

# TB28FR

Compact Excavator

Serial No. 12820004~

Book No. AF4E001

## OPERATOR'S MANUAL

 **WARNING**

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

**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.

 <b>CAUTION</b>	
 <small>E3A010</small>	<p><b>Improper operation, inspection and maintenance of this machine can cause injury or death.</b></p> <p><b>Read and understand this manual before performing any operation, inspection or maintenance on this machine.</b></p>




- 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.



**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:

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

 ..... The  mark on illustrations indicates prohibited or dangerous actions.

**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.

# INTRODUCTION

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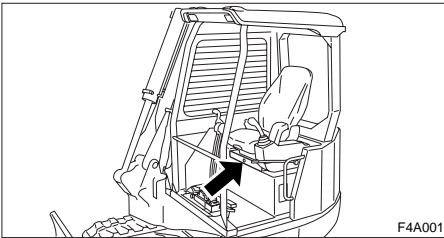
## Foreword

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

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



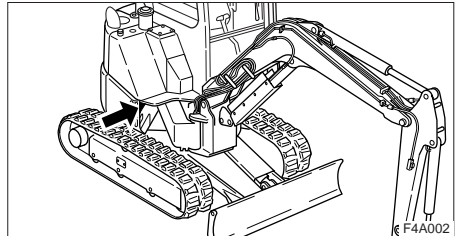
1. Insert the starter key and turn it counterclockwise to unlock the manual storage.
2. After using the manual, place it in the plastic pouch and store it back in the manual storage.

### ■ Serial numbers

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

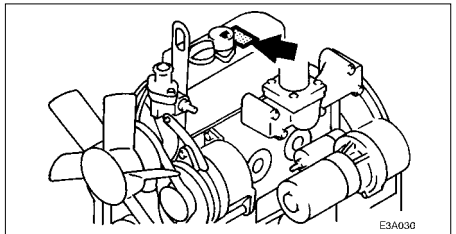
#### Machine number :

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#### Engine number :

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# MACHINE DESCRIPTION

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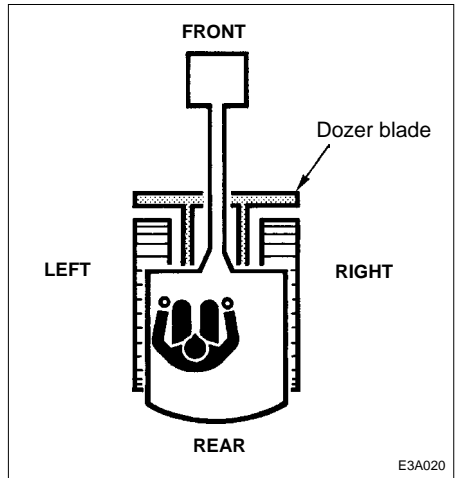
## ■ Front, rear, left and right

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

- A unique adjustable offset boom system
- Short tail swing radius
- Short pitch rubber crawler
- Low engine noise and exhaust emissions
- Pilot operated joystick controls
- One touch engine deceleration button
- Slew cushioning system for easy bucket positioning
- Engine emergency stop/idle system
- Tilt-up operators platform for easy access to major compartment

## ■ 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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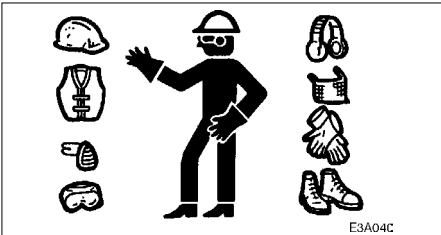
SAFETY

## 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.

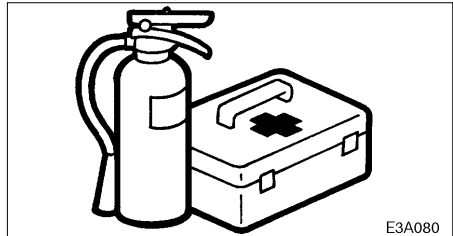
### Wear appropriate clothing and personal protective equipment



- 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 personal injury.

- Use hearing protection when operating the machine. Loud prolonged noise can cause hearing impairments, even the total loss of hearing.

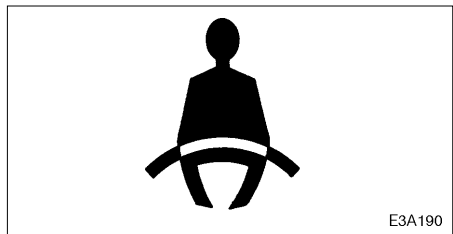
### Provide a fire extinguisher and first aid kit



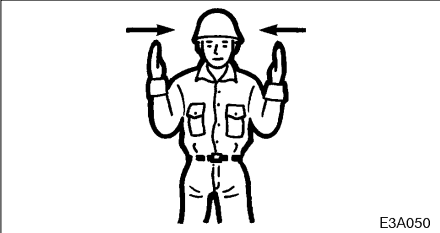
- Know where a fire extinguisher and first aid kit are located and understand how to use them.
- Know how to contact emergency assistance and first aid help.

### 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.

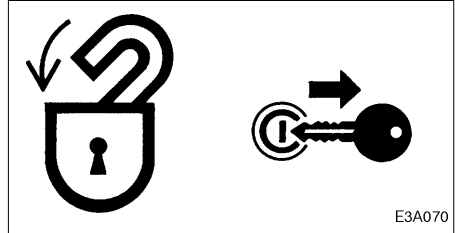


- Know how to use the safety lock lever, seat belt and other safety equipment and use them properly.
- Never remove any safety equipment except for service. Keep all safety equipment in good operating condition.

**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.

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

- Before leaving the operator's seat, set the safety lock lever securely to the lock position and stop the engine. If any controls should be touched accidentally when the safety lock lever has not be locked, the machine will move suddenly, and cause severe 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, lock the safety lock lever, 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.

**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.

**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.



SAFETY

## General Precautions

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### 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.

### Never modify the machine

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

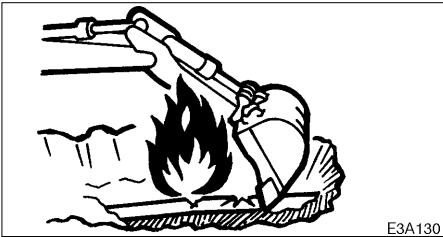
### Using optional products

- 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.

**Know the working area**

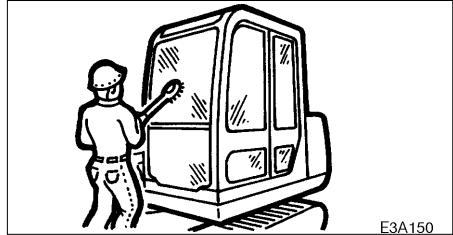
Before starting operation, know the working area to ensure safety.

- 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 an/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.

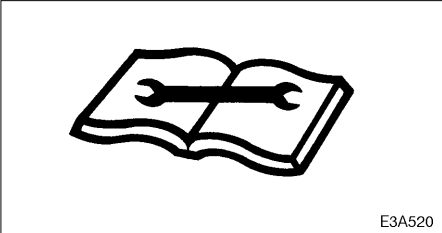


SAFETY

## Preparing Precautions

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### Perform inspection and maintenance daily



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.

**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 hand holds 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**

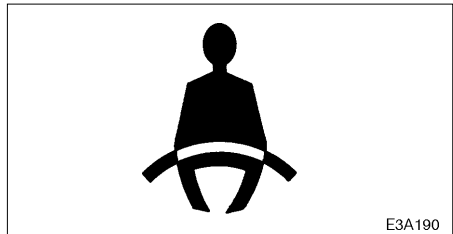
Do not start the engine until you are sure it is safe. Before starting, check or perform the following.

- 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.

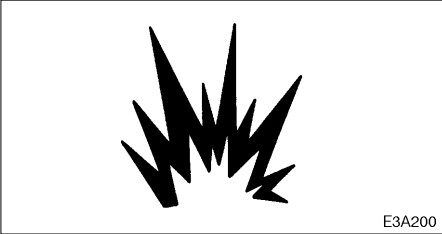




SAFETY

## Starting Precautions

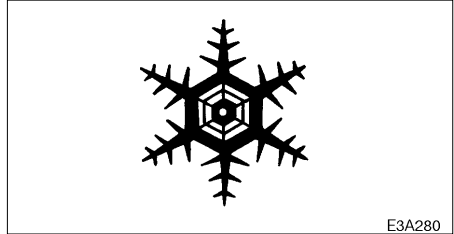
### Starting with jumper cables



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.

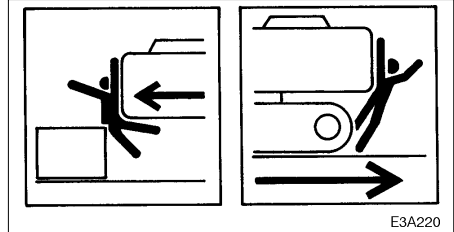
- Warm up the engine and hydraulic fluid.
- Observe all gauges or warning instruments for proper operation.
- Listen for unusual noises.
- Test engine speed control.
- Operate each control to insure proper operation.

**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.

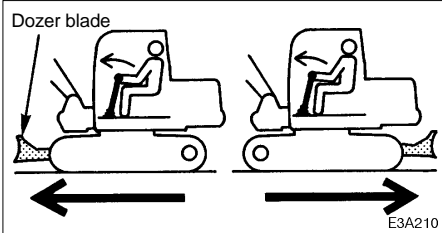
**Check for safety in the surrounding area before starting**

- 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.

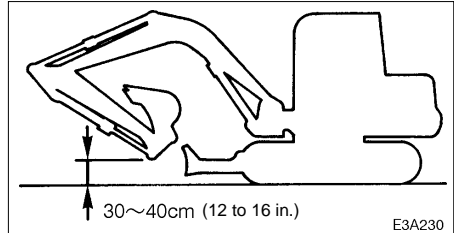


### Check the position of the undercarriage (tracks) before traveling

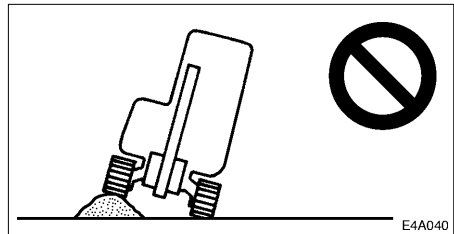


Before operating the travel levers, check to make sure that the dozer blade is to the front of the operator's seat. **BE AWARE** that when the dozer blade is to the rear of the operator's seat, the travel levers operate in the opposite direction to when the dozer blade is in the front.

### 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.
- 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.

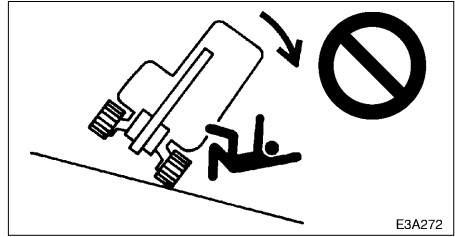


- Avoid crossing over obstacles whenever possible. If you must do so, keep the hoe attachment close to the ground and travel slowly. Never cross obstacles if they will seriously tilt the machine (to an angle of 15° or greater).
- On uneven ground, travel at low speed and avoid accelerating, stopping 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.

**Cautions on traveling on slopes**

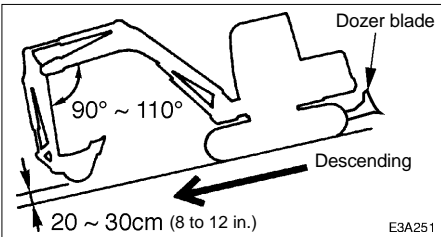
When traveling on slopes or grades, be careful that the machine does not tip (roll) over or slide.

- Never exceed the machine's stability capabilities (maximum gradeability - 30°, lateral tipping angle - 15°). Also note that when actual working area conditions are poor the machine's stability capabilities may be lower.

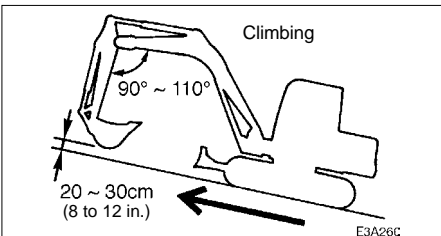


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- Do not change directions or cross slopes sideways. First return to a flat surface then redirect the machine.



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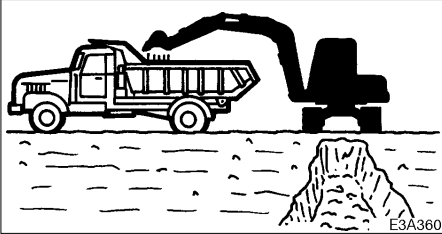


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- When traveling on slopes or grades, lower the bucket to a height of 20 to 30 cm (8 to 12 in.) off the ground. In emergencies, lower the bucket to the ground and stop the machine.
- When traveling on slopes or grades, move slowly in first gear (low 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.

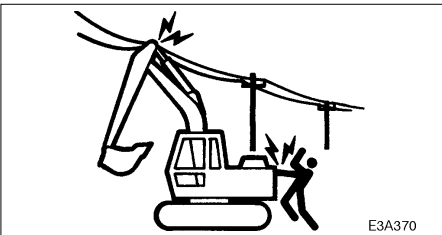
**Operate on snow or ice with extra care**

- 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.

**Insure driver safety before loading trucks**

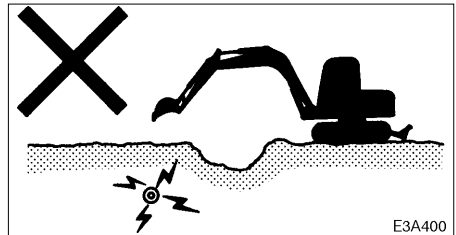
Do not load a truck unless the driver is in a safe place.

- 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. Electrocutation 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.



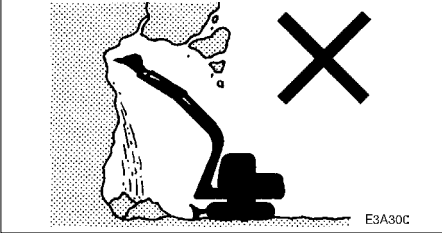
- Be especially careful of buried high voltage power lines.



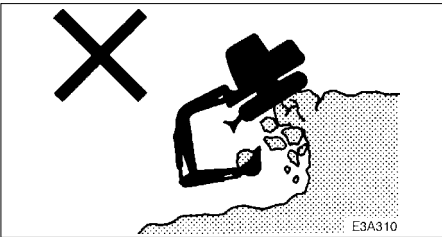
SAFETY

## Operating Precautions

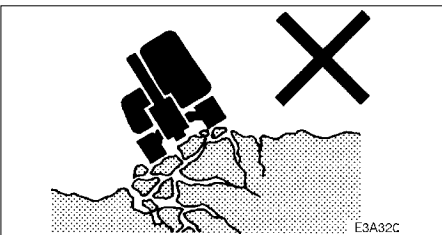
### Watch out for hazardous working conditions



- 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.

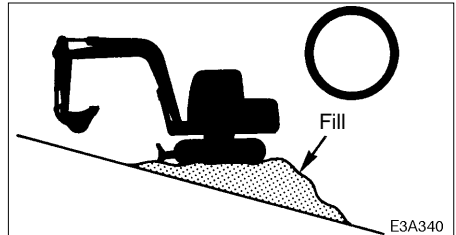


- Do not approach unstable surfaces (cliffs, road shoulders, deep trenches, etc.). The ground may give way under the machine's weight or vibrations, causing the machine to tip over.
- The ground is weak after rain or explosions.

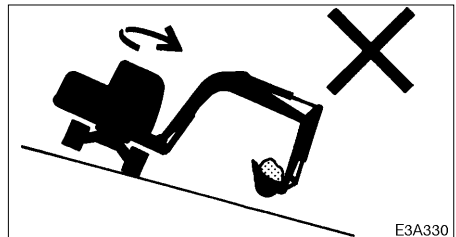
- The ground is also unstable on banks and near dugout trenches.

### Operating on slopes is dangerous

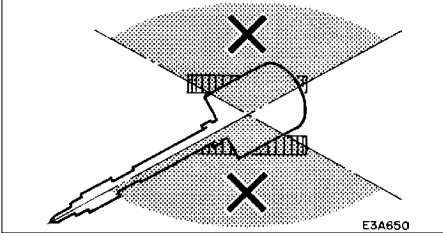
When operating on slopes or grades, slewing (swinging) or operating working equipment may cause the machine to lose stability and tip over. Avoid operating on slopes whenever possible.



- Level off the work area.

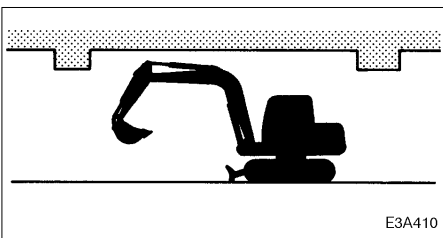


- Avoid swinging the loaded bucket in a downhill direction. This will reduce the stability of the machine.

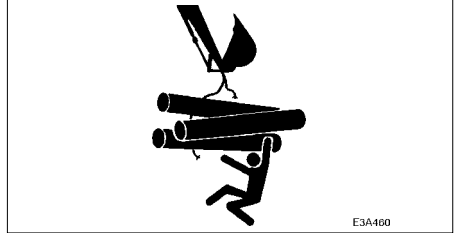
**Never slew (swing) sideways with excessive weights**

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.



SAFETY

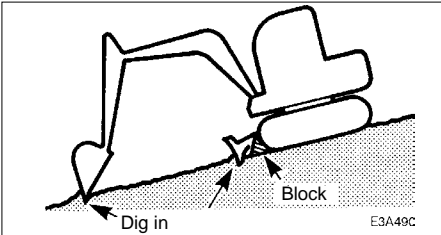
## Operating Precautions

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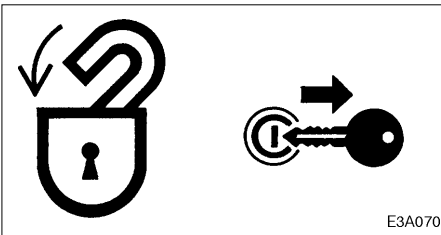
### **Danger of flying objects**

- 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.

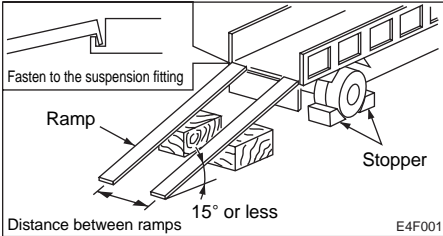


**Park safely**

- 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.
- 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. Place the safety lock lever in the lock position.
  3. Stop the engine and remove the key.
  4. Lock the cab and covers.

**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.

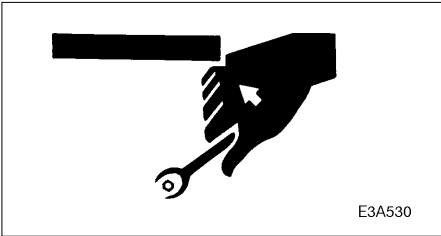
**Transport the machine safely**

- 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.

**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**

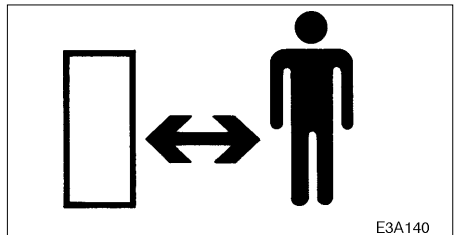
Do not use damaged or weakened tools or tools designed for other purposes. Use tools suited for the operation at hand.

**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**

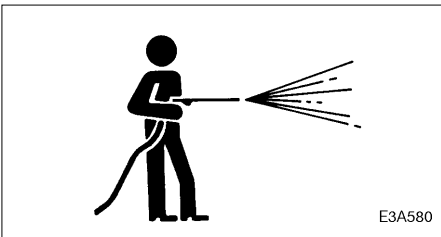
Do not allow unauthorized personnel in the work area. Chips or other debris can fly off machine parts when grinding, welding or using a hammer.

**Prepare the work area**

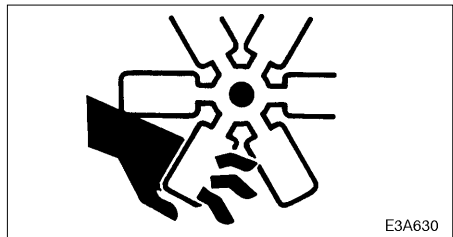
- Select a firm, level work area. Make sure there is adequate light and, if indoors, ventilation.
- Clear obstacles and dangerous objects. Eliminate slippery areas.

**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 2-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.
- 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 seat area.

**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.



SAFETY

## 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.

### 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.

### Cautions on tilting up the platform

- Raising or lowering the platform while the engine is running may cause the machine to move, and cause serious injury or death. Stop the engine before raising or lowering the platform.
- When the floor is tilted up, support it firmly with the stopper to prevent it from falling.

### 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.

**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.

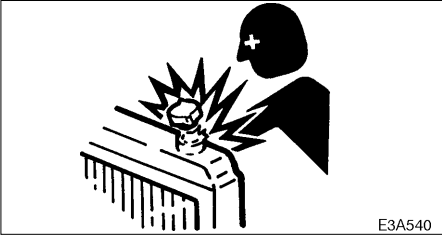
- The engine, muffler, radiator, hydraulic lines, sliding parts and many other parts of the machine are hot directly after the engine is stopped. Touching these parts will cause burns.
- The engine coolant, oil and hydraulic fluid are also hot and under high pressure. Be careful when loosening caps and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



SAFETY

## Maintenance Precautions

### Be careful with hot cooling systems



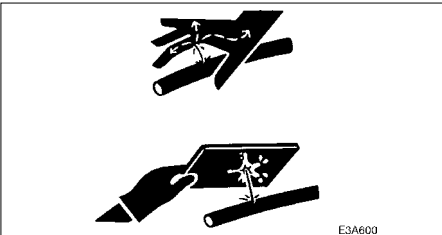
E3A540

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.

### 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.



E3A600

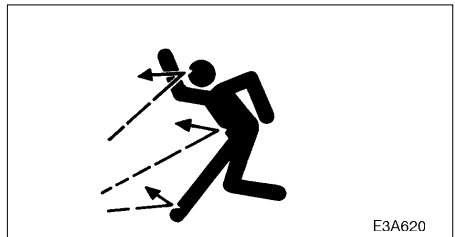
- Hydraulic fluid under pressure can penetrate the skin or eyes and cause injury, blindness or death. Fluid escaping from a small hole can be almost invisible. Wear a safety goggles and heavy gloves and use a piece of cardboard or wood to search for suspected leaks. If fluid is injected into the skin, 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.
- Move all the control levers and pedals several times in all directions to release the pressure from the working equipment circuitry. (For link type controls)
- When removing plugs or screws or disconnecting hoses, stand to the side and loosen slowly to gradually release the internal pressure before removing.

### Be careful with grease under pressure



E3A620

The track adjuster contains highly pressurized grease. If the tension is adjusted without following the prescribed procedure, the grease discharge valve may fly off, resulting in injury.

- Loosen the grease discharge valve slowly.
- Do not put your face, arms, legs or body in front of the grease discharge valve.



### 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.





### 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.

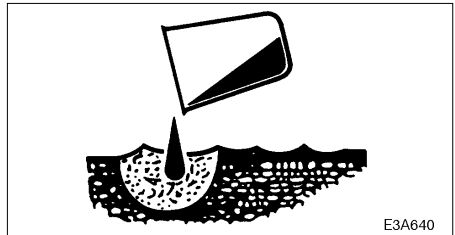
### Safety signs

- Keep all safety signs clean and legible.
- Replace all missing, illegible or damaged safety and warning signs.

### Checks after maintenance

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

### Disposing of wastes

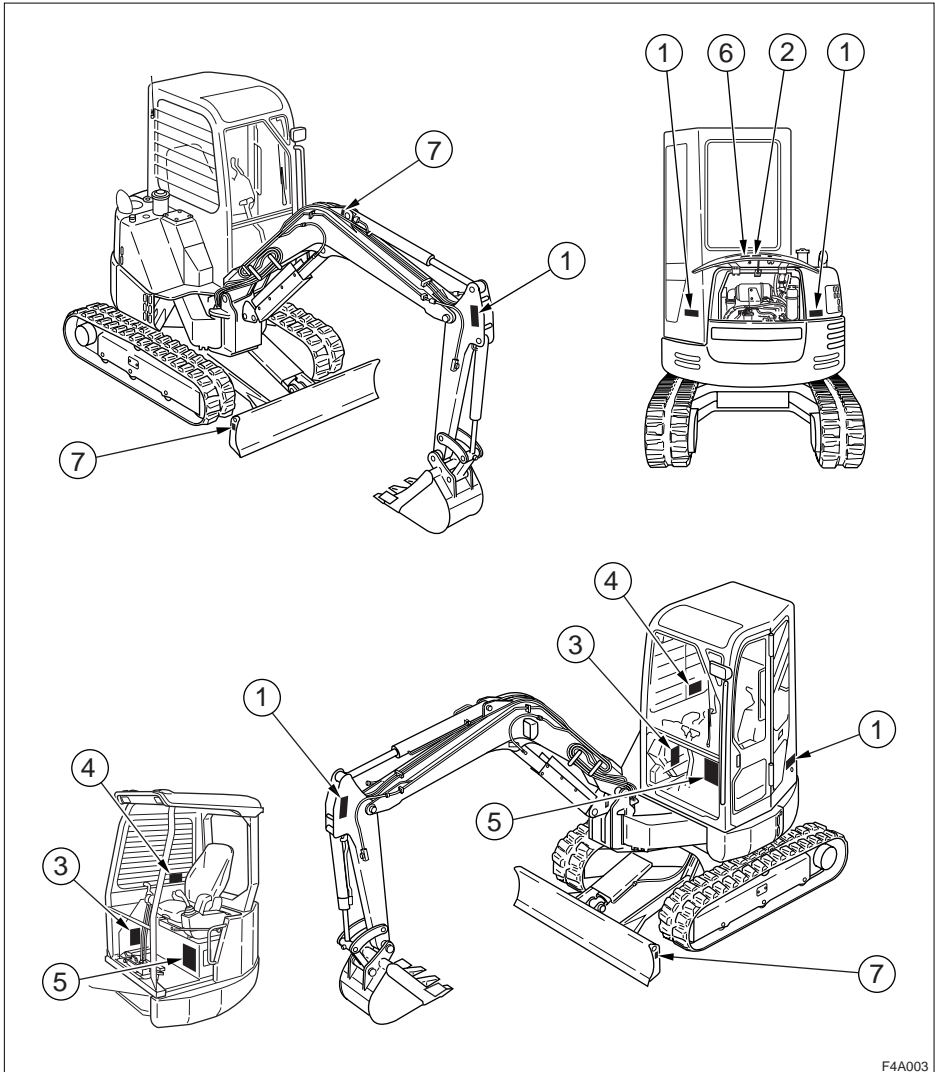


- Funnel spent fluids from the machine into containers. Disposing of fluids improperly destroys the environment.
- Follow the prescribed regulations when disposing of oil, fuel, engine coolant, refrigerant, solvents, filters, batteries or other harmful substances.



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.





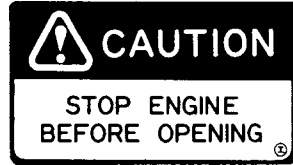
SAFETY

**Safety Signs (Decals)**

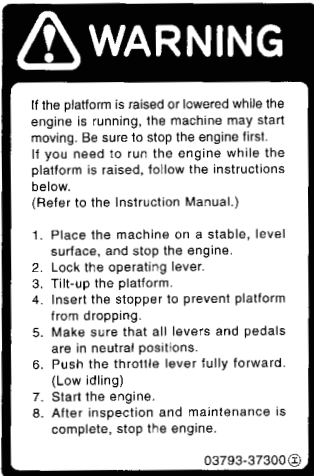
1. No.03593-06500



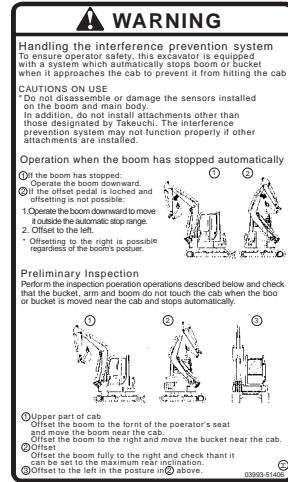
2. No.03593-07400



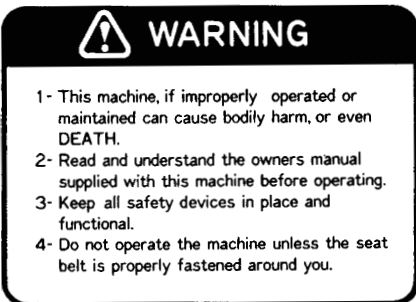
3. No.03793-37300



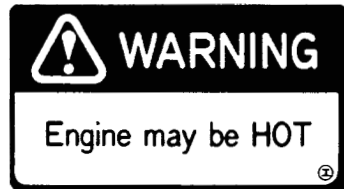
5. No.03993-51406



4. No.03593-13700



6. No.05693-21980



7. No.03993-00500



For EU



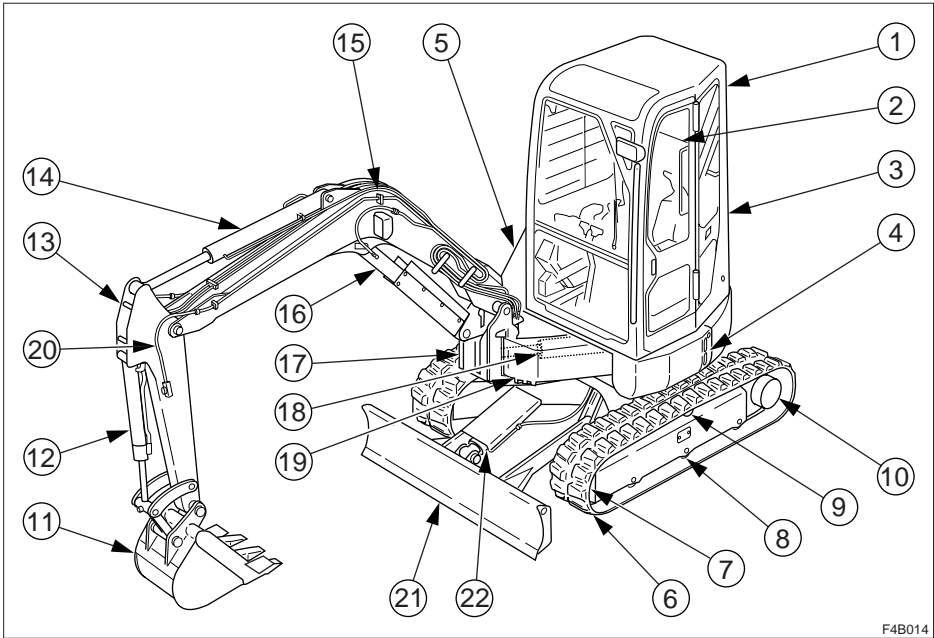


# CONTROLS

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<b>Names of Components .....</b>	<b>36</b>
<b>Doors and Covers .....</b>	<b>38</b>
<b>Seat and Seat Belt .....</b>	<b>43</b>
<b>Instrument Cluster .....</b>	<b>45</b>
<b>Switches .....</b>	<b>47</b>
<b>Levers and Pedals .....</b>	<b>50</b>
<b>Accessories .....</b>	<b>52</b>

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F4B014

**Upperstructure**

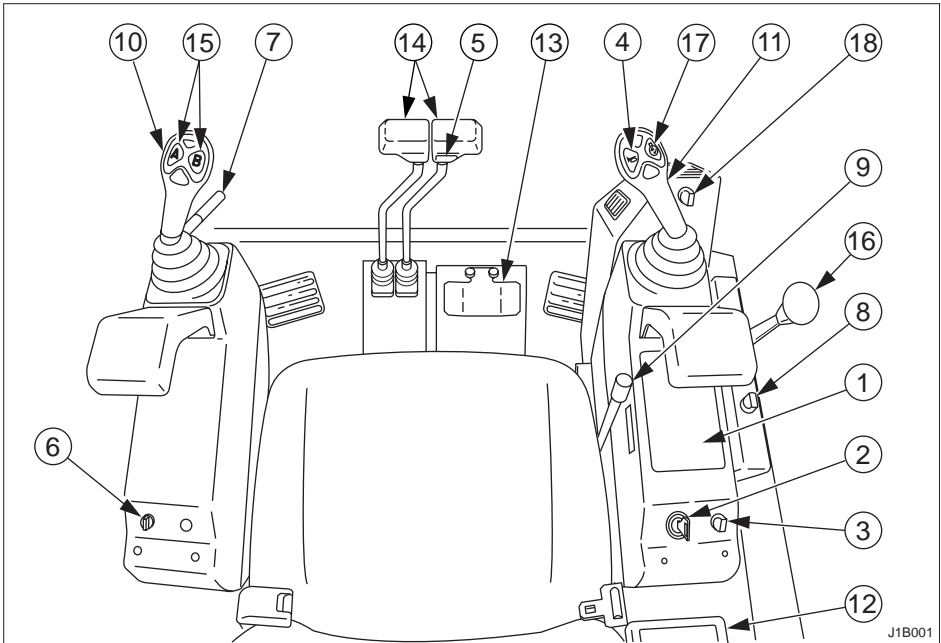
- 1. Cab
- 2. Seat
- 3. Engine hood
- 4. Fuel tank
- 5. Hydraulic tank

**Undercarriage**

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

**Working equipment**

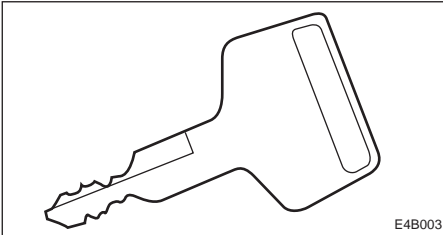
- 11. Bucket
- 12. Bucket cylinder
- 13. Arm
- 14. Arm cylinder
- 15. Boom
- 16. Boom cylinder
- 17. Boom bracket
- 18. Offset cylinder
- 19. Left link arm
- 20. Auxiliary hydraulic lines
- 21. Dozer blade
- 22. Blade cylinder



- |                                   |                                  |
|-----------------------------------|----------------------------------|
| 1. Instrument cluster             | 10. Left operating lever         |
| 2. Starter switch                 | 11. Right operating lever        |
| 3. Light switch                   | 12. Fuse box                     |
| 4. Horn switch                    | 13. Offset pedal                 |
| 5. Travel speed switch            | 14. Travel lever                 |
| 6. Wiper switch (Cab)             | 15. Auxiliary hydraulic switches |
| 7. Safety lock lever              | 16. Blade lever                  |
| 8. Attachment Interference switch | 17. Decel. switch                |
| 9. Throttle lever                 | 18. Fan switch (Heater)          |



### 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
- Engine hood
- Cab door
- Manual storage

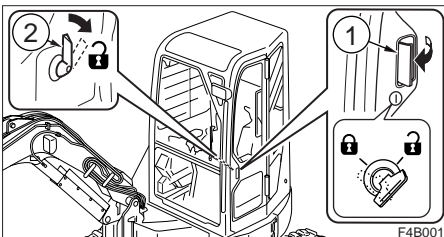
### Cab Door

#### WARNING

**When mounting and dismantling 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 dismantling and when operating the machine.

#### Lock and unlock



: Release    : Lock on

1. Insert and turn the starter key.

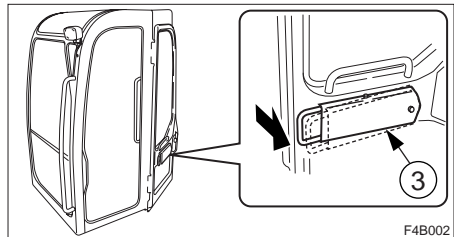
#### Opening

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. Pull the lever (3) towards outside and release the door.

2. Close the released door.

### Front Window (Cab)

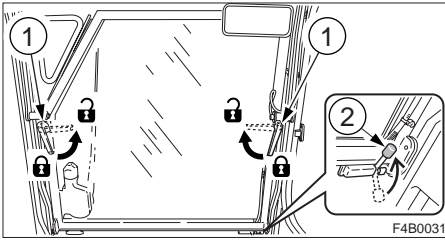
#### WARNING

- **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 pin on the right side. The window may fall if it is not locked in place.**

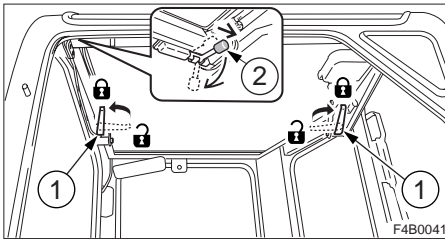




## Opening



1. Park on a level surface and stop the engine.
2. Set the safety lock lever to the locked position.
3. Turn the lock pin knob (2) upward.
4. Grasp and turn the both handles (1) to the inside then release the front window.



5. Lift and slide the front window to the rear.
6. Once the window frame is against the stopper the lock pin enters into the hole to prevent the front window from falling.
7. Turn the both handles (1) to the outside to fix the front window.
8. Turn the lock pin knob (2) downward.

## Closing



### WARNING

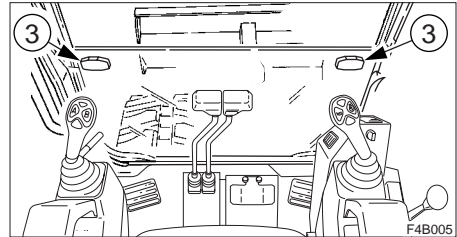
**When closing the front window, lower the window slowly so as not to hit your head. Lowering the window abruptly may result in injury or damage the front window.**

1. Move the lock pin (2) to the inside to unlock the front window.

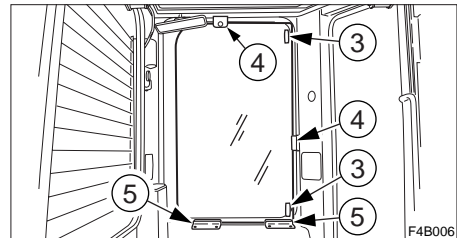
2. Grasp and turn the both handles (1) to the inside then release the front window.
3. Slowly lower the front window.
4. Turn the both handles (1) to the outside to fix the front window.

## Lower Front Window (Cab)

### Removing



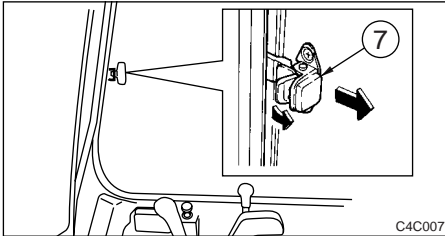
1. Open the front window and stow it in the ceiling.
2. Grasp the protruding parts (3) on the left and right with your fingers and slowly lift the lower front window off.



3. Hold the glass firmly, place the lower front window through the guides (4) at the rear, then set it on the supports (5) and fasten it in place.

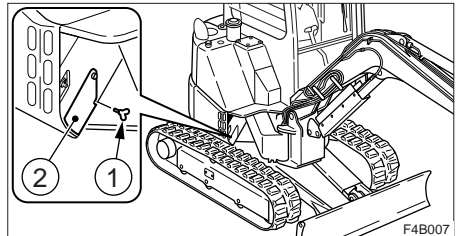


### Side Window (Cab)



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.

### Tool Case



#### Opening

1. Remove the wing bolt (1) and turn the cover (2).

#### Closing

1. Return the cover (2) and tighten the wing bolt (1).



## Engine Hood

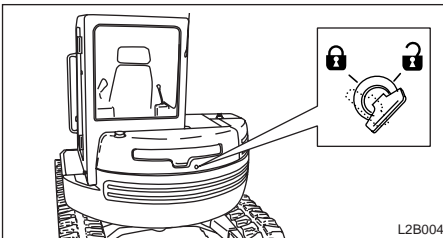
### WARNING

- 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.
- 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.
- When opening and closing the engine hood, be careful not to get your hands or other parts of your body caught.

## Closing

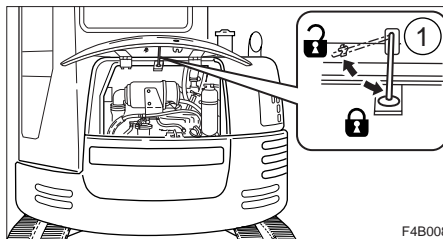
1. Support the engine hood by hand, remove stay (1), and fix it to the original position.
2. Close the engine hood and press it down until a click is heard at the front.

## Opening



 : Release    : Lock on

1. Insert and turn the starter key clockwise to unlock the engine hood.
2. Lift the engine hood fully.



 : Release    : Lock on

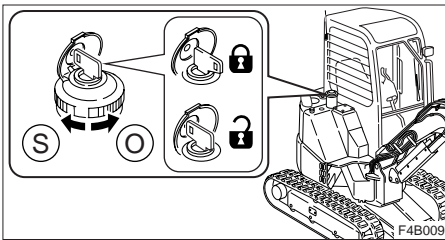
3. Raise the stay (1), then insert and fix it into the stay hole of the body.







## Fuel Filler Cap

### WARNING

- 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.



: Release : Lock on : Open : Closed

### Opening

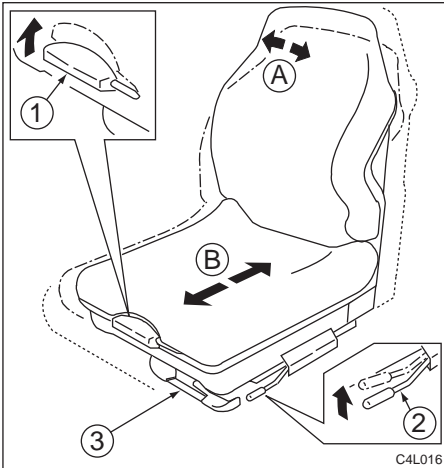
1. Open the key cover, insert and turn the key counterclockwise to unlock the fuel cap.
2. Turn the fuel cap counterclockwise and remove it.

### Closing

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

**Seat****⚠ WARNING**

Adjust, secure and latch the operator's seat.

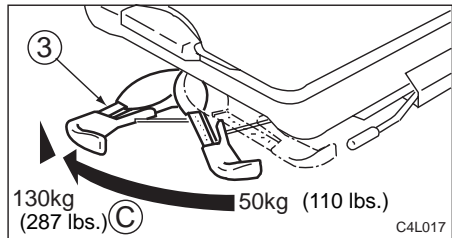
**(A) Backrest angle adjustment**

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

**(B) Fore-and-aft adjustment**

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

Adjustment stroke: 10 steps,  
150 mm (5.9 in.)

**(C) Weight adjustment**

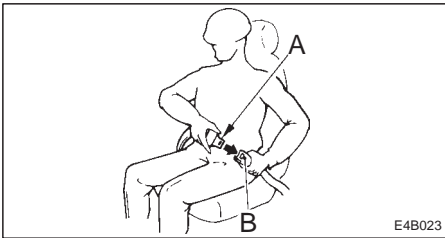
1. Turn handle (3) to the front side and set it to indicate the weight of the person to operate the machine.  
May be set to any value from 10 kg (22 lbs.) steps, 50 to 130 kg (110 to 287 lbs.).
2. When adjusting for a weight lower than the currently set weight, first turn handle (3) as far as it goes to cancel the setting, then readjust.

**Seat Belt****⚠ CAUTION**

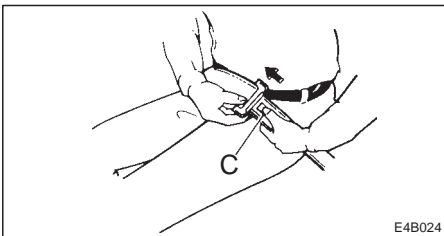
- Always fasten the seat belt securely before starting the engine.

**Fastening the seatbelt**

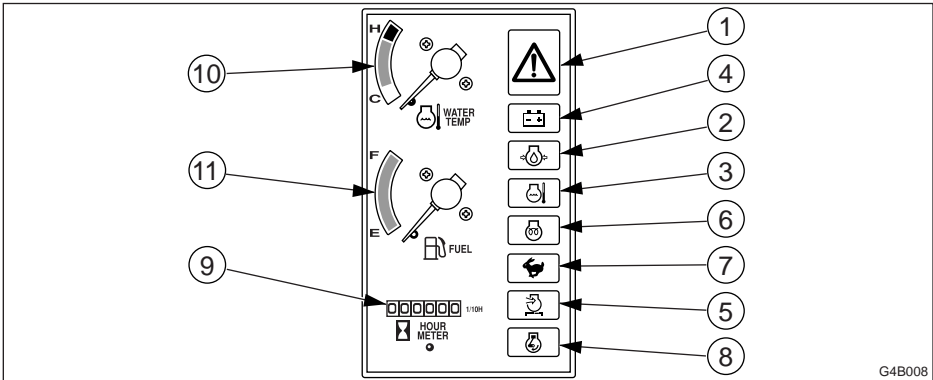
1. Adjust the seat to the optimum position for operating, raise your torso, and sit back firmly into the seat.
2. Pull the seatbelt to the desired length.



3. Adjust the belt so that it is not folded over itself and then insert the tongue plate (A) into the buckle (B) of the seatbelt until you hear a clicking sound as it locks in place.

**Releasing the seatbelt**

1. To remove the seatbelt, simply press the button (C) located on the buckle.



G4B008

### 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 145 "Troubleshooting".

#### 1. Engine Emergency Lamp



G4B009

This lamp flashes and an alarm is sounded if the engine oil pressure drops or the coolant temperature rises abnormally while the engine is running. After approximately 15 seconds, the engine stops or low idling automatically.

#### 2. Engine Oil Pressure Warning Lamp



C4B031

This lamp flashes and an alarm is sounded if the lubricant oil pressure drops abnormally while the engine

is running.

#### 3. Coolant Temperature Warning Lamp

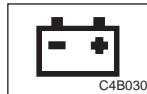


C4B012

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

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.

### Indicators

#### 6. Glow Lamp



C4B013

This lamp turns off when engine preheating is completed.

#### 7. Travel Speed Lamp



C4B014

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

#### 8. Decel. Lamp



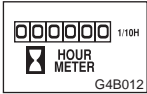
G4B011

This lamp lights when decel. switch pressed, the engine speed decreases.



## Meters

### 9. Hour Meter

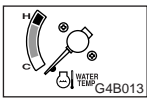


This displays the total engine running time in hours.

The rightmost digit indicates tenths of hours (6 minutes).

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

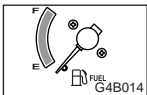
### 10. Water Temperature Gauge



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.

### 11. Fuel Gauge



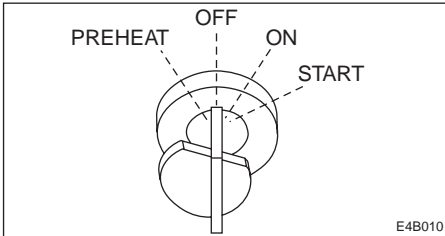
This gauge indicates the amount of fuel in the tank.

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.**

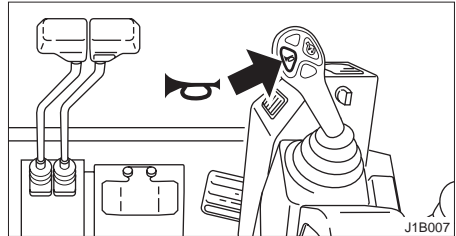
PREHEAT ..... Position for preheating the engine.

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.

START ..... Position for starting the engine. When the key is released, the switch automatically returns to the ON position.

### Horn Switch

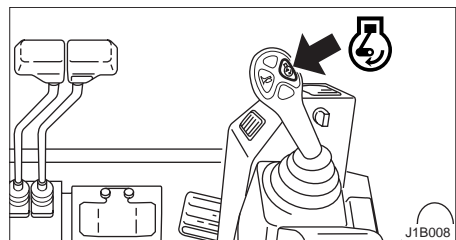


Press the switch on the right operating lever to blow the horn.

### Decel. Switch

#### **WARNING**

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

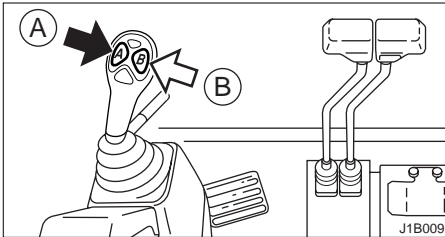


Press the switch on the right operating lever to lower the engine speed to low idling. Press the switch again to return to the engine speed set with the throttle lever.

**Supplement:** 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.



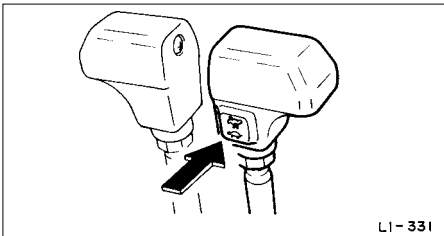
### Auxiliary Hydraulic Switches



Press those switches to control the flow of the oil in the auxiliary hydraulic circuit.

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

### Travel Speed Switch

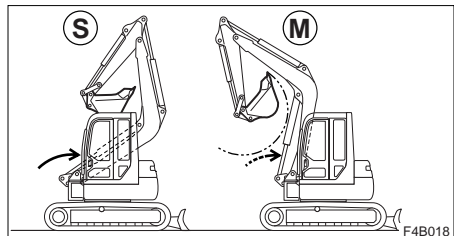
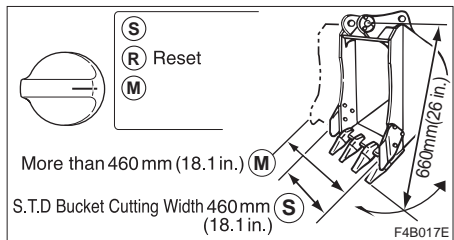


Press this switch to set the travel speed to 2nd speed (high speed). Press again to return to 1st speed (low speed).

### Attachment Interference Switch

#### **⚠ WARNING**

- Failure to properly set the Attachment Interference Switch can result in equipment damage, serious injury, or death.
- Ensure that all buckets used in the standard position are no longer than a standard bucket when measured from pin to tooth.



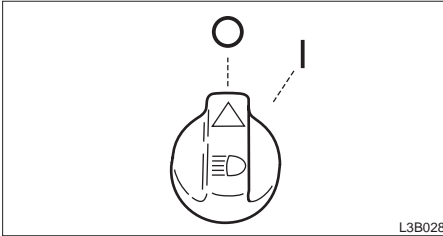
#### Modes of Operation

- S** ... Standard bucket attachment less than 460mm (18.1 inches) wide
- R** ... Reset ..... Select the appropriate attachment width
- M** .. Bucket attachment more than 460mm (18.1 inches) wide or any other approved attachment

Refer to page 75 "Attachment Interference Switch / Interference Prevention System".



### Light Switch



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

O ..... Off

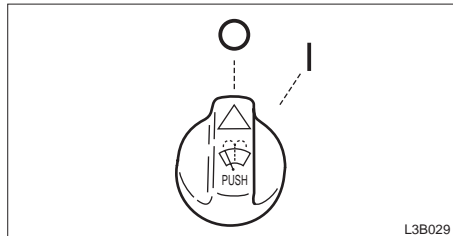
I ..... Meter light, front light and boom light turn on.

### Wiper Switch (Cab)

**IMPORTANT:** If no washer fluid is discharged, do not operate the wiper. 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 operates.

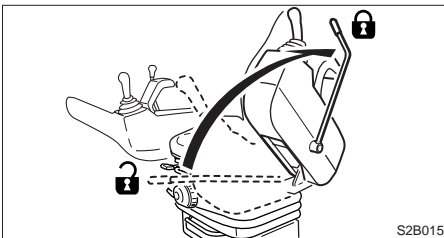
**PUSH** Washer fluid is squirted from the nozzle while pressed, and stops when released.



## Safety Lock Lever

### WARNING

- Before leaving the operator's seat, set the safety lock lever securely to the lock position and stop the engine. If any controls should be touched accidentally when the safety lock lever has not been locked, the machine will move suddenly, and cause severe 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.

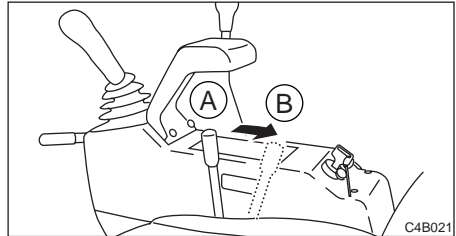


S2B015

: Release   : Lock on

This device is for locking the hoe attachment, auxiliary hydraulics, slewing and traveling. When the lever is lifted, the lever stand springs up and the lever is locked.

## Throttle Lever



C4B021

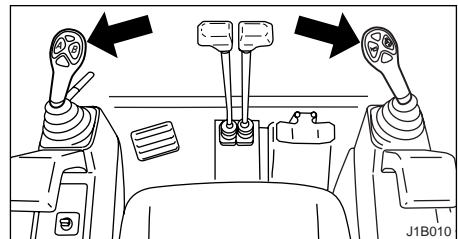
This controls the engine speed.

- (A) .... Low idling  
(B) .... Maximum speed

## 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.



J1B010

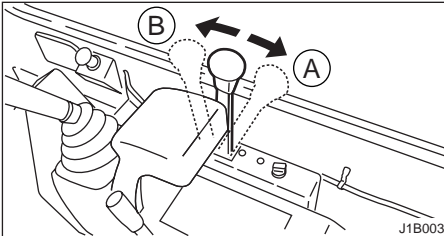
Use these levers to operate the boom, arm, bucket and upperstructure (slew).

Refer to page 66 "Lever Pattern" .

Refer to page 73 "Operating the Working Equipment".



### Blade Lever

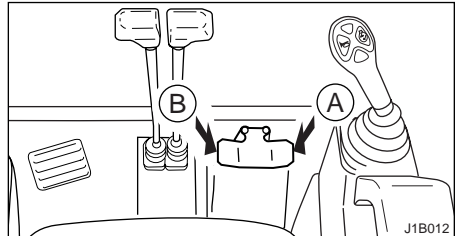


Use this lever to operate the dozer blade.

- (A) .... Blade up
- (B) .... Blade down

Refer to page 74 "Operating the Dozer Blade".

### Offset Pedal



Use this pedal to operate the boom offset.

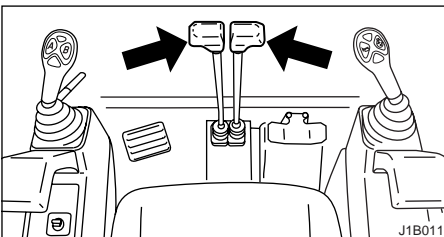
- (A) .... Boom offset right
- (B) .... Boom offset left

Refer to page 74 "Operating the Boom Offset".

### 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 to move forward and backward and to change directions.

Refer to page 70 "Operating the Travel Levers".

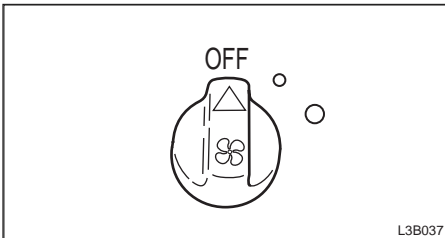


### Heater (Cab)

#### **⚠ WARNING**

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

### Fan Switch



OFF .. Off

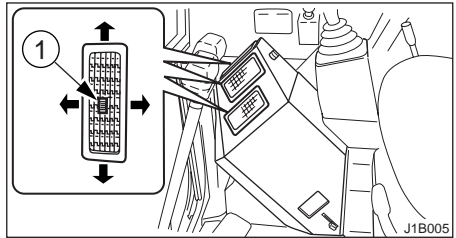
- o ..... Heater fan rotates at low speed.
- O ..... Heater fan rotates at high speed.

### Heater - Defroster/Ventilation - Circulation Lever



- (A) .... Heater
- (B) .... Windshield defroster
- (C) .... Full ventilation
- (D) .... Internal circulation

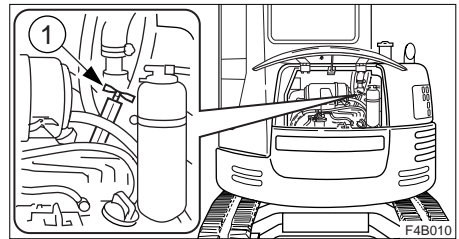
### Outlets



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:



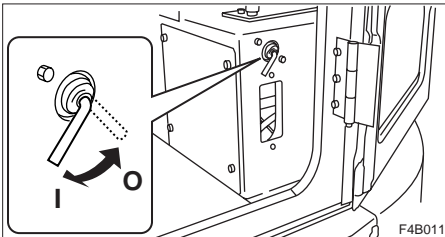
1. Park on a flat surface and stop the engine.
2. Open the engine hood.
3. Close the valve (1).



### Battery Switch (Equipped Machines)

#### WARNING

Never set this switch to the “OFF” position while the engine is running. Doing so might cause damage to the electrical system.

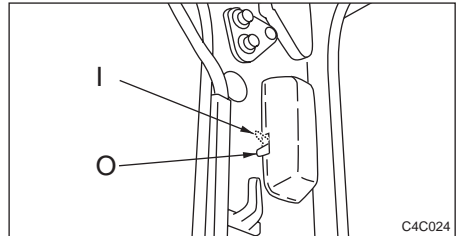


- O (OFF) .. Switches off the electrical circuit. Be sure to set this switch to the “OFF” position when storing the machine for a long period, or when performing maintenance of the electrical system.
- I (ON) ..... Connects the electrical system. Check that this switch is in the “ON” position before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

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

### Room Lamp (Cab)

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



- O ..... Off  
I ..... Lit



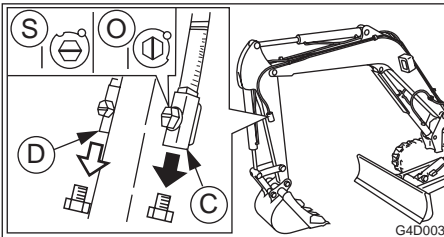
## Auxiliary Hydraulic Lines

### 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 (C) and (D).  
When fitted with a hydraulic breaker, connect the return circuit to port (D) and the supply circuit to port (C).
4. Open the stop valves.  
When fitted with a hydraulic breaker, open the selector valve (1).  
Refer to page 55 “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.

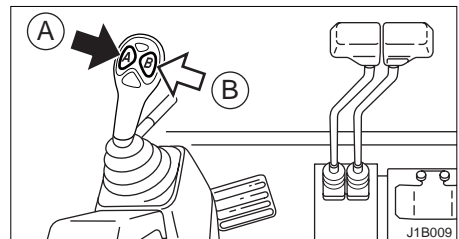
6. Check for leaks.

### 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 (C) and (D).
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.



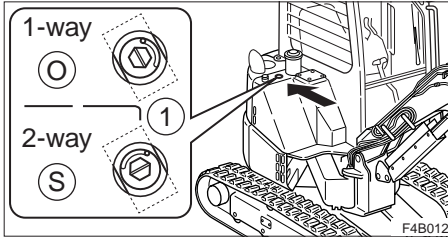
1. Start the engine and press the auxiliary hydraulic switch (B).  
(The residual pressure is released from the (C) port line, and pressure is generated in the (D) port.)





2. Stop the engine and open the selector valve (1) on the machine body.  
(The residual pressure is released from the (D) port line.)

### Selector valve



⓪: Open ..... When using a hydraulic breaker (1-way flow)

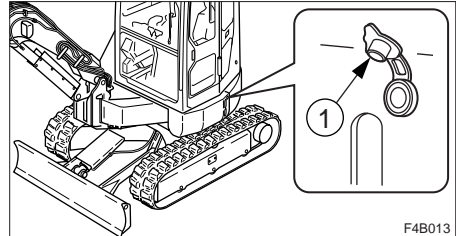
Ⓢ: Closed ..... When using a reversible attachment (2-way flow)

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

### External Power Socket (for EU)

#### ⚠ WARNING

- Only use applicable electric products with this socket.
- Always replace the cap after using the socket.



Use this socket as an external power supply. When using this socket, be careful not to exceed 12V/10A.

To use, remove the cap (1).



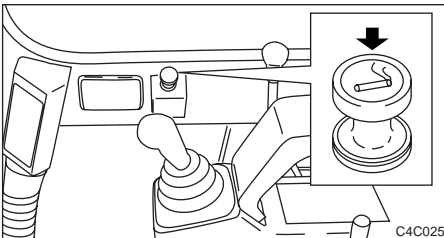
### Cigarette Lighter (Cab)

#### 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 the wiper and this socket simultaneously, be careful not to exceed 12V/10A.

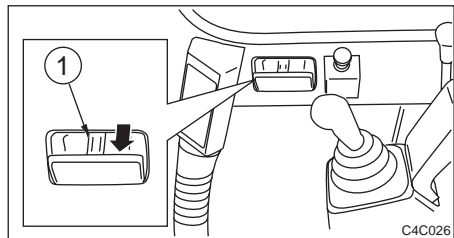


1. Press the lighter in.
2. Release the lighter and wait for it to pop out. The lighter pops out automatically when the heater becomes red.
3. Once the lighter pops out, pull it out.

### Ashtray (Cab)

#### 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.

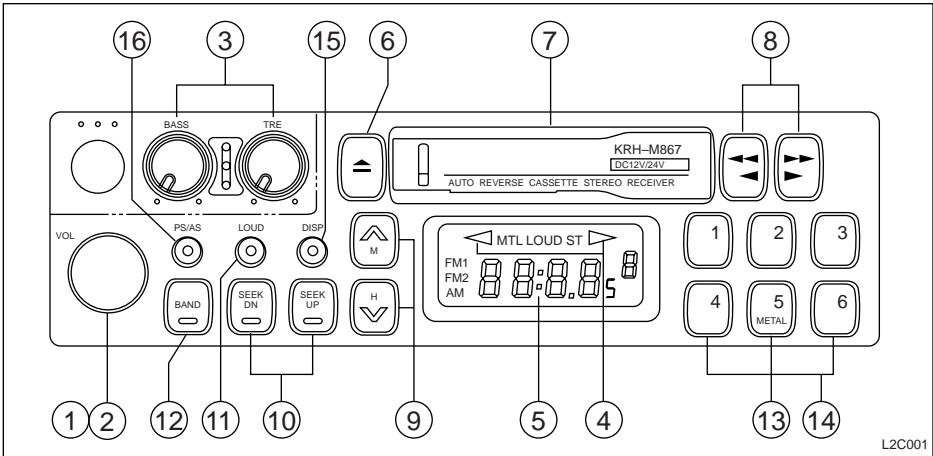


### Car Stereo (Cab) Option

#### Operating precautions

- To ensure safe operation of the machine, always be sure to keep the volume of the car stereo down to a level where you can easily hear sounds from outside the machine.
- Do not keep the car stereo 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 car stereo. 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

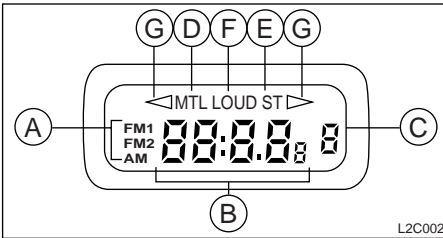
Turn this knob clockwise. The “click” sound indicates that the power supply is turned on. Further turning increases the speaker volume. If a tape is loaded in the car stereo, eject the tape to switch to the radio.

#### (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**

L2C002

- (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.

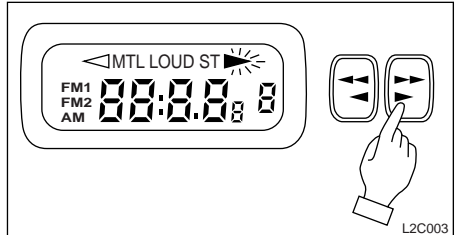
**(7) Cassette door**

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.

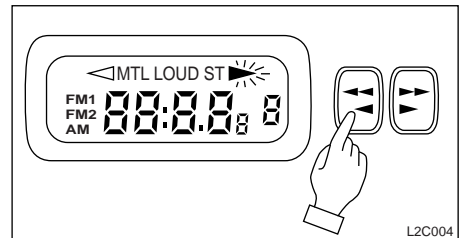
**(8) Fast-forward/rewind/program changeover button**

Fast-forward



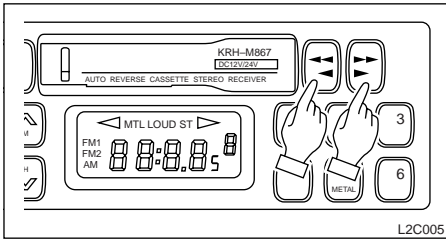
L2C003

Fast-rewind/Stop



L2C004

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 CrO<sub>2</sub> 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

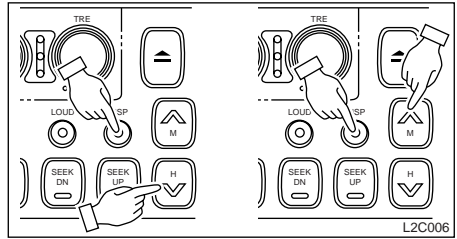
This system is equipped with a clock which can show the accurate time. Even if the radio is off, the clock still shows the time.

### (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  $\nabla$  or  $\triangle$  to correct the time. Press tuner button  $\nabla$  to set the "hour" and tuner button  $\triangle$  for setting the "minute". Set the time when the time is shown.



# OPERATION

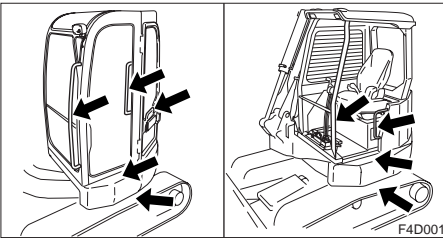
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<b>Before Starting Operation .....</b>	<b>62</b>
<b>Starting and Stopping the Engine .....</b>	<b>63</b>
<b>Machine Operation .....</b>	<b>66</b>
<b>Operating Procedures .....</b>	<b>76</b>
<b>Parking the Machine .....</b>	<b>84</b>
<b>Handling in Cold Weather .....</b>	<b>85</b>
<b>Handling Rubber Crawlers .....</b>	<b>86</b>

---

**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. (For machines with cabs)**



- **Always face the access system and maintain a three point contact with the recommended hand holds 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 once a day before starting the engine the first time that day.

Perform the inspections as described under “Maintenance - Walk-Around Inspection” (pages 103 and 104).

**Daily Inspection**

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

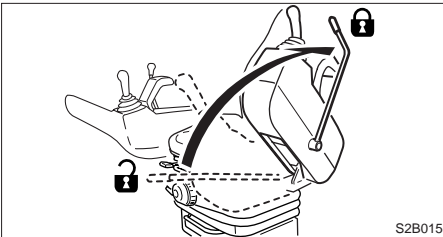
Perform the inspections as described under “Maintenance - Daily Inspection” (pages 105 to 109).



**Before Starting the Engine****⚠ WARNING**

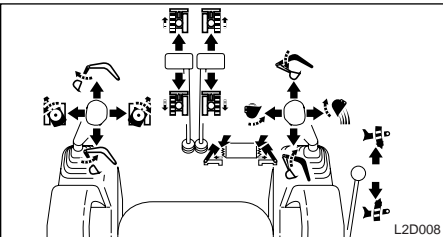
**Before leaving the operator's seat, set the safety lock lever securely to the lock position and stop the engine. If any controls should be touched accidentally when the safety lock lever has not been locked, the machine will move suddenly, and cause severe injury or death.**

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

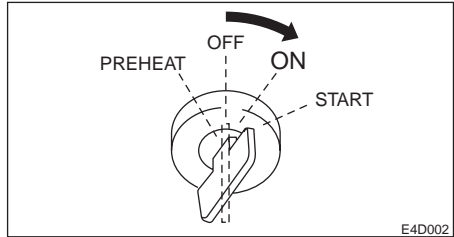


: Release    : Lock on

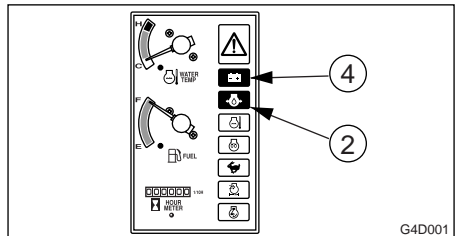
3. Check that the safety lock lever is in the locked position.



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:



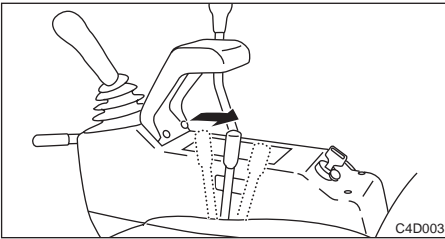
- All the warning lamps flash and an alarm is sounded for 2 seconds. The meters also start functioning. After 2 seconds, only the battery warning lamp (4) and engine oil pressure warning lamp (2) flash, and the other lamps turn off.
- Turn the light switch to check that the boom light, front light and 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.

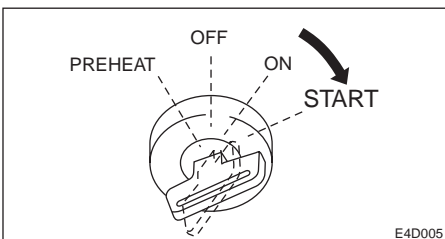
**Starting the Engine****⚠ WARNING**

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

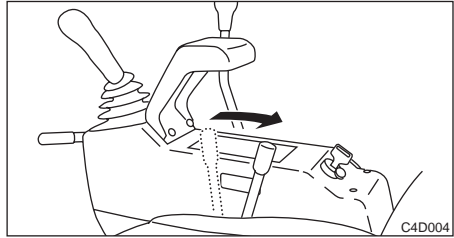
**IMPORTANT:** Do not run the starter motor for more than 15 consecutive seconds. If the engine fails to start, wait for 30 seconds to protect the battery, and then try again to start the engine.

**Normal Starting**

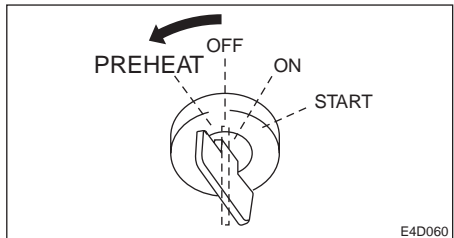
1. Pull the throttle lever to the middle position.



2. 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.

**Starting in Cold Weather**

1. Pull the throttle lever to the maximum speed position.



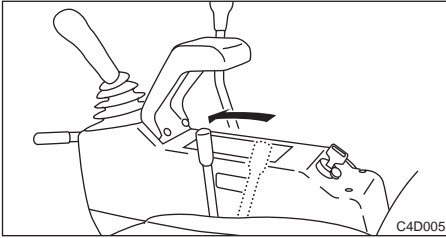
2. Turn the key to the PREHEAT position and hold it there while the glow lamp is lit (about 15 seconds).
3. After the glow lamp turns off, then turn it to the START position and start the engine.
4. Once the engine starts, release the key. The key automatically returns to the ON position.
5. Check that the warning lamps are off.



### 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).

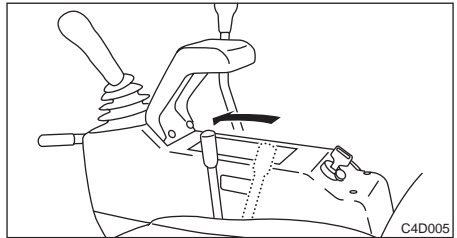


C4D005

1. Return the throttle lever, then idle the engine and run it for about 5 minutes with no load.

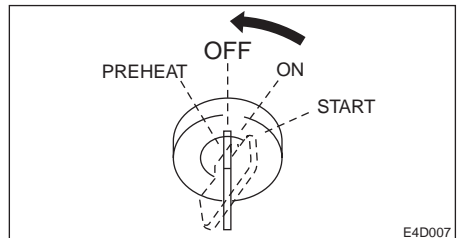
### Stopping the Engine

**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 a true emergency.



C4D005

1. Idle the engine for about 5 minutes to gradually let it cool.



E4D007

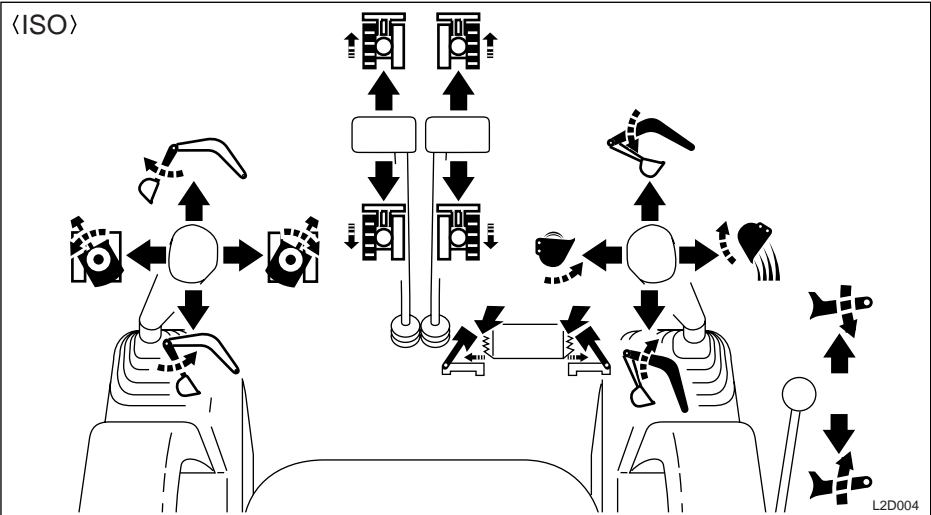
2. Turn the key to the OFF position to stop the engine.



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.



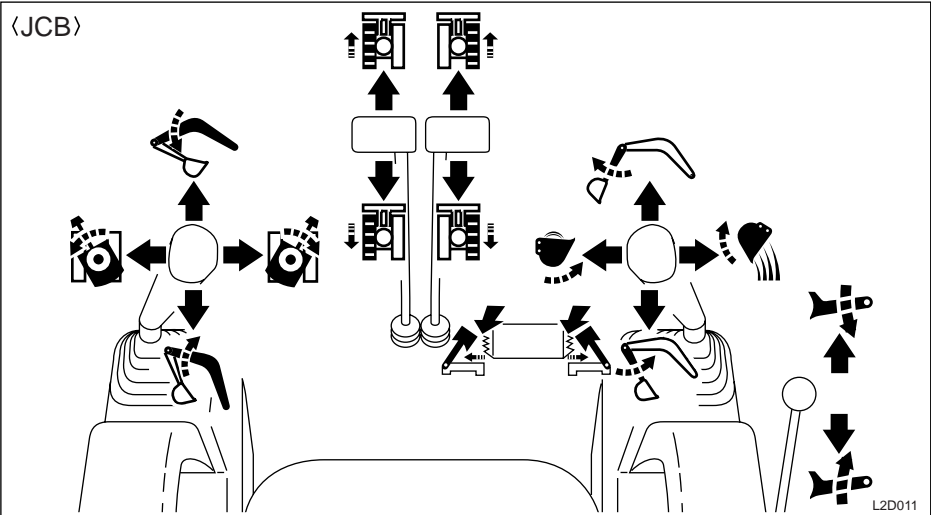
	Left Crawler Forward		Right Crawler Forward
	Left Crawler Reverse		Right Crawler Reverse
	Arm Out		Boom Lower
	Arm In		Boom Raise
	Upperstructure Left Slew		Bucket Load
	Upperstructure Right Slew		Bucket Dump
	Boom Offset Left		Dozer Blade Lower
	Boom Offset Right		Dozer Blade Raise



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 Left Slew		Bucket Load
	Upperstructure Right Slew		Bucket Dump
	Boom Offset Left		Dozer Blade Lower
	Boom Offset Right		Dozer Blade Raise



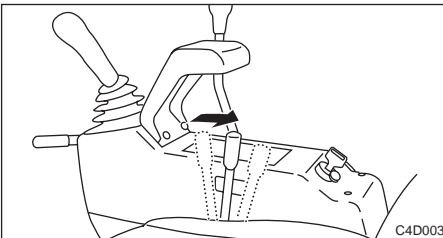
## Warming Up the Machine (Hydraulic Oil)

### ⚠ WARNING

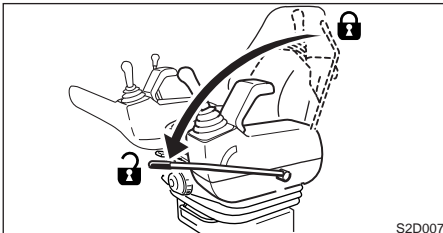
Operating the working equipment without warming up the machine (hydraulic oil) is dangerous, as response will be slow and the equipment may move in unexpected ways. Be sure to sufficiently warm up the machine.

**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

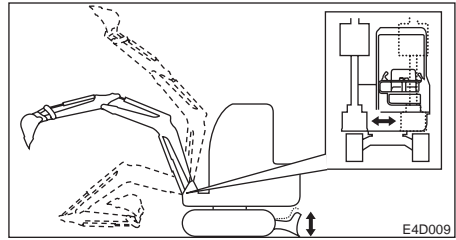


1. Pull the throttle lever to the middle position, then run the engine at medium speed for about 5 minutes with no load.

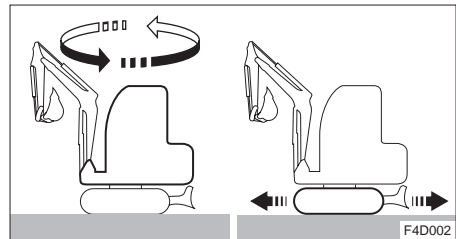


🔓 : Release    🔒 : Lock on

2. Set the safety lock lever to the released position and lift the bucket from the ground.



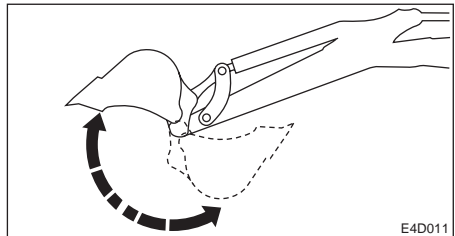
3. Extend and retract each of the cylinders several times with no load.



4. Slowly left and right several times.
5. Travel slowly forward and backward several times.

### Warming Up in Cold Weather

1. Perform the normal warm-up procedure.

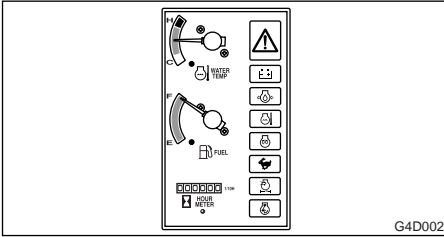


2. Set the bucket cylinder at the stroke end and keep it there. Do not do this for more than 30 seconds.
3. Repeat step 2 until the bucket operating speed is normal.

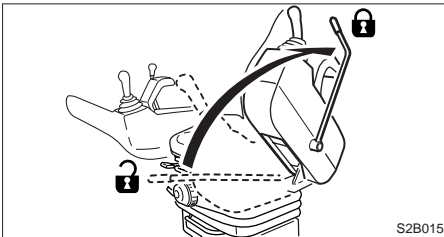


### Inspection After Warm-up

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

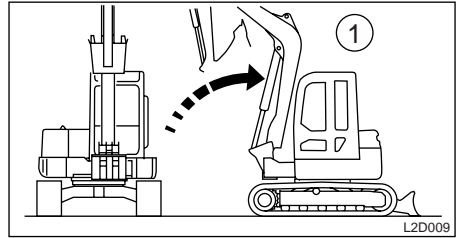


1. Check that the warning lamps and meters are as follows:
  - Are all the warning lamps off?
  - Is the water temperature gauge's needle within the green range?
2. Check that there are no irregularities in the exhaust color, sound and vibrations.

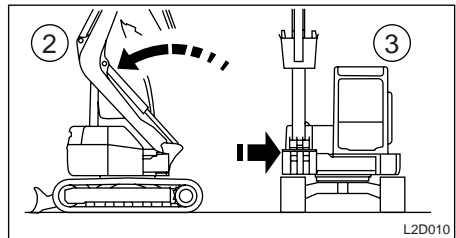


: Release   : Lock on

3. Set the safety lock lever to the locked position and check that the offset pedal, operating and travel levers are locked.
4. Perform the inspection operations described below and check that the bucket, arm and boom do not touch the cab when the boom or bucket is moved near the cab and stops automatically.



- (1) Offset the boom to the front of the operator's seat and move the boom near the cab.  
Offset the boom to the right and move the bucket near the cab.



- (2) Offset the boom fully to the right and check that it can be set to the maximum rear inclination.
- (3) Offset to the left in the posture in (2) above.

### Operation when the boom has stopped automatically

- ① If the boom has stopped while rising:  
Operate the boom downward.
- ② If the boom has stopped while offsetting to the left:
  1. Operate the boom downward to move it outside the automatic stop range.
  2. Offset to the left.  
Offsetting to the right is possible regardless of the boom's posture.

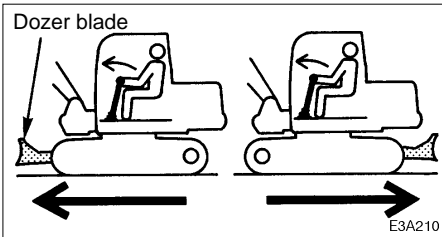


## Operating the Travel Levers

### ⚠ WARNING

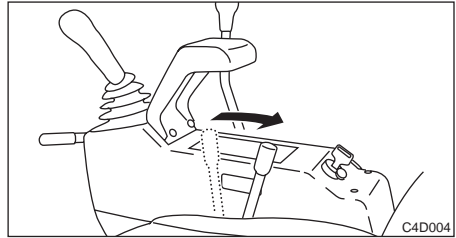
- Never allow anyone to enter the slewing (swing) radius and machine path.
- Signal your intention to move by sounding the horn.
- There are blind spots to the rear of the machine.

If necessary, swing the cab around before backing up to check that the area is safe and clear.

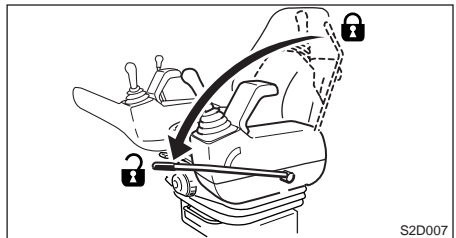


- Before operating the travel levers, check to make sure that the dozer blade is to the front of the operator's seat. **BE AWARE** that when the dozer blade is to the rear of the operator's seat, the travel levers operate in the opposite direction to when the dozer blade is in the front.
- Remove any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

## Traveling Forward and Backward

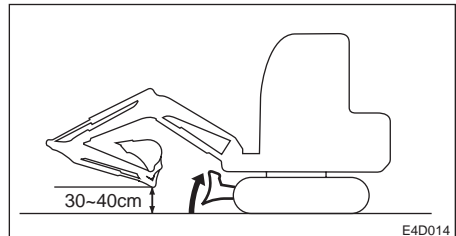


1. Pull the throttle lever and increase the engine speed.



🔓 : Release    🔒 : Lock on

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

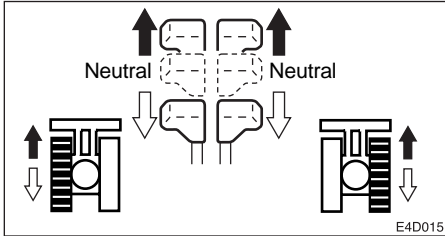


3. Fold the hoe attachment and lower it to 30 to 40 cm (12 to 16 in.) above the ground.
4. Lift the dozer blade.



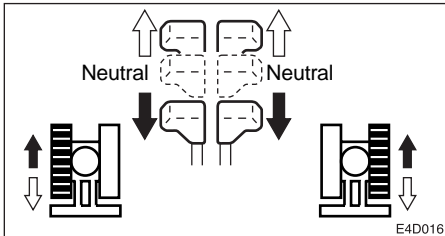


5. Operate the left and right travel levers as described below.



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

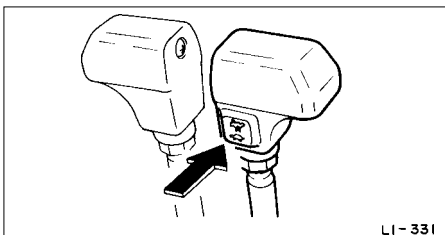
- ➔ To move forward:  
Tilt the levers forward.
- ⇨ To move backward:  
Tilt the levers backward.



When the blade is behind the operator's seat:

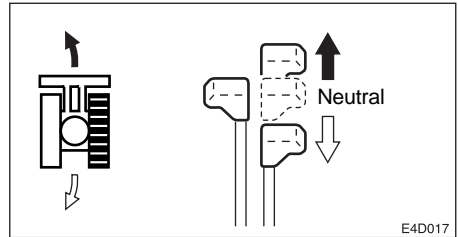
- ➔ To move forward:  
Tilt the levers backward.
- ⇨ To move backward:  
Tilt the levers forward.

### Traveling in 2nd (High) Speed



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).

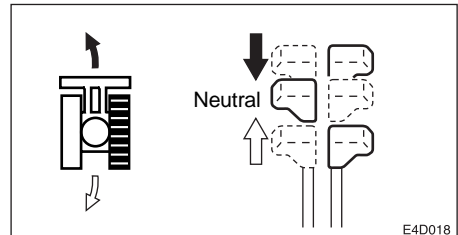
### Pivot Turn



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.



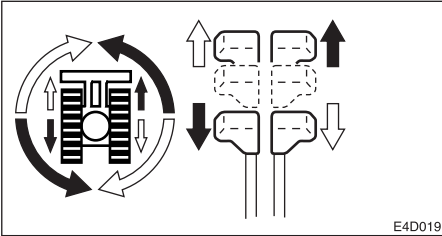
Turning to the left while traveling:

- ➔ 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.

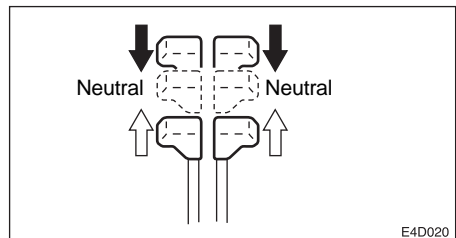
## Stopping Travel

### **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.
- Before leaving the operator's seat, set the safety lock lever securely to the lock position and stop the engine. If any controls should be touched accidentally when the safety lock lever has not been locked, the machine will move suddenly, and cause severe 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**

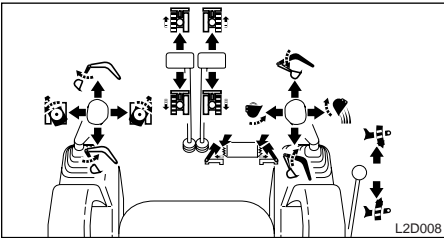
Never bring the machine to a sudden stop except in the case of a true emergency. Stop as gently as possible.



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.

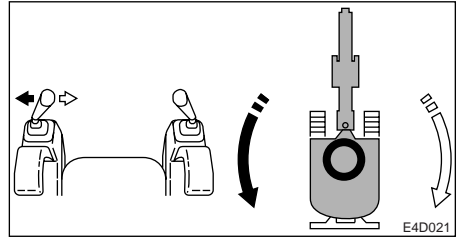
Use the left operating lever to operate the arm and for slewing.

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

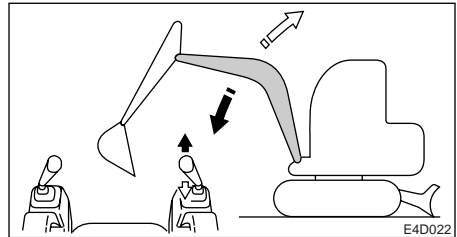
1. Set the safety lock lever to the released position.

**Slewing****⚠ WARNING**

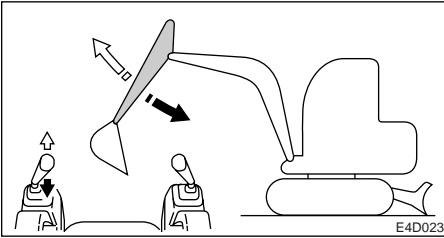
Check the surrounding area for safety before slewing.



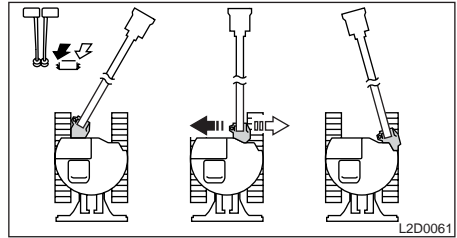
- ➔ To slew left:  
Tilt the left operating lever to the left.
- ⇨ To slew right:  
Tilt the left operating lever to the right.

**Operating the Boom**

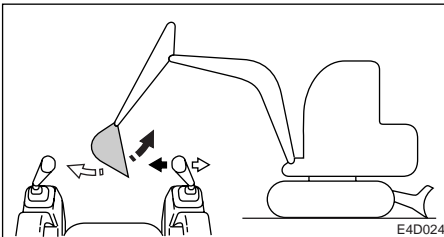
- ➔ To lower the boom:  
Tilt the right operating lever forward.
- ⇨ To raise the boom:  
Tilt the right operating lever backward.

**Operating the Arm**

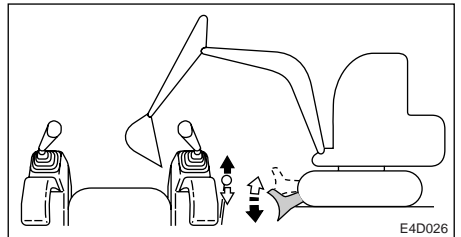
- ➔ To contract the arm:  
Tilt the left operating lever backward.
- ⇨ To extend the arm:  
Tilt the left operating lever forward.

**Operating the Boom Offset**

- ➔ To offset left:  
Press the left side of the pedal.
- ⇨ To offset 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**

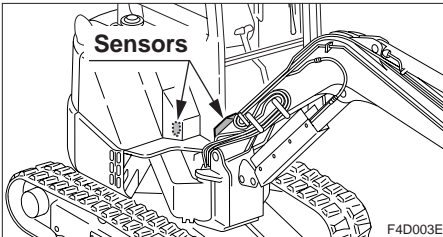
- ➔ To lower the dozer blade:  
Tilt the lever forward.
- ⇨ To raise the dozer blade:  
Tilt the lever backward.



### Attachment Interference Switch / Interference Prevention System

#### ⚠ WARNING

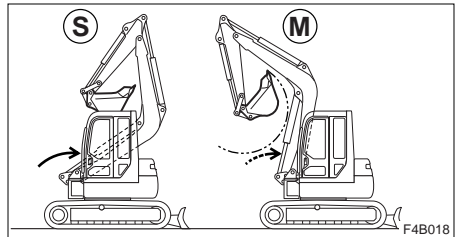
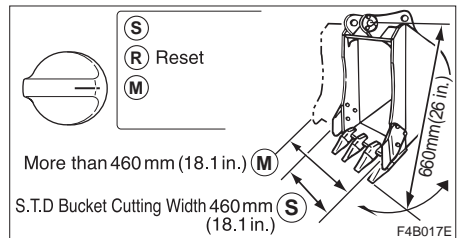
- All attachments other than a bucket should be used with the AIS set to the M mode.
- Ensure that all buckets used in the standard position are no longer than a standard bucket when measured from pin to tooth.
- Failure to properly set the Attachment Interference Switch can result in equipment damage, serious injury, or death.
- Do not disassemble or damage the sensors installed on the boom and main body. Doing so may cause the Interference Prevention System to malfunction. If there is a problem, contact a Takeuchi sales or service outlet for inspection or repair.



- The interference prevention system may not function properly if attachments other than Takeuchi approved attachments are installed. Do not install other non-approved attachments.

The Attachment Interference Switch (AIS) allows the operator to select the attachment size used on the excavator. The Interference Prevention System uses the operator's AIS selection to limit the movement of the boom

(raising, lowering, and offsetting) to prevent the cab from being struck by the boom, attachment, or the material being handled. The Interference Prevention System (IPS) is automatically set to the M mode when the engine is started to provide the maximum operator protection.



To properly set the AIS :

- Reset the AIS to the R position
- Select the appropriate attachment width
- S**... Standard bucket attachment less than 460mm (18.1 inches) wide
- R**... Reset ..... Select the appropriate attachment width
- M** .. Bucket attachment more than 460mm (18.1 inches) wide or any other approved attachment

Operate excavator

The minimal front radius feature is only available for the standard bucket attachment 460mm (18.1 inches) or smaller.

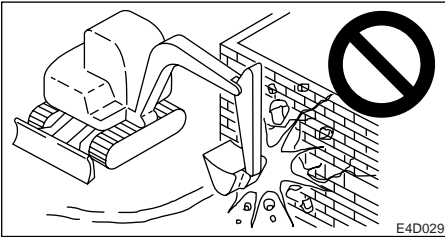


## Prohibited Operations

### WARNING

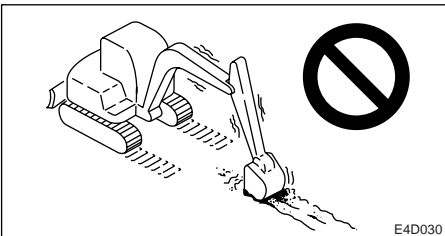
- Do not operate on base rock (hard or soft).
- Do not slew (swing) while traveling. If you must operate the hoe attachment while traveling, operate at speeds slow enough so you have complete control at all times.

### Do not perform breaking or leveling operations using slew force



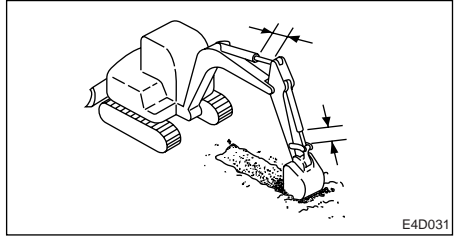
Do not break down walls or level ground using slew force. Also, do not dig the bucket teeth into the ground during slewing. Doing so will damage the hoe attachment.

### Do not Dig while Traveling

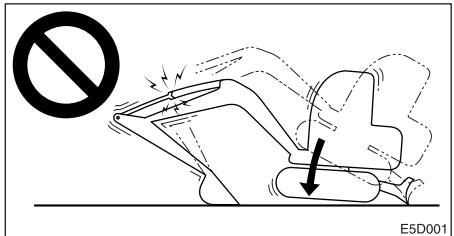


Do not dig the bucket into the ground and use the traveling force to dig.

## Be Gentle on the Hydraulic Cylinders

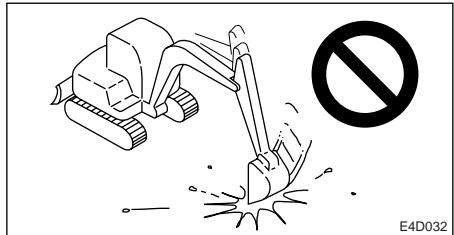


Do not extend the hydraulic cylinders to the stroke ends. Operate them with leeway.



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.

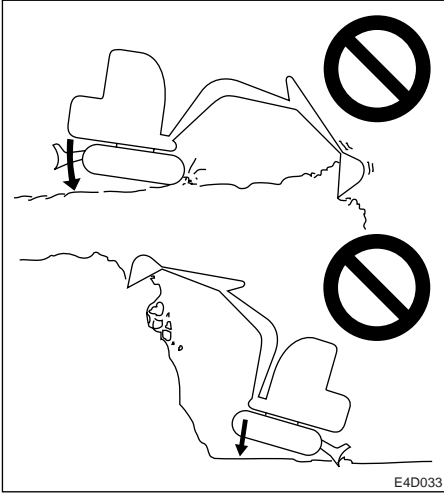
### Do not Drive Piles with the Bucket or Dig with it Using Shock Force



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

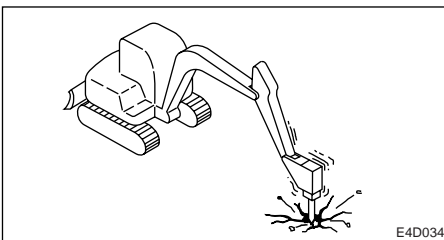


**Do not Perform Operations Using the Machine's Dropping Force**



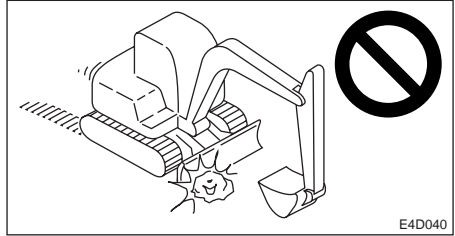
Putting excessive strain on the machine will shorten its service life. Use the hydraulic force of the cylinders and always dig with shallow, long strokes.

**Digging Base Rock**



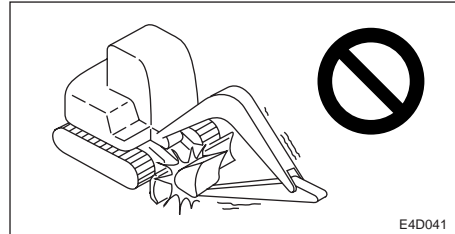
For hard base rock, break the rock up into small pieces with a breaker, etc., before digging. This prevents damage to the machine and is thus more economical in the end.

**Caution on Exposing the Dozer Blade to Shocks**



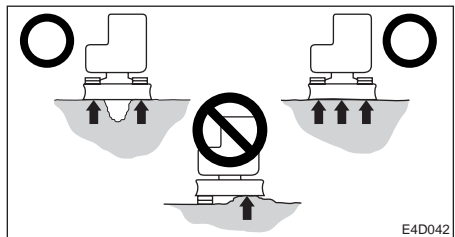
Hitting the dozer blade against rocks, etc., could damage the dozer blade or the blade cylinder.

**Caution on Folding the Hoe Attachment**



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

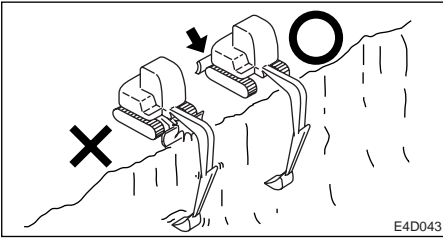
**Support the Dozer Blade on Both Sides**



When using the dozer blade as an outrigger, do not support it on one side only.



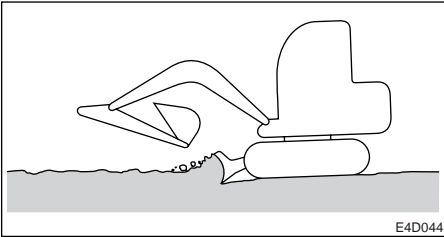
**Pay Attention to the Dozer Blade when Digging**



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.

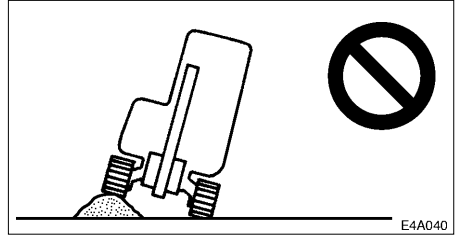
**Caution on Digging Down with the Dozer Blade**



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.

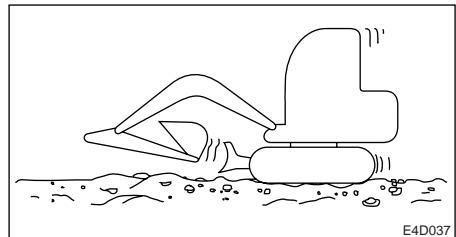
**Cautions on Operating**

**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**

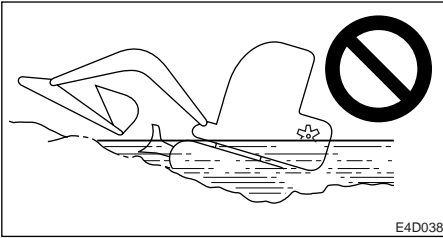


On uneven ground, travel at low speed and avoid accelerating, stopping or changing directions abruptly. Also, when traveling in 2nd speed, do so with the dozer blade at the front.

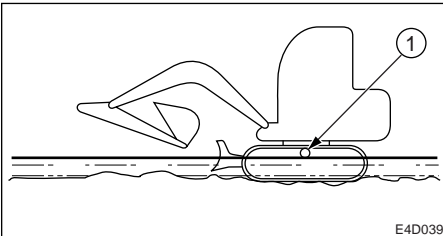




### Cautions on Use in Water



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

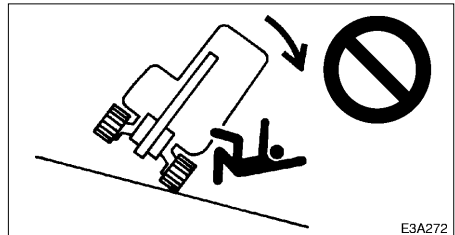
In water, only use the machine up to a depth at which the water comes up to the middle of the carrier roller (1).

- 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

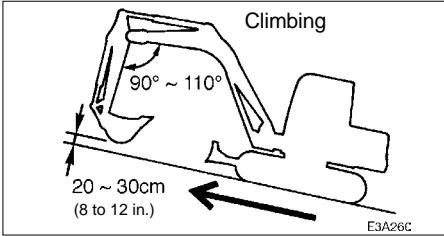
- Never exceed the machine's stability capabilities (maximum gradeability - 30°, lateral tipping angle - 15°). Also note that when actual working area conditions are poor the machine's stability capabilities may be lower.
- When traveling on slopes or grades, lower the bucket to a height of 20 to 30 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.

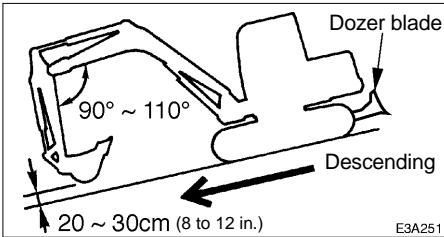


### Traveling Posture Traveling up slopes



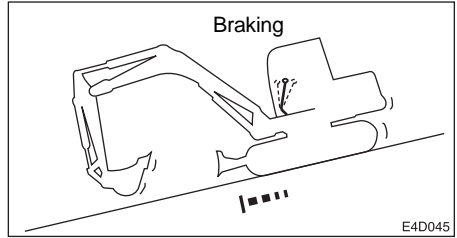
When traveling up slopes at an angle of 15° or greater, travel in the posture shown in the diagram above.

### Traveling down slopes



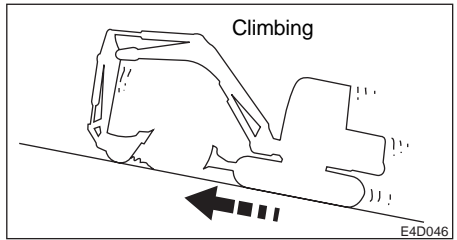
When traveling down slopes at an angle of 15° or greater, lower the engine speed and travel in the posture shown in the diagram above.

### Braking when traveling down slopes



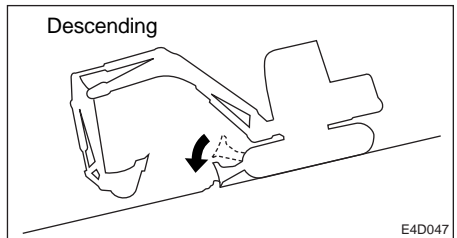
When traveling down slopes, the brakes are applied automatically when the travel levers are returned to the neutral position.

### If the crawlers slip

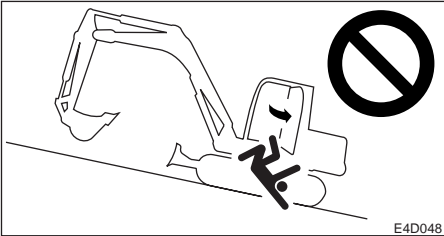


If the crawlers slip while traveling up a slope, use the pulling force of the arm to climb the slope.

### If the engine stops



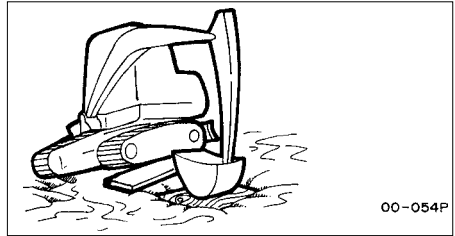
If the engine stops when traveling down a slope, set the travel levers to the neutral position, stop the machine, then set the blade against the ground and start the engine.

**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**

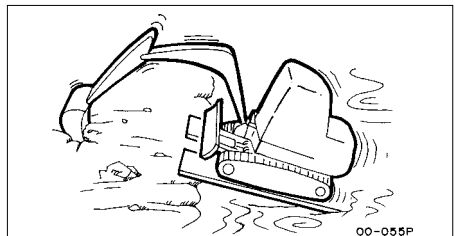
If the machine gets stuck in mud, use the procedure below to get it out.

**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**

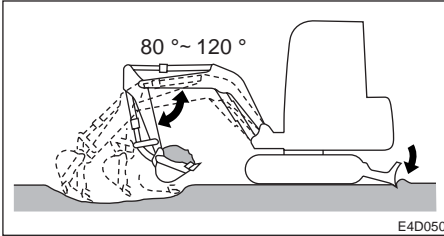
1. Perform steps 1 to 4 above for both crawlers.
2. Dig the bucket into the ground in front of the machine.
3. Pull with the arm and travel forward simultaneously to slowly move out of the mud.





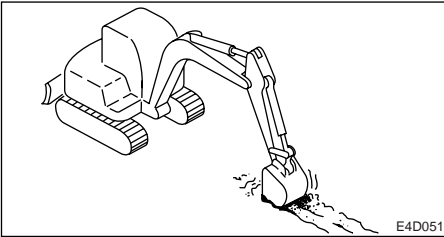
## Operations Possible with this Machine

### Excavating



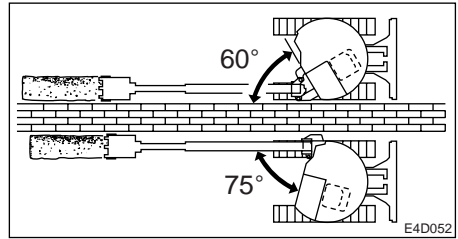
1. Set the dozer blade on the side opposite the side you want to dig on and dig it slightly into the ground.
2. Use the arm and bucket and dig with shallow, long strokes. The digging force is strongest when the boom and arm angle is 80 to 120°. Use this angle for effective digging.

### Digging Ditches



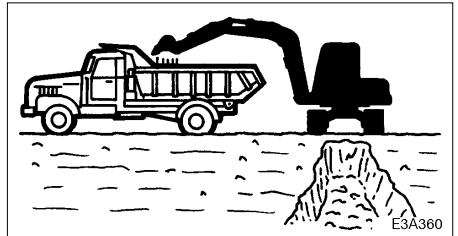
Mount a bucket suited for digging ditches and set the crawlers parallel to the ditch to be dug for greater efficiency. When digging wide ditches, dig the sides first, the center later.

### Digging Side Ditches



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

### Loading

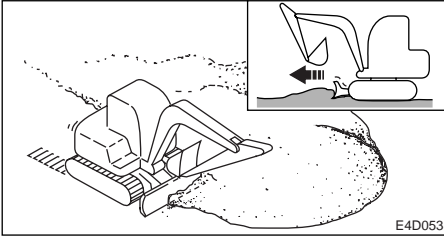


When loading dirt in a truck, starting from the back of the truck's bed makes for easier loading and increases the amount of dirt that can be loaded.

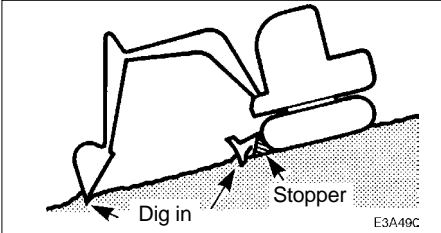
Also, use a small slewing angle for greater efficiency.



## 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****⚠ 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.**
- **Before leaving the operator's seat, set the safety lock lever securely to the lock position and stop the engine. If any controls should be touched accidentally when the safety lock lever has not been locked, the machine will move suddenly, and cause severe injury or death.**

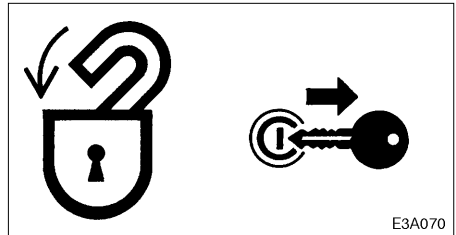
1. Set the left and right travel levers to the neutral position.
2. Return the throttle lever and idle the engine at low speed.
3. Lower the bucket and dozer blade to the ground.
4. Set the safety lock lever to the lock position.
5. Stop the engine and remove the key.  
Refer to page 65 "Stopping the Engine".

**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 107 "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:



- Cab door
- Fuel filler cap
- Engine hood
- Manual storage



### 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 96 “Fuel and Lubricant Chart”.

#### Engine Coolant



**The coolant is combustible. Keep flames away.**

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

**Supplement:** New machine are delivered with JIS Type 2 long-life coolant (antifreeze) at a concentration of 30% (U.S.A. 50%).

Refer to page 96 “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 115 “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 116 “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:

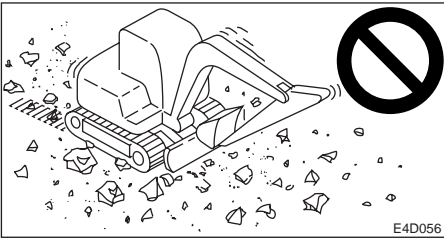
- Change the fuel and the oils for the different devices with those specified on the Fuel and Lubricant Chart. Refer to page 96 “Fuel and Lubricant Chart”.
- When using one-season type antifreeze coolant, completely drain the antifreeze coolant, carefully clean the inside of the coolant system, then add tap water. Refer to page 123 “Cleaning the Engine Cooling System”.



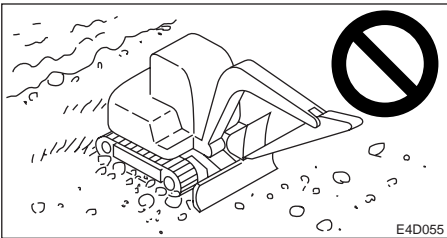
Rubber crawlers have an inherent weakness due to their use of rubber. Be sure to heed the prohibitions and cautions below so as to prevent damage to the crawlers and crawler slippage.

### Prohibited Actions

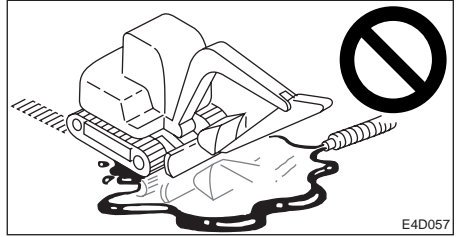
Do not travel or operate the machine in the following places:



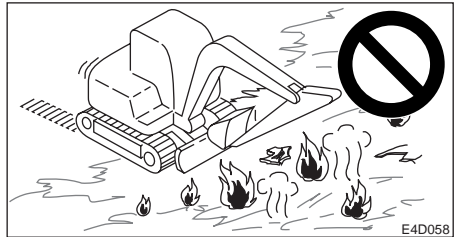
- Traveling or slewing on broken stone, jagged base rock, iron rods, iron scraps or the edges of iron sheets may damage or cut the crawlers.



- 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.



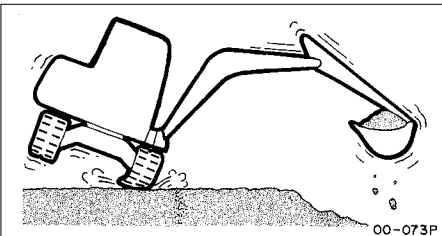
- Traveling on roads directly after asphaltting or on hot surfaces such as over fires or on iron sheets under strong sunlight may result in irregular wear or damage of the rugs.
- Do not move earth in places where the rubber crawlers may slip. Doing so may speed up rug wear.



**Cautions**

Heed the following cautions when operating the machine:

- 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  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  ( $-14^{\circ}\text{F}$  to  $131^{\circ}\text{F}$ ).
- 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.

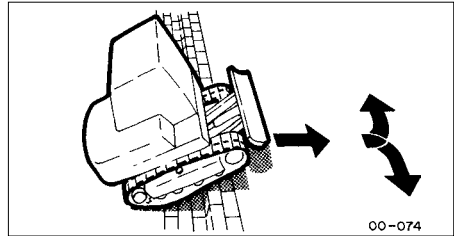


- Rubber crawler belts are not as stable as steel crawler belts since the entire rug is rubber. Be very careful when slewing and swinging sideways.

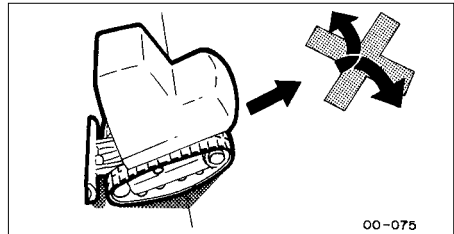
**Preventing the Rubber Crawlers from Slipping Off**

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

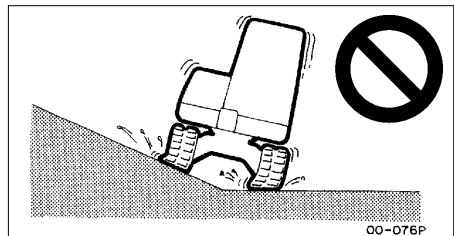
- Always keep the crawlers at the proper tension.



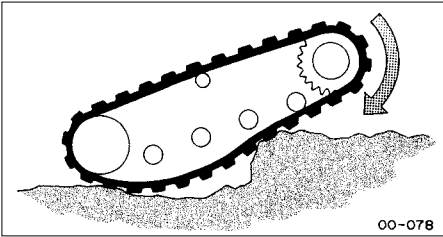
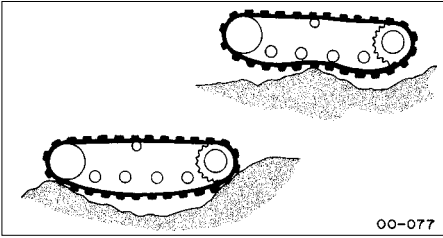
- When traveling up large cobblestone or rock steps (20 cm (8 in.) or greater), climb up the step at a direct angle and do not change course on top of the step.



- 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  $10^{\circ}$  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

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<b>Loading and Unloading .....</b>	<b>90</b>
<b>Securing the Machine .....</b>	<b>91</b>
<b>Cautions on Transporting .....</b>	<b>92</b>

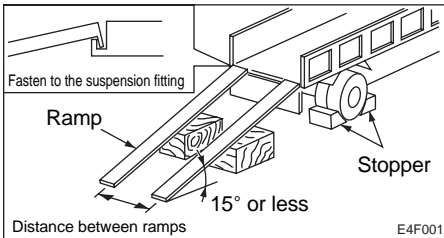
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**⚠ WARNING**

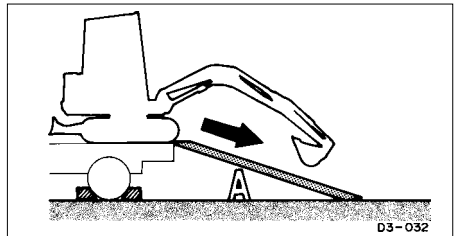
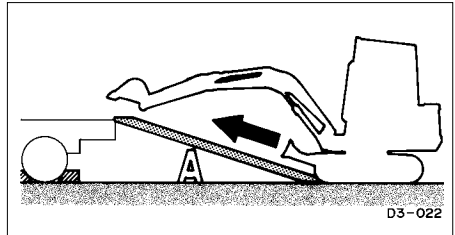
The machine may roll or tip over or fall while loading or unloading it. Take the following precautions:

- 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 with the throttle lever.

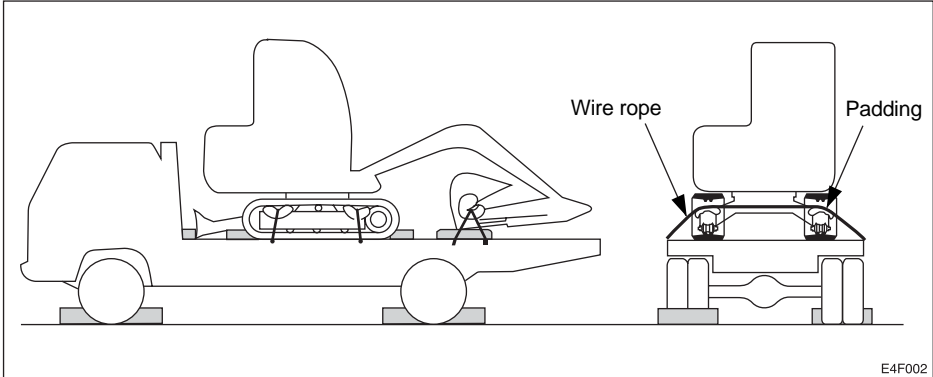


7. Determine the direction on the ramps, then slowly travel up or down the ramps in 1st speed (low speed), following the signals of a flagman.
8. Load the machine properly at the prescribed position on the bed. Refer to page 91 "Transporting Posture".



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

### Transporting Posture



1. Lower the blade.
2. Fully extend the bucket and arm cylinders, then lower the boom.
3. Stop the engine and remove the starter key.
4. Set the safety lock lever securely to the locked position.
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, 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.



**Do not clean parts with fuel.**

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

**Keep dirt out.**

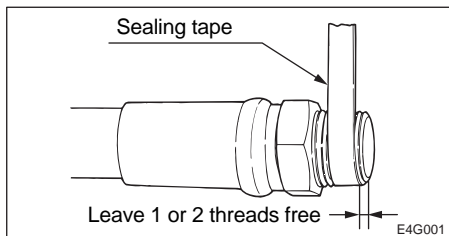
When mounting and removing parts, do so in a place where there is no dust, clean the working area and the part, and keep dirt out.

**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.



### 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 ℓ (US. qt.)		
		-22	-4	14	32	50	68	86	104	-30	-20			-10	0
Engine oil pan	Diesel engine oil API-CD	SAE 5W-20										After first 50 hrs. Every 250 hrs.	Upper limit: 3.9 (4.1) Lower limit: 2.7 (2.9)		
		SAE 10W-30													
		SAE 15W-40													
Hydraulic tank	Antiwear hydraulic oil						ISO VG68					Every 2000 hrs.	System: 70 (18.4US.gal.) Tank: 44 (11.5US.gal.)		
		ISO VG46													
		ISO VG32													
Fuel tank	Diesel fuel	Use a clean, Quality fuel for good performance and optimum engine life. <ul style="list-style-type: none"> <li>• 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.</li> <li>• Minimum cetane number is 45. Low temperature or high altitude operation may require the use of fuel with a higher cetane number.</li> </ul>											35 (9.2US.gal.)		
Engine cooling system	Coolant (water ** + coolant ***)						30% coolant mixture					Every 1000 hrs.	4.5 (4.8)		
		50% coolant mixture													
Travel reduction gear	Gear oil API-GL-4	SAE 90										After first 100 to 250 hrs.* Every 1000 hrs.	0.5 (0.53)		
Slew bearing	Lithium based grease EP-2 NLGI No. 2											Every 50 hrs.	As required		
Working equipment												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, add coolant (antifreeze). Follow the coolant manufacturer's instructions to determine the mixture ratio.

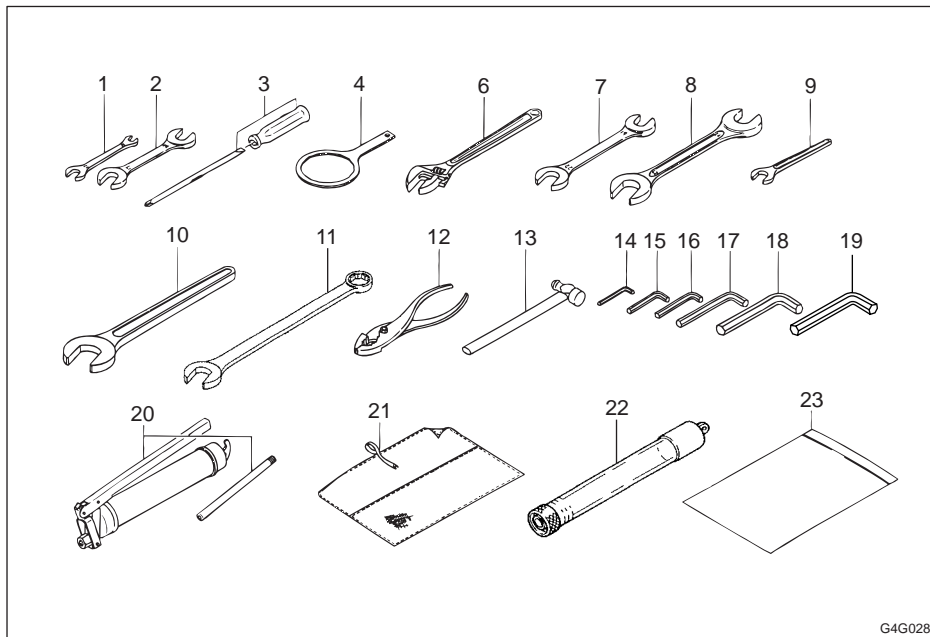
**Expendables**

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

<b>Item</b>	<b>Part name</b>	<b>Part No.</b>	<b>Replacement interval</b>
<b>Return filter</b>	Element	15511-00700	After first 50 hrs. Every 500 hrs.
<b>Fuel filter</b>	Element	119810-55650	Every 500 hrs.
<b>Fuel filter cartridge</b>	Cartridge	129052-55630 (19101-29033)	
<b>Engine oil filter</b>	Cartridge	129150-35151	After first 50 hrs. Every 250 hrs.
<b>Air cleaner</b>	Element	119808-12520	Every 1000 hrs. or after 6 cleanings (whichever comes first)
	Inner Element (option)	19111-02772	Every 1000 hrs. or after 3 cleanings of the outer element (whichever comes first)



## Tools



G4G028

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	
6	Monkey wrench	16904-00250	250mm
7	Spanner	16900-01922	19-22
8	Spanner	16900-02427	24-27
9	Spanner	16901-00013	13
10	Spanner	16901-00041	41
11	Spanner	16909-00026	26
12	Pliers	16905-00200	200mm

No.	Part name	Part No.	Remarks
13	Hammer	16903-00330	3/4
14	Hex. wrench	16906-00400	4mm
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	16906-01400	14mm
20	Grease gun	16910-60600	600cc
21	Tool case	16914-00001	
22	Drain connector	—	for EU
23	Case	16919-00001	

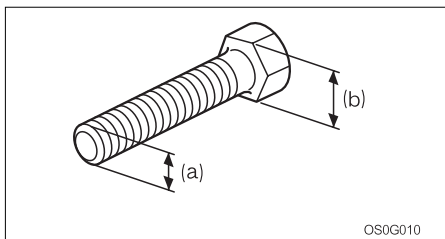
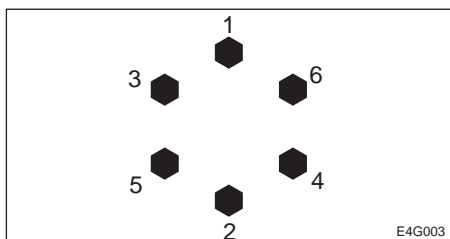


## Tightening Torques

### 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.



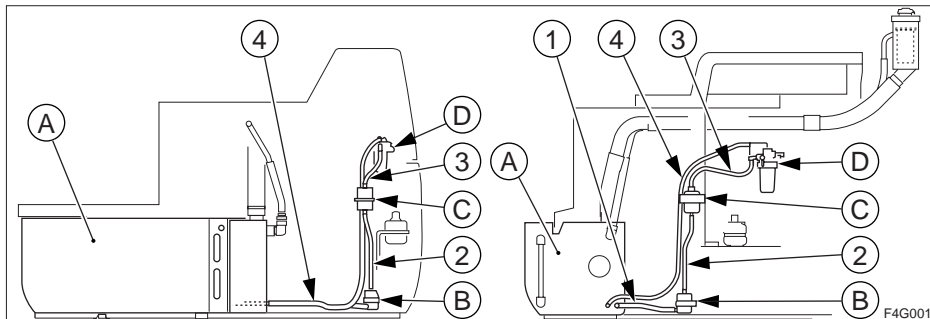
Thread	Head width (b)	Size (a) X Pitch	Torque	
			General Connection Points	
	mm	mm	N·m	ft-lb
Coarse	10	M6 X 1.0	9.8 ± 0.5	7.2 ± 0.4
	12, 13	M8 X 1.25	22.6 ± 1.1	16.6 ± 0.8
	14, 17	M10 X 1.5	47.1 ± 2.4	34.7 ± 1.7
	17, 19	M12 X 1.75	83.4 ± 4.1	61.5 ± 3.0
	19, 22	M14 X 2.0	134.4 ± 6.7	99.1 ± 4.9
	22, 24	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

Worn or damaged fuel hoses may lead to fires. Replace fuel hoses periodically. Even if the hoses appear normal, with time their material changes and they can wear or deteriorate easily.

If an irregularity is found, replace the hose, even if the replacement interval is not yet reached.



No.	Part name	Connecting parts	Part No.	Qty.	Replacement interval
1	Fuel hose	Fuel tank (A) - Fuel filter cartridge (B)	Please contact a Takeuchi sales or service outlet.	1	Every 2 years
2	Fuel hose	Fuel filter cartridge - Feed pump (C)		1	
3	Fuel hose	Feed pump - Fuel filter (D)		1	
4	Fuel hose	Fuel filter - Fuel tank		1	



<b>Maintenance Items</b>	<b>See page</b>
<b>Walk-Around Inspection</b>	
Inspecting by opening the engine hood and covers	103
Inspecting by walking around the machine	104
Inspecting while sitting in the operator's seat	104
<b>Daily Inspection (Every 10 Hours)</b>	
Inspecting and replenishing the coolant	105
Inspecting and replenishing the engine oil	106
Inspecting the fuel level	106
Inspecting the hydraulic oil level and replenishing	107
Lubricating the working equipment	109
<b>After First 50 Hours (New Machines Only)</b>	
Replacing the hydraulic oil return filter	110
Replacing the engine oil and oil filter	111
Inspecting and adjusting the fan belt	112
<b>Every 50 Hours</b>	
Inspecting and adjusting the crawler tension	113
Lubricating the slew bearing	114
Inspecting the battery fluid level and replenishing	115
Draining the fuel tank	116
<b>Every 100 Hours</b>	
Cleaning the fuel filter	117
<b>After First 100 to 250 Hours (New Machines Only)</b>	
Replacing the travel motor gear oil*	118
<b>Every 250 Hours</b>	
Replacing the engine oil and oil filter	119
Inspecting and adjusting the fan belt	119
Cleaning the air cleaner	119

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



<b>Maintenance Items</b>	<b>See page</b>
<b>Every 500 Hours</b>	
Replacing the hydraulic oil return filter	121
Cleaning the radiator and oil cooler fins	121
Replacing the fuel filter	121
Replacing the fuel filter cartridge	122
<b>Every 1000 Hours</b>	
Cleaning the engine cooling system	123
Replacing the air cleaner element	124
Replacing the travel motor gear oil	125
Inspecting and adjusting the engine valve clearance	125
Retightening the engine cylinder head bolts	125
Inspecting the engine fuel injection pressure and spray condition	125
<b>Every 2000 Hours</b>	
Replacing the hydraulic oil and cleaning the suction strainer	126
Inspecting the engine fuel injection timing	127
Inspecting the engine fuel injection valve	127
<b>When Required</b>	
Replacing the bucket teeth and the side cutters	128
Inspecting and replenishing the windshield washer fluid	130
Replacing the bucket	131
Lubricating the levers	133
Tilting up the platform	134
Inspecting the rubber crawlers	135
Replacing the rubber crawlers	136



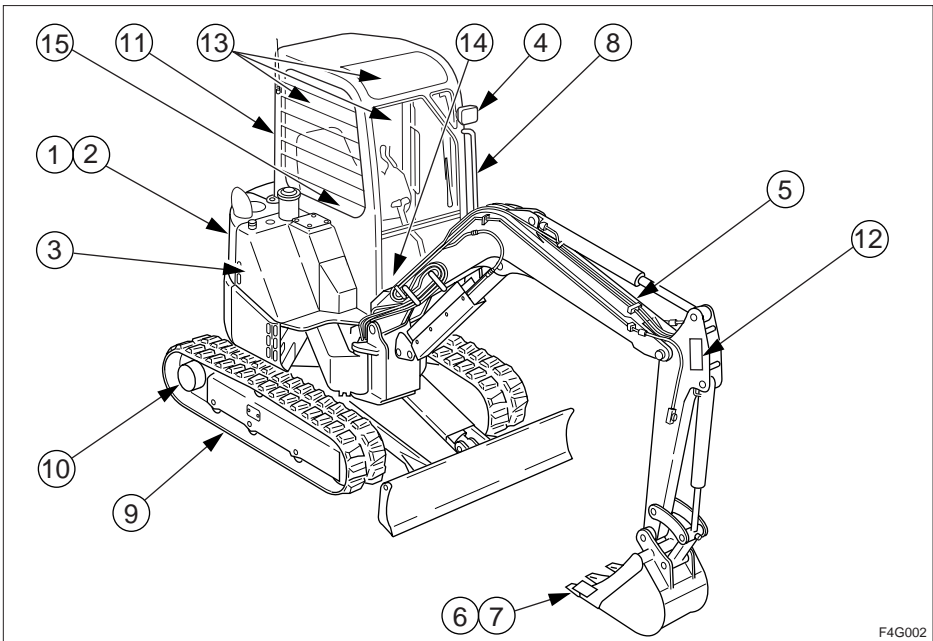


Perform the following inspections once every day before starting the engine the first time.

**⚠ 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.



F4G002

**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.

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



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**

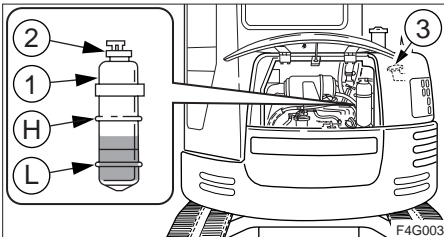
**Do not remove the radiator cap or drain plugs when the coolant is hot. Stop the engine, let the engine and radiator cool and loosen the radiator cap or drain plugs slowly.**

**Replenishing**

1. Remove the reserve tank's cap (2).
2. Add 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 coolant level. If it is low, add water to the radiator first, then to the reserve tank.

3. Install the cap (2).

**Inspection**

1. Open the engine hood.
2. Inspect the quantity of coolant in the reserve tank (1).

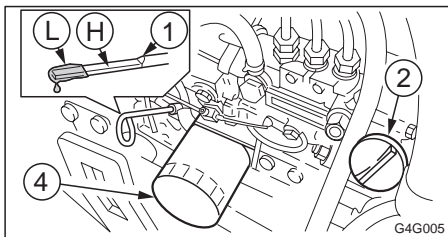
The level should be between the upper limit (H) and lower limit (L).

If it is below the lower limit (L), replenish.



## Inspecting and Replenishing the Engine Oil

### 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. Add 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 Fuel Level

### ⚠ WARNING

- Do not smoke or permit open flames while fueling or near fueling operations.
- Stop the engine in a well-ventilated place when adding 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 at the sight gauge (1).
2. If the level is low, add fuel from the fuel port (2) while watching the sight gauge (1). Refer to page 42 "Fuel Filler Cap".



## Inspecting the Hydraulic Oil Level and Replenishing

### **⚠ WARNING**

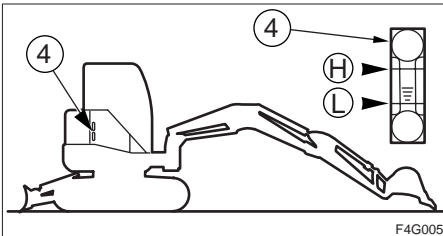
Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.

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

### Inspection

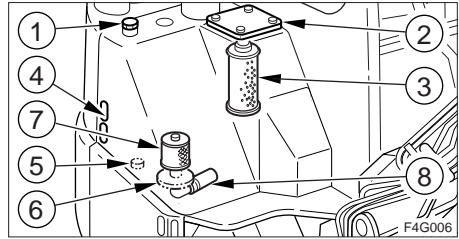
The oil level changes according to the oil temperature. Inspect the oil level in the hydraulic oil level inspection posture shown in the diagram.

- Hydraulic oil level inspection posture



1. Start the engine and run it at low speed.
2. Fully offset the boom to the left.
3. Fully retract the arm and bucket cylinders and ground the bucket.
4. Ground the dozer blade, then stop the engine.
5. Inspect the oil level at the sight gauge (4).
  - 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.
  - When the oil temperature is about 50 to 80°C (122 to 176°F):  
The level should be near the upper limit (H).

### Replenishing



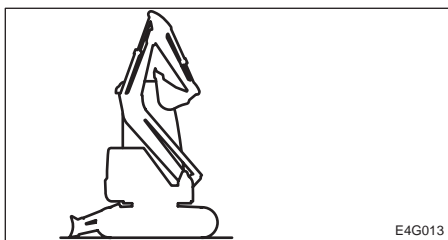
1. Slowly turn the vent plug (1) to release the internal pressure, then remove.
2. Add hydraulic oil up to the middle of the sight gauge (4).
3. Pressurize the hydraulic tank using the procedure next page.



**Pressurizing the hydraulic tank**

1. Start the engine and run it at low speed.
2. With the vent plug (1) removed, set the safety lock lever to the released position.

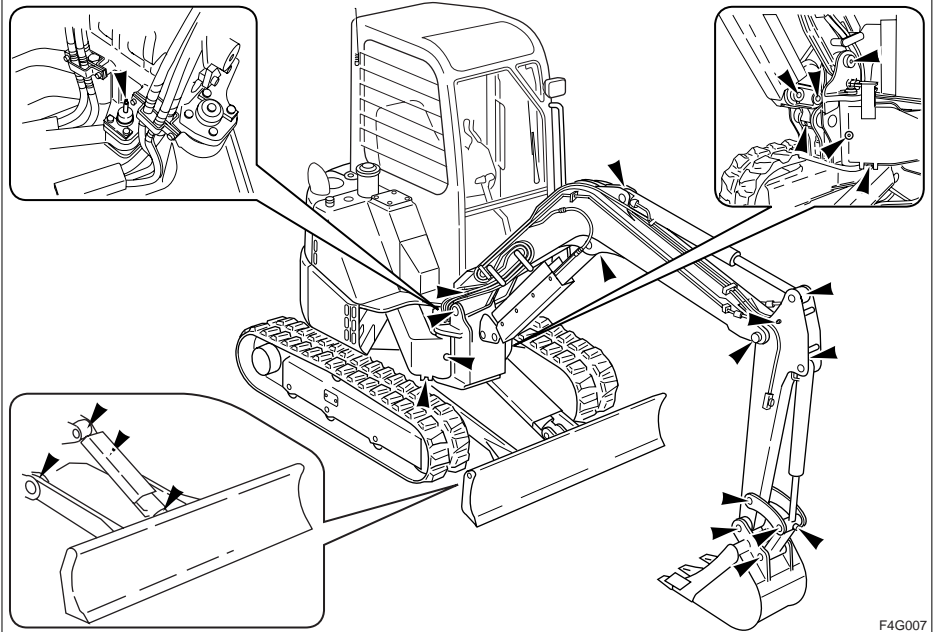
● **Hydraulic tank pressurization posture**



3. Fully extend the bucket, arm, boom and offset cylinders. (Tank pressurization posture)
4. Stop the engine and set the safety lock lever to the locked position.
5. Tighten the vent plug (1), then pressurize.



## Lubricating the Working Equipment



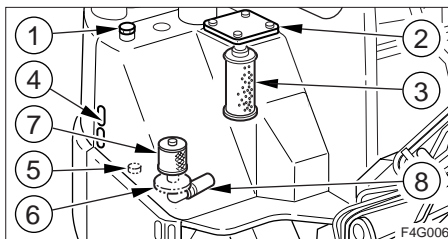
1. Set the machine to the lubrication posture shown in the diagram above, ground the working equipment, then stop the engine.
2. Use the grease gun to lubricate the grease nipples.
3. Wipe off the expelled grease.



## 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.
- Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.
- Gradually loosen the vent plug 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. Slowly turn the vent plug (1) to relieve tank pressure, then remove.
2. Loosen the bolts and remove the cover (2).
3. Remove the return filter (3).
4. Install the new return filter.
5. Install the cover (2).
6. Inspect the level with the sight gauge (4), and replenish if the level is low. Refer to page 107 "Inspecting the Hydraulic Oil Level and Replenishing".
7. Pressurize the hydraulic tank. Refer to page 108 "Pressurizing the Hydraulic Tank".



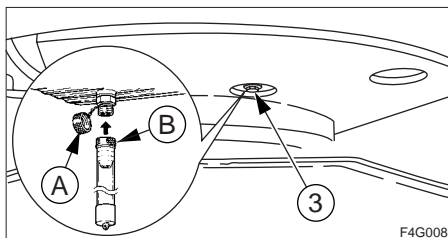


## Replacing the Engine Oil and Oil Filter

### **⚠ 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.



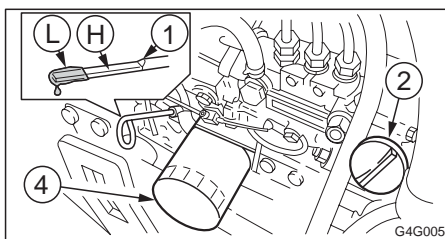
1. Place a pan for catching the spent oil under the drain plug (3).
2. Remove the drain plug (3) and drain the oil.

#### • When a drain valve is included

2. Remove cap (A), install connector (B) and drain the oil. (The oil comes out when the screw is tightened.)
3. 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.**

3. Tighten the drain plug (3).



4. Using a filter wrench, turn the filter (4) counterclockwise and remove it.
5. Clean the surface of installation of the filter stand.
6. Apply a thin layer of oil to the packing of the new filter.
7. Install the new filter by hand. Tighten 2/3 more turns after the filter packing comes in contact with the surface of installation.
8. Remove the oil supply cap (2).
9. Add 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.
10. Tighten the oil supply cap (2).
11. Start the engine, run it at low idle for about 3 minutes, then stop it.
12. After about 10 minutes, inspect the oil level.



## Inspecting and Adjusting the Fan Belt

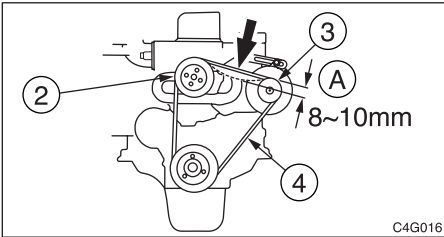
### WARNING

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.

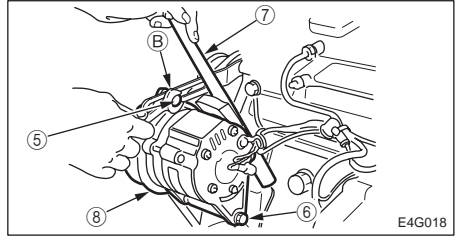
### Inspection

1. Open the engine hood.



2. Press at the center of the fan pulley (2) and alternator pulley (3) and check the tension (about 10 kg or 22 lb.). The slack (A) should be about 8 to 10 mm (0.3 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. Tilt up the platform.  
Refer to page 134 "Tilting Up the Platform".
2. Loosen the adjustment bolt (5) and locking nut (6).
3. Using a lever (7), move the alternator (8) and adjust the slack.
4. Tighten the adjustment bolt (5) and locking nut (6).

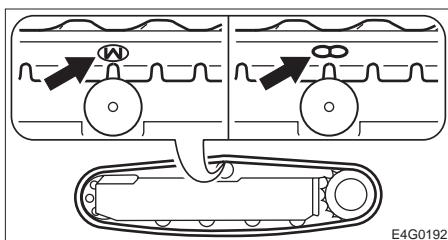


## Inspecting and Adjusting the Crawler Tension

### ⚠ WARNING

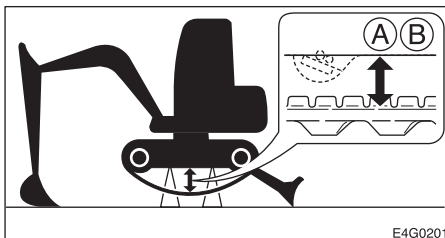
- If you must work beneath the raised machine or equipment, always use wood blocks, jack-stands or other rigid and stable supports. Never get under the machine or working equipment if they are not sufficiently supported. This procedure is especially important when working on hydraulic cylinders.
- The track adjuster contains highly pressurized grease. If the tension is adjusted without following the prescribed procedure, the grease discharge valve may fly off, resulting in injury.
- Loosen the grease discharge valve slowly.
- Do not put your face, arms, legs or body in front of the grease discharge valve.

### Inspection



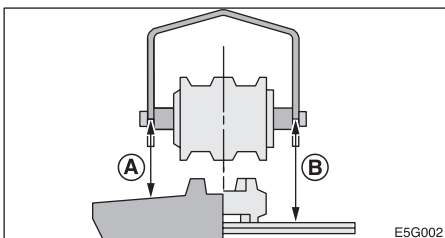
E4G0192

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.



E4G0201

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



E5G002

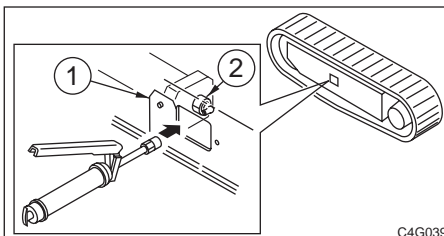
3. Inspect the gap (A or B) between the bottom surface of the frame at the center of the crawler frame and the top surface of the crawler.

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

- (A) Rubber crawler:  
77 to 87 mm (3.0 to 3.4 in.)
- (B) Steel crawler:  
144 to 154 mm (5.7 to 6.1 in.)

### Adjustment

Increasing the tension



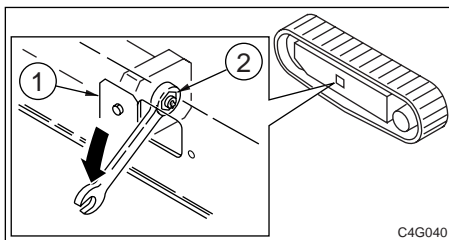
C4G039

1. Remove the cover (1).

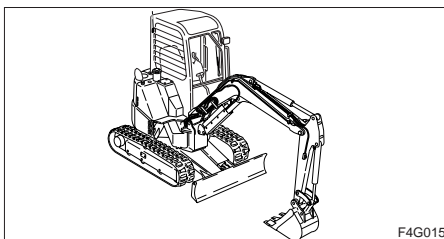


2. Using the grease gun, insert grease through the grease nipple in the grease discharge valve (2).
3. Inspect the crawler tension.

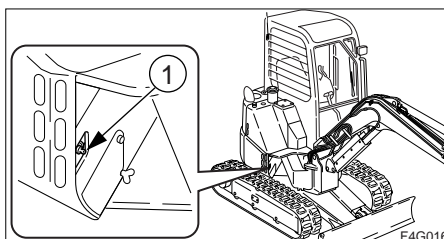
Decreasing the tension



1. Remove the cover (1).
2. Using the Spanner, slowly loosen the grease discharge valve (2) and drain the grease.  
If the grease does not drain easily, move the machine forward or backward.
3. Tighten the grease discharge valve (2).
  - Grease discharge valve (2) tightening torque: 177 N·m (130 ft.lb.)



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

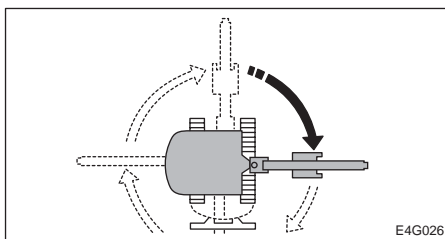


2. Use the grease gun to supply grease to the grease nipple (1).

**Lubricating the Slew Bearing**

**⚠ WARNING**

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



3. Start the engine, lift the bucket and slew clockwise 90°.
4. Ground the bucket and stop the engine.
5. Repeat steps 2 to 4 above three times.
6. Wipe off the grease expelled from the slew bearing and grease nipple.



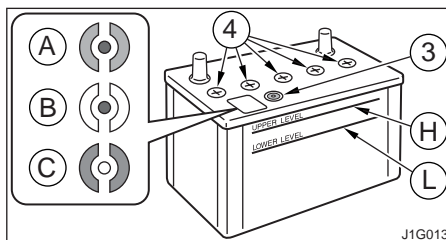
## Inspecting the Battery Fluid Level and Replenishing

### ⚠ 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).

### ⚠ 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.
- Batteries generate flammable and explosive gases. Keep arcs, sparks, flames and lighted tobacco away.



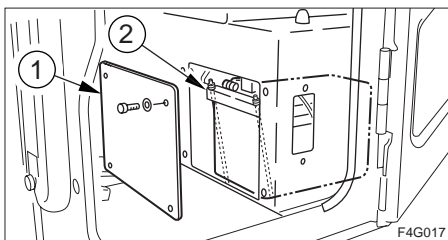
3. Pull out the battery and inspect the indicator (3).
  - (A) Blue: Good
  - (B) White: Charging needed
  - (C) Red: Insufficient battery fluid
4. Also check the terminals for looseness and dirt.

### Replenishing

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

1. Remove the caps (4), and add distilled water up to the upper level (H).
2. Inspect the indicator (3) then it turns blue.
3. Clean the cap's exhaust hole, then tighten the caps securely.

### Inspection



1. Loosen the bolts and remove the cover (1).
2. Remove the angle (2).



## Draining the Fuel Tank

### 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.

Do this before operating the machine.



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

### **Bleeding the air from the fuel system**

Refer to page 143 "Bleeding the Air from the Fuel System".

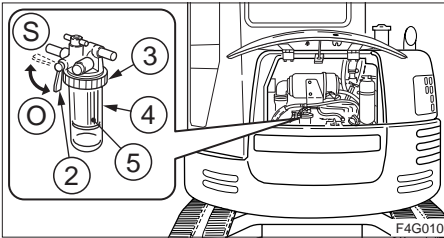
**Supplement:** Air in the fuel system can make it difficult to start the engine and cause engine problems. Also bleed the air when the fuel tank is emptied.



## Cleaning 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.



Ⓢ : Closed   Ⓞ : Open

1. Open the engine hood.
2. Close the cock (2).
3. Loosen the ring (3), then remove the case (4) and element (5) and clean them.
4. Inspect the O-ring, and if there are any scratches or other irregularities, replace it.
5. Assemble the case (4) and element (5) and tighten the ring (3).
6. Open the cock (2) and bleed the air.  
(See below.)
7. Start the engine and inspect for fuel leakage.

### Bleeding the air from the fuel system

Refer to page 143 "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.

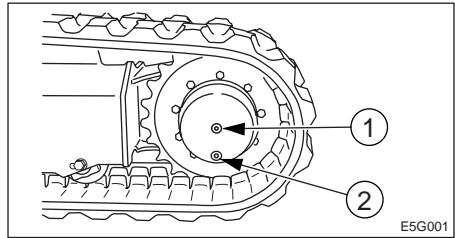


## Replacing the Travel Motor Gear Oil

### 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 (2) is at the very bottom.
2. Place a pan for catching the spent oil under plug (2).
3. Remove plugs (1) and (2) and drain the oil.
4. Tighten plug (2).
5. Add oil through of the hole in plug (1) until oil flows out of the hole.
6. Tighten plug (1).





## Replacing the Engine Oil and Oil Filter

Refer to page 111 “Replacing the Engine Oil and Oil Filter”.

## Inspecting and Adjusting the Fan Belt

Refer to page 112 “Inspecting and Adjusting the Fan Belt”.

## Cleaning the Air Cleaner

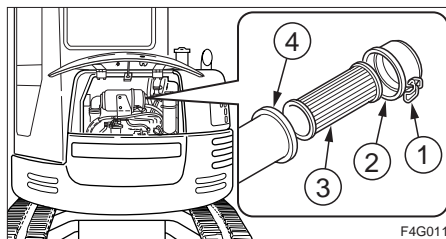
### WARNING

- 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.

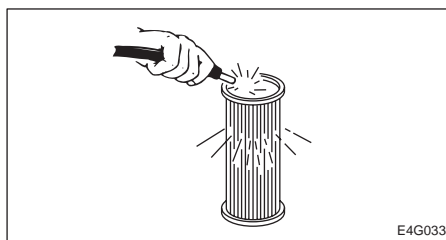
**IMPORTANT:** Be careful not to scratch the element. Do not use an element if it is damaged.

**Supplement:** Do not remove and clean the inner element (option). Replace the inner element every 1000 hrs. or after every 3 cleaning of the outer element. (whichever comes first)

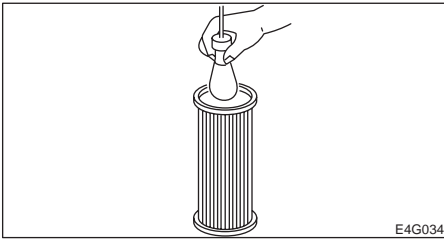
1. Open the engine hood.



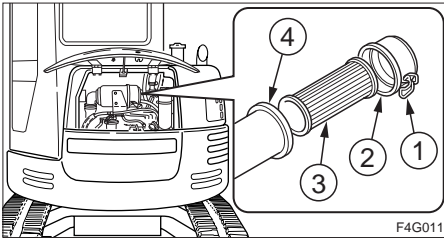
2. Loosen the clamp (1) and remove the dust cup (2).
3. Clean the inside of the dust cup (2).
4. Remove the element (3).
5. Cover the intake hole at the back of the body (4) with cloth or tape to prevent dirt from getting in.
6. Clean the inside of the body (4).



7. Clean the element (3) with dried compressed air {686 kPa (99.5 psi) or less}.  
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.



8. Light up the inside of the element (3) with a bulb, inspect it, and replace it if there are small holes or thin spots.
9. Remove the cloth or tape applied in step 5.



10. Install the element (3).
11. Install the dust cup (2) with the "TOP" mark at the top, then fasten it with the clamp (1).



### Replacing the Hydraulic Oil Return Filter

Refer to page 110 "Replacing the Hydraulic Oil Return Filter".

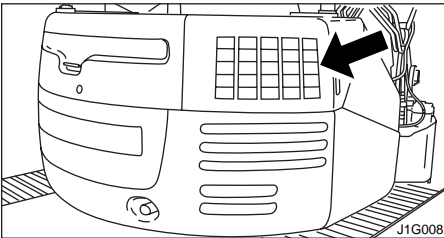
### Cleaning the Radiator and Oil Cooler Fins

#### 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:** To prevent damaging the fins with the compressed air, do not hold the nozzle close to the fins. Also, do not spray highly pressurized water directly at the fins.

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

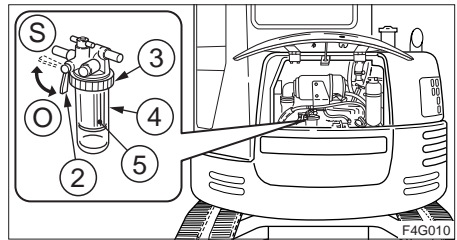


1. Blow compressed air on the radiator and oil cooler fins to remove mud and dirt stuck on them.

### 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.



Ⓢ : Closed    Ⓞ : Open

1. Open the engine hood.
2. Close the cock (2).
3. Loosen the ring (3), then remove the case (4) and element (5).
4. Clean the case (4).
5. Assemble the new element in the case (4), then tighten the ring (3).
6. Open the cock (2) and bleed the air.

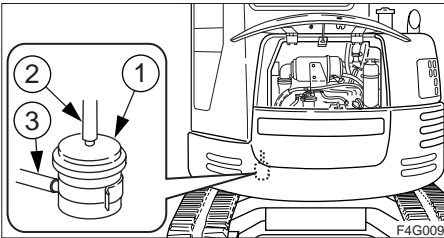
Refer to page 143 "Bleeding the Air from the Fuel System".



## Replacing the Fuel Filter Cartridge

### 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 engine hood.
2. Place a fuel pan under filter (1).
3. Detach fuel hoses (2) and (3) from the fuel filter cartridge (1).
4. Detach the fuel filter cartridge (1) from the clamp.
5. Mount a new the fuel filter cartridge on the clamp.
6. Connect fuel hoses (2) and (3) to the fuel filter cartridge.
7. Bleed the air.  
Refer to page 143 “Bleeding the Air from the Fuel System”.

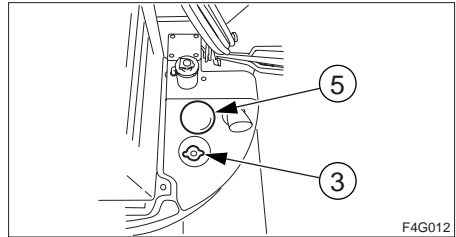


## Cleaning the Engine Cooling System

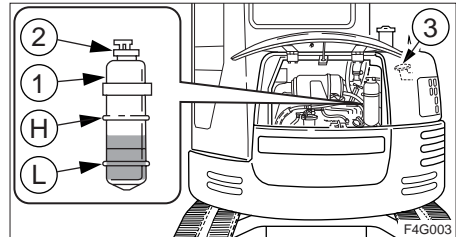
### ⚠ WARNING

- 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 2-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.

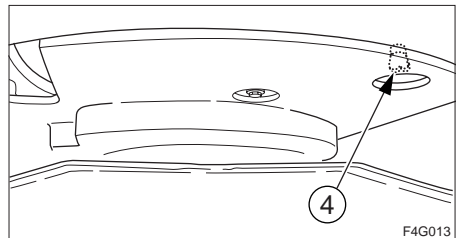
1. Open the engine hood.



2. Remove the cover (5) on the radiator cap (3).



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



4. Place a pan for catching the spent coolant under the drain plug (4), then loosen the drain plug (4) and drain the coolant.
5. Tighten the drain plug (4), then add a little cleaning agent and tap water to the radiator until it is full. Take your time doing this. Follow the manufacturer's instructions when using the cleaning agent.



6. Run the engine at a low idle for about 30 minutes. For the first 5 minutes after starting it, pay attention to the level of the cleaning fluid, and add tap water if the level drops.
7. Stop the engine and drain the cleaning fluid.
8. Tighten the drain plug (4), add tap water, run the engine at a low idle for about 10 minutes, then stop the engine and drain the water.  
Clean repeatedly until the drained water is clear.
9. After cleaning is completed, tighten the drain plug (4) and add new coolant up to the specified level.
10. Run the engine at a low idle, bleed the air, then stop the engine once the coolant level stabilizes at the specified level.
11. Check the coolant level, then tighten the radiator cap (3).
12. Clean the inside of the reserve tank (1), then add coolant up to the upper limit (H).

## Replacing the Air Cleaner Element

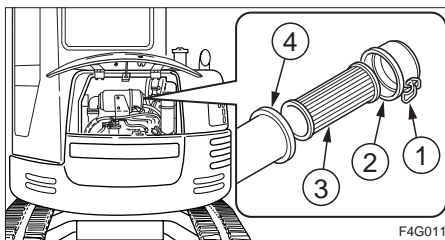
### WARNING

**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 engine hood.



2. Loosen the clamp (1) and remove the dust cup (2).
3. Clean the inside of the dust cup (2).
4. Remove the element (3).
5. Cover the intake hole at the back of the body (4) with cloth or tape to prevent dirt from getting in.
6. Clean the inside of the body (4).
7. Remove the cloth or tape applied in step 5.
8. Install the new element.
9. Install the dust cup (2) with the "TOP" mark at the top, then fasten it with the clamp (1).

**Replacing the Travel Motor Gear Oil**

Refer to page 118 "Replacing the Travel Motor Gear Oil".

**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.

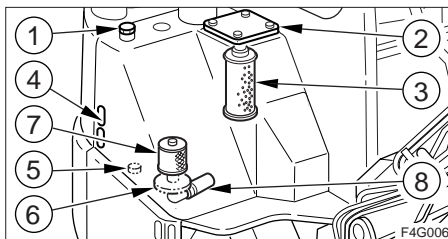


## Replacing the Hydraulic Oil and Cleaning the Suction Strainer

### 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.
- Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.
  - Gradually loosen the vent plug 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 107 “Inspecting the Hydraulic Oil Level and Replenishing”.



2. Slowly turn the vent plug (1) to relieve tank pressure, then remove.
3. Loosen the bolts and remove the cover (2).
4. Remove the return filter (3).
5. Place a pan for catching the spent oil under the drain plug (5).  
Loosen the drain plug (5) and drain the hydraulic oil.
6. Loosen the hose clip and remove the hose (8).
7. Loosen the bolts, and remove the flange (6).
8. Remove the suction strainer (7) and clean it.
9. Clean the inside of the hydraulic tank.
10. Install the new return filter and suction strainer (7).
11. Install the cover (2) and the flange (6).
12. Install the hose (8) to the flange (6).
13. Tighten the drain plug (5).
14. Insert hydraulic oil through the hole in the vent plug (1), adding hydraulic oil to between the upper limit (H) and lower limit (L) of the sight gauge (4).
15. Follow the procedure next page “Bleeding the air” to bleed the air from the hydraulic oil circuit.
16. 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 107 “Inspecting the Hydraulic Oil Level and Replenishing”.
17. Pressurize the hydraulic tank.  
Refer to page 108 “Pressurizing the hydraulic tank”.





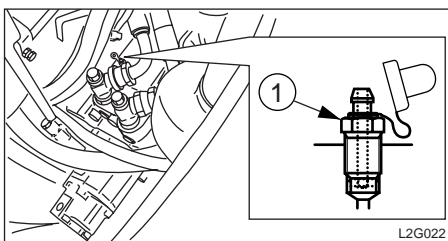
## Bleeding the air

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

### • Hydraulic pump

1. Tilt up the platform.

Refer to page 134 "Tilting Up the Platform".



2. Loosen the hydraulic pump's air bleeding plug (1).
3. Once hydraulic oil overflows from the hole in the air bleeding plug (1), tighten the plug.
4. Lower the platform.

### • Cylinders

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

## 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.



## 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.

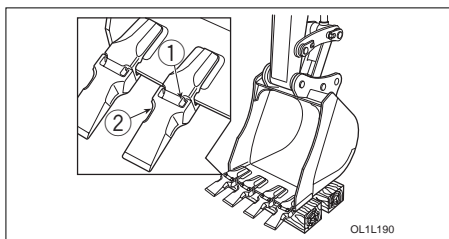
### WARNING

- 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

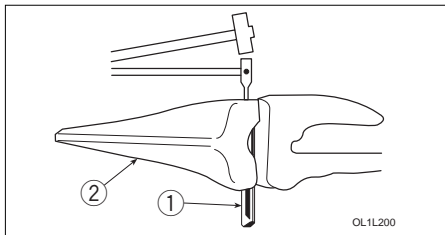
##### Removal

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

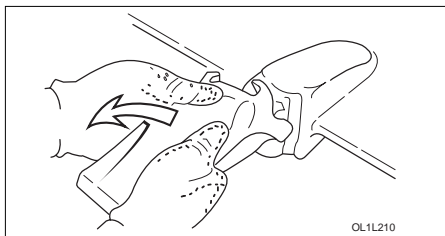


2. Set the bottom surface of the bucket flat and lower it on a block so that the locking pin (1) can be knocked out.

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



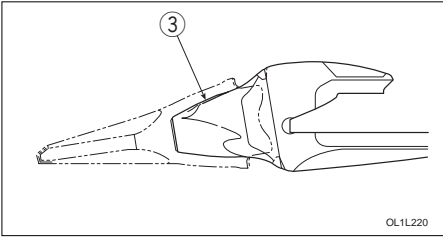
4. Place a rod against the locking pin (1) and knock the locking pin out by hammering against the rod. The rod should be round and thinner than the locking pin.



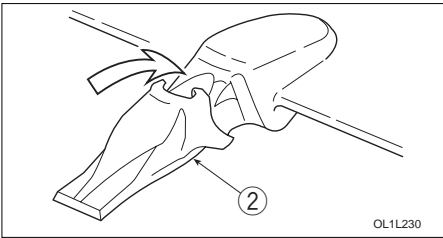
5. Remove the tooth point (2). Some tooth points (2) are of the type that are removed by turning (twisting) them counterclockwise. The same procedure can be used to remove the other tooth points.



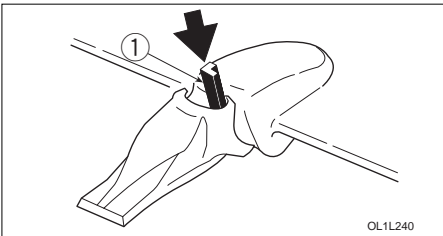
### Installation



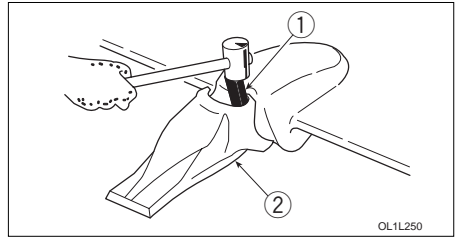
1. Clean the adapter nose (3).  
If there is gravel or mud on the adapter nose, the tooth point will not go in all the way and the pin cannot be driven in.



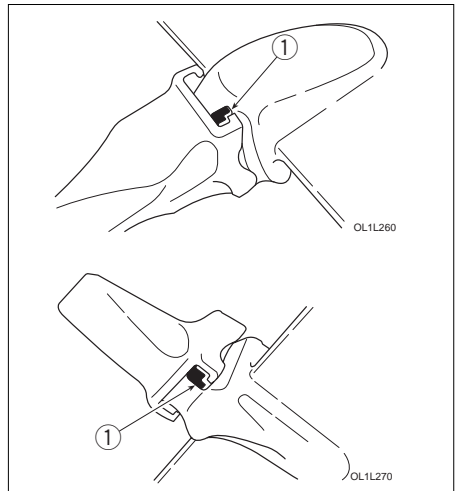
2. Put the tooth point (2) in the adapter nose (3).  
Push in firmly until the tooth point (2) touches the tip of the adapter nose (3).  
Some tooth points (2) are of the type that are installed by turning (twisting) them clockwise.



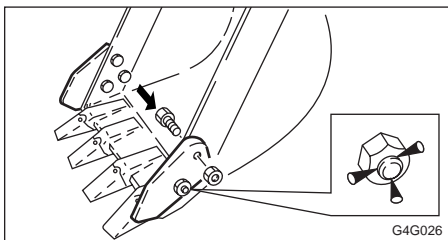
3. Insert the locking pin (1), making sure it is in the right direction.



4. Drive in the locking pin (1) with a hammer until it is flush with the tip of the tooth point (2) ear.



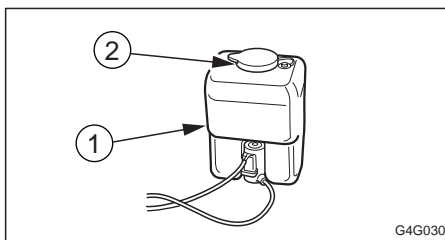
5. The locking pin (1) is now driven in.  
The same procedure can be used to install the other tooth points.

**• 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.

**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. 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).

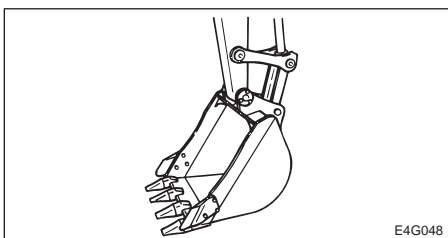


## Replacing the Bucket

### 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 2-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.

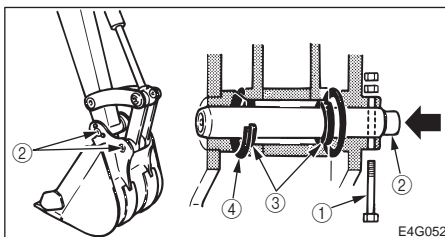
### Removal



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

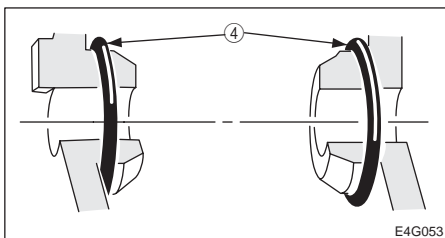
**Supplement:** When removing pins, set the bucket so that it is just gently against the ground. If it is strongly against the ground, the resistance will be great and it will be difficult to remove the pin.

2. Set the safety lock lever to the locked position and stop the engine.
3. Remove the bolt (1).

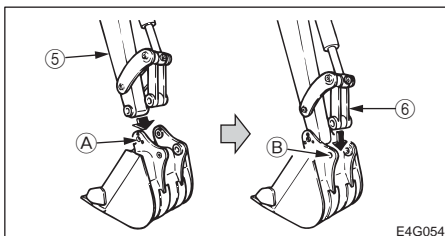


4. Hammer pin (2) out of the bucket.
5. Remove the bucket.
  - Inspect the pin seal (3) and replace it if it is deformed or damaged. (See next page.)

### Installation



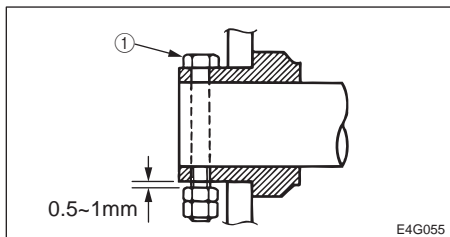
1. Set the bucket's O-ring (4) as shown on the diagram.



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

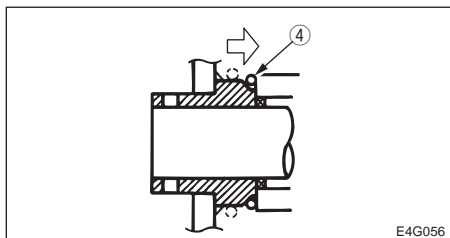


3. Operate the cylinder, line up pin hole (B) in the bucket with the pin hole in the link arm (6), and install the pin (2).



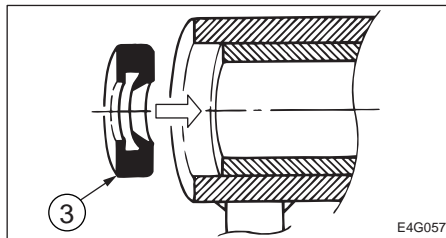
4. Line up the turn prevention holes, install the bolt (1), and the nuts.

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. 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.



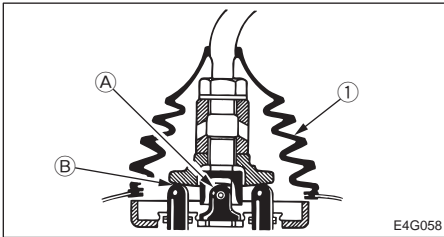
## Lubricating the Levers

### **⚠ 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.



### Tilting Up the Platform

For inspection and maintenance, the platform is designed so that it can be tilted up.

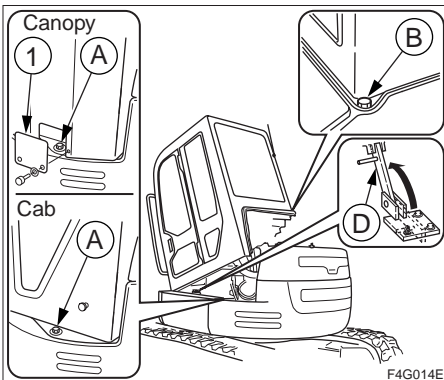
#### **⚠ WARNING**

- Raising or lowering the platform while the engine is running may cause the machine to move, and cause serious injury or death. Stop the engine before raising or lowering the platform.
- When the platform is tilted up, support it firmly with the stopper to prevent it from falling.

**IMPORTANT:** Lower the working equipment to the ground before raising the platform. If not avoided, could result in the boom from touching the cab.

#### Raising (Tilt up)

1. Select a firm, level surface, lower the working equipment to the ground, and stop the engine.
2. Set the safety lock lever to the lock position.



3. Loosen the bolts, and remove the cover (1). (Canopy)
4. Remove the lock bolts (A) and (B).

5. Slowly raise the platform. (Tilt up : 30°)
  6. Lift stopper (D) and insert it into the platform's holder.
- If you need to run the engine while the platform is raised follow these steps.
7. Make sure that all levers and pedal are in neutral positions.
  8. Push the throttle lever to the low idling position.
  9. Start the engine.
  10. Be sure to stop the engine after inspection and maintenance.

#### Lowering

1. Remove the stopper (D), and set back to the original position.
2. Lower the platform.
3. Tighten the lock bolts (A) and (B).
4. Install the cover (1). (Canopy)





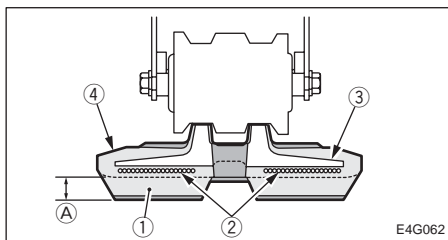
### Inspecting the Rubber Crawlers

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

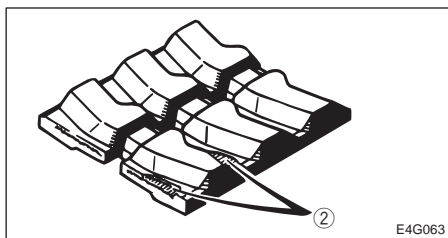
Replace the crawler if the entire crawler is stretched and cannot be adjusted.

#### (1) Rug



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

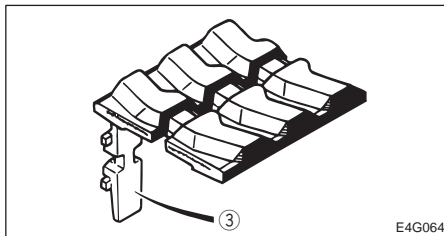
#### (2) Steel cord



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

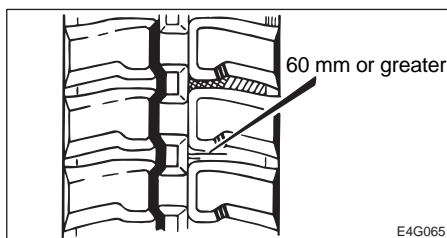
Replace if half or more of the steel cords on one side are cut.

#### (3) Metal core



Replace if even one metal core is off.

#### (4) Rubber



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

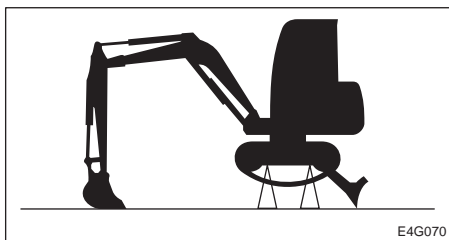
### WARNING

- 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 2-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.

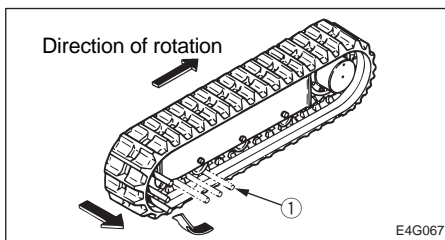
### Removal

1. Fully release the tension of the rubber crawler.

Refer to page 113 "Inspecting and Adjusting the Crawler Tension".



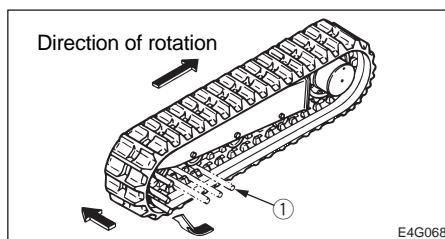
2. Use the working equipment to lift the body.



3. Set an iron pipe (1) in the rubber crawler and turn the sprocket slowly in the reverse direction.
4. Turn until the iron pipe (1) is directly next to the idler and the rubber crawler lifts away from the idler, then stop turning the sprocket.
5. Slide the rubber crawler sideways and remove it from the crawler frame. Remove the other rubber crawler using the same procedure.

### Installation

1. Use the working equipment to lift the body.



2. Set the rubber crawler on the sprocket.
3. Set an iron pipe (1) in the rubber crawler and turn the sprocket slowly in the reverse direction.
4. Turn until the iron pipe (1) is directly next to the idler and the rubber crawler lifts away from the idler, then stop turning the sprocket.
5. Slide the rubber crawler inward, engage it on the idler, then pull out the iron pipe.



6. Check that the rubber crawler is securely engaged on the sprocket and idler.

7. Tighten the rubber crawler to the standard tension.

Refer to page 113 “Inspecting and Adjusting the Crawler Tension”.

8. Install the other rubber crawler using the same procedure.

**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 123 "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**

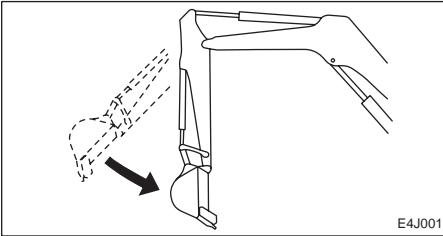
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<b>Symptoms that are not Malfunctions .....</b>	<b>140</b>
<b>If the Engine Overheats .....</b>	<b>141</b>
<b>If the Battery Goes Dead .....</b>	<b>142</b>
<b>After the Fuel Runs Out .....</b>	<b>143</b>
<b>If a Fuse Blows .....</b>	<b>144</b>
<b>If a Warning Lamp Flashes .....</b>	<b>145</b>
<b>Other Symptoms .....</b>	<b>146</b>
<b>To Lower the Boom .....</b>	<b>148</b>

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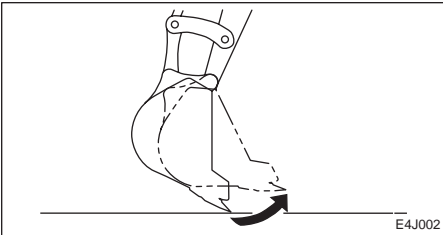


The following symptoms are not malfunctions:



E4J001

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



E4J002

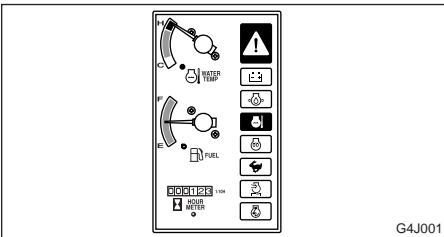
- When the bucket teeth reach the horizontal position while the engine is running at low speed, the speed of bucket movement slows down momentarily.
- The slew motor produces noise at the beginning and end of the slewing operation.
- The travel motor produces noise when stopped suddenly during high speed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



## **⚠ 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.
- 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. With the engine hood closed, inspect whether steam is coming from the engine room.

3. If there is steam, stop the engine immediately and contact a Takeuchi sales or service outlet for repairs.  
If there is no steam, 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 112.
  - Coolant level ..... Add.  
Refer to page 105.
  - Water leakage ..... Repair.
  - Radiator fins ..... Clean.  
Refer to page 121.
  - Sediment in cooling system ..... Clean.  
Refer to page 123.

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



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.

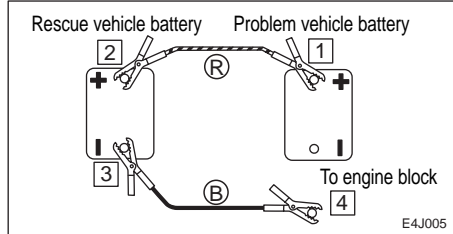
**IMPORTANT:** Use jumper cables and clips of a size suited to the battery's capacity. Do not use damaged or corroded jumper cables and clips.

**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.

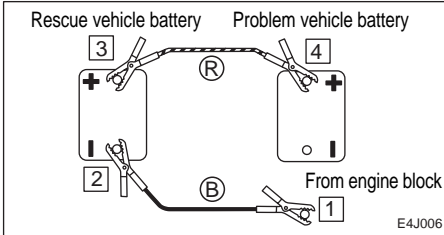
### Starting the engine

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.



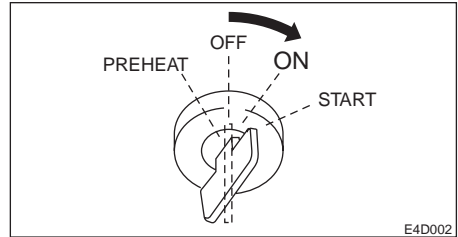
1. Disconnect the clip of jumper cable (B) from the problem vehicle's engine block.
2. Disconnect the other clip of jumper cable (B) from the rescue vehicle's "-" terminal.
3. Disconnect the clip of jumper cable (R) from the rescue vehicle's "+" terminal.
4. Disconnect the other clip of jumper cable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



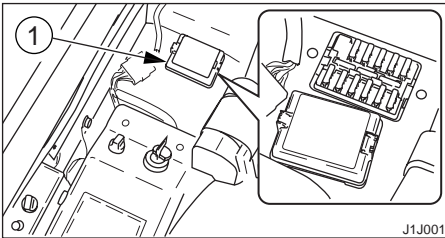
If a light does not turn on or the electric system does not operate, a fuse may be blown. Inspect the fuses.

### Inspecting and Replacing the Fuse

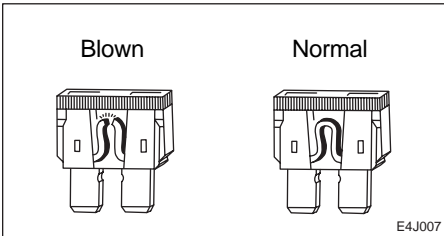
#### **WARNING**

**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.

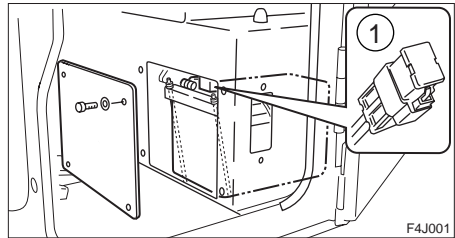


4. If a fuse is blown, replace it with a spare fuse of the same capacity.

### Fuse Layout and Circuits Protected

Capacity	Protected circuit	Capacity	Protected circuit
20A	Decel.(B)		
30A		15A	Solenoid A, B
10A	High speed travel	20A	Light
10A	Instrument cluster Feed pump	20A	Decel.(ACC) Safety lock lever
15A	Heater Radio	15A	Reserve
20A	Wiper Cigar lighter	30A	Stop solenoid

### Inspecting the Fusible Link




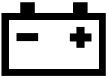



If the power is not switched on after turning the starter switch to the ON position, the cartridge type fusible link (1) might be blown open. Open the cover located at below of the left operating lever and inspect. If the fusible link is blown, please contact your dealer.

**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	<b>Engine emergency lamp</b>	<p>A problem has occurred in the engine lubrication system or the coolant water temperature has risen irregularly.</p> <ul style="list-style-type: none"> <li>• When there is a problem in the engine lubrication system, the engine oil pressure warning lamp flashes simultaneously.</li> <li>• When the coolant water temperature has risen irregularly, the coolant temperature warning lamp flashes simultaneously.</li> </ul> <p>For the procedures, refer to the respective warning lamps below.</p>
 OSOB070	<b>Engine oil pressure warning lamp</b>	<p>Inspect the engine oil level. If the lamp is flashing even though the level is normal or if it continues flashing after oil is added, consult a Takeuchi sales or service outlet. Refer to page 106 "Inspecting and Replenishing the Engine Oil".</p>
 C4B012	<b>Coolant temperature warning lamp</b>	<p>The coolant temperature has risen irregularly and the engine is overheating. Refer to page 141 "If the Engine Overheats".</p>
 OSOB080	<b>Battery charge warning lamp</b>	<p>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 112 "Inspecting and Adjusting the Fan Belt".</p>
 G4B010	<b>Air cleaner warning lamp</b>	<p>The air cleaner filter is clogged. Refer to page 119 "Cleaning the Air Cleaner".</p>



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.

<b>Symptom</b>	<b>Main cause</b>	<b>Procedure</b>
Left and right operating levers do not move smoothly	<ul style="list-style-type: none"><li>● Insufficient grease on left and right operating levers</li></ul>	<ul style="list-style-type: none"><li>● Add grease. Refer to page 133.</li></ul>
Travel levers do not move smoothly	<ul style="list-style-type: none"><li>● Insufficient grease on travel levers</li><li>● Stretched wire</li></ul>	<ul style="list-style-type: none"><li>● Add grease. Refer to page 133.</li><li>● Adjust or replace. (Request at a sales or service outlet.)</li></ul>
Hoe attachment, auxiliary hydraulics, slewing or traveling operation not possible	<ul style="list-style-type: none"><li>● Safety lock lever is locked</li><li>● Fuse is blown</li><li>● Faulty travel lock adjustment</li></ul>	<ul style="list-style-type: none"><li>● Release the safety lock lever. Refer to page 50.</li><li>● Replace the fuse. Refer to page 144.</li><li>● Adjustment. (Request at a sales or service outlet.)</li></ul>
Digging force is insufficient	<ul style="list-style-type: none"><li>● Insufficient hydraulic oil level</li><li>● Hydraulic oil is not heated</li><li>● Air cleaner is clogged</li><li>● Hydraulic oil is not of suitable type</li></ul>	<ul style="list-style-type: none"><li>● Replenish to the prescribed level. Refer to page 107.</li><li>● Perform the warm-up procedure. Refer to page 68.</li><li>● Clean the air cleaner. Refer to page 119.</li><li>● Replace the hydraulic oil. Refer to page 126.</li></ul>
Traveling is not possible or not smooth	<ul style="list-style-type: none"><li>● Stones or foreign objects are stuck</li></ul>	<ul style="list-style-type: none"><li>● Remove the foreign object.</li></ul>
Machine does not travel straight forward	<ul style="list-style-type: none"><li>● Stones or foreign objects are stuck</li><li>● Faulty crawler tension adjustment</li></ul>	<ul style="list-style-type: none"><li>● Remove the foreign object.</li><li>● Adjust the crawler to the prescribed tension Refer to page 113.</li></ul>
Travel speed cannot be changed	<ul style="list-style-type: none"><li>● Fuse is blown</li></ul>	<ul style="list-style-type: none"><li>● Replace the fuse. Refer to page 144.</li></ul>



<b>Symptom</b>	<b>Main cause</b>	<b>Procedure</b>
Slewing is not possible or not smooth	<ul style="list-style-type: none"><li>● Insufficient grease on slew bearing</li></ul>	<ul style="list-style-type: none"><li>● Add grease. Refer to page 114.</li></ul>
Hydraulic oil temperature is too high	<ul style="list-style-type: none"><li>● Insufficient hydraulic oil</li></ul>	<ul style="list-style-type: none"><li>● Replenish to the prescribed level. Refer to page 107.</li></ul>
Starter motor turns but engine does not start	<ul style="list-style-type: none"><li>● Insufficient fuel</li><li>● Air in fuel system</li><li>● Water in fuel system</li></ul>	<ul style="list-style-type: none"><li>● Add fuel. Refer to page 107.</li><li>● Bleed the air. Refer to page 143.</li><li>● Drain the water. Refer to page 116.</li></ul>
Crawlers slip off	<ul style="list-style-type: none"><li>● Crawlers are too loose</li></ul>	<ul style="list-style-type: none"><li>● Adjust the tension. Refer to page 113.</li></ul>
Engine exhaust is white or bluish	<ul style="list-style-type: none"><li>● Excessive engine oil</li><li>● Insufficient fuel</li></ul>	<ul style="list-style-type: none"><li>● Adjust to the prescribed level. Refer to page 106.</li><li>● Replace the fuel.</li></ul>
Engine exhaust is occasionally black	<ul style="list-style-type: none"><li>● Air cleaner is clogged</li></ul>	<ul style="list-style-type: none"><li>● Clean the air cleaner. Refer to page 119.</li></ul>
Irregular noise is produced from the engine (combustion or mechanical noise)	<ul style="list-style-type: none"><li>● Low quality fuel is being used</li><li>● Engine is overheating</li><li>● Damage in muffler</li></ul>	<ul style="list-style-type: none"><li>● Replace the fuel.</li><li>● If the Engine Overheats Refer to page 141.</li><li>● Replace the muffler. (Request at a sales or service outlet.)</li></ul>



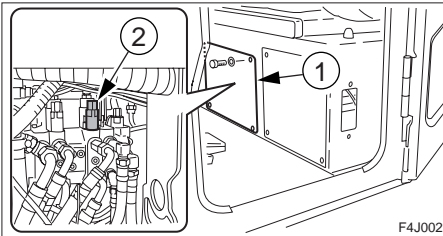
If the hoe attachment must be lowered to the ground while the engine is stopped, use the following procedure to do so.

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

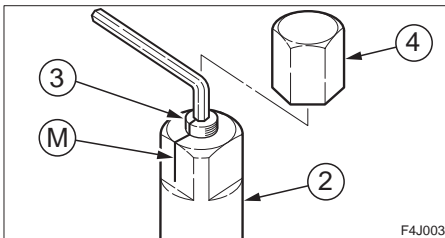
### Procedure

#### **WARNING**

- **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. Remove the lock nut (4).
3. Put mark (M) on the plug of the port relief valve (2) and set screw (3).

4. Turn the set screw (3) slowly 2 turns to lower the boom.
5. Check for safety and machine stability.
6. Turn the set screw (3) back to its original position.
7. Tighten the lock nut (4).  
Tightening torque: 24.5 N·m (18.1 ft·lb.)
8. Reinstall the cover (1).



# SPECIFICATIONS

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<b>Main Specifications .....</b>	<b>150</b>
<b>Machine Dimensions .....</b>	<b>152</b>
<b>Operating Range .....</b>	<b>154</b>
<b>Lifting Capacities .....</b>	<b>157</b>

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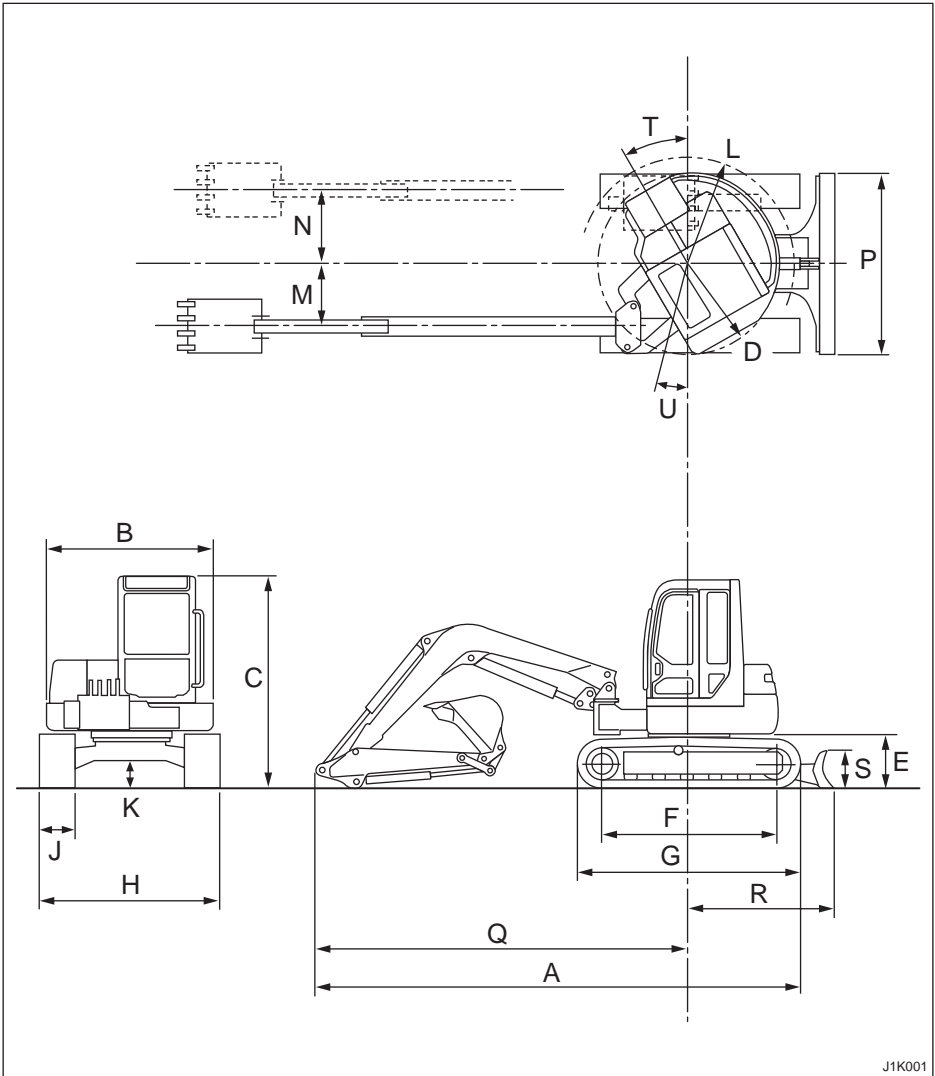
# Main Specifications

TYPE		CANOPY	CAB
<b>MASS</b>			
Machine mass kg (lb.) (not including operator)	Rubber crawlers	3010 (6640)	3095 (6820)
	Steel crawlers	–	–
<b>PERFORMANCE</b>			
Bucket capacity m <sup>3</sup> (cu.ft.) (standard bucket)	Heaped		0.068 (2.4)
	Struck		0.051 (1.8)
Slew speed min <sup>-1</sup> (rpm)		9.6 (9.6)	
Travel speed km/h (mph)	Rubber crawlers	1st	2.3 (1.43)
		2nd	4.1 (2.55)
	Steel crawlers	1st	–
		2nd	–
Gradeability (degrees)		30	
Ground pressure kPa (psi)	Rubber crawlers	29.6 (4.3)	30.4 (4.41)
	Steel crawlers	–	–
Noise level dB(A)	Sound-power level	–	L <sub>WA</sub> 94
	Sound-pressure level	–	L <sub>pA</sub> 83
<b>ENGINE</b>			
Manufacturer and model		Yanmar 3TNE82A-TB	
Rated output	kW / min <sup>-1</sup> (hp / rpm)	16.8 / 2300 (22.5 / 2300)	
Displacement	ml (cu.in.)	1330 (81.2)	
Starter	V – kW	12 – 2.0	
Alternator	V – kW	12 – 0.48	
Battery	V – A·h	12 – 64	



**MEMO**

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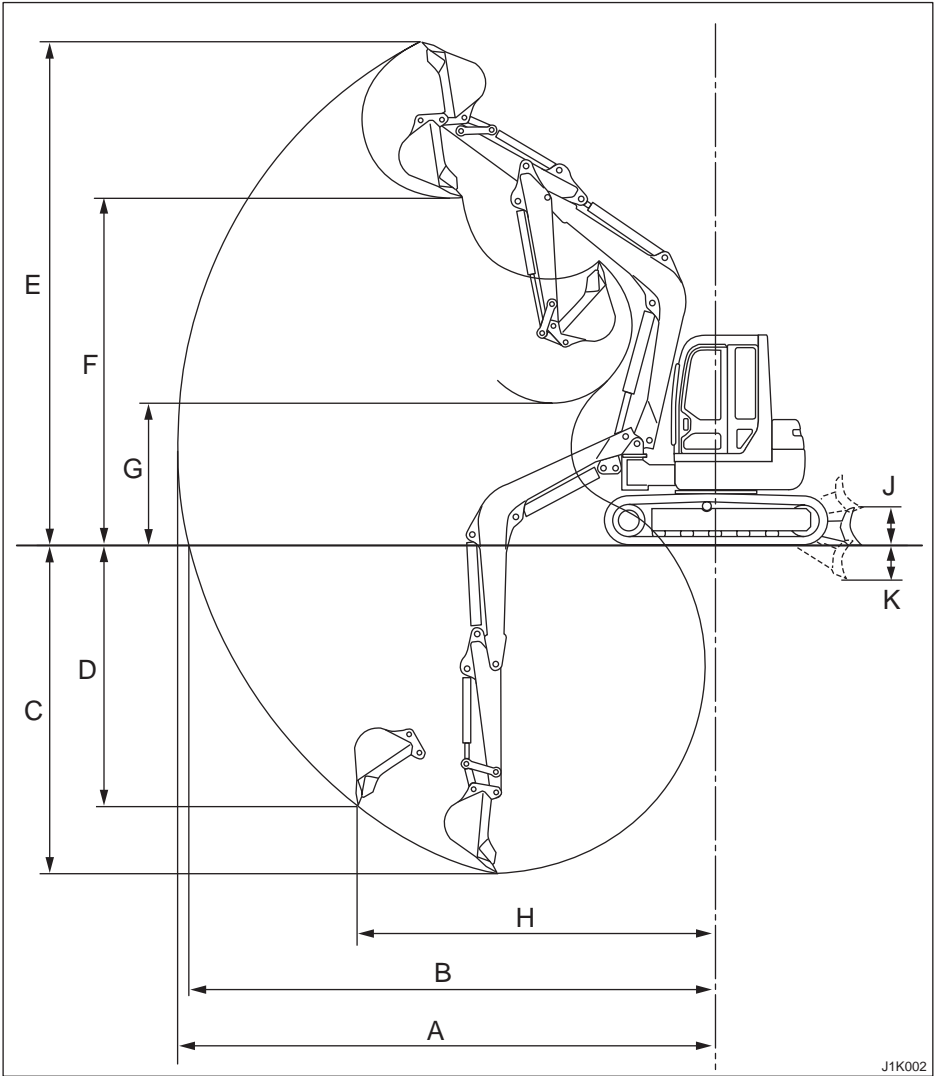


J1K001

**Machine Dimensions**

Units: mm (inches)

	<b>Canopy</b>	<b>Cab</b>
A	4250 (167.3)	←
B	1515 (59.6)	←
C	2550 (100.4)	2525 (99.4)
D	780 (30.7)	←
E	605 (23.7)	←
F	1545 (60.8)	←
G	2000 (78.8)	←
H	1560 (61.4)	←
J	300 (11.8)	←
K	300 (11.8)	←
L	1015 (39.9)	←
M	670 (26.3)	←
N	695 (27.3)	←
P	1560 (61.4)	←
Q	3245 (127.7)	←
R	1315 (51.8)	←
S	350 (13.8)	←
T	30°	←
U	15°	←



J1K002

**Operating Range**

Units: mm (inches)

	<b>Item</b>	<b>Canopy</b>	<b>Cab</b>
A	Max. digging radius	4760 (187.4)	←
B	Max. ground digging radius	4630 (182.2)	←
C	Max. digging depth	2575 (101.4)	←
D	Max. vertical digging depth	2150 (84.6)	←
E	Max. digging height	4700 (185.1)	←
F	Max. dumping height	3380 (133.1)	←
G	Min. dumping height	1440 (56.7)	←
H	Max. vertical digging radius	3129 (123.2)	←
J	Max. raising height	335 (13.1) / 320 (12.7)*	←
K	Max. lowering depth	280 (11.0) / 285 (11.3)*	←

\* Serial No. 12820076~

# MEMO

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**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.)

**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.

** 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.**
-

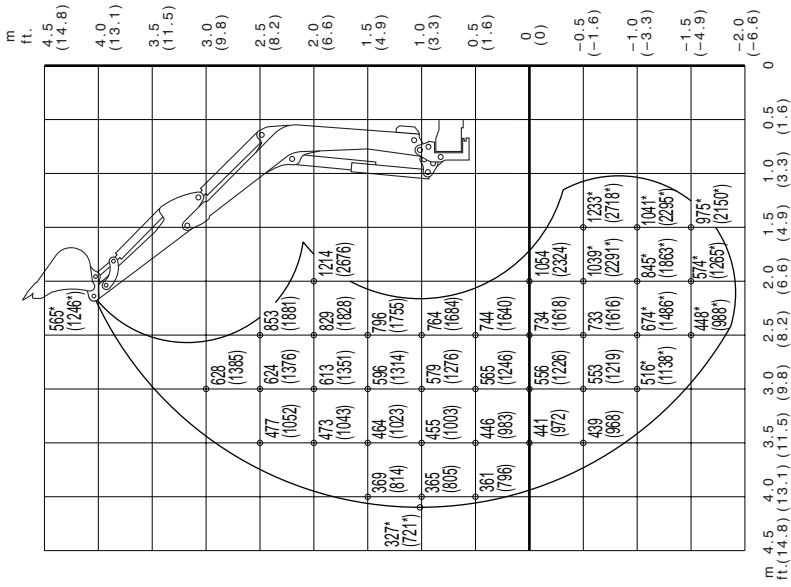


SPECIFICATIONS

Lifting Capacities

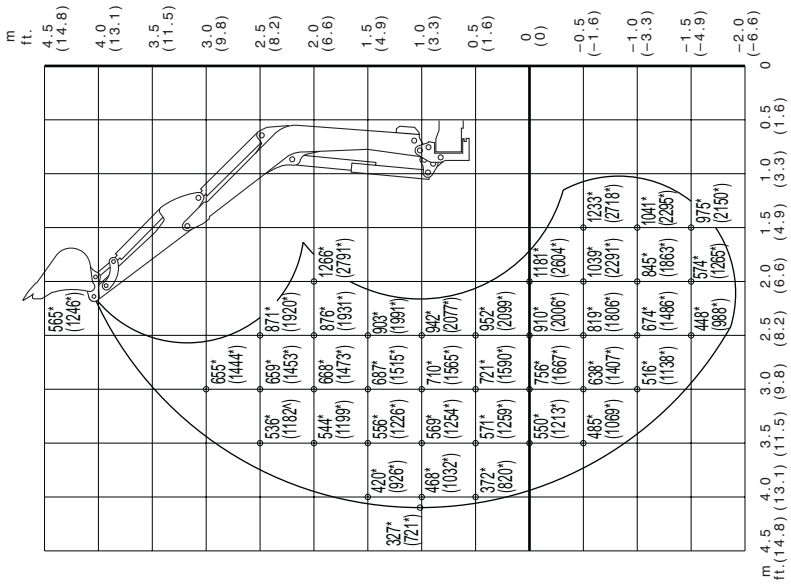
Equipped with Standard Arm

Over Front ; Dozer Blade Up



Units : kg (lbs.)

Over Front ; Dozer Blade Down



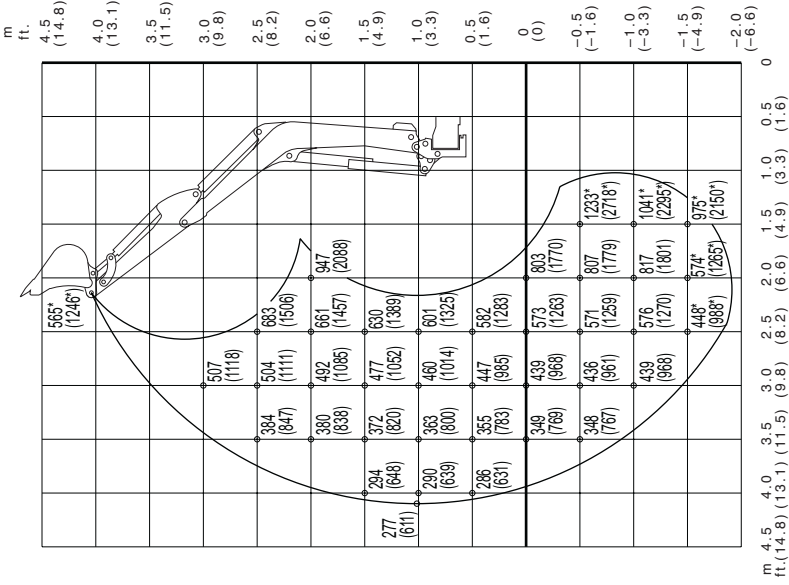
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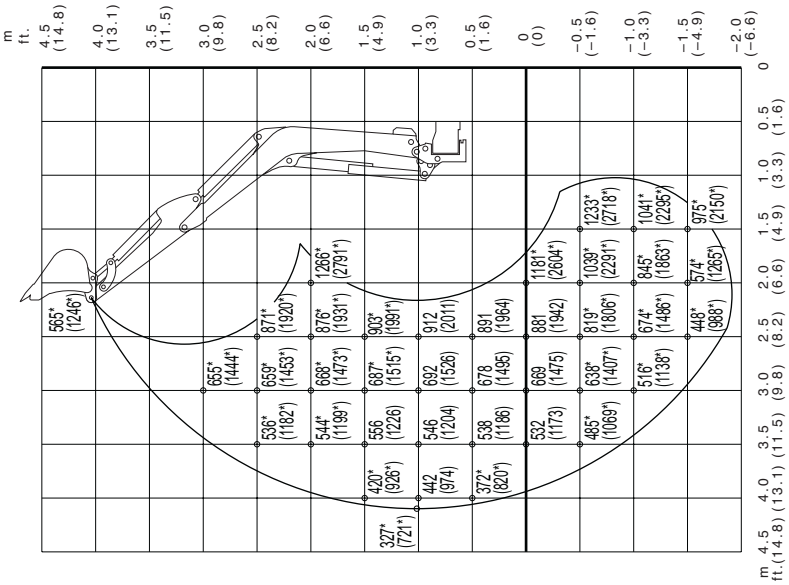
**Equipped with Standard Arm**

**Over Side**



Units : kg (lbs.)

**Over Rear**







## OPTIONS

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### Precautions on Safety

- 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.

### **WARNING**

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

- **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.



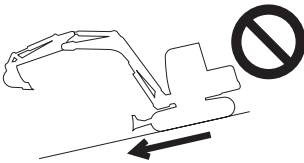
## Precautions on Operating Attachments

### WARNING

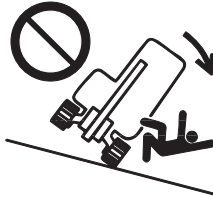
Long attachments reduce machine stability. When traveling down steep slopes or slewing on slopes, the machine may lose its balance and tip over.

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

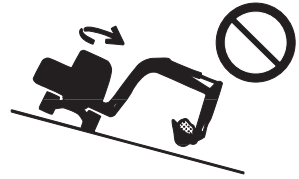
- Traveling down slopes with the attachment lifted
- Traveling across slopes
- Slewing on slopes



OE3A253



OE3A271



OE3A331

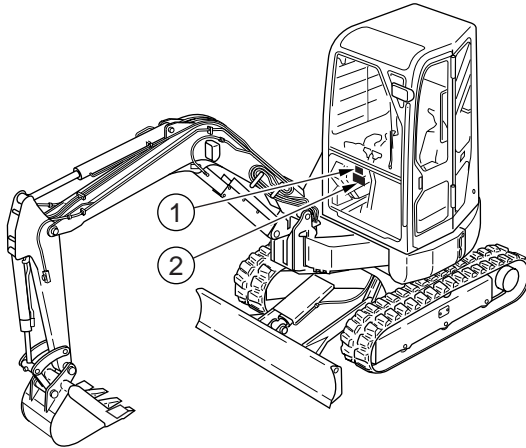
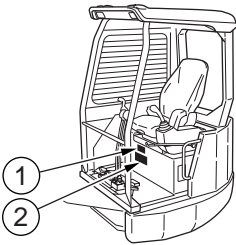
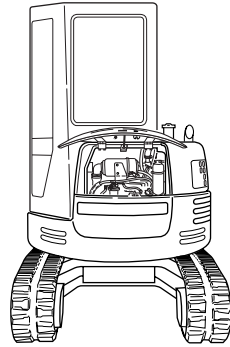
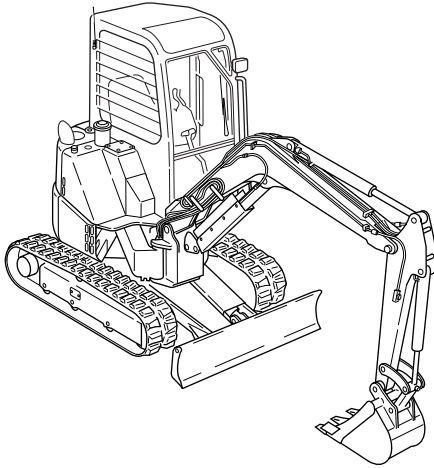
- When heavy attachments are installed, the overslew (the distance from where the operation to stop slewing is performed until slewing stops completely) increases and mistakes in judgment may result in the attachment hitting surrounding objects. Allow for plenty of room between the attachment and obstacles. 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 than for machines equipped with the standard bucket. Do not operate such machines sideways, especially with the digging arm (boom) downhill.



Keep all safety signs clean and legible.

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

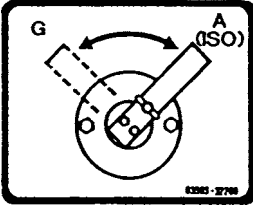
There are other safety signs in addition to the ones listed here. Treat them in the same way.



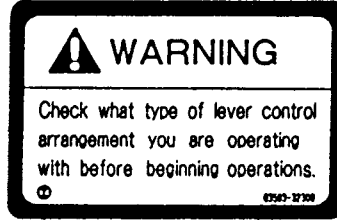
F4L001



1. No.03593-32200



2. No.03593-32300



# MEMO

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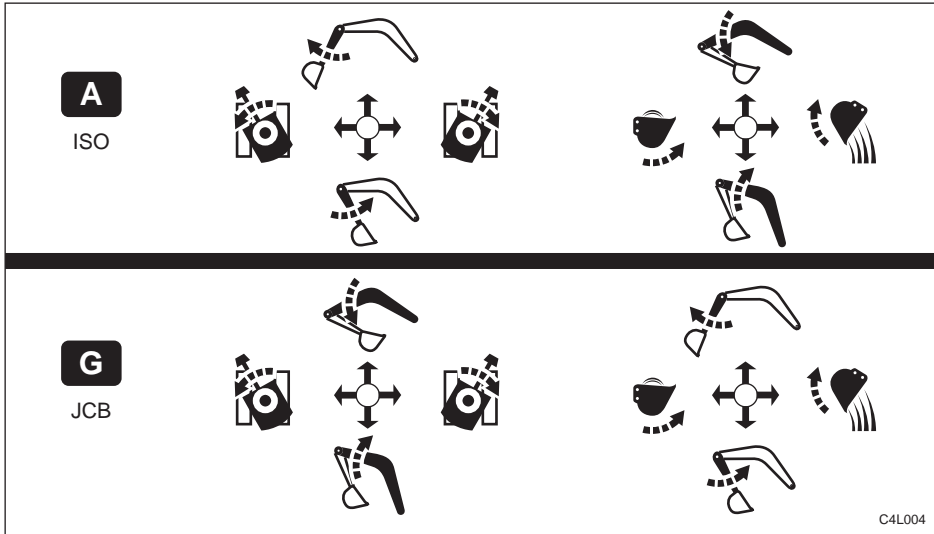


## Switching the Lever Pattern

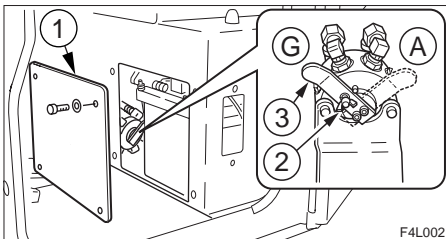
The operating pattern of the left and right operating levers can be changed.

### 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

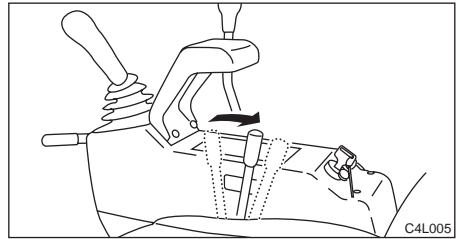
1. Park the machine in a safe place and turn off the engine.
2. Fully open the cab door and fix it in place.
3. Lift up the floor mat.
4. Open the cover (1).
5. Loosen the wing bolt (2).
6. Turn the selector valve lever (3) and switch the pattern.
7. Tighten the wing bolt (2) and fasten the lever (3)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



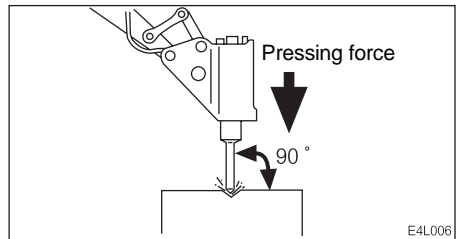
For handling of the breaker, read the hydraulic breaker's manual, provided separately.

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

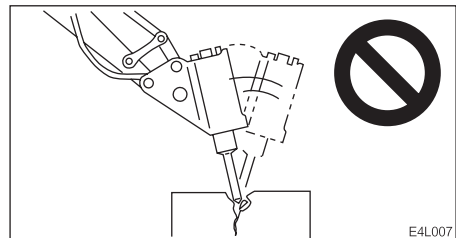
### Precautions on Operating



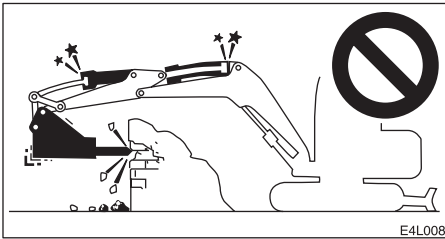
- Pull the throttle lever out by 3/4 stroke and run the engine with 75% the maximum output.



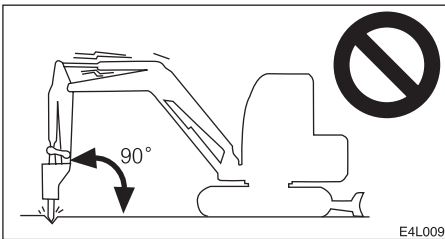
- Pound with the chisel perpendicular to the surface you are pounding.
- When pounding, press the chisel properly against the object to be broken so as to avoid pounding the air.



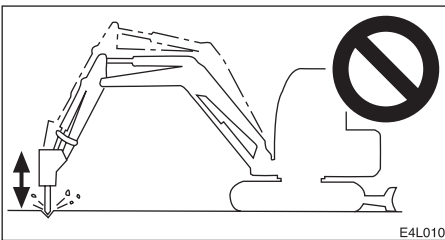
- Do not pry with the chisel, and do not pry while pounding.
- Do not move the chisel while pounding.
- Do not pound continuously for over 30 seconds on the same surface.



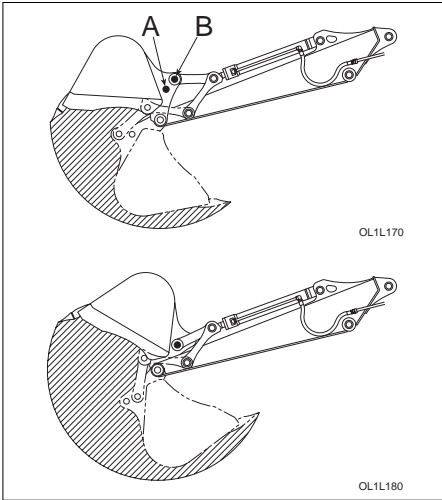
- Do not pound with the cylinder fully extended or contracted (at the stroke end). Leave a margin of at least 5 cm.



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



- 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.



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):  
0.075 m<sup>3</sup> (0.098 cu. yd.)
- Rated capacity (SAE):  
0.093 m<sup>3</sup> (0.121 cu. yd.)

### **Changing the Link Arm Installation Position**

Refer to page 131 "Replacing the Bucket" in the manual.

# MEMO

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## **OPERATOR'S MANUAL**

TB28FR Compact Excavator

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**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.