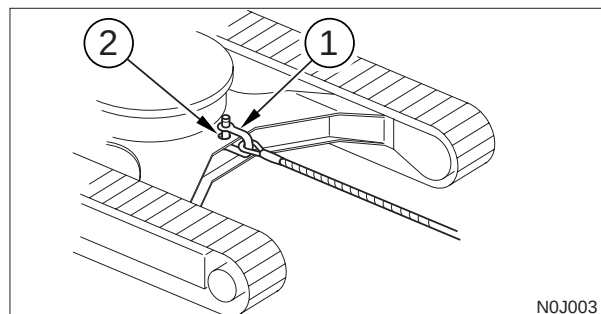
Use the procedure described below to tow heavy objects or the machine itself if it should get stuck in the mud and not be able to get out on its own.



1. Fasten the wire rope to the frame.
2. Place splints or other objects between the wire rope and frame to prevent the machine and wire rope from getting damaged.
3. Move the machine to tauten the wire rope.
4. Move the machine slowly and tow.

Using the light load towing hole

IMPORTANT: Be sure to follow all the steps below closely when using the light load towing hole to tow. Failure to heed even one of the steps may cause damage to the light load towing hole or other parts of the frame.



- Maximum pulling force:
43200 N (9700 lb) or less
1. Attach the wire rope to the shackle (1).
 2. Fasten the shackle (1) to the light load towing hole (2).
 3. Attach the wire rope to the object to be towed.
 4. Make the wire rope horizontal and line up straight with the travel frame.
 5. Move the machine to tauten the wire rope.
 6. Move the machine slowly and tow.



SPECIFICATIONS

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**Main Specifications**

TYPE		Mono-Boom		2-Piece Boom			
MASS							
Machine mass kg (lb.) (not including operator)		Rubber crawlers		7280 (16045)		7940 (17505)	
		Steel crawlers		7405 (16330)		8145 (17955)	
PERFORMANCE							
Bucket capacity m ³ (cu.ft.) (standard bucket)		Heaped		0.245 (8.65)			
		Struck		0.185 (6.53)			
Slew speed min ⁻¹ (rpm)		Slow speed		7.6 (7.6) / 4.1 to 7.6 (4.1 to 7.6)*			
		Normal speed		10.7 (10.7)			
Travel speed km/h (mph)		Rubber crawlers		1st		2.9 (1.8)	
				2nd		5.5 (3.42)	
		Steel crawlers		1st		2.8 (1.74)	
				2nd		5.3 (3.29)	
Gradeability (degrees)				35			
Ground pressure kPa (psi)		Rubber crawlers		32.9 (4.77)		35.9 (5.21)	
		Steel crawlers		33.9 (4.91)		36.9 (5.35)	
Noise level dB(A)		Sound-power level		L _{WA} 100 / L _{WA} 98 **			
		Sound-pressure level		L _{pA} 75			
ENGINE							
Manufacturer and model				Yanmar 4TNV98-VTBZ			
Rated output kW / min ⁻¹ (hp / rpm)				42.8 / 2100 (57.4 / 2100)			
Displacement ml (cu.in.)				3319 (202.5)			
Starter V – kW				24 – 3.5			
Alternator V – kW				24 – 0.96			
Battery V – A·h				12 – 64 x 2			

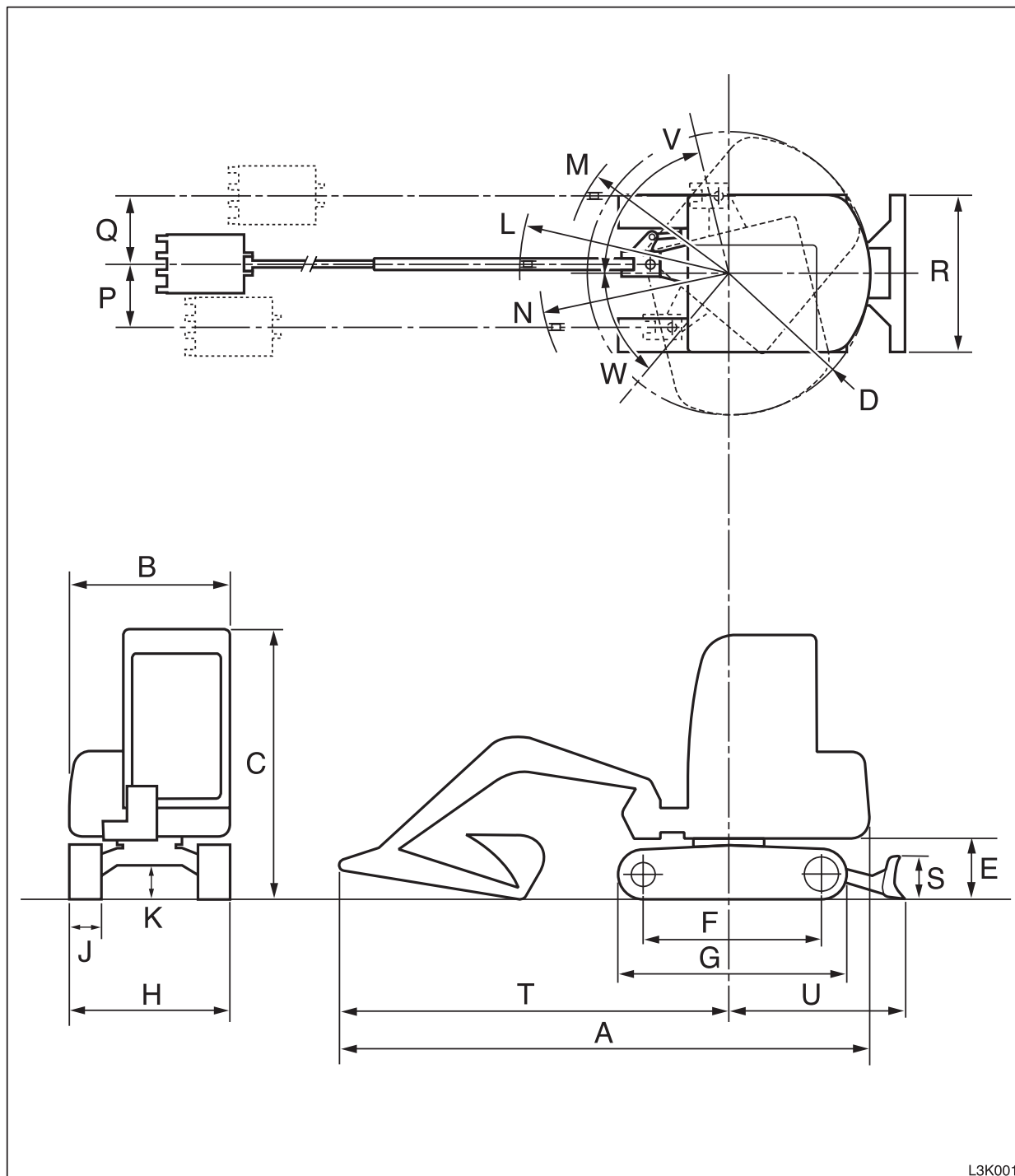
* : The maximum set speed in slow speed can be adjustable. Upon shipment, it is set to 7.6 min⁻¹ (7.6 rpm).

** : Serial No. 17514412 ~

MEMO

Machine Dimensions

Mono-Boom



L3K001

**Machine Dimensions****Mono-Boom**

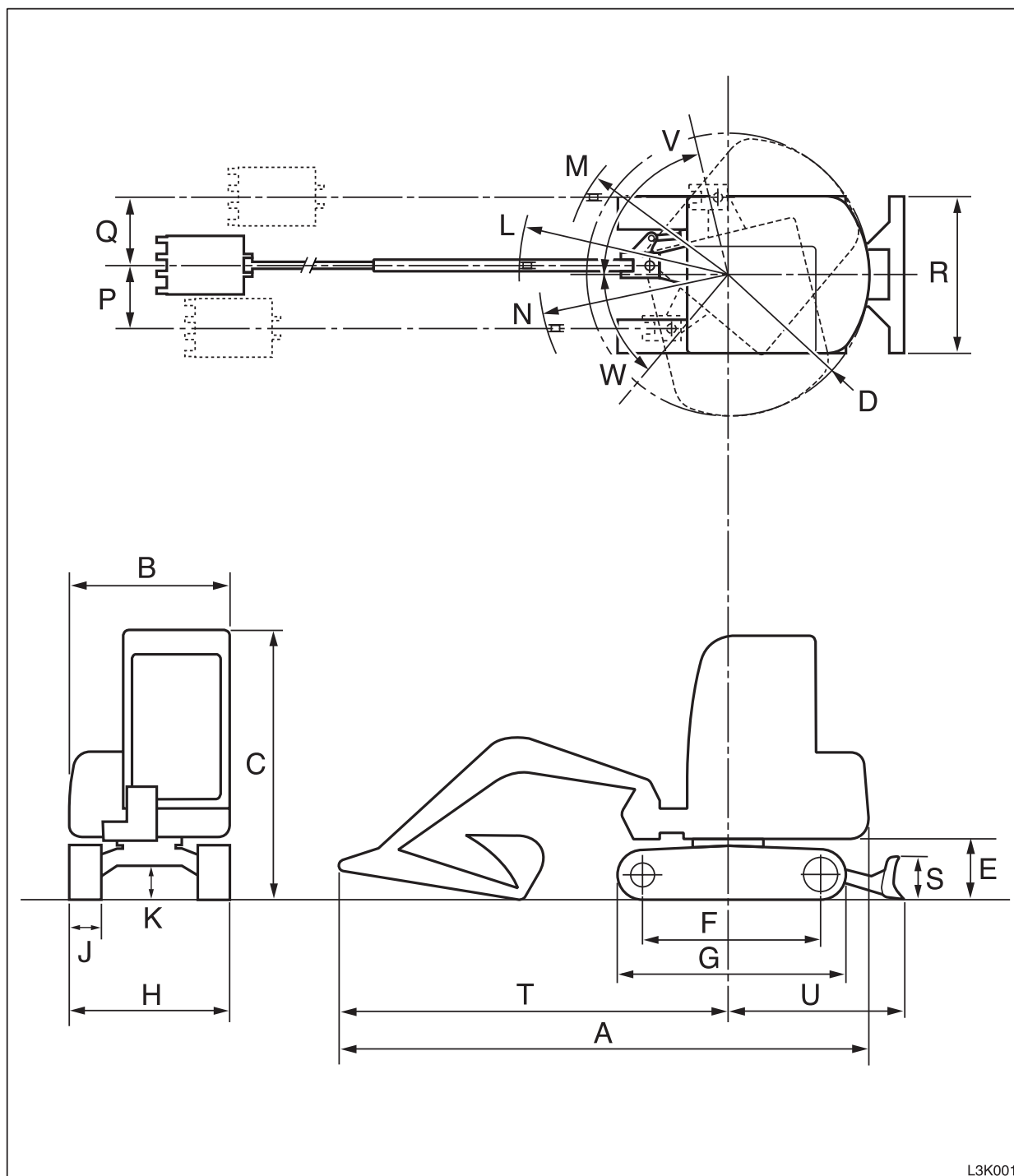
Units: mm (inches)

	Standard Arm		Middle Arm	Long Arm	Telescopic Arm*
	Rubber Crawlers	Steel Crawlers	Rubber Crawlers	Rubber Crawlers	Rubber Crawlers
A	6555 (258.1)	←	6590 (259.4)	←	←
B	2245 (88.4)	←	←	←	←
C	2570 (101.2) / 2615 (103)**	2565 (101) / 2610 (102.8)**	2570 (101.2) / 2615 (103)**	←	←
D	1720 (67.8)	←	←	←	←
E	785 (30.9)	760 (29.9)	785 (30.9)	←	←
F	2210 (87)	2180 (85.8)	2210 (87)	←	←
G	2855 (112.4)	2830 (111.3)	2855 (112.4)	←	←
H	2150 (84.6)	←	←	←	←
J	450 (17.7)	←	←	←	←
K	385 (15.1)	360 (14.2)	385 (15.1)	←	←
L	2180 (85.8)	←	2285 (90.0)	2430 (95.7)	2320 (91.3)
M	1635 (64.3)	←	1745 (68.7)	1870 (73.6)	1735 (68.3)
N	2060 (81)	←	2170 (85.5)	2310 (91)	2180 (85.9)
P	695 (27.3)	←	←	←	←
Q	735 (28.9)	←	←	←	←
R	2150 (84.6)	←	←	←	←
S	500 (19.7)	←	←	←	←
T	4840 (190.6)	4845 (190.7)	4875 (191.9)	4975 (195.9)	4925 (193.9)
U	2000 (78.7)	1995 (78.6)	2000 (78.7)	←	←
V	80°	←	←	←	←
W	50°	←	←	←	←

* : Telescopic arm fully retracted.

** : When equipped with Roof guard.

2-Piece Boom



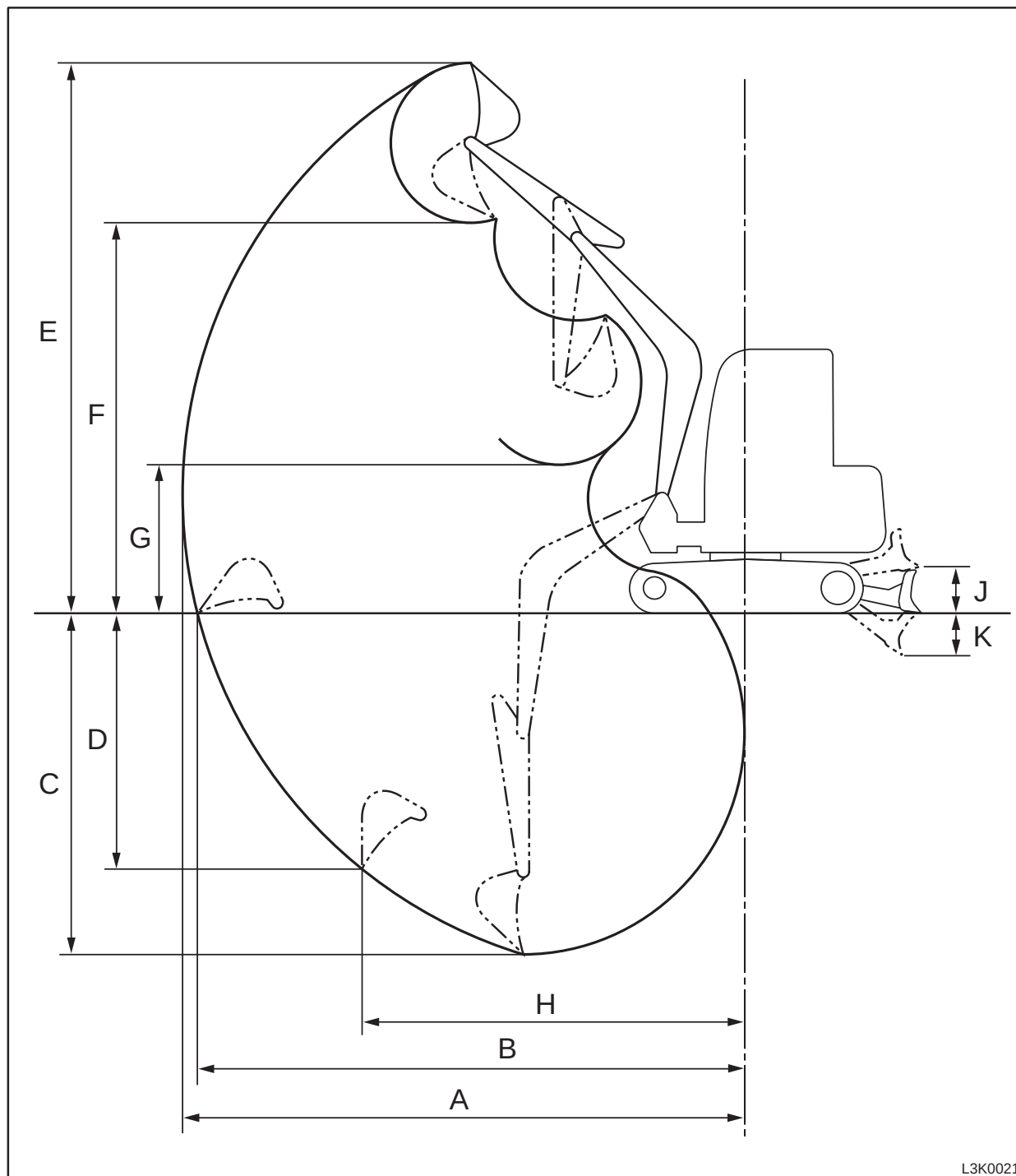
L3K001

**Machine Dimensions****2-Piece Boom**

Units: mm (inches)

	Rubber Crawlers
A	6560 (258.3)
B	2245 (88.4)
C	2570 (101.2) / 2615 (103)*
D	1720 (67.8)
E	785 (30.9)
F	2210 (87)
G	2855 (112.4)
H	2150 (84.6)
J	450 (17.7)
K	385 (15.1)
L	2505 (98.6)
M	1955 (77)
N	2385 (93.8)
P	690 (27.1)
Q	730 (28.8)
R	2150 (84.6)
S	500 (19.7)
T	4845 (190.8)
U	2000 (78.7)
V	80°
W	50°

* : When equipped with Roof guard.

**Operating Range****Mono-Boom**

**Operating Range****Mono-Boom**

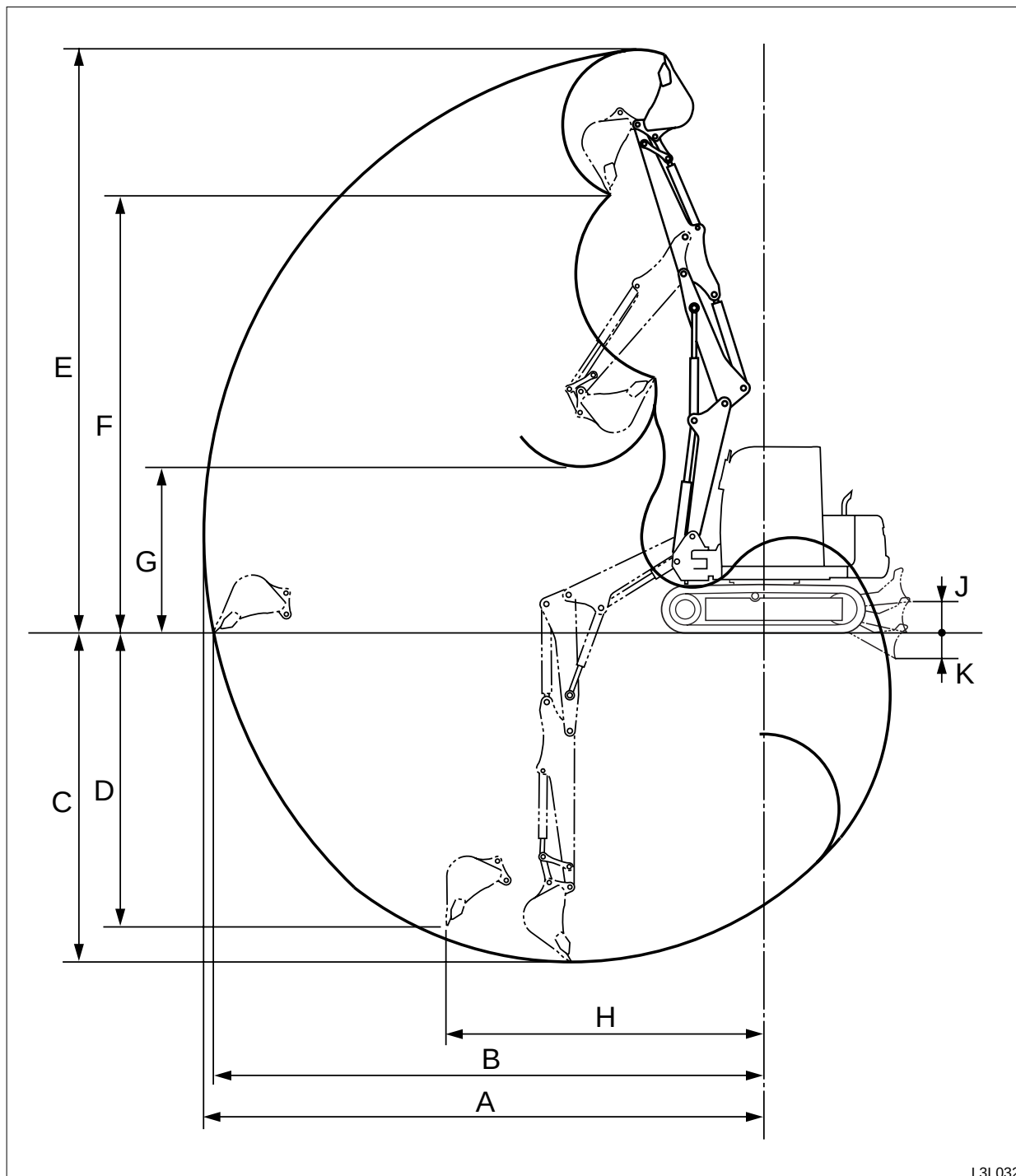
Units: mm (inches)

	Item	Standard Arm		Long Arm	
		Rubber Crawlers	Steel Crawlers	Rubber Crawlers	Steel Crawlers
A	Max. digging radius	7055 (277.7)	←	7385 (290.8)	←
B	Max. ground digging radius	6905 (271.8)	6910 (272)	7245 (285.2)	7250 (285.4)
C	Max. digging depth	4240 (166.9)	4260 (167.8)	4590 (180.6)	4610 (181.5)
D	Max. vertical digging depth	3475 (136.9)	3500 (137.8)	3830 (150.8)	3855 (151.8)
E	Max. digging height	7025 (276.7)	7005 (275.7)	7290 (287)	7270(286.2)
F	Max. dumping height	4995 (196.6)	4970 (195.6)	5255 (206.9)	5230 (205.9)
G	Min. dumping height	1935 (76.3)	1915 (75.3)	1630 (64.3)	1610 (63.4)
H	Max. vertical digging radius	4630 (182.3)	←	4700 (185)	←
J	Max. raising height	525 (20.7)	505 (19.8)	525 (20.7)	505 (19.8)
K	Max. lowering depth	410 (16.1)	435 (17)	410 (16.1)	435 (17)

Mono-Boom

Units: mm (inches)

	Item	Middle Arm	Telescopic Arm	
		Rubber Crawlers		
		—	Arm Fully Retracted	Arm Fully Extended
A	Max. digging radius	7225 (284.4)	7065 (278.1)	8125 (319.8)
B	Max. ground digging radius	7080 (278.7)	6915 (272.2)	7995 (314.8)
C	Max. digging depth	4420 (173.9)	4245 (167)	5445 (214.4)
D	Max. vertical digging depth	3655 (143.9)	3155 (124.3)	4365 (171.9)
E	Max. digging height	7160 (281.9)	7025 (276.5)	7715 (303.8)
F	Max. dumping height	5125 (201.9)	5005 (197.1)	5695 (224.3)
G	Min. dumping height	1775 (69.1)	1935 (76.2)	—
H	Max. vertical digging radius	4655 (183.3)	5075 (199.8)	5235 (206.1)
J	Max. raising height	525 (20.7)	←	←
K	Max. lowering depth	410 (16.1)	←	←

**Operating Range****2-Piece Boom**

L3L032

**Operating Range****2-Piece Boom**

Units: mm (inches)

A	Max. digging radius	7650 (301.2)
B	Max. ground digging radius	7510 (295.7)
C	Max. digging depth	4440 (174.8)
D	Max. vertical digging depth	3955 (155.7)
E	Max. digging height	7970 (313.8)
F	Max. dumping height	6000 (236.2)
G	Min. dumping height	2310 (90.9)
H	Max. vertical digging radius	4360 (171.6)
J	Max. raising height	525 (20.7)
K	Max. lowering depth	410 (16.1)

MEMO



Lifting Capacities

Rated lift capacity chart

- The loads in the charts do not exceed 87% of hydraulic lift capacity or 75% of tipping load.
- Rated lift capacities limited by rated hydraulic lift capacity are identified by an asterisk(*)
- The mass of slings and any auxiliary lifting devices shall be deducted from the rated load to determine the net load that may be lifted.
- The load point is the bucket hinge pin, and the bucket posture is with the standard bucket completely retracted under the arm.
- Units: kg (lbs.) or daN (lbs.)

Load hooking system

A load hooking system with all of the following capacities must be provided and used.

1. A system which can withstand a weight of two times the rated lift capacity no matter at what position the load is applied.
2. A system in which there is no risk of the lifted load falling from the hooking device, for example one equipped with a hook slippage prevention device.
3. A system in which there is no risk of the hooking system slipping from the hoe attachment.

Load safety device

In addition, the following load safety devices must be installed. (For details, contact a designated service outlet.)

- (1) An overload warning device.
- (2) A boom lowering control device.

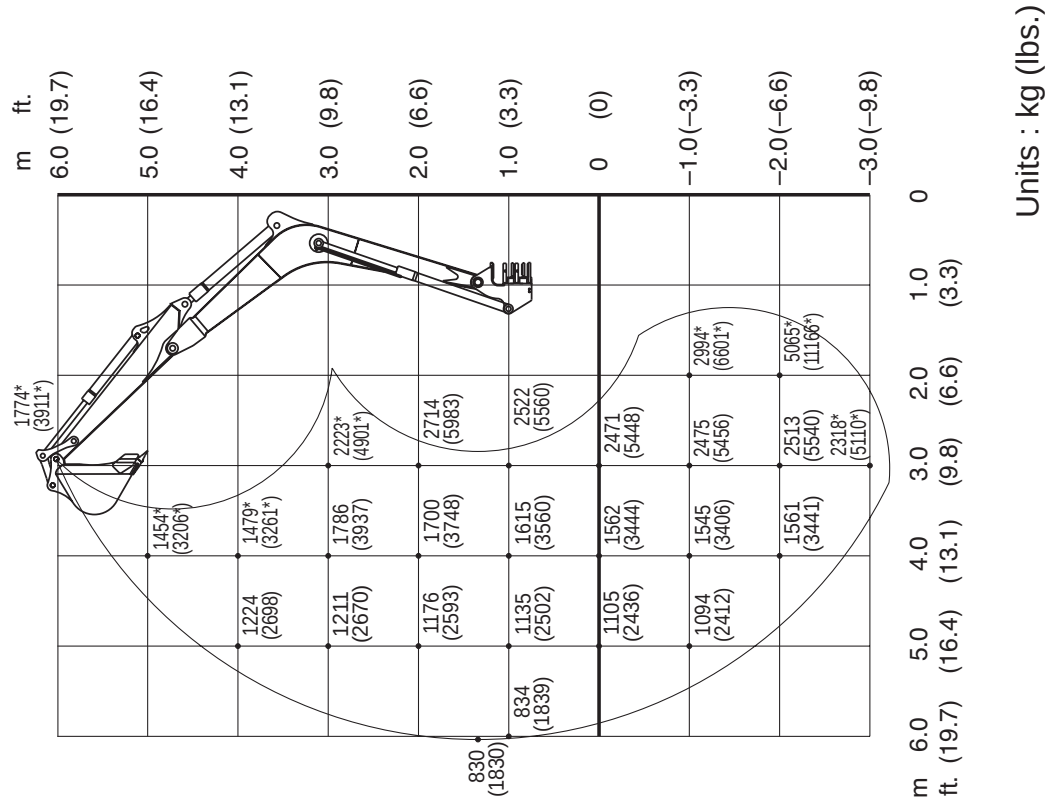
WARNING

- **DO NOT attempt to lift or hold any load that is greater than these rated values at their specified load radii and height.**
 - **All rated lift capacities are based on the machine being level and on a firm supporting surface. For safe working loads, the user is expected to make due allowance for the particular job conditions such as soft or uneven ground, non-level condition, side loads, hazardous conditions, experience of personnel, etc. The operator and other personnel should fully acquaint themselves with the operator's manual furnished by the manufacturer before operating this machine, and rules for safe operation of equipment shall be adhered to at all times.**
-



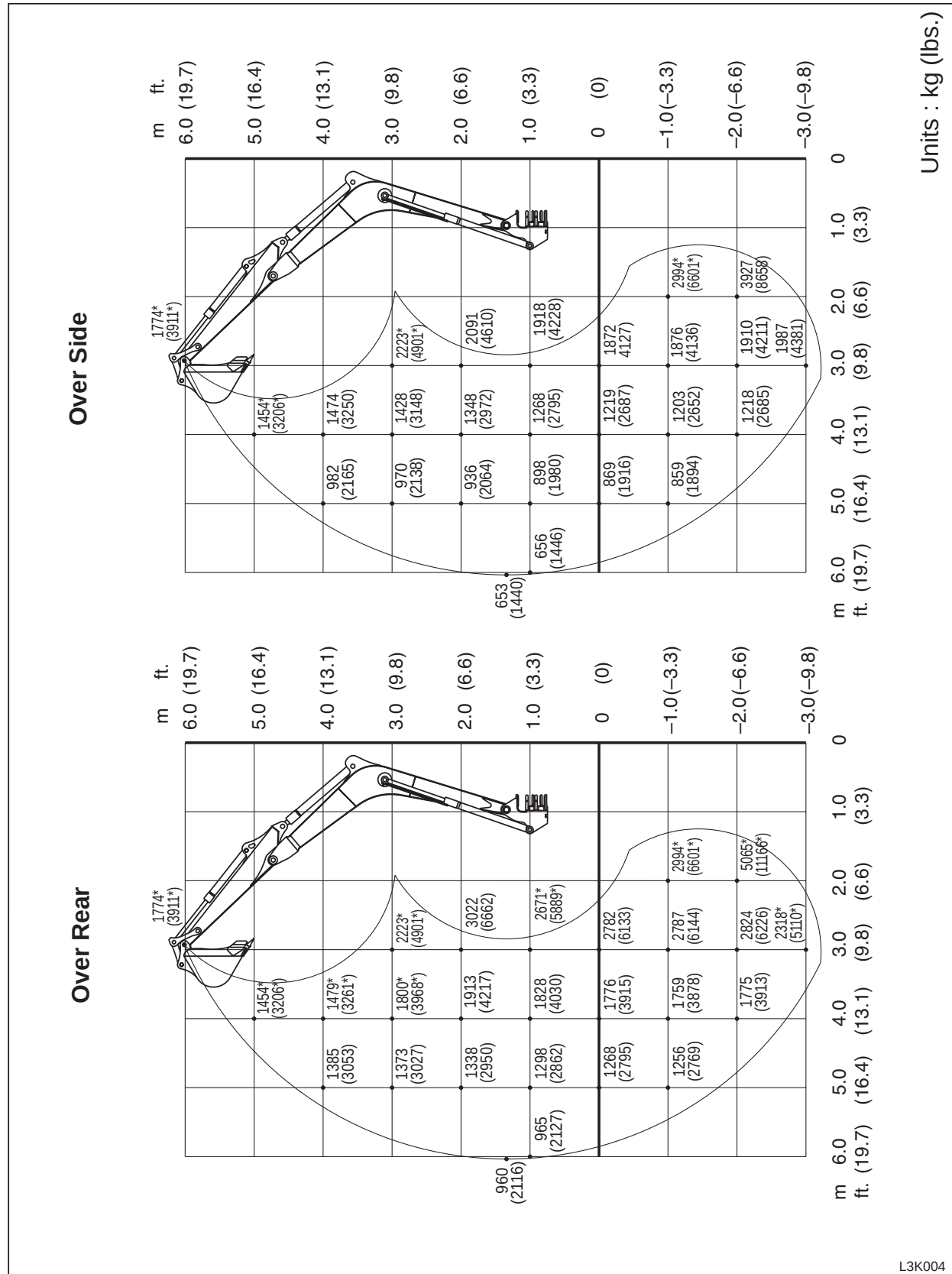
Equipped with Standard Arm

Over Front ; Dozer Blade Up



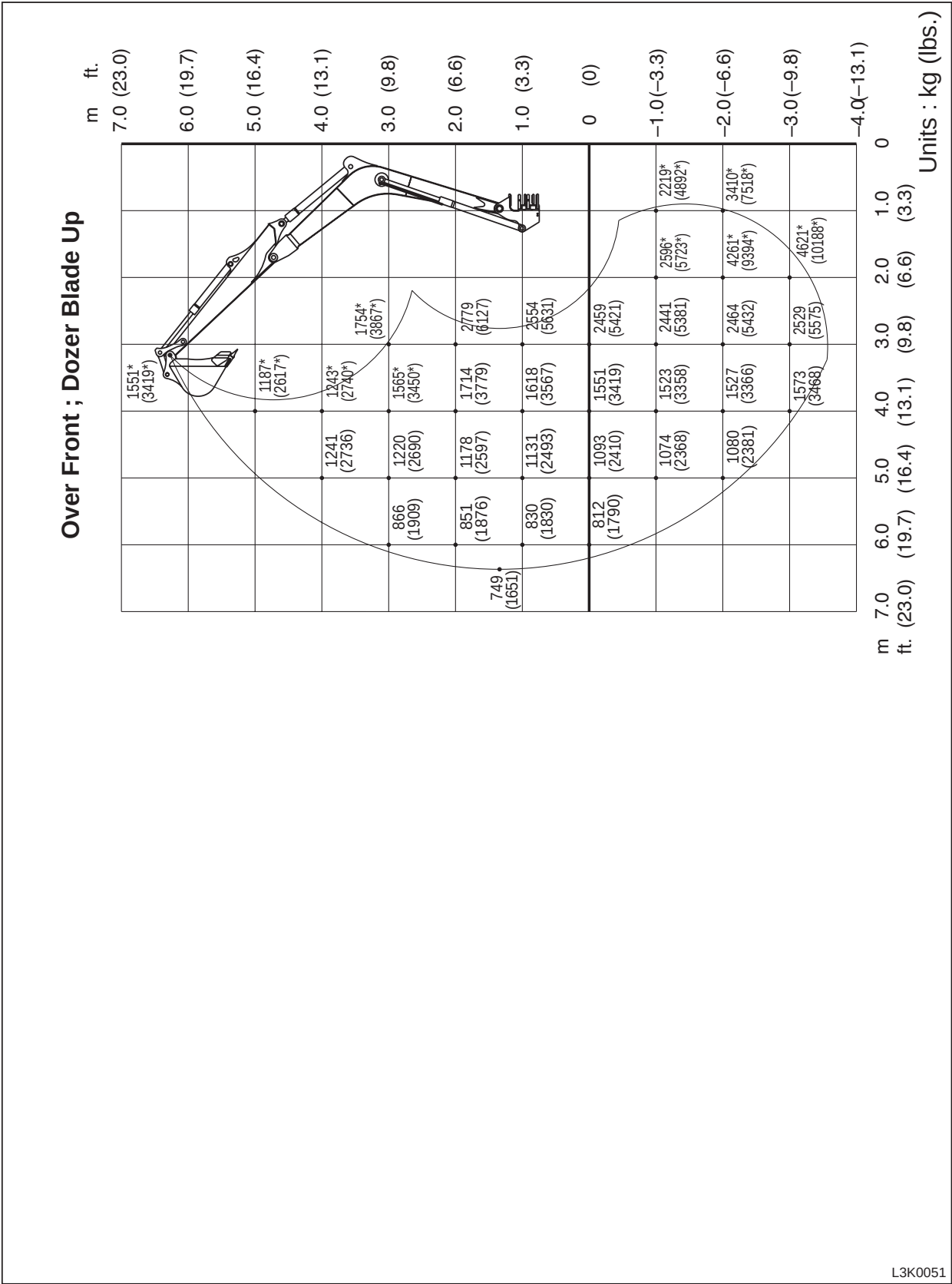
L3K0031

Equipped with Standard Arm





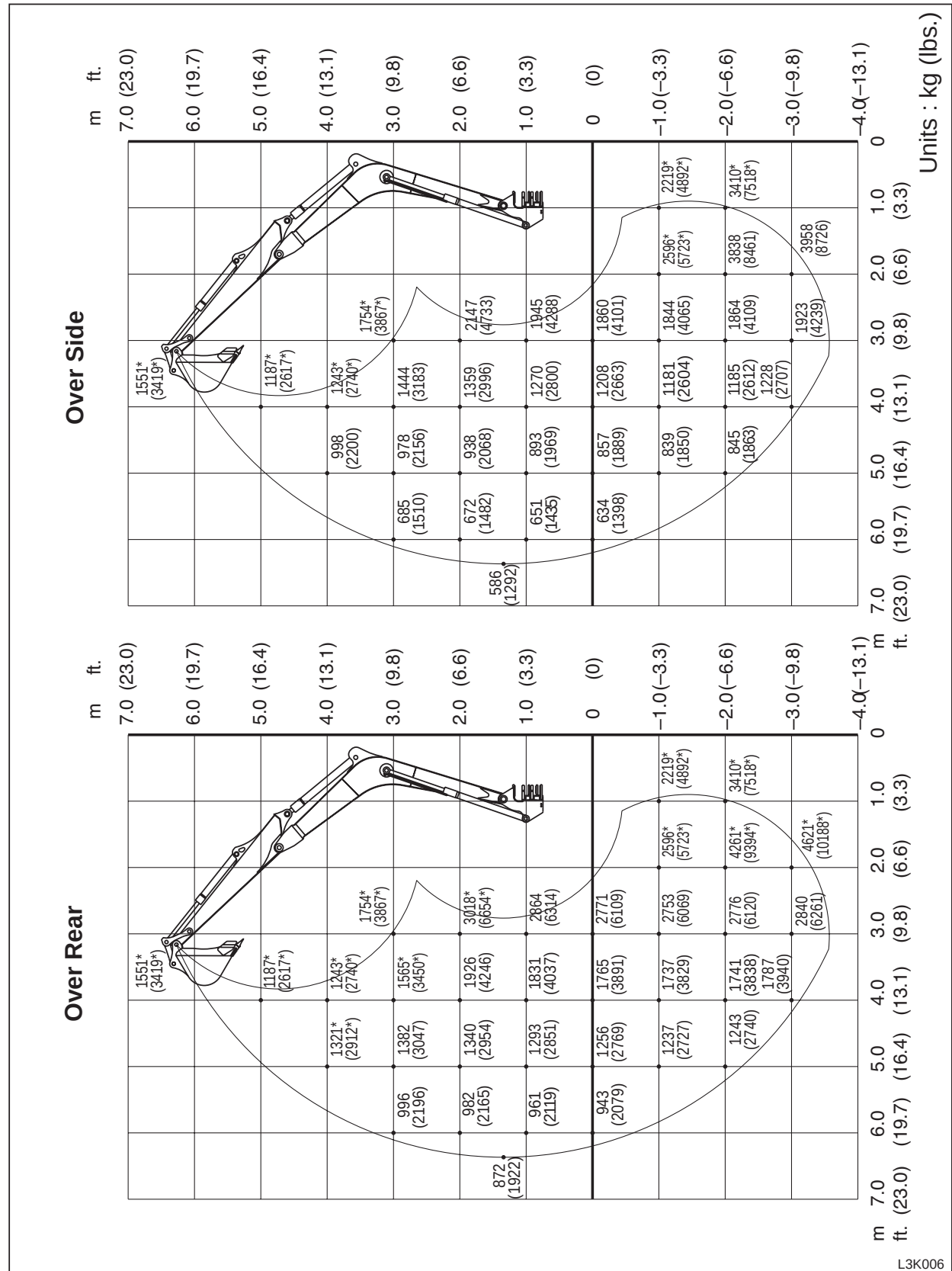
Equipped with Long Arm



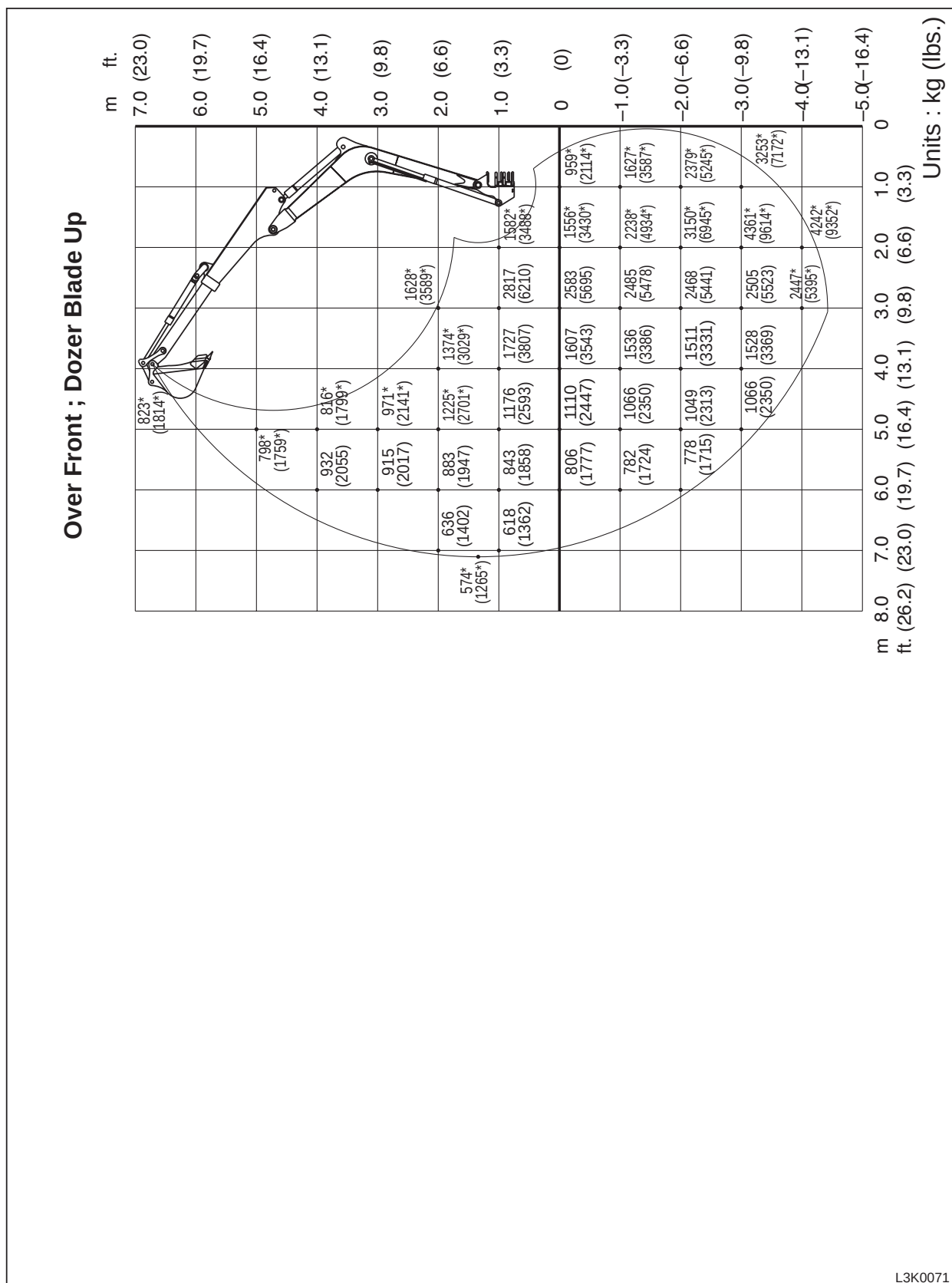
L3K0051

Lifting Capacities

Equipped with Long Arm

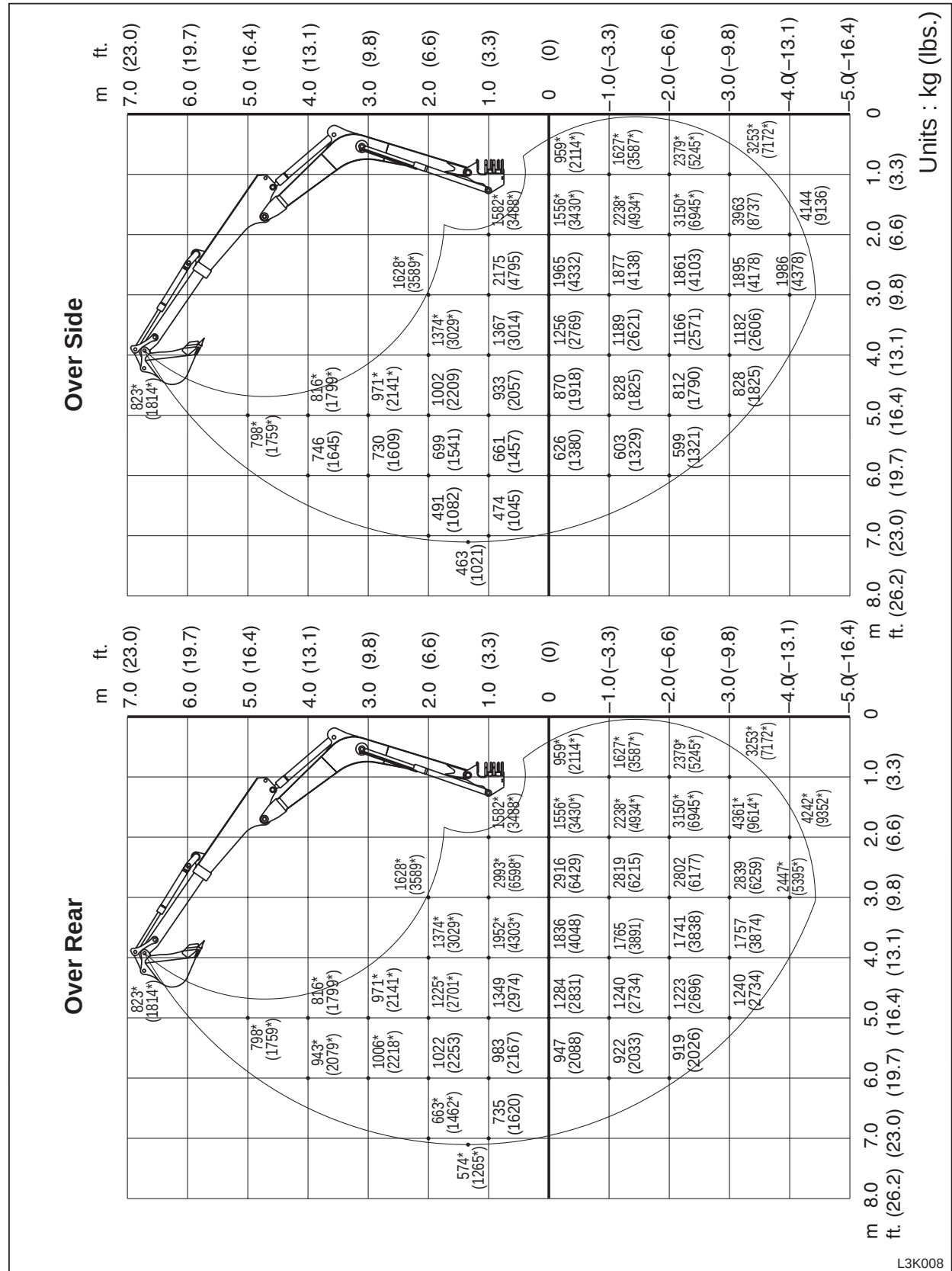


Equipped with Telescopic Arm (Arm Fully Extended)



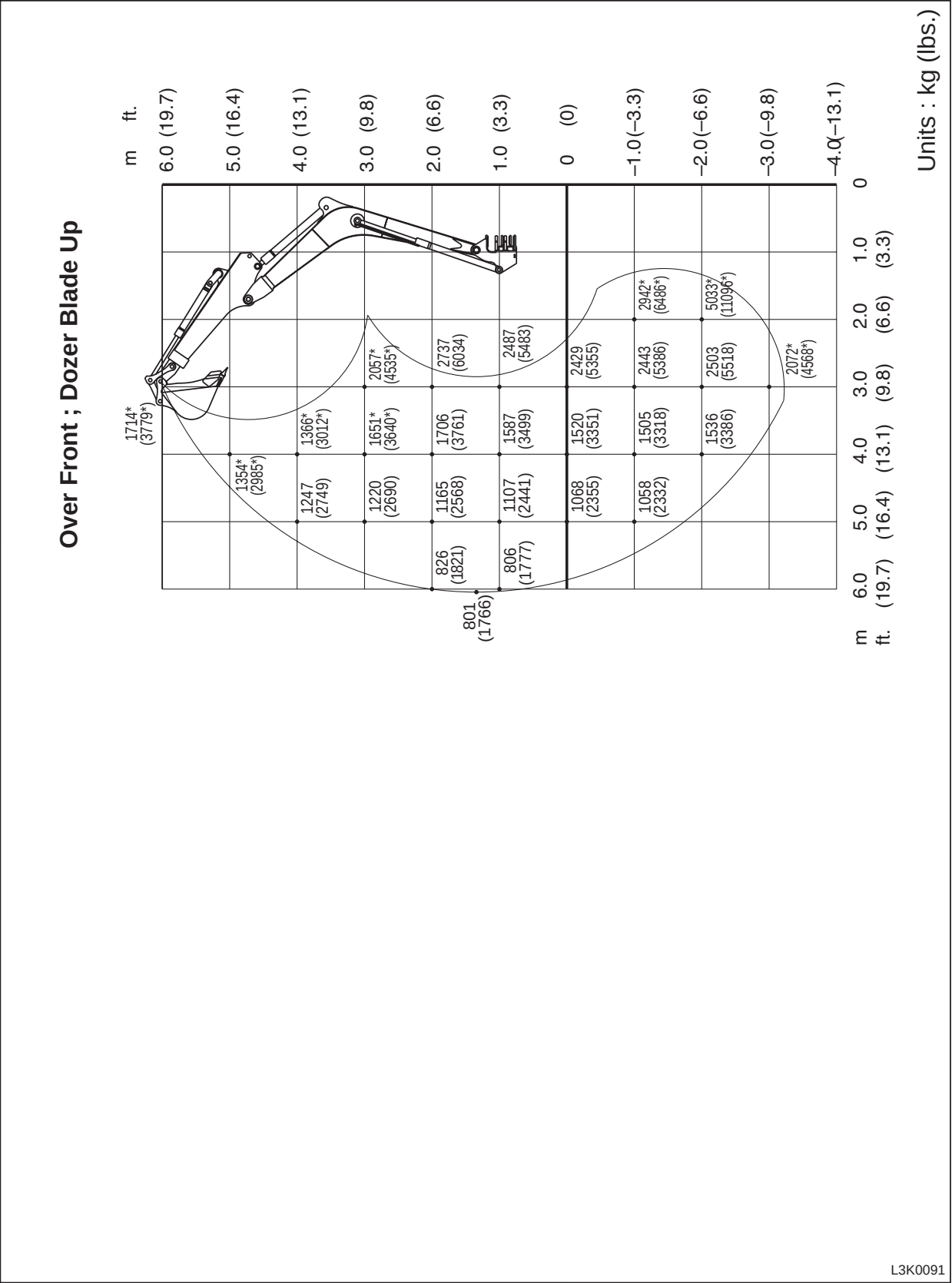
Lifting Capacities

Equipped with Telescopic Arm (Arm Fully Extended)





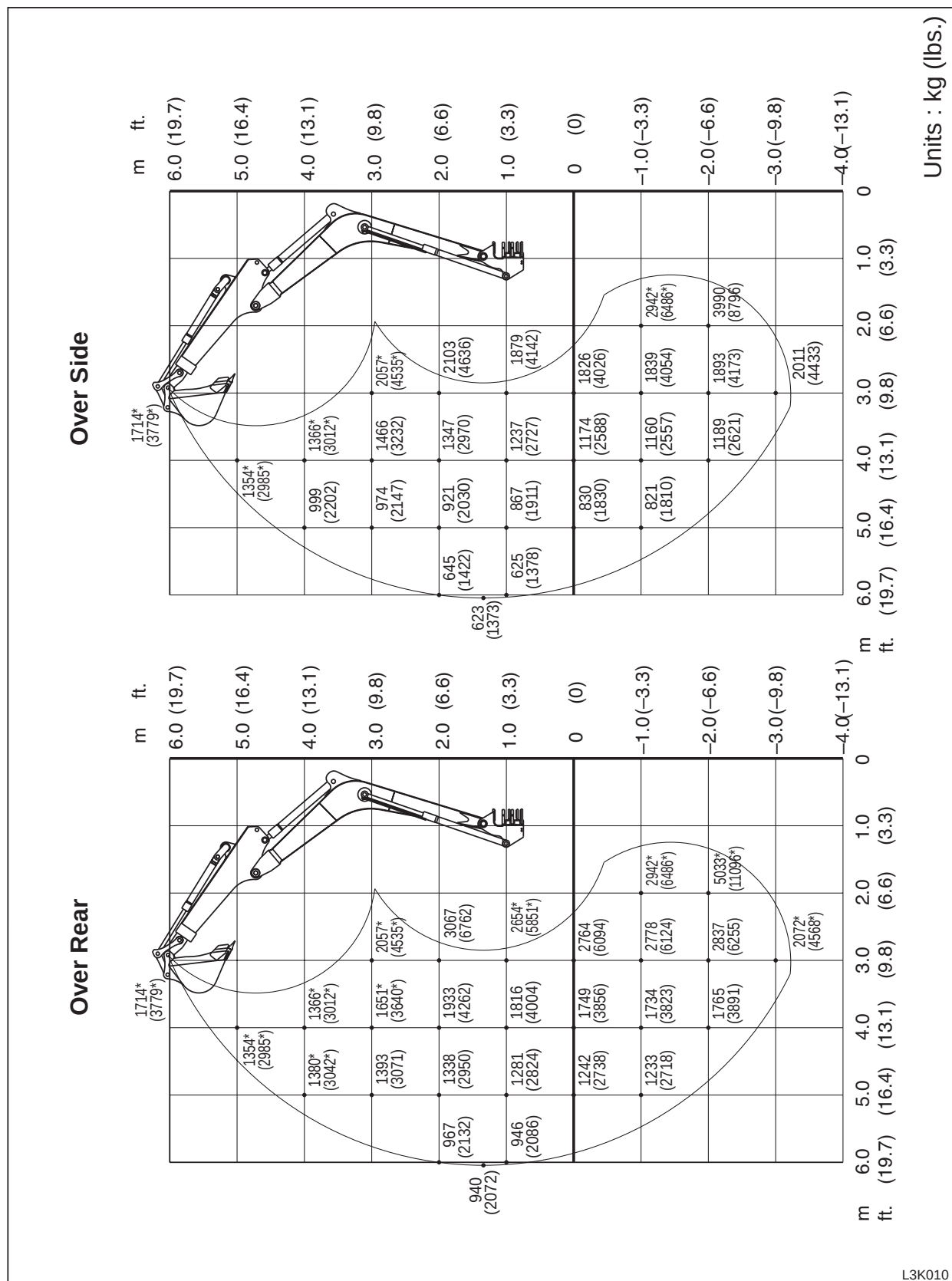
Equipped with Telescopic Arm (Arm Fully Retracted)



L3K0091



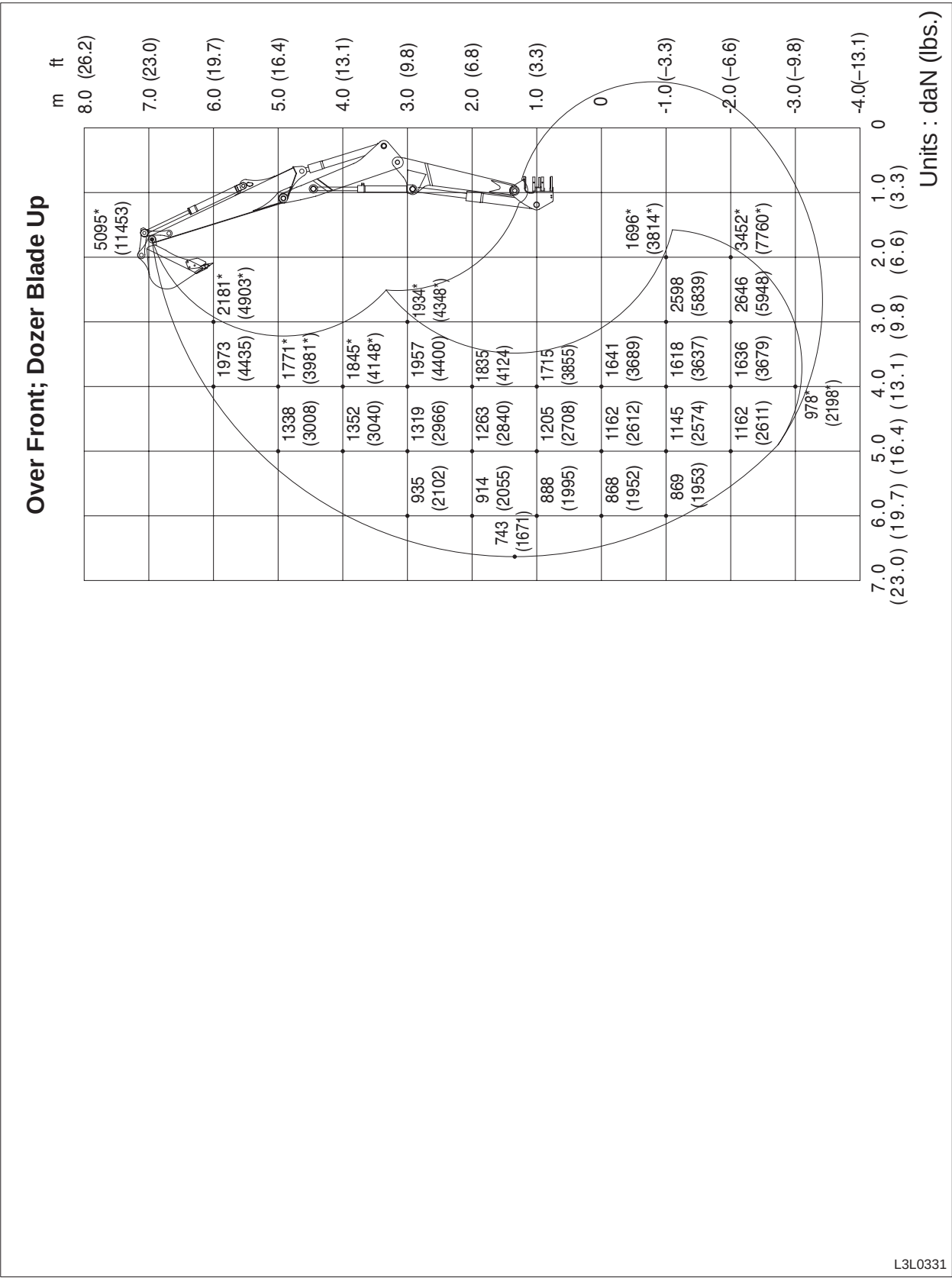
Equipped with Telescopic Arm (Arm Fully Retracted)



L3K010



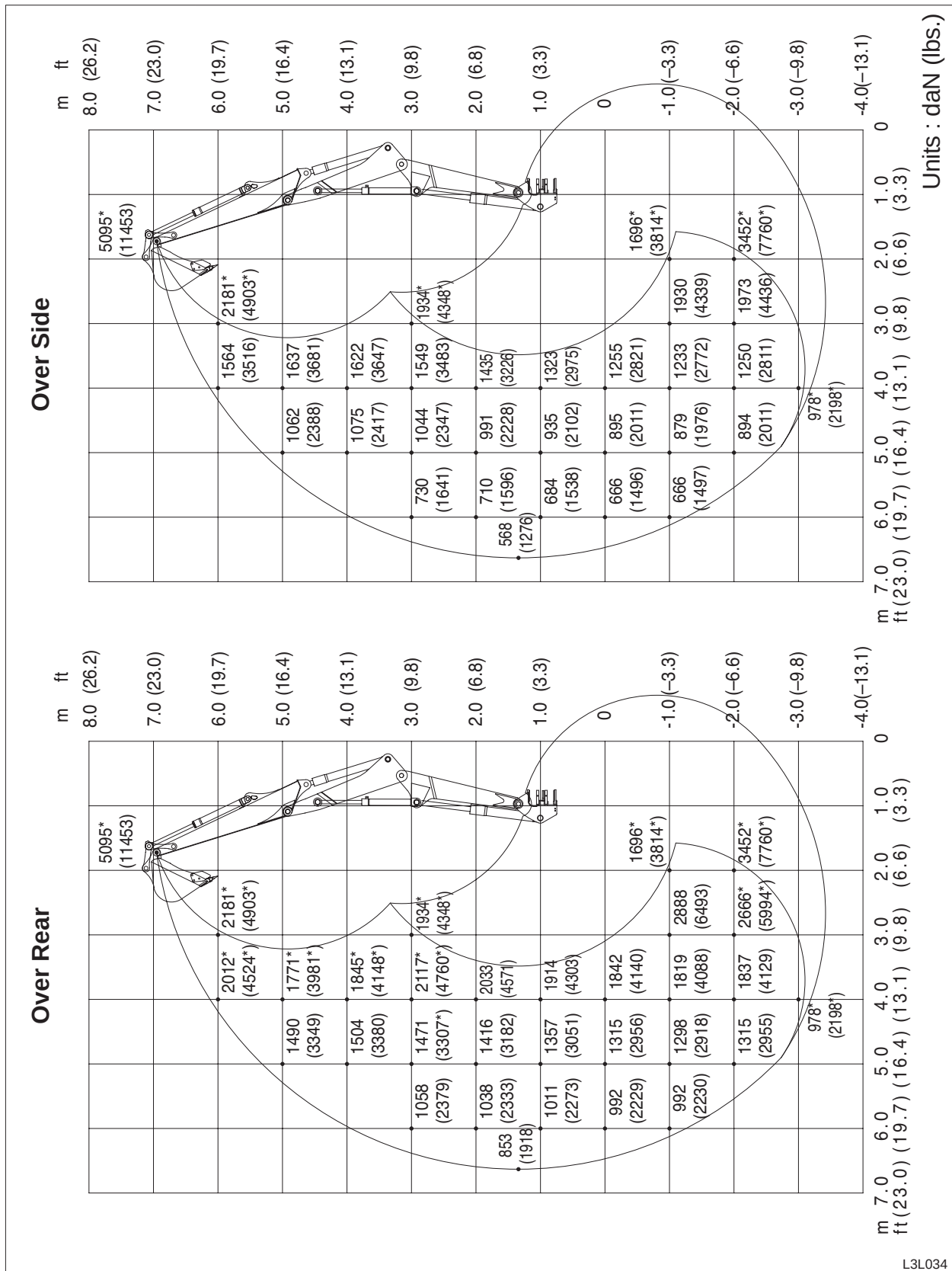
2-Piece Boom



L3L0331



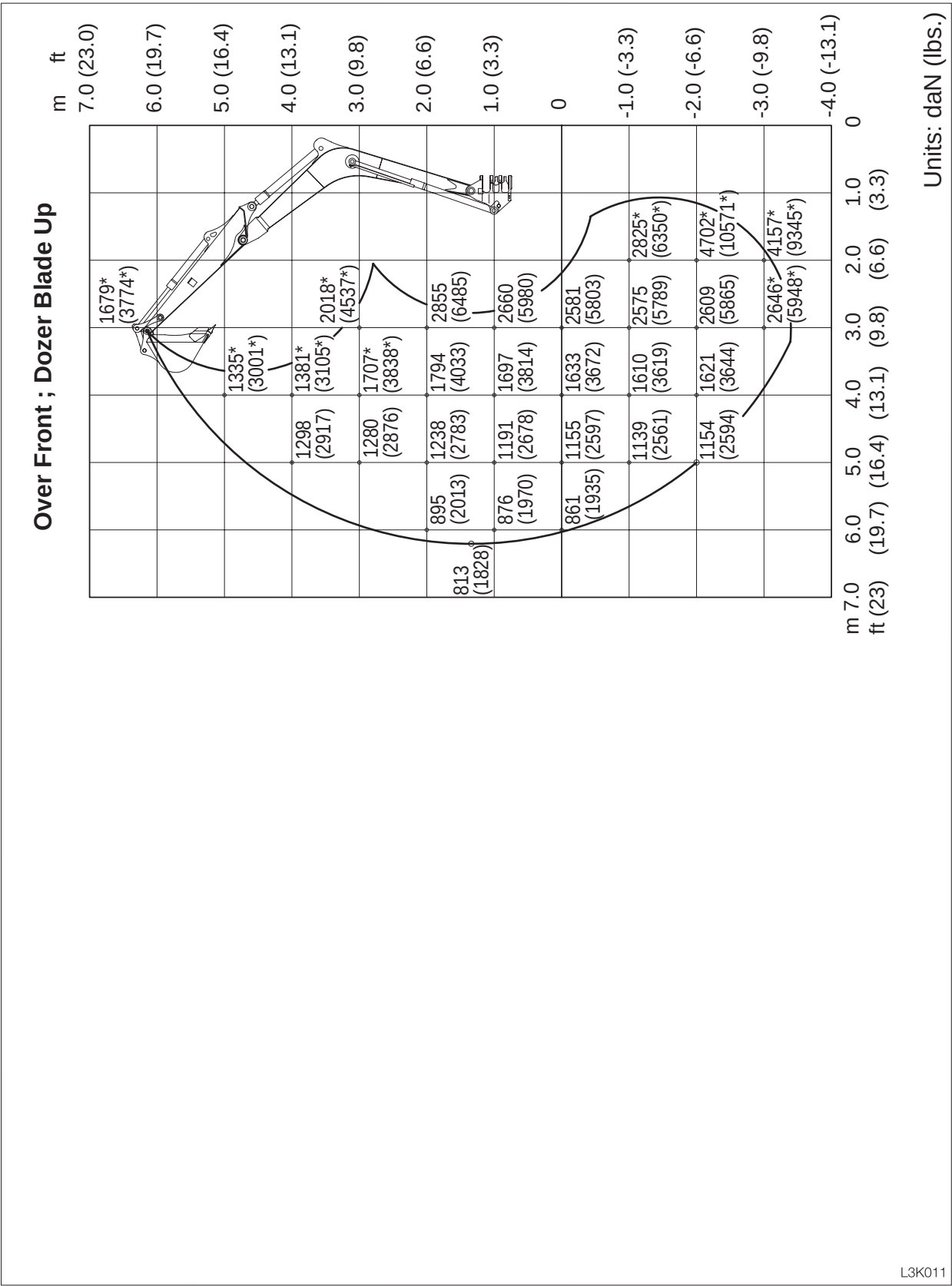
2-Piece Boom



L3L034



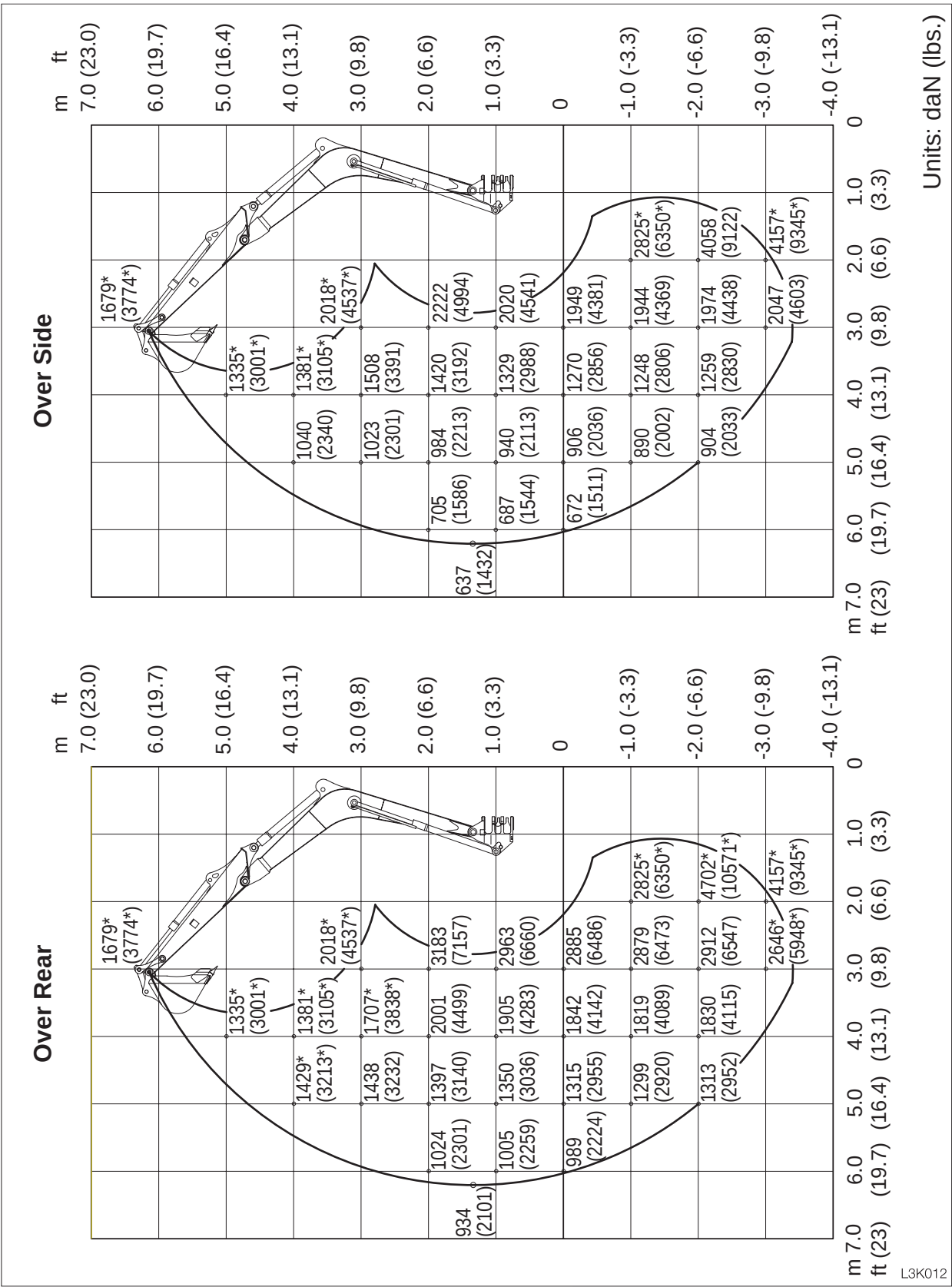
Equipped with Middle Arm



L3K011



Equipped with Middle Arm



L3K012



OPTIONS

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Precautions on Safety

WARNING

Heed the following when removing or installing an attachment or option:

- Consult with a Takeuchi dealer before installing optional attachments.
 - Do not use attachments that have not been approved by Takeuchi or a Takeuchi dealer. Doing so may compromise safety or adversely affect the machine's operation or service life.
 - Takeuchi will not be held responsible for any injuries, accidents or damage to products caused by the use of a non-approved attachment.
 - Choose a flat, hard surface to perform the operations. Also make sure there is enough light and good ventilation.
 - Clean the area, remove any articles that may get in the way or be dangerous, and remove any spilt oil or grease.
 - When performing lifting operations, determine a person to lead the operations and always follow that person's instructions.
 - Follow the leader's instructions on operating methods and procedures.
 - Determine a signal leader and heed this person's signals.
 - When removing or installing the hoe attachment, place it in a stable position so that it does not tip over.
 - Due to the risk of loads falling and/or hitting people, do not allow unauthorized personnel in the work area.
 - Use the crane to carry heavy objects (25 kg (55 lb.) or greater).
 - When removing heavy parts, be sure to prop them up before removing them. When lifting them with a crane, be careful to balance them properly.
 - Operating with loads suspended with the crane is dangerous. Place loads on a stand and check for safety.
 - When attaching the boom or arm, failure to follow proper procedures could result in serious damage. Consult with a Takeuchi dealer beforehand.
-

Precautions on Installing Attachments

After replacing optional attachments or other special attachments, test-run them, then inspect the hydraulic oil level and add oil if necessary.

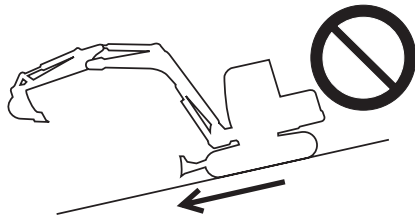
In addition, consult with a Takeuchi dealer for details of removal and installation procedures.

**Precautions on Operating Attachments****! WARNING**

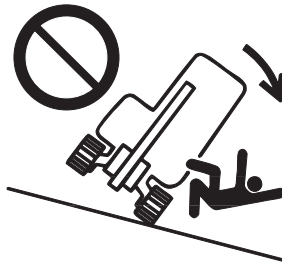
Long attachments reduce machine stability. When traveling down steep slopes or slewing on slopes, the machine may lose its balance and tip over.

The following operations are particularly dangerous. Do not perform them.

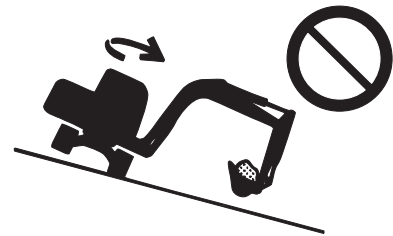
- Traveling down slopes with the attachment lifted
- Traveling across slopes
- Slewing on slopes



OE3A2531



OE3A271



OE3A331

- When heavy attachments are installed, the overslew (the distance from where the operation to stop slewing is performed until slewing stops completely) increases and mistakes in judgment may result in the attachment hitting surrounding objects. Allow for plenty of room between the attachment and obstacles. In addition, the natural drop (the gradual dropping of the attachment under its own weight when it is stopped in midair) also increases when heavy attachments are installed.
- The machine can tip over more easily in the lateral direction than in the longitudinal direction.
 - Do not slew (swing) sideways with excessive weight at the front. In particular do not slew sideways on slopes.
 - The front is heavier for machines equipped with breakers, crushers or telescopic arms than for machines equipped with the standard bucket. Do not operate such machines sideways, especially with the digging arm (boom) downhill.
- When a long arm or a telescopic arm is installed, the operating range suddenly increases and mistakes in judgment may result in the attachment hitting surrounding objects. Allow for plenty of room between the attachment and obstacles.

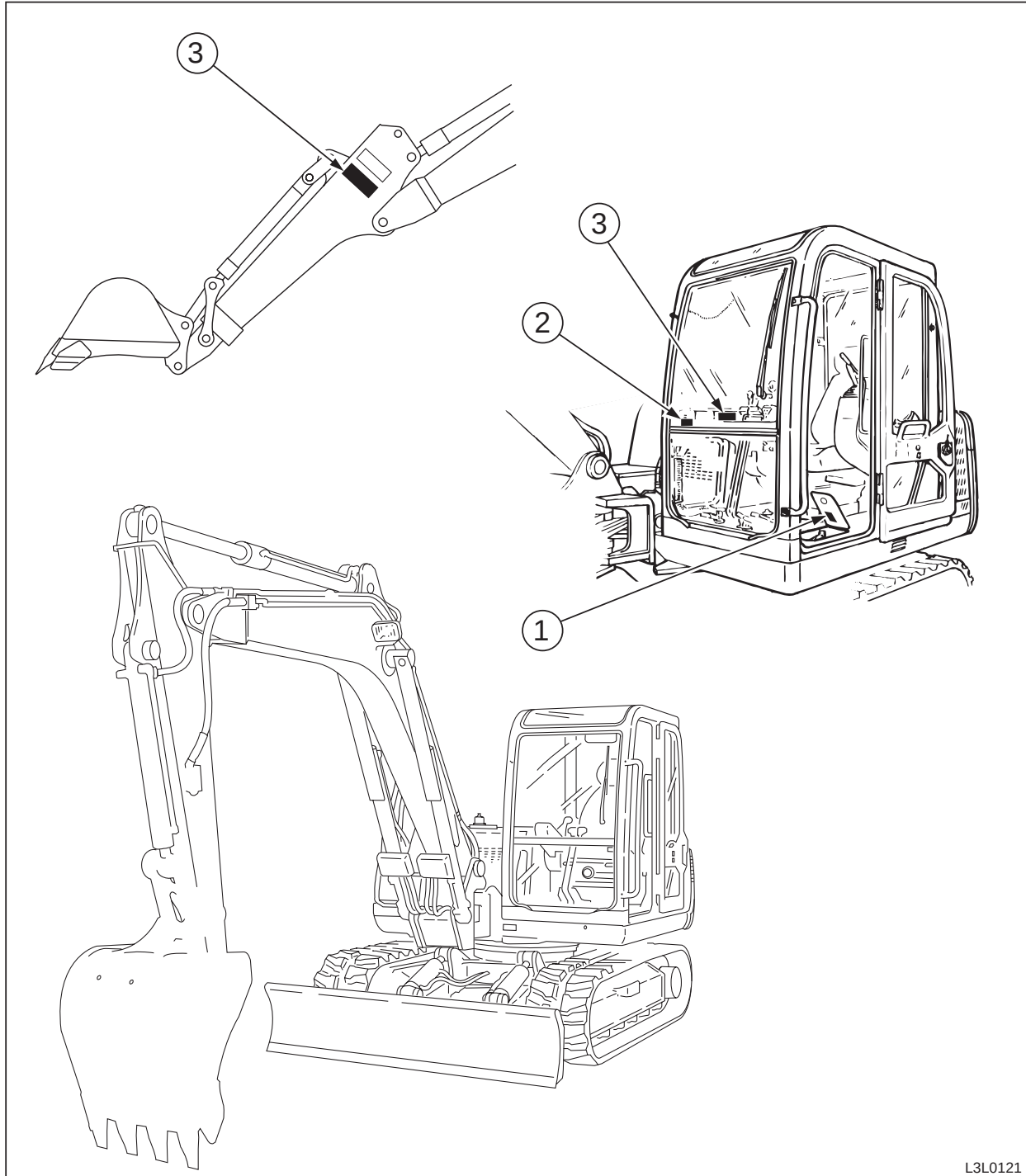


Safety Signs (Decals)

Keep all safety signs clean and legible.

Replace all missing, illegible or damaged safety and warning signs.

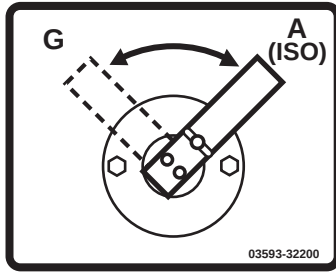
There are other safety signs in addition to the ones listed here. Treat them in the same way.



L3L0121

**Safety Signs (Decals)**

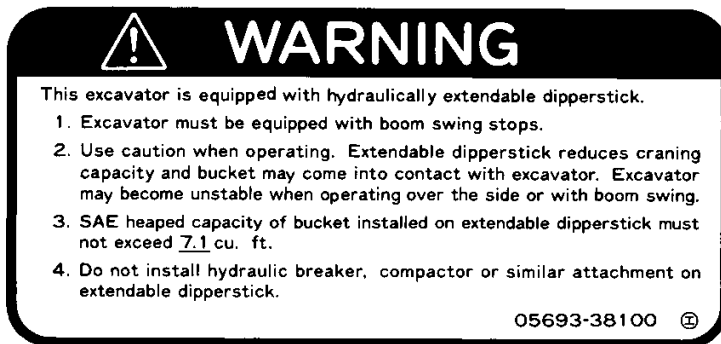
1. No.03593-32200



2. No.03593-32300



3. No.05693-38100





Biodegradable oil

Biodegradable oil is a new type of hydraulic oil that is decomposed into carbon dioxide and water by microorganisms in the soil and water. It is highly safe for living organisms and offers advantages in terms of environmental protection.

- Recommended biodegradable oil: Mobile EAL Envirosyn 46H (an ester synthetic oil).
When replacing the hydraulic oil with biodegradable oil, use the above or an equivalent oil. Note that other oils, even other brands of ester synthetic oils, may damage O-rings, packings and seals. Takeuchi products shipped with the optional biodegradable oil are shipped with the above brand of oil.
- When switching from a mineral oil to a biodegradable oil, the parking brake torque decreases by about 30%.

Replacing the hydraulic oil with biodegradable oil

Mixing mineral oil with biodegradable oil will result in a decrease of the hydraulic oil's performance as well as a decrease in biodegradability and safety. The hydraulic oil system must be flushed as described below before supplying the biodegradable oil. This operation is dangerous and requires experience. Have it performed by a Takeuchi sales or service outlet.

Flushing

- To be performed by a Takeuchi sales or service outlet
1. Drain the hydraulic oil (mineral oil) from the hydraulic tank and clean the inside of the tank and suction strainer. (Refer to the section on replacing the hydraulic oil and cleaning the suction strainer.)
 2. Remove the cylinder hoses and drain the hydraulic oil (mineral oil) from inside the cylinders.
 3. Supply new biodegradable oil to the hydraulic tank.
 4. Bleed the air from the hydraulic pump, control valve, slew motor and cylinders.
 5. Operate the hydraulic devices for 30 minutes.
 6. Drain the biodegradable oil from the tank and cylinders.
 7. Replace the hydraulic oil return filter with a new filter.
 8. Repeat steps 3 and 4.
 9. Operate the hydraulic devices for 30 minutes.
 10. Drain the biodegradable oil from the tank and cylinders.
 11. Repeat steps 3 and 4.
 12. Operate the hydraulic devices for 1 hour.
 13. Drain the biodegradable oil from the tank and cylinders.
 14. Replace the return filter with a new filter.
 15. Repeat steps 3 and 4.
 16. Operate the hydraulic devices, then check for oil leakage.
- There is no need to flush the hydraulic oil system when switching from biodegradable to mineral hydraulic oil.

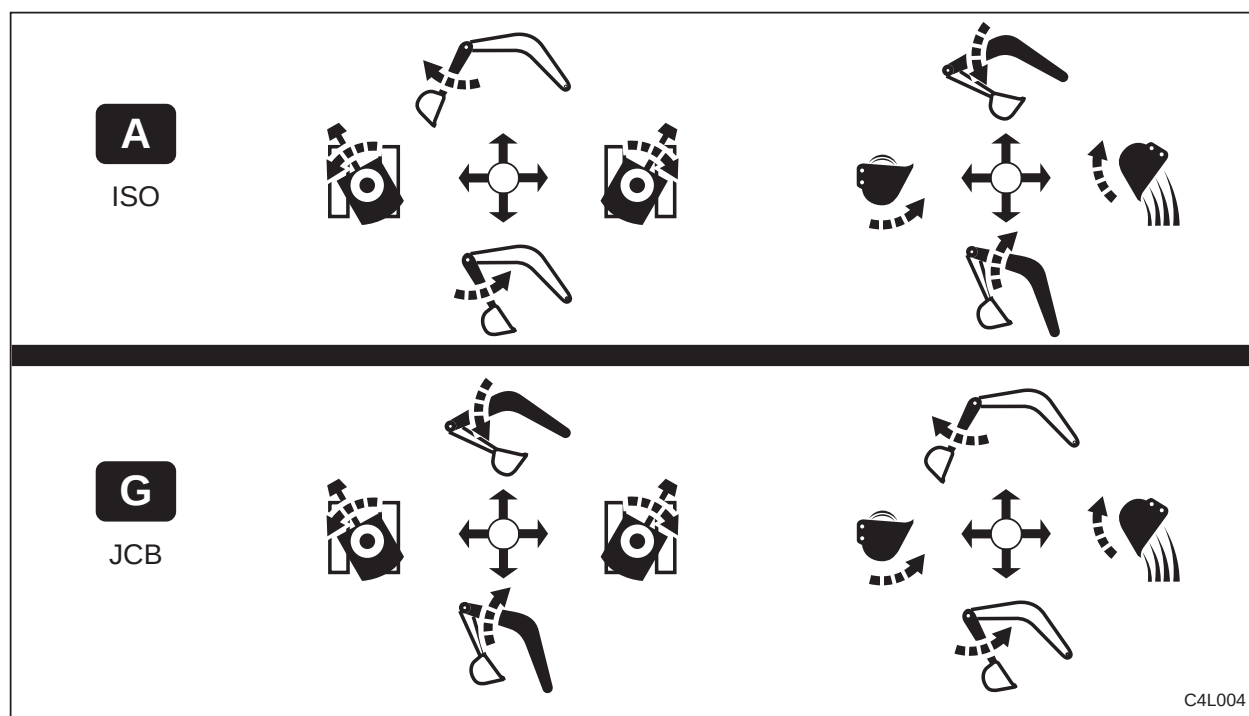


Switching the Lever Pattern

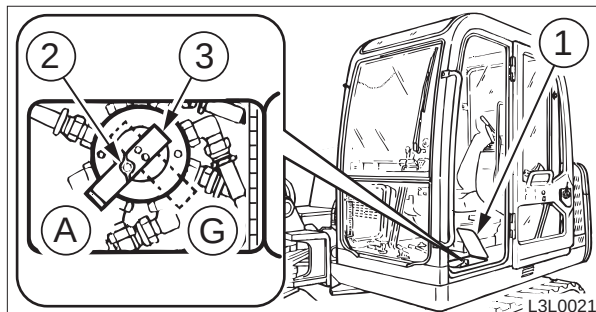
The operating pattern of the left and right operating levers can be changed.

WARNING

Before starting the engine, check the selector to see which operating pattern the left and right operating levers are set for.



Switching the Lever Pattern



(A) : ISO pattern

(G) : JCB pattern

1. Park the machine in a safe place and turn off the engine.
2. Fully open the cab door and fix it in place.
3. Lift up the floor mat at the cab entrance.
4. Open the cover (1).
5. Loosen the wing bolt (2).
6. Turn the selector valve lever (3) and switch the pattern.
7. Tighten the wing bolt (2) and fasten the lever (3) in place.
8. Close the cover (1) and set the floor mat back in place.
9. Check the lever pattern.

**Attachment Combination Table**

Below is the bucket combination table for when standard arm, long arm and telescopic arm are installed.

Heed this table.

! WARNING

- **Add an extra weight when using a telescopic arm.**
- **Add an extra weight or replace with wide steel crawler belts when using a long arm.**
- **Install a swing stopper when a bucket wider than the standard bucket or a telescopic arm is installed.**

√ : Usable

Δ : Usable for light operations (digging and loading operations with dry, loose or mud)

— : Not usable

Total bucket weight = Weight of bucket + Weight of full bucket load (specific gravity : 1.8)

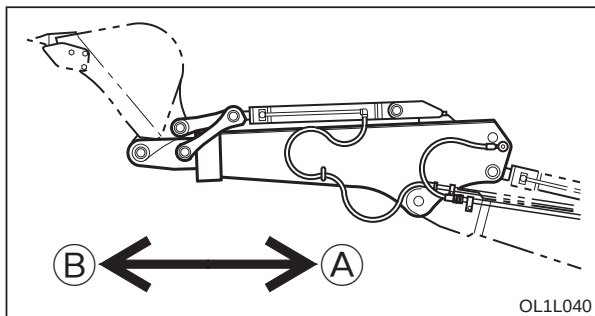
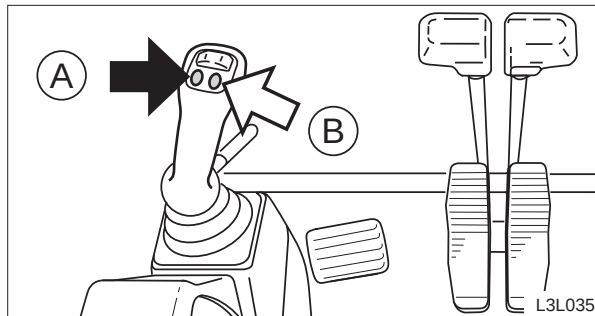
Bucket	Rated Capacity m ³ (cu.yd.)	Bucket cutting width mm (inch)	Standard Arm 1780 mm (70 in.)	Middle Arm 1960 mm (77 in.)	Long Arm 2130 mm (84 in.)	Telescopic Arm 1780 to 2990 mm (70 to 118 in.)
430W (without Side cutter)	0.14 (0.18)	430 (16.9)	√	√	√	√
500W	0.14 (0.18)	500 (19.7)	√	√	√	√
650W	0.20 (0.26)	650 (25.6)	√	√	√	√
750W (S.T.D.)	0.25 (0.33)	750 (29.5)	√	√	√	—
3-hole Bucket (without Side cutter)	0.26 (0.34)	610 (24.0)	√	—	—	—
Total bucket weight = Within 530kg for Telescopic Arm (1168 lb.)		Within 750 (29.5)	√	√	√	√
Total bucket weight = Within 657kg (1448 lb.)		Within 750 (29.5)	√	—	—	—
Hydraulic Breaker (TKB 401)			√	—	—	—



Telescopic Arm

Extending and Retracting the Arm

Use the auxiliary hydraulics controls to extend and retract the telescopic arm.



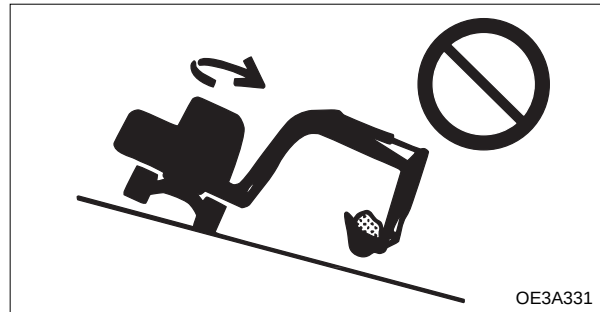
- (A) Retract
(B) Extend



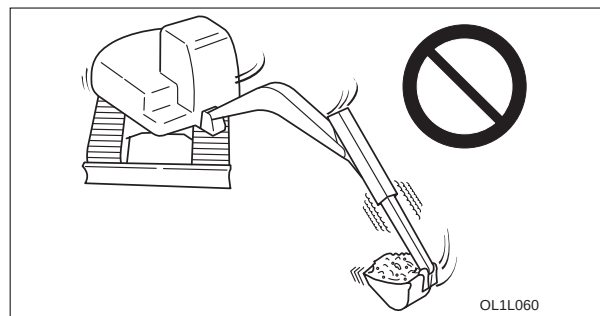
WARNING

- Excavator must be equipped with boom swing stopper.
- Use caution when operating. Telescopic arm reduces craning capacity and bucket may come into contact with excavator. Excavator may become unstable when operating over the side or with boom swing.
- SAE heaped capacity of bucket installed on telescopic arm must not exceed 0.201 m³ (7.1 cu.ft.).
- Do not install hydraulic breaker, compactor or similar attachment on telescopic arm.

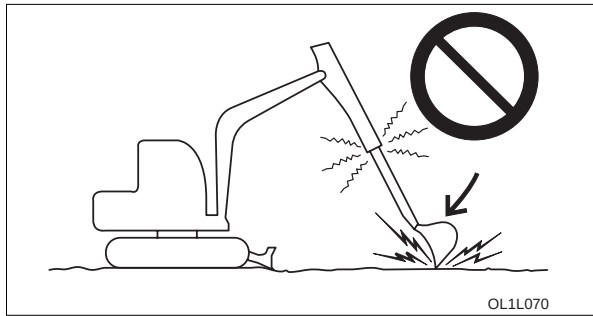
Caution on Using the Arm



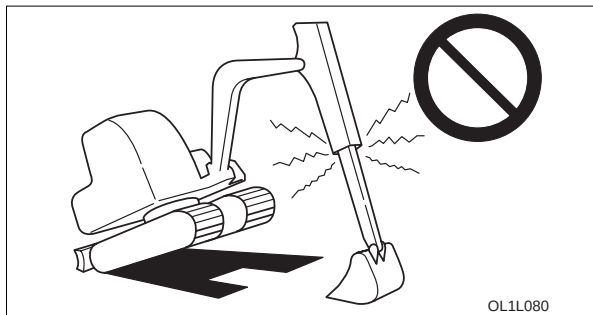
- The machine may lose balance and tip over when slewing or operating the attachment on slopes. It is particularly dangerous to slew with the arm extended on the bucket full. Never do so.



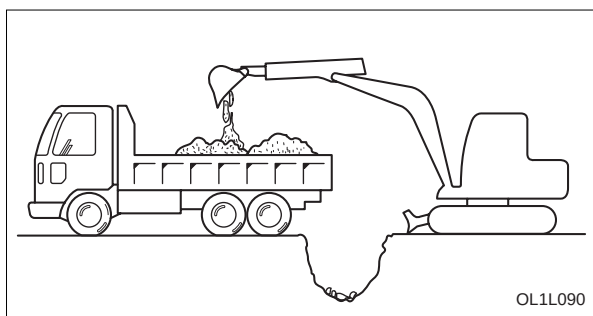
- NEVER slew suddenly or stop slewing suddenly with the arm extended. Doing so may damage the arm.



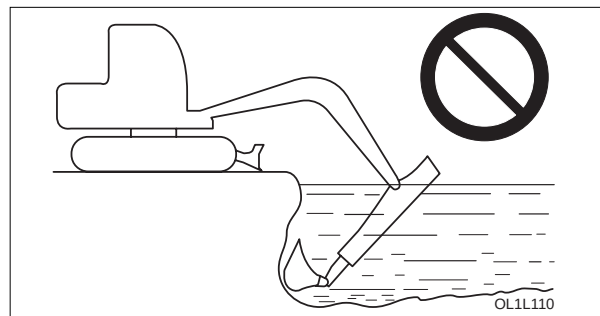
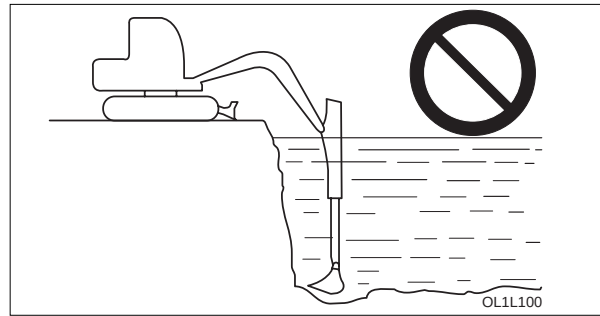
- Do not operate on base rock or hard soils, as doing so may shorten the arm's service life.



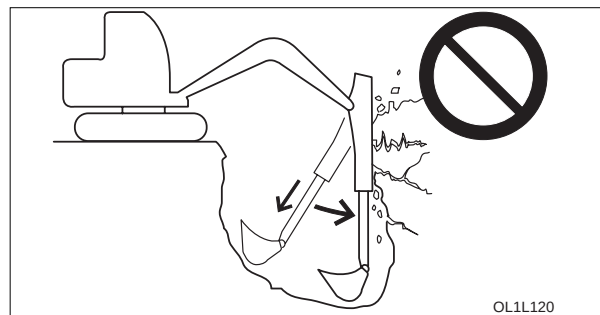
- Do not change directions with machine lifted by pressing the bucket pressed against the ground. Doing so may damage the arm.



- When dumping soil from the bucket or shaking the bucket to remove the remaining soil, do so with the arm retracted to protect the arm extension/retraction section.



- Do not put the arm under water. Also avoid moisture when storing.



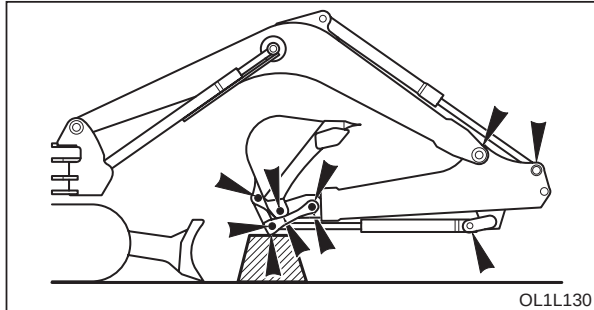
- The arm pressing speed is slow when pressing the arm while simultaneously extending it, but the arm pressing speed suddenly comes faster when the arm extending operation is stopped or the cylinder end is reached. Be careful not to hit surrounding objects.



Inspection and Maintenance

Greasing

- Every day or every 10 hours
- Type of grease Lithium-based multi-purpose grease No. 2
- Greasing points



1. Fully extend the bucket and arm cylinders, lower the boom and on top of block the bucket.
2. Lower the dozer blade and stop the engine.
3. Clean the grease nipple.
4. Add grease to the grease nipple using a grease gun.
5. Wipe off the grease that has been squeezed out and any extra grease.

Looseness in the telescopic arm

When the telescopic arm is used for long periods of time, wear may cause the gap between the outside arm and inside arm to increase to above the set value, resulting in looseness.

Other parts may be damaged if the telescopic arm is used with such looseness. Contact a Takeuchi dealer for maintenance.

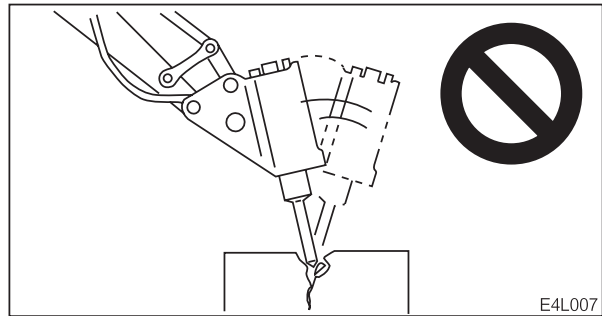
Note that no maintenance is necessary other than the greasing described above.



Hydraulic Breaker

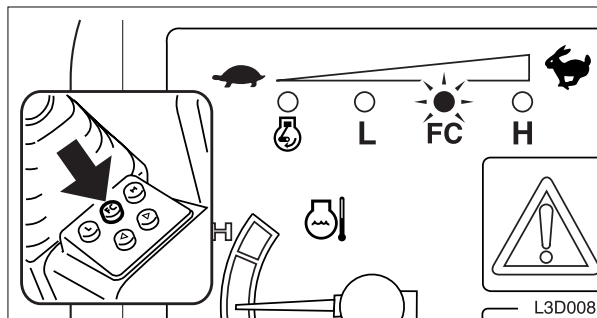
For handling of the breaker, read the hydraulic breaker's manual, provided separately.

IMPORTANT: When mounting devices, select devices suited for this machine. For advice on selecting device, contact a Takeuchi sales or service outlet.

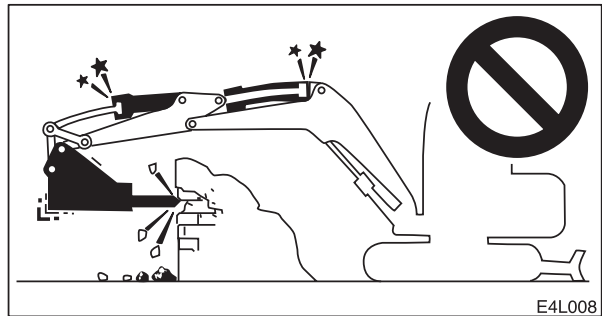


- Do not pry with the chisel, and do not pry while pounding.
- Do not move the chisel while pounding.
- Do not pound continuously for over 30 seconds on the same surface.

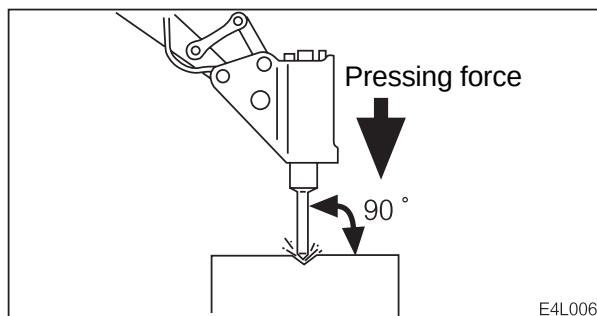
Precautions on Operating



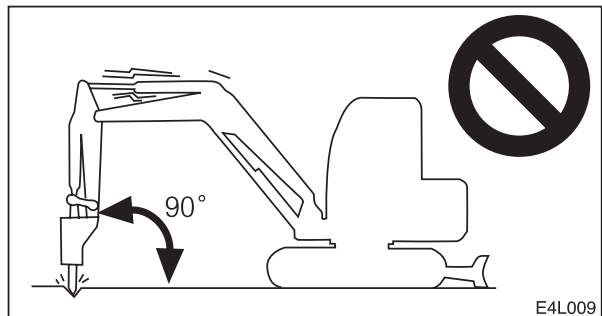
- Run the engine with 75% the maximum speed.



- Do not pound with the cylinder fully extended or contracted (at the stroke end). Leave a margin of at least 5 cm.



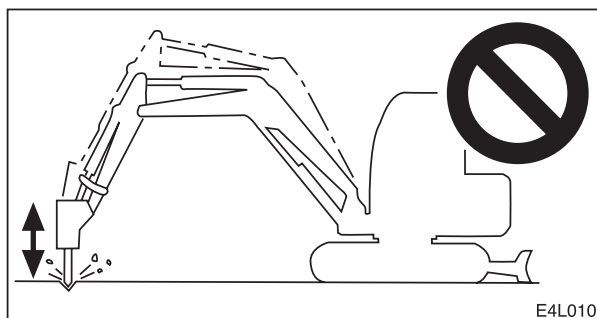
- Pound with the chisel perpendicular to the surface you are pounding.
- When pounding, press the chisel properly against the object to be broken so as to avoid pounding the air.



- Do not pound with the arm perpendicular to the ground surface.



Hydraulic Breaker



- Do not drop the breaker itself on the object to be broken in order to break it.
- Do not move objects to be broken or rocks with the breaker itself.
- Slew occasionally to cool the engine.
- If a hydraulic hose is vibrating abnormally, nitrogen gas may be leaking from the accumulator. Have an inspection as soon as possible.

Replace the hydraulic oil regularly!

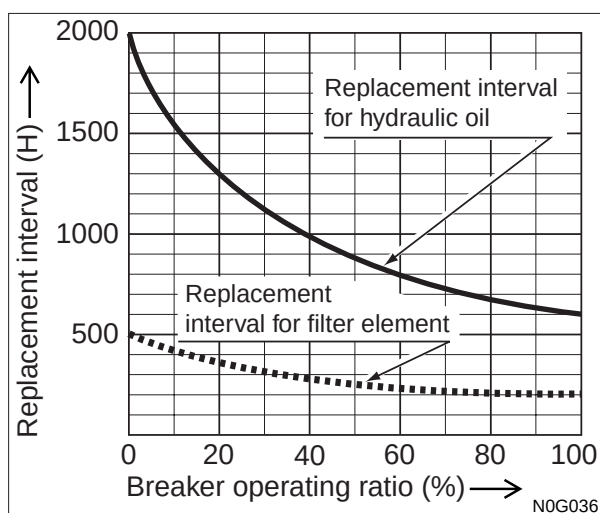
When using a hydraulic breaker, the oil deteriorates quicker than during normal digging. Be sure to replace the hydraulic oil and return filter element.

- Failure to replace these in time can lead to damage to the machine and breaker's hydraulic systems. In order to improve the service life of the hydraulic systems, be sure to replace the hydraulic oil and return filter element after the number of hours shown on the diagram below.
- Clean the suction strainer when changing the return filter element.

Replacement Interval (Hours)

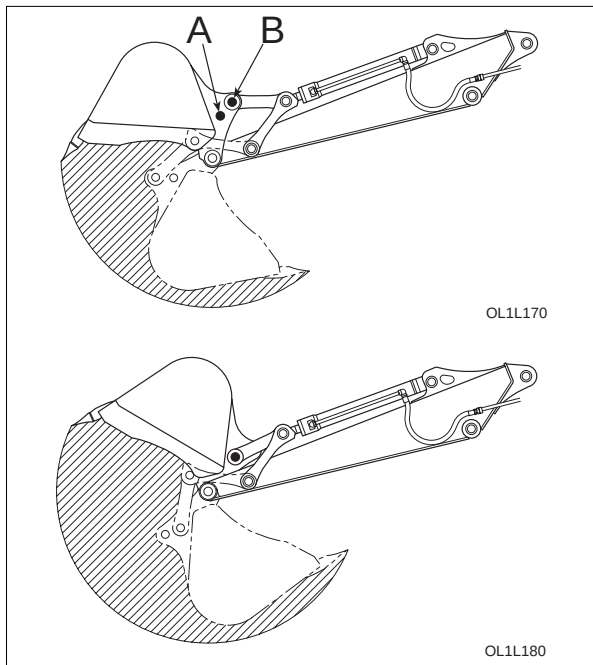
Item	Hydraulic Oil	Filter Element
1st time	—	25
2nd time	—	100
Periodically	600	200

When the breaker operating ratio is 100%





3-Holes Bucket



The digging capacity increases when the bucket's link arm installation position is switched from (A) to (B). However, this shortens the bucket stroke.

- Struck capacity (SAE):
0.210 m³ (0.275 cu. yd.)
- Rated capacity (SAE):
0.261 m³ (0.341 cu. yd.)

Changing the Link Arm Installation Position

Refer to page 134 "Replacing the Bucket" in the manual.



Travel Alarm

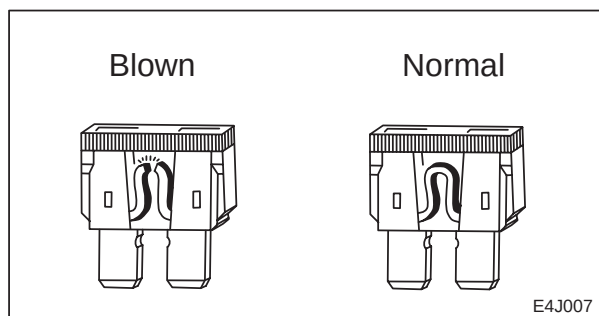
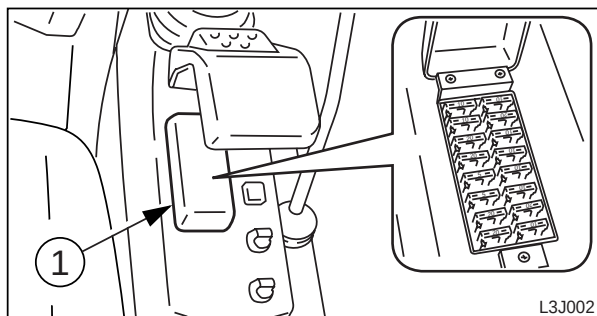
Factory option

An alarm is sounded when the machine travels and stops when traveling is stopped. If the alarm does not sound when the machine travels, the fuse may be blown. Inspect the fuse.



WARNING

If the fuse which has just been replaced should blow again, there is a problem in the electrical system. This could cause fires. Contact a Takeuchi dealer.



1. Park the machine in a safe place.
2. Set the starter switch to OFF.
3. Open the fuse box cover (1).
4. Inspect for blown fuse.
5. If a fuse is blown, replace it with a spare fuse of the same capacity.

Fuse Layout and Circuits Protected

Capacity	Protected circuit	Capacity	Protected circuit
15A	Horn, Interior Light	3A	Throttle controller (B)
10A	Proportional control solenoid	1A	Stop solenoid hold
20A	Lights	10A	External power socket, Travel alarm
20A	Wiper	10A	Cigarette lighter
5A	Radio	10A	Lever lock
5A	Heater	10A	Automatic-glow
30A	Air conditioner (option)	20A	Throttle controller (ACC)
20A	Instrument cluster, Lift alarm (option)	20A	Feed pump, Stop solenoid timer



Load Safety Device

The load safety devices include an emergency shut-off valve and an overload warning device. The emergency shut-off valve stops the boom or arm part way through a fall. The overload warning device sounds an alarm when an excessive load is applied.

Emergency shut-off valve

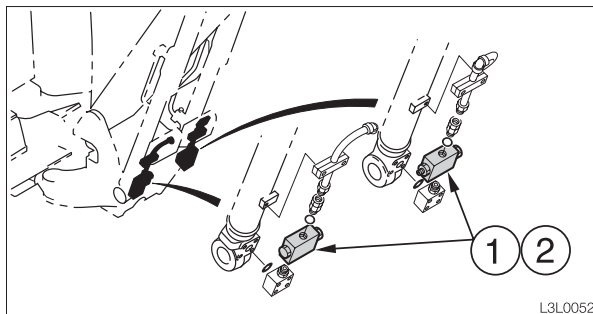
When the hose of the boom or arm cylinders are ruptured and the boom or arm falls, the emergency shut-off valve is activated and stops the boom or arm part way through the fall.



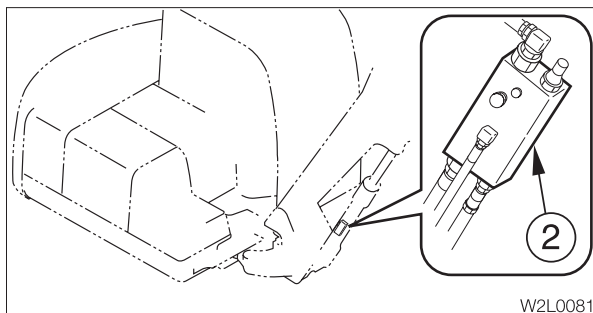
WARNING

If the boom or arm drops and the emergency shut-off valves are activated, immediately move away from the suspended object.

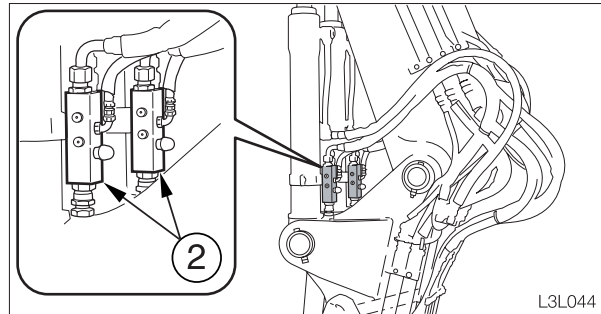
Mono-Boom / Type A or B



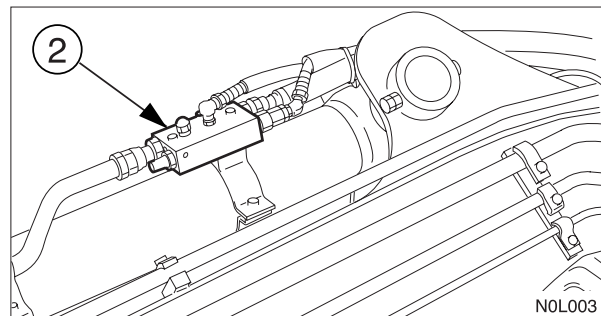
2-Piece Boom / Type B



Intermediate Boom / Type B

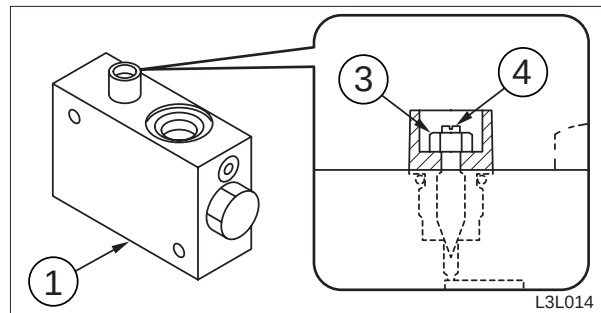


Arm / Type B



If the emergency shut-off valves (1) or (2) are activated, immediately set the operating lever to the neutral position. Do not move the operating lever to the boom or arm lowering side. Contact a Takeuchi dealer for maintenance.

Type A



1. Check for safety in the working area and for stability of the machine and lifted load.
2. Loosen the emergency shut-off valve's lock nut (3) and stem (4) to lower the boom.
3. Check for stability of the hoe attachment and load.



Load Safety Device

4. Tighten the stem (4) secure it with the lock nut (3).

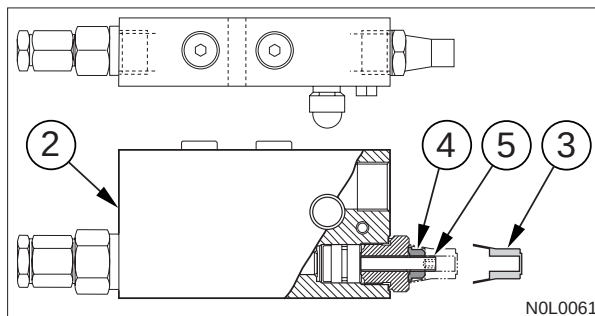
Tightening torque:

- Stem (4) 1.0 to 1.5 N·m (0.7 to 1.1 ft-lb.)
- Lock nut (3) 3.2 N·m (2.4 ft-lb.)

Type B

If the engine can be started, the boom or arm can be lowered with the operating lever. Check for safety, then slowly lower the boom or arm.

If the engine cannot be started, the boom or arm can be lowered using the procedure described below.



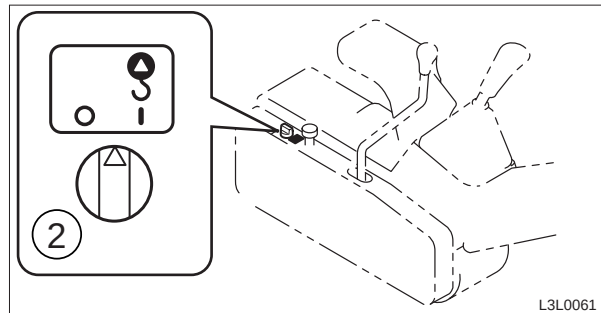
1. Check for safety in the working area and for stability of the machine and lifted load.
2. Remove the cap (3).
3. Loosen the lock nut (4).
4. Tighten the stem (5) to lower the boom or arm.
5. Check for stability of the hoe attachment and load.
6. Loosen the stem (5) secure it with the lock nut (4).

Overload Warning Device

If a weight greater than the machine is designed to lift is lifted, the overload warning device is activated and a horn is sounded (when the overload warning switch is turned on).

WARNING

Continuing to apply the load after the overload warning horn sounds could result in the machine tipping over or the emergency shut-off valve being activated. If the horn sounds, stop operating the machine and lighten the load.



Overload warning switch (2)

O position OFF

I position ON When the emergency shut-off valve is activated, the overload warning horn stops. (This is because the pressure sensor can no longer detect hydraulic pressure.)

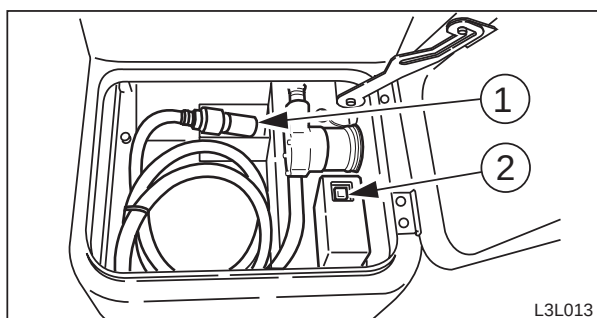


Fuel Supply Pump

This device automatically supplies fuel to the fuel tank and stops automatically when the fuel tank is full.

**DANGER**

Do not use the fuel supply pump for gasoline or hydraulic oil. Doing so could result in explosion or damage. Only use the fuel supply pump for diesel fuel.



1. Open the front cover.
2. Insert the pump's nozzle (1) in the fuel supply tank.
3. Press the switch (2).
The pump stops automatically once the fuel tank is full.



Operating the Machine with Accumulator

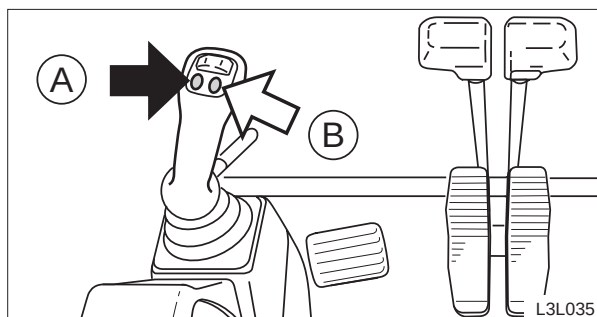
On machines equipped with an accumulator, the residual pressure in the auxiliary hydraulic circuits and the working equipment can be released within a specific amount of time (within 10 minutes) after the engine is stopped.

Releasing the residual pressure

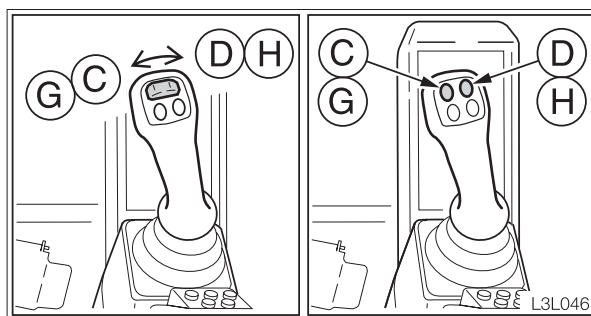
After using the machine, pressure remains in the hydraulic circuits. This is called the residual pressure. Use the procedure below to release the residual pressure as necessary.

Perform the operation to release the residual pressure within 10 minutes after stopping the engine.

1. Press the decel. button and idle the engine at low speed.
2. Lower the bucket and dozer blade to the ground.
3. Check that the safety lock lever is in the released position.
4. Stop the engine.
5. Turn the starter switch to the ON position.



6. Press both the first auxiliary hydraulic buttons (A) and (B) several times to release the residual pressure in the circuitry.



7. Move or press the second / fourth auxiliary hydraulic switches (C / G) and (D / H) several times to release the residual pressure in the circuitry.
When equipped with fourth auxiliary hydraulics.
 - a. Press the selector button (2nd or 4th Aux.) to change over to operation of the second auxiliary hydraulics.
 - b. Move or press the second / fourth auxiliary hydraulic switches to the right and left several times.
8. Move all the control levers and pedals several times in all directions to release the pressure from the working equipment circuitry.
9. Raise the safety lock lever to engage the lock.

Lowering the boom when the engine has stopped.

Perform this operation within 10 minutes after stopping the engine.

1. Check that the safety lock lever is in the released position.
2. Check that the starter switch is in the ON position.
3. Push the operating lever slowly forward to lower the boom.



Second Auxiliary Hydraulics

Second Auxiliary Hydraulic Lines

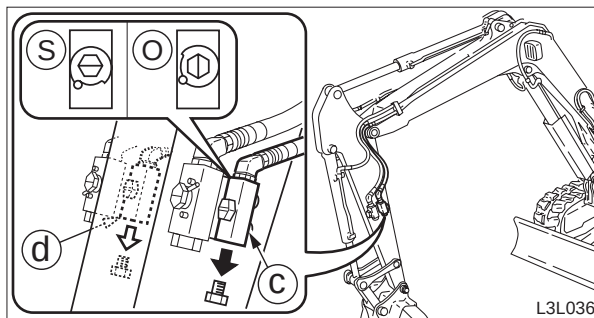


WARNING

Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.

- When disconnecting hoses, release the internal pressure before removing.

These lines deliver the hydraulic oil necessary for operating a hydraulic attachment.



Stop valve (S) : Closed (O) : Open

Connecting the Hydraulic Circuits

To connect the attachment hydraulic lines, use the following procedures:

1. Release the pressure remaining in the lines then close the stop valve.

When equipped with accumulator:

Refer to page 201 "Releasing the residual pressure".

2. Remove the plugs.
3. Connect the attachment hydraulic lines to ports (c) and (d).
4. Open the stop valves.
5. When connecting is complete, purge air from the hydraulic lines.
 - a. Start and run the engine at low idle with no load for 10 minutes.

- b. With the engine running at low idle operate the auxiliary hydraulic switches repeatedly (approx. 10 times) to purge air from the hydraulic lines.
- c. Stop the engine and wait for more than 5 minutes until bubbles escape from the hydraulic oil in the tank.

IMPORTANT: Follow the procedures for purging air as instructed by the attachment manufacturer if specified to do so.

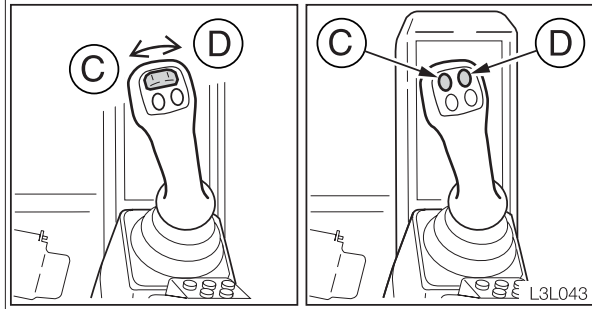
6. Check for leaks.



Second Auxiliary Hydraulics

Second Auxiliary Hydraulic Switches

Slider switch (Proportional control) and Buttons



Move or press those switches to control the flow of the oil in the second auxiliary hydraulic lines.

- (C) Hydraulic oil flows to left auxiliary line(c)
- (D) Hydraulic oil flows to right auxiliary line(d)

- When the safety lock lever is set to the lock position, this control is locked.

Disconnecting the hydraulic circuits

1. Release the pressure remaining in the lines then close the stop valve.
When equipped with accumulator:
Refer to "Releasing the residual pressure."
2. Disconnect the lines from ports (c) and (d).
3. Install the plugs.

When equipped with accumulator

Releasing the residual pressure

After using the auxiliary hydraulic circuits, pressure remains in the circuits. This is called the residual pressure. Release this residual pressure before disconnecting the lines.

1. Stop the engine.
2. Turn the starter switch to the ON position.
3. Fully lower the safety lock lever.

4. Within 10 minutes after the engine comes to a complete stop, move or press the second auxiliary hydraulic switches to the right and left several times.
5. Raise the safety lock lever to engage the lock.



Third Auxiliary Hydraulics

Third Auxiliary Hydraulic Lines

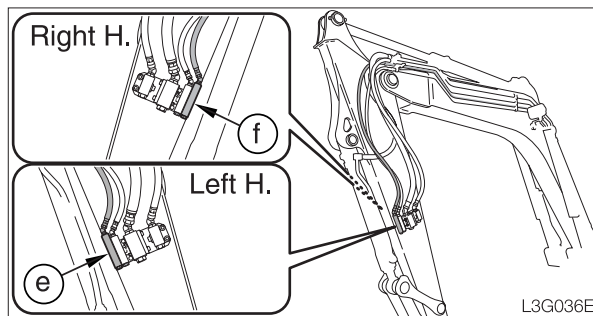


WARNING

Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.

- When disconnecting hoses, release the internal pressure before removing.

These lines deliver the hydraulic oil necessary for operating a quick attachment.



Connecting the Hydraulic Circuits

To connect the attachment hydraulic lines, use the following procedures:

1. Release the pressure remaining in the lines.
Refer to "Releasing the residual pressure".
2. Remove the plugs.
3. Connect the attachment hydraulic lines to ports (e) and (f).
4. When connecting is complete, purge air from the hydraulic lines.
 - a. Start and run the engine at low idle with no load for 10 minutes.
 - b. With the engine running at low idle operate the auxiliary hydraulic switches repeatedly (approx. 10 times) to purge air from the hydraulic lines.
 - c. Stop the engine and wait for more than 5 minutes until bubbles escape from the hydraulic oil in the tank.

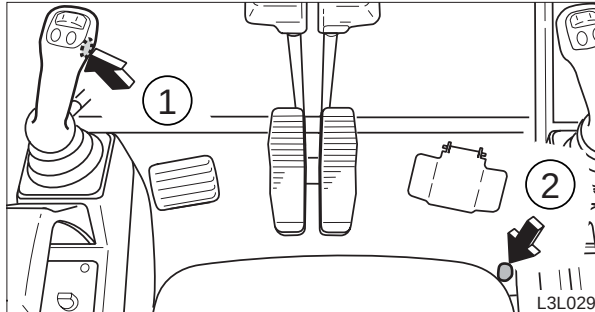
IMPORTANT: Follow the procedures for purging air as instructed by the attachment manufacturer if specified to do so.

5. Check for leaks.



Third Auxiliary Hydraulics

Third Auxiliary Hydraulic Switch and Button



Press those switch and button to control the flow of the oil in the third auxiliary hydraulic lines.

When the safety lock lever is released after the engine is started, hydraulic oil constantly flows in pipe (e). When button (1) and switch (2) are pressed simultaneously, the oil flow switches to pipe (f). When this happens, the pressure of pipe (e) drops, an alarm is sounded and the warning lamp lights. For safety, only operates when both button (1) and switch (2) are pressed.

Disconnecting the hydraulic circuits

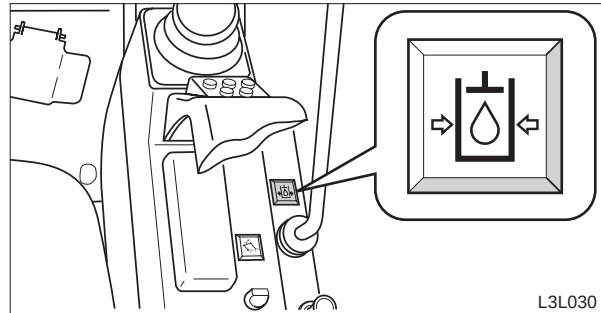
1. Release the pressure remaining in the lines.
Refer to "Releasing the residual pressure".
2. Disconnect the lines from ports (e) and (f).
3. Install the plugs.

Releasing the residual pressure

After using the auxiliary hydraulic circuits, pressure remains in the circuits. This is called the residual pressure. Release this residual pressure before disconnecting the lines.

1. Stop the engine.
(The residual pressure is released from the (e) port line.)

Third Auxiliary Hydraulics Warning Lamp



This lamp illuminates and an alarm sounds when the third auxiliary hydraulic pressure drops abnormally while the engine is running.



Fourth Auxiliary Hydraulics

Fourth Auxiliary Hydraulic Lines

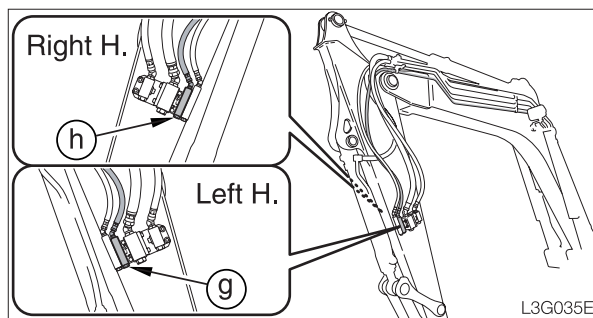


WARNING

Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.

- When disconnecting hoses, release the internal pressure before removing.

These lines deliver the hydraulic oil necessary for operating a hydraulic attachment.



Connecting the Hydraulic Circuits

To connect the attachment hydraulic lines, use the following procedures :

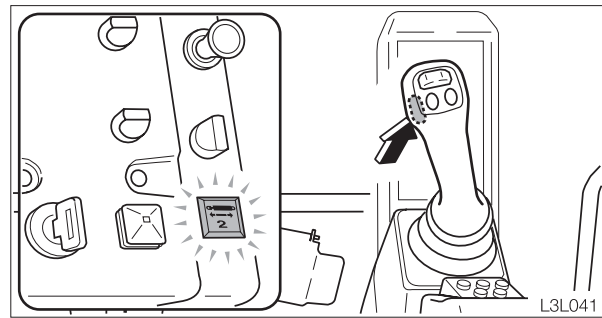
1. Release the pressure remaining in the lines.
When equipped with accumulator:
Refer to page 199 "Releasing the residual pressure".
2. Remove the plugs.
3. Connect the attachment hydraulic lines to ports (g) and (h).
4. When connecting is complete, purge air from the hydraulic lines.
 - a. Start and run the engine at low idle with no load for 10 minutes.
 - b. With the engine running at low idle operate the auxiliary hydraulic switches repeatedly (approx. 10 times) to purge air from the hydraulic lines.

- c. Stop the engine and wait for more than 5 minutes until bubbles escape from the hydraulic oil in the tank.

IMPORTANT: Follow the procedures for purging air as instructed by the attachment manufacturer if specified to do so.

5. Check for leaks.

Selector Button (2nd or 4th Aux.)



This button changes from the fourth auxiliary hydraulics operation to the second auxiliary hydraulics operation.

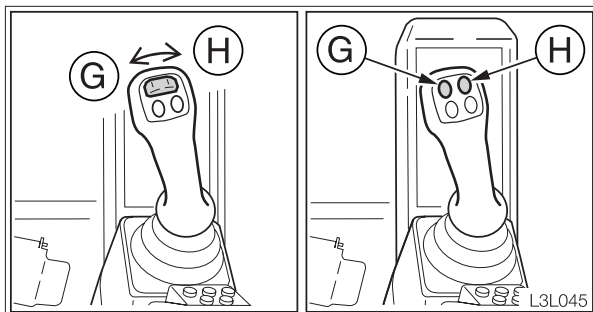
Press this button to change over to operation of the second auxiliary hydraulics. The second auxiliary hydraulics operation indicator lamp will light. One more press of this button will result in a return to fourth auxiliary hydraulics operation. Actual operation is performed with the second / fourth auxiliary hydraulic switches.



Fourth Auxiliary Hydraulics

Second / Fourth Auxiliary Hydraulic Switches

Slider switch (Proportional control) and Buttons



Move or press those switches to control the flow of the oil in the fourth auxiliary hydraulic lines.

- (G) Hydraulic oil flows to left auxiliary line(g)
(H) Hydraulic oil flows to right auxiliary line(h)

- When the safety lock lever is set to the lock position, this control is locked.

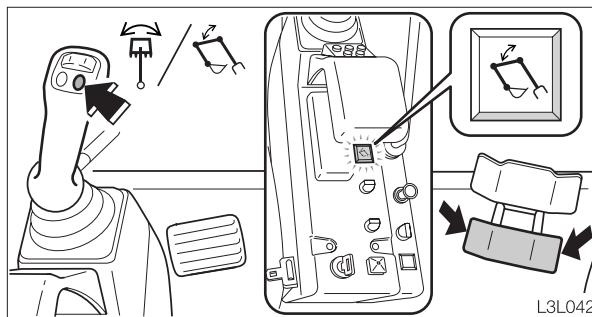
Disconnecting the hydraulic circuits

1. Release the pressure remaining in the lines.
When equipped with accumulator :
Refer to page 199 "Releasing the residual pressure".
2. Disconnect the lines from ports (g) and (h).
3. Install the plugs.

Selector Button (2-Piece boom)

WARNING

Pressing (switching ON or OFF) the selector button while the boom swing pedal is depressed is dangerous, since the attachment will move unexpectedly. Always set the boom swing pedal back to the neutral position before operating the selector button.



This button changes from the boom swing operation to the intermediate boom operation.

Press this button to change over to operation of the intermediate boom . The intermediate boom operation indicator lamp will light. One more press of this button will result in a return to boom swing operation. Actual operation is performed with the boom swing pedal. Operation of the first auxiliary hydraulic switch push button: left side (A) only.



CAUTIONS ON USE

Ventilate periodically

- When using the air conditioner over an extended period of time, open the windows about once each hour to let in fresh air.
- Your eyes may become irritated if you smoke while using the air conditioner. If this happens, open the windows to let in fresh air. Cigarette smoke particularly irritates the eyes when using the air conditioner because the humidity in the cabin drops and the eyes' membranes tend to become dry.
- If the outside air is dirty, set the air conditioner to the recirculation mode.

Always maintain good visibility

Working with the windows dirty or fogged restricts visibility and is dangerous. Always clean dirt and moisture off the windows before working.

- The windows tends to get foggy when the humidity is high. If this happens, turn on the air conditioner and use outside air and the defroster to get rid of the fog.
- If the air conditioner is set to high when using the defroster, the difference between the external and internal temperatures increases, and fog may form on the outside of the windows. If this happens, either turn the air conditioner off or turn the temperature control dial clockwise to increase the internal temperature.
- Mist may blow out of the air outlets. This is not a malfunction. When moist air passes through the air conditioner unit's evaporator, water particles in the air freeze and are emitted as mist.

Do not overcool

For health purposes, the air inside the cab should be kept at a temperature at which you feel a little cool when entering the cab from outside (a difference of 5 to 6 °C (9 to 11 °F)). Be careful to adjust the temperature properly.

Do not turn the air conditioner on until the engine is started

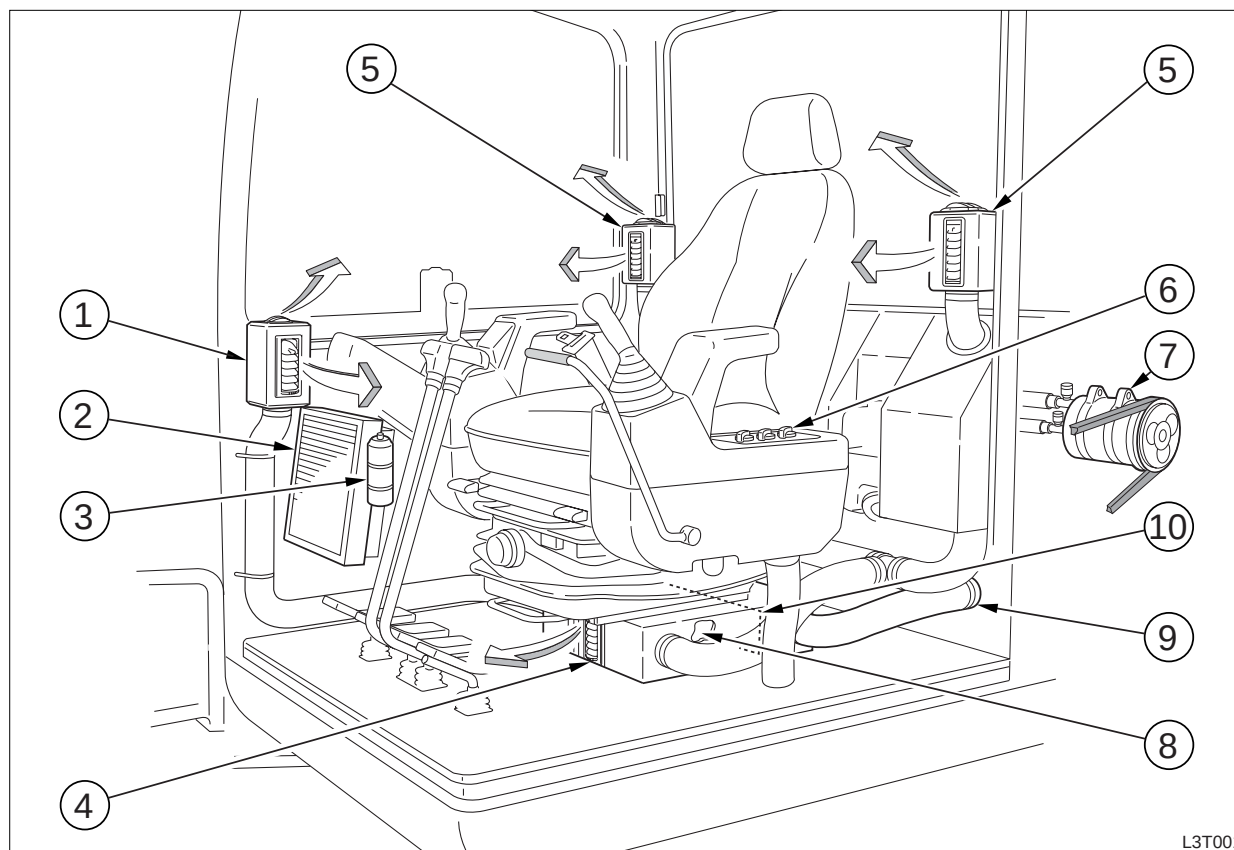
To avoid placing an excessive load on the compressor, wait until the engine is started and is running smoothly before turning on the air conditioner.

Let hot air out first

If the excavator has been parked in the sun, open the windows or door to let the hot air out of the cab before using the air conditioner.

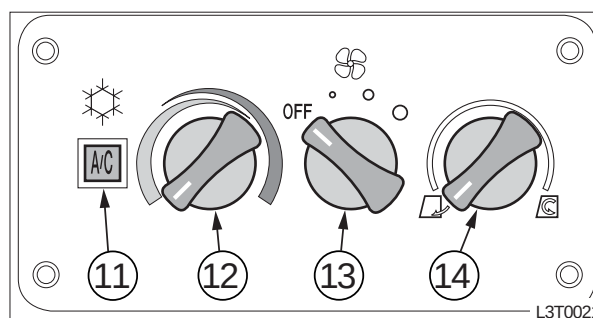
Caution on refrigerant (gas)

Exposure of the eyes or hands to the cooler's refrigerant could result in blindness or frostbite. Never touch the refrigerant or loosen the parts of the cooling circuit. Should the refrigerant gas leak, keep flames away.

**Air Conditioner****NAMES OF COMPONENTS**

L3T001

1. Defroster
2. Condenser
3. Receiver drier
4. Foot outlets
5. Back outlets
6. Control panel
7. Compressor
8. Air conditioner unit
9. External air duct
10. Filter

Control Panel

L3T0021

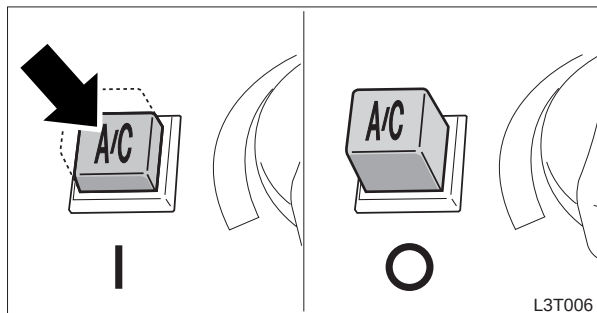
11. Air conditioner switch
12. Temperature control dial
13. Fan switch
14. Airflow mode control dial



Air Conditioner

Air Conditioner Switch

IMPORTANT: To avoid placing an excessive load on the compressor, wait until the engine is started and is running smoothly before turning on the air conditioner.



Use this switch to turn the air conditioner ON and OFF. When this switch is pressed while the engine is running and the fan switch is ON, the air conditioner turns on. Press the switch again or turn the fan switch OFF to stop the air conditioner.

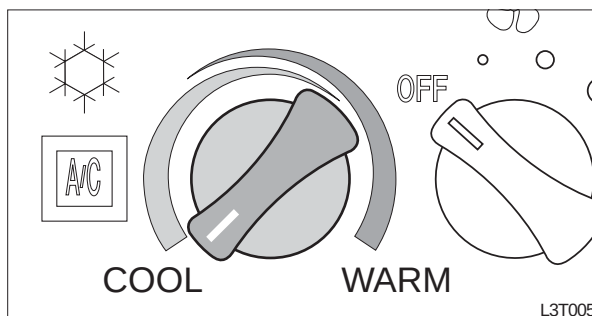
O OFF

I ON

Supplement: To prevent leakage of coolant gas from the compressor's seal, operate the air conditioner at least once a week, regardless of the season.

Supplement: The air conditioner will not function if the temperature in the cab is low (about 3 °C (38 °F) or lower).

Temperature Control Dial



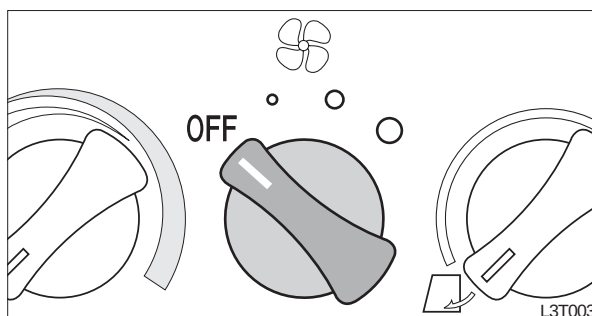
Use this dial to adjust the air temperature.

COOL To lower the temperature

WARM To increase the temperature

Supplement: No warm air is emitted if the temperature of the engine coolant is low.

Fan Switch



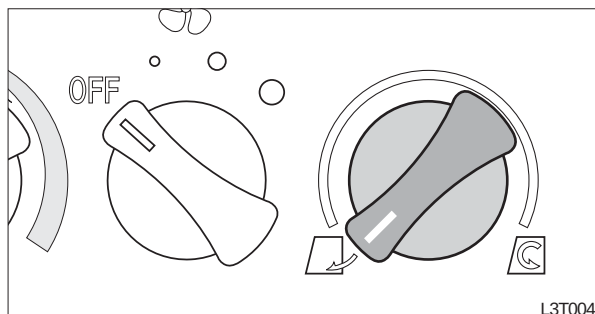
Use this switch to adjust the fan speed in three steps. At the OFF position, the air conditioner is also OFF.

OFF Fan and air conditioner off

• Low

○ Medium

○ High

**Air Conditioner****Airflow Mode Control Dial**

Use this dial to select recirculation or fresh air intake.

 Recirculation

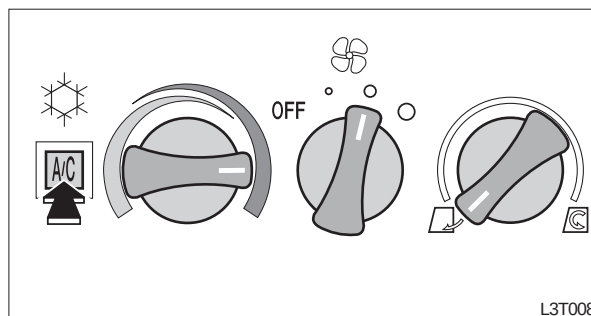
- To cool or heat the cab quickly
- When external air is dirty

CENTER 50% fresh air intake

- To let in fresh air
- To ventilate while cooling or heating the cab slowly

 Fresh air intake

- To let in fresh air
- To remove fog from the windows
- To ventilate while cooling or heating the cab

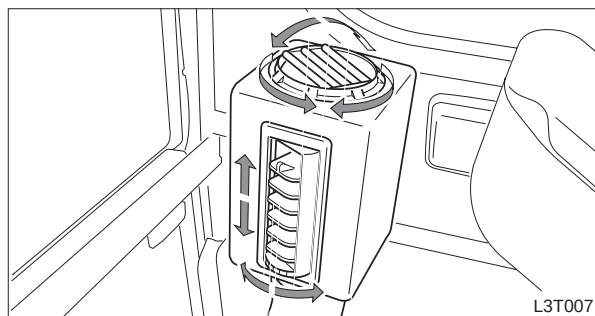
OPERATION**Heating and Dehumidifying
(in cold weather or when the
humidity is high)**

After starting the engine, turn the air conditioner ON and adjust the switches as shown in the diagram above.

The outflow slot of foot area and the outflow slots of the defroster can be directed at the front window.

Warm, dehumidified air blows on the front window, preventing fogging.

Set the temperature control dial and fan switch to the desired positions.

Outlets

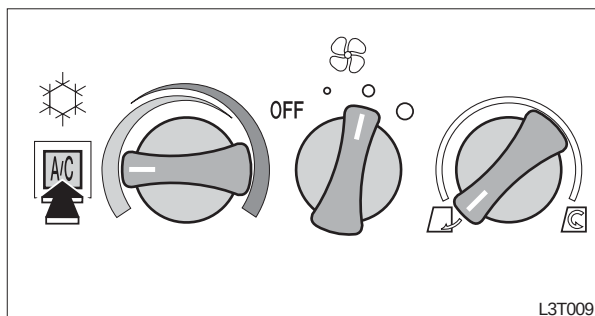
Move the louvers up and down or left and right to adjust the air flow direction and amount.

Cooling**! CAUTION**

- When the air conditioner is set to the recirculation mode, the air in the cab gradually becomes dirty, so switch to external air to ventilate once a comfortable temperature is reached.
- Excessive cooling can be harmful to your health. It is best to keep the air inside the cab only about 5 to 6 °C (9 to 11 °F) cooler than the outside air.
- If the excavator has been parked in the sun, open the windows or door to let the hot air out of the cab before using the air conditioner.

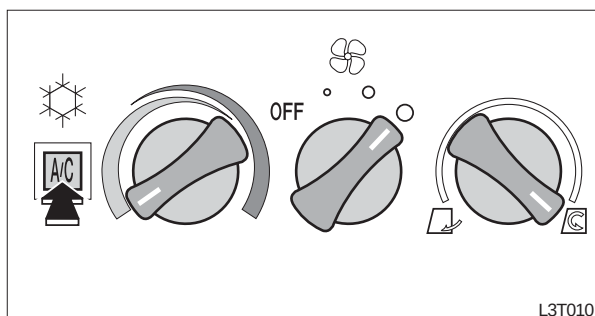


Air Conditioner



After starting the engine, turn the air conditioner ON and adjust the switches as shown in the diagram above. Set the temperature control dial and fan switch to the desired positions.

Quick cooling

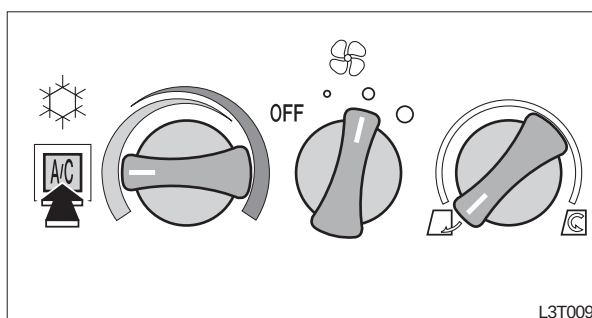


To cool the cab quickly, set the airflow mode control dial to the recirculation position and the fan switch to High, as shown on the diagram above.

Defogging the Windows

! CAUTION

If the air conditioner is set to high when using the defroster, the difference between the external and internal temperatures increases, and fog may form on the outside of the windows. If this happens, either turn the air conditioner OFF or turn the temperature control dial clockwise (WARM).



After starting the engine, turn the air conditioner ON and adjust the switches as shown in the diagram above.

The outflow slot of foot area and the outflow slots of the defroster can be directed at the front window.



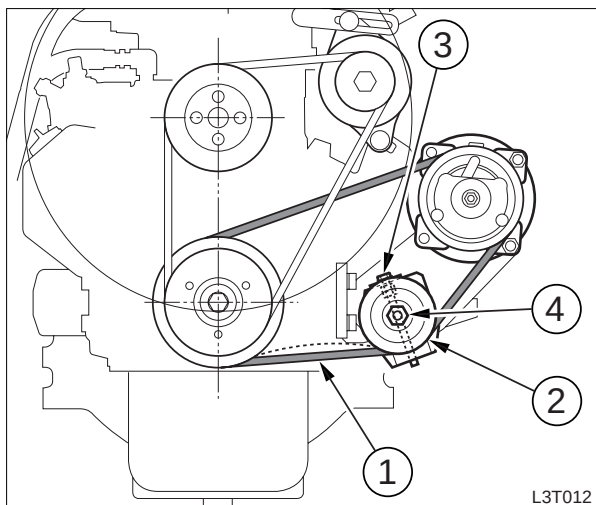
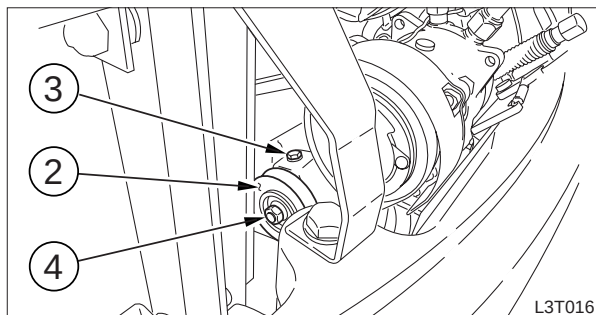
INSPECTION AND MAINTENANCE

Inspection and maintenance interval
..... Every 250 hours

Inspecting and Adjusting the Air Conditioner Belt

Inspection and maintenance interval
... After first 50 hours (New machines only)
IMPORTANT: Do not let any oil or grease get on the belt, as it will cause the belt to slip, shortening its service life and reducing the air conditioner's cooling capacity.

If the belt is slack, it will slip and vibrate, shortening its service life and reducing the air conditioner's cooling capacity. The belt should also not be too tense. Adjust the belt tension to the standard value (approximately 8 mm or 0.3 in.).



Inspection

1. Open the engine hood.
2. Press on the center of the belt (1) with a finger. The belt's tension is normal if it bends about 8 mm (0.3 in.) when pressed with a force of about 98N (22 lbs).

Adjustment

If the belt's tension is not normal, adjust it with the adjust bolt (3).

1. Loosen the nut (4).
2. Tighten the bolt (3) to decrease the tension.
Loosen the bolt (3) to increase the tension.
3. After adjusting is completed, tighten the nut (4).

Replace

Replace the belt in the following cases:

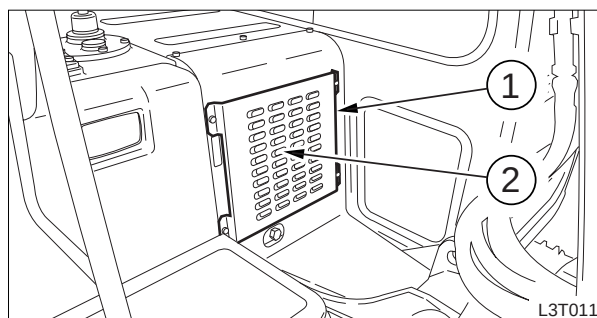
- If it stretches and its tension cannot be adjusted.
- If it is cut or cracked.
- If the fan belt is worn and the pulley is touching the bottom of the V groove.



Cleaning the Condenser

CAUTION

Cleaning the condenser with high pressured water may damage it. Clean the condenser gently.



If the condenser is dirty, heat will not discharge properly. Wash dirt off the condenser with water.

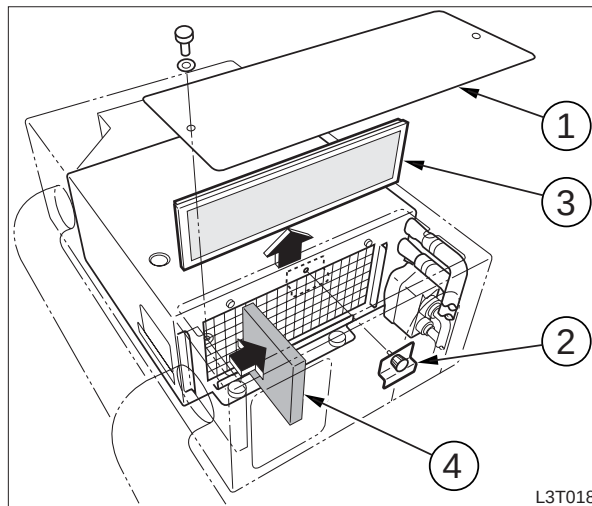
1. Remove the cover (1) on the right side of the cab.
2. Clean the condenser (2).

Cleaning the Filters

Clean the filters sooner when operating in dusty places.

If the filters are clogged, the air becomes weak and a muted booming sound is heard from the air conditioner unit.

Removing the filters



1. Move the seat all the way forward, then fold down the seat back toward the front.
2. Loosen the bolts and remove the cover (1).
3. Loosen the knob and remove the filter stopper (2).
4. Lift the filter (3) upwards and off.
5. Remove the filter (4).
6. Use compressed air or water to clean the filters, depending on how dirty it is.

Cleaning

CAUTION

Wear safety glasses when using compressed air.

1. Blow dry, compressed air (138 KPa or 20 psi or less) directly on the filters from the inside, moving up and down along the creases.
Be sure to keep the nozzle at an adequate distance from the filters.
2. For tough dirt, wash the filter (4) with neutral detergent and water. Dry the filter (4) completely after washing it.



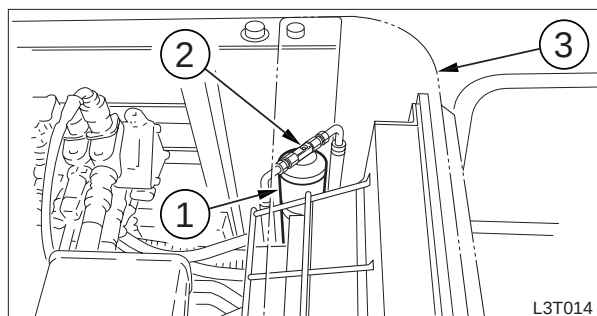
Inspecting the Refrigerant (gas) Level

! WARNING

Exposure of the eyes or hands to the cooler's refrigerant could result in blindness or frostbite. Never touch the refrigerant or loosen the parts of the cooling circuit.

Should the refrigerant gas leak, keep flames away.

The cooling capacity will decrease if the amount of refrigerant is insufficient.

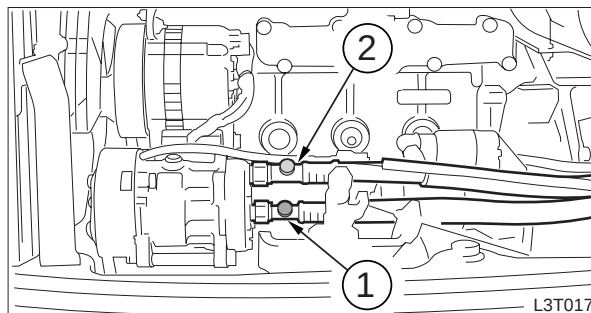


Inspect the refrigerant level using the sight glass (2) on the top of the receiver drier (1).

1. Remove the center cover(3).
2. Inspect under the following conditions:
 - Cab door Fully open
 - Temperature control dial
..... Fully to the COOL side
 - Air strength High
 - Airflow mode control dial
..... Recirculation position
 - Engine speed 1500 rpm
 - Air conditioner ... On
3. Inspect by watching the flow of air bubbles in the refrigerant through the sight glass (2). Refer to page 214 "Condition of the refrigerant".

! CAUTION

The high pressure pipe becomes hot (80 to 120 °C (176 to 248 °F)), so be careful not to burn yourself when inspecting the refrigerant level.

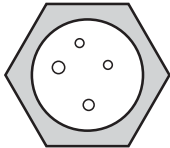
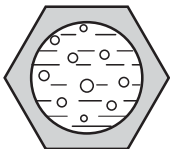
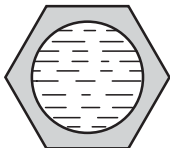
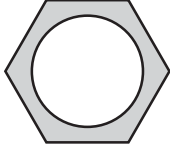


4. Also check the temperature of the compressor's high pressure pipe (1) and low pressure pipe (2). Refer to page 214 "Condition of the refrigerant."

Off-Season Inspection

Even off season, run the cooler for 3 to 5 minutes at least once a week to maintain oil in the various parts of the compressor.

**Condition of the refrigerant**

Sight glass (refrigerant)		High/low pressure pipe temperature	Pipe connection
Normal 	Almost transparent, with some bubbles, but fully transparent when the engine speed is increased or decreased.	High pressure pipe (1) hot (80 to 120 °C (176 to 248 °F)), low pressure pipe (2) cold (8 to 15 °C (46 to 59 °F)). Clear difference in temperature between the pipes.	No irregularities.
Refrigerant low 	Flow of bubbles can be seen constantly. Refrigerant is sometimes transparent or has white bubbles. Refrigerant may be leaking.	High pressure pipe warm, low pressure pipe somewhat cool. No great difference in temperature between the pipes.	Some oily places.
Almost no refrigerant 	Some mist-like refrigerant can be barely seen flowing. Refrigerant has leaked, and almost none is left.	Almost no difference in temperature between the high and low pressure pipes.	Some heavily oily places.
Excess refrigerant 	No bubbles can be seen, even when the fan is set to high and the engine is idling.	High pressure pipe is hot, low pressure pipe is somewhat cool. There is a difference in temperature between the pipes.	No irregularities.

If the air conditioner does not function

If the air conditioner does not cool or heat the air, set the fan switch to OFF and contact a service outlet for inspection and/or repairs.

IMPORTANT: Continued use of the air conditioner when it is not functioning properly may damage its various parts.

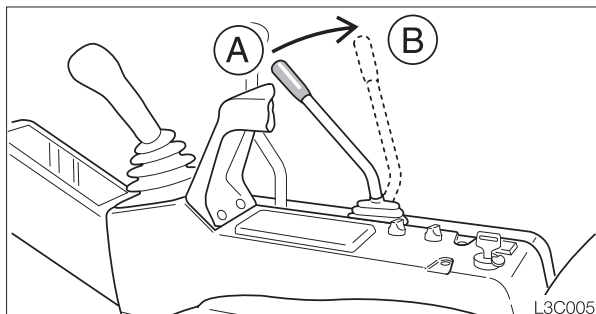
IMPORTANT: Using the air conditioner when there is no refrigerant will damage the compressor. Be particularly careful not to do this.

IMPORTANT: Always have a service outlet add or replace the refrigerant. Be sure to use R134a refrigerant (800g or 1.76 lb).



Throttle Lever

Throttle Lever

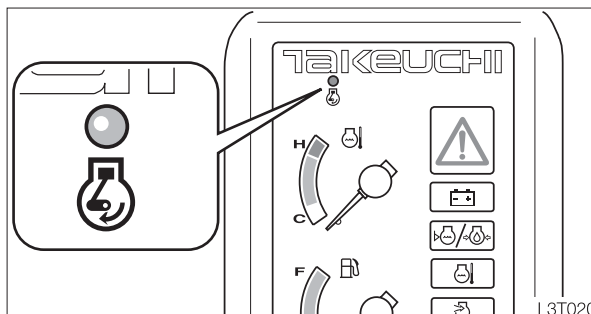


This controls the engine speed.

(A) Low idling

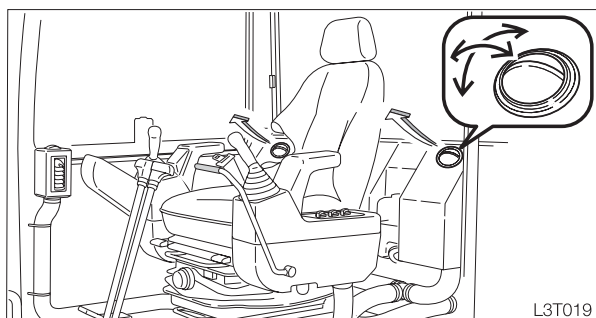
(B) Maximum speed

Decel. Lamp



This lamp lights when decel. button pressed, the engine speed decreases.

Air Conditioner Outlets



Move the louvers up and down or left and right to adjust the air flow direction and amount.

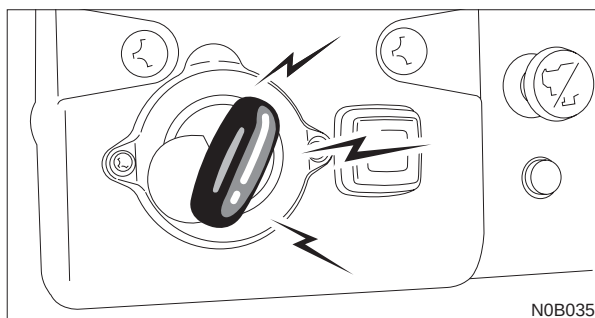
Fuse Layout

Fuse Layout and Circuits Protected

Capacity	Protected circuit	Capacity	Protected circuit
15A	Horn	10A	Deceleration
10A	Proportional control solenoid	1A	Stop solenoid hold
20A	Lights	10A	External power socket
20A	Wiper	10A	Cigarette lighter
5A	Radio	10A	Lever lock
5A	Heater	10A	Automatic-glow
30A	Air conditioner (option)	20A	Throttle controller (ACC)
20A	Instrument cluster	20A	Feed pump

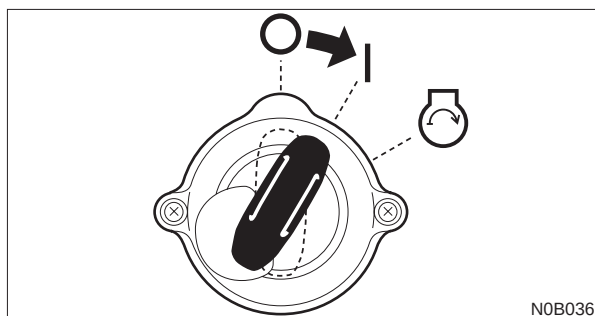


Immobilizer System



The immobilizer system is a device that protects the machine from theft through the use of falsified keys, etc. Signals are exchanged between the machine and the key, and the engine cannot be started unless the key is one of the included immobilizer keys or the registration key. If an attempt is made to force the engine to start using a falsified key, an alarm device is activated.

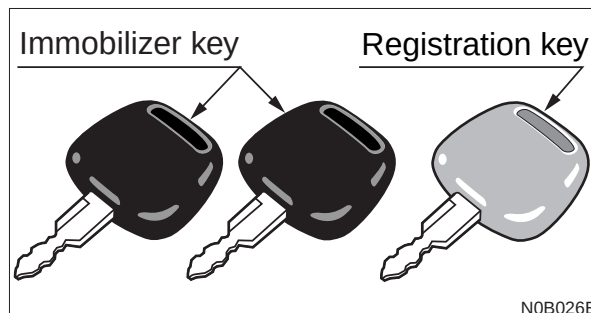
Stopping the alarm



Using one of the included immobilizer keys or the registration key, turn the starter switch from OFF (O) to ON (I). When the signal is identified, the alarm stops.

Keys

The machine comes with two immobilizer keys and one registration key. The keys are used for the immobilizer system (theft prevention device).



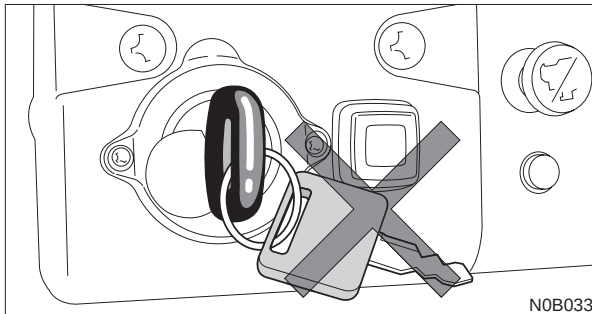
- Immobilizer key (key grip: black)
The immobilizer key is used not only to start and stop the engine, but also to lock and unlock the following places:
 - Fuel filler cap
 - Cab door
 - Covers
- Registration key (key grip: gray)
The registration key is used for key re-registration (rewriting the ID code). It can also be used in the same way as the immobilizer keys. If an immobilizer key is lost or a new immobilizer key is purchased, re-register the keys. Refer to page 218 "Re-Registration of the key".

Immobilizer keys can be ordered individually. If the registration key is lost, however, the immobilizer system must be replaced. Be particularly careful not to lose the registration key, and store it separately from the immobilizer keys.

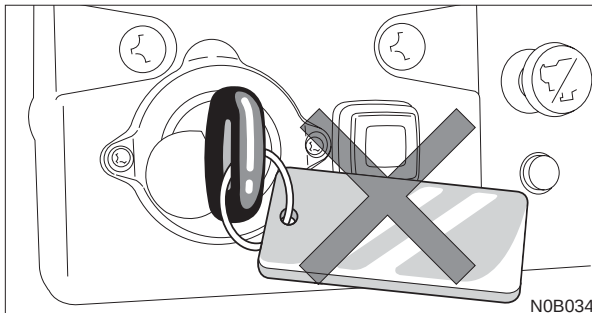


Immobilizer System

IMPORTANT: If a key from a different immobilizer system or a metal object is brought near or into contact with the starter switch or key section, the system may no longer be able to identify the keys' ID codes, in which case it is no longer possible to start the engine.



- Do not place keys for another immobilizer system together with your machine's keys.



- Do not use metal key holders.



Re-Registration of the Keys

Re-register the keys in the following cases:

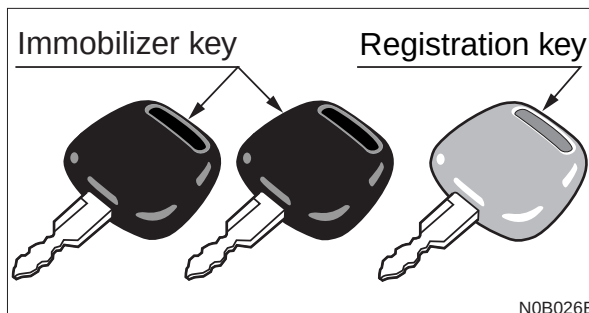
- If one of the immobilizer keys is lost, re-register the remaining keys so as to prevent theft.
- If you purchase new immobilizer keys, they must be registered before they can be used with the machine's immobilizer system.
- The ID code is changed each time a key is registered, so any keys you already have must also be re-registered.

Refer to page 216 "Immobilizer System".

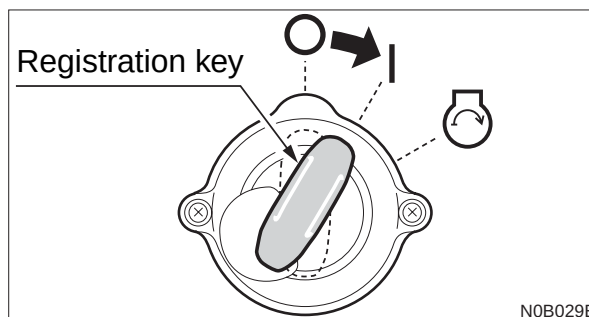
IMPORTANT: Please read and understand the registration procedure before starting. If you stop in the middle, you may have to start over from the beginning.

Do not turn the key to the START () position while performing the steps 3 to 12.

Registration Procedure



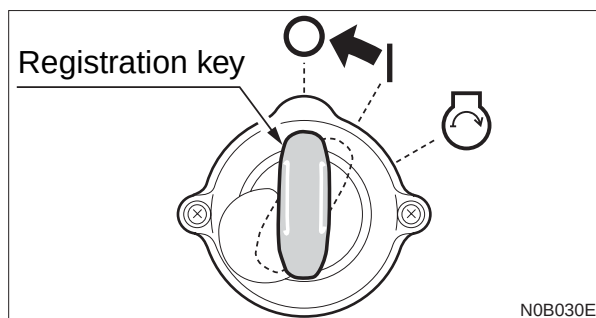
1. Prepare the immobilizer keys you wish to register (key grip: black/maximum of 5 keys) and the registration key (key grip: gray).
2. Check whether or not the engine starts with the registration key.
If the engine does not start, it is possible that the registration key belongs to another product.
This matter must be checked again.



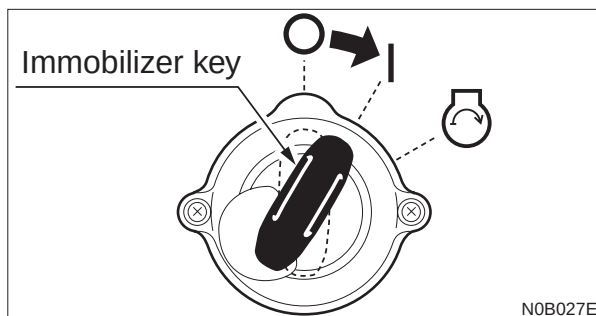
3. Insert the registration key into the starter switch and turn it from the OFF (O) position to the ON (I) position.
4. Hold for about 10 seconds.



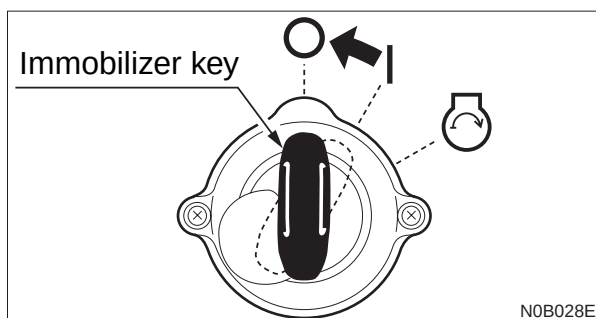
Immobilizer System



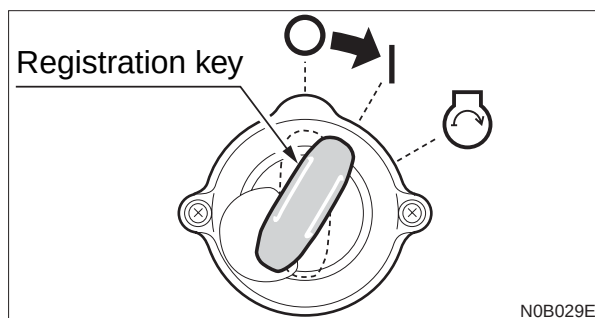
5. Return to the OFF (O) position from the ON (I) position and remove the registration key.



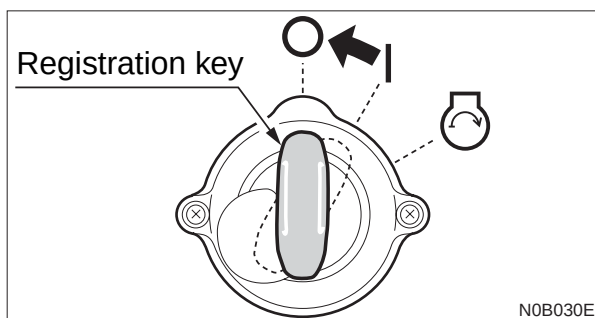
6. Within 10 seconds, insert the immobilizer key into the starter switch and turn it from the OFF (O) position to the ON (I) position.
7. Hold for about 10 seconds.



8. Return to the OFF (O) position from the ON (I) position and remove the immobilizer key.
9. Perform steps (6) to (8) for all immobilizer keys (maximum of 5 keys) that you wish to register.



10. Within 10 seconds after registering the immobilizer keys, insert the registration key into the starter switch and turn it from the OFF (O) position to the ON (I) position.
11. Hold for about 10 seconds.



12. Return to the OFF (O) position from the ON (I) position and remove the registration key.
- This completes the registration procedure.
13. Check that the engine starts using all the registered keys (registration key and immobilizer keys).
- If the engine does not start, re-register the keys.
- If the engine still does not start, consult a Takeuchi sales or service outlet.



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