OPERATOR'S MANUAL

Original instructions

TB280FR

Serial No. 178500002~

Book No. AL9E010

OETB280FR_F-XK



HYDRAULIC EXCAVATOR

TAKEUCHI

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

SAFETY ALERT SYMBOL



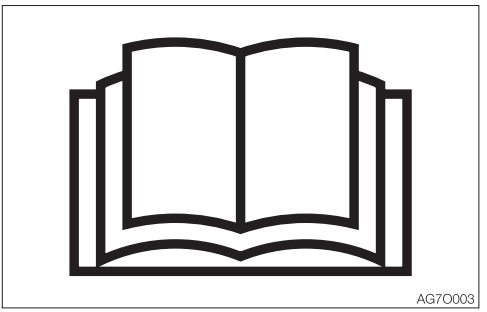
This symbol represents the safety alert. The message that follows the symbol contains important information about safety.
Read and understand the message to avoid personal injury or death.

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 contents of this manual.

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.

⚠ WARNING



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

Always store this manual near at hand preferably on the machine itself. If it should be lost or damaged, immediately order a new one from your Takeuchi dealer.
When transferring ownership of this machine, be sure to hand this manual to the next owner.

Takeuchi supplies machines complying with 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.

SIGNAL WORDS

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

⚠ DANGER

DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor moderate injury.

IMPORTANT: The word IMPORTANT is used to alert operators and maintenance personnel about situations which could result in 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

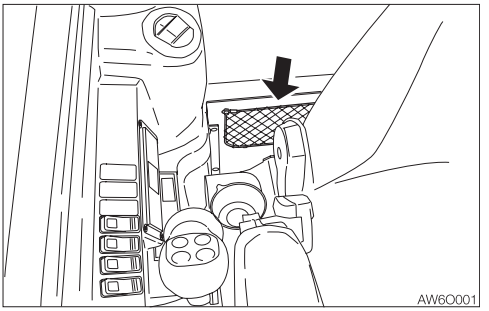
FOREWORD

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.

- Some details in this manual may differ from those provided in the machine you are using.
- Please note that the information and specifications in this manual are subject to change without prior notice.

MANUAL STORAGE COMPARTMENT

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

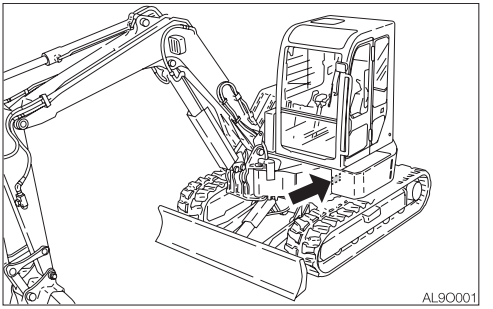


1. The storage place is located at the back of the seat.
2. After using the manual, place it in the plastic pouch and store it back in the manual storage compartment.

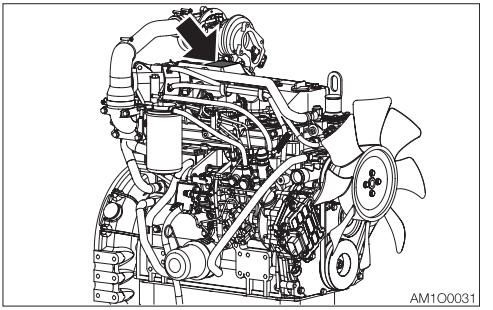
SERIAL NUMBERS

IMPORTANT: Do not remove the machine name plate with the serial number. Check the serial numbers of the machine and engine and write them down in the spaces below.

Machine number:

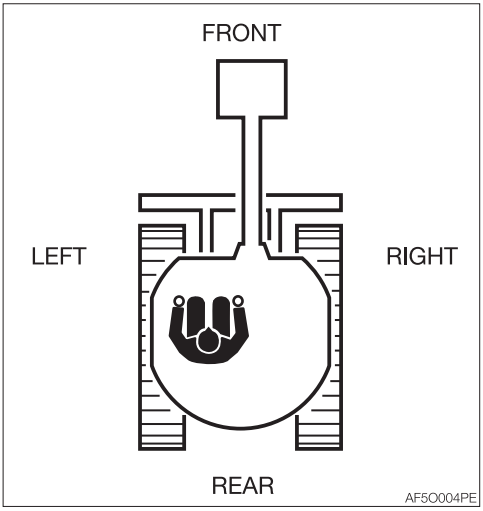


Engine number:



MACHINE DESCRIPTION

FRONT, REAR, LEFT AND RIGHT



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

DESIGNATED OPERATIONS

Use this machine primarily for the following operations:
- Excavation
- Digging ditches
- Digging side ditches
- Leveling
- Loading

FEATURES

- A unique adjustable offset boom system
- Short tail swing radius
- Tilting up the operator seat floor for easier maintenance
- Automatic travel shift-down system
- Short pitch rubber crawler
- Low engine noise and exhaust emissions
- Electronic control of auxiliary hydraulic circuit
- Automatic and manual operation for engine deceleration
- Slew motors are equipped with shockless valves
- Engine emergency stop system

BREAK-IN PERIOD

When the machine is new, operate the machine for the first 100 hours (as indicated on the hour meter) by following the instructions below.
Using a new machine without a break-in period will lead to quicker deterioration of machine performance and may shorten the machine's service life.
- Sufficiently warm up the engine and hydraulic oil.
- Avoid heavy loads and rapid operations. Operate with a load of about 80% the maximum load.
- Do not abruptly start up, accelerate, change directions, or stop unless necessary.

NOTES ON READING THIS MANUAL

Please note that the descriptions and diagrams included in this manual may not be applicable to your machine.
The numbers used in the illustration are with circles around them. The same numbers appear between the parentheses in the text.
(Example: ① → (1))

Symbols used in this manual
The symbols used in this manual have the following meanings.
⃠, ✕ ..... Prohibition
..... Lock
..... Unlock

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SAFETY



GENERAL PRECAUTIONS

It is your responsibility to observe all pertinent laws and regulations and to follow the manufacture'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.
Most accidents can be prevented by identifying the potentially hazardous situations beforehand.
Read and understand all safety messages which describe how to prevent accidents.
Do not operate the machine until you are sure that you have gained a proper understanding of its operation, inspection and maintenance.

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.

When a problem is found on the machine

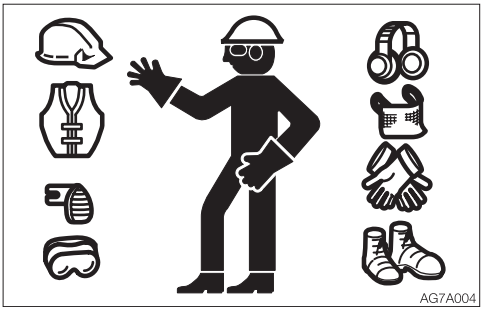
If any problem (noise, vibration, smell, disorder of instrument, smoke, oil leak, wrong indication of alarm or unusual indication in the instrument cluster, etc.) is detected during the operation or inspection and maintenance of the machine, immediately inform your sales or service dealer and take proper actions. Do not operate the machine until the trouble is cleared.

Operating temperature range

To maintain the performance of machine and to prevent it from early wear, observe the following operating conditions.

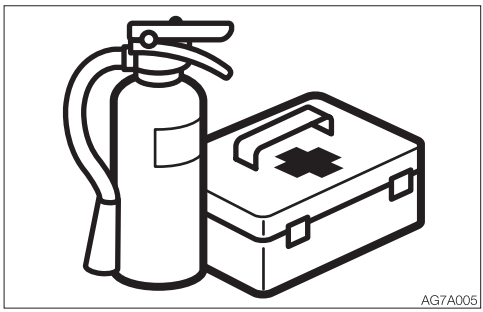
- Do not operate the machine if the ambient temperature is higher than +45°C (+113°F) or lower than –15°C (+5°F).
  - If operated at an ambient temperature of higher than +45°C (+113°F), the engine may overheat and cause the engine oil to degrade. Also, the hydraulic oil may become very hot, causing damage to the hydraulic equipment.
  - If operated at an ambient temperature of lower than –15°C (+5°F), the parts made of rubber such as gaskets may get hardened to cause an early wear or damage to the machine.
  - If the machine is to be used outside the ambient temperature range described above, consult your sales or a service dealer.

Wear appropriate clothing and 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 easily catch fire.
- Wear a hard hat, safety shoes, safety glasses, filter mask, heavy gloves, ear protection and other protective equipment as required by job conditions. Wear required appropriate equipment such as safety glasses and filter mask when using grinders, hammers or compressed air, as metal fragments or other objects can fly and cause serious injury.
- Use hearing protection when operating the machine. Loud prolonged noise can cause hearing impairments, even the total loss of hearing.

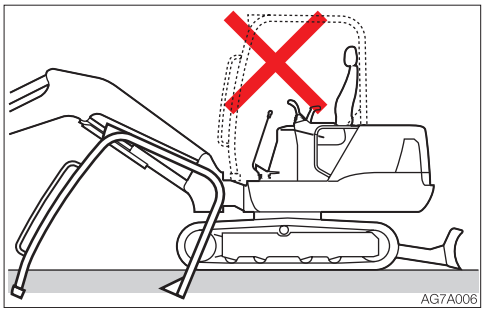
Install a fire extinguisher and first aid kit



Be prepared for fire and accidents

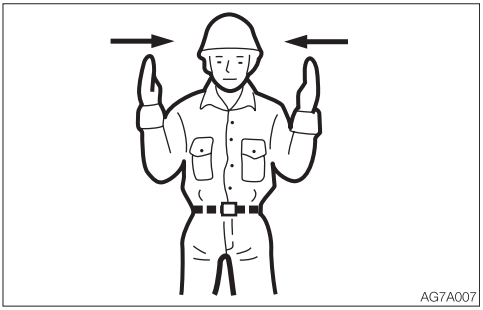
- Install an extinguisher and a first aid kit, and learn how to use them.
- Lean how to fight a fire and how to deal with accidents.
- Know how to contact emergency assistance and make a list of emergency contacts.

Never remove safety equipment



- Make sure all protective guards, covers and doors are in place and secured. Repair or replace damaged parts 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 servicing. Keep all safety equipment in good operating condition.

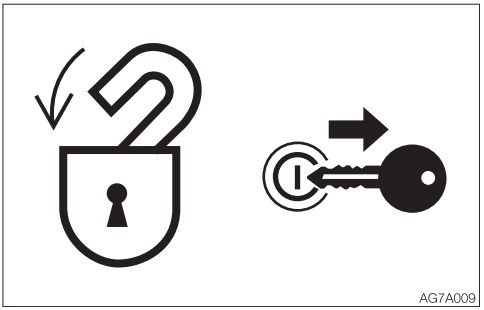
Use a signal person and a flag person



Learn how to 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 must respond to signals only from the appointed signal person, but must obey a stop signal at any time from anyone.
- The signal person must stand in a clearly visible location when giving signals.

Cautions when standing up from or leaving the operator's seat



- Before standing up from the operator's seat to open/close the window or remove/install the lower window, lower the working equipment to the ground, raise the safety lock lever to engage the lock and stop the engine. If any controls should be accidentally touched when the safety lock lever is lowered (unlocked), the machine will suddenly move and cause serious injury or death.
- Be careful not to touch the operating levers when raising or lowering the safety lock lever.
- Before leaving the operator's seat, lower the working equipment to the ground, raise the safety lock lever to engage the lock and stop the engine. Also, be sure to remove the key, lock the door and covers, take it with you and store it in a specified place.

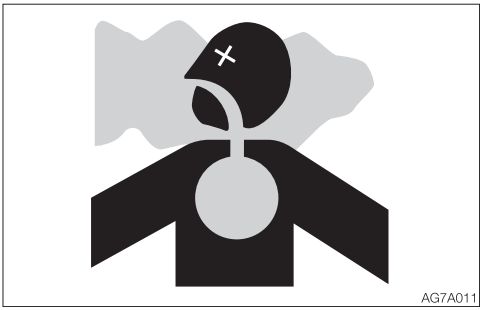
Avoid fire and explosion hazards



Keep flames away from fuel, 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 handling fuel or working on the fuel system.
- Do not leave the location while refilling with fuel or oil.
- Never remove the fuel cap or add fuel when the engine is running or still hot. Also, do not spill the fuel on the hot surface of the machine or the component of the electric system.
- Clean up spilled fuel or oil immediately.
- Check for fuel, oil leak. Stop all leaks and clean the machine before operating.
- When operating with grinder or welding, move inflammables to a safe place.
- 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 (foam type fire extinguisher) according to procedures identified on manufacturer's containers. Work in a well-ventilated area.
- Never use fuel for cleaning purposes. Always use a nonflammable solvent.
- When handling the fuel, washing oil or paint, open the door and windows to ventilate thoroughly.
- Store all flammable fluids and materials in a safe and well-ventilated place.
- The short circuit of the electric system may cause the fire. Check for any loosened connections or damage to the wires every day. Retighten the loosened connector and wire clamp. Fix or change the damaged wire.
- Fire from the pipes:
  Make sure that the clamps, guards and cushions of the hoses and tubes are securely fixed. If not, hoses or tubes may be damaged due to vibration or contact with other parts during operation. This can cause the high-pressure oil to spurt out, resulting in the fire or injury.
- Do not perform the DPF regeneration if the machine is surrounded by flammable items such as plants, trees, dry grass, wastepaper, oil and waste tires. There is a risk of fire due to the high-temperature exhaust gas emitted from the DPF.
  DPF: Diesel Particulate Filter

Exhaust fumes from the engine are poisonous



- Do not operate the engine in an enclosed area without adequate ventilation.
- If natural ventilation is not possible, install ventilators, fans, exhaust extension pipes or other venting devices.
- Do not perform the DPF regeneration in poorly-ventilated indoor spaces, as smoke may be generated during the regeneration.

Handling asbestos dust

Inhaling asbestos dust can cause lung cancer. When handling the materials which may contain asbestos, take the following precautions:

- Never use compressed air for cleaning.
- Avoid brushing or grinding parts containing asbestos.
- For clean up, use a vacuum equipped with a high efficiency particulate air filter (HEPA).
- Wear the stipulated respirator if there is no other way to control the dust. When working indoors, install a ventilation system with a macromolecular filter.
- Do not allow unauthorized personnel in the work area while working.
- Follow the rules and environmental standard applicable to the work area.

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 sizes of these gaps change when the machine moves, and a person can suffer severe injury or death.

Using optional products

- Consult with Takeuchi before installing optional attachments. Depending on the type of attachments or the combination of them, the attachment may come into contact with the operator's compartment or the other parts of the machine. Make sure that the optional attachment installed is not contacted with other parts before use.
- Do not use attachments that have not been approved by Takeuchi. 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 by a non-approved attachment.

Never modify the machine

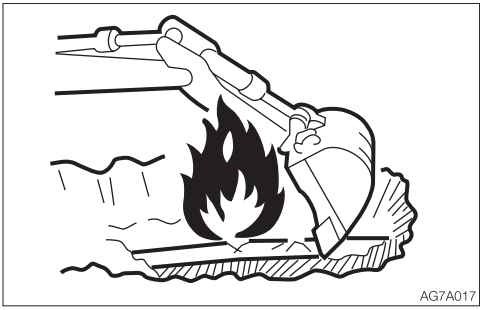
Unauthorized modifications to this machine can cause injury or death. Never make unauthorized modifications to any part of this machine.

PRECAUTIONS WHEN PREPARING

Know the work area

Before starting operation, know the working area condition to ensure safe operation.

- Inspect the topography and ground condition of the working area, or the structure of the building when working indoors, and take the safety precautions as necessary.
- Be sure to avoid all hazards and obstructions such as ditches, underground lines, trees, cliffs, overhead electrical wires, or places where there is a danger of falling rocks or slides.



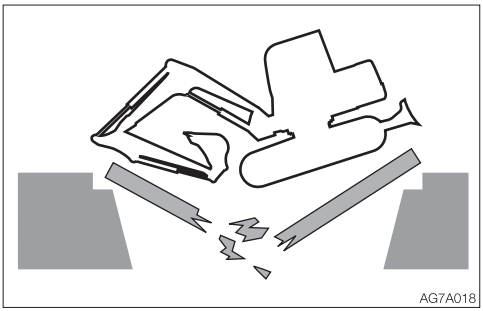
- Check with the administrator for the locations of buried gas pipes, water pipes and power cables. If necessary, determine what specific precautions must be taken to insure safety by consulting with the administrator.
- When working on roads, be sure to consider the safety of pedestrians and vehicles.
  - Use a flag person and/or a signal.
  - Fence off the working area and keep off 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 water flow speed beforehand.
  Refer to “Cautions on operating” for further instructions.



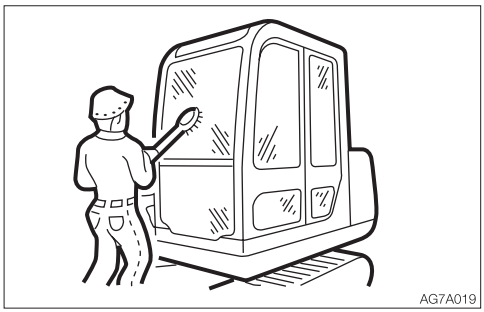
- Do not perform the DPF regeneration if the machine is surrounded by flammable items such as plants, trees, dry grass, wastepaper, oil and waste tires. There is a risk of fire due to the high-temperature exhaust gas emitted from the DPF.
  DPF: Diesel Particulate Filter
- The DPF may automatically perform the regeneration while the engine is left running. Make sure that there are no flammable items around the DPF and the exhaust line, and also that the engine hood is closed to prevent fire. Be careful not to burn yourself on the high-temperature exhaust gas.
- Do not perform the DPF regeneration in poorly-ventilated indoor spaces, as smoke may be generated during the regeneration.

Check the strength of the bridge

When traveling over a bridge or a structure, check the permissible load. If the strength is insufficient, reinforce the bridge or the structure.

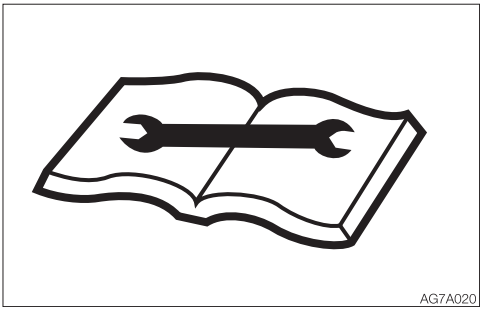

AG7A018

Always keep the machine clean


AG7A019

- Wipe off any oil, grease, mud, snow or ice, to prevent accidents due to slipping.
- Remove all loose objects and unnecessary devices from the machine.
- Remove any dirt, oil or grease from the engine area to prevent fires.
- Clean around the operator's seat and remove any unnecessary object from the machine.

Perform inspection and maintenance every day



Failure to identify or repair the irregularities or damage on machine can lead to accidents.

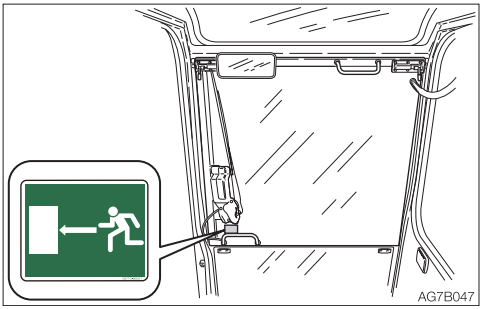
- Before operating, perform the specified inspection and make prompt repairs where necessary.
- If a failure occurs and the operation becomes impossible or the engine fails, immediately stop the machine by following the shutdown procedure, and keep machine securely parked until the malfunction is corrected.

Cautions in the operator's compartment

- Remove mud and grease from shoe soles before entering the operator's compartment. Pedaling the machine with the shoes with mud and grease will cause a slip accident.
- Do not leave the parts or tools around the operator's seat.
- Do not leave any plastic bottles in the operator's compartment or attach any suction cups on the window glass. The plastic bottle or suction cup act as a lens and can cause fire.
- Do not use the mobile phone during traveling or working.
- Do not bring combustibles or explosives into the operator's compartment.
- After smoking, be sure to tightly close the lid of the ashtray to put out the match or cigarette.
- Do not leave the cigarette lighter in the operator's compartment. When the room temperature rises, the lighter may explore.

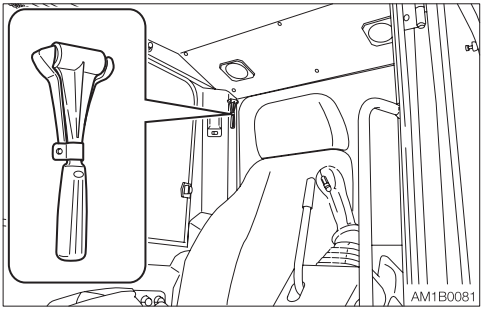
Emergency exit

Front window (excluding machines with a front guard)



If you should become trapped inside the cab, open the front window to get out.

Emergency hammer (optional)



An emergency hammer is installed to be used to escape from the cab in an emergency. When escaping, break the windows with the hammer.

- When breaking the windowpane with a hammer, take great care not to injure yourself with the broken glass pieces.
- Remove the glass pieces from the window sill so as not to cut yourself when evacuating. Broken glass will fall from the window, so be careful of your footing and do not slip on the glass.

PRECAUTIONS WHEN STARTING

Support your weight in a three point secure stance when getting on/off the machine

- Do not jump on or down from the machine. Never attempt to get on or off the moving machine.
- When getting on or off the cab, first fully open the door to the locked position and check that it does not move (for machines with cab).



- Climb up/down the steps facing the machine and holding the handrail to support your weight in a three point secure stance (hand and feet).
- Never use the safety lock lever or control levers as hand holds.

Before starting the machine, ask any unauthorized personnel to leave the area

Do not start the engine until you are sure it is safe to start the machine by checking the following items.

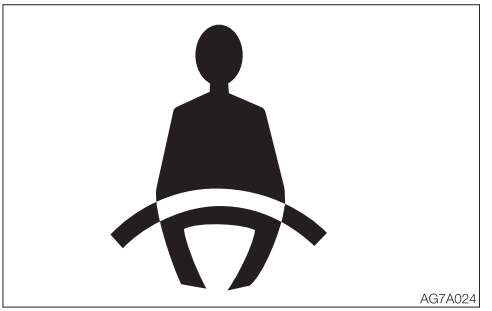
- Walk around the machine and warn the person who is servicing the machine or is walking near the machine. Do not start the machine until you are certain that no one is around the machine.



- Check if there is a “DO NOT OPERATE” alert sign or similar sign is on the cab door, controls or starter switch. If there is one, do not start the engine or touch any levers.
- Sound the horn to warn people around the machine.

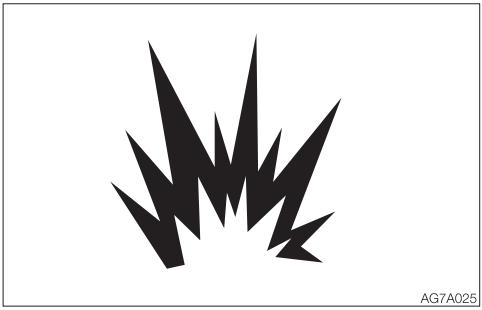
Sit in the operator’s seat and start the engine

- Adjust the seat to securely latch it.



- Fasten the seat belt.
- Check if the parking brake is on and all control levers and pedals are in the neutral position.
- Check if the safety lock lever is in the lock position.
- Make sure that no one is near the machine.
- Start and operate the machine only from the operator’s seat.
- Never attempt to start the engine by shorting across the starter terminals.

Starting with jumper cables



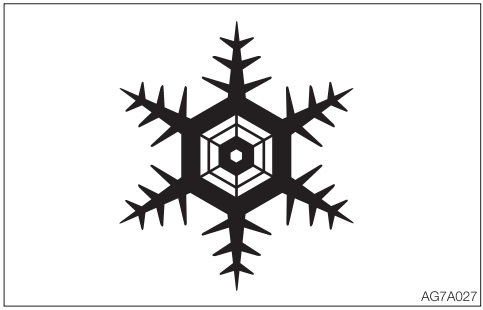
Use jumper cables only in the recommended manner. Improper use of jumper cables can result in battery explosion or unexpected machine motion.
Refer to “If the battery goes dead” for further instructions.

After starting the engine

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

- Warm up the engine and hydraulic oil.
- Check if all gauges and warning devices are properly working.
- Check for any noises.
- Test the engine speed control.
- Operate each control to ensure they are properly working.

In cold climates



- Be careful of slippery conditions on freezing ground, steps and hand holds.
- In severe cold climates, do not touch any metal parts of the machine with bare hands. The skin will freeze to the metal, resulting in severe injury.
- Do not use ether or starting fluid on this engine. The starting fluids can cause explosion and serious injury or death.
- Warm up the engine and hydraulic oil. If the levers are operated without warming, the machine will not react or move promptly or properly, resulting in accident.

PRECAUTIONS WHEN OPERATING

Ensure good visibility

Check the field of view before operating the machine.

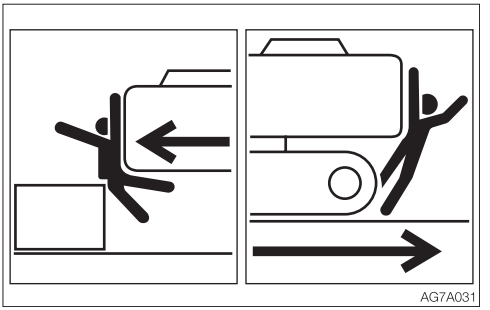
- When working in dark places, turn on the machine's working lights and headlights and additional lighting equipment installed, as necessary.
- When visibility is poor due to bad weather (fog, snow, rain or a cloud of dust), stop operating the machine and wait until visibility improves.
- Clean the windows, mirrors, lights and camera to ensure good visibility. Adjust the mirror and camera to the best positions so that the operator can see the rear view (blind spots) from the operator's seat.
- Unauthorized machine modifications or installation of unapproved attachments could impair the visibility. The operator's field of view must conform to ISO 5006.

Do not permit riders on the machine



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

Check if the work area is safe and secure before operation

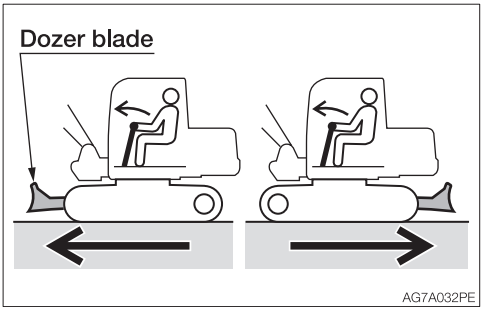


- Confirm the performance limits of the machine.
- Use a signal person at road shoulders, narrow places or where your vision is obstructed.
- Never allow anyone to enter the machine's slewing radius and path.
- Signal your intention to move by sounding the horn.
- There is a blind spot in the rear of the machine. Before traveling in reverse, check that the area is safe and clear.

Safety precautions when performing the DPF regeneration

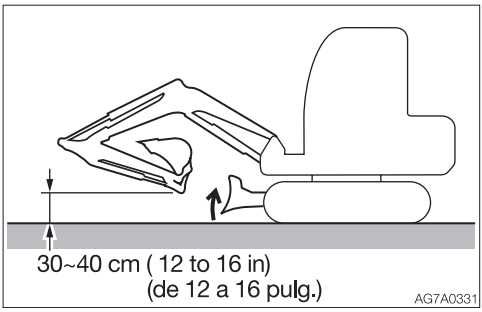
The DPF may automatically perform the regeneration while the engine is left running. Make sure that there are no flammable items around the DPF and the exhaust line, and also that the engine hood is closed to prevent fire. Be careful not to burn yourself on the high-temperature exhaust gas.
DPF: Diesel Particulate Filter

Check the position of the undercarriage (tracks) before traveling

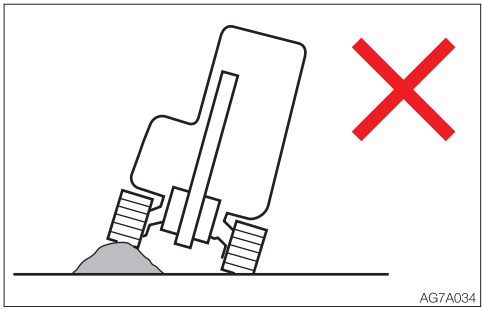


Before operating the travel levers/pedals, make sure that the dozer blade is to the front of the operator's seat. Remember that when the dozer blade is to the rear of the operator's seat, the travel levers/pedals must be operated in the reverse direction from when it is to the front.

Travel safely



- Travel with the dozer blade raised, the hoe attachment folded as shown on the figure above, and the bucket raised 30 to 40 cm (12 to 16 in.) above the ground.
- Do not slew while traveling. If you must operate the hoe attachment while traveling, operate at speeds slow enough so you have complete control at all times.
- When a load greater than a set value is applied during traveling in 2nd (high) speed, the speed will automatically slow down to 1st (low) speed. When the load becomes lighter, the speed will increase and return to 2nd (high) speed. It should be noted that the travel speed changes depending on the load condition (for machines with the automatic travel shift-down system).
- When traveling on the uneven road or sharp slope, turn off the deceleration switch and the auto-deceleration switch. If the machine is operated on such roads with these switches turned on, the engine speed may increase, causing the machine to travel unexpectedly rapidly (for machines with the deceleration and auto-deceleration switches).

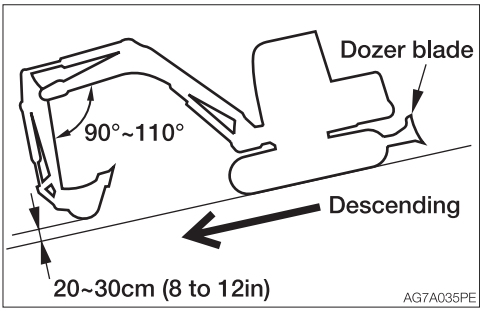


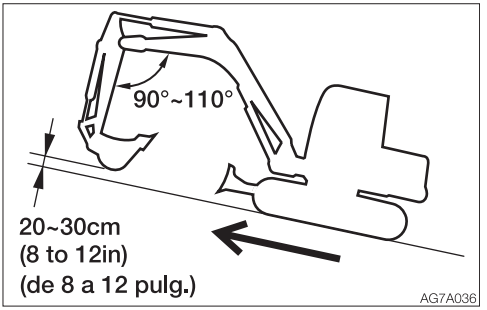
- Avoid crossing over obstacles whenever possible. If you must do so, keep the hoe attachment close to the ground level and travel slowly. Never cross obstacles which will tilt the machine to an angle of 10° or greater.
- On uneven ground, maintain the low speed and avoid starting, stopping or changing directions abruptly. Otherwise, the working equipment may come in contact with the ground, causing the machine to lose its balance and get damaged or to damage the structures in the surrounding area.

Cautions on traveling on slopes

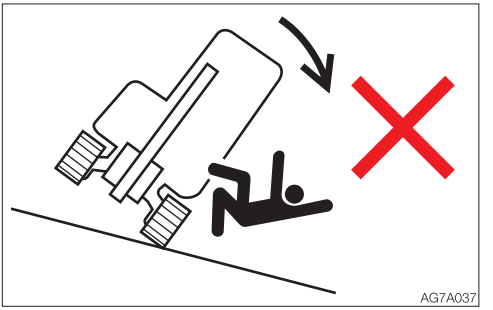
When traveling on slopes or grades, be careful that the machine does not tip (roll) over or slide.

- Never travel on slopes that are too steep for the machine to maintain its stability (maximum gradeability: 30°, lateral tipping angle: 15°). Note that in reality, the machine's stability becomes lower than the above values depending on the working condition.





- When climbing a hill, keep the operator's seat facing the hillside. When descending a hill, keep the operator's seat facing the downhill direction. In either case, travel must be done while paying attention to the ground in front of the machine.
- When traveling on slopes, lower the bucket to a height of 20 to 30 cm (8 to 12 in.) above the ground. When climbing a steep slope, extend the hoe attachment to the front. In emergencies, lower the bucket to the ground and stop the machine.
- When traveling on slopes or grades, drive slowly in 1st (low) speed. When descending a slope, slow down the engine speed.
- Do not descend slopes in reverse.

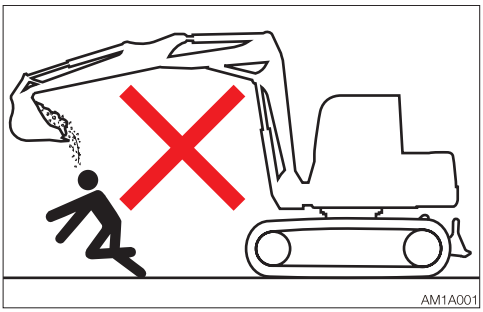


- Do not change directions on slopes or traverse slopes. First return to a flat surface, and then take an alternative path.
- The machine may slip sideways even on a slight slope if the ground is covered with grass or dead leaves, or when traveling on a wet metal plate or frozen surfaces. Make sure the machine is never positioned sideways on slopes.
- If the machine is stalled on the slope, return each operating lever to the neutral position before restarting the engine.

Operate the machine on snow or ice with extra care

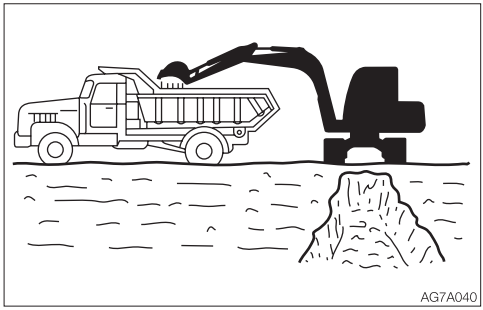
- When traveling on snow or on frozen surfaces, drive at a low speed and avoid starting, stopping or changing directions abruptly.
- In the snowy area, the road shoulder and objects placed beside the road are buried in the snow and cannot be seen. There is a hazard of the machine tipping over or hitting covered objects, so always carry out operations carefully.
- If the machine enters deep snow, there is a hazard that it may tip over or become buried in the snow.
  Be careful not to drive beyond the road shoulder or to get trapped in a snow drift.
- With frozen ground surfaces, the ground becomes soft when the temperature rises, and this may cause the machine to tip over, resulting in an operator trapped inside the machine.
- When parking the machine on an unstable ground, lower the dozer blade.

Do not move the bucket over the heads of people



Moving the bucket over the heads of people entails the danger of the load spilling or the sudden dropping of the bucket.

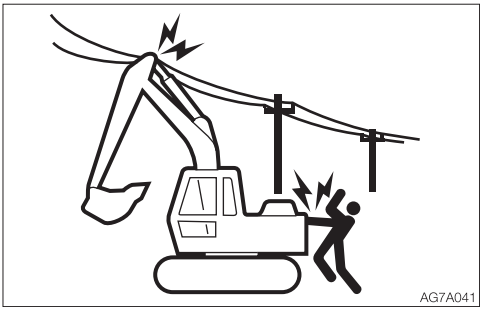
Ensure driver's safety when loading



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

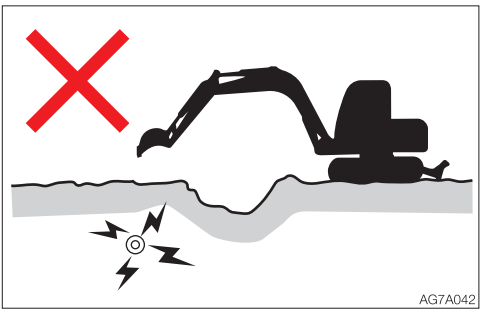
- Never swing or position the bucket over a person or the cab room.
- Load the truck from the rear.

Keep a safe distance from the overhead high-voltage cables



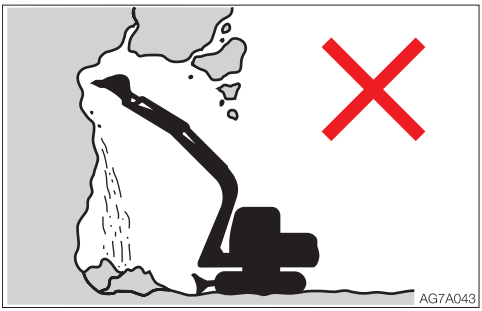
Never bring any part of the machine or loaded material to near to the high voltage cables unless all safety precautions required by the local and national authorities have been installed. If a person comes near to the machine that is discharging sparks or located near to or in contact with the power source, there is a hazard of electric shock and death.

- Always maintain a safe distance between the machine and the high-voltage electric cable.
- Check with the local power company about safe operating procedure before starting operations.
- Consider all cables to be high-voltage cables and treat all cables as energized even though it is known or believed that the power is shut off and the cables are visibly grounded.
- Use a signal person to give warning if the machine approaches too close to the high-voltage electric cables.
- Caution all personnel in the work area not to come close to the machine or the loaded material.

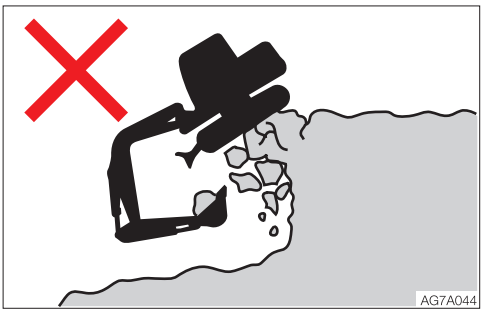


- Pay also careful attention to the high-voltage electric cables buried underground.

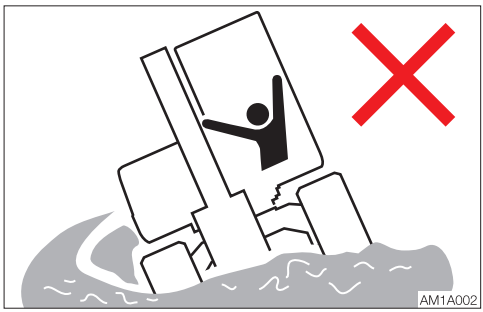
Watch out for hazardous working conditions



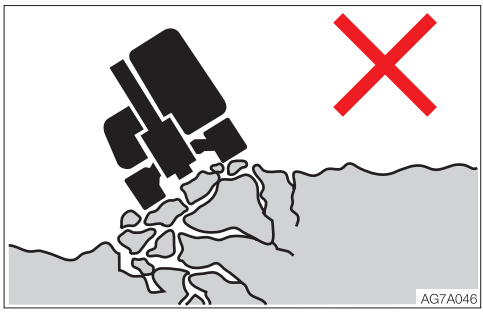
- Never undercut a high bank. Doing so is dangerous as it may cause ground collapse.
- Do not operate in places where there is a danger of falling rocks.



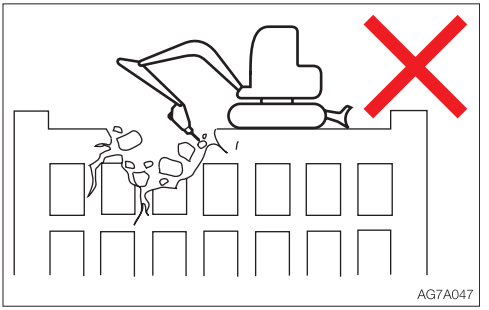
- Maintain a safe distance between the machine and the edge of the digging site. Do not dig the ground under the front of the machine.
- When working close to the cliffs or road shoulders, to make it easier to escape if there is any problem, set the crawlers at right angles to the cliff or road shoulder and the dozer blade to the front when carrying out operations.



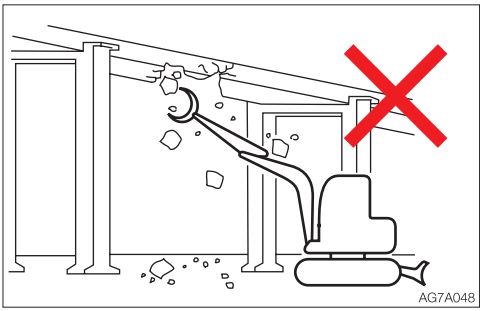
- Do not enter areas where there is soft ground. Doing so could cause the machine to tilt under its own weight, resulting in a machine tipping over or sinking into the ground.



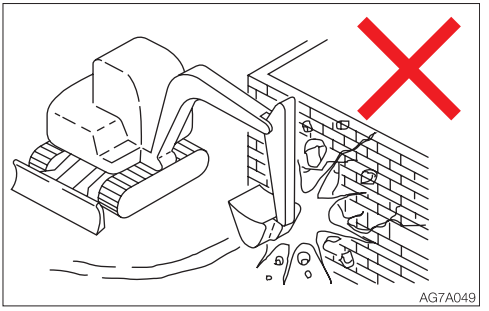
- Do not come close to unstable grounds (cliffs, road shoulders, deep ditches). If the ground should collapse under the weight or vibration of the machine, there is a hazard that the machine may fall or tip over.
  - Remember that the soil after heavy rain or blasting is weak.
  - The ground of top of the embankment and of the circumferences of the excavated ditches are also weak.



- Do not perform demolition work under the machine. There is a hazard that the machine may fall down, because the ground becomes unstable.
- When working on or from the top of buildings or other structures, check the strength and the structure before starting operations. If a building or structure collapses, serious injury or damage will result.



- When doing demolition work, do not perform demolition above your head. There is a hazard of broken parts falling or of the building collapsing and causing serious injury or damage.



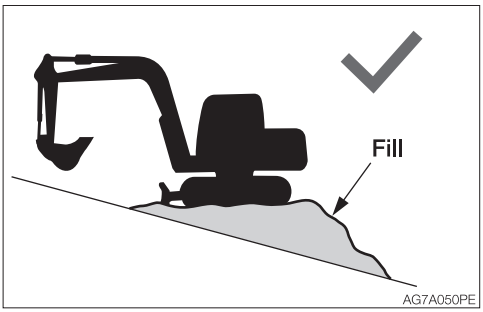
- Do not use the impact force of the hoe attachment for breaking work. There is a hazard of serious injury being caused by flying pieces of broken materials and by the damaged hoe attachment.

Be careful with flying objects

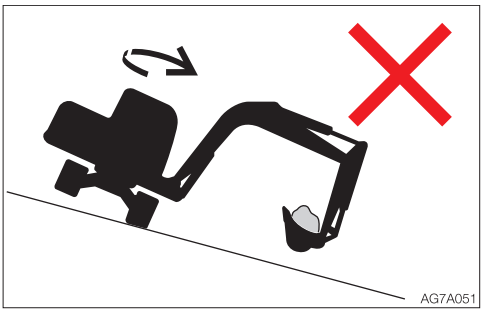
This machine is not equipped with protective equipment to protect the operator from flying objects. Do not use this machine in places where there are risks of the operator being hit by flying objects.

Operating on slopes is dangerous

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

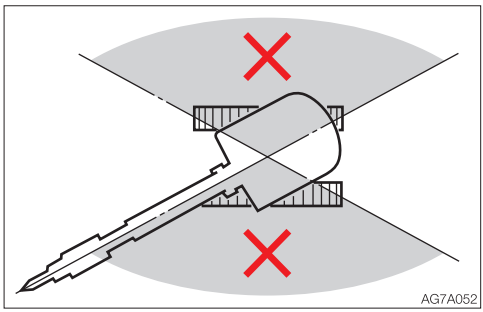


- Level off the work area.



- Avoid slewing to the downhill direction with the bucket full of loaded material. This will reduce the stability of the machine and may result in tipping over.

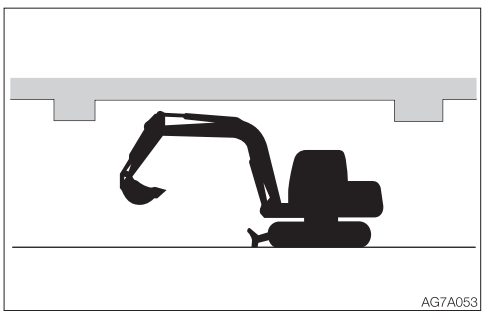
Never slew sideways with a heavy load



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

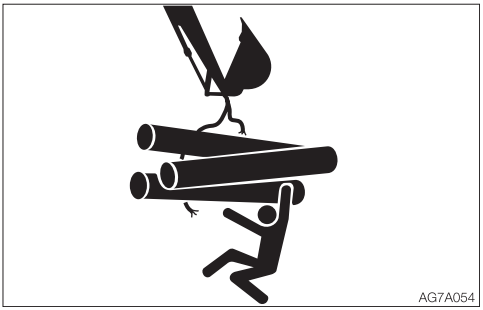
- Do not slew sideways with a heavy load at the tip of the hoe attachment. In particular, do not slew sideways on slopes.
- The tip of the attachment is heavier for machines equipped with breakers, crushers or long arms than for machines equipped with the standard bucket. For such machines with heavier tips, do not perform excavation with the digging arm (boom) facing the downhill direction or operate toward sideways.

Be careful with the overhead objects



When operating under bridges, in tunnels, near electric cables or indoors, be careful not to let the boom or arm hit overhead objects.

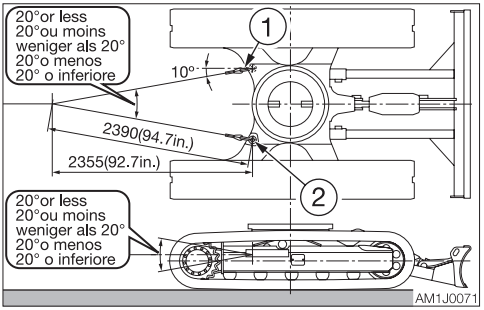
Excavators are not designed for lifting loads



This machine is specifically designed for excavation work. Therefore, it has no safety equipment for crane operation. Extreme caution should be paid 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 determined by using a machine placed on a stable and flat ground. For a safe lifting work, the user is expected to make due allowance for the particular job conditions. They include, soft or uneven ground, non-level condition, side loads, dynamic or jerked loads, hazardous conditions, and experience of personnel. 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.
- The bucket linkage or lifting device may fail if chains or lifting device are incorrectly attached, resulting in serious injury or death.
- Do not attempt to pull stumps out of the ground when using the machine as a crane. The loads imposed on the machine under this use are completely unknown.
- Do not allow anyone to stand on or under the lifted loads or come close to the work area.

Cautions when towing



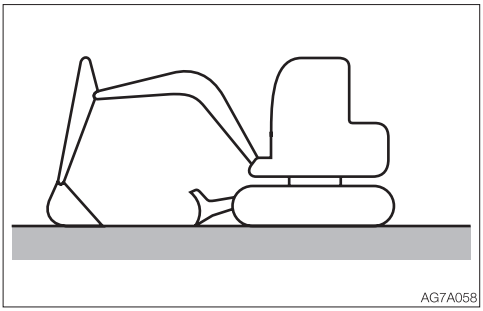
When towing, serious injury or death could result, if performed incorrectly or the wire rope being used is inappropriate or not properly inspected.

- Do not tow using only a towing hole on one side.
- It becomes dangerous if the wire rope breaks or becomes disengaged. Use a wire rope appropriate for the required tractive force.
- Do not use a wire rope that is kinked, twisted or otherwise damaged.
- Do not apply heavy loads abruptly to the wire rope.
- Wear safety gloves when handling the wire rope.
- Make sure there is an operator on the machine being towed as well as on the machine that is towing.
- Never tow on slopes.
- Do not let anyone come near to the wire rope while towing.

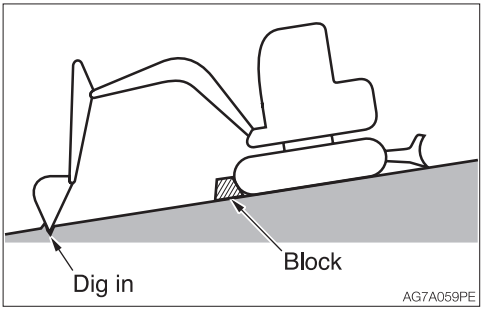
Refer to "Towing" for further instructions.

PRECAUTIONS WHEN STOPPING

Park safely

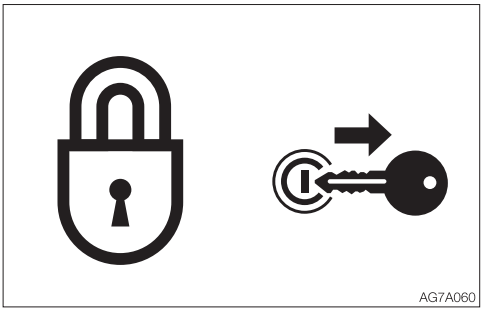


- Park the machine on a flat, rigid and safe ground. Set the parking brake.



If you must park on a slope or incline, park the machine securely and block the movement of the machine.

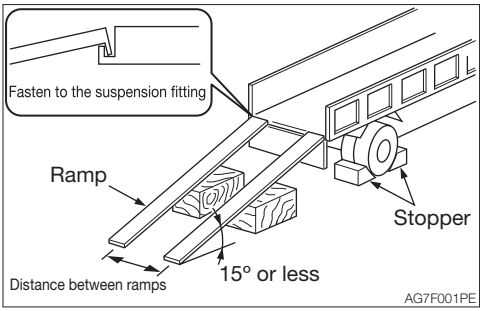
- When parking on a street, use barriers, caution signs, lights, etc., so that the machine can easily be seen even at night to avoid collision with other vehicles.



- Before leaving the machine, do the followings:
  1. Lower the bucket and the dozer blade to the ground.
  2. Raise the safety lock lever to the locked position.
  3. Stop the engine and remove the starter key.
  4. Lock the cab and covers and take the key with you.

PRECAUTIONS WHEN TRANSPORTING

Load/unload the machine safely



The machine may roll or tip over or fall while being loaded or unloaded. Take the following precautions:

- Select a firm, level surface and keep sufficient distance from road shoulders.
- Secure the ramps of adequate strength and size to the truck bed. The slope of the ramps must not exceed 15°. If the rumps are bowed down too low, support them with poles or blocks.
- Never use the working equipment to load or unload the machine. Doing so may result in tipping over or falling down of the machine.
- Keep the truck bed and loading ramps clean of oil, soil, ice, snow, and other materials to prevent the machine from sliding sideways. Clean the crawlers.
- Chock the transporter wheels to prevent movement.
- Turn off the deceleration switch and auto-deceleration switch. Otherwise, the engine speed may suddenly increase to cause troubles.
- When being loaded or unloaded, travel slowly in 1st (low) gear by following the signal from the signal person.
- Never change courses on the ramps.
- Do not slew/swing on the ramps. The machine may tip over.
- When slewing/swinging on the truck bed, do it slowly as the footing should be unstable.
- Lock the cab door after being loaded, if applicable. Otherwise, the door may open during transport.
- Chock the tracks and secure the machine to the truck bed with wire rope or chain.

Hoist the machine safely

- Know and use correct crane signals.
- Check the hoisting equipment for damaged or missing parts on a daily basis and replace as necessary.
- When hoisting, use a wire rope capable of lifting the machine mass.
- Hoist the machine in such a manner described in the procedure below. Do not do it in any other manner, as it may result in the machine losing its balance.
  Refer to “Hoisting the machine” for further instructions.
- Do not hoist the machine with an operator on it.
- When hoisting, hoist slowly so that the machine does not tip.
- Keep everyone out of the area when hoisting. Do not move the machine over the heads of the persons.

Transport the machine safely

- Know and follow the applicable safety rules, vehicle code and traffic laws when transporting the machine.
- Select the best transport route by considering the length, width, height and weight of the truck with the machine loaded on it.
- Never abruptly start or stop or run at a high speed at the sharp curves during transport. Doing so will move or lose the balance of the loaded machine.

PRECAUTIONS ON MAINTENANCE

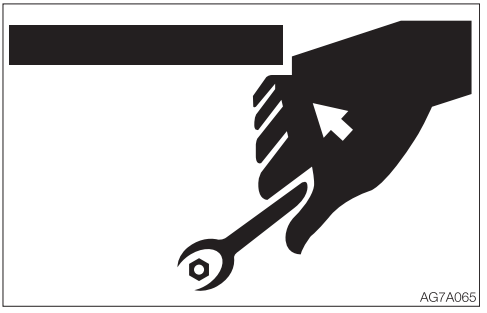
Display a “DO NOT OPERATE” alert sign

Severe injury could result if an unauthorized person should start the engine or touch controls during inspection or maintenance.
- Before performing maintenance, stop the engine, remove the key and take it with you.



- Display a “DO NOT OPERATE” alert sign on easy-to-see locations such as on the starter switch or on control levers.

Use the correct tools



Do not use damaged or weakened tools or tools designed for other purposes. Use tools appropriate for the work involved.

Replace safety-critical parts periodically

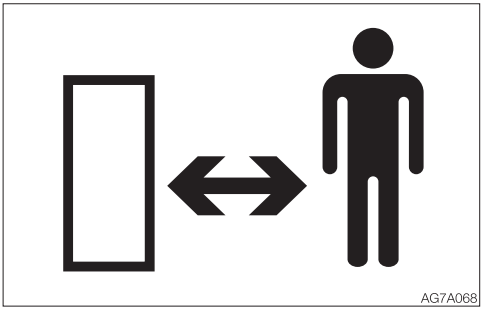
- Replace fuel hoses periodically. Fuel hoses wear out over time, even if they do not show any symptom of wear.
- Regardless of the replacement schedule, replace immediately if a symptom of wear is found.
  Refer to “List of safety-critical parts” for further details.

Explosionproof lighting



To prevent an ignition or explosion, use explosion-proof lights when inspecting fuel, oil, coolant or battery fluid. Otherwise, explosion could result causing serious injury or death.

Prohibit access by unauthorized persons

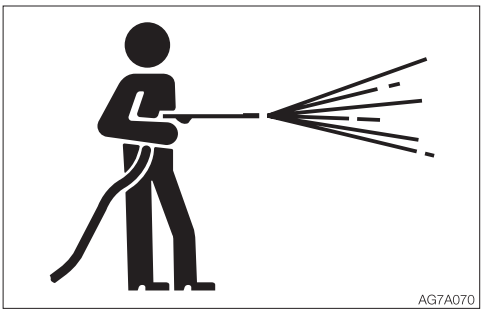


Do not allow unauthorized personnel in the work area while working. Be careful when grinding, welding or using a hammer. You could be injured by flying debris from the machine.

Prepare 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.

Always keep the machine clean

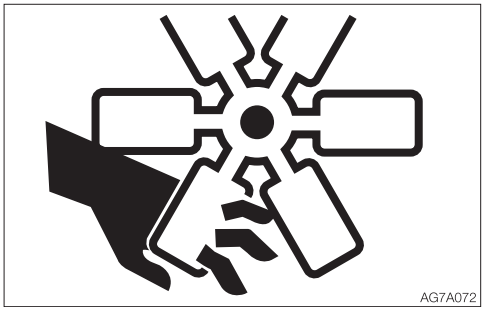


- Clean the machine before performing maintenance.
- Stop the engine before washing the machine. Cover the electrical parts so that water cannot enter. Water on electrical parts could cause short-circuits or malfunctions. Do not use water or steam to wash the battery, electronic control components, sensors, connectors or the operator's compartment.

Stop the engine before performing maintenance

- Avoid lubrication or mechanical adjustments while the machine is moving or while the engine is running when the machine is not moving.
- If maintenance must be performed with the engine running, always work as a two person team communicating each other.
  - One person must sit in the operator's seat so that he/she can immediately stop the engine when necessary. He/she must take care not to touch the lever or pedal unless necessary.
  - The one who performs maintenance must make sure to keep his/her body or clothing away from the moving part of the machine.

Stay clear of the moving parts



- Stay clear of all rotating and moving parts. If a hand or tool becomes trapped in the rotating or moving part, serious injury or death could result.
- If a tool or other objects is dropped or inserted in the fan or fan belt, it will be flown or cut in pieces. Do not drop or insert anything in the fan or fan belt.

Firmly secure the machine or any component that may fall



- Before performing maintenance or repairs under the machine, lower all moveable working equipment to the ground or in the lowermost position.
- Chock 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.

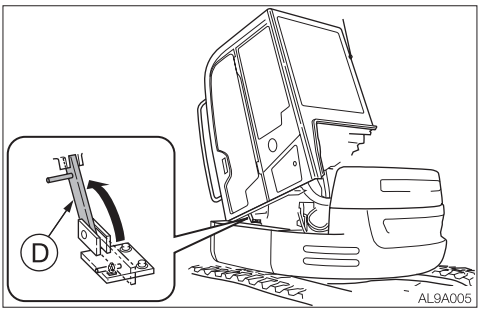
Secure the working equipment

To prevent unexpected movement, firmly secure the working equipment when repairing or replacing the bucket teeth or side cutter.

Secure the engine hood or cover when opened

Be sure to secure the engine hood or cover before working the inside. Do not keep the hood or cover open on a windy day or if the machine is parked on a slope.

Cautions on tilting up the platform



- Raising or lowering the platform while the engine is running may cause the machine to move, resulting in 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 (D) to prevent it from falling.

Place heavy objects in a stable position



When it is necessary to temporally place a heavy object or an attachment on the ground during removal or installation, be sure to place it in a stable position. Keep unauthorized persons from the storage place for such object.

Cautions when refueling



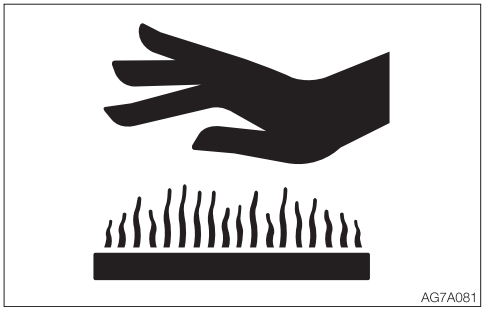
- Do not smoke or permit open flames while fueling or near fueling operations.
- Never remove the fuel cap or add fuel when the engine is running or still hot. Do not spill fuel on the hot surface of the machine.
- Fill the fuel tank in a well ventilated place.
- Do not fill the fuel tank to capacity. Allow room for oil expansion.
- Clean up spilled fuel immediately.
- Securely tighten the fuel filler cap. If the fuel cap is lost, replace it only with the genuine cap. Use of a non-approved cap without proper venting may result in pressurization of the tank.
- Never use fuel for cleaning.
- Use the correct grade of fuel for the operating season.

Handling of hoses

Oil leak or fuel leak can cause a fire.

- Do not twist, bend or hit the hoses.
- Never use twisted, bent or cracked pipes, tubes or hoses; otherwise, they may burst.
- Retighten loose connection.

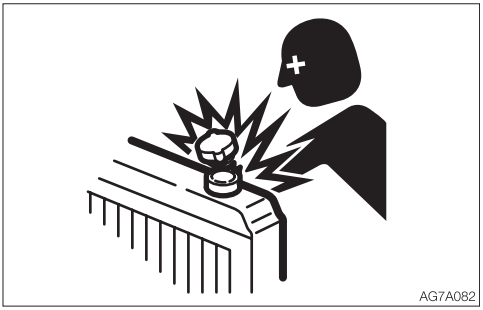
Be careful with hot and pressurized components



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

- The engine, muffler, radiator, hydraulic lines, sliding parts and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.
- The engine coolant, hydraulic oil and other oils are also hot and under high pressure. Be careful not to touch the hydraulic oil when loosening the cap or plug. Working on the machine under these conditions could result in burns or injuries due to the hot oil spurting out.
- The DPF and the exhaust gas emitted from the exhaust line can be very hot while the engine is running or the regeneration is under way, as well as immediately after the engine is stopped. Be careful not to accidentally touch them; doing so could cause burns.

Be careful with hot cooling systems

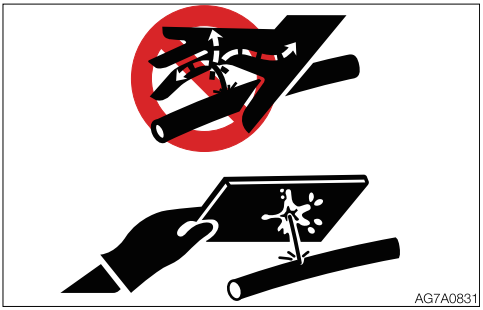


Do not remove the radiator cap or the drain plug when the cooling water is hot. Stop the engine and wait until the engine and the cooling water cool. Then, slowly loosen the radiator cap to release the internal pressure and remove it.

Be careful with oil internal pressure

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

- Completely relieve the internal pressure before performing maintenance work.



- The hydraulic oil is high enough pressure to penetrate the skin or eyes and cause serious injury, blindness or death. Remember that the hydraulic oil escaping from a small hole is almost invisible. When checking for leaks, wear protective goggle and thick gloves, and use a paperboard or plywood to keep your skin from oil spurting.
  If oil penetrates the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury.

Release pressure before working on the hydraulic system

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

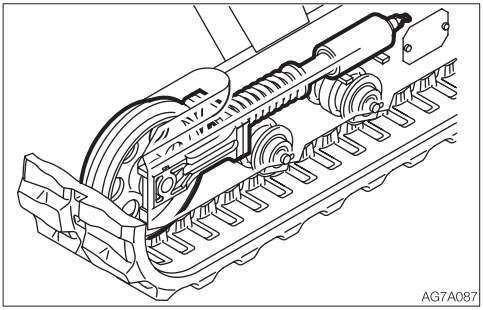
- Immediately after the engine is stopped, and while the safety lock lever is still in the unlock position, turn the starter switch to ON and move all the control levers and pedals several times all the way in each direction to release the pressure from the working equipment circuitry.
- Press the air breather button to relieve the internal pressure from the tank.
- When removing plugs or screws, or when disconnecting hoses, stand to the side and loosen them slowly to gradually release the internal pressure before removing.
- Oil or plug may spurt out according to the pressure in the travel motor case. Loosen the plug slowly and release the internal pressure.

Be careful with debris when the hammer is being used

When using a hammer, pins may fly out or metal particles may be scattered. This may lead to serious injury.

- If hard metal parts such as pins, bucket teeth, side cutter or bearings are hit with a hammer, wear protective gear such as safety goggles and gloves.
- When hitting pins or bucket teeth, always check that there is no one in the surrounding area.

Never disassemble the track adjuster



There is a very strong spring contained in the track adjuster. If the track adjuster is accidentally disassembled, the spring can pop out, resulting in serious injury Never disassemble the track adjuster.

Cautions when servicing the air conditioner

If the refrigerant comes in contact with eyes, it damages your eyesight. If the refrigerant comes in contact with skin, it may cause frostbite. Never touch the refrigerant.

Handling of the accumulator



Be sure to handle the high-pressure nitrogen gas enclosed in the accumulator with care. If handled incorrectly, it could explode and cause serious injury. Strictly observe the following precautions:

- Do not disassemble.
- Do not allow flame near or throw it into a fire.
- Do not drill, weld or fuse.
- Do not subject it to physical shock such as hitting, rolling or dropping.
- Before disposing of the unit, the sealed gas must be drained. Contact a Takeuchi service agent for help.

Disconnect the battery wiring



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

Use caution when handling batteries

- Batteries contain sulfuric acid which will damage the eyes or skin in case of contact.
  - If eye contact occurs, flush immediately with clean water and get prompt medical attention.
  - If accidentally swallowed, drink large quantities of water or milk and call a physician immediately.
  - If acid contacts skin or clothing, wash off immediately with a lot of water.
- Wear protective goggle and gloves when working with batteries.
- Batteries generate flammable hydrogen gas which may explode. Keep away from flame, sparks, fire or lighted cigarettes.
- When checking the level of the battery fluid, use a flashlight.
- Be sure to stop the engine by turning off the starter switch before inspecting or handling the battery.
- Be careful not to let metal tools or any metal objects come into contact with the battery terminals and cause a short circuit.
- Loose battery terminals may result in sparks. Be sure to fasten terminals tightly.
- Make sure the battery caps are tightened securely.
- Do not charge a battery or jump-start the engine if the battery is frozen; otherwise it may explode. Warm the frozen battery to 15°C (60°F) before use.
- Do not use the battery when the fluid level is below the lower level limit. Doing so will hasten the deterioration of the internal portions of the battery and shorten the battery life. It also can cause rupturing (explosion).
- Do not add the distilled water above the upper level limit. Doing so could cause the fluid to leak. This fluid can cause skin damage if contacted, or can cause the machine components to corrode.
- Use a dampened cloth to clean around the fluid level line and check the fluid level. Do not clean with a dry cloth; otherwise it could cause static electricity to build up, resulting in ignition or explosion.

Periodically replace the safety-critical parts

- To use the machine safely for a longer period, periodically add oil and perform inspection and maintenance. To improving the safely, replace the safety-critical parts like hoses and seat belts periodically. Refer to “Safety-critical parts to be replaced periodically” for further details.
- The “Safety-critical parts to be replaced periodically” are the parts which deteriorate, wear and fatigue after repeated use and whose properties change over time. While these characters of these parts could cause serious physical or personal damage, judging the remaining life of these part are difficult from external inspection or the feeling when operating.
- Replace the “Safety-critical parts to be replaced periodically” if any defect is found from external inspection, even when they have not reached the time specified interval.

Jump starting with booster cables

- When starting the engine using the booster cables, be sure to connect the cables in the proper order described below. Wrongly connected cables can result in sparking and battery explosion.
  - Do not allow the “machine in trouble” and “rescue machine” to touch each other.
  - Do not allow the positive (+) and negative (–) clips of the booster cables to touch each other or to come in contact with the machine.
  - When connecting, attach the positive booster cable to the positive (+) terminals first. When disconnecting, remove the negative cable from the negative (–) terminal (ground) first.
  - Be sure to connect the clips securely.
  - Connect the last clip of the booster cable to a point as far away from the battery as possible.
- Always wear the protective goggle and gloves when starting the engine by using the booster cables.
- Use the booster cables and clips of a size suited to the capacity of battery. Do not use damaged or corroded booster cables and clips.
- Be sure that the battery of the “rescue machine” has the same capacity as the battery of the “machine in trouble”.

Have a Takeuchi service agent repair welding

If welding must be performed, make sure that it is done by a qualified person in a properly equipped workplace. To prevent any part from breaking down or being damaged due to overcurrent or sparks, observe the following.

- Disconnect the wiring from the battery before doing electric welding.
- Do not continuously apply 200 V or more.
- The earth ground must be connected within one meter from the welding section. Do not connect the earth ground near to an electronically controlled device/ instrument or connectors.
- Make sure that there are no seals or bearings between the welding section and the earth ground.
- Do not connect the earth ground around the pins for the working equipment or hydraulic cylinders.
- When welding is to be done on the machine body, disconnect the connectors for the electronically controlled devices before working.

Vibrations operators are subject to

According to the results of the tests conducted to determine the vibrations transmitted to the operator by the machine, the upper limbs are subjected to vibrations lower than 2.5 m/s^2 (8.2 ft/s^2) while the seated part of the body is subjected to vibrations lower than 0.5 m/s^2 (1.64 ft/s^2).

Checks 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 the serviced parts.
- Operate each control lever and check that the machine is operating properly.

Disposing of wastes



- Always collect oil that is drained from the machine in containers. Improperly disposed waste oil can cause environmental harm.
- Follow appropriate laws and regulations when disposing of harmful objects such as oil, fuel, coolant, solvent, filters and batteries.

Handling of poisonous chemicals

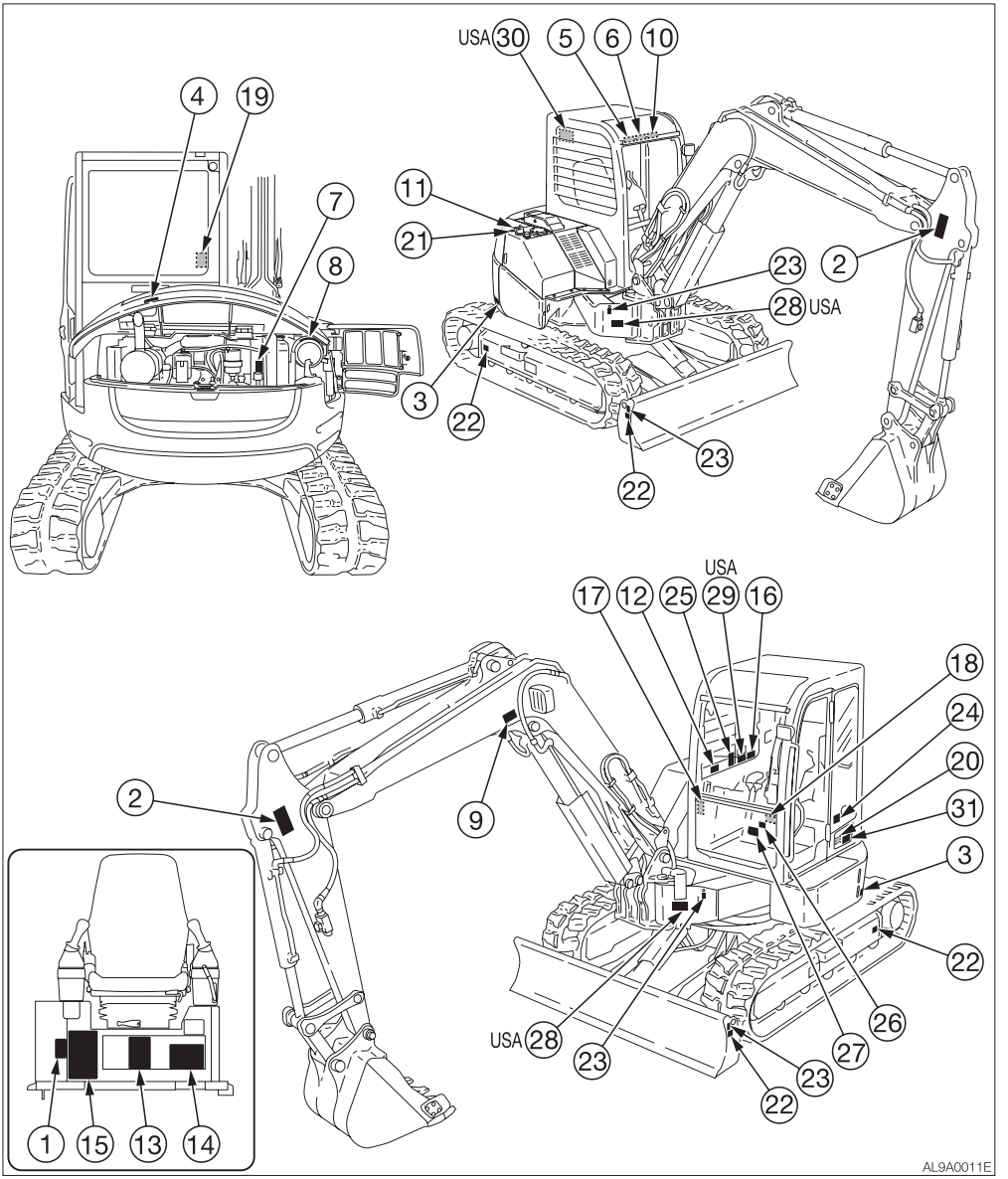
Poisonous chemicals will cause serious injury if directly contacted.
Poisonous chemistry used in this machine includes grease, battery solution, coolant, paint and adhesive agent.
Handle the poisonous chemicals properly with care.

SAFETY SIGNS (DECALS)

For the safety of the operator and the personnel working around the site, safety signs (decals) are placed at certain locations on the machine as shown below. Walk around the machine with this manual, and check 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 clean and legible. If any of the safety labels is peeling or damaged and becomes difficult to read, replace it with a new one. Please include your product serial number when ordering a new sign from the Takeuchi service agent.
- When a part/unit to which a safety sign is attached is replenished, a new sign must be attached to the new part/unit.

SAFETY SIGNS (DECALS)



1. No.08810-31556
Warning
Read and understand this manual before performing any operation, inspection or maintenance on this machine.



2. No.05793-00049
Safety Distance
Hazard of being hit by the working device of the machine.
Keep away from machine during operation.



3. No.05793-00011
Safety Distance
Do not get near or stand within the machine working area.



4. No.03793-66006
Hazard of rotating parts
Turn off before inspection and maintenance.



5. No.08810-31557
Hazard from falling window
After raising window, be sure to lock it in place with lock pins.



6. No.05793-00045
Hazard at lifting or lowering window
When the front window is opened or closed, it will come close to the head. Be careful that the window does not strike the head.



7. No.05793-03630
Sign indicates a burn hazard from touching heated parts, such as engine, pump, or muffler during or right after operation.
Never touch when hot.



AM1A0042E

8. No.03393-75040



9. No.03593-47010 (if equipped)



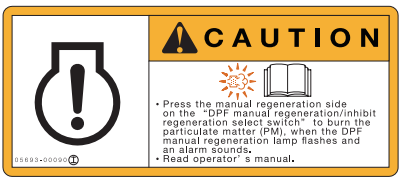
10. No.03393-68100



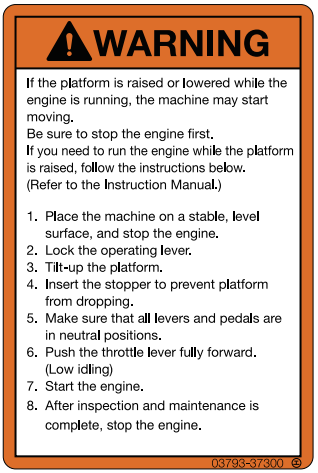
11. No.03393-75050



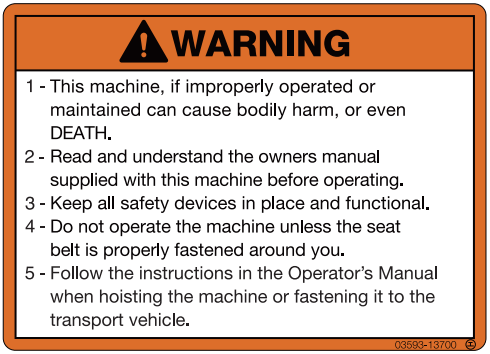
12. No.05693-00090



13. No.03793-37300

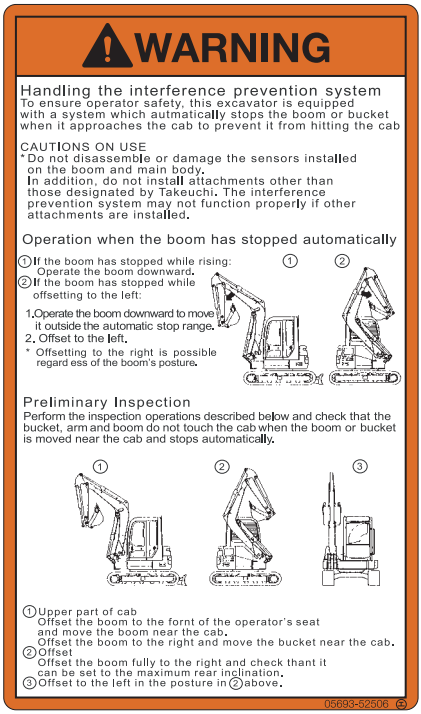


14. No.03593-13700



AL9A002E

15. No.05693-52506



16. No.05693-68009

Before starting lifting operation, be sure to turn on the lift overload warning switch.
An alarm sounds if an excessive weight is lifted.



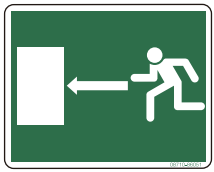
17. No.05793-03643



Be careful about the hoe attachment interference
When lowering the hoe attachment, be careful not to let it hit the undercarriage or dozer blade.
Also, make sure that the boom cylinder hose does not contact the chassis.

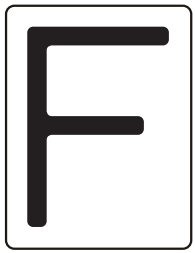
18. No.08710-86051

Position of Emergency Exit



19. No.03993-00400

For EU
Position of Fire extinguisher



20. No.03593-06600

Diesel fuel



21. No.03593-06700

Hydraulic oil



AL9A003E

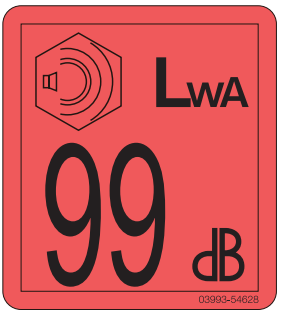
22. No.08810-31549
Tie down point



23. No.03993-00500
Position of hoisting



24. No.03993-54628
Noise Outside the Cab (if equipped)
This value indicates the noise level outside the machine and refers to the noise
perceived by the persons who are in the vicinity of the work area.

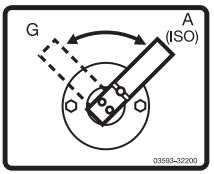


25. No.03793-69110 (Option)



WARNING!
Do not press the float switch while the machine is raised by the dozer blade. Doing so may cause the machine to fall.

26. No.03593-32200(Option)



27. No.03593-32300(Option)



28. No.03993-52302



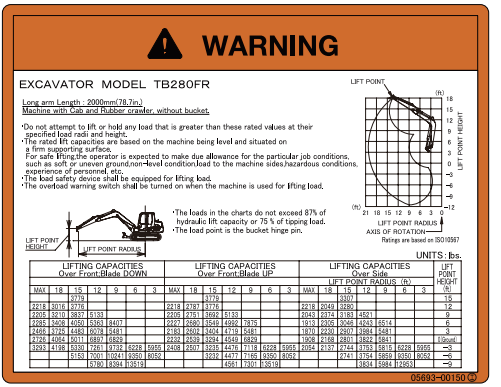
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29. No.03993-52303



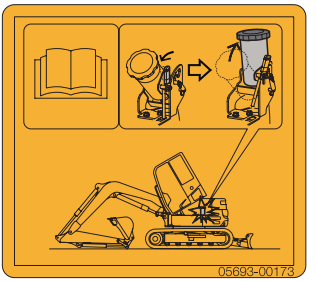
for USA

30. No.05693-00150



for USA

31. No.05693-00173
Cautions on tilting up the platform

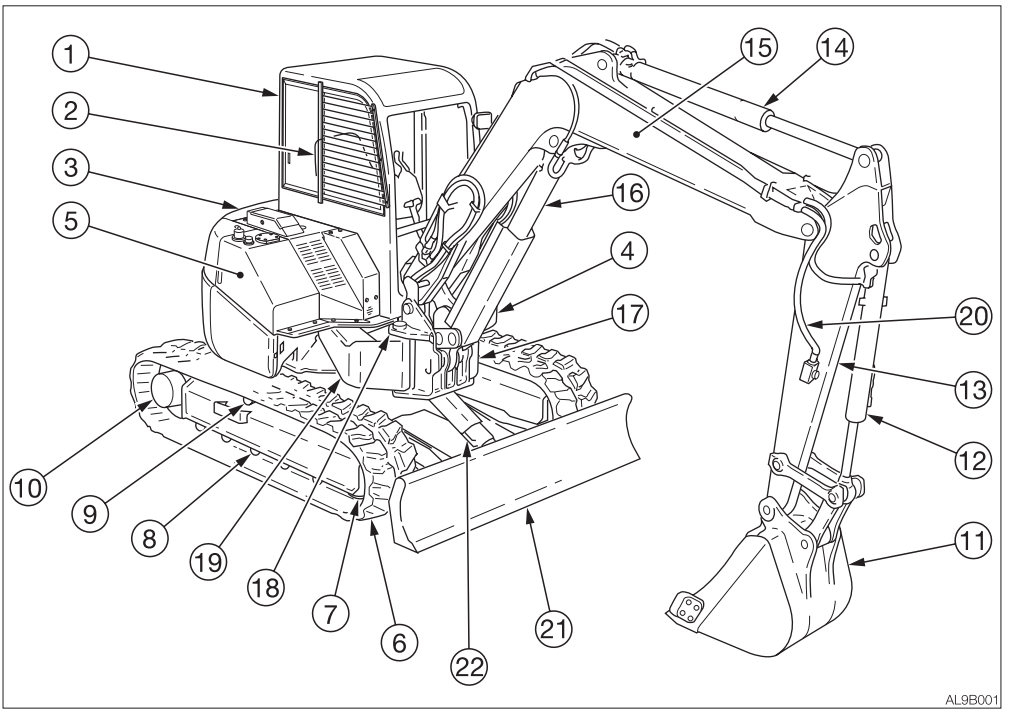


AL9A0042E

CONTROLS



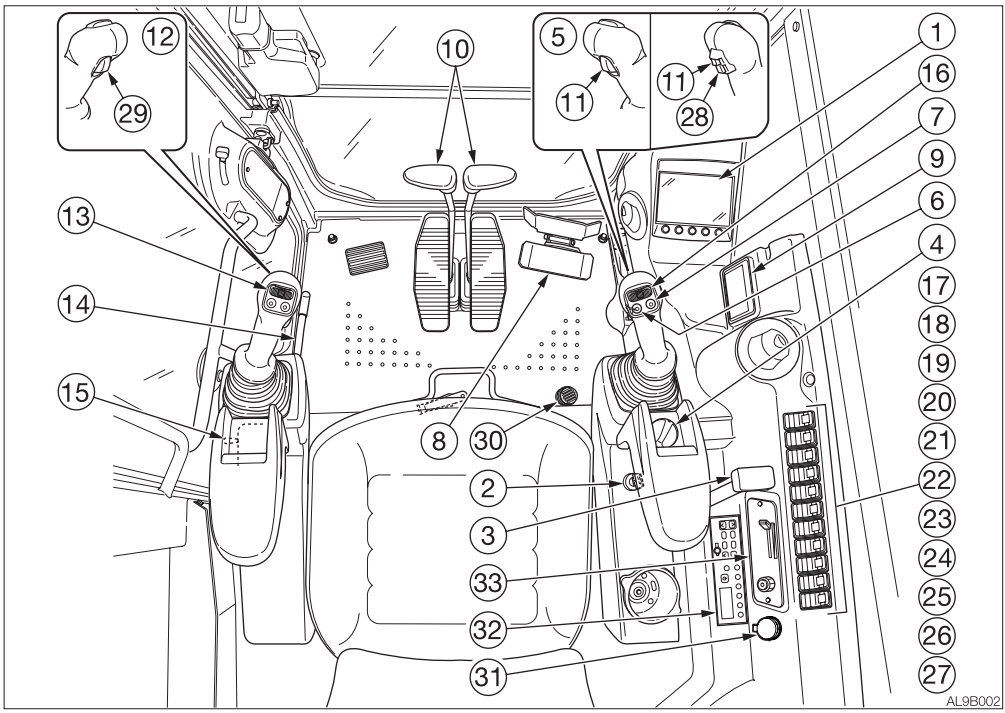
NAMES OF COMPONENTS



Upperstructure
1. Cab
2. Seat
3. Engine hood
4. Fuel tank
5. Hydraulic oil 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. Link arm (R. H)
20. Auxiliary hydraulic lines
21. Dozer blade
22. Blade cylinder

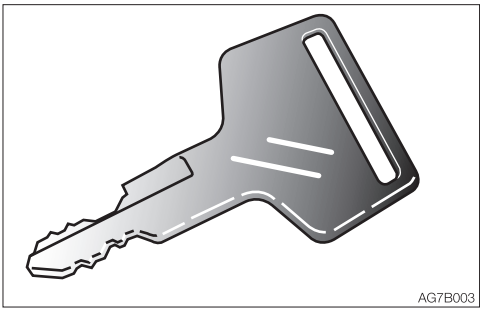


1. Multi-information display
2. Starter switch
3. Blade lever
4. Throttle controller
5. Right operating lever
6. Horn button
7. Deceleration button
8. Offset pedal
9. Ashtray
10. Travel levers/pedals
11. Travel speed button
12. Left operating lever
13. Auxiliary 1st switches
14. Safety lock lever
15. Engine shutdown switch
16. Auxiliary 2nd/4th switch*
17. DPF manual regeneration/inhibit select switch
18. Light switch
19. Wiper switch
20. Washer switch
21. Attachment interference prevention switch
22. Automatic deceleration switch
23. Power/Highland mode switch
24. Detent mode switch
25. Auxiliary 1st auto tank switch*
26. Lift overload warning switch*
27. Beacon lamp switch*
28. Auxiliary 2/4 select button*
29. Third auxiliary hydraulic button*
30. Third auxiliary hydraulic switch*
31. Power supply socket*
32. Radio
33. AC Control panel/Heater control panel*

*: Subject to the specifications or optional products selected

COVERS

STARTER KEY



The starter key is used to start and stop the engine, as well as to lock and unlock the following components:
- Cab door
- Engine hood
- Covers

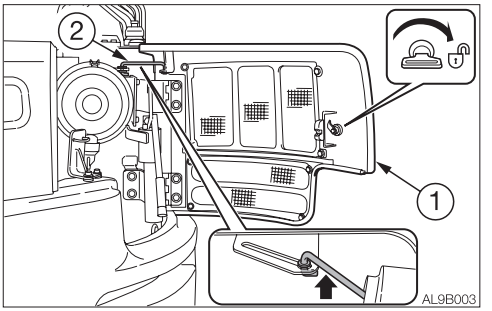
SIDE COVER

⚠ WARNING

- **Stop the engine and allow the machine to cool down before performing maintenance.**
- **Do not keep the side cover open on a windy day or if the machine is parked on a slope.**
- **When opening and closing the side cover, be careful not to get your hands or other parts of your body caught by the cover.**

For inspection and maintenance of the fuel system, electrical system, coolant system, air conditioner system, air cleaner or window washer, open this cover.

Opening



1. Insert the starter key into the key hole and turn it clockwise to unlock the side cover (1).
2. Open the side cover (1) all the way until it is no longer possible (automatically locked).

Closing

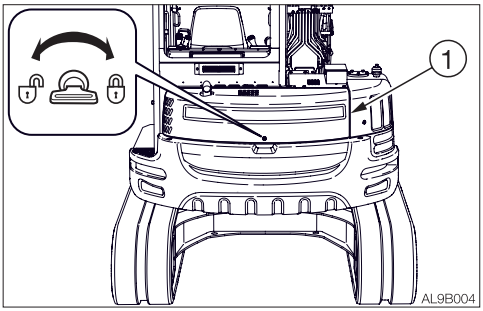
1. Support the side cover (1) by hand and lift the stay (2) to release it.
2. Close the side cover (1) and press it down until a click is heard.
3. Insert the starter key into the key hole and turn it counterclockwise to lock the side cover (1).

ENGINE HOOD

⚠ WARNING

- **Before opening the engine hood, be sure to stop the engine. If a hand or tool becomes trapped in the rotating or moving part, serious injury could result.**
- **When opening or closing the engine hood, be careful not to get your hands or other parts of your body caught by it.**

Opening



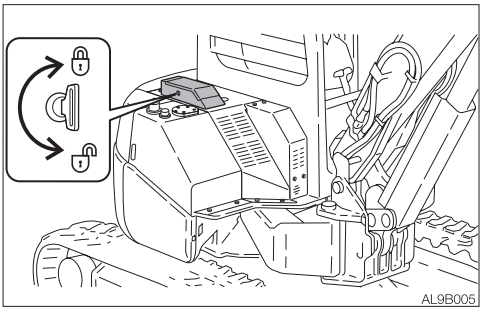
1. Insert the starter key into the key hole and turn it counterclockwise to unlock the engine hood (1).
2. Push in the key hole with your thumb and open the engine hood (1).

Closing

1. Close the engine hood (1) and press down the edge of it until a click is heard.
2. Insert the starter key into the key hole and turn it clockwise to lock the engine hood (1).

TOOL CASE

Opening



1. To unlock this case, insert the starter key and turn it counterclockwise.

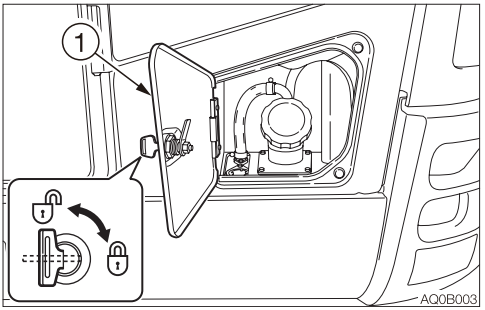
FUEL LID

⚠ CAUTION

Be sure to close the cab door before opening the fuel lid for fueling. If not, the wind-blown door could cause injury by striking you in the head or body.

For adding fuel or checking its level, open this cover.

Opening



1. Insert the starter key and turn it counterclockwise to unlock the fuel lid (1).
2. Open the fuel lid (1).

Closing

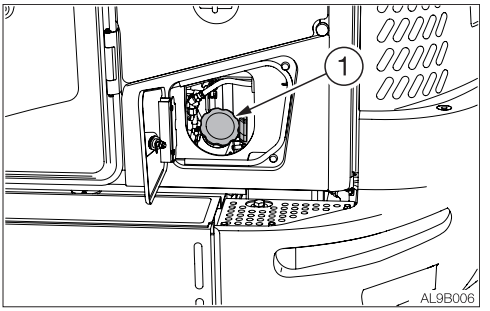
1. Close the fuel lid (1).
2. Insert the starter key and turn it clockwise to lock the fuel lid (1).

FUEL FILLER PORT

⚠ WARNING

- **Do not smoke and keep away from heat or flame while filling the fuel tank.**
- **Fill the fuel tank in a well ventilated place, with the engine turned off.**
- **Clean up spilled fuel immediately.**
- **Do not fill the fuel tank to capacity. Allow room for oil expansion.**
- **Securely tighten the fuel filler cap.**
- **Be sure to retract the fuel filler port before tilting up the platform. Otherwise, the filler port will come in contact with the platform and be damaged when the platform is tilted up.**

Opening



1. Open the fuel lid.
2. Turn the fuel cap (1) counterclockwise and remove it.

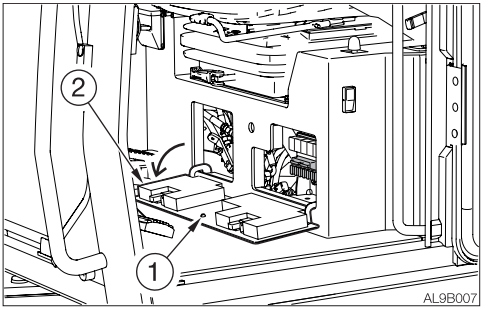
Closing

1. Turn the fuel cap (1) it clockwise and close it.
2. Close the fuel lid and lock it.

FUSE BOX COVER

Open this cover to perform a maintenance operation on the fuse or to switch the lever pattern selector valve.
The port for connecting to a computer is inside the box.

Opening



1. Hold the knob (1) and open the fuse box cover (2).

Closing

1. Close the fuse box cover (2).

CAB

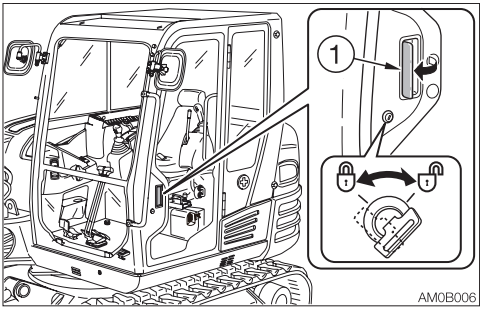
CAB DOOR

⚠ WARNING

When getting on or off the cab, first open the door all the way until it is secured in the catch and check that it does not move.

Open the door fully and press it against the catch at the back of the door to secure it in place.
The door must be locked when getting on or off the machine and while in operation.

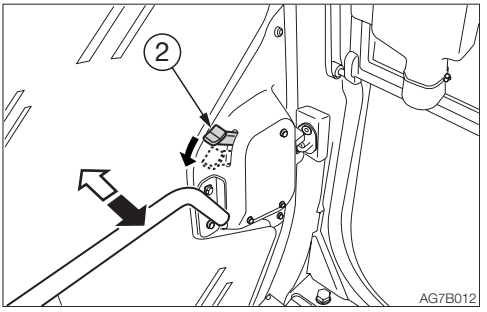
Locking and unlocking



Insert the starter key and turn it.

Opening

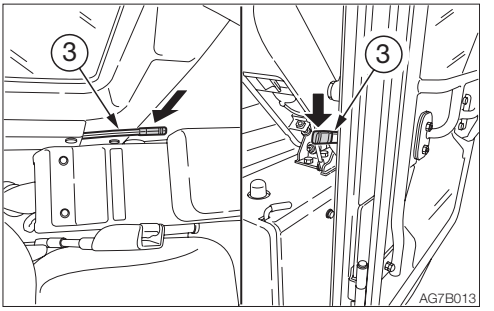
1. Pull the knob (1) towards you and open the door.



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

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

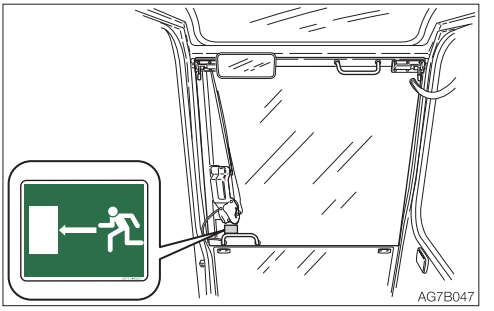
Closing



1. Push the release lever (3) to the lower.
2. Close the released door.

EMERGENCY EXIT

Front window (excluding machines with a front guard)



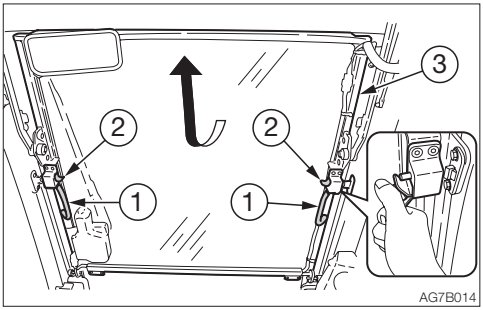
If you should become trapped inside the cab, open the front window to get out.

FRONT WINDOW

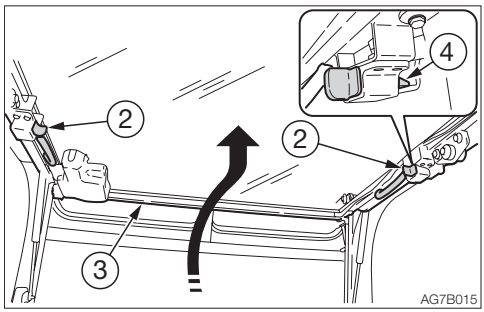
⚠ WARNING

- **Grasp the handles firmly with both hands when opening and closing the front window. Your head or hands may get caught if it slips from your hands.**
- **When the front window is opened or closed, it will come close to the head. Be careful that the window does not strike the head.**
- **When you open the front window, be sure to lock it in place with the lock pins on the left and right sides. The window may fall if it is not locked in place.**

Opening



1. Park on a level surface and stop the engine.
2. Set the safety lock lever to the locked position.
3. Grasp the left and right handles (1) and press the knobs (2) with your thumb to release the lock.
4. Pull the front window (3) toward you and lift while doing so.

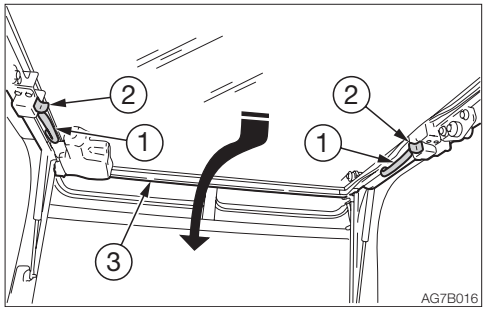


5. Release your thumb from the knobs (2) and then lift the front window (3) fully and lock the front window with lock pin (4).

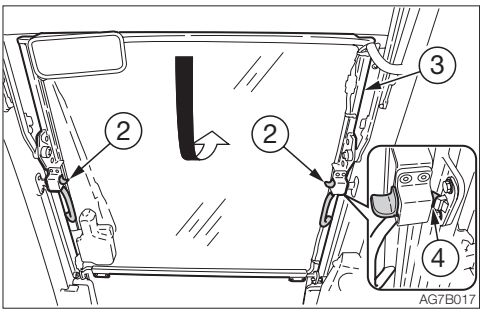
Closing

⚠ WARNING

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



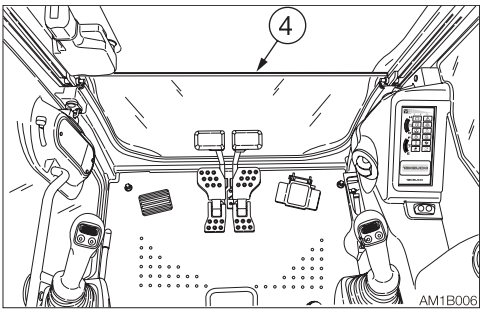
1. Grasp the left and right handles (1) and press the knobs (2) with your thumb to release the lock.
2. Pull down the front window (3) and while doing so, slide it to the front and slowly lower it.



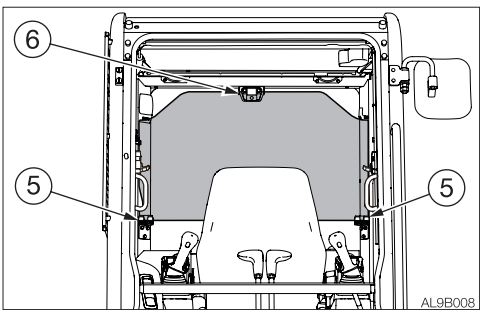
3. Release your thumb from the knobs (2) and then press the front window toward front and lock the front window with lock pin (4).

LOWER FRONT WINDOW

Removing

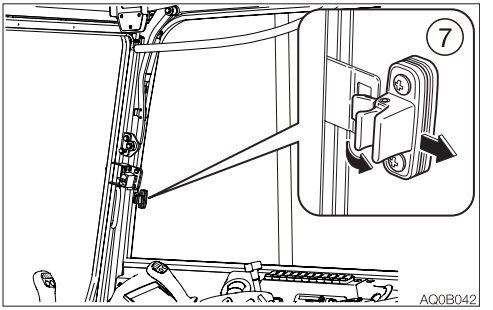


1. Open the front window and stow it in the ceiling.
2. Slowly lift the lower front window (4).



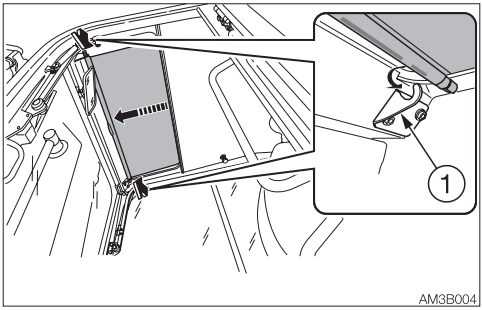
3. Place the bottom of the front window through the guides (5), and then secure the window with the support (6).

SIDE WINDOW



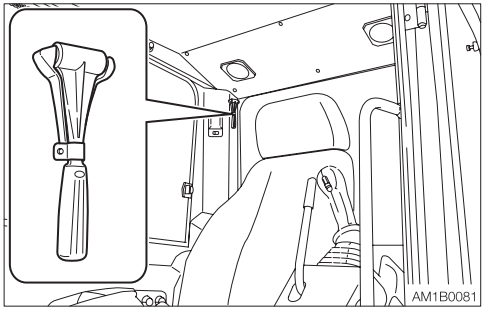
1. Grasp the catch (7), unlock it and open the side window.
2. To close the side window, close it until a click is heard.

SUN SHADE (IF EQUIPPED)



1. Pull out the sun shade forward.
2. Hook the sun shade to the two catches (1)

EMERGENCY HAMMER (OPTIONAL)



An emergency hammer is installed to be used to escape from the cab in an emergency. When escaping, break the windows with the hammer.

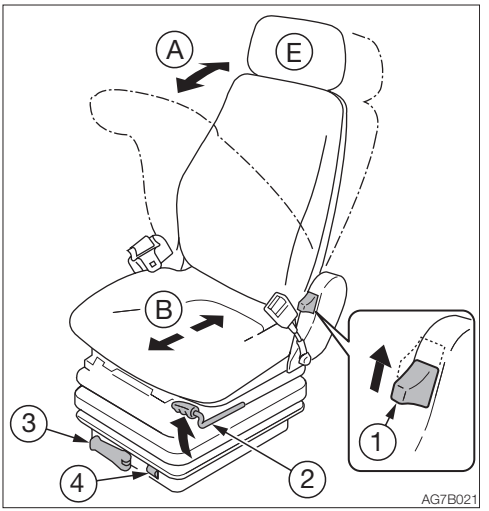
- When breaking the windowpane with a hammer, take great care not to injure yourself with the broken glass pieces.
- Remove the glass pieces from the window sill so as not to cut yourself when evacuating. Broken glass will fall from the window, so be careful of your footing and do not slip on the glass.

SEAT AND SEAT BELT

SEAT

⚠ WARNING

- **Adjust and secure the seat.**
- **Do not make any adjustments while operating the machine.**
- **Do not set the backrest to its maximum reclining position and slide the seat backwards at the same time. Doing so may damage the rear window or cause injury.**
- **Remember that the backrest returns to the forward position abruptly due to the spring force.**

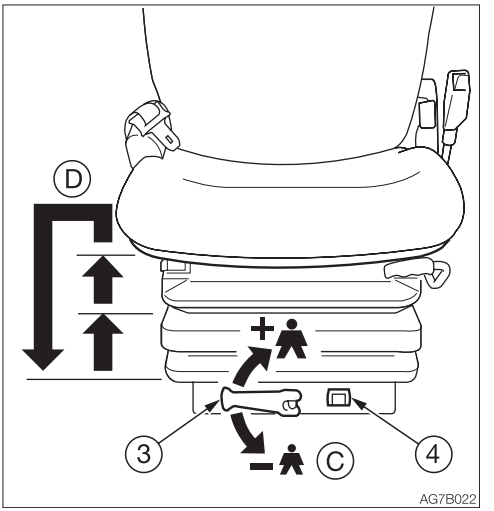


(A) Adjusting the backrest angle

1. Sit up and sit back in the seat.
2. Pull up the lever (1), recline the backrest by using the spring force. Release the lever (1) at the desired angle to secure the backrest.

(B) Fore-and-aft adjustment

1. Pull up the lever (2) and slide the seat backward or forward to the desired position for operation of machine.
2. Release the lever (2) at the desired position to secure the seat.
   Adjustment range: 15 positions, in 150 mm (5.9 in.)



(C) Adjusting according to operator's weight

1. Turn the handle (3) until the scale (4) indicates the weight of operator.
   Adjustment range: 50 to 130 kg (110 to 287 lbs)

(D) Adjusting the height of the seat

Upward

1. Lift the seat to first or second position click-stop.
   Adjustment ranges: 2positions, in 60mm (2.36 in.)

Downward

1. First lift the seat to highest position, then the seat can be lowered to lowest position.

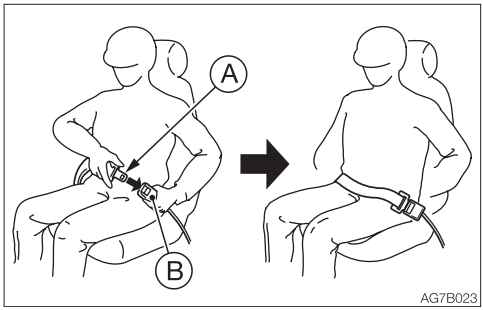
(E) Adjusting the headrest (Option)
The headrest (E) can be moved upward or downward.
1. Grab the headrest (E) with both hands, and move upward or downward to the desired position.

SEAT BELT

⚠ WARNING

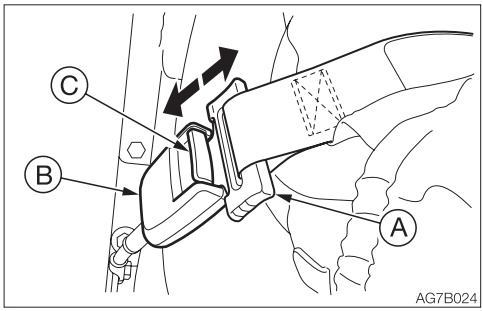
Be sure to fasten the seat belt securely before starting the engine.

Fastening the seat belt
1. Adjust the seat to the desired position for operation, sit up and sit back in the chair.
2. Pull the seat belt to the desired length.



3. Make sure that the belt is not twisted and then insert the tongue plate (A) into the buckle (B) of the seat belt until you hear a clicking sound as it locks in place.
4. Check if the belt is securely locked by pulling it, and arrange the belt around your waist.

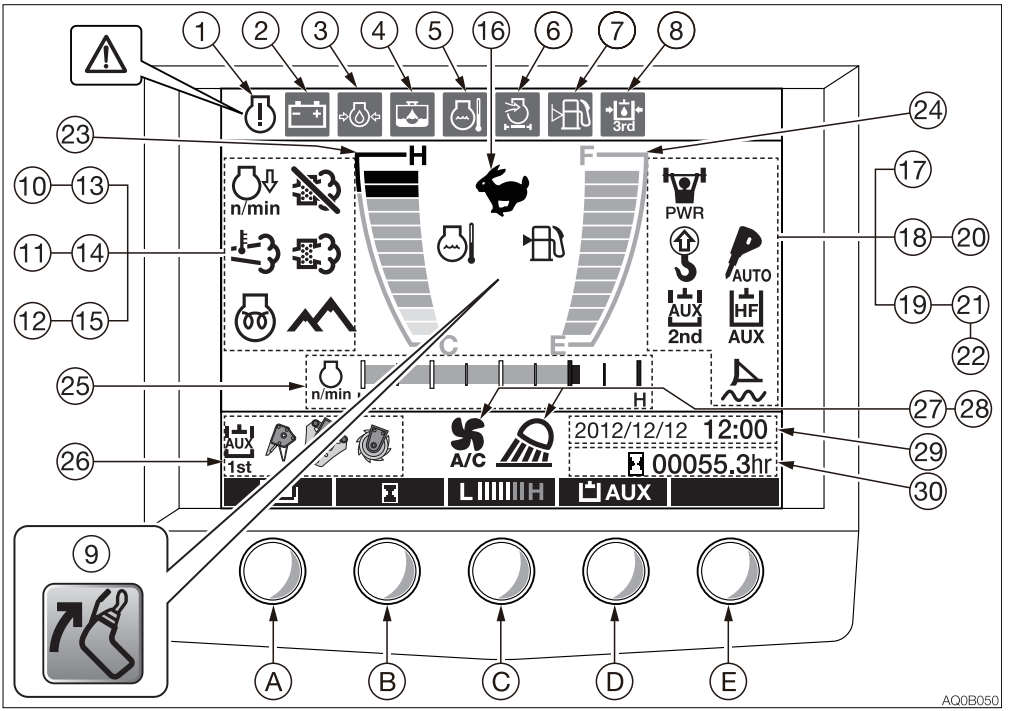
Releasing the seat belt



1. Grasp the tongue plate (A) and press the button (C) on the buckle (B).
   The seat belt retracts back into its original position.

MULTI-INFORMATION DISPLAY

MAIN MENU SCREEN



For explanation purposes, all lamps on this page are in the lit condition. This screen image is quite different from that of the real operation. In the actual operation, if a warning is given or any function is selected, the corresponding symbol appears enlarged at the center of the display for approx. one second.
When the starter switch is set to ON, the battery charge warning lamp and the engine oil pressure warning lamp first appear enlarged, and then turn on with an alarm at their original locations. The machine system is normal if the lamps turn off after the engine is started.

WARNING LAMPS

IMPORTANT: If a warning lamp flashes and an alarm is sounded, immediately stop all operations and check the corresponding component.
Refer to "If a warning lamp flashes" on pages 6-10 and 6-11.

1. ECM error warning lamp
This warning lamp flashes if the Electronic Control Module (ECM) detects an engine problem while the starter switch is in the ON position. The problem detected is recorded as an ECM error.
Refer to "Engine error code list" on pages 6-14 to 6-21.

1-1. Vehicle and engine emergency lamp
This lamp is displayed enlarged for one second, and then flashes and an alarm sounds if there is a problem with the machine. Go to the Error code display from the Menu screen, get the vehicle or engine error code number, and consult your sales or service dealer

referring to the “Vehicle error code list” or “Engine error code list” in this manual.
Refer to “Menu screen” on page 2-20 or 2-25.
Refer to “(7) Error code display” on page 2-23 or “(6) Error code display” on page 2-30.
Refer to “Vehicle error code list” on pages 6-12 to 6-13.
Refer to “Engine error code list” on pages 6-14 to 6-21.

2. Battery charge warning lamp
This lamp flashes and an alarm is sounded if a problem rises in the charging system while the engine is running.

3. Engine oil pressure warning lamp
This lamp flashes and an alarm is sounded if the lubricant oil pressure abnormally low while the engine is running.

4. Water separator warning lamp
This lamp flashes if the water is detected within the water separator while the starter switch is in the ON position.

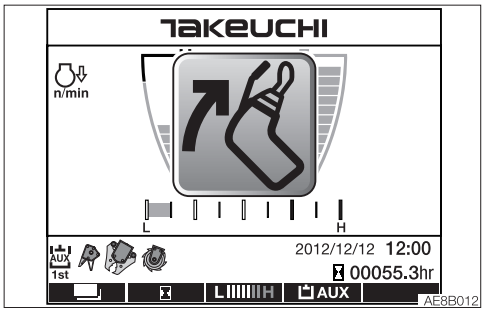
5. Coolant temperature warning lamp
This lamp flashes and an alarm is sounded if the engine coolant temperature becomes abnormally high while the engine is running.

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

7. Fuel level warning lamp
This lamp flashes when the fuel level is low while the starter switch is in the ON position.

8. Third auxiliary hydraulic warning lamp
This lamp starts flashing and an alarm sounds if the fixed side (left “e”) pressure of the auxiliary 3rd drops abnormally while the engine is running, or while the quick-hitch is being removed or installed.

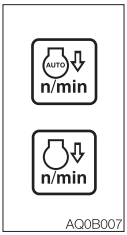
9. Safety start warning lamp <Applicable machine models 178500837 or later>



This lamp appears enlarged on the display and the buzzer sounds if the engine is started when the safety lock lever is in the unlock position. The engine cannot be started. First, set the safety lock lever to the lock position, and then start the engine.

INDICATORS

10. Deceleration indicator lamp



..... Automatic deceleration indicator

..... Deceleration indicator

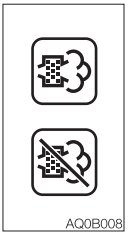
Automatic deceleration indicator
It flashes when the automatic deceleration switch is pressed and remains lit while in the deceleration mode.
Refer to “Deceleration button” on page 2-35.
Refer to “Automatic deceleration switch” on page 2-42.

Deceleration indicator
This lamp turns on when the deceleration button is pressed. The lamp lights up to indicate that the engine is in the deceleration mode at low idling speed.

11. Exhaust temperature warning indicator
This indicator lights up to warn if the exhaust temperature is abnormally increased. Check for any flammable items around the exhaust piping.

12. Glow indicator lamp
This indicator lamp turns off when the engine preheating is completed.

13. DPF auto regeneration/inhibit indicator lamp



..... DPF auto regeneration under way

..... DPF auto regeneration inhibit

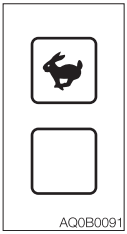
DPF auto regeneration under way
The DPF regeneration is automatically performed by the engine, when certain criteria are met. The operator only has to check the display.

DPF auto regeneration inhibit
The DPF manual regeneration inhibit symbol appears on the display when the DPF manual regeneration under way or the DPF auto regeneration under way is cancelled.
Refer to “DPF manual regeneration/ inhibit select switch” on page 2-38.

14 DPF manual regeneration under way/ regeneration promoting indicator
The indicator starts flashing and an alarm starts sounding, if the accumulated PM exceeds the limited amount on the DPF. Immediately perform the manual DPF regeneration.
Refer to “DPF manual regeneration/ inhibit select switch” on page 2-38.

15. Highland mode indicator lamp
Highland mode is selected.
Refer to “Power/Highland mode switch” on page 2-42.

16. Travel speed indicator lamp



..... High-speed travel

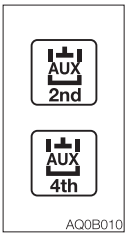
..... Low-speed travel

This lamp turns on when the travel speed button is set to the 2nd (high) speed.

17. Power mode indicator lamp
This lamp lights up when the power mode side of the Power/Highland mode select switch is pressed. The maximum engine output is maintained for as long as this lamp is lit.

18. Lift overload warning indicator lamp
This lamp turns on when the lift overload warning switch is turned on.

19. Auxiliary 2nd/4th select indicator lamp



..... Auxiliary 2nd is selected.

..... Auxiliary 4th is selected.

20. Auxiliary 1st one-way (one-way circuit) indicator lamp



..... Auxiliary 1st auto tank is selected.

..... Auxiliary 1st one-way is selected.

No display: ..... Two-way (two-way circuit) is selected.

21. High-flow indicator lamp
This lamp flashes and then stays lit when the auxiliary 1st flow rate is set to high-flow.
It also flashes when the high-flow setting is changed.

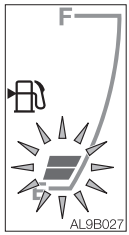
22. Dozer blade float indicator lamp (If equipped)



..... This lamp lights up when the float switch on the blade lever is pressed.

23. Water temperature gauge
Indicates the temperature of the engine coolant water. The indicator level must be within the green range during machine operation. The red range indicates overheating.

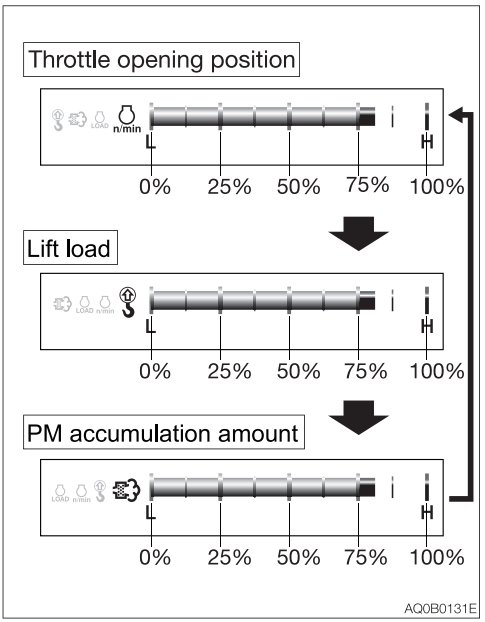
24. Fuel gauge



IMPORTANT: If the fuel gauge changes the color from green to orange while traveling on a flat ground, do not go to a sloping land. Engine stalling may occur on the sloping land. Before operating on the sloping land, be sure to add enough fuel.

Indicates the amount of fuel in the tank. Be sure to fill up the tank before running out of fuel.

25. Throttle opening position indicator



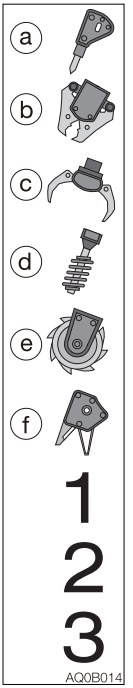
This gauge displays the load condition of the work. When the gauge is in the green range, the work load is light to medium. When the gauge is in the red range (75% or more), the work load is high. When the button (C) (Bar meter key) is pressed in a normal screen, the display is changed from the throttle opening position to the lift load factor and the PM accumulation amount, in this order.

Note: The machine is not faulty if the gauge is in the red range. Operating the machine with the gauge being in the green range is energy-saving and will help conserve the global environment.

- The lift load factor is displayed if there is no change in the throttle opening position for five seconds after the lift alarm switch is turned on.
- The throttle opening position is displayed if the highland mode switch is turned on or there is a change in the throttle opening position.

26. Auxiliary 1st flow rate indicator lamp

This lamp lights up to indicate which flow rate setting is selected in the auxiliary 1st.



a ..... a Flow rate setting 1
b ..... b Flow rate setting 2
c ..... c Flow rate setting 3
d ..... d Flow rate setting 4
e ..... e Flow rate setting 5
f ..... f Flow rate setting 6
1 ..... 1 Flow rate setting 7
2 ..... 2 Flow rate setting 8
3 ..... 3 Flow rate setting 9

Refer to “Auxiliary 1st flow rate setting” on page 2-21 or 2-27.

27. Air conditioner indicator lamp

Lights up while the air conditioner is operating.

28. Working light indicator

Lights up when the working light is turned on.

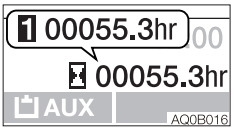
29. Date and time indicator



Displays the date and time set.
Refer to “Date and time setting” on page 2-23 or 2-30.

30. Hour meter/Trip meter

• Hour meter

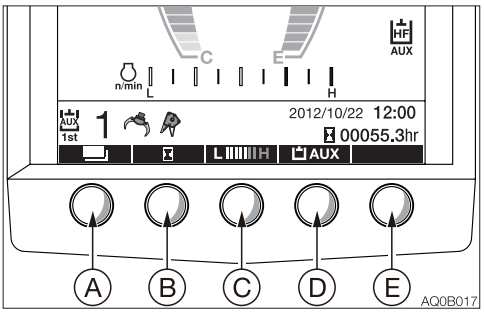


Displays the total engine running time in hours.
The rightmost digit indicates tenths of hours (6 minutes).
Set the inspection and maintenance intervals according to the time displayed on the hour meter.

• Trip meter

Three patterns of desired operating hours can be displayed.
Refer to “Trip meter setting” on page 2-21 or 2-26.

SCREEN CONTROL KEY



Note: Do not press the symbol keys on the display. The LCD could be damaged if the symbol keys are pressed hard. For actual operation, press the push button keys located at the bottom of the screen.

A. Menu key

Use this key to switch between the Home screen and the Menu screen. This key is also used to cancel changes made in each setting. The screen returns to the Home screen if this key is pressed in the information screen.

B. Hour meter key

This hour meter symbol is displayed in the initial screen. Pressing this key changes the meter display in the following order. Trip meter 1, Trip meter 2, Trip meter 3, Hour meter.

Down (↓) key
Use this key to move the cursor ▶ downward and to decrease the value in each setting. Press and hold this key for one second to rapidly decrease the value.

C. Bar meter key

This bar meter symbol is displayed in the initial screen. Pressing this key changes the meter display in the following order. Throttle opening position, Lift load factor, PM accumulation amount

Up (↑) key
Use this key to move the cursor ▶ upward and to increase the value in each setting. Press and hold this key for one second to rapidly increase the value.

D. Auxiliary 1st key

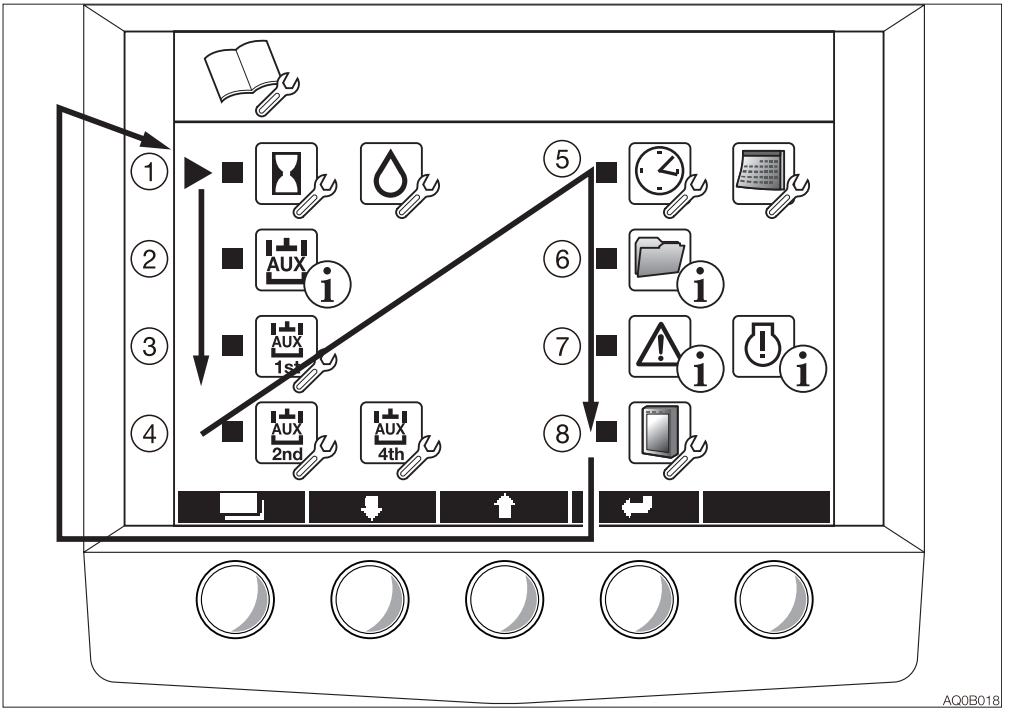
The auxiliary 1st symbol is displayed in the initial screen. Pressing this key changes the symbol display in the following order. Auxiliary 1st setting 1, Auxiliary 1st setting 2, Auxiliary 1st setting 3.

Enter key
Use this key to confirm or execute the setting made by each key.
To clear the trip meter being displayed, press and hold this key for three seconds.

E. —

SCREEN NAVIGATION

• Menu screen
<Applicable machine models 178500002 to 178500691>

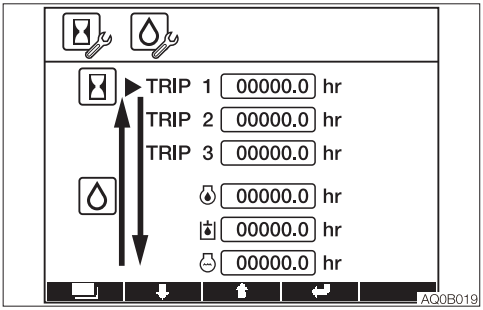


Press the Menu key to go the Menu screen while in the Home screen.

(1) Trip meter setting
(2) Auxiliary line flow rate display
(3) Auxiliary 1st flow rate setting
(4) Auxiliary 2nd/4th flow rate setting
(5) Date and time setting
(6) Data display
(7) Error code display
(8) LCD setting

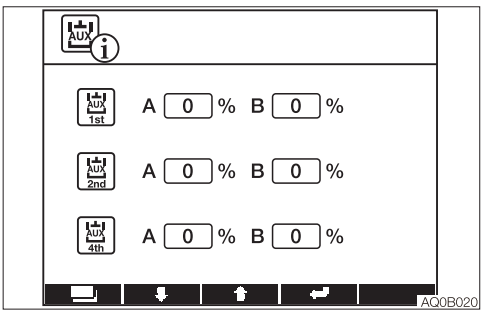
Move the cursor ▶ with the Up (↑) or Down (↓) key to go to the desired item to be set, and then press the Enter key to confirm. To return to the Menu screen, press the Menu key.
The wrench symbol indicates the “setting is possible state” and the (i) mark indicates information only.

(1) TRIP METER SETTING



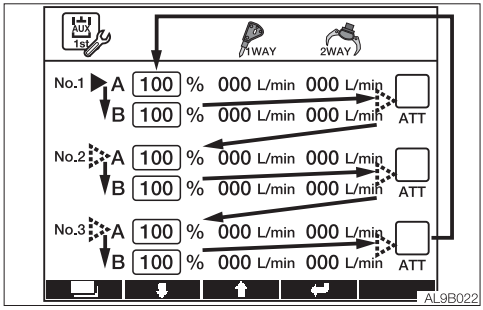
Six patterns of desired operating hours can be set.
To start setting, press the Enter key. The value flashes while being set.
Up (↑) key: Increases the value or moves the cursor ▶ upward. Rapidly increases the value when pressed and held for one second.
Down (↓) key: Decreases the value or moves the cursor ▶ downward. Rapidly decreases the value when pressed and held for one second.
Enter key: Confirms setting
Menu key: Cancels setting or returns to the Menu screen.
Pressing and holding the Enter key for three seconds clears the trip meter pointed by the cursor.

(2) AUXILIARY LINE FLOW RATE DISPLAY



Displays the flow rate of the Auxiliary 1st, 2nd and 4th.
The flow rate cannot be changed.

(3) AUXILIARY 1ST FLOW RATE SETTING

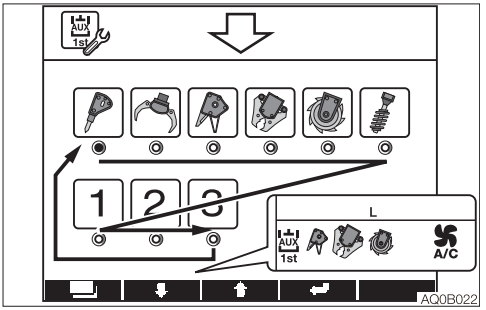


Three flow rate patterns can be set in the auxiliary 1st.
Refer to the trip meter setting for the key operation. To move the cursor ▶ in the direction of the arrow, use the Down (↓) key. To move the cursor ▶ in the opposite direction of the arrow, use the Up (↑) key.

Initial condition	A/B common, standard flow	Variable range
Auxiliary 1st-1	100%=74L/min (19.6 US gpm)	10 to 100%
Auxiliary 1st-2	75%=55L/min (14.7 US gpm)	10 to 100%
Auxiliary 1st-3	50%=37L/min (9.8 US gpm)	10 to 100%

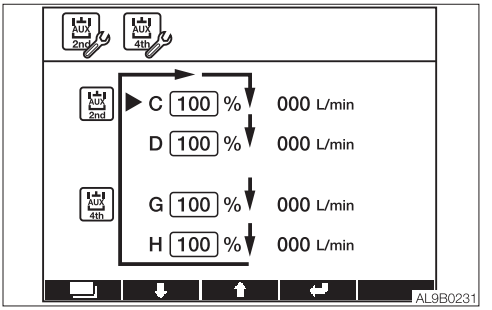
Maximum flow rate	A/B common, high-flow	Variable range
Auxiliary 1st-1, 2, 3	200%=148L/min (39.1 US gpm)	101 to 200%

The table shows the 1-way flow rate when there is no load.



Pressing the Enter key while the cursor ◉ is at “Select ATT” goes to the attachment select screen.
Pressing the Down (↓) key will move the blue flashing light in the direction of the arrow.
Pressing the UP (↑) key will move the blue flashing light in the opposite direction of the arrow.
Move the blue flashing light to the desired symbol or the number, and then press the Enter key to confirm.
The selected symbol will appear at the lower left of the Home screen.

(4) AUXILIARY 2ND/4TH FLOW RATE SETTING



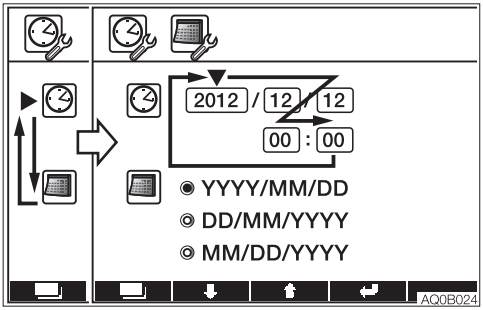
One pattern of the auxiliary 2nd/4th flow rate can be set.

Initial condition	Standard flow	Variable range
Auxiliary 2nd	C/D 100%=59 L/min (15.6 US gpm)	10 to 100%
Auxiliary 4th	G/H 100%=59 L/min (15.6 US gpm)	10 to 100%

The table shows the 1-way flow rate when there is no load.

Refer to the trip meter setting for the key operation. To move the cursor ▶ in the direction of the arrow, use the Down (↓) key. To move the cursor ▶ in the opposite direction of the arrow, use the Up (↑) key.

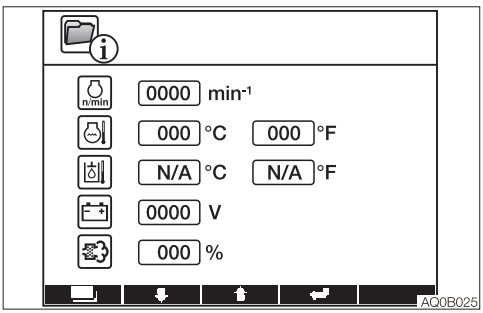
(5) DATE AND TIME SETTING



The year, month, date, hour and minute can be set. (Effective year range: 2010 to 2099)

- Move the cursor ▶ to the clock symbol, and then press the Enter key. The cursor ▼ will be shifted to the place for setting the year.
  Press the Enter key again, and then enter the year. (The year display keeps flashing during editing.)
  Press the Enter key to confirm. The month, date, hour and minute can be set using the same procedure for the year.
- Move the cursor ▶ to the calendar symbol, and then press the Enter key to change the format of "Year-Month-Date" to "Date-Month-Year" or "Month-Date-Year".
  Refer to the trip meter setting for the key operation.

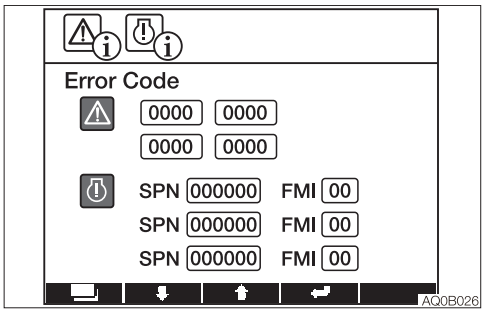
(6) DATA DISPLAY



Displays various data. The setting cannot be changed.

Display items
- Engine RPM
- Coolant temperature
- —
- Battery voltage
- PM accumulation amount

(7) ERROR CODE DISPLAY



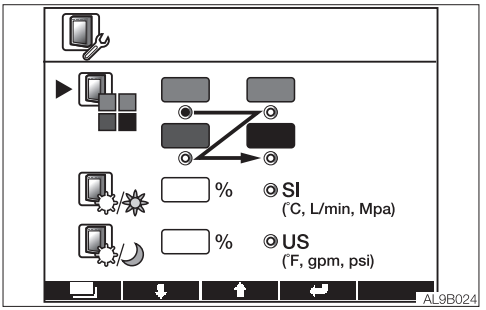
⚠.....Vehicle error code
Displays four error codes, with the latest code in the upper left.
Refer to "Vehicle error code list" on page 6-12 to 6-13.

.....ECM error code
Engine ECM (Engine Control Module) error code
Displays three error codes, with the latest code at the top.
Refer to "Engine error code list" on pages 6-14 to 6-21.

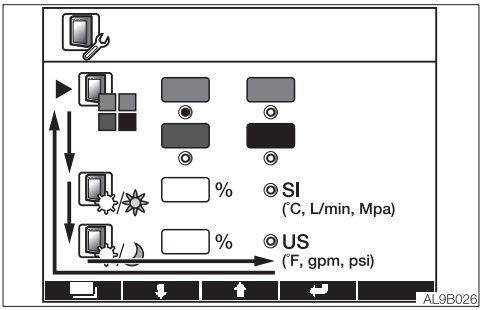
IMPORTANT: If an error code appears, immediately stop the operation and contact a Takeuchi sales or service outlet for help.

(8) LCD SETTING

• Background color setting



Move the cursor ▶ to the background color symbol, and then press the Enter key. The blue flashing light moves from blue gray to gray, blue and black, in this order. Move the blue flashing light to the desired color position, and then press the Enter key to confirm.
The background color can be changed in this screen, regardless of mode (day or night).



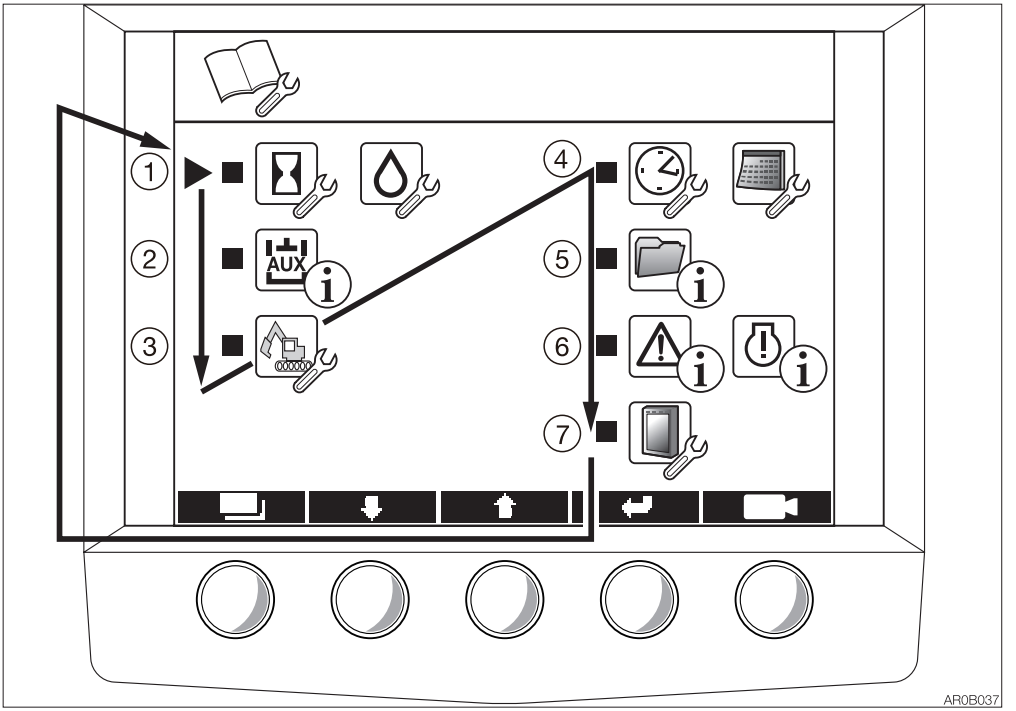
• The brightness of the LCD is set to between 0 and 100%. The brightness changes each time the adjustment is made.
Day mode: initial setting value is 50%
Night mode: initial setting value is 50%
While in the day (night) mode, adjustment is possible only for the brightness set to the night (day) mode.
Refer to the trip meter setting for the key operation.

• Unit setting
Switch between SI unit and US units.
Move the blue flashing light to the desired unit position, and then press the Enter key to confirm.

Menu key: returns to the Menu screen. Pressing the Menu key again returns to the Home screen.

SCREEN NAVIGATION

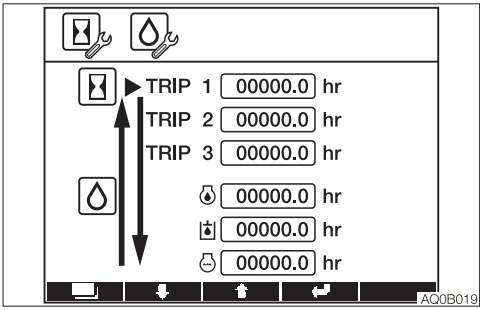
• Menu screen
<Applicable machine models 178500692 or later>



Press the Menu key to go the Menu screen while in the Home screen.

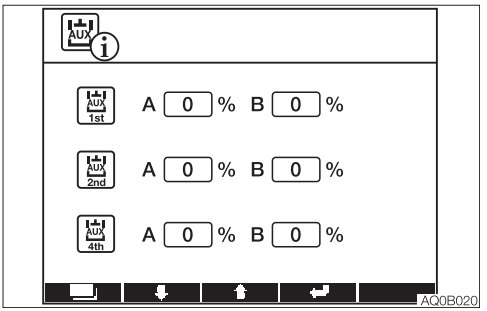
(1) Trip meter setting
(2) Auxiliary line flow rate display
(3) Machine settings
(4) Date and time setting
(5) Data display
(6) Error code display
(7) LCD setting
Move the cursor ▶ with the Up (↑) or Down (↓) key to go to the desired item to be set, and then press the Enter key to confirm. The screen returns to the Home screen if the Menu key is pressed on the Menu screen.
The wrench symbol indicates the “setting is possible state” and the (i) mark indicates information only.

(1) TRIP METER SETTING



Six patterns of desired operating hours can be set.
Press the Menu key to return to the Menu screen.
Move the cursor ▶ with the Up (↑) or Down (↓) key, and press and hold the Enter key for three seconds to clear the flashing trip meter pointed by the cursor.

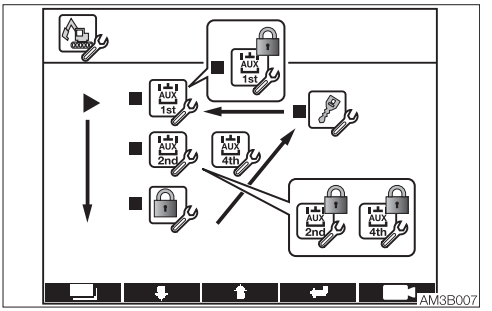
(2) AUXILIARY LINE FLOW RATE DISPLAY



Displays the flow rate of the Auxiliary 1st, 2nd and 4th.
The flow rate cannot be changed.

(3) MACHINE SETTINGS

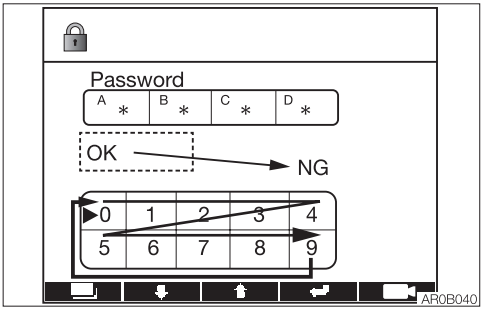
• **Machine setting screen**



The settings made to the machine can be changed. Move the cursor ▶ with the Up (↑) or Down (↓) key to go to the desired item to be set, and then press the Enter key to confirm.
To return to the Menu screen, press the Menu key.

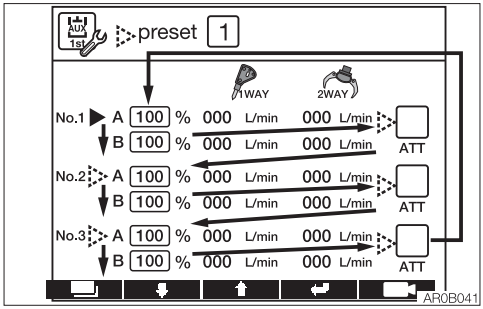
Note: When the auxiliary flow rate locking is set to “enabled”, the “Lock” symbol is added to the upper right of the “auxiliary flow rate setting” symbol.
You are requested to enter the password when setting the auxiliary flow rate, locking/unlocking the auxiliary flow rate or changing the password.

• Requesting password screen



When the “closed-lock” symbol is displayed, it is necessary to enter the password to set the auxiliary flow rate, lock/unlock the auxiliary flow rate or change the password. Move the cursor ▶ with the Up (↑) or Down (↓) key, and press the Enter key to enter a 4-digit number password. Enter the existing password. If it is correct, “OK” will be displayed followed by the setting screen. If it is not, “NG” will be displayed followed by the machine setting screen.
It is not necessary to enter the password again unless you want to change it or until you turn the ignition switch to OFF.

1. Auxiliary 1st flow rate setting

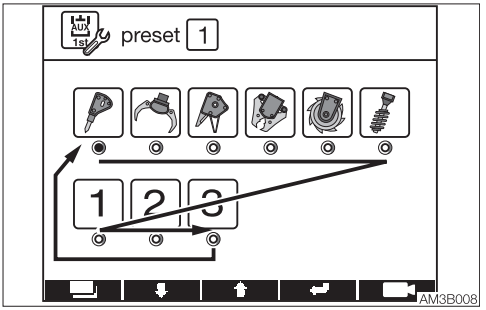


For the auxiliary 1st flow rate, there are four patterns to choose from.
The three patterns shown on the display can be selected from the Home screen.
For the preset, select from 1 through 4.
To return to the machine setting screen, press the Menu key.
Use the Up (↑) or Down (↓) key to move the cursor ▶, and then press the Enter key to flash the number to be edited. To cancel editing, press the Menu key.
Use the Up (↑) or Down (↓) key to change the value, and then press the Enter key again to complete editing.

Initial condition	A/B common, standard flow	Variable range
Auxiliary 1st-1	100%=74L/min (19.6 US gpm)	10 to 100%
Auxiliary 1st-2	75%=55L/min (14.7 US gpm)	10 to 100%
Auxiliary 1st-3	50%=37L/min (9.8 US gpm)	10 to 100%

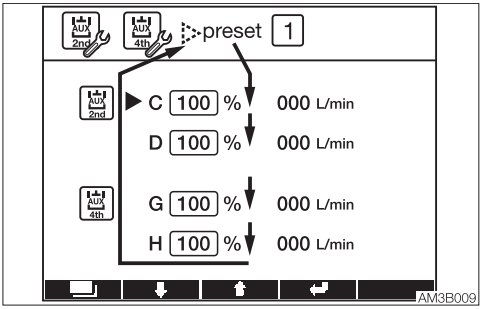
Maximum flow rate	A/B common, high-flow	Variable range
Auxiliary 1st-1, 2, 3	200%=148L/min (39.1 US gpm)	101 to 200%

The table shows the 1-way flow rate when there is no load.



Pressing the Enter key while the cursor ▶ is at “ATT” goes to the attachment select screen.
Pressing the Down (↓) key moves the cursor ◉ in the direction of the arrow.
Use the Up (↑) key to move the cursor ◉ in the opposite direction of the arrow.
Move the cursor ◉ to the desired symbol or the number, and then press the Enter key to confirm.
The selected symbol will appear at the lower left of the Home screen.

2. Auxiliary 2nd/4th flow rate setting



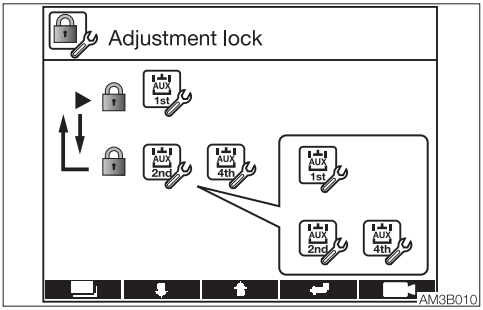
One pattern of the auxiliary 2nd/4th flow rate can be set.

Initial condition	Standard flow	Variable range
Auxiliary 2nd	C/D 100%=59 L/min (15.6 US gpm)	10 to 100%
Auxiliary 4th	G/H 100%=59 L/min (15.6 US gpm)	10 to 100%

The table shows the 1-way flow rate when there is no load.

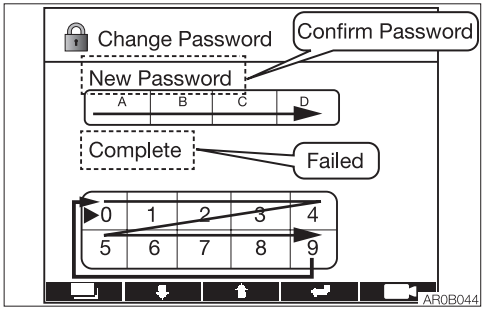
Refer to the trip meter setting for the key operation. To move the cursor ▶ in the direction of the arrow, use the Down (↓) key. To move the cursor ▶ in the opposite direction of the arrow, use the Up (↑) key.

3. Setting the auxiliary flow rate locking



It is possible to request the user to enter a password when setting the auxiliary flow rate.
To return to the machine setting screen, press the Menu key.
Use the Up (↑) or Down (↓) key to move the cursor ▶, and then press the Enter key to turn on or off the “Lock” symbol.
Lock symbol is lit: Locked
Lock symbol is off: Unlocked
Note: If the password is set to “0000”, the auxiliary flow rate locking cannot be set to “enabled”.
Upon setting the locking to “enabled”, the screen asking for the password appears every time the ignition switch is turned to OFF or the password is changed.

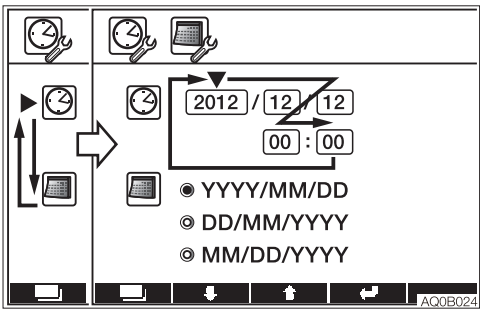
4. Changing the password



The password can be changed. Use the Up (↑) or Down (↓) key to move the cursor ▶ to the password field, and then press the Enter key to enter a 4-digit number password.
Once the password is entered, the display of “New Password” is change to “Confirm Password”.
The password change is successful when “Complete” appears after entering the same password for confirmation. If the password reentered does not match the one entered earlier, the notification of “Failed” appears asking for entering the password again in the first entry field.
To cancel editing, press the Menu key.

Note: If the password is set to “0000”, the auxiliary flow rate locking cannot be set to “enabled”.

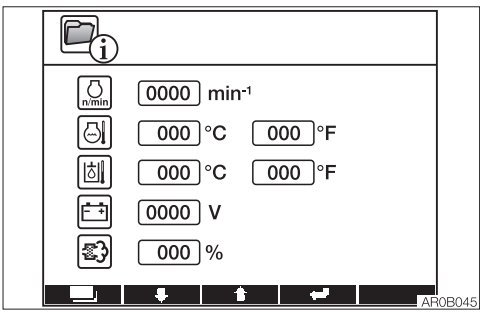
(4) DATE AND TIME SETTING



The year, month, date, hour and minute can be set. (Effective year range: 2010 to 2099)

- Move the cursor ▶ to the clock symbol, and then press the Enter key. The cursor ▼ will be shifted to the place for setting the year.
  Press the Enter key again, and then enter the year. (The year display keeps flashing during editing.)
  Press the Enter key to confirm. The month, date, hour and minute can be set using the same procedure for the year.
- Move the cursor ▶ to the calendar symbol, and then press the Enter key to change the format of "Year-Month-Date" to "Date-Month-Year" or "Month-Date-Year".
  For the key operations, refer to "Screen control key" on page 2-19.

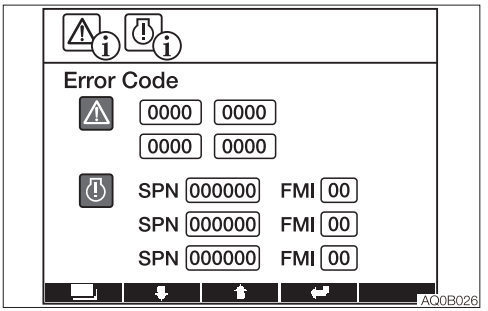
(5) DATA DISPLAY



Displays various data. The setting cannot be changed.

Display items
- Engine RPM
- Coolant temperature
- Hydraulic oil temperature
- Battery voltage
- PM accumulation amount

(6) ERROR CODE DISPLAY

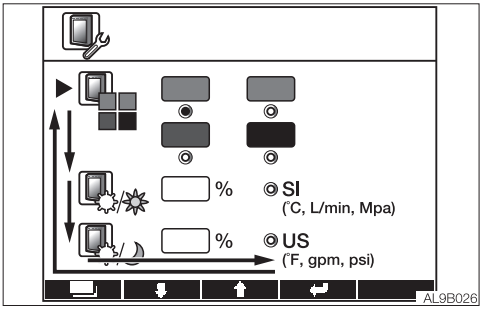


⚠.....Vehicle error code
Displays four error codes, with the latest code in the upper left.
Refer to "Vehicle error code list" on pages 6-12 to 6-13.

.....ECM error code
Engine ECM (Engine Control Module) error code
Displays three error codes, with the latest code at the top.
Refer to "Engine error code list" on pages 6-14 to 6-24.

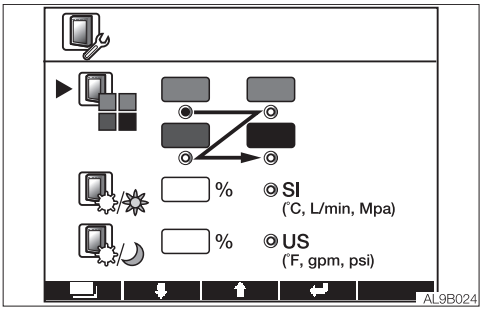
IMPORTANT: If an error code appears, immediately stop the operation and contact a Takeuchi sales or service outlet for help.

(7) LCD SETTING



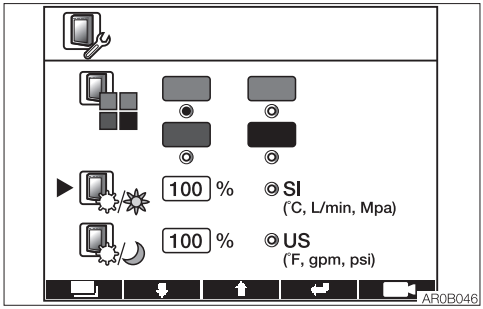
The display settings can be changed. Use the UP (↑) or Down (↓) key to move the cursor ▶.
Press the Menu key to return to the Menu screen.

• Background color setting



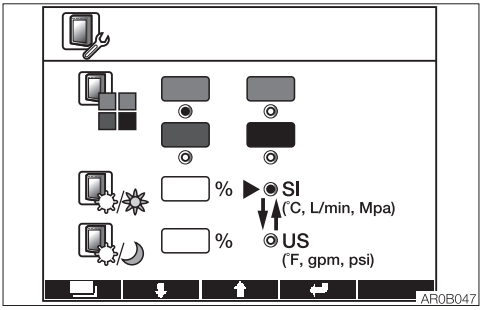
Move the cursor ▶ to the background color symbol, and then press the Enter key. The blue flashing light moves from blue gray to gray, blue and black, in this order. Move the blue flashing light to the desired color position, and then press the Enter key to confirm.
The background color can be changed in this screen, regardless of mode (day or night).

• Brightness setting



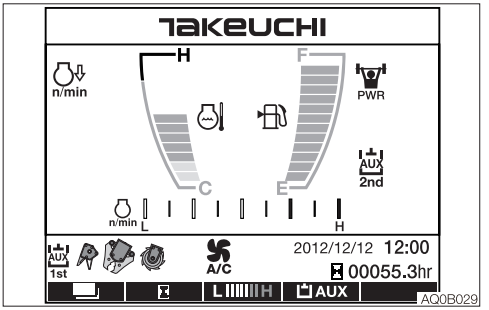
The brightness of the LCD is set to between 20 and 100%.
The brightness changes each time the adjustment is made.
Pressing the Enter key upon selecting the brightness setting symbol causes the value to flash for editing. To cancel editing, press the Menu key.
Use the Up (↑) or Down (↓) key to change the value, and then press the Enter key to complete editing.
(1) Day mode: initial setting value is 50%
(2) Night mode: initial setting value is 50%
Adjustment to the night (day) mode while in the day (night) mode cannot be synchronized.
For the key operations, refer to “Screen control key” on page 2-19.

• Unit setting

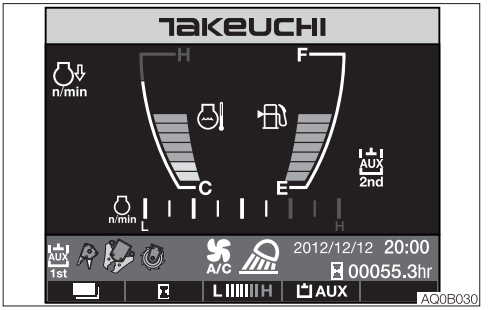


Switch between SI unit and US units. Move the blue flashing light to the desired unit position, and then press the Enter key to confirm.

SWITCHING IMAGES



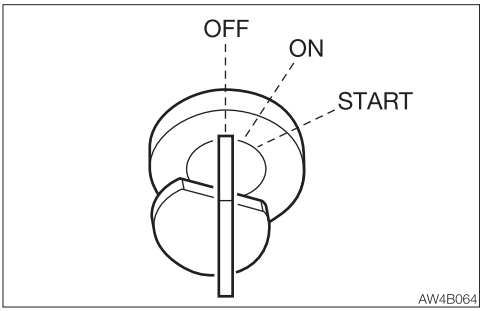
- **Changing the background color (day/ night)**



Turn on the light switch on any screen to decrease the display brightness and to enter the “evening mode”.

SWITCHES

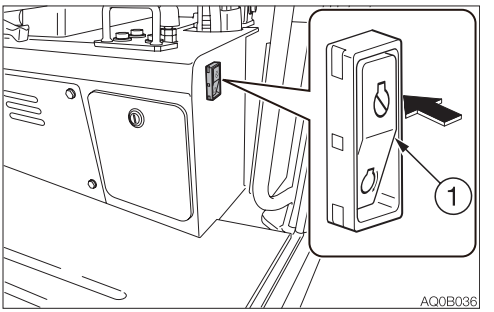
STARTER SWITCH



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

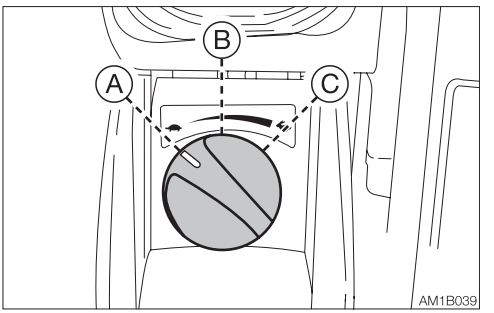
OFF ..... Position for stopping the engine and inserting or removing the key.
ON ..... Position in which the engine is running. At this position, all the electrical equipment is functional. When the coolant temperature is too low, the engine is automatically preheated.
START ..... Position for starting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

ENGINE SHUTDOWN SWITCH



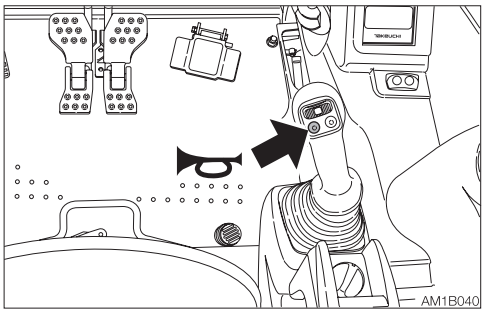
This switch is used to shutdown the engine if it fails to stop, due to machine failure or breakage, when the starter switch is set to the OFF position.
1. Press the switch (1).
2. After use, reset the switch (1).

THROTTLE CONTROLLER



This controls the engine speed.
(A).....Low idling
(B) .....Medium speed
(C) .....Maximum speed

HORN BUTTON

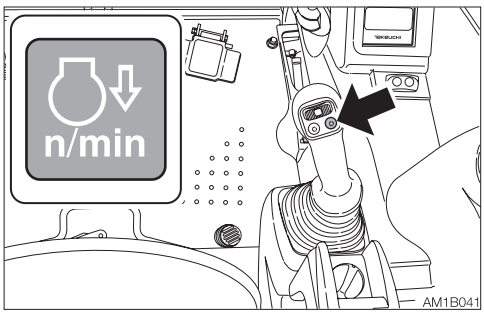


Press the button situated on the right operating lever to blow the horn.

DECELERATION BUTTON

⚠ WARNING

Before operating the deceleration button, set the operating lever to the neutral position and take your foot off the pedals. If the deceleration button is pressed while driving, the machine's operating speed will abruptly change to result in a dangerous situation.



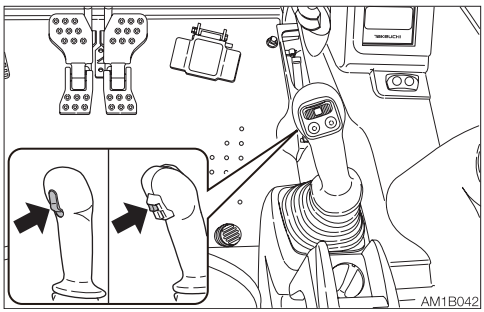
Press this button on the right operating lever to lower the engine speed to low idling. Press the button again to return to the engine speed set with the throttle controller. For safety reasons, it is designed that the deceleration function is activated to set the engine revolutions to low idling whenever the engine is started.
Cancel the deceleration mode by pressing the deceleration button as necessary.

Note: This deceleration button is capable of decreasing the engine speed and reducing the fuel consumption, with a simple operation, in a situation such as when little engine output is required and thus the operating or the travel levers are in neutral.

TRAVEL SPEED BUTTON

⚠ WARNING

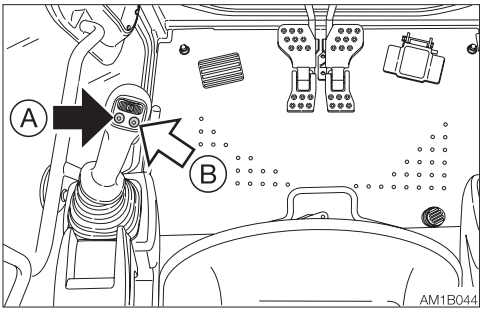
When a load greater than a set value is applied during traveling in 2nd (high) speed, the speed will automatically slow down to 1st (low) speed. When the load becomes lighter, the speed will increase and return to 2nd (high) speed. It should be noted that the travel speed changes depending on the load condition (for machines with the automatic travel shift-down system).



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

AUXILIARY 1ST SWITCHES

Auxiliary hydraulic buttons

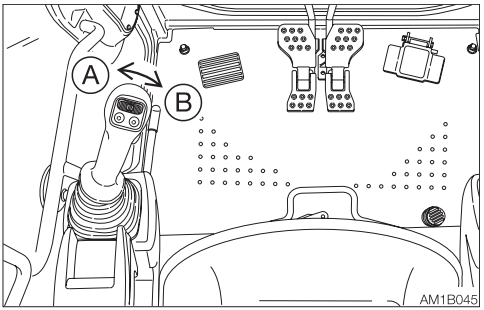


Press those buttons to control the flow of the oil in the first auxiliary hydraulic lines.
- Proportional control of the auxiliary hydraulic circuit is not possible.

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

Slider switch
(Proportional control)

Proportional control allows for slow-to-fast/ fast-to-slow movement of attachment.
Example: If you move the slider switch half way, the attachment will move at approximately one-half the speed.



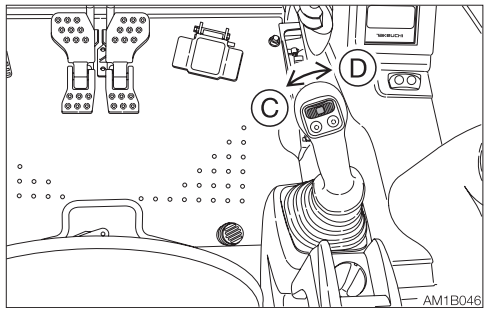
Move this switch to control the flow of the oil in the first auxiliary hydraulic lines.
(A).....Hydraulic oil flows to the left auxiliary line (a).
(B) .....Hydraulic oil flows to the right auxiliary line (b).

Refer to “Auxiliary hydraulic lines (If equipped)” on pages 2-74 to 2-78.

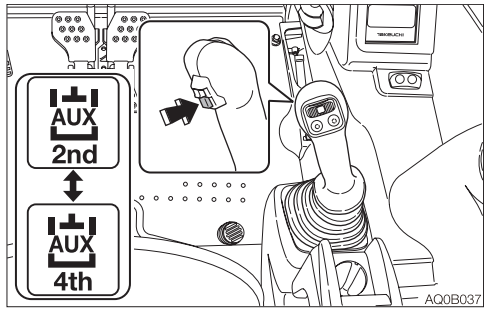
AUXILIARY 2ND/4TH SWITCH

Slider switch
(Proportional control)

Proportional control allows for slow-to-fast/ fast-to-slow movement of attachment.
Example: If you move the slider switch half way, the attachment will move at approximately one-half the speed.



Move this switch to control the flow of the oil in the second auxiliary hydraulic lines.
(C): .....Hydraulic oil flows to the left auxiliary line (c).
(D): .....Hydraulic oil flows to the right auxiliary line (d).



To use the auxiliary 4th hydraulic line, press the auxiliary 2/4 select button to change to the operation of the auxiliary 4th.
Refer to “Auxiliary hydraulic lines (If equipped)” on pages 2-74 to 2-78.

THIRD AUXILIARY HYDRAULIC SWITCH AND BUTTON (IF EQUIPPED)

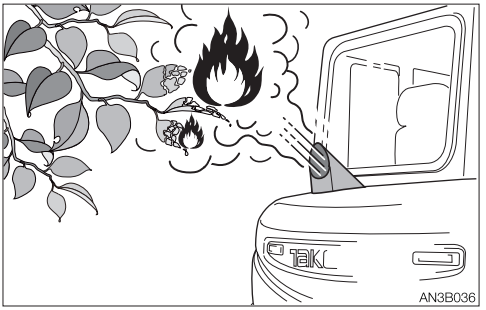
Refer to “Third auxiliary hydraulic switch and button (If equipped)” on page 2-77.

AUXILIARY 2/4 SELECT BUTTON (IF EQUIPPED)

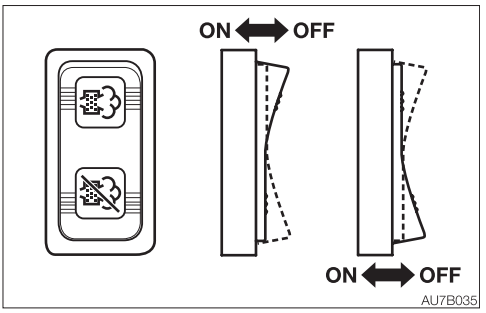
Refer to “Auxiliary 2/4 select button (If equipped)” on 2-78..

DPF MANUAL REGENERATION/INHIBIT SELECT SWITCH

⚠ WARNING

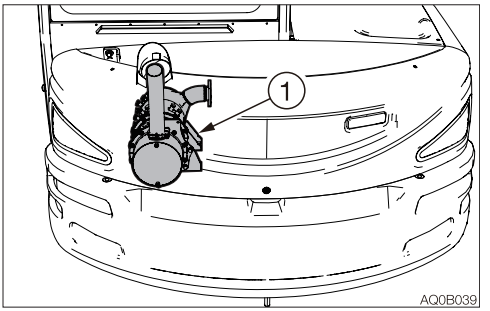


- **The DPF and the exhaust gas emitted from the exhaust line can be very hot while the engine is running or the regeneration is under way, as well as immediately after the engine is stopped. Be careful not to accidentally touch them; doing so could cause burns.**
- **Do not perform the DPF regeneration if the machine is surrounded by flammable items such as plants, trees, dry grass, wastepaper, oil and waste tires. There is a risk of fire due to the high-temperature exhaust gas emitted from the DPF.**
- **Do not perform the DPF regeneration in poorly-ventilated indoor spaces, as smoke may be generated during the regeneration.**
- **Do not perform regeneration when the engine hood is open. There is a risk of fire due to the high-temperature exhaust gas emitted from the DPF.**



IMPORTANT: Press the manual regeneration side on the DPF manual regeneration/inhibit select switch to burn the particulate matter (PM), when the DPF manual regeneration lamp flashes and an alarm sounds. If the machine continues to be operated without performing the manual regeneration, the engine power will decrease and eventually the engine will stop running. The ECM warning display will also flash if the DPF needs to be repaired. A number appears on the engine error code screen. Refer to the "Engine error code list" and contact a Takeuchi sales or service dealer for repair.

- **DPF manual regeneration**
  When the DPF manual regeneration symbol on the display starts flashing and an alarm starts sounding, perform the DPF manual regeneration by following the procedure below.
  1. Park the machine in a safe place where there is no fire hazard.
  2. Raise the safety lock lever to the lock position.
     · Do not lower the safety lock lever and move the control levers during regeneration. Doing so interrupts the regeneration.
  3. Decrease the engine speed to low idling.
  4. Press and hold the manual regeneration side on the DPF manual regeneration/ inhibit select switch.



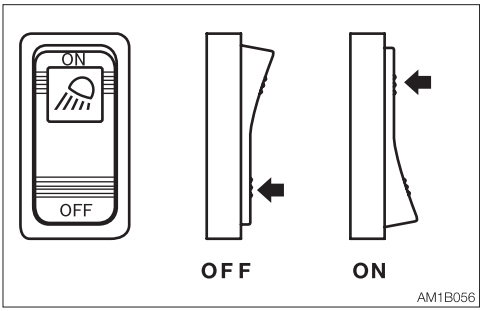
5. The manual regeneration symbol stops flashing and remains lit to indicate that the engine RPM is automatically increased and the DPF (1) regeneration (PM burning) has started.
6. Release the switch. Do not leave the machine during regeneration.
   It takes approximately 25 to 30 minutes, depending on the ambient temperature, to complete the regeneration operation.
7. The manual regeneration symbol goes off to indicate the end of manual regeneration.

Note:

- Since the exhaust gas is cleaned through the catalyst fitted inside the DPF, it has a smell different from that of the conventional diesel engine.
- In some cases smoke may be emitted from the tail pipe while the DPF regeneration is being performed. This is not a failure; it is due to burning of the particulate matter (PM).
- It is normal that a sound is produced when the DPF regeneration is started or completed; This is to adjust the air-intake throttle and EGR opening position.
- In some cases the noise associated with the DPF regeneration operation or cancel operation may change; this is not a failure.
- The DPF manual regeneration can be completed faster while the machine engine is warm rather than cold. Note that the manual regeneration does not start unless the coolant temperature is higher than a set value. The coolant temperature may increase while manual regeneration is being performed.
- Since the DPF regeneration is designed to work only when the accumulated particulate matter (PM) in the filter exceeds a certain amount, it will not start otherwise, even if you attempt to perform manual regeneration.

- **DPF regeneration inhibit (cancel)**
  To cancel the DPF regeneration currently being processed (manual or auto), press the regeneration inhibit symbol side.
  The DPF regeneration inhibit symbol appears on the display, and the regeneration operation must be performed again. Start the manual regeneration procedure from Step (1) above, as soon as possible. Do not press the DPF regeneration inhibit switch unless there is a risk of fire.
  To cancel, press the switch again. Turning the starter switch to OFF will also cancel the operation.
  Refer to “DPF auto regeneration/inhibit indicator lamp” and “DPF manual regeneration under way/regeneration promoting indicator” on page 2-16.

LIGHT SWITCH

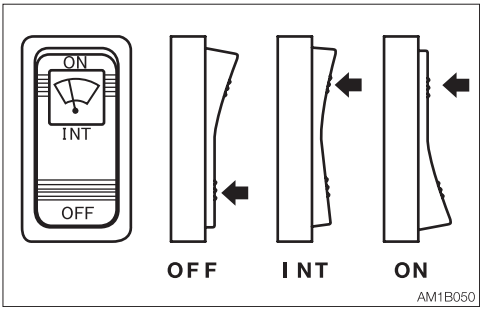


When this switch is turned while the starter switch is at ON, the lights turn on as follows:

OFF ....Off
ON .....Switch lamps and boom light will be lit.

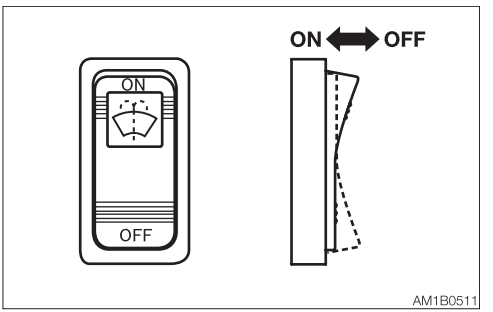
WIPER SWITCH

IMPORTANT: If no washer fluid is discharged, do not operate the washer. Doing so may damage the pump.
IMPORTANT: Operating the wiper with no moisture on the windshield will scratch the glass. Use water or washer fluid when operating the wiper.
IMPORTANT: In cold climates, the wiper blade may freeze to the glass. Operating the wiper forcibly may damage the wiper motor.



OFF ....Off
INT .....Intermittence operation
ON .....Continuous operation

WASHER SWITCH



ON .....Pressing the ON side of the switch causes the washer to spray washer fluid. To stop spraying, release the switch.

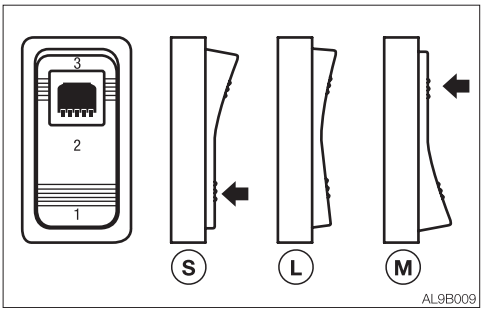
ATTACHMENT INTERFERENCE PREVENTION SWITCH

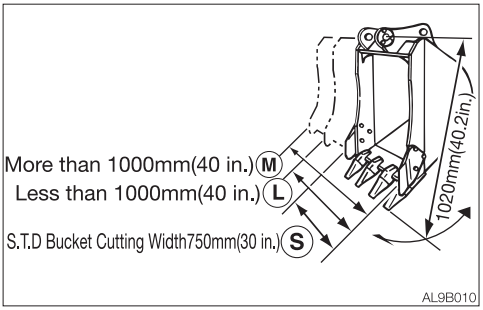
⚠ WARNING

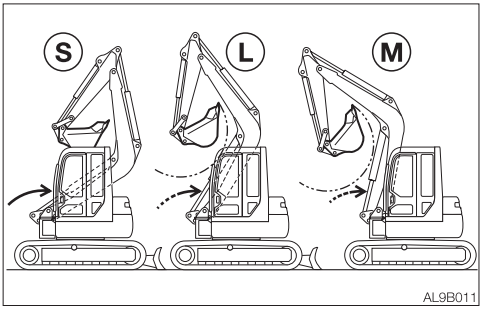
- **Failure to properly set the Attachment Interference Prevention Switch can result in equipment damage, serious injury or death.**
- **Ensure that all buckets used in the S mode are standard buckets or those with shorter width than standard buckets when measured from the pin to the tooth.**

The Attachment Interference Prevention Switch (AIPS) is automatically set to the M mode by the Interference Prevention System (IPS) when the engine is started.
To use the minimal front radius feature, reset the AIPS to the M position then select the appropriate attachment width (S or M).

Modes of operation



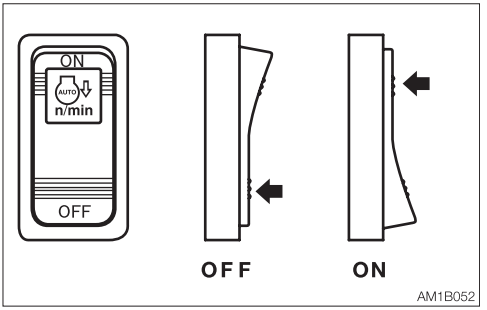




S .....Standard bucket attachments or those having the width of 750 mm (30 in.) or less
L.....Bucket attachment whose width is between 750 mm (30 in.) and 1000 mm (40 in.)
M.....Bucket attachments having a width of more than 1000 mm (40 in.), or any other approved attachments

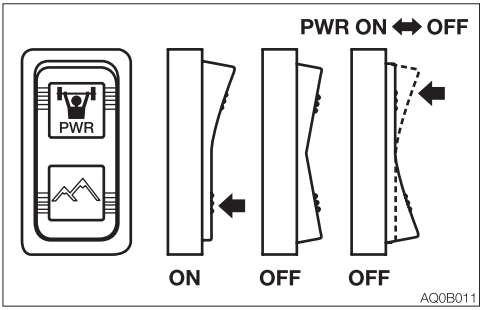
Refer to “Attachment interference prevention device” on page 3-16.

AUTOMATIC DECELERATION SWITCH



When the ON side of the switch is pressed, the deceleration lamp in the instrument cluster flashes. This flashing stops when the deceleration function starts working, and the lamp remains lit while in the deceleration mode. The engine speed automatically drops to low idle (deceleration mode) four seconds after the control levers are set to neutral, to reduce fuel consumption. Moving the control levers will cause the speed to return to the original engine speed.
Switching from the deceleration button to the auto-deceleration switch will first return to the engine speed set with the throttle controller. Then, the engine will automatically enter the deceleration mode (low idling) if the control levers are not operated within four seconds.

POWER/HIGHLAND MODE SWITCH

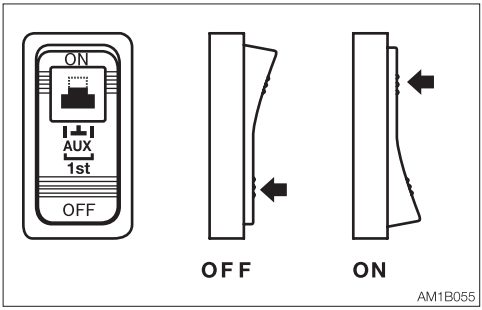


- **Power mode**
  - Pressing the PWR symbol side of the switch turns on the Power mode indicator lamp on the instrument cluster. The maximum engine output is obtained.
  - STD mode: Pressing the PWR symbol side of the switch again turns off the power mode indicator lamp.

- **Highland mode**
  This switch is used to reduce the engine load due to the hydraulic pump. When the machine is operated at a high-altitude site, the engine output is decreased due to thin air. In such cases, the hydraulic horse power is automatically adjusted to prevent the engine from stalling. Use this switch when the machine is operated at a high-altitude site.
  - Pressing the PWR symbol side of the switch turns on the Power mode indicator lamp on the instrument cluster.
  - To cancel the highland mode, press the PWR symbol side halfway to set to the neutral position. The highland mode indicator lamp goes out and enters the lowland mode.
    Refer to “Multi-information display” on page 2-14.

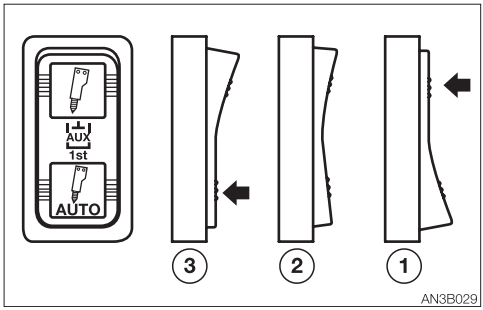
DETENT MODE SWITCH (AUXILIARY 1ST)

IMPORTANT: Do not operate the machine in the detent mode for a long time. Doing so will increase the hydraulic oil temperature and shorten the service life of the hydraulic units.



This switch is used to change the operation mode of the auxiliary 1st button (A). Pressing the ON side of the switch causes the auxiliary button (A) to enter the detent mode. Pressing the OFF side changes to the momentary mode.

AUXILIARY 1ST AUTO TANK SWITCH (IF EQUIPPED)



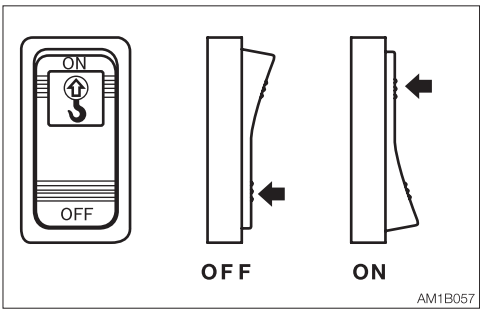
Use this switch to change the direction of hydraulic oil flow in the Aux. 1st line.

(1) When using a hydraulic breaker (1-way flow)
(2) When using a reversible attachment (2-way flow)
(3) The one-way flow can be set only when the button “A” of the Aux. 1 is pressed. (The tank circuit is automatically opened.)

LIFT OVERLOAD WARNING SWITCH

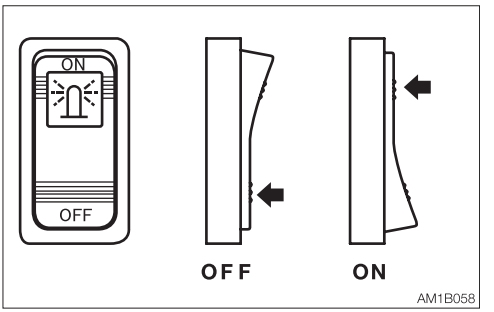
⚠ WARNING

If the overload is not removed after the overload warning horn is sounded, the machine may tip over or the emergency shut-off valve may be activated. If the horn starts sounding, stop operating the machine and lighten the load.



If a weight greater than the lifting capacity is applied or lifted, the overload warning device is activated and the horn sounds. (When the lift overload warning switch is turned on.)
OFF ....Off
ON .....On

BEACON LAMP SWITCH



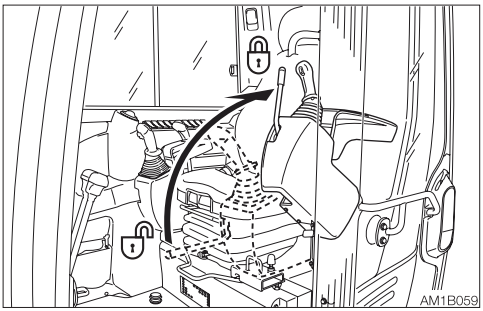
When this switch is turned on while the starter switch is at ON, the lamp turns on as follows:
OFF ....Off
ON .....Beacon lamp is lit

LEVERS AND PEDALS

SAFETY LOCK LEVER

⚠ WARNING

- **Before standing up from the operator's seat to open/close the window or remove/install the lower window, lower the working equipment to the ground, raise the safety lock lever to engage the lock and stop the engine. If any controls should be accidentally touched when the safety lock lever is lowered (unlocked), the machine will suddenly move and cause serious injury or death.**
- **Be careful not to touch the operating levers when raising or lowering the safety lock lever.**
- **Before leaving the operator's seat, lower the working equipment to the ground, raise the safety lock lever to engage the lock and stop the engine. Also, be sure to remove the key, lock the door and covers, take it with you and store it in a specified place.**



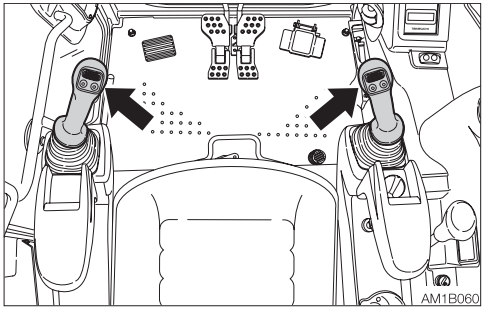
This device is for locking the operations of hoe attachment, slewing, auxiliary, dozer blade and traveling.
When the lever is raised, the lever stand springs up to lock the lever.

Safety start function
<Applicable machine models 178500837 or later>
When the lever is in the unlock position, the engine cannot be started.

OPERATING LEVERS

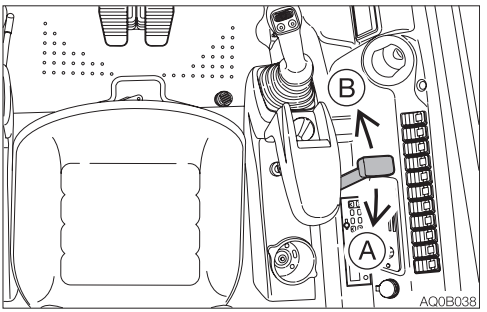
⚠ WARNING

- **Before starting operation, carefully check which lever pattern you are going to use.**
- **It is described using the ISO pattern in this manual.**



Use these levers to operate the boom, arm, bucket and upperstructure.
Refer to "Lever pattern" on pages 3-8 and 3-9.
Refer to "Operating the working equipment" on pages 3-18 and 3-19.

BLADE LEVER



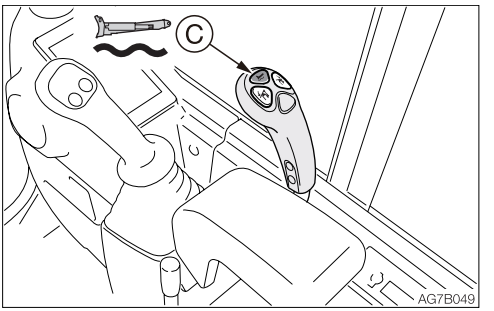
Use this lever to operate the dozer blade.
(A).....Blade up
(B) .....Blade down
Refer to “Operating the dozer blade” on page 3-19.

Float button (if equipped)

⚠ WARNING

- **Do not press the float button while the machine is raised by the blade. Doing so will cause the machine to fall. If you must work beneath the raised machine, always use a secure support to keep the machine raised.**
- **Do not press the float button while the blade is raised. Doing so will cause the blade to fall. Lower the blade to the ground before pressing the float button.**
- **Do not travel forward while the blade is in the float mode.**

Float operation

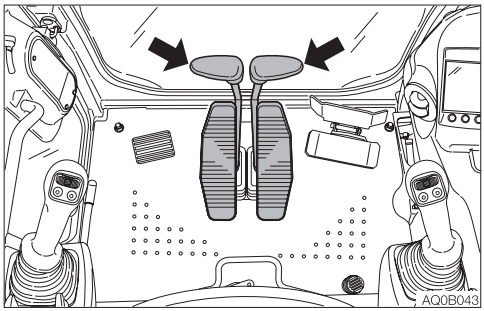


Button (C) Float mode
Press the float button (C) to set the dozer blade to the float mode. To cancel the float mode, press the float button (C) again. The float mode is temporally cancelled when the blade lever is tilted backward. To return to the float mode, tilt the blade lever back to the neutral position. Take caution when returning to the float mode.

TRAVEL LEVERS/PEDALS

⚠ WARNING

- **Before operating the travel levers/pedals, make sure that the dozer blade is to the front of the operator's seat. Remember that when the dozer blade is to the rear of the operator's seat, the travel levers/pedals must be operated in the reverse direction from when it is to the front.**
- **Do not rest your foot on the pedal unless operating it for traveling. If the pedal is accidentally stepped while working, the machine may suddenly move and cause serious injury or death.**

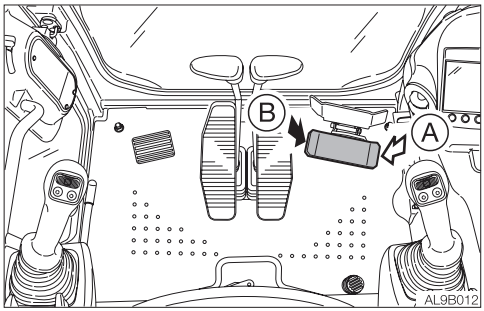


Use these levers/pedals to move forward or backward and to change directions.
Refer to "Operating the travel levers/pedals" on page 3-13.

BOOM OFFSET PEDAL

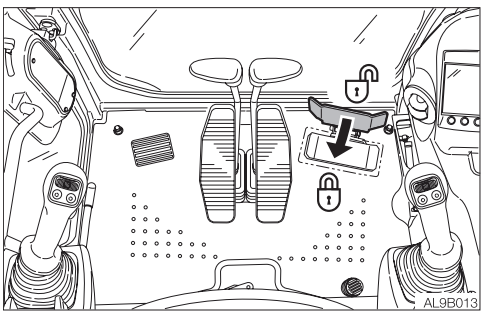
⚠ WARNING

Keep the pedal cover to the locked position when not using the pedal. Stepping on a pedal accidentally when it is not locked may cause accidents.



Use this pedal to operate the boom offset.
(A).....Boom offset right
(B) .....Boom offset left
Refer to "Operating the boom offset" on page 3-19.

Pedal lock



Set the pedal cover over the pedal to lock it. Open the pedal cover from the pedal to unlock it.

ACCESSORIES

AIR CONDITIONER (IF EQUIPPED)

CAUTIONS ON USE

Ventilate periodically

- When using the air conditioner over an extended period of time, open the windows about once each hour to let in fresh air.
- Your eyes may become irritated if you smoke while using the air conditioner. If this happens, open the windows to let in fresh air. Smoking particularly irritates the eyes when the air conditioner is being used. Since the humidity in the cab drops, the cornea becomes dry.
- If the outside air is dirty, set the air conditioner to the circulation mode.

Always maintain good visibility

Working with dirty windows or fogged windows restricts visibility and is dangerous. Always clean dirt and moisture off the windows before working.

- The windows tend to get foggy when the humidity is high. If this happens, turn on the air conditioner to use outside air and the defroster to get rid of the fog.
- If the air conditioner is set to high when using the defroster, the difference between the external and internal temperatures increases, resulting in frost on the outside of the windows. If this happens, either turn the air conditioner off or turn the temperature control dial clockwise to increase the internal temperature.
- Mist may blow out of the air outlets. This is not a malfunction. When moist air passes through the evaporator on the air conditioner unit, water particles in the air freeze and are emitted as mist.

Do not overcool

For health reasons, the air inside the cab should be kept at a temperature at which you feel a little cool when entering the cab from outside (a difference of 5 to 6°C (9 to 12°F)). Remember to adjust the temperature properly.

Do not turn on the air conditioner until the engine is started

To avoid placing an excessive load on the compressor, wait until the engine is started and is running smoothly before turning on the air conditioner.

Let hot air out first

If the machine has been parked in the sun, open the windows and door to let the hot air out of the cab before using the air conditioner.

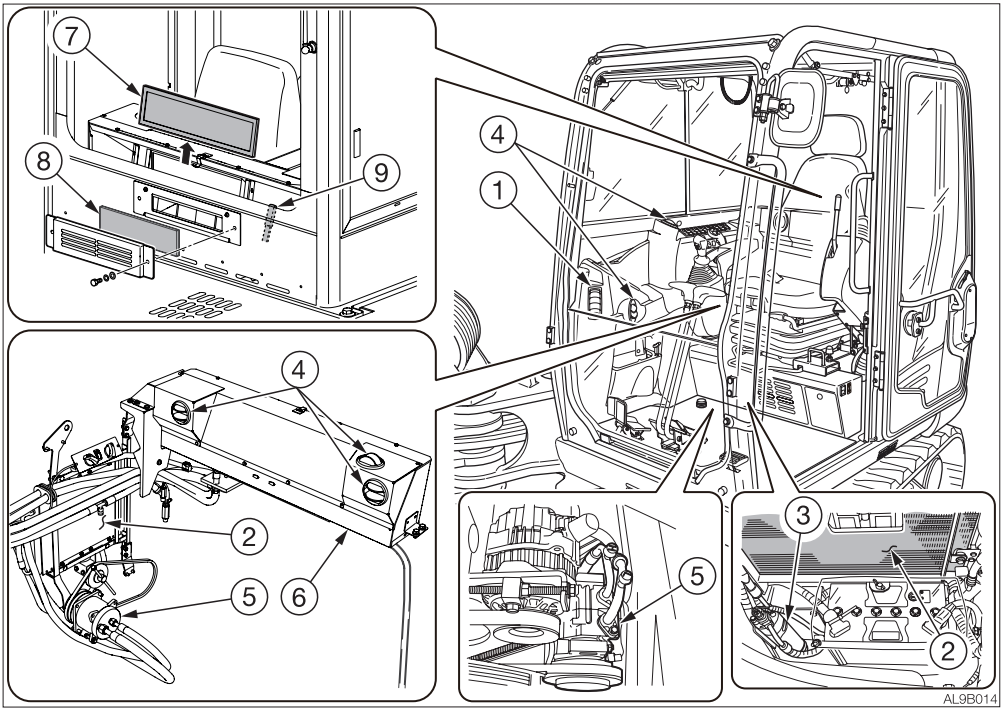
Caution on refrigerant (gas)

If the refrigerant comes in contact with skin or eyes, it may cause frostbite or eye damage. Never touch the refrigerant or loosen the parts on the cooling circuit.
If the refrigerant gas leaks, keep flames away.

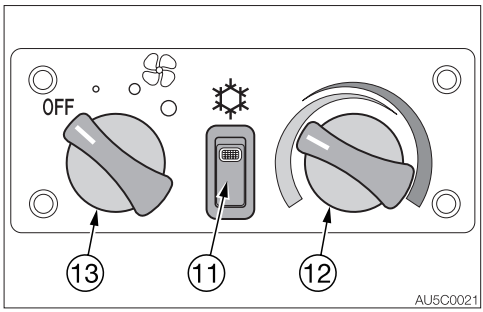
Off-season inspection

Even off season, run the air conditioner for 3 to 5 minutes at least once a week to maintain oil in the various parts of the compressor.

NAMES OF COMPONENTS



1. Defroster
2. Condenser
3. Receiver dryer
4. Outlets
5. Compressor
6. Air conditioner unit
7. Circulation filter
8. Ventilation filter
9. Ventilation/Circulation select lever
10. —

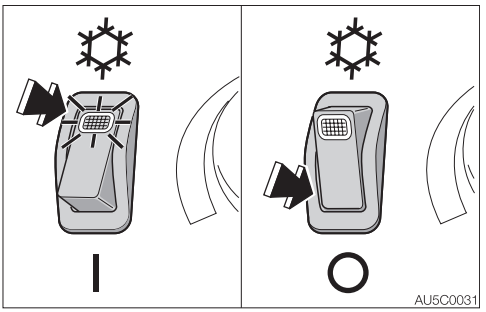


Control panel

11. Air conditioner switch
12. Temperature control dial
13. Fan dial

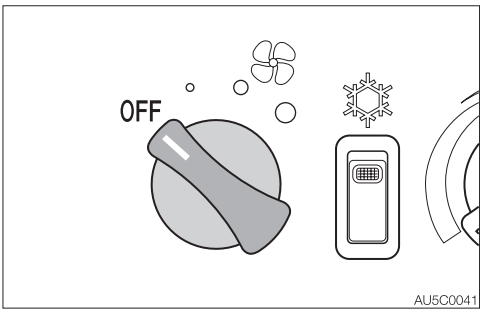
Air conditioner switch

IMPORTANT: To avoid placing an excessive load on the compressor, wait until the engine is started and is running smoothly before turning on the air conditioner.



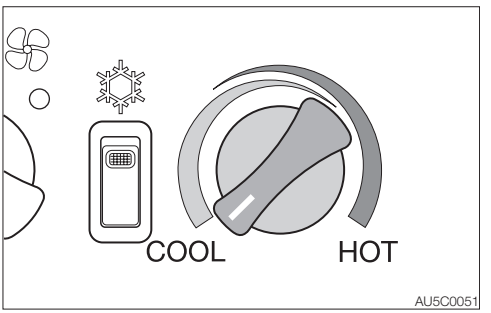
Use this switch to turn on or off the cooling/dehumidifying function. When this switch is pressed while the engine is running with the fan dial set to ON, the lamp lights up and the cooling/dehumidifying function is turned on. Press this switch again or turn the fan dial to OFF to turn off the cooling/dehumidifying function.
Lamp is off ....OFF
Lamp is on ....ON
Note: To prevent leakage of refrigerant gas from the compressor's seal, operate the air conditioner at least once a week, regardless of the season.
Note: The air conditioner will not function if the temperature in the cab is low (3°C (38°F) or lower).

Fan dial



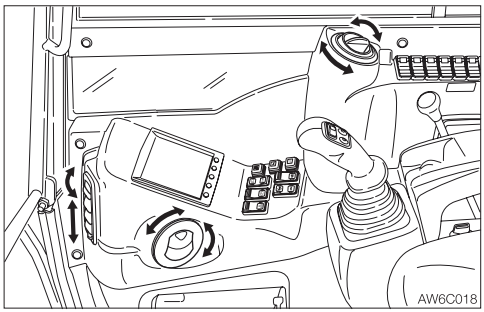
Use this dial to select the fan speed from the three levels. Turning this dial to the OFF position turns off the air conditioner.
OFF ....Turning off the fan and the air conditioner.
∘ .....Low
○ .....Medium
◯ .....High

Temperature control dial



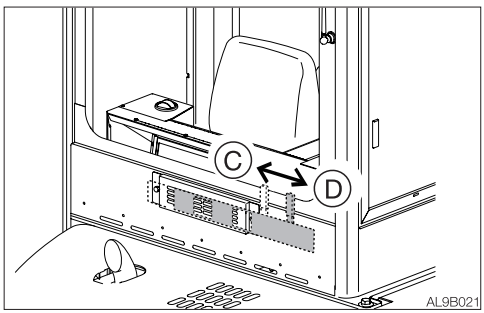
Use this dial to adjust the air temperature.
COOL..... Decreases the temperature
HOT ..... Increases the temperature
Note: No warm air is emitted if the temperature of the engine coolant is low.

Outlets



Move the louvers up or down or left or right to adjust the air flow direction and volume.

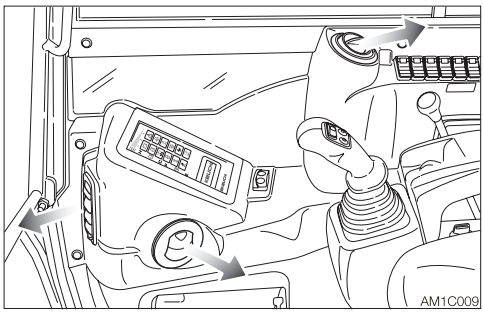
Ventilation/Circulation select lever



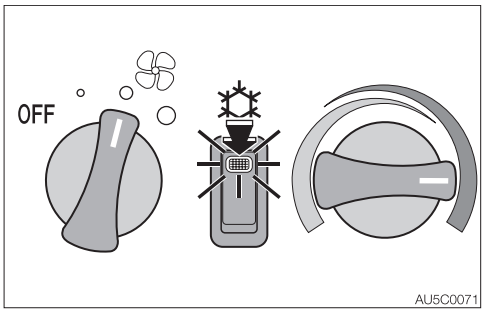
Use this lever to select between Ventilation and Circulation.
(C) .....Circulation
• Cool or heat the cab quickly
• When external air is dirty
(D) .....Ventilation
• Lets in fresh air
• Removes frosting from the windows
• Ventilates while cooling or heating

Operation

Dehumidifying and Heating (in cold climates or when the humidity is high)



Arrange the foot outlets and the defroster so that they are directed to the front window. Let the dehumidified warm air blow on the front window, to prevent frosting.



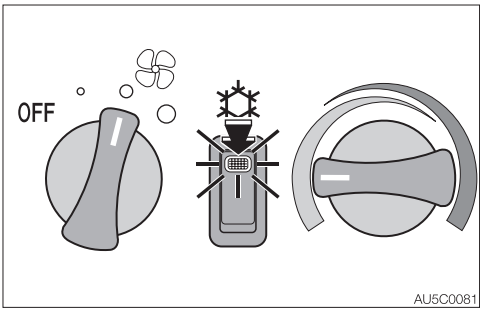
1. Set the desired temperature by turning the temperature control dial to between the center and the right end (HOT).
2. Set the fan dial to the desired position.

Cooling

⚠ CAUTION

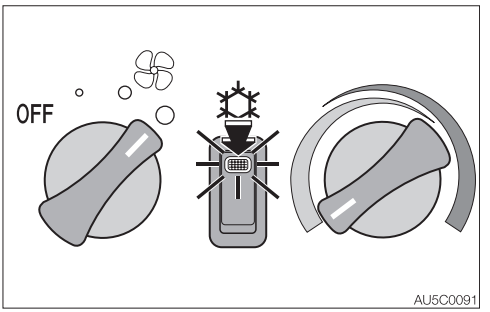
- **When the air conditioner is set to the circulation mode, the air in the cab gradually becomes dirty. Switch to the "ventilation" to ventilate once a comfortable temperature is obtained.**
- **Excessive cooling can be harmful to your health. It is best to keep the air inside the cab only about 5 to 6°C (9 to 12°F) cooler than the outside air.**

Note: If the machine has been parked in the sun, open the windows and door to let the hot air out of the cab before using the air conditioner.



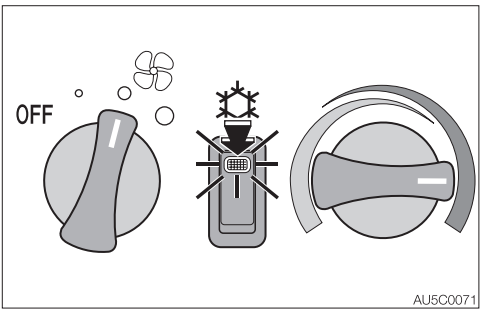
1. Set the fan outlet to the desired position.
2. Set the desired temperature by turning the temperature control dial to between the center and the left end (COOL).
3. Set the fan dial to the desired position.

Quick cooling



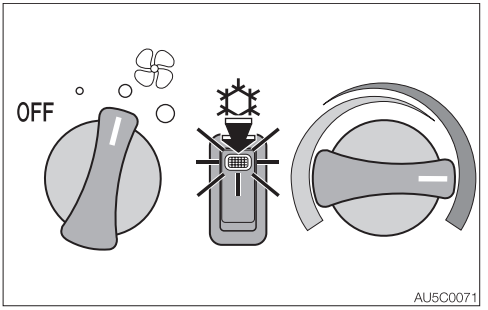
1. Set the fan outlet to the desired position.
2. Set the desired temperature by turning the temperature control dial to between the center and the left end (COOL).
3. Turn the fan dial to "High".
4. Move the Ventilation/Circulation select lever to the right to select "Circulation".

Heating



1. Arrange the outlet louvers so that air can be directed to the feet.
2. Set the fan dial to the desired position.
3. Set the desired temperature by turning the temperature control dial to between the center and the right end (HOT).
   For the highest temperature, turn the dial all the way to the right.
4. Turn the fan dial to the OFF position to turn off heating.

Defrosting or defogging the windows
Note: If the air conditioner fan is set to High when using the defroster, the difference between the external and internal temperatures increases, resulting in frost on the outside of the windows. If this happens, either turn off the air conditioner or turn the temperature control dial clockwise to increase the internal temperature.



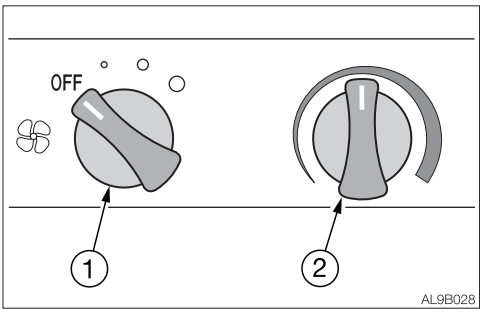
1. Set the desired temperature by turning the temperature control dial to between the center and the right end (HOT).
2. Set the fan dial to the desired position.
3. Move the Ventilation/Circulation select lever to the left to select “Ventilation”.
4. Arrange the foot and defroster outlets so that they are directed to the front window.

HEATER (IF EQUIPPED)

⚠ WARNING

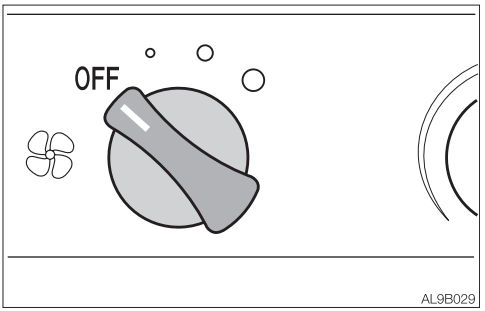
- **Always be sure to allow sufficient ventilation.**
- **Do not place combustible or explosive objects near the air outlets.**

Control panel



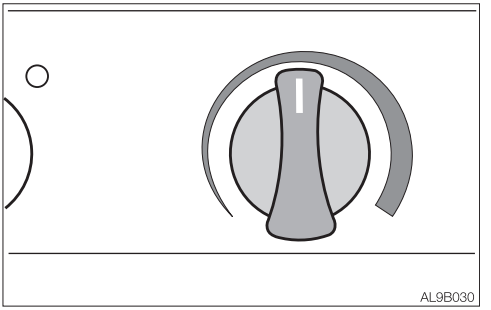
1. Fan dial
2. Temperature control dial

Fan dial



Use this dial to select the fun speed from the three levels.
OFF ....Off
∘.....Low
○.....Medium
◯.....High

Temperature control dial



Use this dial to adjust the air temperature.
Counterclockwise
.....Decreases the temperature
Clockwise.....Increases the temperature
Note: No warm air is emitted if the temperature of the engine coolant is low.

Ventilation/Circulation select lever

Refer to “Ventilation/Circulation select lever” on page 2-51.

Outlets

Refer to “Outlets” on page 2-51.

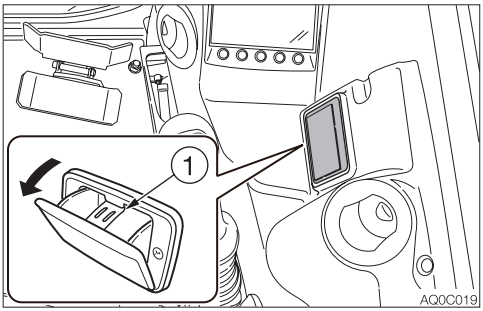
Filters

Clean the filters immediately after operating in dusty places.
If the filters are clogged, the air flow is reduced and a booming sound is heard from the heater unit.
Refer to “Cleaning the air filters” on page 5-40.

ASHTRAY

⚠ WARNING

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

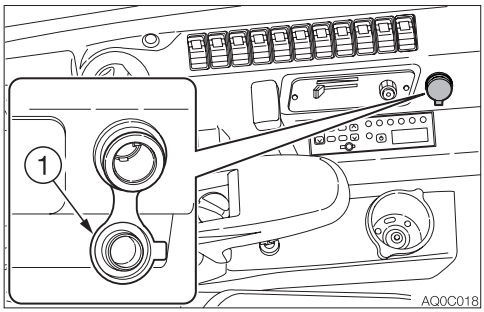


Pull the ashtray out towards you to use it. To clean, press the ash discharge button (1) and pull out the ashtray.

POWER SUPPLY SOCKET

⚠ WARNING

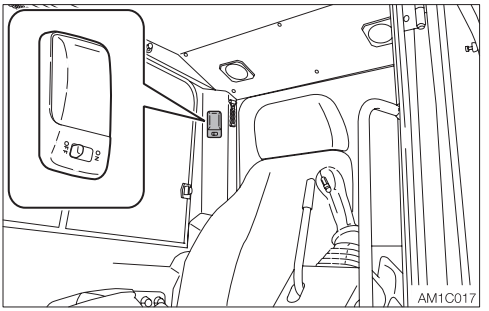
Use only those electric products which comply with the specifications of these sockets.



This socket is used to supply power to the interior electrical components. When using, be careful not to exceed 12 V/5A.
To use, open the cap (1).

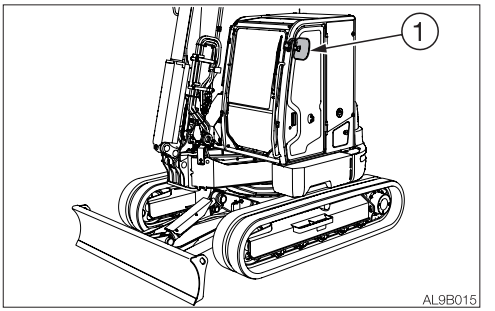
INTERIOR LIGHT

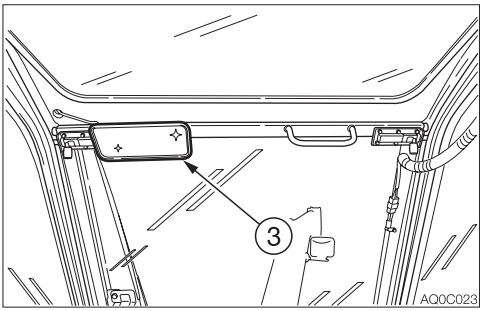
IMPORTANT: The battery capacity decreases if the interior light is left on for a long time when the engine is stopped.



OFF ....Remains off all the time.
ON .....Lights up all the time.

MIRRORS



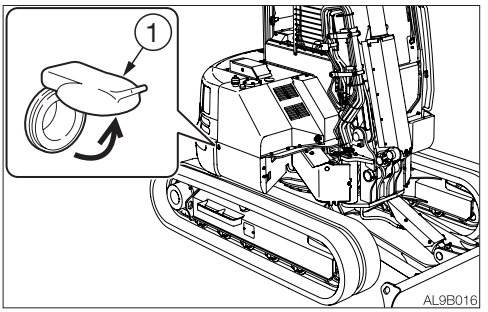


Adjust the rear view mirrors and side view mirrors so that you have a better view.
1. Check the right side rear view
2. —
3. Check the rear view.

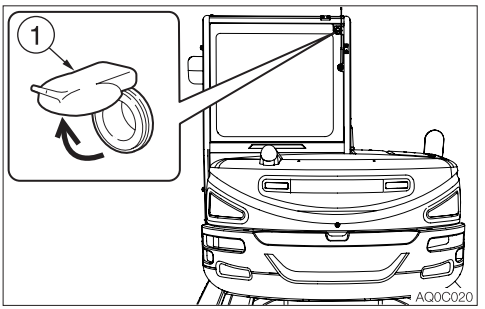
EXTERNAL POWER SOCKETS

⚠ WARNING

Use only those electric products which comply with the specifications of these sockets.



For beacon



Use these sockets to connect the external power supply. When using, be careful not to exceed 12V/5A.
To use, open the cap (1).

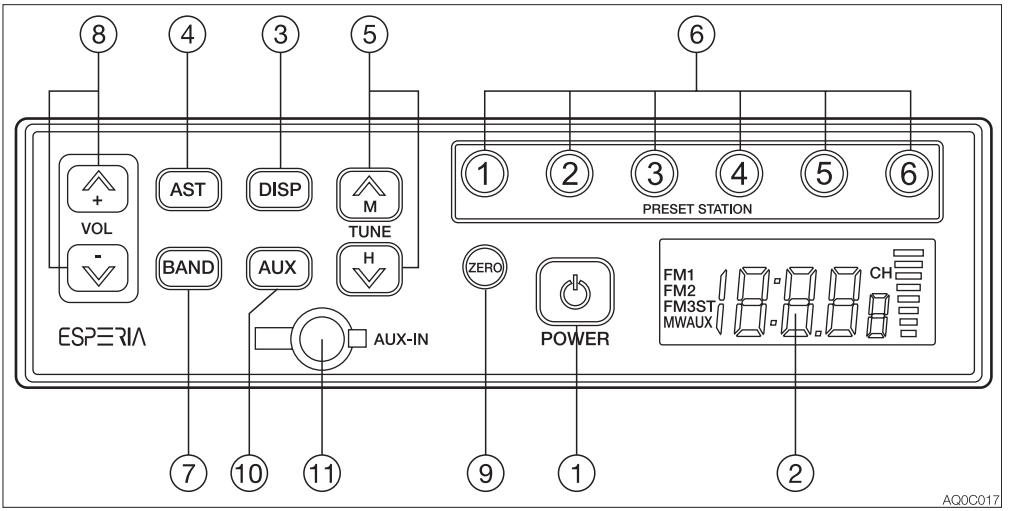
RADIO

If the radio installed on the machine is a Bluetooth-equipped one, refer to “Radio (Bluetooth equipped)” on page 2-62.

CAUTIONS ON USE

- **To ensure safe operation of the machine, always be sure to keep the volume of the radio down to a level where you can easily hear sounds from outside the machine.**
- **Do not use the radio for a long time when the engine is stopped. Doing so will drain the battery and make it difficult or impossible to restart the engine.**
- **Be careful not to allow water or other liquids to come into contact with the radio. Otherwise, it may result in malfunction.**

NAMES OF COMPONENTS



(1) POWER button
Use this button to turn on or off the radio.

(2) LCD
Displays the time/the receiving frequency and the operation mode.

(3) Display button (DISP)
Pressing this button while the frequency is displayed on the LCD changes the display to the clock. Pressing the button again returns to the frequency. If the button is not pressed for five seconds, the display returns to the frequency.

(4) Auto store/Auto seek station (AST)
Press this button to automatically assign receivable radio stations to preset buttons (1 to 6).

(5) Tuning button (TUNE ⏶ ⏷)
Press and hold this button (⏶ or ⏷) for one second or more to start seeking the receivable stations. The seeking stops when a station is found. To cancel tuning halfway, press the button again.
Pressing the TUNE button ⏶ starts seeking stations with higher frequency.
Pressing the TUNE button ⏷ starts seeking stations with lower frequency.
The frequency changes as either button is pressed in one second intervals.

(6) Preset buttons (1 to 6) (PRESET STATION)
Each button can store three FM stations (FM1, FM2, FM3) and one MW (AM) station. For how to set these buttons, refer to “Presetting stations”.

(7) Band button (BAND)
Pressing this button changes the band from FM1 to FM2, FM3 and MW (AM) in this order. The received band and its frequency appear on the display.

(8) VOL buttons
Use these buttons to control the sound volume. Press the button ⏶ to increase the volume and the button ⏷ to decrease the sound volume. Press and hold each button to continuously increase/decrease the volume.

(9) Clock zero set button (ZERO)
Use this button to set the minute to “00” when it is between “55” to “59” or “01” to “05”.
The LCD returns to the frequency display if no more operation is performed for five seconds.

(10) Auxiliary input select button (AUX)
Pressing this button changes the input source to the external device connected to the AUX-IN (11) jack. The display of “AUX” appears on the LCD. Pressing the button again returns to the radio.

(11) Auxiliary input jack (AUX-IN)
Use this jack to connect an external audio source such as a portable music player. Pull off the rubber cap and connect the output terminal (headphone jack) of the portable player to the AUX-IN with the stereo mini-plug (3.5 mm) cord. Be sure that jack is closed with the rubber cap when not in use.

Playing the radio
1. Turn the starter key to the ACC or ON position, and then press the power button (1) to turn on the radio.
2. Select the band, FM or MW (AM) by pressing the BAND button.
3. Select the station with the preset button or the tuning button, and adjust the volume with the volume button.
4. To turn off the radio, press the power button.

Selecting a station-auto select
Press and hold the TUNE button ⏶ for one second or more to start seeking stations in the higher frequencies direction. Press and hold the TUNE button ⏷ for one second or more to start seeking stations in the lower frequencies direction. The radio will stop seeking when it finds an receivable station and start playing.

Selecting a station-manual select
The selection can be done manually. Press the tune ⏶ button to seek stations with higher frequencies. Press the tune ⏷ button to seek stations with lower frequencies.

Presetting stations

1. Press the BAND button to select a band (MW (AM) or FM), and then select the station by pressing the TUNE button for seeking.
2. To assign the selected station to a preset button, press and hold the button to be assigned for one second or more. The number of the preset button appears on the LCD.
3. For more stations to preset, repeat the steps 1 and 2 above.
   - If the preset button on which a station has been assigned is pressed and held for one second or more, the preset information will be modified.
   - If the stored information is erased during battery replacement on the vehicle, assign the stations again to the preset buttons.
   - Each preset button (1 to 6) can store three FM stations (one from each FM1, FM2, FM3) and one AM station.

Auto storing (AST)

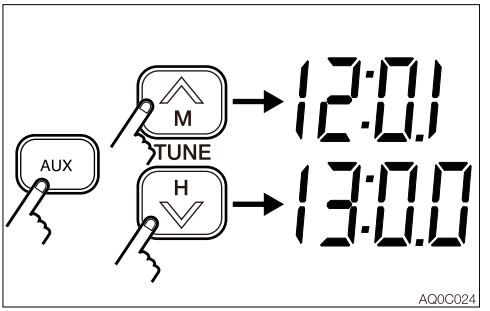
Press the AST button while playing the radio. The radio automatically starts seeking the receivable stations within the band currently selected and assign each preset button (1 to 6) a station.

Note: The previous stations stored will be cleared (cancelled) by the auto storing. If the station stored in the preset button is not desirable, try to preset the station manually.

Auxiliary input (AUX)

- Connect a portable audio player and listen to your favorite music.
- Plug a patch cord (without resistor) into the headphone jack of the audio player.
- Plug a stereo mini plug (3.5 mm) into the AUX-IN jack on the radio.
- To listen to an external portable audio player, press the AUX button. (The “AUX” display appears on the LCD and the frequency display is changed to the clock display.)
- To return to the radio, press the AUX button again.
- When connecting, adjust the sound volume level of the audio player so that it is same as that of the radio.
- Adjust the sound volume of the audio player by using the volume control buttons on the radio.
- Do not connect a device with a larger output compared with a portable audio player.

Setting the clock



- If a frequency is displayed on the LCD, press the AUX button (auxiliary input) to display the clock.
- Use the tune ⏶M button to set the minute. Use the tune ⏷H button to set the hour.
- To set the minute digits to “00” when they are from “55” to “59” or from “01” to “05”, press the ZERO button.

Resetting (North, Central and South America)

If there are any problems, such as the abnormal display of frequency or failure of selection, reset the radio by pressing the “3” button* while pressing the AST button and the AUX button together. Then, “US”** and the clock display appear on the LCD, indicating that the radio is turned off. Note that the memory stored in the preset button is cleared.

* : “6” button – (Europe, Asia, Oceania)
“5” button – (China)

** : EU – (Europe, Asia, Oceania)
CH - (China)

Switching the volume mode when the radio is on

Switch the modes between SU and FI by pressing the (1) button while pressing the AST and AUX buttons together, when the radio is on.

The SU or FI display appears on the LCD, followed by the radio turning off by itself.

SU mode: .....The volume at power-off is retained.

FI mode: .....The volume at power-off is reset.

SPECIFICATIONS

Power source: .... 12/24 VDC (negative ground)

Maximum power consumption: ..... 3A or less (at max. volume, 24 V)

Maximum output power: ..... 16 W + 16 W (4Ω) (at 28.8 VDC input)
5W+5W (4Ω) (at 14.4 VDC input)

Rated output power: ..... 12 W + 12 W (10% distortion, 4Ω) (at 28.8 VDC input)
3.5 W + 3.5 W (10% distortion, 4Ω) (at 14.4 VDC input)

Dimensions:..... 178 (W) x 50 (H) x 65 (D) mm (excluding protrusions)

Receiving frequency: ..... MW (AM) 531 to 1602 kHz (Europe, Asia), 530 to 1710 kHz (North, Central and South America)
FM 87.5 to 108 MHz (Europe, Asia), 87.9 to 108 MHz (North, Central and South America)

Practical sensitivity: ..... MW (AM) 32 dB or less (S/N 20 dB)
FM 12 dB or less (S/N 30 dB)

S/N ratio:..... MW (AM) 40 dB or more
FM 50 dB or more

AUX-IN: ..... Stereo mini jack (3.5 mm); rated input, 90 mV; 20 kΩ impedance

Note: Specifications and dimensions may be changed without notice.

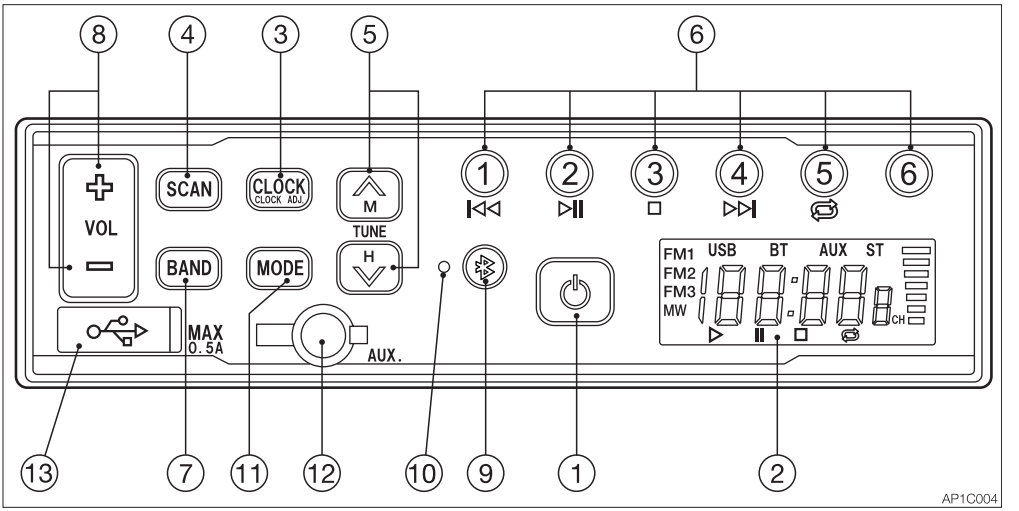
RADIO (BLUETOOTH EQUIPPED)

If the radio installed on the machine is not a Bluetooth-equipped one, refer to “Radio” on page 2-58.

CAUTIONS ON USE

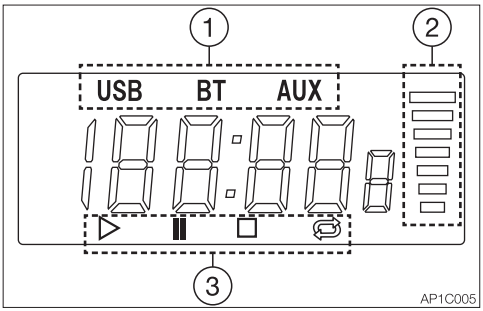
- **To ensure safe operation of the machine, always be sure to keep the volume of the radio down to a level where you can easily hear sounds from outside the machine.**
- **Do not use the radio for a long time when the engine is stopped. Doing so will drain the battery and make it difficult or impossible to restart the engine.**
- **Be careful not to allow water or other liquids to come into contact with the radio. Otherwise, it may result in malfunction.**

NAMES OF COMPONENTS



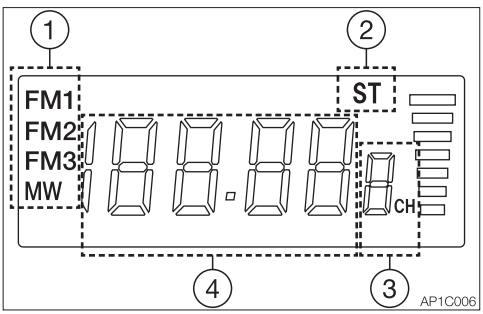
(1) POWER button
Use this button to turn on or off the radio.

(2) LCD
<Home screen>



(1) Operation mode
USB: USB audio mode
BT: Bluetooth mode
AUX: Auxiliary in mode
(2) Volume level
(3) Audio control (For USB audio or Bluetooth mode only)

<Radio mode screen>



(1) Radio band display
FM1, FM2 FM3: FM band (Six stations can be preset to each band.)
MW: AM band
(2) Stereo display
Turns on when receiving stereo.
(3) Preset station
(4) Display of frequency/clock

Displays the time/the receiving frequency and the operation mode.

(3) Clock button (CLOCK)
Pressing this button changes the display to the clock. Pressing the button again displays the frequency. If the button is not pressed for three seconds, the display returns to the frequency. Pressing and holding the button enters the clock setting mode.

(4) Auto store/Auto seek station (SCAN)
Press this button to automatically assign receivable radio stations to preset buttons (1 to 6).

(5) Tuning button (TUNE ⏶ ⏷)
Press and hold this button (TUNE ⏶ or TUNE ⏷) for two seconds or more to start seeking the receivable stations. The seeking stops when a station is found. To cancel tuning halfway, press the button again.
Pressing the TUNE ⏶ button starts seeking stations with higher frequency.
Pressing the TUNE ⏷ button starts seeking stations with lower frequency.

(6) Preset buttons (1 to 6) (PRESET STATION)
Each button can store three FM stations (FM1, FM2, FM3) and one MW (AM) station.

(7) Band button (BAND)
Pressing this button changes the band from FM1 to FM2, FM3 and MW (AM), in this order.

(8) Volume control button (VOL ✚ ▭)
Press the VOL ✚ button to increase the volume and the VOL ▭ button to decrease the volume.

(9) Bluetooth button (B)
Press this button to connect to the already paired and most recently connected Bluetooth-enabled device.

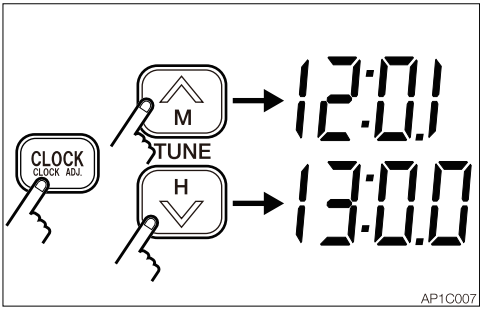
(10) Bluetooth LED
Lights up when a Bluetooth-enabled device is connected. Flashes while in the pairing standby mode.

(11) Operation mode select button (MODE)
Pressing this button changes the operation mode from FM or MW (AM) to Bluetooth, USB and AUX, in this order.

(12) Auxiliary input jack (AUX)
Open the rubber cap and connect to an earphone jack of a smartphone or portable audio player with a commercially available stereo mini-plug (3.5 mm) cable. Be sure that jack is closed with the rubber cap when not in use.

(13) USB jack
Open the rubber cap and connect to a USB flash drive with a commercially available USB extension cable.
Be sure that jack is closed with the rubber cap when not in use.

Setting the clock



- Press and hold the CLOCK button until the time display starts flashing to indicate that the unit is in the clock setting mode.
- Use the tune ⏶M button to set the minute. Use the tune ⏷H button to set the hour.

Playing the radio

1. Select the band, FM or MW (AM) by pressing the BAND button.
2. Select the station with the preset button or the tuning button.
3. Adjust the volume with the VOL (− or +) button.

Seeking stations (auto)

Press and hold the TUNE ∧ button for two seconds or one to start seeking stations in the higher frequencies direction. Press and hold the TUNE ∨ button for two seconds or more to start seeking stations in the lower frequencies direction. The radio will stop seeking when it finds a receivable station and start playing.

Manual tuning

Press the TUNE ∧ button to increase the frequency by one step. Press the TUNE ∨ button to decrease the frequency by one step.

Presetting stations

1. Press the BAND button to select a band (MW (AM) or FM), and then select the desired station.
2. To assign the selected station to a preset button, press and hold the button to be assigned for three seconds or more. The number of the preset button appears on the LCD to indicate that it is stored in the preset memory.
3. For more stations to preset, repeat the steps 1 and 2 above.
   - Each preset button (1 to 6) can store three FM stations (FM1, FM2, FM3) and one MW (AM) station.

Auto storing stations (SCAN)

Press the SCAN button while playing the radio. The radio automatically starts seeking the receivable stations in the band currently selected and assign each preset button (1 to 6) a station.

Note: The previous stations stored will be cleared (cancelled) by the auto storing. If the station stored in the preset button is not desirable, try to preset the station manually.

Playing back audio content stored on a USB flash drive
To enter the USB playback mode, first insert the USB flash drive while playing the radio and then press the MODE button. (The LCD changes to the time display and “USB” appears on the LCD.)
When playing back audio content stored on the USB drive, the following operations are available using the buttons (1) to (5).

(1) **Backward (⏮) button**
Moves one track backward and starts playing back from the beginning of it.

(2) **Playback/Pause (⏯) button**
Pauses playback when pressed during playback. When pressed again, starts playback from the point where the playback was paused.

(3) **Stop (⏹) button**
Stops playback when pressed during playback. When the Play/Pause button is pressed, the unit starts playing back the stopped track from the beginning.

(4) **Forward (⏭) button**
Moves one track forward and starts playing back from the beginning of it. Pressing and holding the button will fast forward the current track.

(5) **Repeat (🔁) button**
When pressed during playback, the unit repeats the current track.
To cancel repeating, press the button again.

Notes:
- When in the USB playback mode, do not insert or remove the USB drive.
- ESPERIA makes no warranty that the unit is compatible with every USB storage device.
- To connect the USB flash drive to the unit, use a commercially available USB extension cable.
- Do not connect any device other than a USB flash drive. The USB jack cannot be used to charge a device such as a smartphone.
- Please be advised that ESPERIA bears no responsibility for any damage to or loss of data on the USB drive arising from the use of the unit.

Using the Bluetooth wireless technology
You can use your Bluetooth-enabled mobile phone or audio device by connecting it to the unit.
When a mobile phone is connected, incoming calls will be announced.
Note: Since the unit is not equipped with a microphone, the unit cannot be used for phone calls.

To use the Bluetooth device, certain profiles must be able to interpreted.
The unit is compatible with the following profiles:

Incoming mobile phone call
HFP (Hands-Free Profile)

Bluetooth audio
A2DP (Advanced Audio Profile)
AVRCP (Audio Video Remote Control Profile)
Note: The Bluetooth® word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by ESPERIA is under license.

Pairing a Bluetooth-enabled device
When pairing the unit with a Bluetooth device for the first time, you have to pair with each other.
Once pairing is done, the unit and the paired Bluetooth device can recognize each other.

Note: Before pairing with the unit, turn on the Bluetooth feature on the Bluetooth device. Refer to the instruction manual of the Bluetooth device for further instructions.

1. Press the MODE button to switch to the Bluetooth mode.
2. Turn on the Bluetooth feature on the Bluetooth-enabled device.
3. Press and hold the Bluetooth button until two short beeps are heard, indicating the unit has entered the paring standby mode.
4. Select “CAR RADIO” on the Bluetooth-enabled device.

Note: Only one Bluetooth-enabled device can be paired and used at a time. To use a different device, follow the steps 1 to 4 for pairing again.
Note: At power-up, the unit automatically reconnects to the device most recently connected. When you leave the machine, cancel pairing by pressing and holding the Bluetooth button until two short beeps are heard, to avoid misconnection.

Playing back audio content stored on a Bluetooth-enabled device
When a Bluetooth-enabled device has been paired with the unit, check if the Bluetooth LED is lit, and then press the MODE button to enter the Bluetooth mode.
While the Bluetooth device is connected, the following operations are available using the buttons (1) to (5).

(1) Backward (⏮) button
Starts playing back from the beginning of the track currently playing. Pressing and holding the button will skip backward to the desired track.

(2) Playback/Pause (⏯) button
Pauses playback when pressed during playback. When pressed again, starts playback from the point where the playback was paused.

(3) Stop (⏹) button
Stops the currently playing audio.

(4) Forward (⏭) button
Moves one track forward and starts playing back from the beginning of it.

(5) Repeat (🔁) button
Disabled in the Bluetooth mode.

Note: If no sound is heard from the unit, check to see that the output destination of the music from the Bluetooth device is set to “CAR RADIO”.

Receiving an incoming call on the Bluetooth-enabled device

If a Bluetooth-enabled device has been connected, the unit enters the standby mode and waits for a call. When an incoming call arrives, “CALL” appears on the display, the volume of the car stereo is set to mute and the ringtone is heard from the speaker.

Auxiliary input (AUX)

- Connect a portable audio player and listen to your favorite music.
- Plug a stereo mini plug (3.5 mm) into the AUX-IN jack on the radio.
- Press the MODE button and select “AUX” to switch to the AUX mode. (The “AUX” display appears on the LCD and the frequency display is changed to the time display.)
- To return to the radio, press the MODE button again.
- When connecting, adjust the sound volume level of the audio player so that it is same as that of the radio.
- The sound volume can be adjusted with the volume control buttons on the unit.
- Do not connect a device with a larger output compared with a portable audio player.

Resetting the radio

If any irregular frequencies appear on the LCD or any feature is missing, reset the unit. The factory settings can be restored by following the steps below.

1. Press and hold the SCAN button.
2. Press and hold the MODE button.
3. Press and hold the button (3).
4. The “US” display appears on the LCD indicating that the radio has now been reset.
   Reset the unit according to the area by referring to the table.

AREA	RESETTING	DISPLAY
North America	SCAN + MODE + (3)	US
Japan	SCAN + MODE + (4)	JP
Asia or Oceania	SCAN + MODE + (5)	CH
Europe	SCAN + MODE + (6)	EU

Note: The radio station data will be retained even when the cable connection to the vehicle is removed.

SPECIFICATIONS

Power source: .....12/24 VDC (negative ground)
Max. power consumption: .....2 A or less (at max. volume, 24 V)
Max. output power: ..16 W + 16 W (4Ω)
Rated output power: 14 W + 14 W (10% distortion, 4Ω)
Dimensions:.....178 (W) x 50 (H) x 91 (D) mm (without projections)
Receiving frequency: MW (AM) 522 to 1629 kHz
FM 76.0 to 95.0 MHz
Practical sensitivity: ..MW (AM) 20 µV (S/N 20 dB)
FM 30 µV (S/N 30 dB)
S/N ratio:.....FM 50 dB
AUX IN: .....Stereo mini jack (3.5 mm); max. input, 1 V; rated input, 90 mV
Bluetooth standard: ..Ver. 2.1 + EDR
Output:.....Class 2 (max. communication range 10 m)
Receiving frequency: 2.4 to 2.48 GHz
Supported profile:.....HFP V 1.5, A2DP V 1.2, AVRCP V 1.0
USB standard:.....USB 2.0/1.0
Supported file
• MP3: .....MPEG 1/2/2.5 .....Audio Layer 2/3
• WMA: .....Windows Media ™ Audio
Supported format: ....FAT16/FAT32 file system
Max. output power: ..0.5 A

TROUBLESHOOTING

For symptoms not included in the table below or if the problem persists after the proper remedies have been taken, consult your sales or service dealer.

General

Symptoms	Major causes	Remedies
Radio does not operate or the display is inaccurate when the button is pressed.	• CPU malfunction due to noises, etc.	• Reset the unit by referring to “Resetting the radio”. Note that once reset, all settings are cleared; set the unit again.
The clock is not displayed.	• Backup power supply (orange cable) is not connected.	• Consult your sales or service dealer for help.

Radio

Symptoms	Major causes	Remedies
Sound is noisy.	• Incorrect frequency for the station	• Tune to the correct frequency for the station.
	• Antenna (pillar antenna) is not extended.	• Be sure to extend the pillar antenna when using the radio.
	• Antenna is not grounded or properly installed.	• Consult your sales or service dealer for help.
	• The antenna is not connected to the power supply	• The power supply must be connected to the antenna with a built-in booster. For details on the connection, contact your sales or service dealer.
Unrealistic frequency is displayed.	• CPU malfunction due to noises, etc.	• Reset the unit by referring to “Resetting the radio”. Note that once reset, all settings are cleared; set the unit again.

USB

Symptoms	Major causes	Remedies
No sound is heard.	• The USB flash drive has no MP3/WMA files.	• Write the MP3/WMA files correctly on the USB flash drive.
	• The files on the drive are not MP3/WMA.	• Use the MP3/WMA files properly encoded.
Sound skipping occurs. Noises are heard.	• The MP3/WMA files are not properly encoded.	• Use the MP3/WMA files properly encoded.
A USB device is not recognized.	• The USB flash drive is damaged. • The USB connector is not properly connected.	• Disconnect the USB flash drive from the unit, and then reconnect it. If the drive is still not recognized, replace it with a new one.
	• The USB flash drive is not formatted to FAT32/16.	• Format the USB flash drive to FAT32/FAT16, and then rewrite the MP3/WMA file. Be sure to back up the files on the drive before formatting it.

Bluetooth

Symptoms	Major causes	Remedies
A Bluetooth device cannot be connected.	• The Bluetooth device is not connected.	• Some Bluetooth devices require longer time for connection and cannot be reconnected automatically. Check if the Bluetooth button is lit. If it does not turn on after a while, re-pair the device by referring to “Pairing a Bluetooth-enabled device”.
	• Another Bluetooth device is connected.	• If another Bluetooth device is connected, re-pair the device by referring to “Pairing a Bluetooth-enabled device”.
A Bluetooth device cannot be remote controlled.	• The AVRCP profile is not connected.	• Remove all Bluetooth devices connected to the Bluetooth-enabled device, and then re-pair the device by referring to “Pairing a Bluetooth-enabled device”.
	• The connection link between the unit and the device may be corrupted.	• Pair the Bluetooth device again with the unit by referring to “Pairing a Bluetooth-enabled device”.
	• AVRCP is not supported	• Check the profiles supported by the Bluetooth-enabled device.

Bluetooth

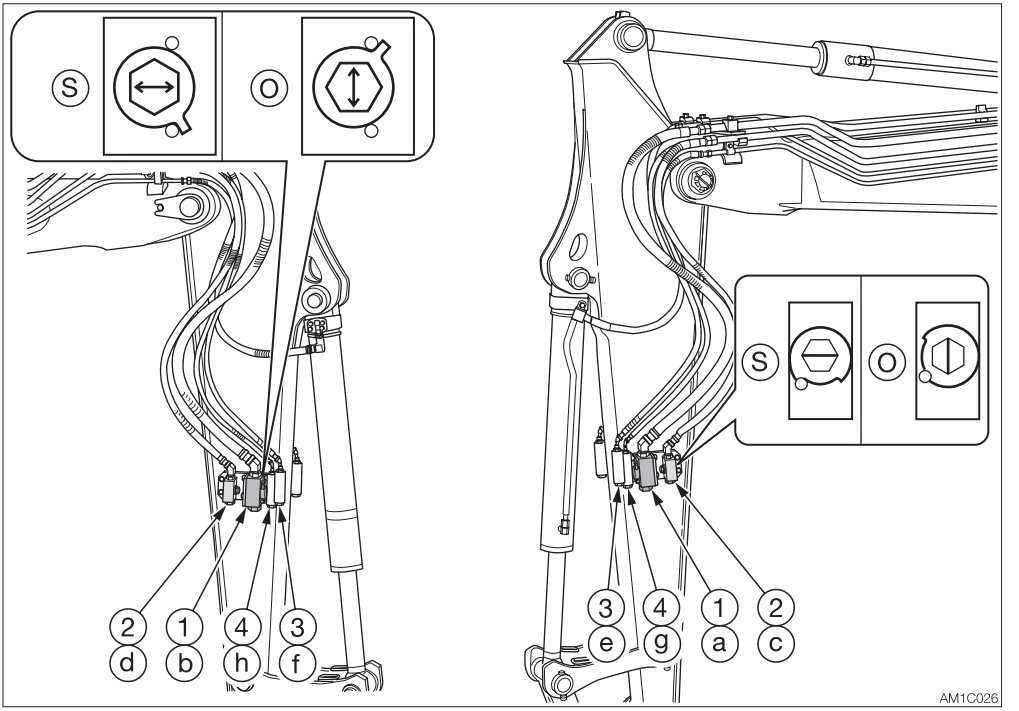
Symptoms	Major causes	Remedies
No sound is heard from the Bluetooth audio.	• The volume on the Bluetooth-enabled device is too low.	• The volume of the Bluetooth audio playback is dependent on the volume level set on the Bluetooth device Set the volume on the Bluetooth device to a proper level.
	• Output destination of the Bluetooth device is not set to “CAR RADIO”.	• Check to see that the output destination of the music from the Bluetooth device is set to “CAR RADIO”.
Phone function is not available.	• The unit does not support phone calls. Some mobile phone models may connect to the unit via the “phone call” profile.	• Change the microphone setting from the unit to the mobile phone microphone by referring to the instruction manual of the mobile phone being used.
The Bluetooth audio is interrupted after receiving an incoming call.	• Some mobile phones cannot resume the Bluetooth audio after a phone call interruption.	• After the phone call, re-pair the mobile phone with the unit by referring to “Pairing a Bluetooth-enabled device”.

Regional limitation

To use a Bluetooth-equipped radio, “radio wave authentication” must be obtained in the country where the radio is to be used.
It can be used in the countries listed below, as of August 2017. To use it in other countries, please contact your service or sales dealer for assistance.

Countries where a Bluetooth-equipped radio can be used
Ireland, Italy, UK, Estonia, Austria, Holland, Cyprus, Greece, Croatia, Sweden, Spain, Slovakia, Slovenia, Czech, Denmark, Germany, Hungary, Finland, France, Bulgaria, Belgium, Poland, Portugal, Malta, Latvia, Lithuania, Rumania, Luxemburg, Iceland, Norway, Liechtenstein, Switzerland, Turkey, USA, Canada, Japan

AUXILIARY HYDRAULIC LINES (IF EQUIPPED)



⚠ WARNING

Oil may spurt out if pipes disconnected before releasing the pressure in the hydraulic system.

- **Immediately after the engine is stopped and while the safety lock lever is still in the unlock position, turn the starter switch to ON and press each auxiliary hydraulic switch several times to release the pressure from the auxiliary hydraulic circuit.**
- **Press the air breather button to relieve the tank pressure.**
- **When disconnecting hoses, stand to the side and loosen them slowly to gradually release the internal pressure before removing.**

These lines deliver the hydraulic oil necessary for operating a hydraulic breaker, crusher or other attachments.
(1).....First auxiliary hydraulic lines
(2).....Second auxiliary hydraulic lines
(3).....Third auxiliary hydraulic lines
(4).....Fourth auxiliary hydraulic lines

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

Connecting the hydraulic circuits

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

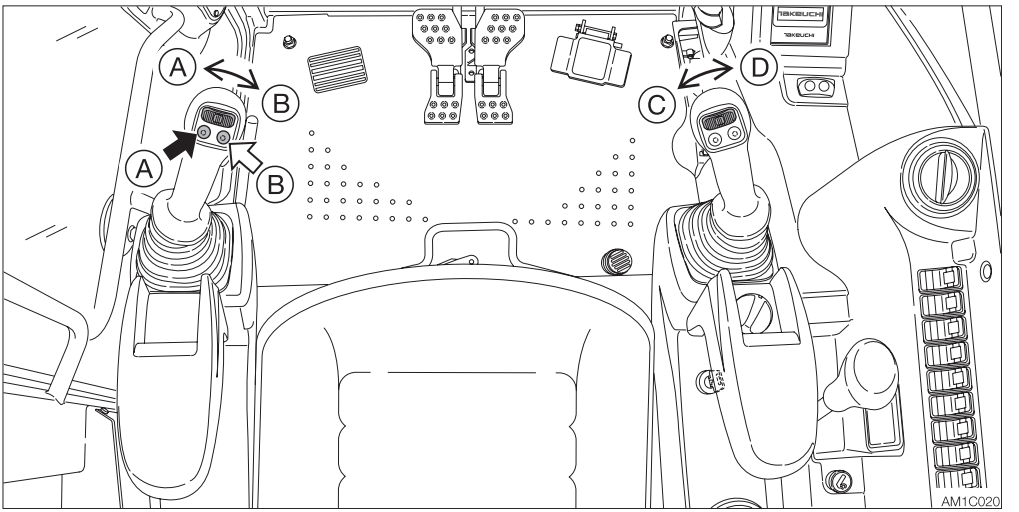
1. Release the pressure remaining in the lines, and then close the stop valve.
   Refer to “Releasing the residual pressure” on page 2-76.
2. Remove the plugs.
3. Connect the attachment hydraulic lines to ports (a/c) and (b/d). When installing a hydraulic breaker, connect the supply circuit to the port (a) and the return circuit to port (b).
4. Open the stop valves. When installing a hydraulic breaker, open the selector valve (1).
   Refer to “Selector valve” on page 2-77.
5. When connecting is complete, purge air from the hydraulic lines.
   a. Start the engine and run it at a low idle speed with no load for 10 minutes.
   b. With the engine running in 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 at least 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 applicable.

6. Check for oil leaks.

Disconnecting the hydraulic circuits

1. Release the pressure remaining in the lines, and then close the stop valve.
   Refer to “Releasing the residual pressure” on page 2-76.
2. Disconnect the lines from the ports (a/c) and (b/d).
3. Install the plugs.



Operating

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

(A).....Hydraulic oil flows to left auxiliary line (a).

(B) .....Hydraulic oil flows to right auxiliary line (b).

(C) .....Hydraulic oil flows to left auxiliary line (c).

(D) .....Hydraulic oil flows to right auxiliary line (d).

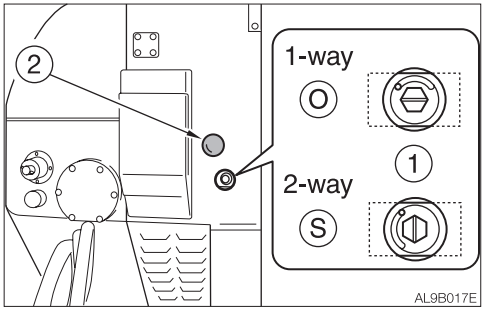
Releasing the residual pressure

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

Perform the residual pressure releasing within 10 minutes after the engine stopping.

1. Park the machine on a flat, rigid and safe ground.
2. Stop the engine.
3. Lower the safety lock lever to the unlocked position.
4. Turn the starter switch to the ON position.
5. Press the auxiliary hydraulic switches several times to release the residual pressure in the auxiliary hydraulic circuitry.

Selector valve

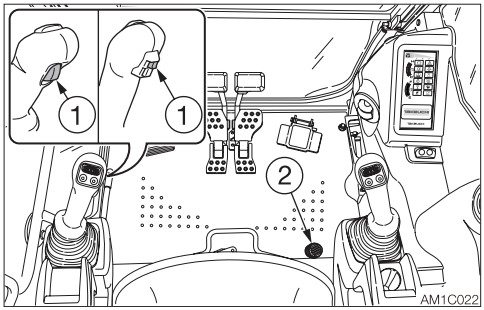


(O): Open.....When using a hydraulic breaker (1-way flow)
(S): Close.....When using a reversible attachment (2-way flow)

1. Remove the cover (2).
2. Change the direction of the hydraulic oil flow by opening or closing the selector valve (1) inside the right side cover.
   · For the machine with the auxiliary 1st auto tank switch, use the switch to select the flow.

Refer to “Auxiliary 1st auto tank switch (If equipped)” on page 2-43.

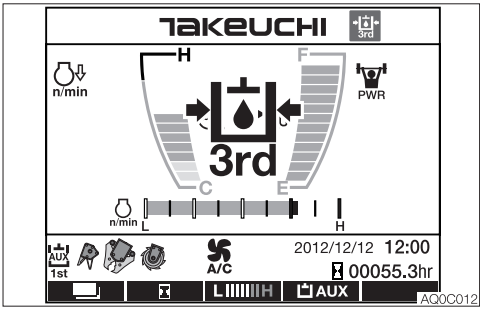
Third auxiliary hydraulic switch and button (If equipped)



The auxiliary 3rd is mainly used for the attachment that can quickly connect/ disconnect the bucket. After the engine is started, hydraulic oil constantly flows into the pipe (e). This allows the pressure in the (e) side to increase, preventing the pin inserted on the bucket from coming out. If the pressure in the (e) side drops, the warning lamp starts flashing to warn that the bucket may come out. For a safety reason, the bucket can be disconnected only when the button (1) and the switch (2) are pressed at the same time. When they are pressed, the hydraulic oil flows into the line (f) to increase the pressure there. As the result, the pin on the bucket comes out and the bucket is removed from the machine.

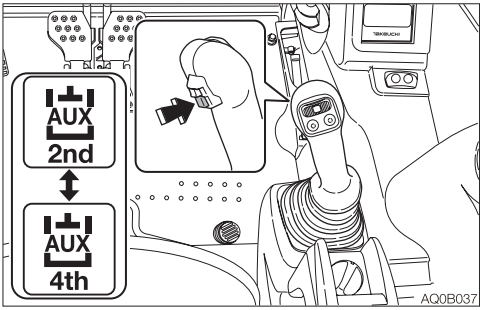
- Bleeder unit for simultaneous use with the auxiliary 1st and 2nd (if equipped)
  Pressing both the auxiliary 3rd button (1) and the switch (2) makes it possible to release internal pressure from the auxiliary 3rd (e side), auxiliary 1st and auxiliary 2nd at the same time. (The pressure is kept drawn for six seconds after the button and the switch are released.) This enables faster attachment change.

Third auxiliary hydraulic warning lamp



This lamp illuminates and an alarm sounds if the auxiliary 3rd hydraulic pressure drops abnormally while the engine is running.

Auxiliary 2/4 select button (If equipped)



This button is used to change from the second auxiliary operation to the fourth auxiliary operation.
Pressing this button displays the second auxiliary on the LCD to indicate that the second auxiliary operation is enabled.
Pressing this button again displays the auxiliary 4th on the LCD to indicate that the auxiliary 4th operation is enabled.
The actual operation is performed with the auxiliary 2nd/4th switch (slider switch).
Refer to “Auxiliary 2nd/4th switch” on page 2-36.

Setting the flow rate
The flow rate in the auxiliary 1st, 2nd and 4th can be set to the desired values.
For details, refer to “Auxiliary 1st flow rate setting” on page 2-21 and “Auxiliary 2nd/4th flow rate setting” on page 2-22.

IMPORTANT: The set values are not the guaranteed values. They should be used as rough guides.

OPERATING THE MACHINE WITH AN ACCUMULATOR

⚠ WARNING

Be sure to handle the high-pressure nitrogen gas enclosed in the accumulator with care. If handled incorrectly, it could explode and cause serious injury. Strictly observe the following precautions:

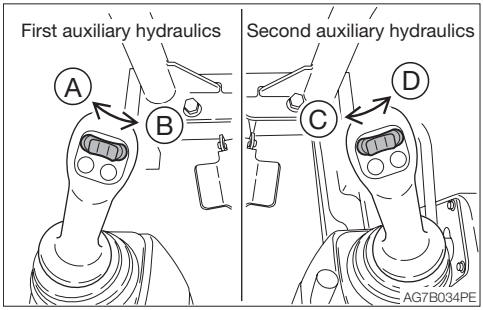
- **Do not disassemble.**
- **Do not allow flame near or throw it into a fire.**
- **Do not drill, weld or fuse.**
- **Do not subject it to physical shock such as hitting, rolling or dropping.**
- **Before disposing of the unit, the sealed gas must be drained. Contact a Takeuchi service agent for help.**

For a machine with an accumulator, the residual pressure in the auxiliary hydraulic circuit or the working equipment circuit can be released even after the engine is stopped.

Releasing residual pressure

Residual pressure refers to the pressure that remains in the hydraulic circuit after the operation. Release the residual pressure as necessary by using the following steps. Perform the residual pressure releasing within 10 minutes after the engine stopping.

1. Return the throttle controller to idle the engine at low speed.
2. Lower the bucket and dozer blade to the ground.
3. Check that the safety lock lever is in the released position.
4. Stop the engine.
5. Turn the starter switch to the ON position.



6. Move or press the auxiliary hydraulic switches several times to release the residual pressure in the circuitry.
7. Move all the control levers and pedals several times in all directions to release the pressure from the working equipment circuitry.
8. Raise the safety lock lever to engage the lock.

Lowering the boom when the engine has stopped

Perform this operation within 10 minutes after the engine stopping.

1. Sit at the operator's seat.
2. Turn the starter switch to the ON position.
3. Lower the safety lock lever to the unlock position
4. Slowly push the operating lever forward to lower the boom.

LOAD SAFETY DEVICE (IF EQUIPPED)

The load safety devices include an emergency shut-off valve and an overload warning device.

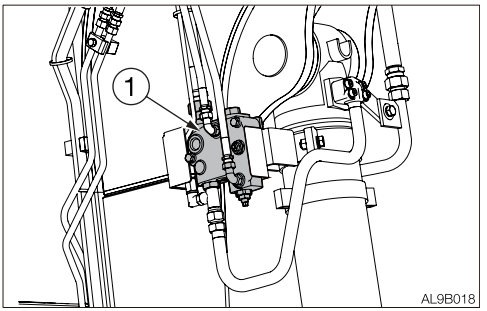
Emergency shut-off valve

⚠ WARNING

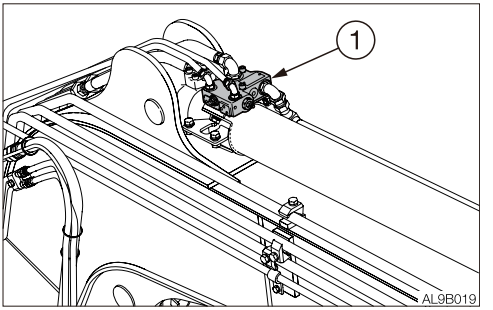
- **If the boom or arm stops due to the breakage of hose, immediately move away from the load being lifted and go to a safe location.**
- **Since the emergency shut-off valve (1) is a safety device, you must not disassemble it and/or replace or adjust its internal part. Takeuchi shall not be held responsible for any injuries, accidents or product malfunction caused by disassembly.**

The emergency shut-off valve (1) prevents the boom or arm from falling rapidly in case the hydraulic hose is broken.

Boom



Arm (option)



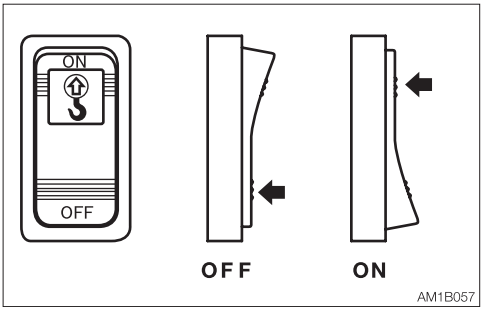
If the hose breaks and the emergency shut-off valve (1) is activated to stop the operation of boom or arm, lower the boom or arm by slowly operating the lever while ensuring safety. Ask your sales or service dealer for repair.

Overload warning device

⚠ WARNING

If the overload is not removed after the overload warning horn is sounded, the machine may tip over. If the horn starts sounding, stop operating the machine and lighten the load.

If a weight greater than the lifting capacity is applied or lifted, the overload warning device is activated and the horn sounds. (When the lift overload warning switch is turned on.)



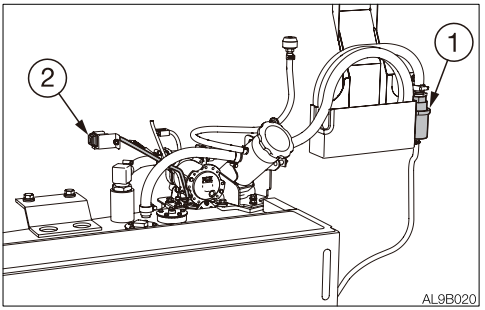
Lift overload warning switch
OFF ....Off
ON .....On

FUEL SUPPLY PUMP (IF EQUIPPED)

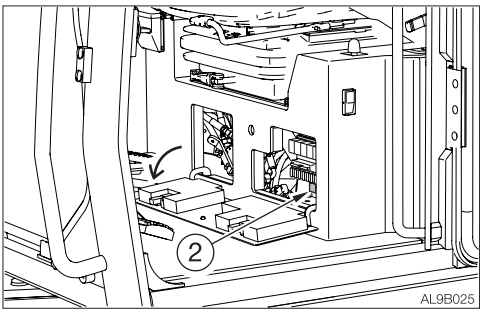
⚠ DANGER

Do not use the fuel supply pump for gasoline or hydraulic oil. Doing so could result in explosion or damage.
Only use the fuel supply pump for diesel fuel.

This device automatically supplies fuel to the fuel tank and stops automatically when the fuel tank is full.



1. Open the engine hood.
2. Insert the pump's nozzle (1) in the fuel supply tank.
3. Open the cab door and the fuse box cover.



4. Press the switch (2) under the fuse box. The pump automatically stops once the fuel tank becomes full.
5. Turn off the switch.
6. Store the nozzle.

ENGINE AUTO STOP

<Applicable machine models 178500837 or later>

⚠ WARNING

Do not leave the machine when the attachment is raised.

The term "engine auto stop" refers to a function that automatically stops the engine. When the engine auto stop function is on, the machine engine automatically stops to reduce fuel consumption, under the conditions listed below.
When the following conditions are met, the buzzer sounds and the engine stops in three minutes.
1. Safety lock lever is raised
2. Vehicle error code is not generated.
3. Engine error code is not generated.

For details about turning on or off this function, ask your sales or service dealer for help.

IMPORTANT: If the certain conditions are met when the engine auto stop is on, the buzzer sounds once every minute. The buzzer continues to sound once every minute even after the engine stops. Leaving the starter switch at the ON position will deplete the battery. Be sure to turn the switch to the OFF position after the engine is stopped.

Note: The engine auto stop does not function during the DPF auto regeneration.

OPERATION

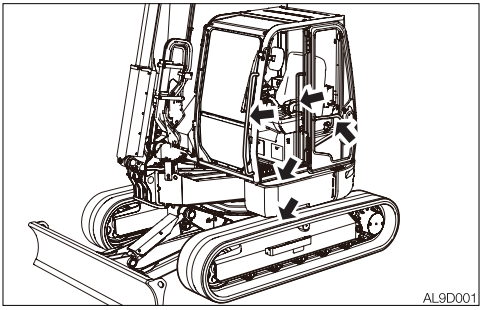


BEFORE STARTING OPERATION

GETTING ON OR OFF THE MACHINE

⚠ WARNING

- **Do not jump on or down from the machine. Never attempt to get on or off the moving machine.**
- **When getting on or off the cab, first fully open the door to the locked position and check that it does not move.**



- **Climb up/down the steps holding the handrail to support your weight in a three point secure stance (hand and feet).**
- **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 for the first time that day.
Refer to “MAINTENANCE, Walk-around inspection”, on pages 5-16 and 5-17.

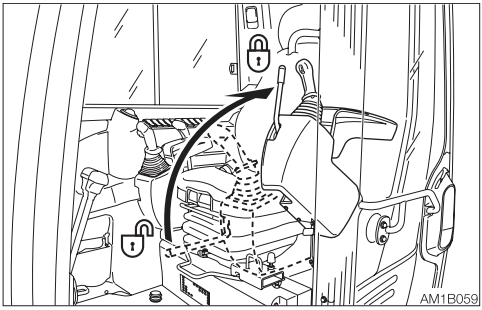
DAILY INSPECTION

Perform the daily inspections once a day before starting the engine for the first time.
Refer to “MAINTENANCE, Daily inspection”, on pages 5-18 to 5-23.

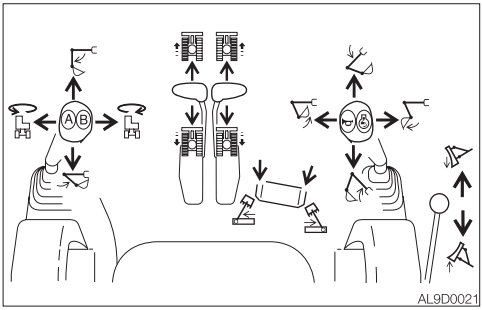
STARTING AND STOPPING THE ENGINE

BEFORE STARTING THE ENGINE

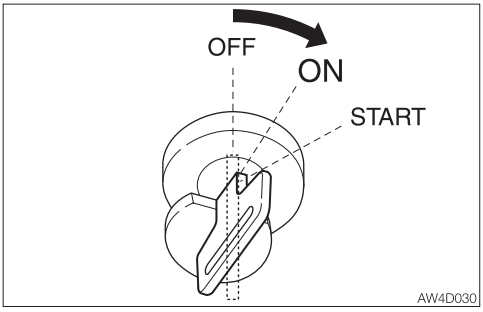
1. Adjust the seat for a comfortable operating position.
2. Fasten the seat belt.



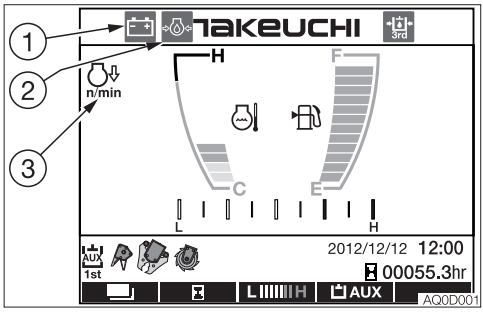
3. Check that the safety lock lever is in the locked position.



4. Check that all 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 inspections:



- All warning lamps flash and an alarm is sounded for two seconds. The meters also start functioning. After two seconds, the deceleration lamp (3) stops flashing and remains lit, while the battery charge warning lamp (1) and engine oil pressure warning lamp (2) remain flashing. (If the auxiliary 3rd is selected, it is also flashing.) The other lamps go out.
- Turn on the light switch to check that the boom light and each switch lamp turn on.
- Check the fuel level.

If a lamp does not light or the alarm is not sounded, the display or a wire may be damaged. Ask your sales or service dealer for repair.

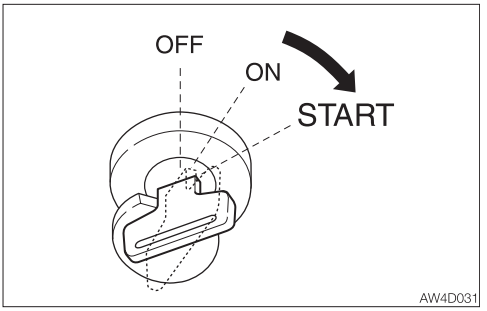
STARTING THE ENGINE

⚠ WARNING

- **Clear all personnel from the work area.**
- **Sound the horn to warn people 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, and then try again to start the engine.
IMPORTANT: If the engine stalls due to fuel shortage, add fuel, turn the key to the ON position for 60 seconds, and then turn it to the START position. Running the starter for a long time before there is enough fuel is going through can cause the starter to fail.

Normal starting

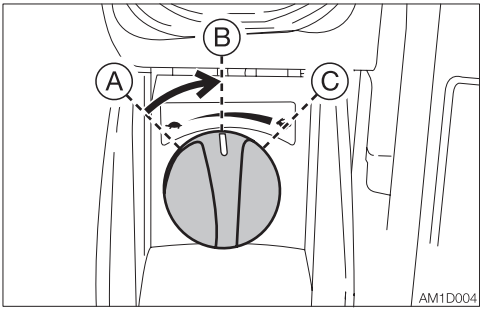


1. Turn the starter key to the START position and start the engine.
   When the machine is equipped with the safety start function: The engine does not start unless the safety lock lever is in the locked position at this point.
   Refer to “Safety lock lever” on page 2-45.
2. Once the engine starts, release the key. The key automatically returns to the ON position.
3. Check that the warning lamps are off.
   For safety reasons, it is designed that the deceleration function is activated to set the engine revolutions to low idling whenever the engine is started.
   Cancel the deceleration mode by pressing the deceleration button as necessary.
4. Warm up the engine.
   Refer to “Warming up the engine” on page 3-7.
5. After the completion of the warming up, press the deceleration button to cancel the deceleration mode.

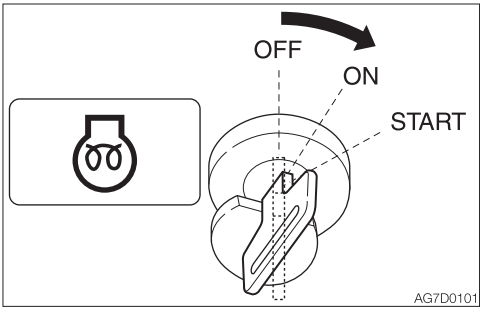
Starting in cold climates

⚠ WARNING

Never use starting fluid on this engine, as the starting fluid could cause an explosion.



1. Turn the throttle controller to the middle position.



2. Turn the starter key to the ON position, and confirm that the glow lamp is on. (The glow lamp stays lit for 15 seconds when the coolant temperature is –10°C (14°F).)
3. After the glow lamp goes out, press the deceleration button (to cancel the deceleration mode), and then turn the key to the START position to start the engine.
   When the machine is equipped with the safety start function: The engine does

not start unless the safety lock lever is in the locked position at this point.
Refer to “Safety lock lever” on page 2-45.

4. Once the engine starts, release the key. The key automatically returns to the ON position.
5. Check that the warning lamps are off.
6. Return the throttle controller to the original position and warm up the engine.
Refer to “Warming up the engine”.

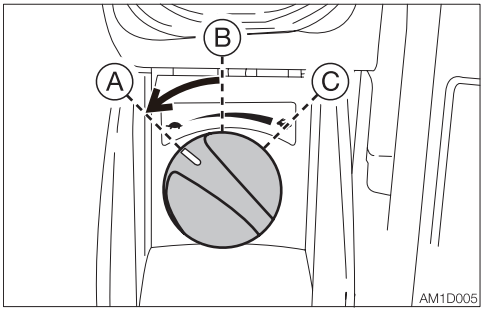
Note: If the engine is started at –15°C (5°F), the revolution speed is controlled to 1500 min^{-1} (rpm). After 10 seconds, the throttle controller operation becomes available.

Note: The glow lamp turns on if the coolant temperature is low after the engine is started.

MEMO

WARMING UP THE ENGINE

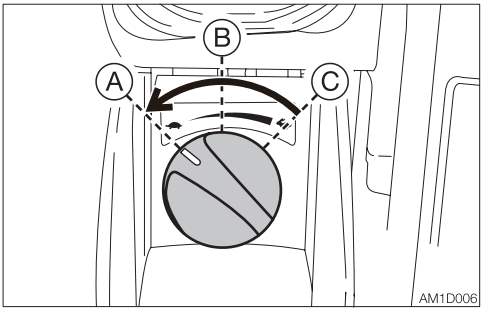
IMPORTANT: Avoid racing the engine until it has warmed up.
Do not warm up the engine for a long time (20 minutes or more). When idling is required, occasionally place a load or run the engine at medium speed.



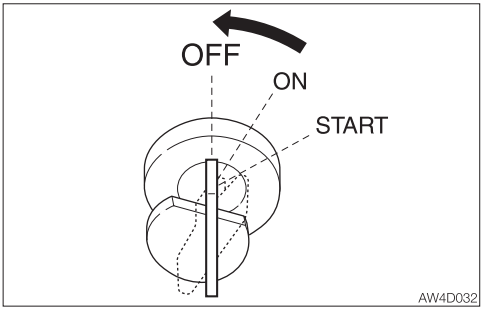
1. Return the throttle controller, and then run at a low idle with no load for 5 minutes.

STOPPING THE ENGINE

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



1. Return the throttle controller.
2. Idle the engine for about 5 minutes to gradually let it cool.



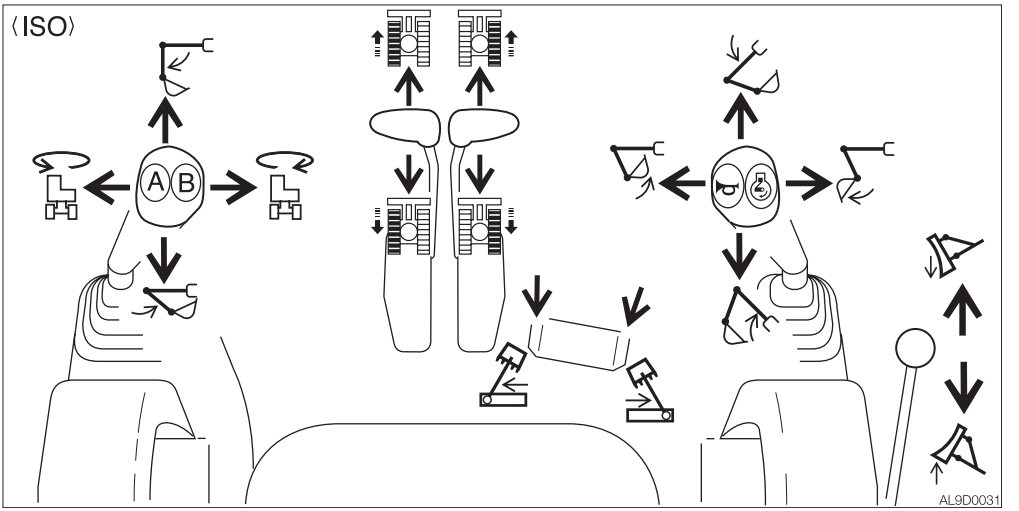
3. Turn the starter key to the OFF position to stop the engine.

OPERATING THE MACHINE

LEVER PATTERN (ISO PATTERN)

⚠ WARNING

- Before starting operation, carefully check which lever pattern you are going to use.
- It is described using the ISO pattern in this manual.

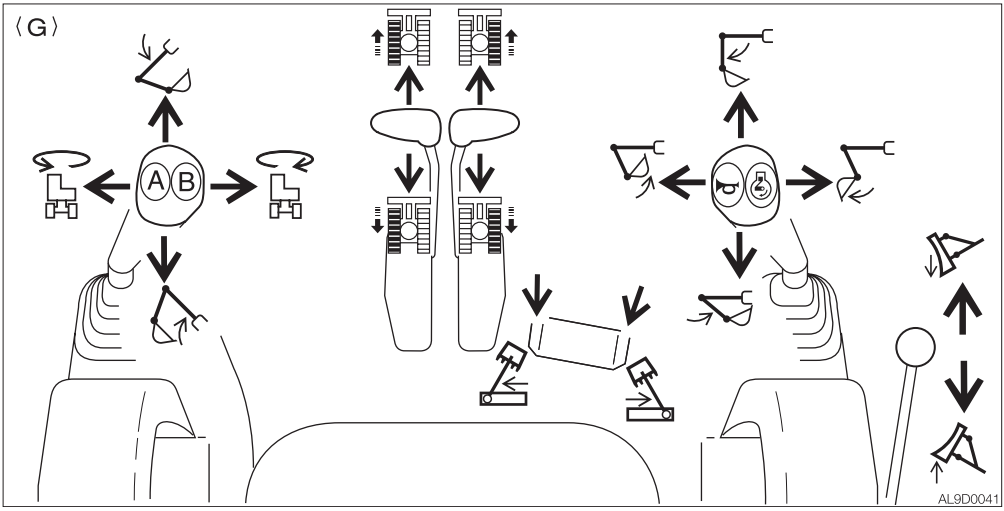


	Left crawler forward		Right crawler forward
	Left crawler reverse		Right crawler reverse
	Arm out		Boom lower
	Arm in		Boom raise
	Upperstructure slew left		Bucket load
	Upperstructure slew right		Bucket dump
	Boom offset left		Dozer blade lower
	Boom offset right		Dozer blade raise

LEVER PATTERN (G PATTERN) (IF EQUIPPED)

⚠ WARNING

- **Before starting operation, carefully check which lever pattern you are going to use.**
- **It is described using the ISO pattern in this manual.**



	Left crawler forward		Right crawler forward
	Left crawler reverse		Right crawler reverse
	Boom lower		Arm out
	Boom raise		Arm in
	Upperstructure slew left		Bucket load
	Upperstructure slew right		Bucket dump
	Boom offset left		Dozer blade lower
	Boom offset right		Dozer blade raise

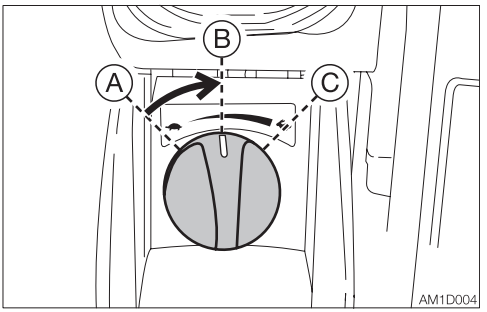
WARMING UP THE MACHINE (HYDRAULIC OIL)

⚠ WARNING

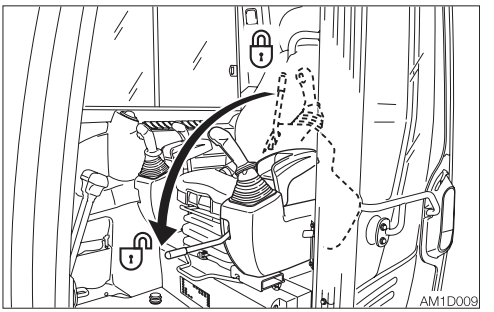
Operating the working equipment without warming up the machine (hydraulic oil) is dangerous, as the working equipment cannot response to controls quickly or may move in unexpected ways, and the safety devices may not operate properly. Be sure to sufficiently warm up the machine.

IMPORTANT: Do not operate the levers too quickly 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). If operations must be performed at lower temperatures, heat up the hydraulic oil to at least 20°C (68°F).

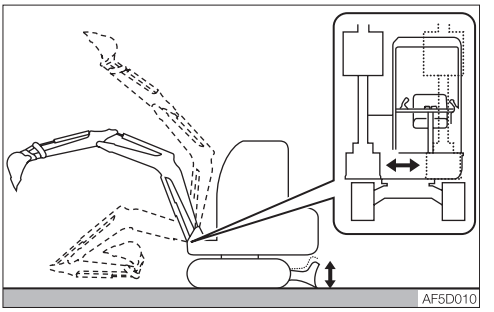
Normal warm-up



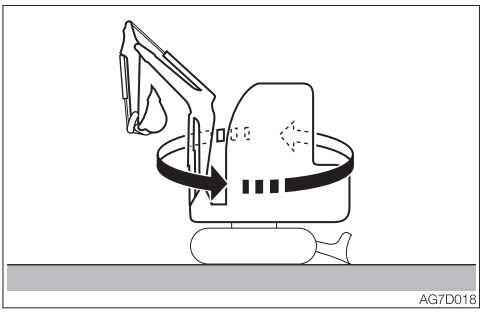
1. Turn the throttle controller to the middle position, and then run the engine at medium speed for about five minutes with no load.



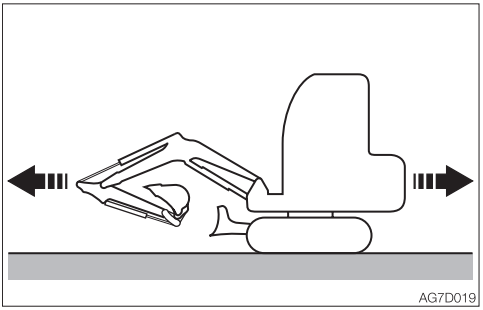
2. Fully lower the safety lock lever to the unlock position, and then unlock the offset pedal.
3. Lift the bucket from the ground.



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



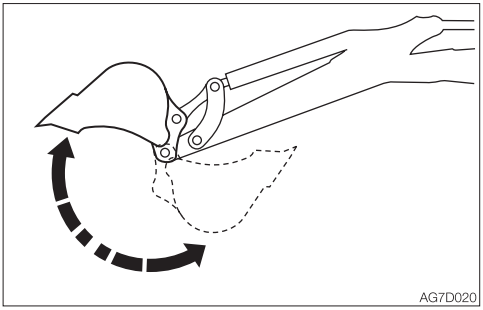
5. Slew slowly to the left and the right several times.



6. Travel slowly forward and in reverse several times.

Warm-up in cold climates

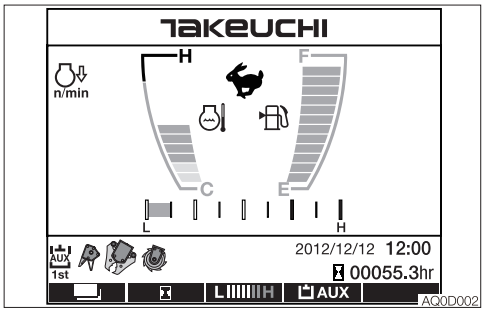
1. Perform the normal warm-up procedure.



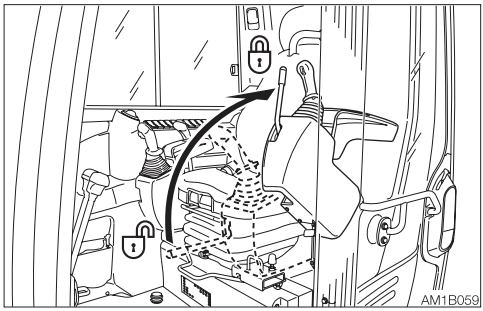
2. Set the bucket cylinder at the stroke end and keep it there.
   Do not keep this condition for more than 30 seconds.
3. Repeat Step 2 until the bucket operating speed becomes normal.

INSPECTION AFTER WARM-UP

After warming up the engine and machine (hydraulic oil), perform the checks and inspections described below, and repair if necessary.



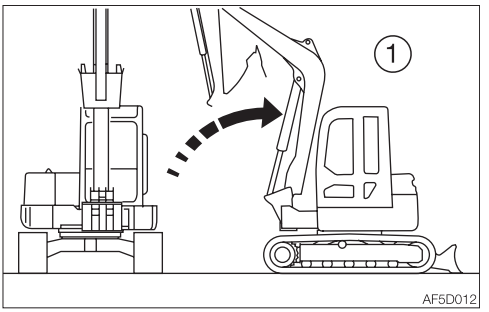
1. Check that the warning lamps and meters are as follows:
   · Are all warning lamps off?
   · Is the water temperature level within the green range?
2. Check that there are no irregularities in the exhaust color, sound and vibrations.



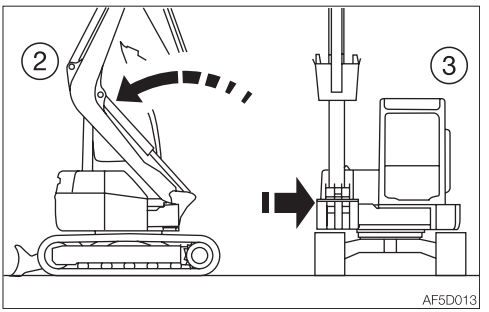
3. Raise the safety lock lever to the locked position, and then check that the operating and travel levers are locked.

INSPECTING THE ATTACHMENT INTERFERENCE PREVENTION SYSTEM

Perform an inspection below to confirm that the bucket, arm and boom do not touch the cab if the boom or bucket is stopped by itself after moved very close to the cab.



1. Offset the boom to the front of the operator's seat and move the boom closed to the cab.
   Offset the boom to the right and move the bucket close to the cab



2. Offset the boom fully to the right and check if it can be set to the maximum rear inclination.
3. Offset to the left by maintaining the posture shown in the figure 2 above.

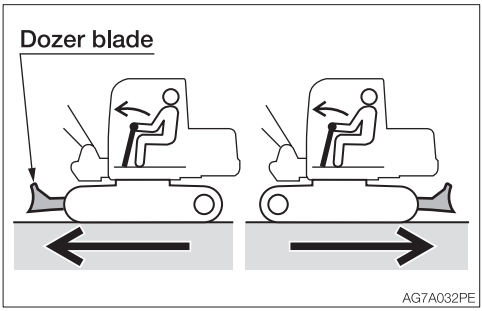
What to do if the boom automatically stops

1. If the boom stops while it is being raised:
   Operate the boom downward.
2. If the boom has stopped while offsetting to the left:
   a. Operate the boom downward to move the boom out of the auto-stop range.
   b. Offset the boom to the left.
   Offsetting to the right is possible regardless of the boom's posture.

OPERATING THE TRAVEL LEVERS/ PEDALS

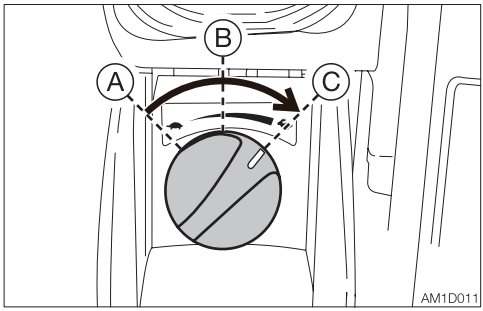
⚠ WARNING

- Never allow anyone to enter the machine's slewing radius and path.
- Signal your intention to move by sounding the horn.
- There is a blind spot in the rear of the machine. Before traveling in reverse, as necessary, swing the cab around in reverse to check that the area is safe and clear.

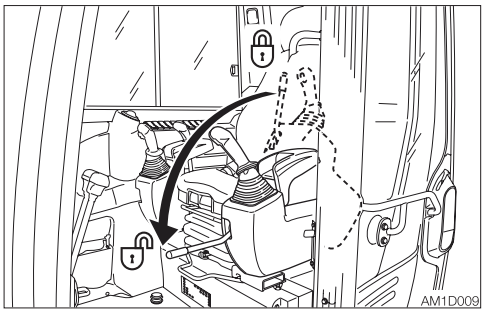


- Before operating the travel levers/ pedals, make sure that the dozer blade is to the front of the operator's seat. Remember that when the dozer blade is to the rear of the operator's seat, the travel levers/pedals must be operated in the reverse direction from when it is to the front.
- Clear all obstacles from the path of the machine.

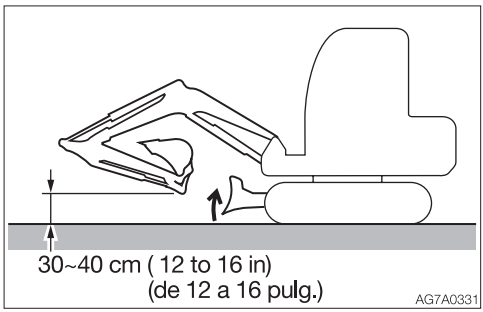
Moving the machine forward and backward



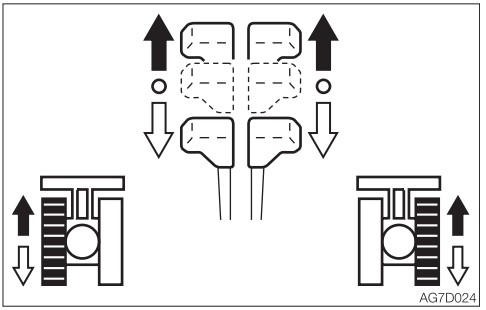
1. Turn the throttle controller and increase the engine speed.



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



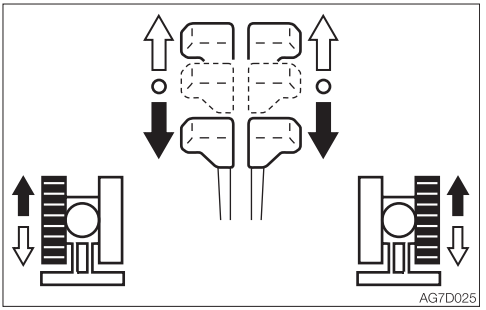
3. Fold the hoe attachment and lower it 30 to 40 cm (12 to 16 in.) above the ground.
4. Lift the dozer blade.
5. Operate the left and right travel levers as below.



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

➡ To move forward:
Tilt the levers forward.

⇨ To move backward:
Tilt the levers backward.



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

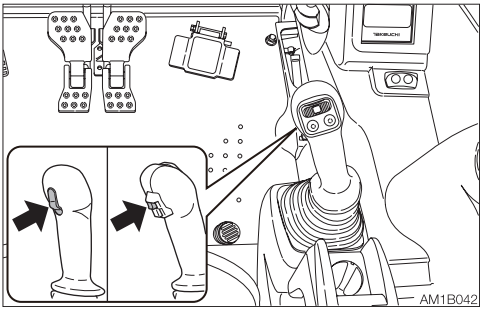
➡ To move forward:
Tilt the levers backward.

⇨ To move backward:
Tilt the levers forward.

Traveling in 2nd (High) speed

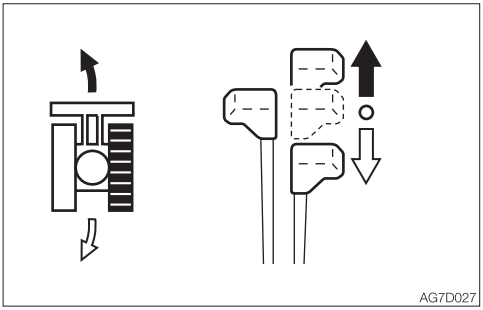
⚠ WARNING

When a load greater than a set value is applied during traveling in 2nd (high) speed, the speed will automatically slow down to 1st (low) speed. When the load becomes lighter, the speed will increase and return to 2nd (high) speed. It should be noted that the travel speed changes depending on the load condition (for machines with the automatic travel shift-down system).



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

Pivot turn

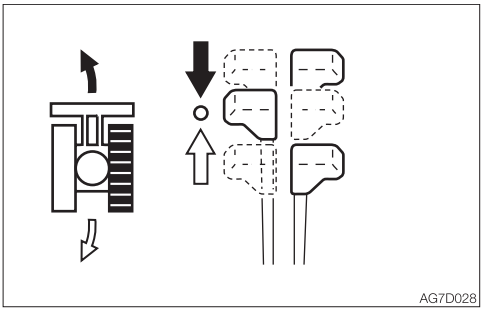


Turning to the left when stopped:

➡ 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 as for the right lever.



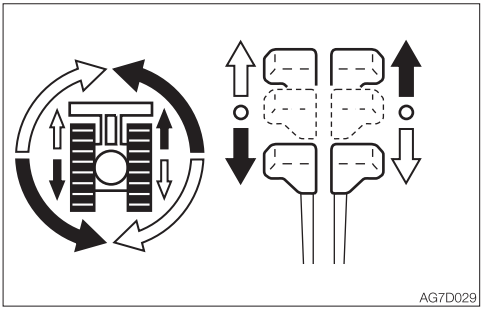
Turning to the left while traveling:

➡ 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 as for the left lever.

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.

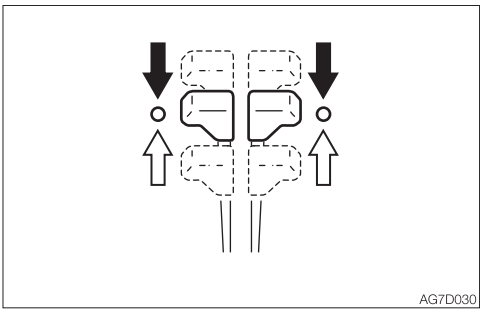
STOPPING TRAVEL

⚠ WARNING

- Park the machine on a flat, rigid and safe ground. Set the parking brake. If you must park on a slope, chock the tracks to block the machine.
- If any control is accidentally touched when the safety lock lever is not locked, the machine may suddenly move and cause serious injury or death.

⚠ CAUTION

Never stop running the machine suddenly except in emergency. Stop in good time, if possible.

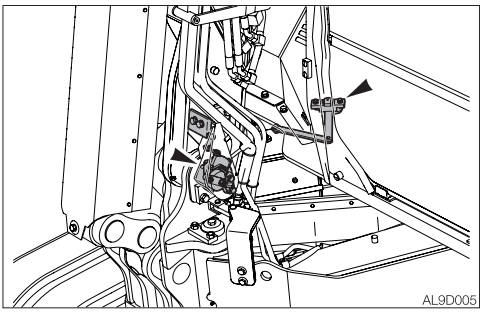


1. Set the left and right travel levers slowly to the neutral position. The machine stops.

ATTACHMENT INTERFERENCE PREVENTION DEVICE

⚠ WARNING

- All attachments other than a bucket should be used with the AIPS set to the M mode.
- Failure to properly set the Attachment Interference Prevention Switch can result in equipment damage, serious injury or death.
- The buckets used in the standard mode (S) must be either the standard buckets or those having a length (between the pin and the tooth) and a width, each equal to or smaller than that of the standard buckets.

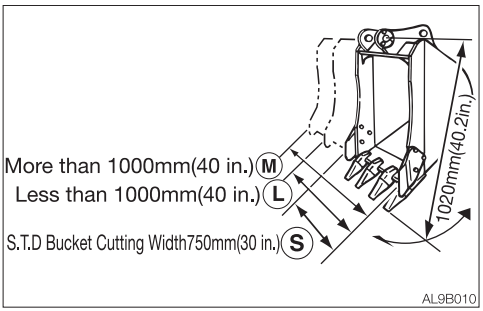


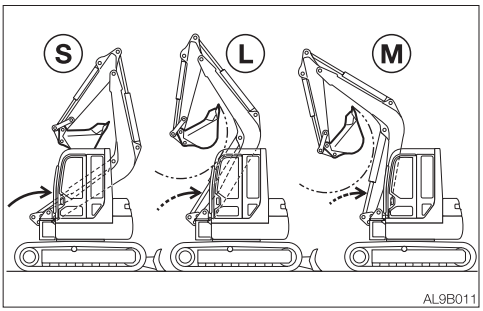
- Do not disassemble or damage the sensors installed on the boom and main body. Doing so may cause the Interference Prevention System to malfunction. If there is a problem, contact a Takeuchi sales or service outlet for inspection or repair.
- The interference prevention system may not function properly if attachments other than Takeuchi-approved attachments are installed.
  Do not install attachments not approved by Takeuchi.
- If an error occurs in the boom angle sensor, the boom stops. If restarted, the boom operation speed becomes slow and the engine speed is controlled to be 1500 RPM. Park the machine in a safe place and contact a Takeuchi sales or

service dealer for repair. <Applicable machine models 178500106 or later>

The Attachment Interference Prevention Switch (AIPS) allows the operator to select the attachment size used on the excavator. The Interference Prevention System uses the operator's AIPS 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.

Modes of operation





To properly set the AIPS:
Select the appropriate attachment width.
S .....Standard bucket attachments or those having the width of 750 mm (30 in.) or less
L.....Bucket attachment whose width is between 750 mm (30 in.) and 1000 mm (40 in.)
M.....Bucket attachments having a width of more than 1000 mm (40 in.), or any other approved attachments

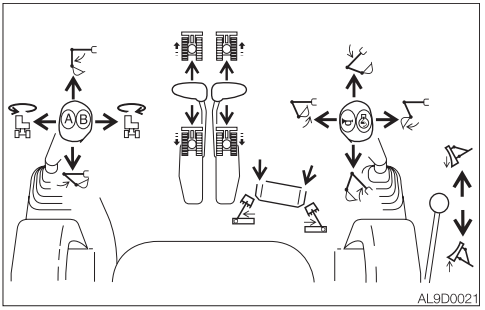
Operate excavator

The minimal front radius feature is only available for the standard bucket attachment 750 mm (30 in.) or smaller.

OPERATING THE WORKING EQUIPMENT

⚠ WARNING

- **Before starting operation, carefully check which lever pattern you are going to use.**
- **It is described using the ISO pattern in this manual.**



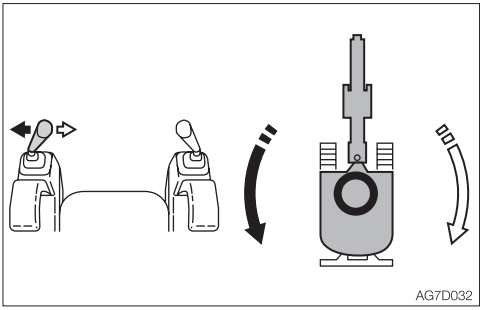
Use the right operating lever to operate the boom and bucket.
Use the left operating lever to operate the arm and slewing.
Return the operating levers to the neutral position to stop the hoe attachments.

1. Lower the safety lock lever to the unlocked position.
2. Set the pedal cover to the unlocked position.

Slewing

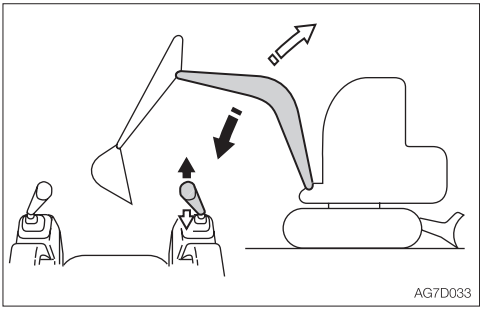
⚠ WARNING

Check the surrounding area for safety before slewing.



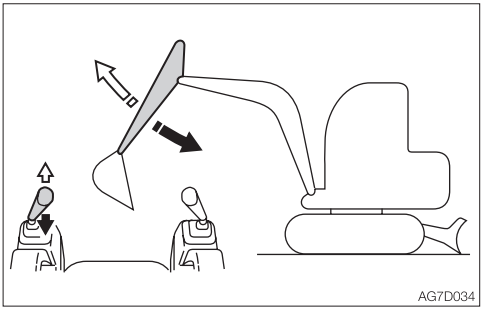
➡ Upperstructure slew left:
Tilt the left operating lever to the left.
⇨ Upperstructure slew right:
Tilt the left operating lever to the right.

Operating the boom



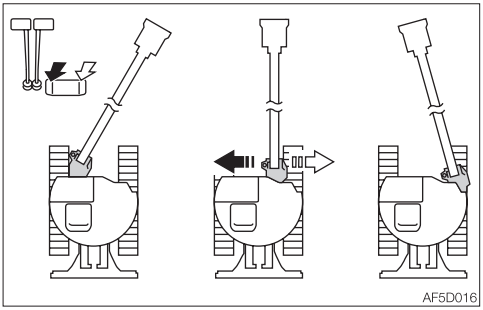
➡ Boom lower:
Tilt the right operating lever forward.
⇨ Boom raise:
Tilt the right operating lever backward.

Operating the arm



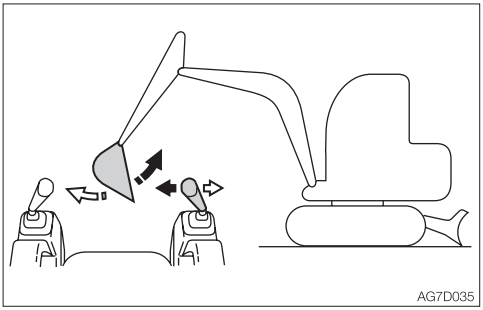
➡ Arm in:
Tilt the left operating lever backward.
⇨ Arm out:
Tilt the left operating lever forward.

Operating the boom offset



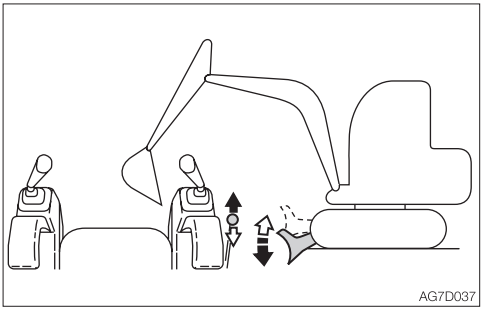
➡ Boom offset left:
Step on the left side of the pedal.
⇨ Boom offset right:
Step on the right side of the pedal.

Operating the bucket



➡ Bucket load:
Tilt the right operating lever to the left.
⇨ Bucket dump:
Tilt the right operating lever to the right.

Operating the dozer blade



➡ Dozer blade lower:
Tilt the lever forward.
⇨ Dozer blade raise:
Tilt the lever backward.

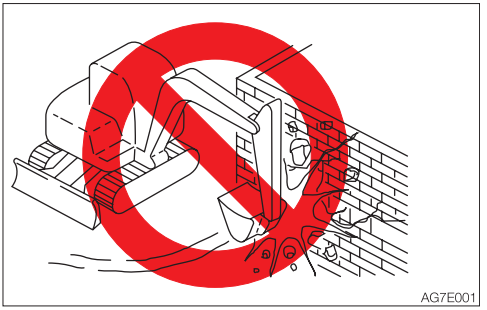
OPERATING PROCEDURES

PROHIBITED OPERATIONS

⚠ WARNING

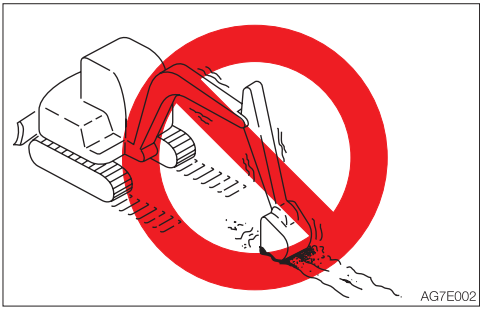
- **Do not operate on bedrock (hard or soft).**
- **Do not slew/swing while traveling. If you must operate the hoe attachment while traveling, operate at speeds slow enough so you have complete control at all times.**

Do not perform demolition or leveling using slew force



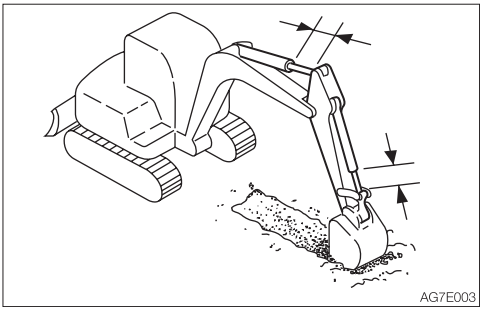
Do not demolish walls or level ground using slew force. Also, do not dig the bucket teeth into the ground during slewing. Doing so will damage the hoe attachment.

Do not dig while traveling

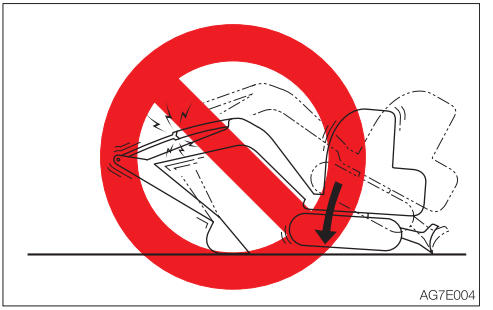


Do not dig the bucket into the ground and use the traveling force to dig.

Be gentle when using the hydraulic cylinder

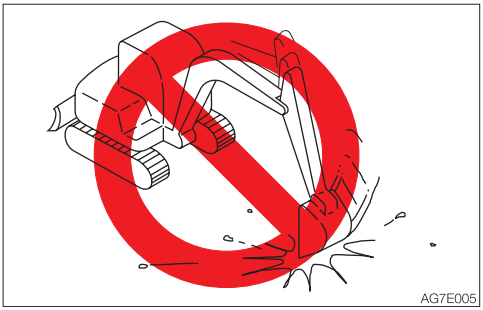


Do not extend the hydraulic cylinders to the stroke ends. Operate them with leeway.



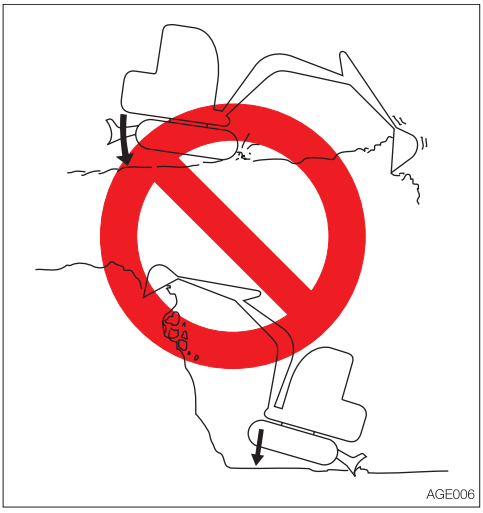
Do not support the machine body with the hoe attachment when the body is lowering with the arm cylinder fully extended. Doing so concentrates the load on the arm cylinder and could damage the arm cylinder.

Do not drive piles with the bucket or dig by banging the bucket



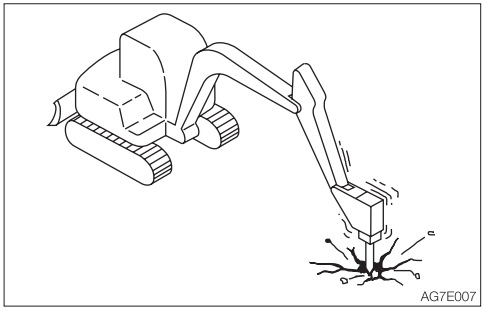
Doing so will shorten the service life of the hoe attachment. Use the hydraulic force to dig.

Do not perform operations using the machine's dropping force



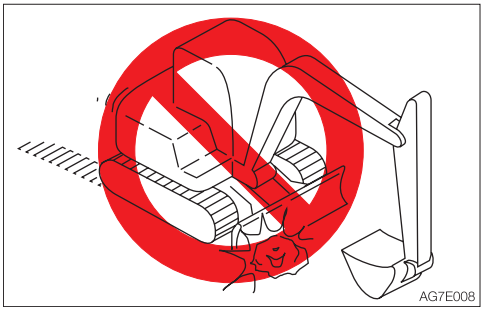
Putting excessive strain on the machine will shorten its service life. When digging, use the hydraulic force of the cylinders and the shallow and long strokes.

Digging bedrock



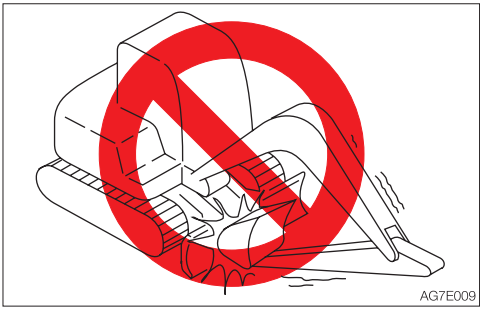
For hard base rock, break the rock up into small pieces with a breaker, etc., before digging. This prevents damage to the machine and is thus more economical in the end.

Caution on exposing the dozer blade to shocks



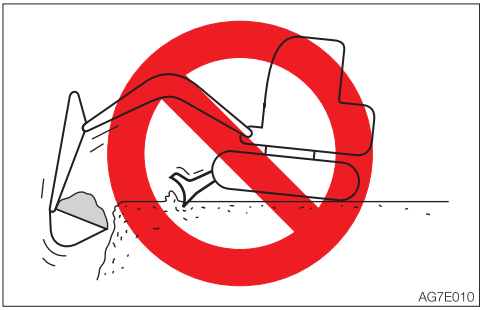
Hitting the dozer blade against rocks, etc., could damage the dozer blade or the blade cylinder.

Caution on folding the hoe attachment

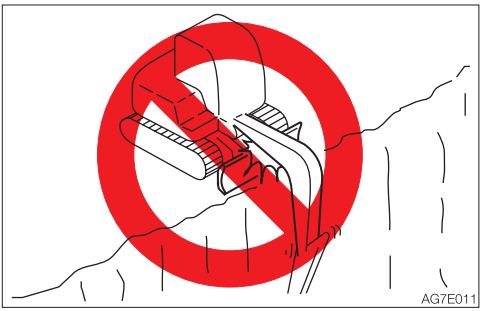


Be careful not to let the bucket to hit the dozer blade when the hoe attachment is being folded.

Do not use the dozer blade as an outrigger

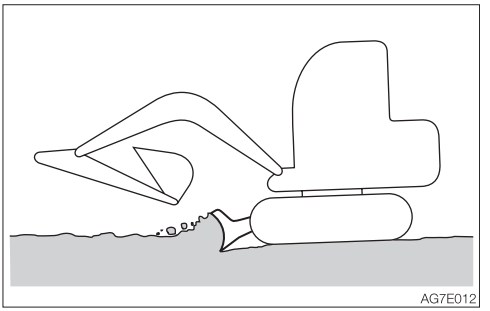


Pay attention to the dozer blade when digging



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.

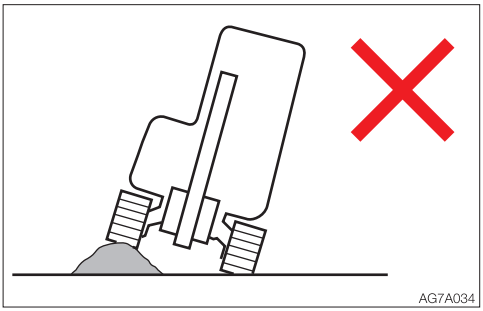
Caution on digging down with the dozer blade



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 undercarriage.

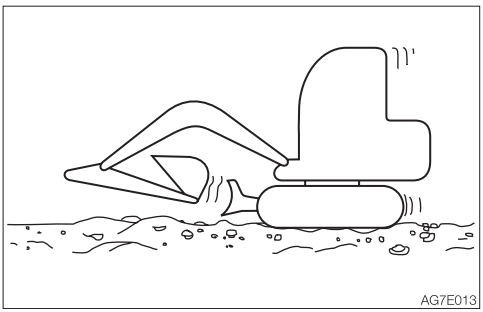
CAUTIONS ON OPERATING

Cautions on traveling



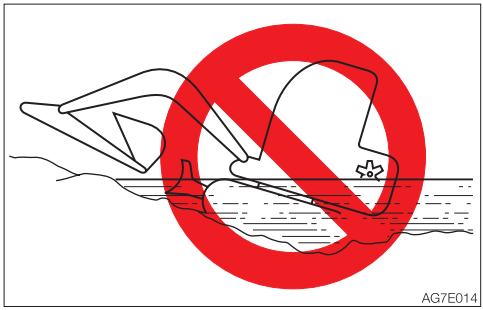
Traveling over obstacles (rocks, stumps, etc.) may put a great load on the machine body and may cause damage to it. Avoid crossing over obstacles whenever possible. If you must do so, keep the hoe attachment near the ground, travel at a low speed, and go over the obstacle at the center of the crawler.

Cautions on traveling in 2nd (High) speed

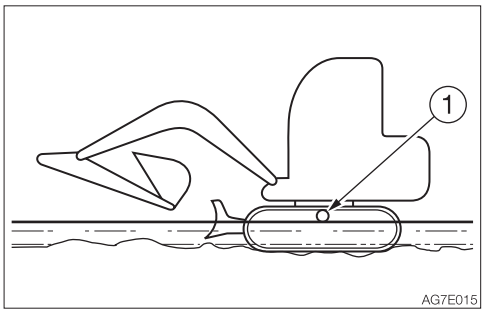


- On uneven ground, maintain the low speed and avoid starting, stopping or changing directions abruptly.
- When a load greater than a set value is applied during traveling in 2nd (high) speed, the speed will automatically slow down to 1st (low) speed. When the load becomes lighter, the speed will increase and return to 2nd (high) speed. It should be noted that the travel speed changes depending on the load condition (for machines with the automatic travel shift-down system).
- When traveling in 2nd speed, do so with the dozer blade at the front.

Cautions on using machine in water



If the rear of the machine is submerged in water as shown in the figure above, it causes the radiator fan to turn in water, resulting in damage to the fan. The rear of the machine must not be submerged.



- Allowable water depth
  Use the machine in water only when the water is up to the bottom of the carrier roller (1).
- For those parts used in water for a long time, apply enough grease until the old grease is expelled.
- Never submerge the slew bearing or main body in water or sand. If submerged, contact a Takeuchi service agent for inspection.