OPERATOR'S MANUAL

Original instructions

Serial No. 120000010~

TB20e

electric power

Book No.AC9EN016

OENTB20e_F-XQ

MINI EXCAVATOR

TAKEUCHI

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

03392-00046

SAFETY ALERT SYMBOL



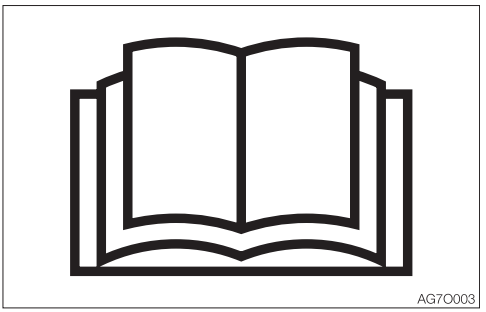
This symbol represents the safety alert. The message that follows the symbol contains important information about safety.
Read and understand the message to avoid personal injury or death.

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

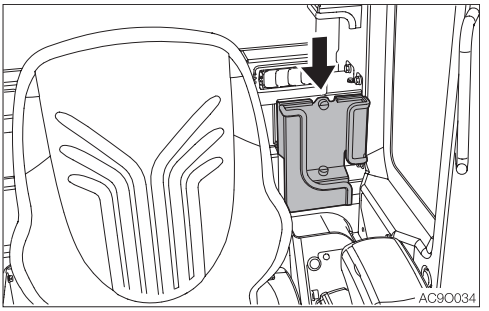
This manual describes the safety instructions to be followed when operating the machine. If you have any questions about the machine, please contact a Takeuchi sales or service outlet.

- 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.

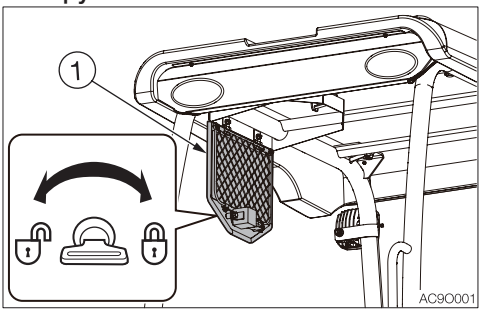
MANUAL STORAGE COMPARTMENT

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

Cab



Canopy

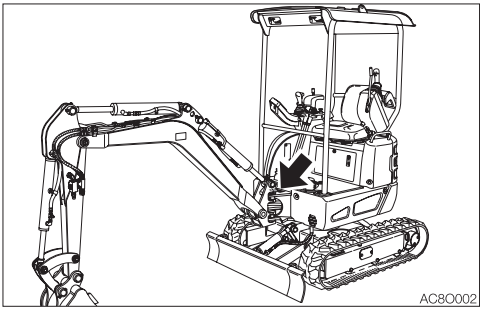


1. Insert the starter key and turn it counterclockwise to open the cover (1).
2. After using the manual, place it in the plastic pouch and store it back in the manual storage compartment.

SERIAL NUMBERS

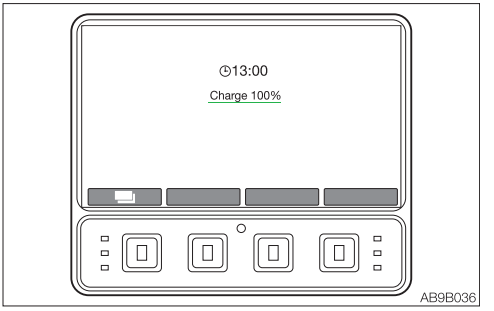
IMPORTANT: Do not remove the machine name plate with the serial number. Check the serial number of the machine and write it down in the space below.

Machine number:

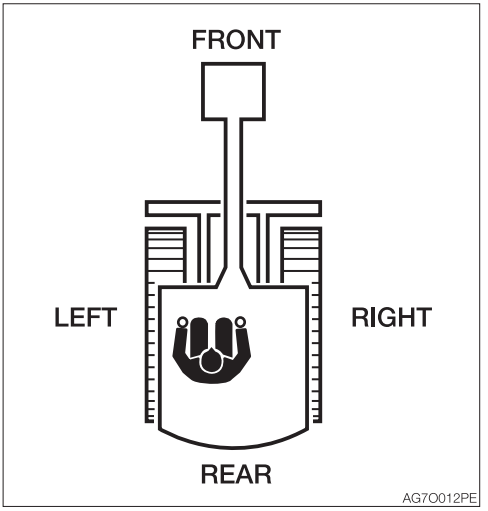


FIRST-TIME CHARGING

When using the machine for the first time, be sure to fully charge it (until the white or green bar appears).



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

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 hydraulic oil.
- Avoid heavy loads and rapid operations. Operate with a load of about 80% of 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.
⃠, ✕ ..... Prohibited
..... Lock
..... Unlock

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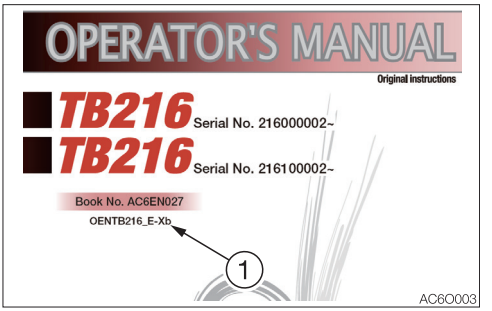
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REVISION HISTORY

When checking the revision history, refer to the book code (1) on the cover page.

Example:
O EN TB216_E-X b

- Revision history (A to Z, a to z)
- Model code
- Language
- Type
  - O: Operator's Manual
  - W: Workshop Manual



Revision history	Date	Description	Importance
O	07/2025	Changed:	
		Radio (Digital Audio Broadcasting not supported) 2-40	High
		Radio (Digital Audio Broadcasting supported) 2-52	High
		Securing the machine 4-6	High
P	08/2025	Changed:	
		Safety signs (decals) 1-41	High
		Cleaning the air filters 5-31	High
		Basic Specifications 7-2	High
Q	10/2025	Changed:	
		Charging 0-24	High
		Battery pack error code list 6-22	High
		Motor error code list 6-26	High
		Charger error code list 6-40	High

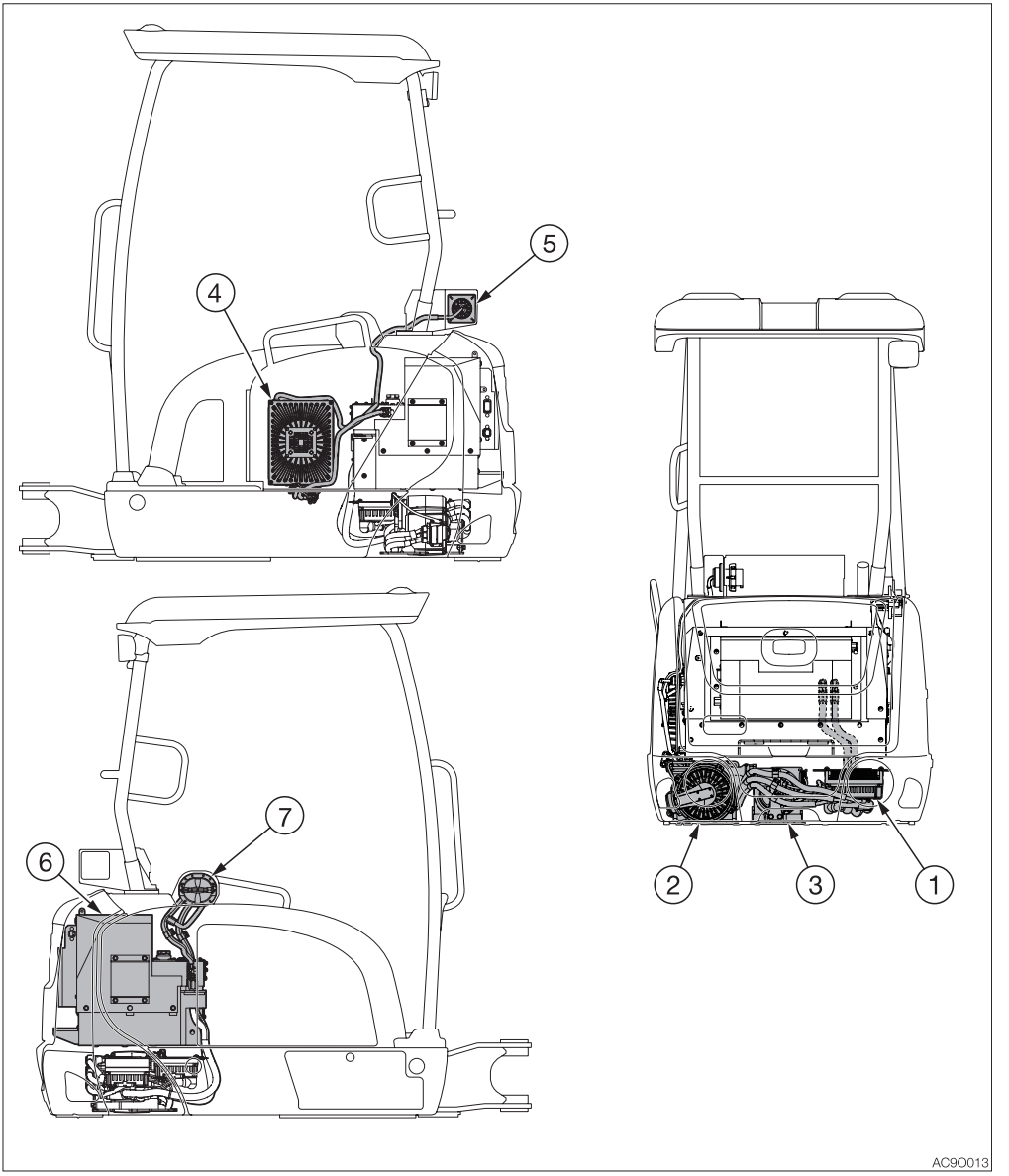
FEATURES OF THE ELECTRIC HYDRAULIC EXCAVATOR

The electric hydraulic excavator is driven by a motor that uses power stored in a lithium ion battery.

IMPORTANT: Do not disassemble or remove high-voltage parts such as the lithium ion battery, charger or motor.
IMPORTANT: Do not use the charger with the power supply or voltage not designated.
Doing so could cause fire or failure.

Note: The capacity (power storage capability) of the lithium ion battery gradually reduces through repeated use. This is an inherent characteristic of the battery and is not a malfunction.

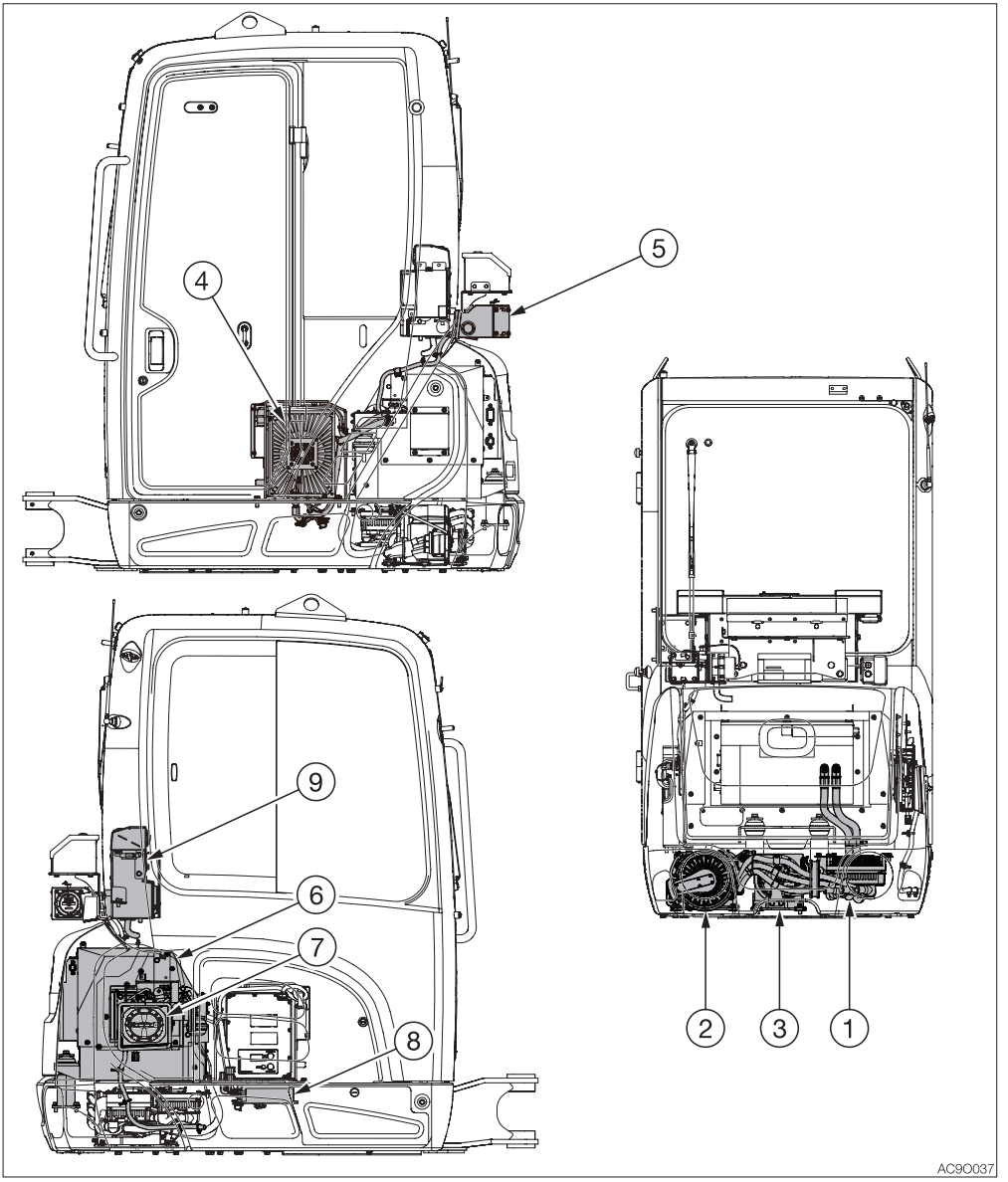
HIGH-VOLTAGE COMPONENT NAMES (CANOPY)



1. Inverter
2. Motor (main)
3. Motor (sub)
4. On-board charger
5. On-board charging port
6. Lithium ion battery pack
7. Off-board charging port

Note: Never wash areas near the high-voltage parts with water.

HIGH-VOLTAGE COMPONENT NAMES (CAB)



1. Inverter
2. Motor (main)
3. Motor (sub)
4. On-board charger
5. On-board charging port
6. Lithium ion battery pack
7. Off-board charging port
8. DCDC converter
9. Heater

Note: Never wash areas near the high-voltage parts with water.

PRECAUTIONS FOR THE ELECTRIC HYDRAULIC EXCAVATOR

Handling precautions for the electric hydraulic excavator

⚠ WARNING

- The machine uses high-voltage direct current (maximum 84 volts); Do not touch the high-voltage cable (orange color cable) or connector, charger, inverter or any other high-voltage parts such as the motor and lithium ion battery. If an electric shock occurs, serious injury could result.

IMPORTANT: To prevent damage to the lithium ion battery, observe the following precautions.

- When the machine is not going to be used for a long time, store the lithium ion battery at an ambient temperature of –10 to 30°C, with a state of charge (amount of remaining power) of around 10%.
- Inspect the state of charge of the lithium ion battery once a month. If it is 0%, recharge it to 10%.

Note: If the battery is stored at ambient temperature of 45°C (113°F) and over 30% state of charge, it will degrade by 2 to 5% per month.

The electric hydraulic excavator fails

⚠ WARNING

- Never touch the high-voltage parts or cable if it is exposed.
- If there is a leak in the lithium ion battery, immediately contact a Takeuchi sales or service dealer for help. There is a risk of fire.
- Never touch any leaking liquid found inside or outside the operator's compartment. If liquid leaked from the lithium ion battery accidentally comes in contact with the skin or clothes, immediately wash it with clean water such as tap water, and then seek medical attention.
- If a strong impact is felt in the lithium ion battery area at the rear of the machine while operating, park the machine in a safe place and check for any damage. If there is damage in the lithium ion battery area at the rear of the machine, immediately contact a Takeuchi sales or service dealer for help without touching the damaged part.
- If a fire occurs in the lithium ion battery or a high-voltage part, exit the machine as quickly as possible. When extinguishing the fire, be sure to use a fire extinguisher for electrical fires.
- If you cannot ensure the safety of the machine due to the damage caused by an accident or other reasons, leave the machine and then contact a Takeuchi sales or service dealer for help. When contacting, be sure to inform them that the machine is an electric hydraulic excavator.

- **If the repair requires sheet-metal working or coating, be sure to contact a Takeuchi sales or service dealer. In case of damage to the battery pack (lithium ion battery), serious injury could result if the repair is not done by a person qualified to repair the electric hydraulic excavator.**

CAUTIONS IN USING THE LITHIUM ION BATTERY

Using the lithium ion battery incorrectly could cause electric shock, localized heat generation or heat runaway, resulting in smoke, ignition or explosion. Be sure to observe the following warnings.

⚠ WARNING

- **Use a charger supplied by Takeuchi, as well as the correct voltage and current when charging.**
  Refer to “Basic Specifications” on page 7-2.
- **Do not place the machine in a hot place such as close to the fire.**
- **Do not pour water or apply excessive force onto the lithium ion battery.**
- **Do not disassemble the lithium ion battery.**
- **If hot gas is ejected from the lithium ion battery, leave the area; the gas contains toxic component.**
- **When extinguishing the fire, use a fire extinguisher for electrical fire.**

CAUTIONS IN USING THE CHARGER/ CHARGING CABLE

Using the charger/charging cable incorrectly could damage the charger/charging cable itself and also the lithium ion battery connected, resulting in smoke, explosion or ignition. Be sure to observe the following warnings.

⚠ WARNING

- **Observe the specification for the input power supply.**
  Refer to “Basic Specifications” on page 7-2.
- **Do not use the charger or store it for a long period in a hot place, such as close to the fire.**
- **Do not pour water or apply excessive force onto the charger itself.**
- **Do not disassemble the charger.**

IMPORTANT: The charger or charging cable purchased from Takeuchi or a Takeuchi sales or service dealer is exclusively for the machine. Do not use it for any other purpose than to charge the machine.

MAKING THE LITHIUM ION BATTERY LAST LONGER

The capacity (power storage capability) of the lithium ion battery gradually reduces as you use it. The life of the lithium ion battery can be prolonged by taking the following precautions.

When charging

- The life of the lithium ion battery can be prolonged by avoiding unnecessary charging.

When parking

- Do not store the machine in a place where the outside temperature is extremely high or low. The difference in temperature will accelerate depletion of the lithium ion battery capacity (power storage capability). In midsummer, the lithium ion battery will last longer if the machine is parked in the shade, not in direct sunlight.
- When the machine is not going to be used for a long time, store the lithium ion battery at an ambient temperature of –10 to 30°C, with a state of charge (amount of remaining power) of around 10%.
- Inspect the state of charge of the lithium ion battery once a month. If it is 0%, recharge it to 10%.

Note: If the battery is stored at ambient temperature of 45°C (113°F) and over 30% state of charge, it will degrade by 2 to 5% per month.

CHARGING THE LITHIUM ION BATTERY

Cautions on charging

When charging, be sure to observe the following precautions to prevent a fire or electric shock.

⚠ WARNING

- Persons who use a medical electrical device, such as an implantable pacemaker or an implantable cardioverter defibrillator (ICD), are advised to consult the medical electric device manufacturer about the effect on the medical device before charging.
- Persons who use a medical electrical device, such as an implantable pacemaker or an implantable cardioverter defibrillator (ICD), are advised to keep the implanted portion of the body at least 15 cm away from the charging cable. The radio waves from the charging cable could affect the operation of such medical devices.
- Persons who use a medical electrical device, such as an implantable pacemaker or an implantable cardioverter defibrillator (ICD), must stay away from the off-board charger. Ask another person to do it if it is necessary to operate the charger. The electromagnetic waves from the off-board charger while in use could temporarily affect the device.
- Do not allow children to use the charging cable or the off-board charger by themselves. Doing so could cause a serious accident.
- When any abnormality such as an odd smell, smoke, unusual noise, or malfunction is detected during charging, stop charging. Failure to do so could result in fire, electric shock, injury or burns.
- If thunder is heard, do not touch the machine, charger, or charging cable. Doing so could result in electric shock due to a lighting strike.
- Do not touch the plug or insert or remove the plug with wet hands. Doing so could result in electric shock.
- Never use an extension cable or conversion adapter. Doing so could result in fire or burns.
  Charging can be performed in rain or snow, but the following precautions must be observed. Failure to do so could result in fire, electric shock, injury or burns.
- If there is a danger that the plug socket area could be submerged due to heavy rain, turn off the breaker.
- If the back side or inside of the charging port cap gets wet, wipe it before starting a charge operation.
- Charger and charging cable
  - Never disassemble, repair or modify the charger or charging cable. Failure to follow these instructions could result in serious damage or injury due to fire or electric shock.
  - Do not stretch, twist, bend, stand on or drag the cord or cable. Doing so could cause a break in the cord or cable, resulting in abnormal heating and fire.
  - Do not wind the cord or charging cable around the charging connector. Doing so could cause a break in the cord or cable, resulting in abnormal heating and fire.
  - Insert the plug straight and all the way to the end. Failure to do so could result in abnormal heating and fire.
  - Do not pull the cord to remove the plug. Doing so could cause a break in the cord or cable, resulting in abnormal heating and fire.

⚠ WARNING

- When the charger or charging cable fails
  - If there is a deep scratch, crack, breakage or rust on the plug, do not use the charger or charging cable. Failure to observe these instructions could result in fire or electric shock.
  - If the power is turned off when the plug or cord is moved, or if the charging is repeatedly interrupted, immediately stop using the charger or charging cable. Failure to do so could cause a break in the cord or cable, resulting in abnormal heating and fire.
  - When any abnormality such as an odd smell, smoke, unusual noise, or a malfunction is detected during charging, stop charging. Failure to do so could cause a break in the cord or cable, resulting in abnormal heating and fire.
- Using the plug socket for charger
  - If the plug socket holes are too loose to securely hold the plug or if the plug socket has a break or discoloration, do not use it. As doing so could result in abnormal heating and fire, ask a licensed electrical expert to check the plug socket.
  - Do not open any cover during charging. The cooling fan inside could suddenly start running and your hands, legs, clothes or accessories could come into contact with it and become caught resulting in injury.
  - When charging, make sure that the connector is inserted all the way to the end. If the connector is not securely inserted to the end, the machine may not recognize it that could result in an unexpected accident or failure.
- Handling the charging cable
  - Do not drop, hit hard or allow it to be submerged. Failure to follow these instructions could result in serious damage or injury due to fire or electric shock.
  - Do not insert any foreign body into the plug or charging connector or connect the plug into a plug socket that is not properly rated. Failure to follow these instructions could result in serious damage or injury due to fire or electric shock.
- Observe the following precautions when storing the charging cable.
  - Store it in a place away from direct sunlight.
  - Store it in a place not exposed to rain or wind.
  - Cover the charging connector terminal with a protective cap to prevent dirt and dust from entering.
  - Do not store the cord or cable with twists in it.

IMPORTANT:

- **Do not subject the charging port, charging cable or on-board charger to strong impact.**
- **Do not perform charging while the machine is covered with a sheet.**
- **Before charging, make sure that the charging port, charging connector or plug is free from any water, corrosion, foreign matter or damage. If there is any foreign matter or damage, contact a Takeuchi sales or service dealer for help without starting charging.**
- **Do not insert anything other than the charging connector into the charging port. Doing so could break the charging port.**
- **If the charging port is frozen, unfreeze it by using a dryer or the like before inserting the charging connector into it or removing the charging connector from it.**
- **After charging is complete, be sure to close the cap on the charging port. Failure to do so could result in failure if water or dirt enters.**

Notes:

- Charging is not possible if the on-board charger and the off-board charger are connected to the machine at the same time.
- For the off-board charger, the machine cannot be started while the charging connector is connected.
- If the ambient temperature around the charger is high, a longer charging time may be required due to the action of the protective function.
- The time required for charging varies depending on the following conditions.
  - The lithium ion battery level when charging is started
  - The lithium ion battery temperature
  - The type of charger to be used or the power source to be connected
  - The age of the lithium ion battery
- The capacity (power storage capability) of the lithium ion battery gradually reduces through repeated use.
  The machine's battery is charged from 20% or less to full charge to correct the capacity at full charge, to avoid the capacity becoming extremely low.

FEATURES OF THE ELECTRIC HYDRAULIC EXCAVATOR

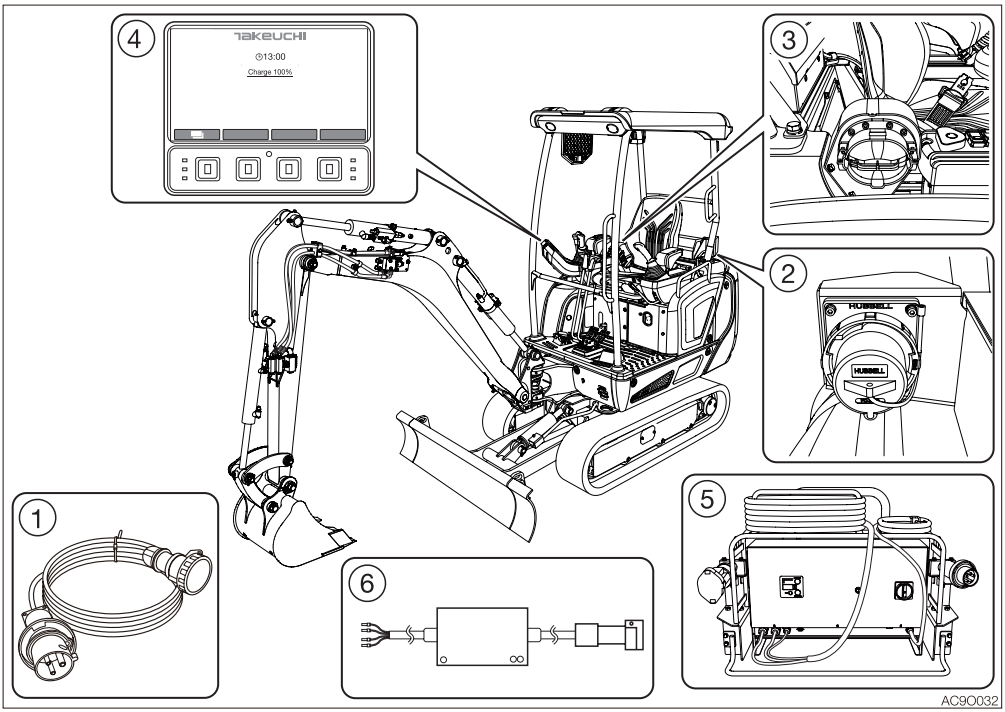
EQUIPMENT FOR CHARGING

Instead of fuel, the machine is powered by using various types of chargers, charging cable and charging port. The charge level can be checked by viewing the multi-information display.

IMPORTANT:

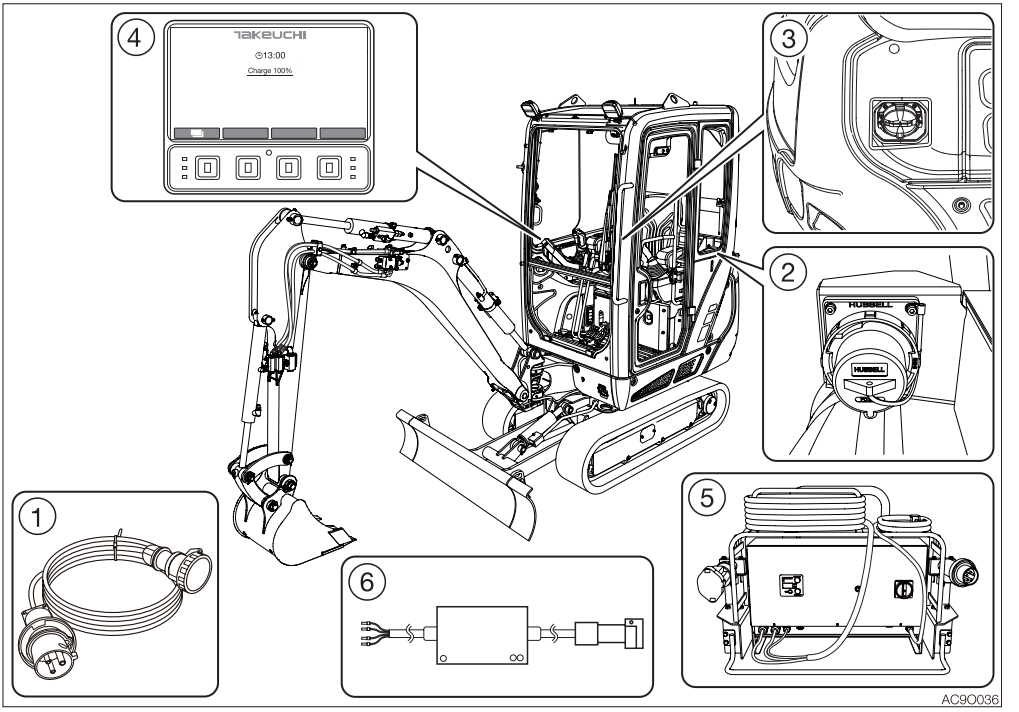
- **When removing snow, mud or water from the charging port area, be sure to close the charging port cap beforehand.**
- **If the charging port area is frozen and the cap is hard to open/close, do not forcibly move it; be sure to thaw the area before opening/closing the port.**
- **If water is trapped inside the charging port, do not perform charging; instead, contact a Takeuchi sales or service dealer for help.**
- **Before operating, make sure that the charging port cap is completely closed.**

Component names of charging equipment (Canopy)

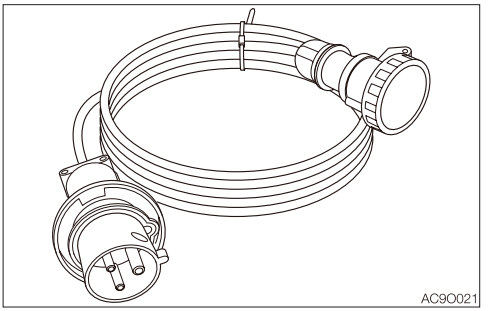


FEATURES OF THE ELECTRIC HYDRAULIC EXCAVATOR

Component names of charging equipment (Cab)

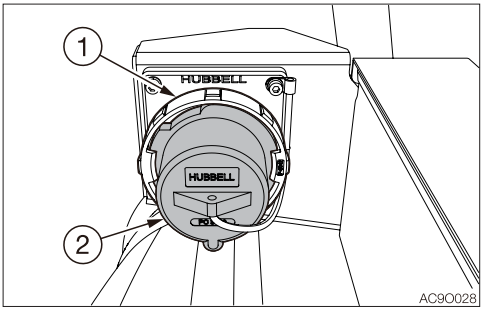


1. Charging cable (for on-board charger) (option)
This cable is used for on-board charging.



IMPORTANT: Select an appropriate connector for the charging cable by referring to "Charger (input specifications)" on page 0-28.
IMPORTANT: Be sure to select a charging cable that complies with the local laws and regulations.

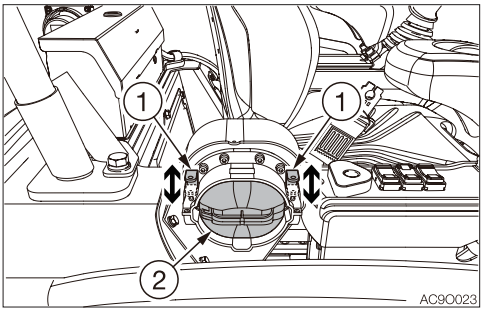
2. On-board charging port
The charging cable for on-board charging is connected to this port.



Opening
1. Turn the lock (1) clockwise to unlock the cap (2).
2. Pull out the cap (2).

Closing
1. Insert the cap (2).
2. Turn the lock (1) counterclockwise to lock the cap (2).

3. Off-board charging port
The charging cable for off-board charging is connected to this port.

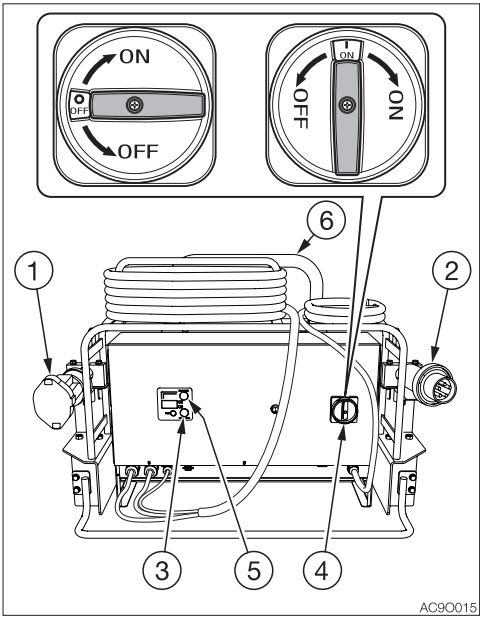


Opening
1. Pull the lock (1) upward.
2. Pull the cap (2) to remove it.

Closing
1. Insert the cap (2) and close it.
2. Push the lock (1) downward.

4. Multi-information display
The charge and machine conditions can be checked on this display.
Refer to "Multi-information display" on page 2-14.

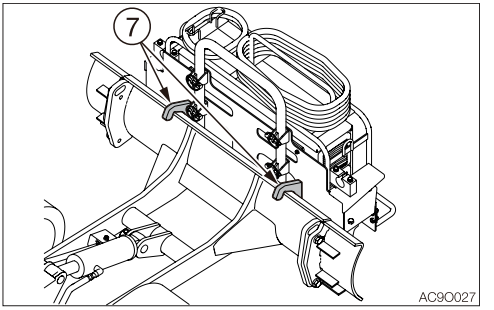
5. Off-board charger (option)



Connect the charging connector (1) to the off-board charging port.
Connect the plug (2) for industrial purposes to the 400 V/480 V supply socket.

IMPORTANT: Select an appropriate connector of the charging cable to be connected to the plug for industrial purposes by referring to "Charger (input specifications)" on page 0-28.
IMPORTANT: Be sure to select a charging cable that complies with the local laws and regulations.
IMPORTANT: Do not allow the off-board charger to become wet. Doing so will result in a malfunction.

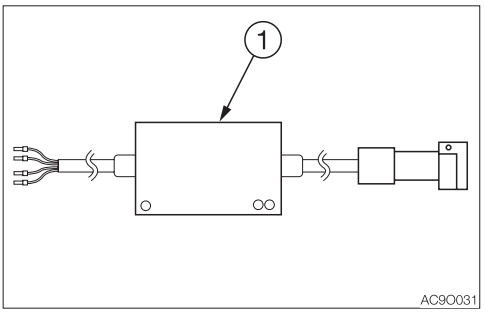
To start charging, turn the switch (4) to ON.
The red indicator lamp (5) remains lit while charging.
The green indicator lamp (3) turns on when the charging is complete.
To stop in an emergency, turn the breaker to OFF.
To move the off-board charger, push the handle (6).



By engaging the hooks (7) of the off-board charger onto the blade, the machine can move the off-board charger.

IMPORTANT: Be sure to do this moving on flat, firm ground. If performed on rough terrain, the off-board charger could be disengaged from the blade, resulting in a failure.

6. Cable for off-board charger (option)



The cable for the off-board charger must be installed between the 400/480 V power supply and the industrial purposes plug on the off-board charger.
When the cable for the off-board charger is to be connected to a 400/480 V power supply, a qualified technician must perform the work. Contact a Takeuchi sales or service dealer for details.

(1) Noise filter
A noise filter must be installed on the power line to comply with Electromagnetic Compatibility Regulation 2014/30/EU.
Use a Takeuchi genuine cable that includes a noise filter. If such a cable is not to be used, install a noise filter on the power line.
Note that in regions outside Europe, a noise filter can also be installed to suppress noise and reduce the impact on nearby electronic devices.
When installing a noise filter on a 400/480 V power supply, ensure its performance is equivalent to the following.

Product name: Noise filter
Manufacturer: TDK-Lambda
Model No.: RTEN-5030

Contact a Takeuchi sales or service dealer for details.

CHARGING

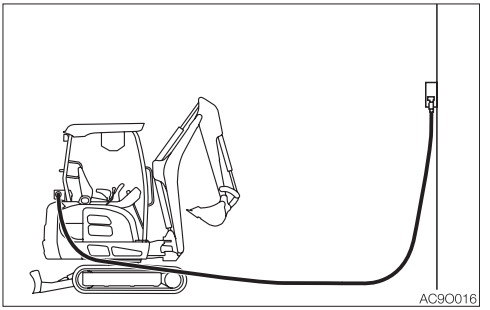
Types of charging

There are two types of charging: 220V single phase charging which uses the charger built into the machine, and off-board charging which is 400-480V three phase charging using a mobile charger placed outside the machine. For the power supply to be used, refer to “Basic Specifications” on page 7-2.

Using the on-board charger

⚠ WARNING

When charging using the on-board charger, a voltage is generated at the off-board charger port, so put the cap on the port and securely lock it.



Directly connect the machine to the 220 V supply socket to charge. The machine can be operated while being charged.

IMPORTANT: When a 220 V power supply socket is installed, a qualified technician must perform the work. Contact a Takeuchi sales or service dealer for details.

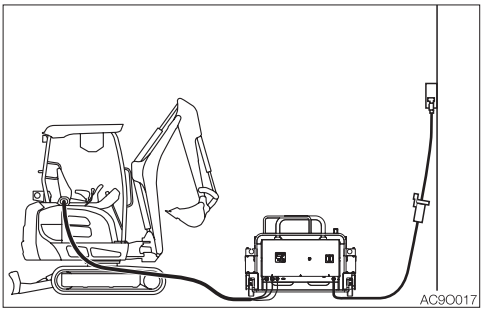
Note: The time required for on-board charging varies depending on the lithium ion battery temperature, ambient temperature around the charger, charge conditions, years of use, and condition of the connected power source.

Note: When charging in a cold environment of 0°C or lower, the voltage regulator in the on-board charger may become unstable, preventing the charger from activating. Disconnect the charger and reconnect it to a 220 V outlet, and then restart charging. If the error persists, move to a warm place and wait a while before charging.

Using the off-board charger (400 V/480 V)

⚠ WARNING

Be sure to use the off-board charger designated by Takeuchi. Using an inappropriate charger could result in fire or malfunction.



Connect the off-board charger to the 400 V /480 V supply socket to charge.

IMPORTANT: When performing off-board charging, be sure to follow the "Charging using the off-board charger". If operated incorrectly, the machine or the off-board charger could be damaged.
IMPORTANT: When a 400 V/480 V power supply socket is installed, a qualified technician must perform the work. Contact a Takeuchi sales or service dealer for details.
IMPORTANT: The off-board charger has an IP54 rating for dust and water resistance. Do not use the charger in places where it is exposed to intermittent water splashes from, for example, rain.

Time required for charging

The time required for off-board charging largely varies depending on the temperature of the lithium ion battery.

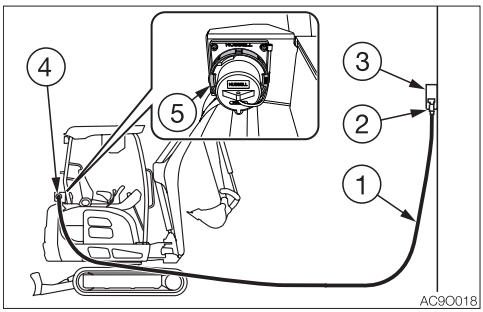
Note: In addition to the lithium ion battery temperature, the time required for off-board charging also depends on the ambient temperature around the charger, charge conditions and years of use.

Charging using the on-board charger

Follow the steps below to perform on-board charging.

Note: Before charging, check that the key switch is turned to the OFF position.

1. Check that the key switch is OFF.



2. Take out the charging cable (1).
3. Open the charging port (4) cap.
4. Fully insert the connector of the charging cable (1) into the charging port (4), while turning the connector clockwise.
5. Secure the connector by turning the fixing part (5).
6. Connect the plug (2) of the charging cable (1) into the plug socket (3).
7. When the charging starts successfully, the multi-information display indicates the charge conditions and approximate charge level.
8. To end charging, remove the plug (2) from the plug socket (3).
9. Release the connector by turning the fixing part (5).
10. Pull out the connector of the charging cable (1) from the charging port (4).
11. Close the charging port (4) cap.
12. Store the charging cable (1).

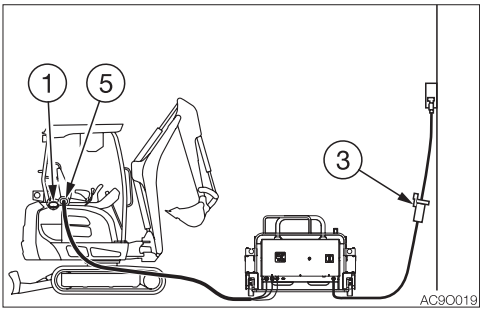
Charging using the off-board charger
Follow the steps below to perform off-board charging.

⚠ CAUTION

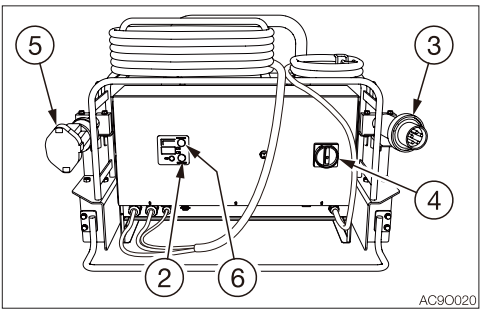
When inserting the off-board charging connector, engage it with the charging port slot and securely insert it all the way to the end.

Notes:
- When charging, be sure to observe the instructions provided with the charger. If improperly operated, the machine or charger could be damaged.
- Charging cannot be started if the key switch is not in the OFF position. Before charging, be sure to turn the key switch to OFF.

1. Check that the key switch is OFF.



2. Connect the plug for industrial purposes (3) to the 400 V/480 V supply socket.
3. Open the charging port (1) cap.
4. Connect the charging connector (5) of the off-board charger into the charging port (1).



5. Turn the switch (4) to ON.
6. The red indicator lamp (6) turns on when the charging starts successfully. The multi-information display indicates the charge conditions and charge level.
7. When the charging is stopped, turn the switch (4) to OFF.
8. Remove the off-board charging connector (5) from the charging port (1).
9. Close the charging port (1) cap.
10. Pull out the plug for industrial purposes (3) from the 400 V/480 V supply socket.

Note: The time required for charging varies depending on the lithium ion battery temperature, ambient temperature around the charger, charge conditions, years of use, and condition of the connected power source.

About the use of 400 V/480 V power supply for the off-board charger

A noise filter must be installed on the power line to comply with Electromagnetic Compatibility Regulation 2014/30/EU.
Use a Takeuchi genuine cable that includes a noise filter. If such a cable is not to be used, install a noise filter on the power line.
Note that in regions outside Europe, a noise filter can also be installed to suppress noise and reduce the impact on nearby electronic devices.
When installing a noise filter on a 400/480 V power supply, ensure its performance is equivalent to the following.

Product name: Noise filter
Manufacturer: TDK-Lambda
Model No.: RTEN-5030

Contact a Takeuchi sales or service dealer for details.

OPERATING WHILE CHARGING

⚠ WARNING

When charging using the on-board charger, a voltage is generated at the off-board charger port, so put the cap on the port and securely lock it.

IMPORTANT: Ensure that the charging cable does not get caught in the machine when it is moved while traveling, slewing, or digging. If caught, the charging port or cable could be damaged. When operating while charging, use a cable hanger (optional).
Refer to “Cable hanger” on page 8-16.

The machine can be operated while charging if an on-board charger is used. The machine cannot be operated while charging using an off-board charger. Follow the procedure below to start the machine.

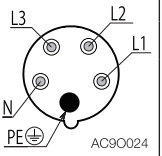
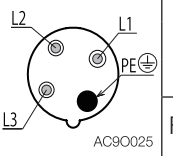
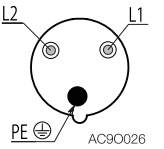
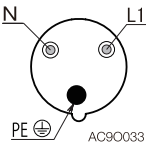
Charging the battery before turning on the key switch

1. Start charging using the on-board charger. Refer to “Charging using the on-board charger” on page 0-25.
2. Wait until the orange bar appears on the charging screen on the multi-information display to indicate that the charging has started.
3. Turn the key switch to the ON position.

Turning on the key switch before charging the battery

1. Turn the key switch to the ON position.
2. Wait until the Home screen appears on the multi-information display.
3. Start charging using the on-board charger. Refer to the steps from Step 2 in “Charging using the on-board charger” on page 0-25.

CHARGER (INPUT SPECIFICATIONS)

Item		Off-board charger* (400 V)	Off-board charger* (480 V)	On-board charger
Number of phases		Three phases	Three phases	Single phase
Input line-to-line voltage	V	340 to 460	408 to 552	95 to 265
Maximum input line current	A	18.4	16	16
Frequency	Hz	50 or 60		
Connector (charger side)		 IEC60309 3P+N+E	 IEC60309 3P+E	 IEC60309 2P+E For EU  IEC60309 2P+E	

*: This charger can be used in a Delta or Star connection. It can be operated without connecting the neutral line.

If you are not sure whether the charging equipment is compatible with the machine, please contact a Takeuchi sales or service dealer.

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 or maintenance of this machine when under the influence of alcohol, drugs, medication, overwork or lack of sleep.

When a problem is found on the machine

If any problem (noise, vibration, smell, malfunction of instrument(s), smoke, oil leak, wrong indication of alarm or warning indicator on the multi-information display, 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

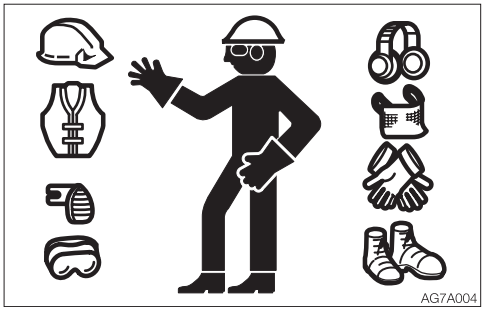
To maintain the performance of machine and to prevent it from early wear, observe the following operating conditions.

- Do not operate the machine if the ambient temperature is higher than +45°C (+113°F) or lower than –15°C (+5°F).
- Do not charge the machine if the ambient temperature is higher than +45°C (+113°F), or lower than 0°C (+32°F).
  - If operated at an ambient temperature of higher than +45°C (+113°F), the hydraulic oil may become very hot, causing damage to the hydraulic equipment. Also, the life of the electrical component such as the lithium ion battery and charger may be shortened, resulting in early failure.
  - If operated at an ambient temperature of lower than –15°C (+5°F), the parts made of rubber such as gaskets may get hardened and cause 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.

Using the machine at an altitude higher than 2000 meters

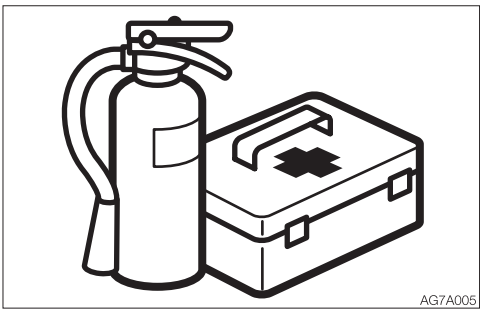
- When selecting a work site at high altitude, special conditions may need to be considered due to the thin air.
- If the driving voltage (direct current input) is increased due to the low insulation resistance in air, arc discharge could occur, damaging the power conditioner.
- The failure rate of electronic parts due to cosmic radiation rapidly increases with higher altitude.
- If the machine is to be used at an altitude higher than 2000 meters, consult your sales or service dealer for help.

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

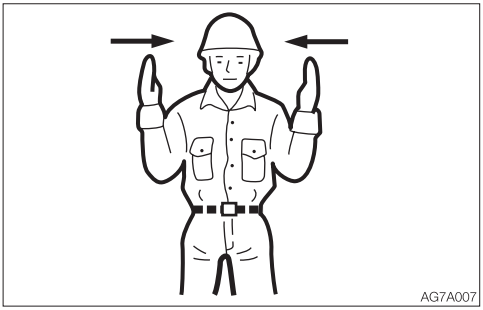


Be prepared for fire and accidents
- Install an extinguisher and a first aid kit, and learn how to use them.
- Lean how to fight a fire and how to deal with accidents.
- Know how to contact emergency assistance and make a list of emergency contacts.

Never remove safety equipment

- Make sure all protective guards, canopies 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.

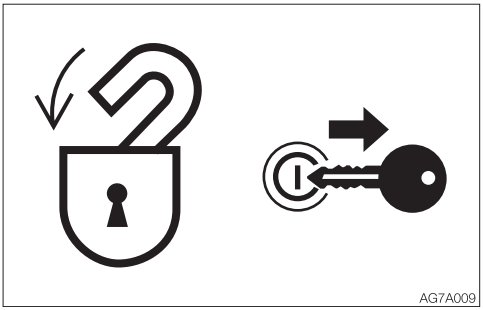
Use a signal person and a flag person



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, for example, adjust the seat, lower the working equipment to the ground, raise the safety lock lever to the lock position and then stop the motor. If any control is 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 the lock position and stop the motor. Also, be sure to remove the key, lock the door and covers, take the key with you and store it in a specified place.

Avoid fire and explosion hazards



Keep flames away from oil and grease.

- When handling these combustible materials, keep lit cigarettes, matches, lighters and other flames or sources of flames away.
- Do not leave the location while refilling with oil.
- Clean up spilled oil immediately.
- Check for oil leak. Repair any leak and clean it before operating the machine.
- When operating with grinder or welding, move flammables 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.
- Always use a nonflammable cleaning material.
- When handling the cleaning solvents or paints, open the door and windows to ventilate thoroughly.
- Store all flammable fluids and materials in a safe and well-ventilated place.
- Short circuiting of the electrical system may cause a fire. Check for any loosened connections or damage to the wires every day. Retighten the loose connections or connector(s) and wire clamp. Repair or replace the damaged wire. Ask a Takeuchi sales or service dealer for repair or replace.
- If the covers in the area near to the high-voltage parts are damaged, the high-voltage parts must be checked for damage. Ask a Takeuchi service or sales dealer for inspection.
- 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 fire or injury.

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

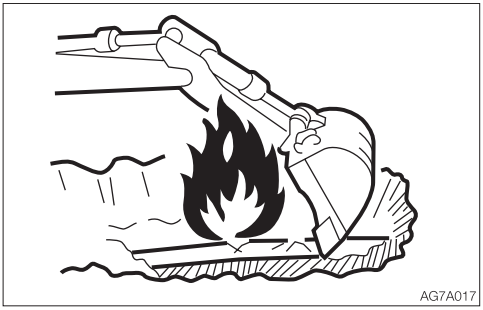
Unauthorized modifications to this machine can cause injury or death. Never make unauthorized modifications to any part of this machine.
If you modify or alter the configuration of the machine in a way which results in a restriction of the operator's field of vision, a new risk assessment will need to be performed. If this becomes necessary, contact your Takeuchi service or sales dealer.

PRECAUTIONS WHEN PREPARING

Know the work area

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

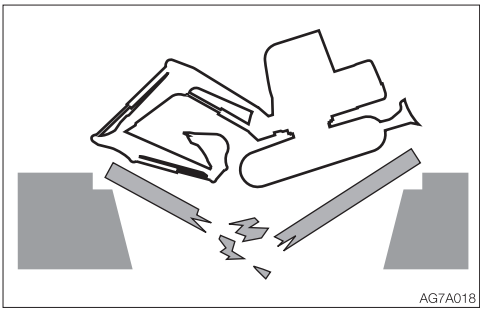
- Inspect the topography and ground condition of the working area, or the structure of the building when working indoors, and take the safety precautions as necessary.
- Be sure to avoid all hazards and obstructions such as ditches, underground lines, trees, cliffs, overhead electrical wires, or places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



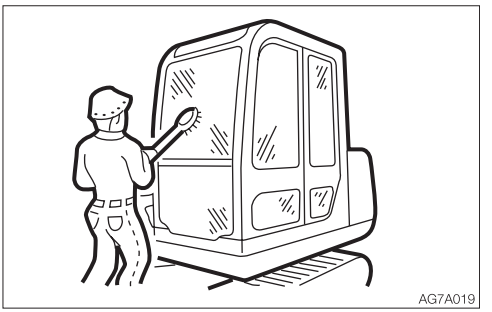
- Check with the administrator for the locations of buried gas pipes, water pipes and power cables. If necessary, determine what specific precautions must be taken to insure safety by consulting with the administrator.
- When working on roads, be sure to consider the safety of pedestrians and vehicles.
  - 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.

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.

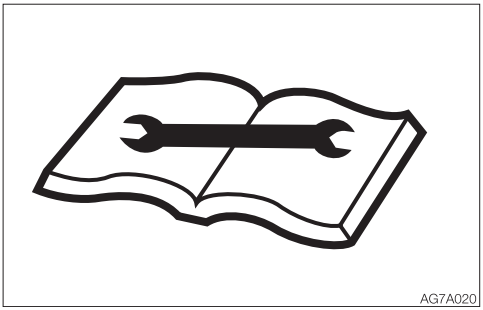


Always keep the machine clean



- 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.
- 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 motor fails, immediately stop the machine by following the shutdown procedure, and keep the 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. Operating the travel pedals with mud or grease on shoes may 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. The plastic bottle could act as a lens and cause a fire.
- Do not use the mobile phone during traveling or working.
- Do not bring combustibles or explosives into the operator's compartment.
- Do not leave the cigarette lighter in the operator's compartment. When the temperature rises, the lighter may explore.

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.


AG7A022

- 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 run the motor 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.

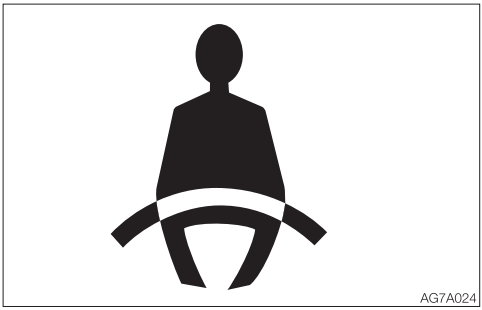


AG7A023PE

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

Sit in the operator's seat and start the motor

- Adjust the seat to securely latch it.


AG7A024

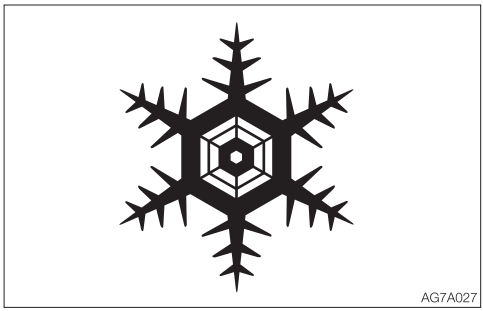
- Fasten the seat belt.
- Check if the parking brake is on and all control levers and pedals are in the neutral position.
- Check if the safety lock lever is in the lock position.
- Make sure that no one is near the machine.
- Start and operate the machine only from the operator's seat.

After starting the motor

After starting the motor, 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 hydraulic oil.
- Check if all gauges and warning devices are properly working.
- Check for any noises.
- Operate each control to ensure they are properly working.

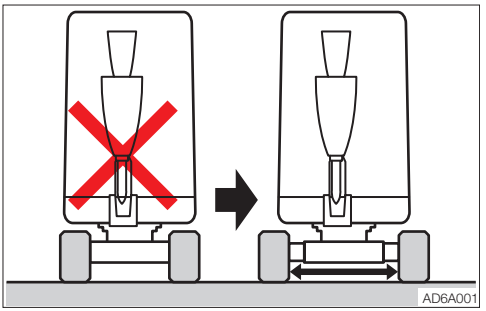
In cold climates


AG7A027

- 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.
- Warm up the hydraulic oil before operating the machine. If the levers are operated without a proper warm-up, the machine will be less responsive or move unexpectedly, resulting in an accident.

PRECAUTIONS WHEN OPERATING

Operate the machine with the maximum crawler width



- Always operate the machine with the crawler width extended to 1300 mm (51.2 in.) to maximize the machine stability. If the machine is operated with the crawler width narrowed 980 mm (38.6 in.), the machine may tip over due to its poor stability.
- If the machine must be operated with the narrowed crawler width 980 mm (38.6 in.), traveling should be done after folding the hoe attachment, lowering the boom to lower the center of gravity and keeping the machine facing forward.

Ensure good visibility

Check the field of view before operating the machine.

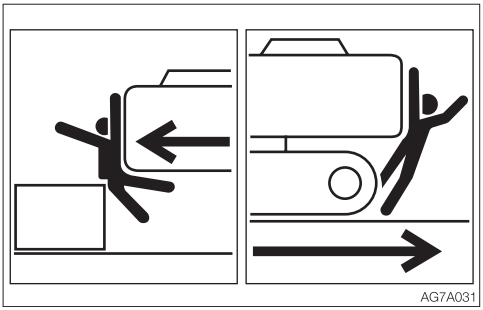
- When working in dark places, turn on the machine's working lights and headlights and additional lighting equipment installed, as necessary.
- When visibility is poor due to bad weather (fog, snow, rain or a cloud of dust), stop operating the machine and wait until visibility improves.
- Wipe the lights clean to ensure good visibility.
- 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



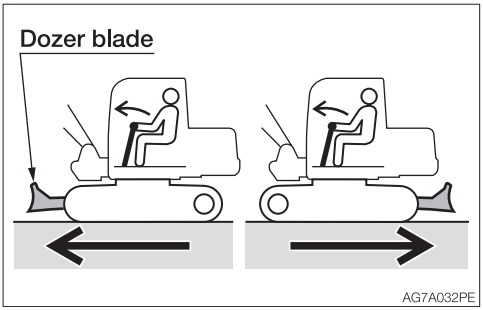
Do not allow anyone to ride on any part of the machine at any time while traveling or operating.

Check if the work area is safe and secure before operation


AG7A031

- 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.

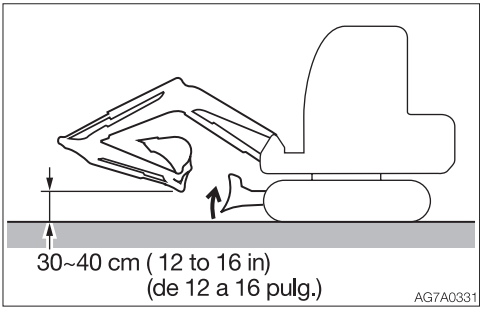
Check the position of the undercarriage (tracks) before traveling



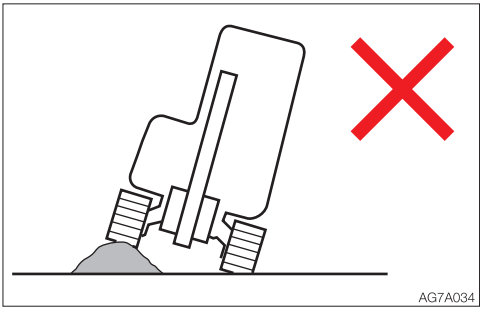
AG7A032PE

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).

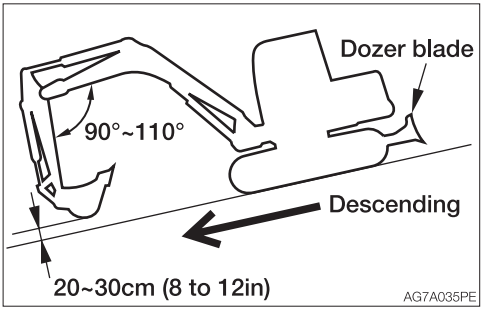


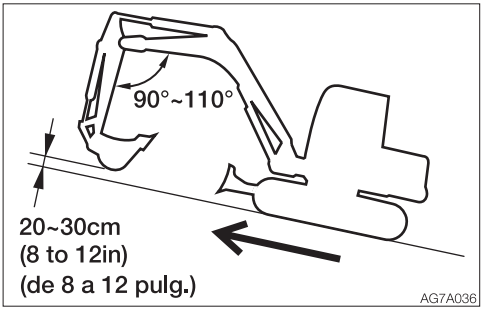
- Avoid crossing over obstacles whenever possible. If you must do so, keep the hoe attachment close to the ground level and travel slowly. Never cross obstacles which will tilt the machine to an angle of 10° or greater.
- On uneven ground, maintain the low speed and avoid starting, stopping or changing 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

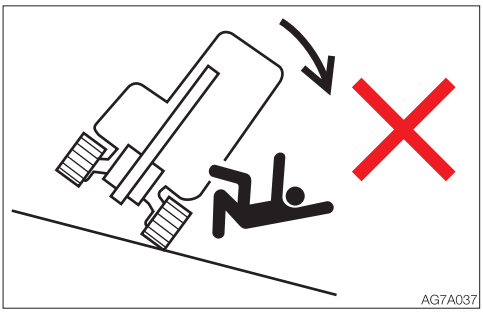
When traveling on slopes or grades, be careful that the machine does not tip (roll) over or slide.

- Never travel on slopes that are too steep for the machine to maintain its stability. Note that in reality, the machine's performance decreases on slopes due to its poor 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 the 1st (low) speed. When descending a slope, slow down the motor speed.
- Do not descend slopes in reverse.

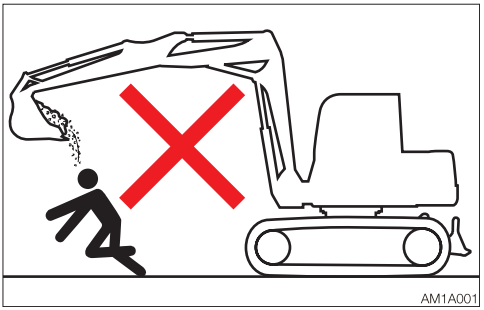


- Do not change directions on slopes or traverse slopes. First return to a flat surface, and then take an alternative path.
- The machine may slip sideways even on a slight slope if the ground is covered with grass or dead leaves, or when traveling on a wet metal plate or frozen surfaces. Make sure the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

Operate the machine on snow or ice with extra care

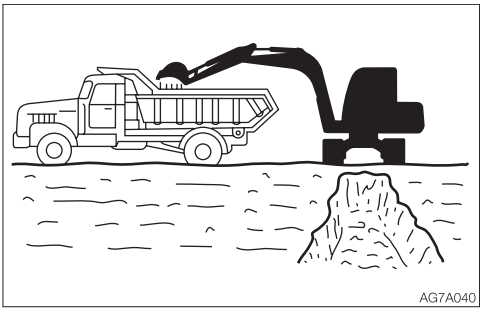
- When traveling on snow or on frozen surfaces, drive at a low speed and avoid starting, stopping or changing directions abruptly.
- In the snowy conditions, the road shoulder and objects placed beside the road can be buried in the snow and cannot be seen. There is a hazard of the machine tipping over or hitting covered objects, so always operate the machine 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 stuck 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 entrapment 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 is dangerous and risks the load spilling or sudden dropping of the attachment.

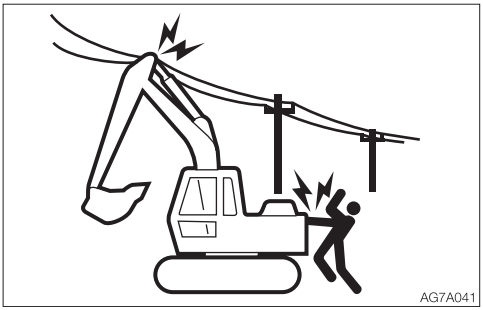
Ensure driver's safety when loading



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

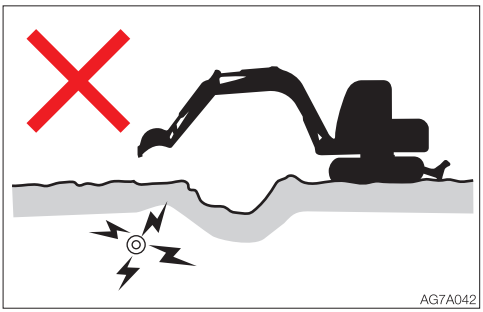
- Never swing or position the bucket over a person or the cab.
- Load the truck from the rear.

Keep a safe distance from the high-voltage cable



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

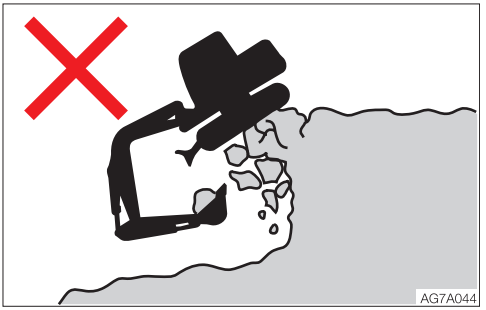


- Pay also careful attention to the high-voltage electric cables buried underground.

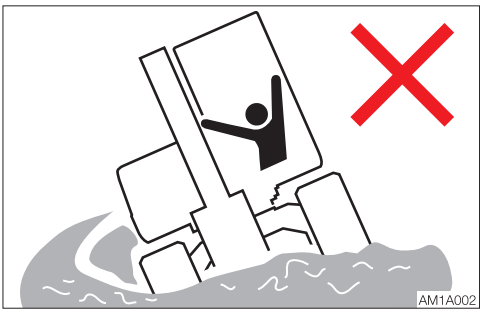
Watch out for hazardous working conditions



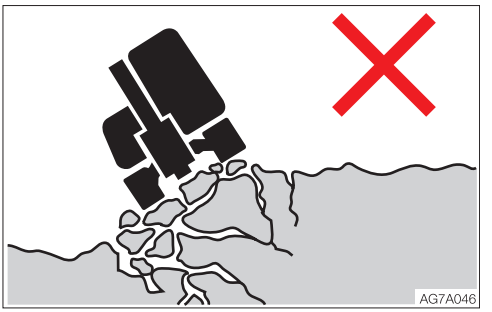
- Never undercut a high bank. Doing so is dangerous and may cause ground collapse.
- Do not operate in places where there is a danger of falling rocks.



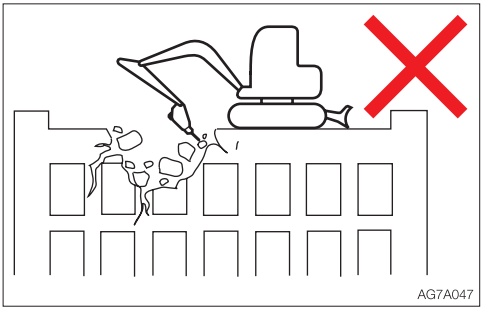
- Maintain a safe distance between the machine and the edge of the digging site. Do not dig the ground under the front of the machine.
- When working close to the cliffs or road shoulders, to make it easier to escape if there is any problem, set the crawlers at right angles to the cliff or road shoulder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



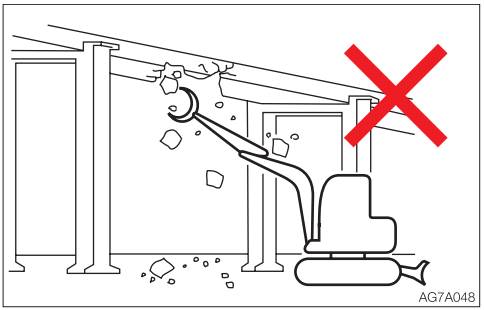
- Do not enter areas where there is soft ground. Doing so could cause the machine to tilt under its own weight, resulting in a machine tipping over or sinking into the ground.



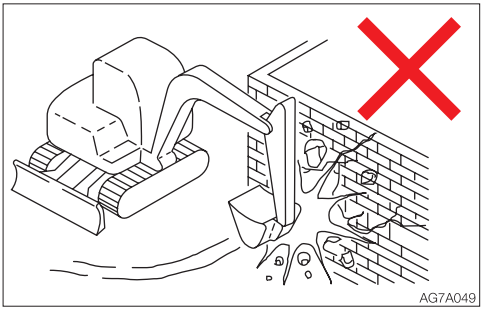
- Do not come close to unstable grounds (cliffs, road shoulders, deep ditches). If the ground should collapse under the weight or vibration of the machine, there is a risk that the machine may fall or tip over.
  - Remember that the soil after heavy rain or blasting is weak.
  - The ground at the top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



- Do not perform demolition work under the machine. There is a risk of the machine falling down due to ground instability.
- 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.



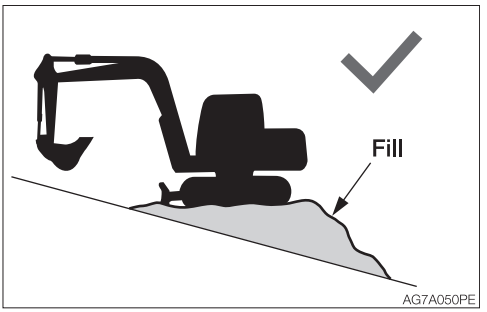
- When doing demolition work, do not perform demolition above your head. There is a hazard of broken parts falling or of the building collapsing and causing serious injury or damage.



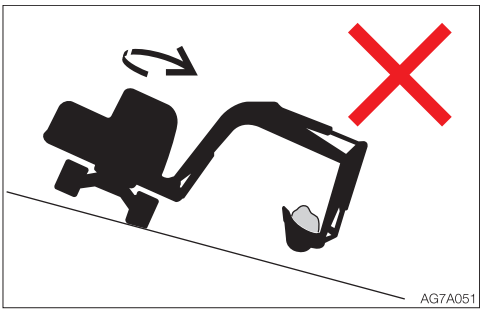
- Do not use the impact force of the hoe attachment for breaking work. There is a risk of serious injury due to flying debris, and it may also damage the hoe attachment.

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.

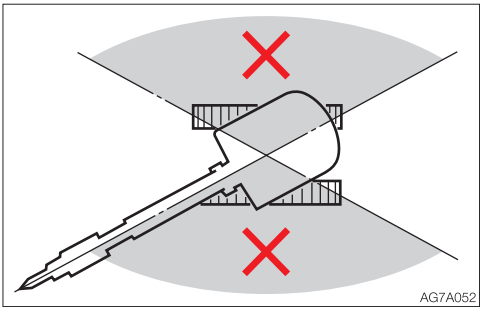


- Level off the work area.



- 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.

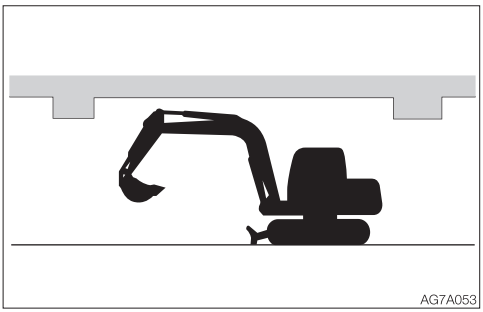
Never slew (swing) sideways with a heavy load



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

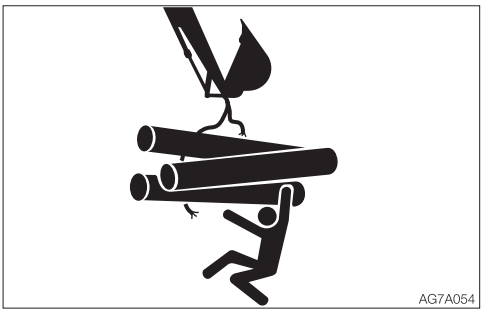
- Do not slew (swing) sideways with a heavy load at the tip of the hoe attachment. In particular, do not slew (swing) sideways on slopes.
- The tip of the attachment is heavier for machines equipped with breakers, crushers or long arms than for machines equipped with the standard bucket. For such machines 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.

Cautions when lifting loads



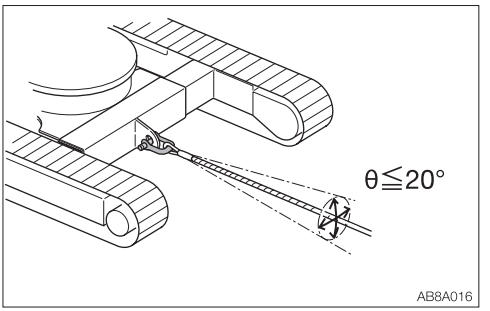
If the machine is used for lifting, it must be equipped with an emergency shut-off valve on the arm and the boom, respectively. Extreme caution should be paid if the excavator is used for lifting.

- 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.

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.

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.

- 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.

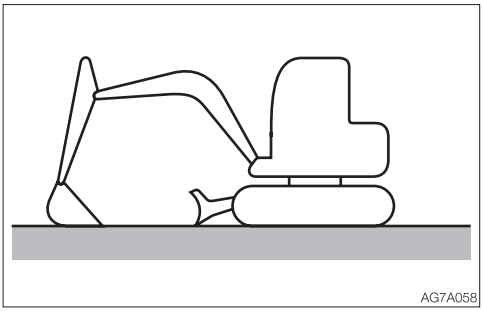
Precautions in confined spaces such as underground and indoors

In confined spaces such as underground and indoors, observe the following points, in addition to the current work precautions.
- Ceiling height
- Entrance and passage widths
- Adequate ventilation
- Maximum load on ceiling and floor

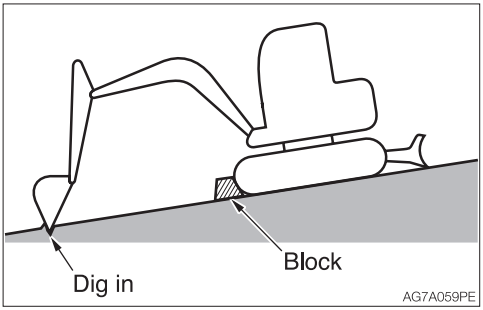
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PRECAUTIONS WHEN STOPPING

Park safely

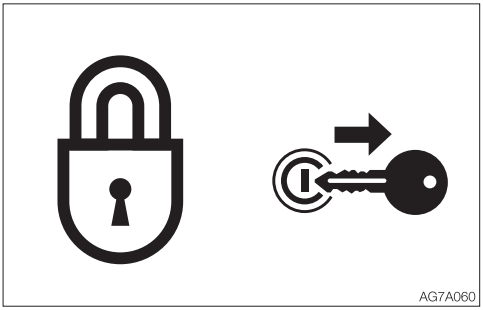


- Park the machine on a flat, rigid and safe ground. Set the parking brake.



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

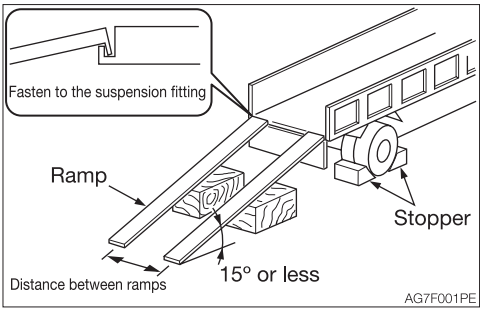
- When parking on a street, use barriers, caution signs, lights, etc., so that the machine can easily be seen even at night to avoid collision with other vehicles.



- 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 motor and remove the starter key.
  4. Lock the 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 ramps 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 the machine tipping over or falling.
- 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.
- When being loaded or unloaded, travel slowly in 1st (low) gear by following the signal from the signal person.
- Never change course 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 may be unstable.
- Always lock the covers after the machine is loaded onto the vehicle. Otherwise, the covers 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.
- 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

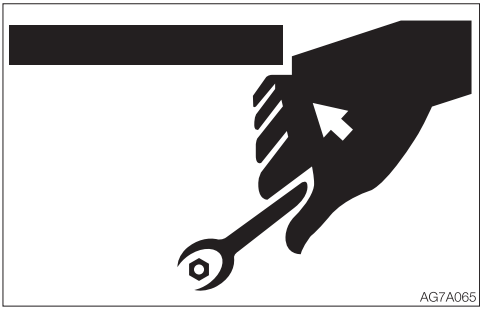
Severe injury could result if an unauthorized person runs the motor or touches the controls during inspection or maintenance.

- Before performing maintenance, stop the motor, remove the key and take it with you.



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

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

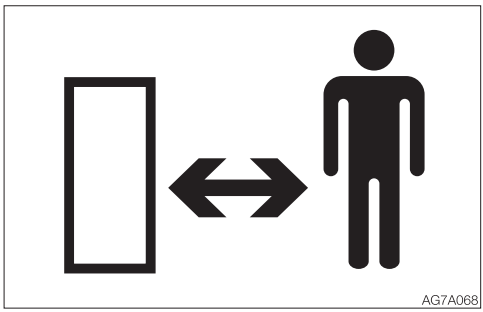
- Regardless of the replacement schedule, replace immediately if a symptom of wear is found.

Explosionproof lighting



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

Prohibit access by unauthorized persons

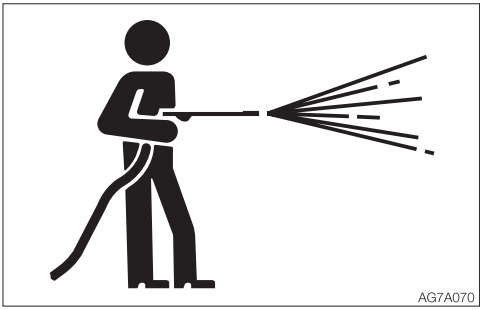


Do not allow unauthorized personnel in the work area while working. Be careful when grinding, welding or using a hammer. You could be injured by flying debris from the machine.

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

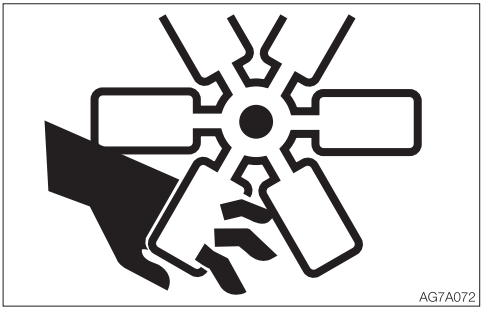


- Clean the machine before performing maintenance.
- Stop the motor before washing the machine with water. Cover the electrical parts so that water cannot enter. Water on electrical parts could cause short-circuits or malfunctions.
  Do not use water or steam to wash the batteries, electronic control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

Stop the motor before performing maintenance

- Avoid lubrication or mechanical adjustments while the machine is moving or while the motor is running when the machine is not moving.
- If maintenance must be performed with the motor 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 motor 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 object is dropped or inserted in the fan, it will be flown or cut in pieces. Do not drop or insert anything in the fan.

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 cover when opened

Be sure to properly secure the cover if it is to be left open for some time. Do not leave the cover open on a windy day or if the machine is parked on a slope.

Place heavy objects in a stable position

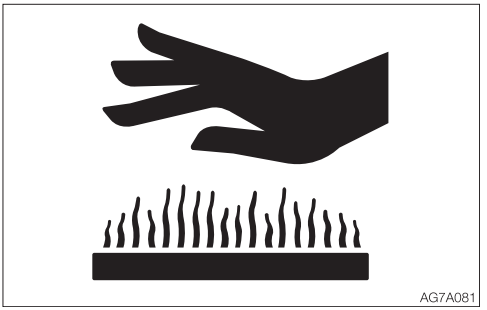


When it is necessary to temporally place a heavy object or an attachment on the ground during removal or installation, be sure to place it in a stable position. Keep unauthorized persons from the storage place for such object.

Handling of hoses

Oil leak or hydraulic oil 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.

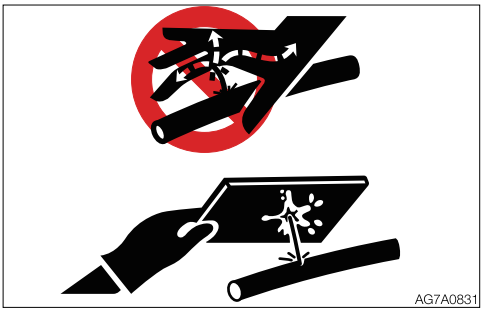
Be careful with hot and pressurized components



Stop the motor and allow each part of the machine to cool down before performing maintenance.
- The hydraulic lines, sliding parts and other parts of the machine are hot immediately after the motor is stopped. Touching these parts could cause burns.
- The hydraulic oil and other oils are also hot and under high pressure.
  Be careful 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.

Be careful with oil internal pressure

Pressure is maintained in the hydraulic circuit long after the motor has been shut down.
- Completely relieve the internal pressure before performing maintenance work.



- The high-pressure hydraulic oil can 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. Use cardboard instead of your hands to check for leaks.
  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.
- Slowly loosen the air breather to release the internal pressure from the hydraulic oil 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.

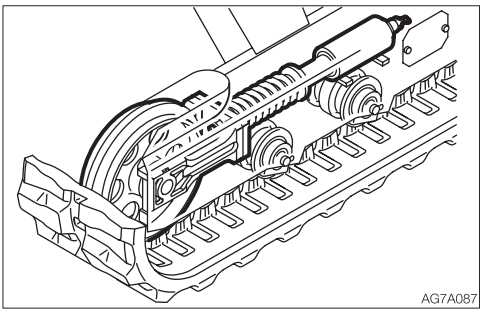
Be careful with the high-pressure grease


AG7A086

In the track adjuster, the grease has been injected under high pressure. If the tension is adjusted without following the prescribed procedure, the grease discharge valve may fly off, resulting in injury.

- Never loosen the grease fitting.
- Loosen the grease discharge valve slowly. Do not turn it more than one turn.
- Do not put your face, arms, legs or body in front of the grease discharge valve.
- If grease does not come out when the grease discharge valve is loosened, the valve is faulty. Ask a Takeuchi service agent for repair.

Never disassemble the track adjuster


AG7A087

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.

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 lead-acid battery wiring



Disconnect the lead-acid 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 the lead-acid batteries

- Do not allow persons (such as children) to come into contact with the product unless they fully understand the handling methods and risks.
- Lead-acid batteries contain sulfuric acid which will damage eyes or skin if contacted.
  - 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 goggles and gloves when working with the lead-acid batteries.
- Lead-acid batteries generate flammable hydrogen gas which may explode. Keep away from lighted cigarettes or fire, and avoid creating arcs and sparks.
- When checking the level of the battery fluid, use a flashlight.
- Be sure to stop the motor by turning the key switch to OFF before inspecting or handling the lead-acid 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 the lead-acid battery or jump-start the motor if the lead-acid battery is frozen; otherwise it may explode. Warm the frozen lead-acid battery to 15°C (60°F) before use.
- Do not use or charge the lead-acid battery when the fluid level is below the lower level limit. Doing so will hasten the deterioration of the internal portions of the lead-acid battery and shorten the lead-acid 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.
- 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.

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 lead-acid 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 motor speed from low to maximum 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.
- When disposing of a machine that is no longer usable, dispose of it in accordance with the latest national and local regulations applicable at the time.

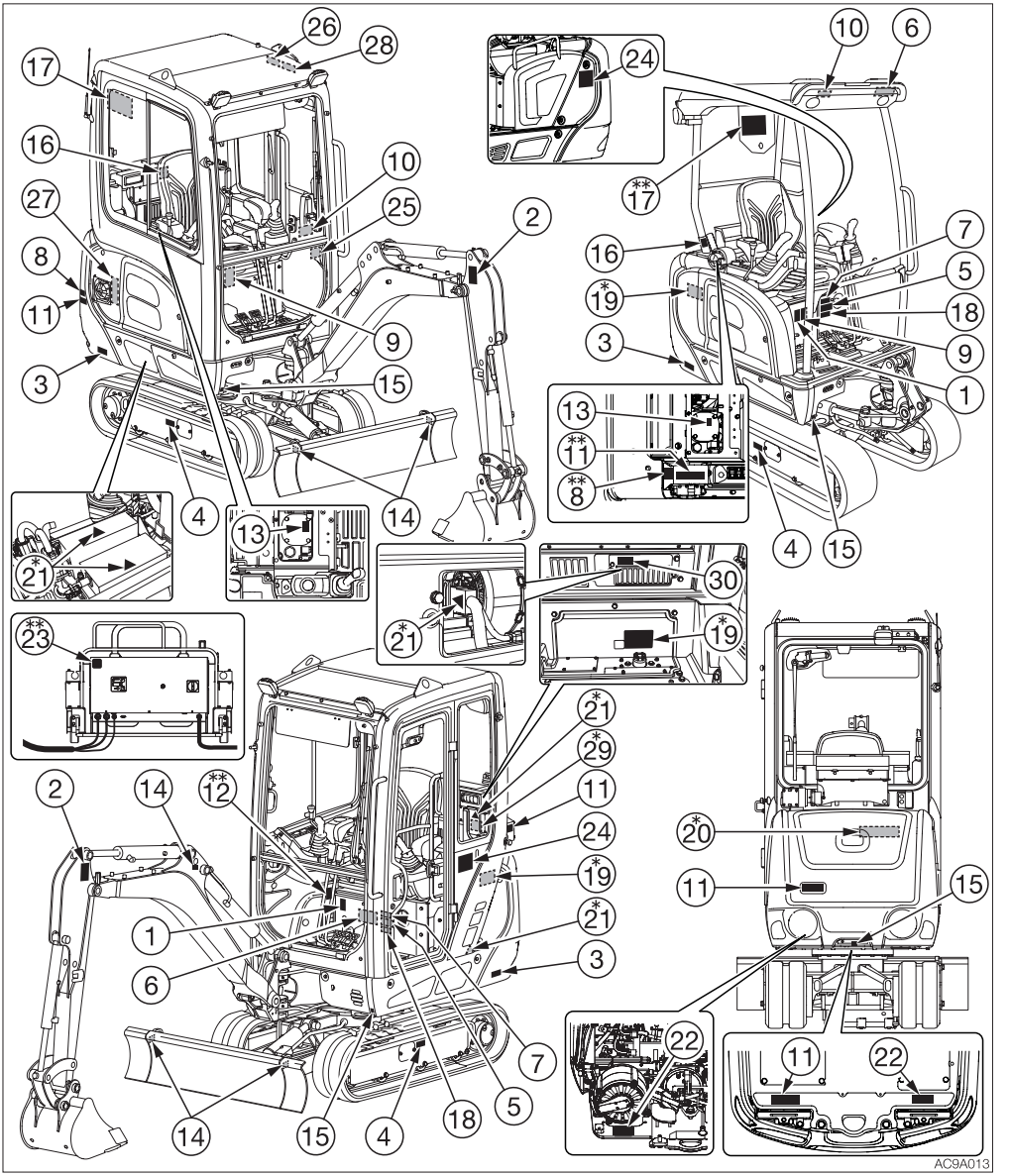
Handling of poisonous chemicals

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.



*: Decals for service technicians.
**: If equipped.

1. No.08810-31556



Warning
Read and understand this manual before performing any operation, inspection or maintenance on this machine.

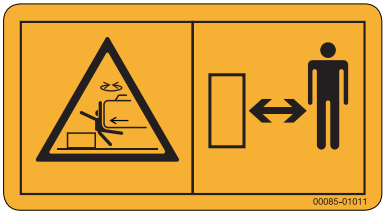
2. No.03293-64610



Safety Distance
Hazard of being hit by the working device of the machine.
Keep away from machine during operation.

3. No.00085-01011

Safety Distance
Do not get near or stand within the machine working area.

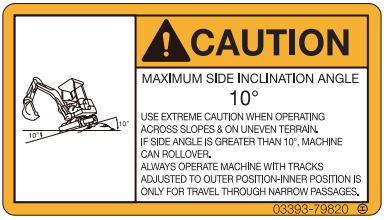


4. No.05793-00052

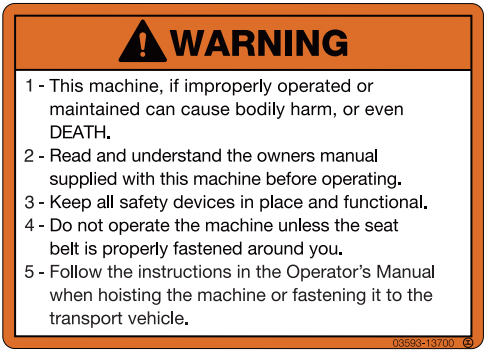
Hazard of a flying plug from track adjuster
Read manual before adjusting track for safe and proper handing.



5. No.03393-79820



6. No.03593-13700



7. No.03593-47020 (If equipped)



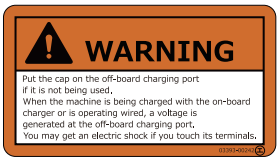
7. No.03293-00066 (If equipped)

When a bucket wider than a standard one is installed, the cab (canopy) may be damaged if the bucket is fully offset to the left.



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8. No.03393-00242



9. No.03393-00070

Keep the boom and blade separated
Be careful not to let the boom come in contact with the blade when the boom is lowered.

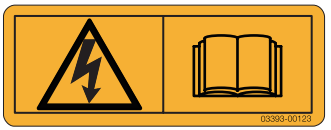


10. No.03593-32300



11. No.03393-00123

ELECTRIC SHOCK HAZARD
Be sure to read the manual
before performing maintenance, disassembling, assembling or transporting the machine.



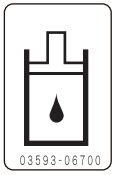
12. No.03993-00023



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

13. No.03593-06700

Hydraulic oil



15. No.08810-31549

Tie down point



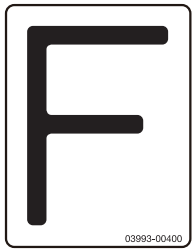
14. No.03393-00295

Position of hoisting



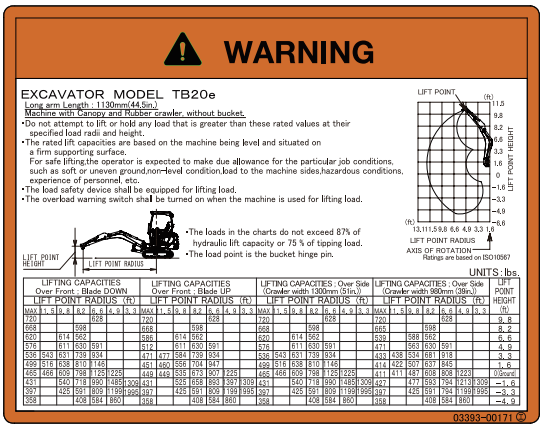
16. No.03993-00400

For EU
Position of Fire extinguisher



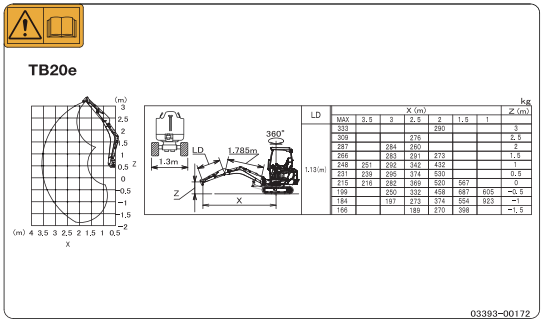
17. No.03393-00171

For USA



AC9A011EN

17. No.03393-00172



18. No.03393-00236

WARNING!

No Children Allowed



19. No.03393-00237

ELECTRIC SHOCK HAZARD

Be sure to read the service manual before performing maintenance, disassembling, assembling or transporting the machine.

ELECTRIC SHOCK HAZARD

Do not use a pressure washer.



20. No.03393-00238

ELECTRIC SHOCK HAZARD

Be sure to read the service manual before performing maintenance, disassembling, assembling or transporting the machine.

ELECTRIC SHOCK HAZARD

Do not use a pressure washer.



21. No.03393-00239

ELECTRIC SHOCK HAZARD



22. No.03393-00240



Touching the motor
when it is running or
immediately after
it is stopped will cause a burn.
Do not touch the motor.

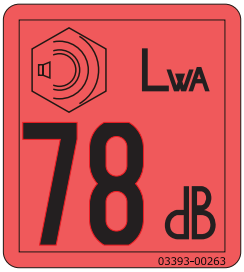
23. No.03393-00250

KEEP DRY



AC9A008EN

24. No.03393-00263 (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.



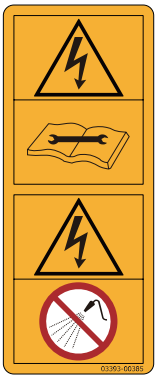
25. No.03993-00052
Position of Emergency Exit



26. 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.



27. No.03393-00385

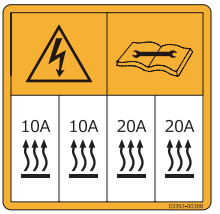


ELECTRIC SHOCK HAZARD
Be sure to read the service manual before performing maintenance, disassembling, assembling or transporting the machine.
ELECTRIC SHOCK HAZARD
Do not use a pressure washer.

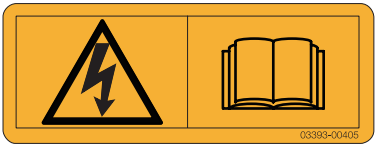
28. No.08810-31557(Cab)
Hazard from falling window
After raising window, be sure to lock it in place with lock pins.



29. No.03393-00388(Cab)
ELECTRIC SHOCK HAZARD
Be sure to read the service manual before performing maintenance, disassembling, assembling or transporting the machine.



30. No.03393-00405(Cab)
ELECTRIC SHOCK HAZARD
Be sure to read the manual before performing maintenance, disassembling, assembling or transporting the machine.

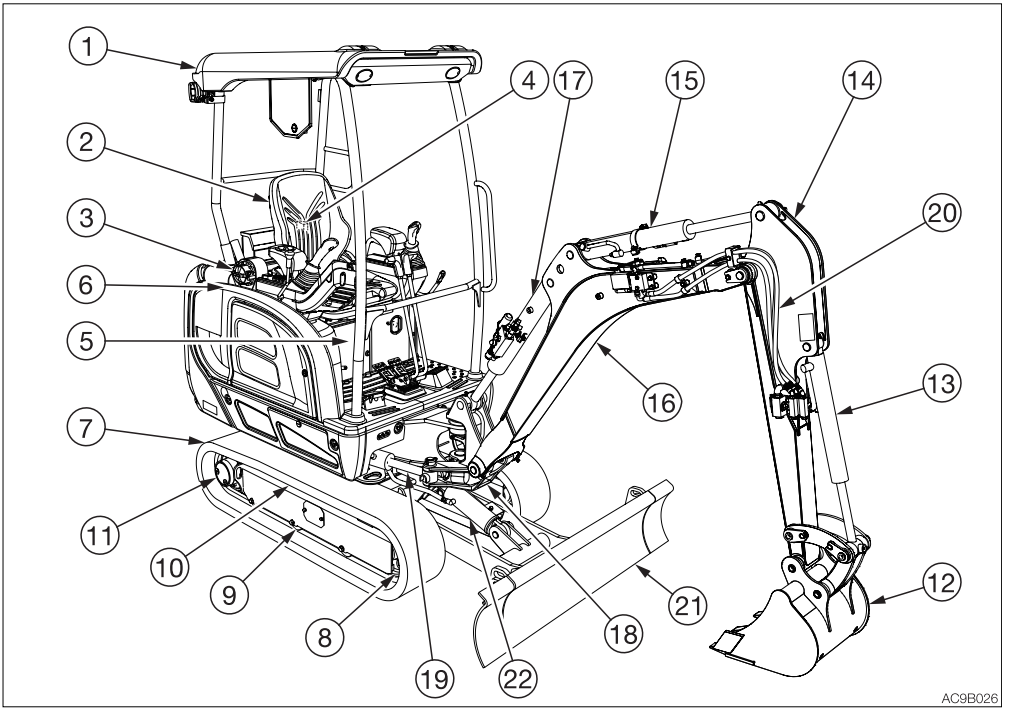


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CONTROLS



COMPONENT NAMES (CANOPY)

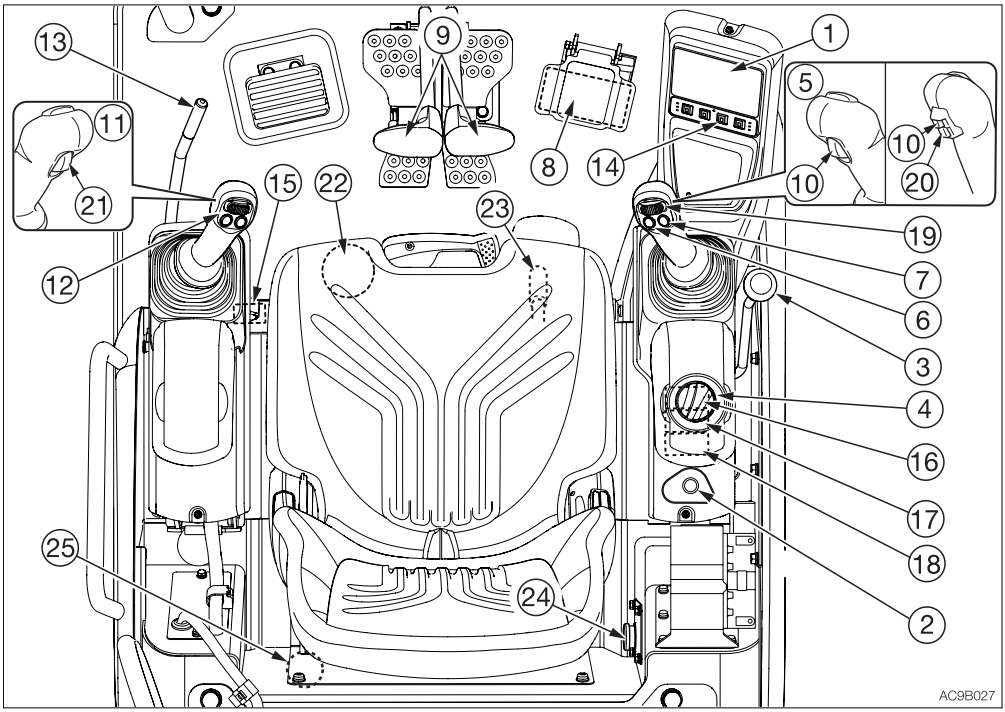


Upperstructure
1. Canopy
2. Seat
3. Off-board charging port
4. On-board charging port
5. Hydraulic oil tank
6. Lithium ion battery

Undercarriage
7. Crawler belt
8. Idler
9. Track roller
10. Shoe slide
11. Travel motor

Working equipment
12. Bucket
13. Bucket cylinder
14. Arm
15. Arm cylinder
16. Boom
17. Boom cylinder
18. Boom bracket
19. Swing cylinder
20. Auxiliary hydraulic lines
21. Dozer blade
22. Blade cylinder

COMPONENT NAMES (CANOPY)

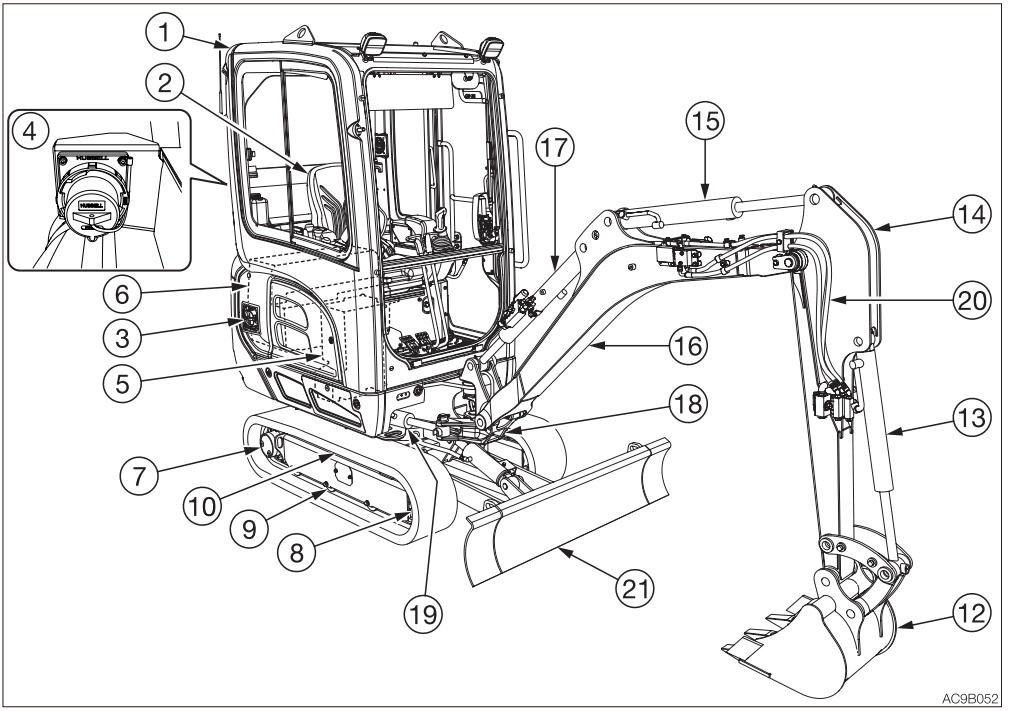


1. Multi-information display
2. Key switch
3. Blade lever
4. Speed controller
5. Right operating lever
6. Horn button
7. Deceleration button
8. Boom swing pedal
9. Travel levers/pedals
10. Travel speed button
11. Left operating lever
12. Auxiliary 1st switches
13. Safety lock lever
14. Light switch
15. Emergency stop switch
16. Detent mode switch
17. Auxiliary 1st auto tank switch
18. Lift overload warning switch*
19. Auxiliary 2nd/4th switch*
20. Auxiliary 2/4 select button*
21. Third auxiliary hydraulic button*
22. Third auxiliary hydraulic switch*
23. Selector lever
24. Power supply socket
25. Service plug**

*: Subject to the specifications or optional products selected

**: Remove it when repairing the machine due to failure. Otherwise, it must not be removed; doing so could cause the machine to fail.

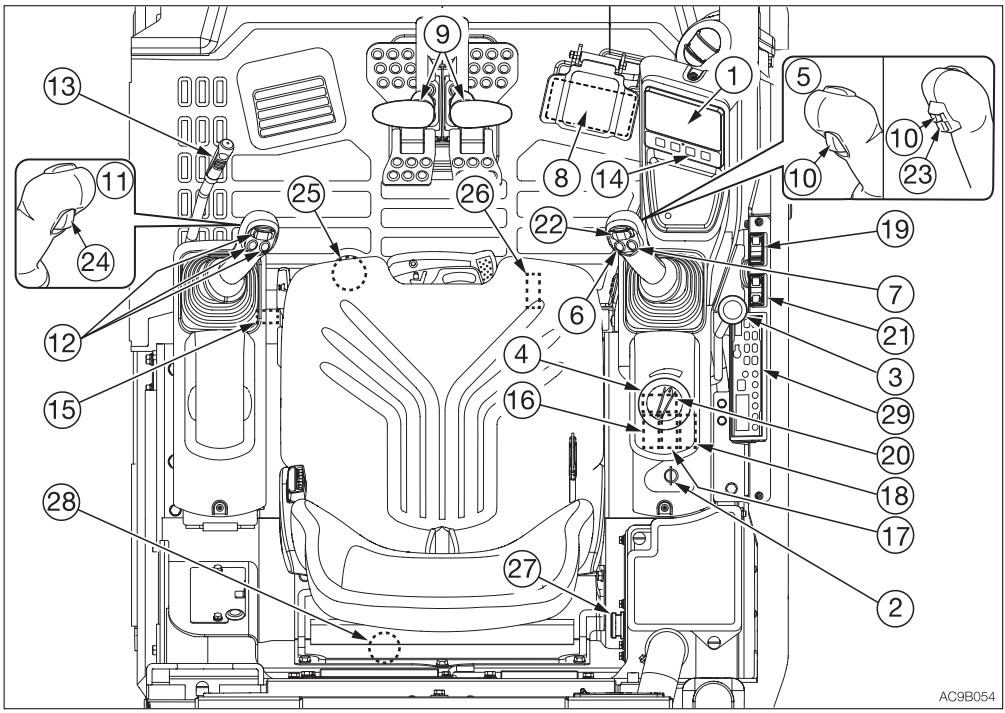
COMPONENT NAMES (CAB)



Upperstructure
1. Cab
2. Seat
3. Off-board charging port
4. On-board charging port
5. Hydraulic oil tank
6. Lithium ion battery

Undercarriage
7. Crawler belt
8. Idler
9. Track roller
10. Shoe slide
11. Travel motor

Working equipment
12. Bucket
13. Bucket cylinder
14. Arm
15. Arm cylinder
16. Boom
17. Boom cylinder
18. Boom bracket
19. Swing cylinder
20. Auxiliary hydraulic lines
21. Dozer blade
22. Blade cylinder

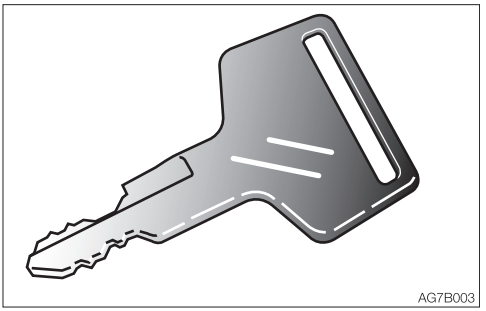


1. Multi-information display
2. Key switch
3. Blade lever
4. Speed controller
5. Right operating lever
6. Horn button
7. Deceleration button
8. Boom swing pedal
9. Travel levers/pedals
10. Travel speed button
11. Left operating lever
12. Auxiliary 1st switches
13. Safety lock lever
14. Light switch
15. Emergency stop switch
16. Detent mode switch
17. Auxiliary 1st auto tank switch
18. Lift overload warning switch*
19. Front wiper/Washer switch
20. Rear wiper/Washer switch
21. Heater fan switch
22. Auxiliary 2nd/4th switch*
23. Auxiliary 2/4 select button*
24. Third auxiliary hydraulic button*
25. Third auxiliary hydraulic switch*
26. Selector lever
27. Power supply socket
28. Service plug**
29. Radio

*: Subject to the specifications or optional products selected
**: Remove it when repairing the machine due to failure. Otherwise, it must not be removed; doing so could cause the machine to fail.

COVERS

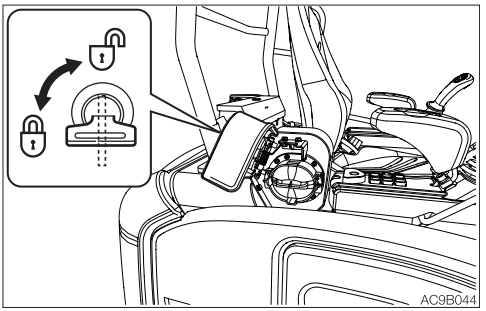
STARTER KEY



The starter key is used to start and stop the motor, as well as to lock and unlock the following components:
- Manual storage compartment
- Covers

OFF-BOARD CHARGER PORT COVER (IF EQUIPPED)

Opening



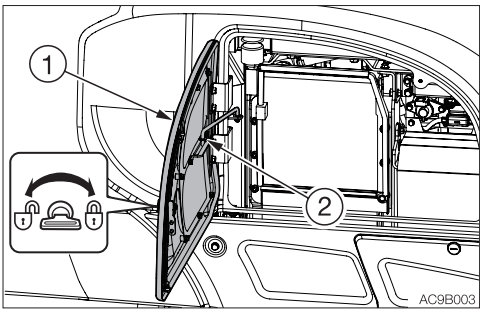
To unlock this holder, insert the starter key and turn it clockwise.

SIDE COVER

⚠ CAUTION

- **Before opening the side cover, be sure to set the safety lock lever to the lock position and stop the motor.**
- **When opening the side cover, open it all the way to the position where it is securely stopped.**
- **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 hydraulic oil system or electrical system, open this cover.



Opening

Insert the starter key and turn it counterclockwise to unlock the side cover (1).

Closing

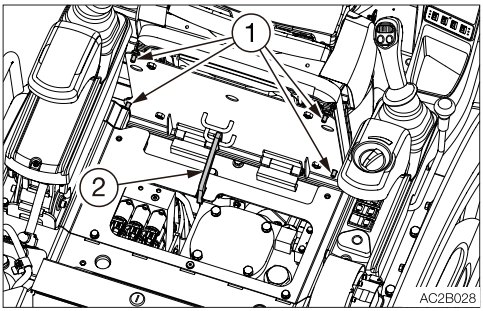
1. Support the side cover (1) by hand and release the stay (2).
2. Close the side cover (1).
3. Insert the starter key and turn it clockwise to lock the side cover (1).

MAINTENANCE COVER

⚠ CAUTION

- **Before opening the maintenance cover, set the safety lock lever to the locked position and stop the motor.**
- **When opening the maintenance cover, open it all the way to the position where it is securely stopped.**
- **When opening and closing the maintenance cover, be careful not to get your hands or other parts of your body caught by the cover.**

For inspection and maintenance of the hydraulic oil system, open this cover.



Opening

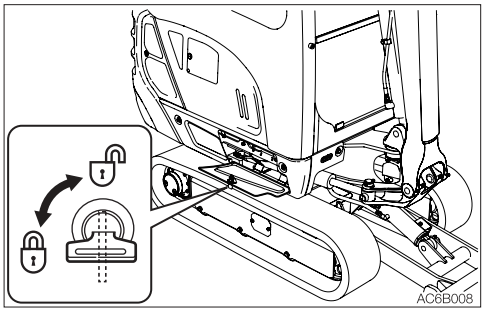
1. Remove the bolts (1).
2. Slide the seat backward.
3. Tilt the seat forward.
4. Secure the seat with the stopper (2).

Closing

1. Hold the seat and lift the stopper (2) up to release it.
2. Return the seat to the original position.
3. Tighten the bolts (1).

GREASE GUN HOLDER

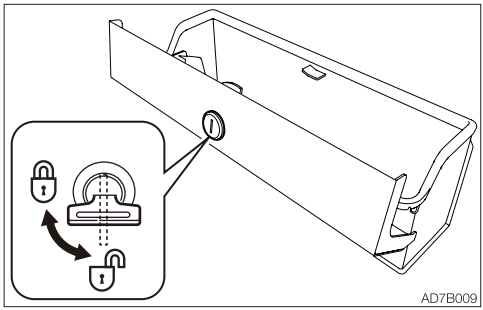
Opening



To unlock this holder, insert the starter key and turn it clockwise.

TOOL CASE

Opening



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

CAB

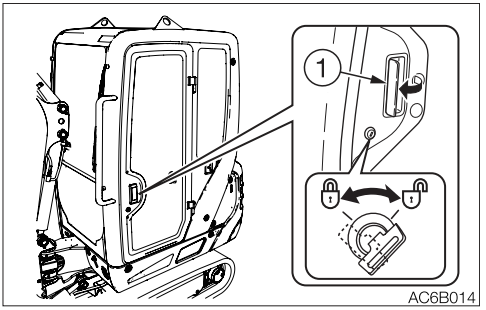
CAB DOOR

⚠ 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.

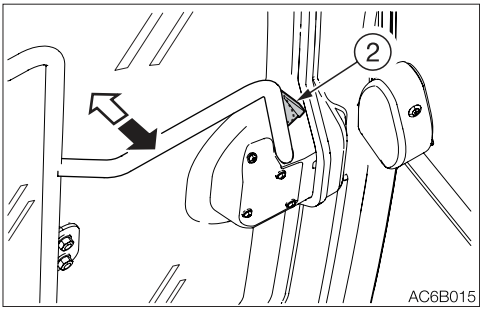
Locking and unlocking



Insert the starter key and turn it.

Opening

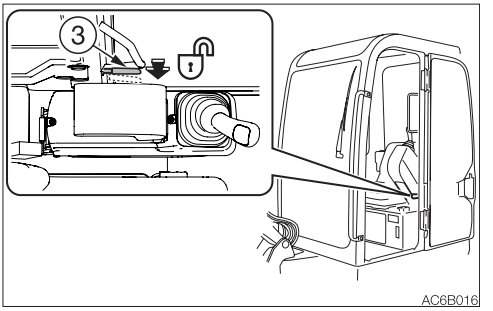
1. Pull the knob (1) towards you and open the door.



To open the door from inside the cab, hold the door opener (2).

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

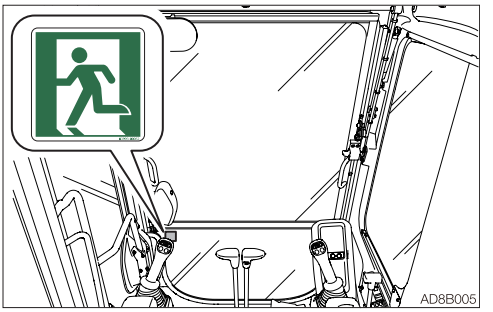
Closing



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

EMERGENCY EXIT

Front window (excluding machines with a front guard)



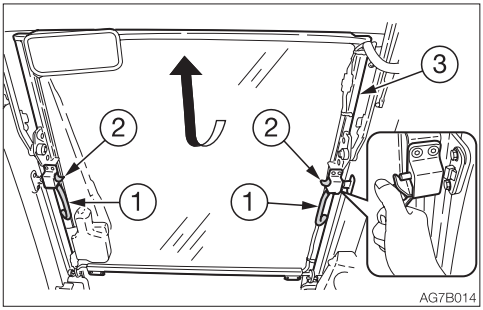
If you should become trapped inside the cab, open the front window to get out.

FRONT WINDOW

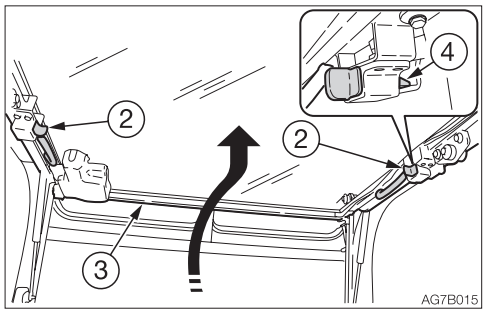
⚠ WARNING

- **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.

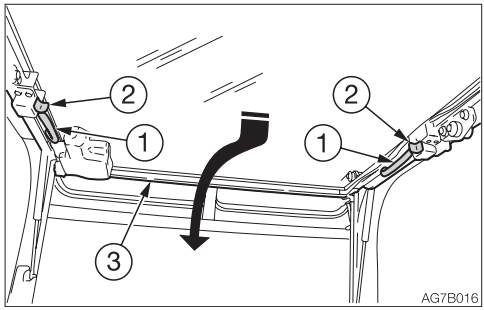


5. Release your thumb from the knobs (2) and then lift the front window (3) fully and lock the front window with lock pin (4).

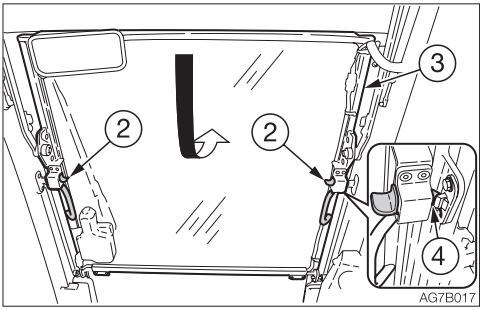
Closing

⚠ 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.



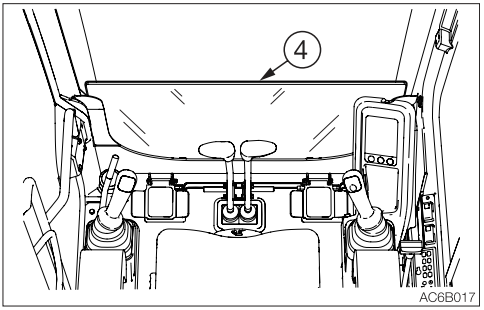
1. Grasp the left and right handles (1) and press the knobs (2) with your thumb to release the lock.
2. Pull down the front window (3) and while doing so, slide it to the front and slowly lower it.



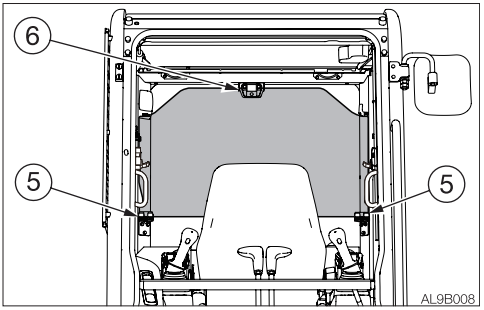
3. Release your thumb from the knobs (2) and then press the front window toward front and lock the front window with lock pin (4).

LOWER FRONT WINDOW

Removing



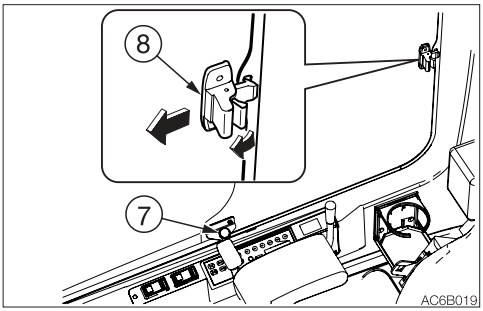
1. Open the front window and stow it in the ceiling.
2. Slowly lift the lower front window (4).



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

SIDE WINDOW

Opening

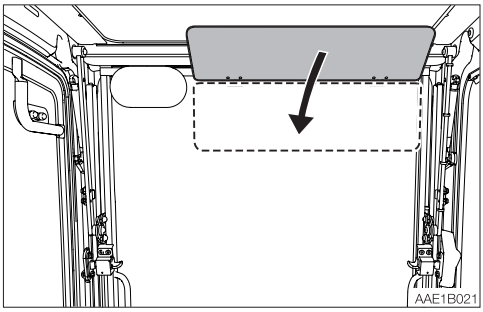


1. Release the lock by turning the locking screw (7) counterclockwise
2. Hold the catch (8) to disengage it and open the side window.
3. Secure the side window by turning the locking screw (7) clockwise.

Closing

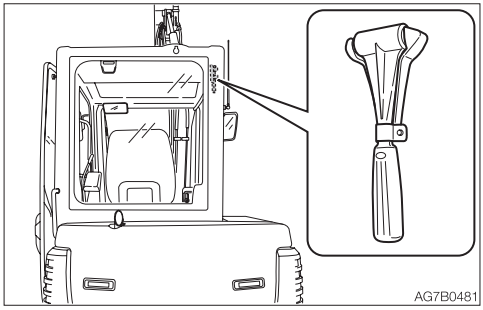
1. Release the lock by turning the locking screw (7) counterclockwise
2. Close the window until a click is heard, and then secure the window by turning the lock screw (7) clockwise.

SUN VISOR (IF EQUIPPED)



Use it when the sunlight coming from the front is glaring.

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.

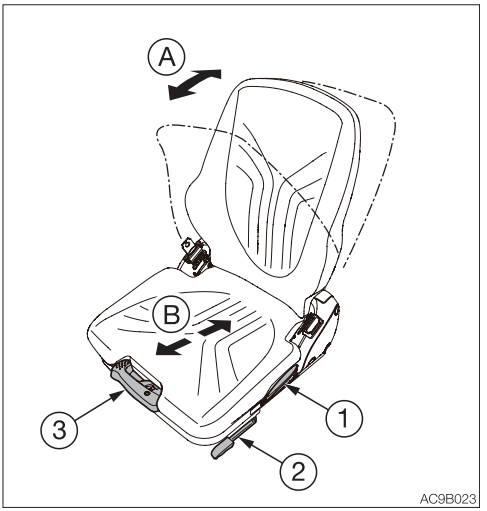
- When breaking the windowpane with a hammer, take great care not to injure yourself with the broken glass pieces.
- Remove the glass pieces from the window sill so as not to cut yourself when evacuating. Broken glass will fall from the window, so be careful of your footing and do not slip on the glass.

SEAT AND SEAT BELT

SEAT

⚠ WARNING

- **Adjust and secure the seat.**
- **Do not make any adjustments while operating the machine.**
- **Remember that the backrest returns to the forward position abruptly due to the spring force.**

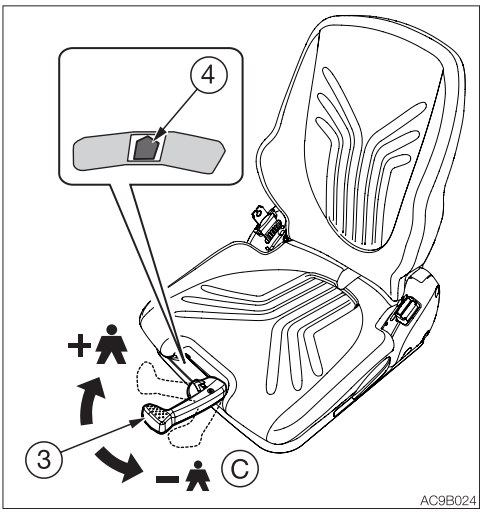


(A) Adjusting the backrest

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: 18 positions, in 170 mm (6.7 in.)



(C) Adjusting according to operator's weight

1. Sit back in the seat.
2. Open the lever (3).
3. Move the lever (3) up or down until the arrow (4) goes inside the transparent frame.
   Up: Increases the weight.
   Down: Decreases the weight.

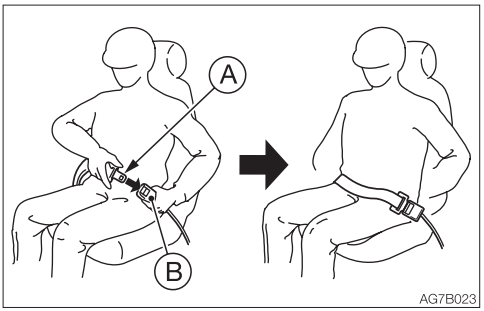
SEAT BELT

⚠ WARNING

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

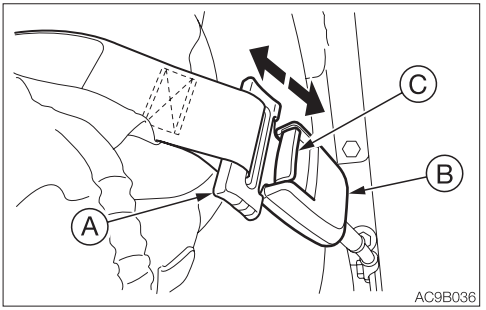
Fastening the seat belt

1. Adjust the seat to the desired position for operation, sit up and sit back in the seat.
2. Slowly pull out the seat belt to the desired length.
   If pulled out too rapidly, the belt is automatically locked. If this occurs, release the belt and slowly pull the belt again.



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.

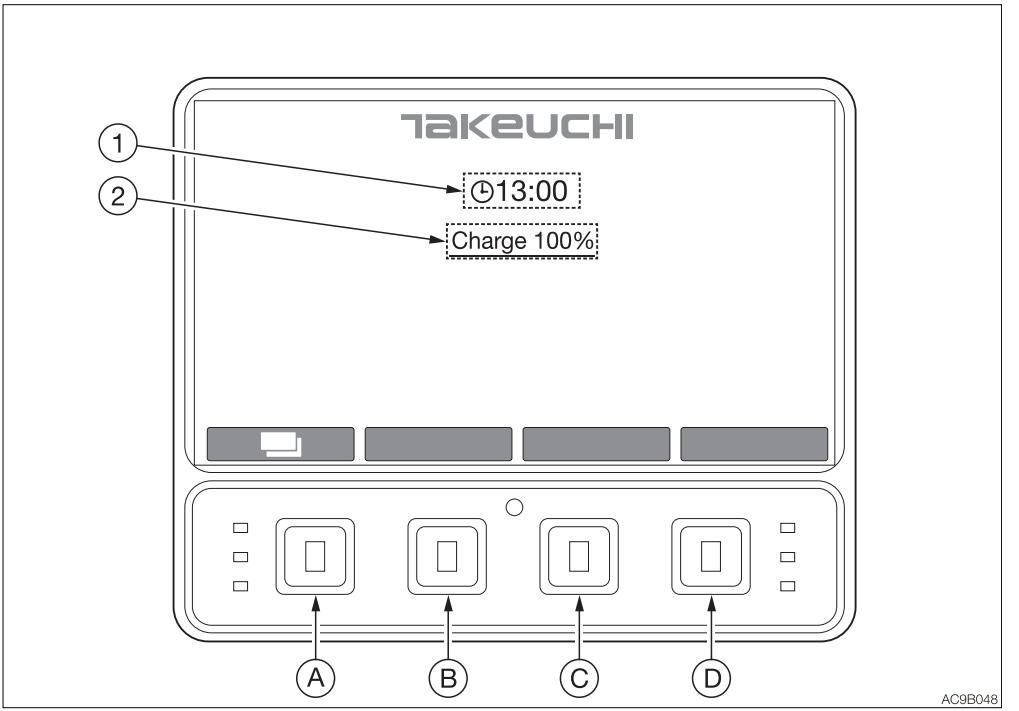
Releasing the seat belt



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

CHARGE SCREEN

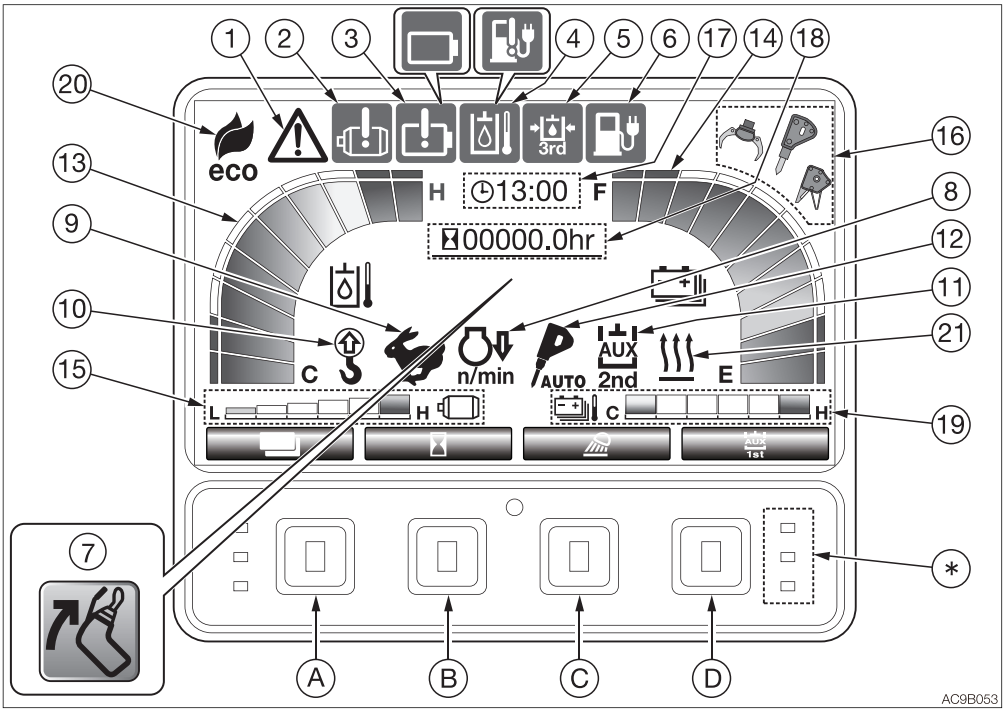


1. Clock
Displays the current time.

2. Charge
The orange bar is displayed during charging.
The green or white bar is displayed when the charging is complete.
The white bar indicates that the battery capacity is being improved (cell balancing control). The white bar may remain displayed for 9 hours or more; it is OK to stop charging before the bar turns off.
The red bar appears if there is an error. Press the button (A), go to the Error code display from the Menu screen, get the error code number, and then consult your sales or service dealer.
Refer to “Menu screen” on page 2-21.
Refer to “(5) Error code display” on page 2-25.

Screen brightness
The screen remains bright for one minute after starting up.
After one minute, the brightness is reduced by half.
Press the button (A to D) to return to the original brightness.
If no button is pressed for one minute, the brightness is reduced by half.

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.

*: LED lamps
Indicate the state of the machine.

Red lamp (upper) flashes
..... There is a problem in the machine.
Yellow lamp (middle) lit
..... Being charged or being operated wired.
Green lamp (lower) lit
..... Charging is complete.

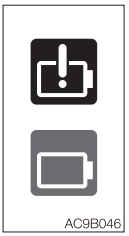
WARNING LAMPS

IMPORTANT: If a warning lamp flashes and an alarm is sounded, immediately stop all operations and check the corresponding component.

1. Vehicle emergency lamp
This lamp is displayed enlarged for one second, 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 error code number, and consult your sales or service dealer.
Refer to “Menu screen” on page 2-21.
Refer to “(5) Error code display” on page 2-25.

2. Drive system warning lamp
This lamp flashes and an alarm is sounded if a problem occurs in the drive system while the motor is running.

3. Lithium ion battery warning lamp



..... Lithium ion battery warning lamp

..... Warning lamp for uncorrected lithium ion capacity

Lithium ion battery warning lamp
This lamp flashes and an alarm is sounded if a problem rises in the battery pack while the motor is running.
Refer to “Battery pack error code list” on pages 6-22 to 6-25.

Warning lamp for uncorrected lithium ion capacity
This lamp flashes if the battery capacity has not been corrected for a long time (84 days or more), and battery error code 105 is generated.
Refer to “If a warning lamp flashes” on pages 6-14 to 6-15.

4. Off-board charger warning lamp/ Hydraulic oil temperature warning lamp



..... Off-board charger warning lamp

..... Hydraulic oil temperature warning lamp

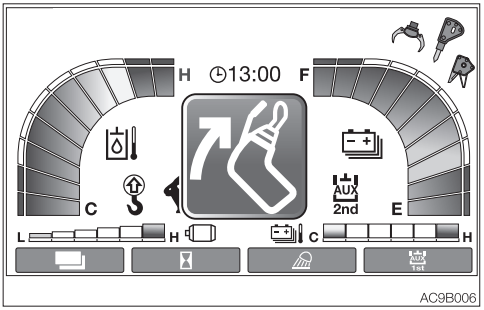
Off-board charger warning lamp
This lamp flashes and an alarm is sounded if a problem occurs in the off-board charger

Hydraulic oil temperature warning lamp
Red ... This lamp flashes if the hydraulic oil temperature becomes abnormally high while the motor is running.
Blue... This lamp flashes if the hydraulic oil temperature is low (under 6°C). The motor RPM is controlled.

5. Third auxiliary hydraulic warning lamp
This lamp starts flashing and an alarm sounds if the fixed side (left “e”) pressure of the third auxiliary drops abnormally while the motor is running, or while the quick-hitch is being used for changing the attachment.
It also flashes and an alarm sounds if the lever lock is in the lock position.

6. Lithium ion battery level warning lamp
This lamp flashes when the lithium ion battery level becomes low while the key switch is in the ON position.
The lamp turns on when the machine is being operated wired.

7. Safety start warning lamp



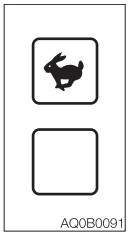
This lamp appears enlarged on the display and the buzzer sounds if the motor is attempted to be started when the safety lock lever is in the unlock position. The motor cannot be started. First, set the safety lock lever to the lock position, and then start the motor.

INDICATORS

8. Deceleration indicator lamp

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

9. Travel speed indicator lamp



..... High-speed travel

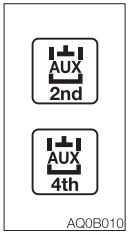
..... Low-speed travel

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

10. Lift overload warning indicator lamp

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

11. Auxiliary 2nd/4th select indicator lamp



..... Auxiliary 2nd is selected.

..... Auxiliary 4th is selected.

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



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

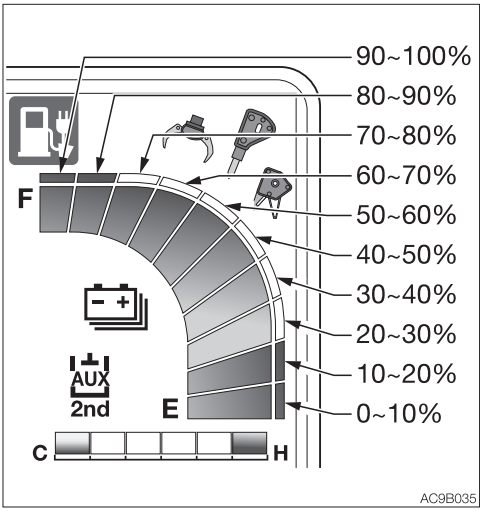
..... Auxiliary 1st one-way is selected.

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

13. Hydraulic oil thermometer

This instrument indicates the temperature of the hydraulic oil. The level must be within the blue range during machine operation
The red range indicates overheat condition.

14. Lithium ion battery meter

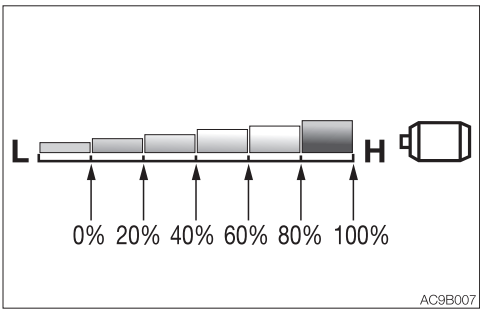


This meter indicates the amount of power left in the lithium ion battery. Be sure to charge the battery before it runs out of power.

Note: If the lithium ion battery level drops to 10%, the motor speed is controlled to 50%.

If the lithium ion battery level drops further, the lowest scale mark flashes.

15. Motor speed setting display

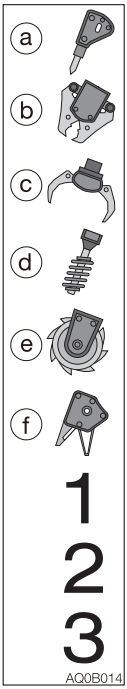


This gauge displays the motor speed settings set with the speed controller. When the gauge is in the blue or white range, the motor speed is low to medium. When the gauge is in the red range (80% or more), the motor speed is high.

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

16. Auxiliary 1st flow rate indicator lamp

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



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

Refer to “Auxiliary 1st flow rate setting” on page 2-23.

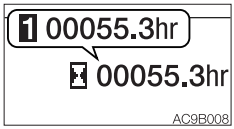
17. Time indicator

Displays the time set.

Refer to “Time setting” on page 2-27.

18. Hour meter/Trip meter

• Hour meter



Displays the total motor 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 2-22.

19. Lithium ion battery thermometer

This instrument indicates the temperature of the lithium ion battery.
The level must be within the white range during machine operation.
The red range indicates overheat condition

20. ECO mode indicator lamp

This lamp lights up when the ECO mode is selected by the ON/OFF setting. If the machine is not being operated, the motor stops.

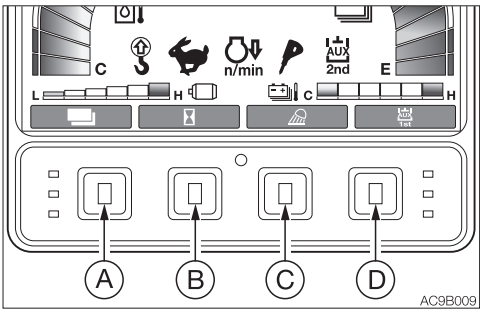
Refer to “3. ON/OFF setting” on page 2-24.

21. Heater indicator lamp

This lamp lights up when the heater is selected by the ON/OFF setting and the heater fan switch is turned ON.

Refer to “3. ON/OFF setting” on page 2-24.
Refer to “Heater” on page 2-39.

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. Light key

Used to turn ON or OFF the lights.

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.

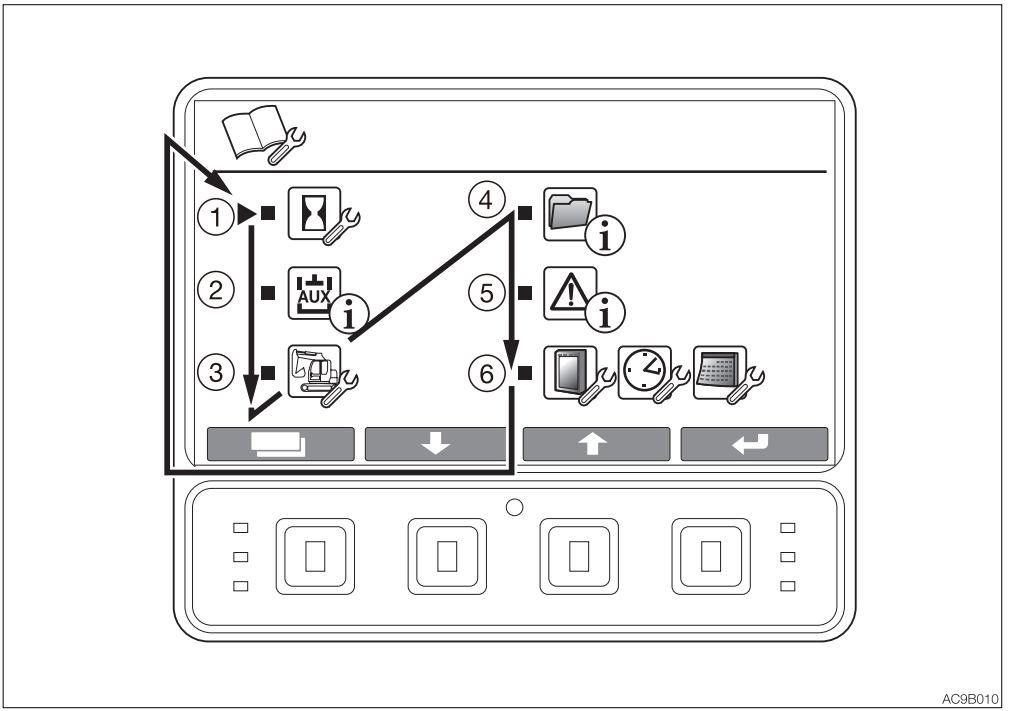
D. Auxiliary 1st key

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.

SCREEN NAVIGATION

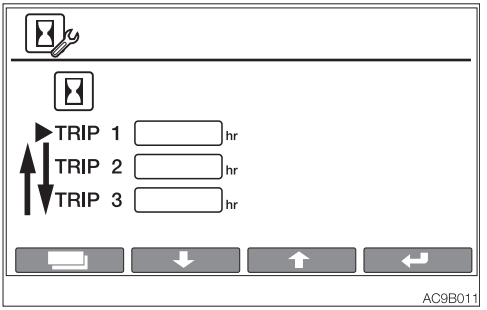
• Menu screen



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

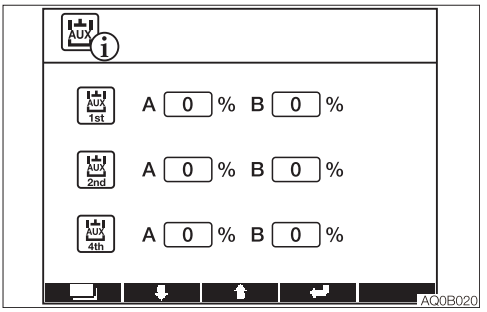
(1) Trip meter setting
(2) Auxiliary line flow rate display
(3) Machine settings
(4) Data display
(5) Error code display
(6) LCD setting/Date and time setting
Move the cursor ▶ with the Up (↑) or Down (↓) key to go to the desired item to be set, and then press the Enter key to confirm. The screen returns 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



Three 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.

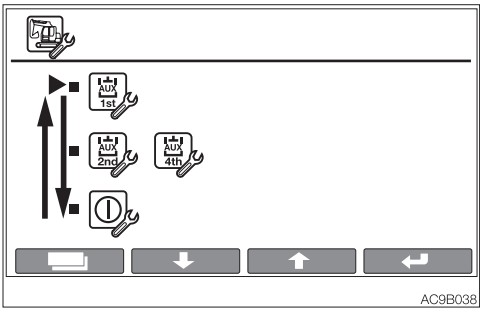
(2) AUXILIARY LINE FLOW RATE DISPLAY



Displays the flow rate of the Auxiliary 1st, 2nd and 4th.

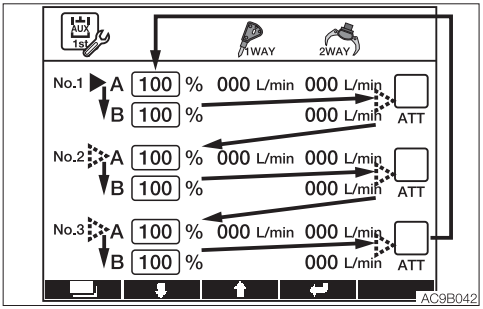
(3) MACHINE SETTINGS

• **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.

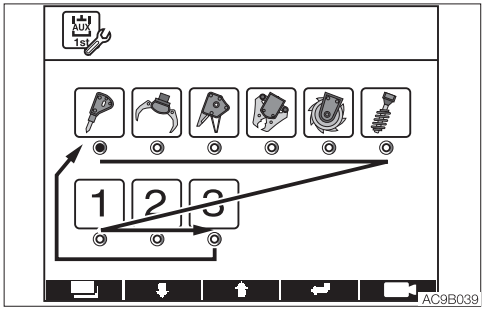
1. Auxiliary 1st flow rate setting



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.

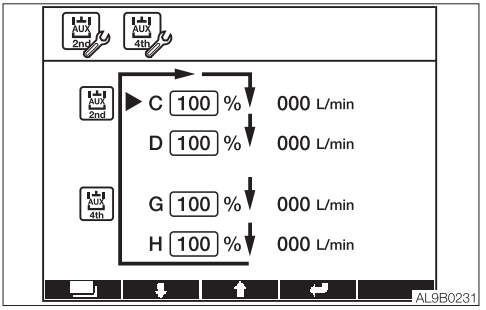
Initial condition	Standard flow	Variable range
Auxiliary 1st No.1	100%= 34 L/min (9 US gpm)	10 to 100%
Auxiliary 1st No.2	75%= 26 L/min (6.9 US gpm)	10 to 100%
Auxiliary 1st No.3	50%= 17 L/min (4.5 US gpm)	10 to 100%

The table shows the 1-way flow rate when there is no load.
Note: The 1-way flow can be performed only when the switch (A) is used.



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 upper right of the Home screen.

2. Auxiliary 2nd/4th flow rate setting



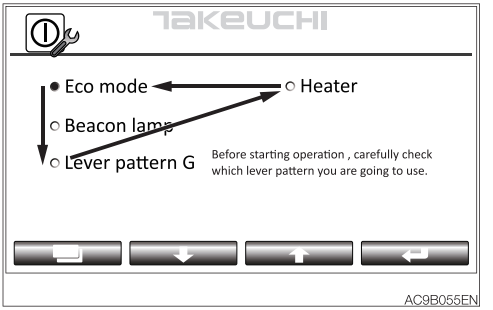
One pattern of the auxiliary 2nd/4th flow rate can be set.

Initial condition	Standard flow	Variable range
Auxiliary 2nd	C/D 100%= 11 L/min (2.9 US gpm)	10 to 100%
Auxiliary 4th	G/H 100%= 11 L/min (2.9 US gpm)	10 to 100%

The table shows the 1-way flow rate when there is no load.
Note: The 1-way flow can be performed only when the switch (A) is used.

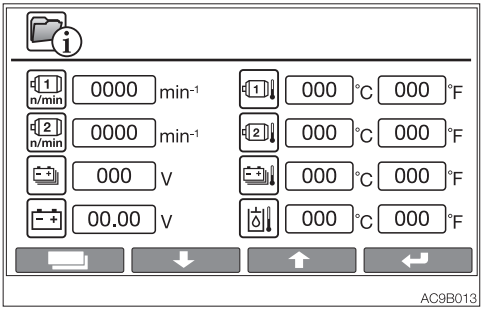
Refer to the trip meter setting for the key operation. To move the cursor ▶ in the direction of the arrow, use the Down (↓) key. To move the cursor ▶ in the opposite direction of the arrow, use the Up (↑) key.

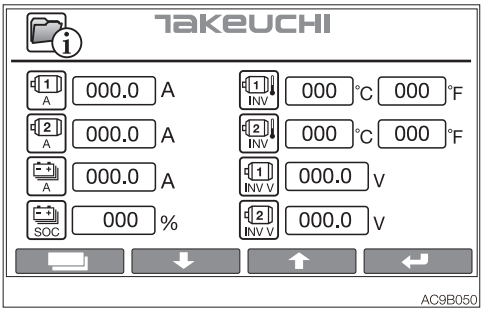
3. ON/OFF setting



The ECO mode, beacon lamp, lever pattern G and heater can be set to ON or OFF.
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 blue circle.
Blue circle is lit: ON
Blue circle is off: OFF

(4) DATA DISPLAY

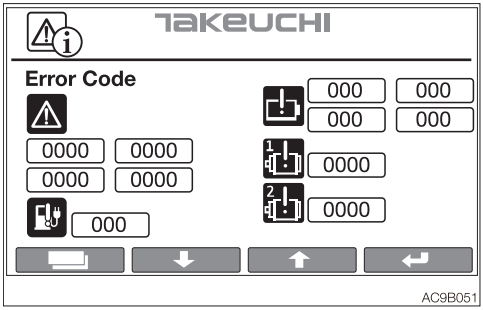




Displays various data. The setting cannot be changed.
Use the Up (↑) or Down (↓) key to switch among the data items to be displayed.

Display items
- Motor RPM
- Battery voltage
- Motor temperature
- Lithium ion battery temperature
- Hydraulic oil temperature
- Motor current
- Lithium ion battery current
- INV temperature
- State of charge
- Inverter voltage

(5) ERROR CODE DISPLAY



⚠.....Vehicle error code
Displays four error codes, with the latest code in the upper left.

.....Charger error code
Displays the latest error code.
Refer to “Charger error code list” on page 6-40.

.....Battery Management Unit (BMU) error code
Displays four error codes, with the latest code in the upper left.

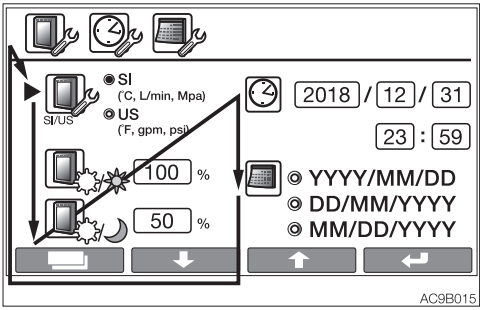
.....Motor 1 error code
Displays the latest error code.

.....Motor 2 error code
Displays the latest error code.

Refer to “Battery pack error code list” on pages 6-22 to 6-25.

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

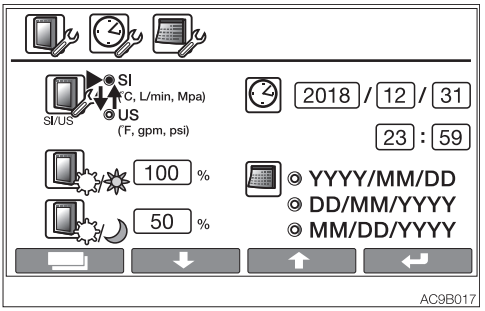
(6) LCD SETTING/DATE AND TIME SETTING



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.

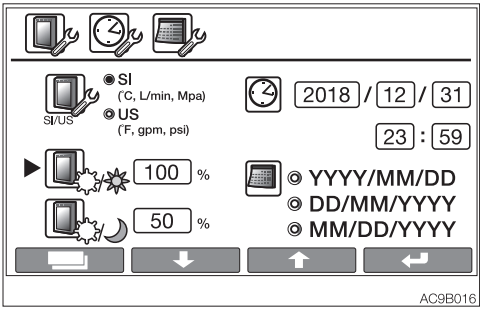
IMPORTANT: If the date is set to the past (84 days or more ago) by mistake, the warning lamp for uncorrected lithium ion capacity flashes and the battery pack error code 105 is generated. Correct the date and charge the battery as follows.
- **Set the state of charge to 20% or less.**
- **Complete charging. (Charge until a green or white bar appears on the charging screen.)**

- **Unit setting**



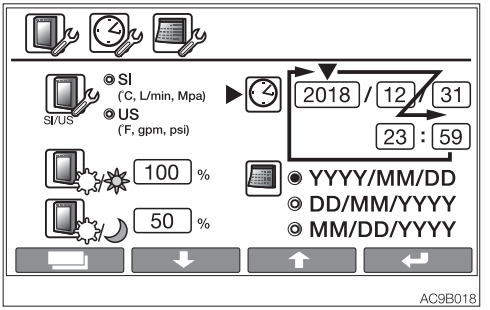
Switch between SI unit and US units.
Move the blue flashing light to the desired unit position, and then press the Enter key to confirm.

- **Brightness setting**



The brightness of the LCD is set to between 1 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 100%
(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 2-20.

• 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 2-20.

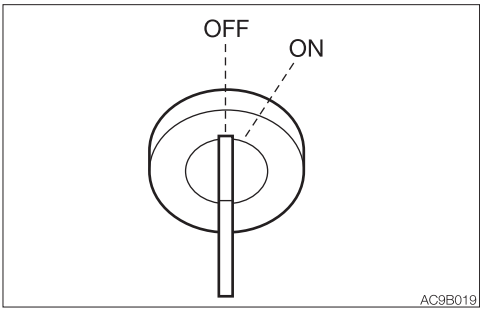
IMPORTANT: If a past date is set, the battery pack error code 105 may appear.

SWITCHING IMAGES

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

SWITCHES

KEY SWITCH



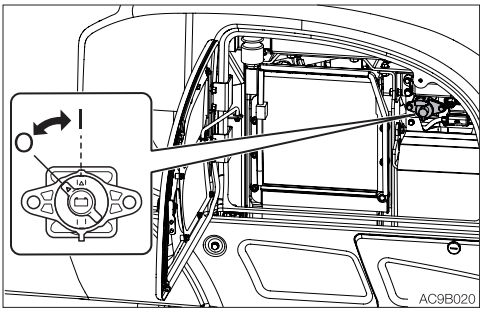
IMPORTANT: Do not repeatedly switch the key from OFF/ON to ON/OFF over a short period. Doing so will cause electrical breakdown.

OFF ..... Position for stopping the motor and inserting or removing the key.
ON ..... Position in which the motor is running. At this position, all the electrical equipment is functional.

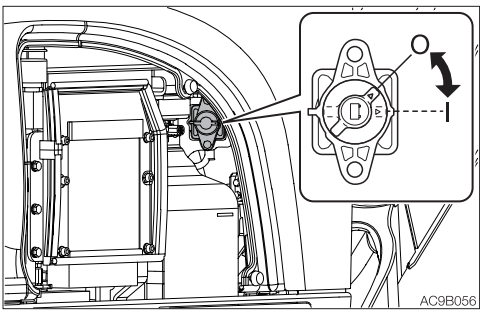
LEAD-ACID BATTERY SWITCH

IMPORTANT: Never turn this switch to the OFF (O) position while the motor is running. Doing so will cause electrical breakdown.

Canopy

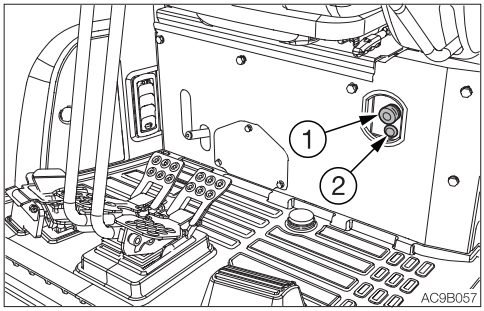


Cab



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

EMERGENCY STOP SWITCH



In an emergency, this switch is used to shut down the machine by stopping charging or the motor.

1. Press the switch (1).
2. To resume the operation, turn it counterclockwise.

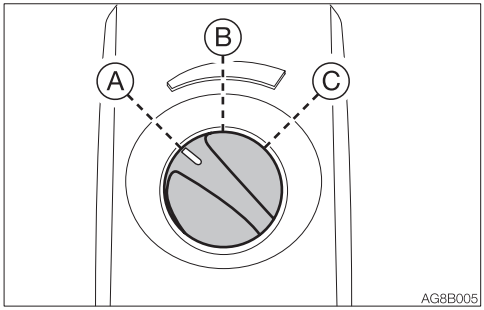
Pilot lamp (2)

ON .....Machine is normal.

OFF ....Lead-acid battery is run down. Electric wiring is disconnected. The key switch is in the OFF position. The emergency stop switch is activated.

IMPORTANT: Use the emergency stop switch to stop the machine only if the machine cannot be stopped when you stop the charger or the motor. Do not use the emergency stop switch if the normal stop procedure is available. Since the system is forcibly shut down, the normal shutdown procedure may not be done and the internal data may be left unsaved.

SPEED CONTROLLER



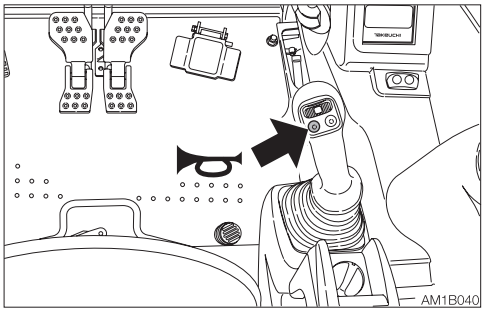
This controller is used to control the maximum motor speed.

(A).....Low speed

(B) .....Medium speed

(C) .....Maximum speed

HORN BUTTON

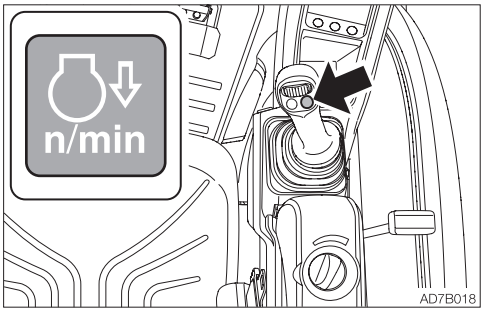


Press the button situated on the right operating lever to blow the horn.

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 resulting in a dangerous situation.

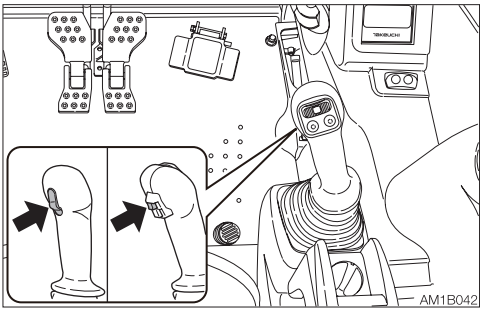


Press the button on the right operating lever to enter the deceleration mode.
Press the button again to cancel the deceleration mode.
For safety reasons, it is designed that the deceleration function is activated to enter the deceleration mode whenever the motor is started.
Cancel the deceleration mode by pressing the deceleration button as necessary.

TRAVEL SPEED BUTTON

⚠ WARNING

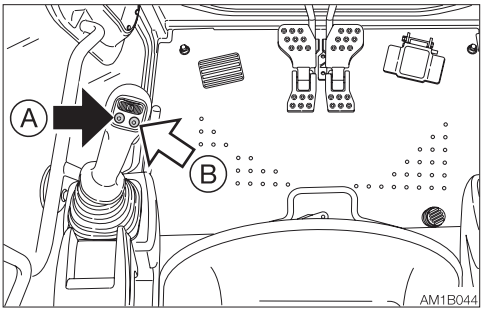
When a load greater than a set value is applied during traveling in 2nd (high) speed, the speed will automatically slow down to 1st (low) speed. When the load becomes lighter, the speed will increase and return to 2nd (high) speed. It should be noted that the travel speed changes depending on the load 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 these buttons to control the flow of the oil in the first auxiliary hydraulic lines.

- Proportional control of the auxiliary hydraulic circuit is not possible when using the A and B buttons.

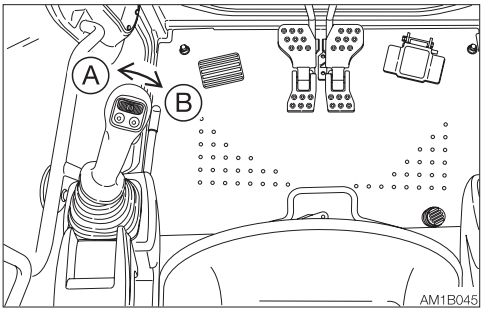
(A).....Hydraulic oil flows to the left auxiliary line (a).

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

Slider switch (Proportional control)

Proportional control allows the operator to meter the oil flow to the attachment. (Slow/Fast and Fast/Slow)

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 2-65 to 2-69.