RIPPA

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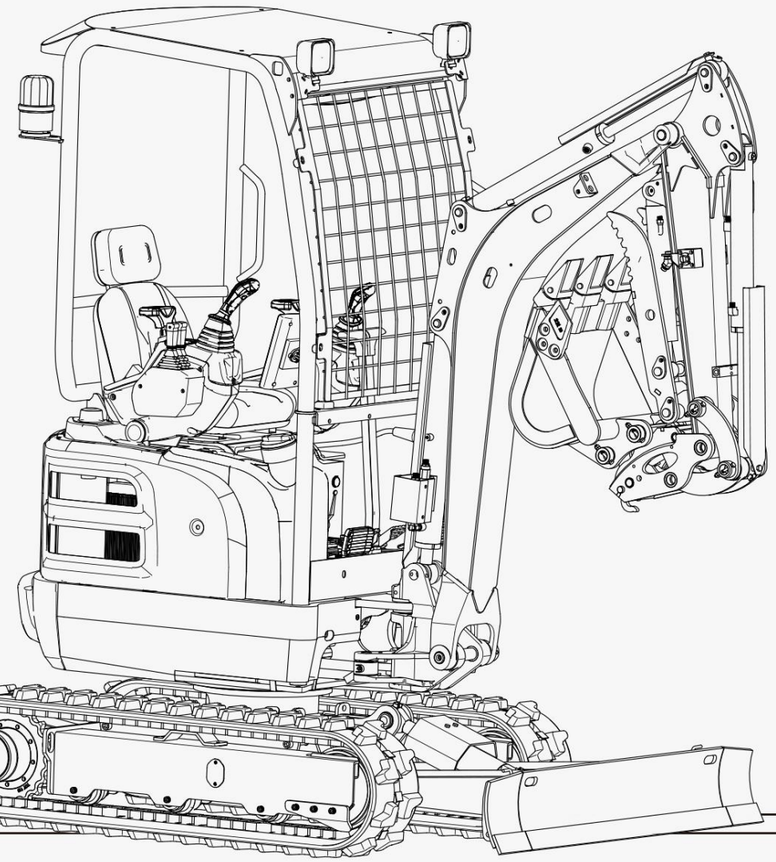
RIPPA



R18 PRO

Operation and maintenance description of hydraulic excavator

Warning: Unsafe use of this machine may cause serious injury or death.Operation and maintenance personnel must read this manual before operating and maintaining this machine. This manual shall be placed near the machine for timely access and all machine-related personnel.

Operation and maintenance instructions

First edition

The symbol of the operating device

The operating device is marked with symbols to facilitate operation, maintenance and management. The meanings of the symbols are as follows. Please pay more attention on the basis of full understanding to avoid misoperation.

	Bucket dumping
	Boom descends
	Forward
	Rotate left and swing left
	Pull up the lever
	The bulldozer shovel descends
	The machine moves at a low speed
	Lock
	Fuel (light oil)
	Battery charging warnings
	Horn
	Auto Idle
	Wiper and window washer
	Lever limit position

	The bucket is pulled up
	Boom lift
	Back off
	Rotate to the right and swing to the right
	Boom extended
	The bulldozer lift
	The machine moves at high speed
	Unlocking
	Working oil
	Engine oil pressure
	Engine preheating
	Operation lights
	Water temperature gauge

Previous remarks

Thank you for purchasing RIPPA products.
This user manual explains the correct usage method of the product and simple inspection and repair. Please read and fully understand this content before use to bring out the best performance of the product you have purchased and to work safely and comfortably. The manufacturer cannot directly supervise or guide the use, operation, inspection and maintenance of the machine. Therefore, users should operate correctly and safely. Also, please be fully aware that matters not recorded in this user manual may sometimes be subject to relevant laws, regulations, rules and insurance conditions depending on the content of the operation. After reading this manual, please be sure to keep it properly in your User manual favorites so that you can access it at any time if you have any questions. When the User Manual collection is damaged, be sure to replace it with a new one. Also, due to changes in product specifications, the product you purchase may sometimes not be consistent with the contents of this manual. We apologize for any inconvenience.

Safety first

The precautions recorded in this book and the symbolic labels attached to machines are important items that could lead to personal accidents. Be sure to read carefully and follow strictly.
Also, if the label with the symbol is dirty, damaged or fallen off, be sure to order it from your local store and post it in the designated place.

Marking about precautions	This manual marks the particular matters that need attention when using the machine as follows.
danger	It indicates that failure to follow the instructions may result in death or serious injury.
warning	Indicates that there is a risk of death or serious injury if the precautions are not followed.
note	Indicates that there is a risk of injury if the precautions are not followed.
important	It indicates that failure to follow the precautions will cause damage to the machine or trigger a malfunction.
supplement	Indicate additional instructions that are helpful for use.

About Specifications

This manual also provides instructions for different models and specifications of the product. Please confirm the model and specification of the product you are purchasing before proceeding to avoid mistakes.

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Truck transportation

Maintenance

Problems and solutions for backhoe excavators

Precautions for the Use of hydraulic breakers

Recommended lubricating grease

Appendix

Be sure to read it in order to work safely

Before using this machine, be sure to read and understand this "User Manual" carefully to ensure safe operation. In order to work safely, the following are the precautions that must be followed. In addition to this, this text is marked with in this case danger warning note important supplement for attention.

Be mindful of local regulations

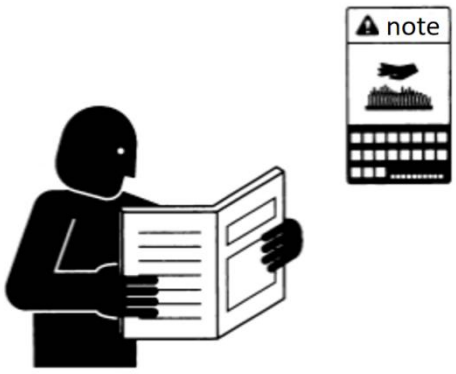
Certain aspects require compliance with government-mandated minimum insurance levels, work permits or certificates, guardrails around the work area, operating hours, etc. There may be reference standards or restrictions on the equipment when performing certain tasks. Check and comply with local requirements regarding the safety of underground facilities and cables.

For safe operation, please be sure to

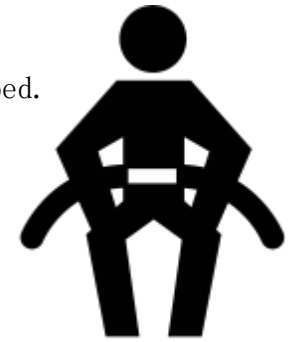
abide by the following matters.

Basic safety matters

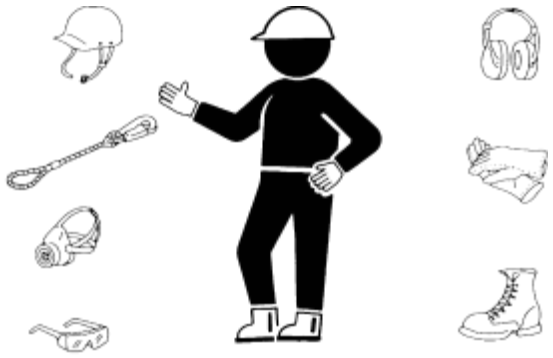
1. Before using this machine, please read this user manual carefully and operate it safely on the basis of full understanding.
2. When lending this machine to others, please provide detailed instructions on how to use it and instruct the person taking over to read the "Instruction Manual" carefully before use.



3. When it is ROPS cab specification, fasten your seat belt at all times while driving.
   Do not use seat belts when the ROPS cab is not equipped.
4. Do not modify the ROPS cab. Also, in the event of damage that affects strength, bending, etc., do not repair it directly and replace it with a new ROPS cab.
5. Do not drive with the ROPS cab removed.



6. When operating and maintaining, please wear a helmet, safety shoes and safety clothing.
Please wear protective glasses, dust masks, soundproof devices, protective gloves and safety belts as required for your work. Please ensure that all protective gear is functioning properly before use.
Keep the area around the driver's seat clean. If there is oil, grease, ice, snow and mud attached to the pedals and handrails, it can cause skidding. Also, check for dirt attached to the shoes, etc.



7. Prepare safety supplies
Prepare safety supplies in advance for use in case of injury or fire.
- Prepare first aid kits and fire-fighting equipment.
- Note down in advance the addresses of emergency doctors, ambulances and fire stations.

8. Do not use this device if you are drinking alcohol, sleep deprived, pregnant, overly fatigued or sick.

9. Please have a routine check-up.
Please confirm whether any abnormal phenomena occurred during the last use (such as oil leakage, water leakage, loose bolts and nuts, broken electrical wiring, loose terminal, etc.). If any abnormal phenomena are found, please take corresponding measures.
- Use the specified brand of fuel and grease.

10. Please make sure to install the safety cover and protective cover before use.

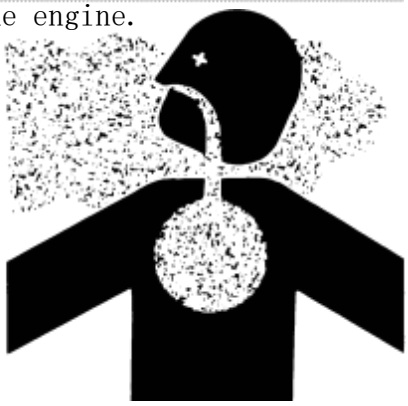
11. Turn off the engine when refueling, lubricating, checking and adjusting.
No fire or smoke when refueling.
Also, be fully careful not to let the fuel spill.

12. No one is allowed to enter under the bucket when it is lifted.
13. When pulling up the bucket, do not touch wires or obstacles above your head.
    Especially when touching wires, you may die from electric shock, so be sure to be careful.
14. Do not drive when you have drunk alcohol, taken medicine or are in poor health. Otherwise, it will cause an accident.

Notes before work

1. Make sure there is no one around the machine.

2. Make sure to confirm the following before starting the engine.



● Be sure to sit in the driver's seat when starting.
● Please make sure the automatic idle switch is "in action" and "off".
● Make sure all levers are in the "neutral" position.
●Please "start" the engine while lifting the lock lever of the left operation handle.
● Since the muffler exhaust pipe faces backward, make sure there is no one behind the machine. Also, when working near a wall or tree, sometimes the wall can be blackened by the exhaust gas and the tree can wither due to the heat of the exhaust gas. Therefore, take protective measures for the wall or tree before working.

● Make sure there are no flammable materials around the engine.
● Make sure the bucket is in contact with the ground.
●The exhaust gas emitted poses a risk of poisoning. Therefore, when conducting operations indoors or elsewhere, please ensure adequate ventilation. In addition, inspection work should be carried out outdoors.

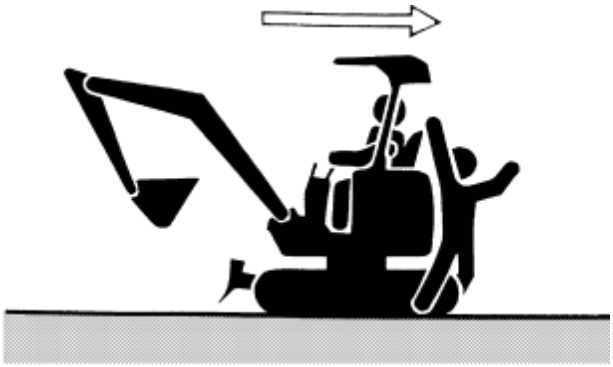
3. Be careful to hold the handrails when getting on or off the vehicle to avoid slipping. Jumping on or off is extremely dangerous.
   Never get caught in the control handle when getting on or off the vehicle.
4. In the machine that can be adjusted in the driver's seat, adjust the driver's seat to the proper position.

5. Check the direction of the machine before shifting gears. If you don't pay attention to operating the lever, you may move in the opposite direction against your will, which is very dangerous.
6. After starting the engine, check the working conditions of the bucket, boom, boom, bulldozer, travel and rotation, etc. The inspection should be carried out in an open area where there are no people around and no obstacles.
   If any abnormality is found, repair it immediately.

Notes during the work process

1. For first-time operators, please run at a low speed until you get used to the operation.
2. Sit in the driver's seat and operate correctly (do not look around, jump on, jump off, etc.) and do not allow anyone other than the driver to ride.
   Do not sit on the bucket.
3. Do not use it for any other purpose. Otherwise, not only will it cause malfunction of the machine body, but it may also cause unexpected accidents.

4. Before moving the machine, make sure there are no people or obstacles around. No one is allowed to enter the operation area during the operation.
5. When working in areas with poor visibility ahead or in poor terrain, appoint a commander and work according to the commander's signals.

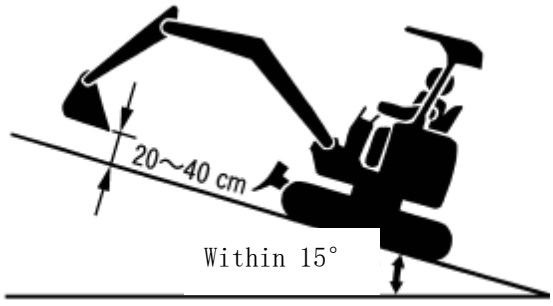


6. Confirm the direction of the machine before operating the travel handle. When the wheel part is facing backward (the idling wheel and the bulldozer blade are at the rear side), press the drive handle forward to move it backward and pull it backward to move it forward. Before starting, make sure you are in a safe position front, back, left and right. If one is careless during operation, it will move in the opposite direction, which is extremely dangerous.

7. Please never turn (make a U-turn) or cross on a slope, as it may cause a rollover or skidding, which is extremely dangerous. Please turn on a flat ground. Drive along the maximum slope line when going up or down slopes.

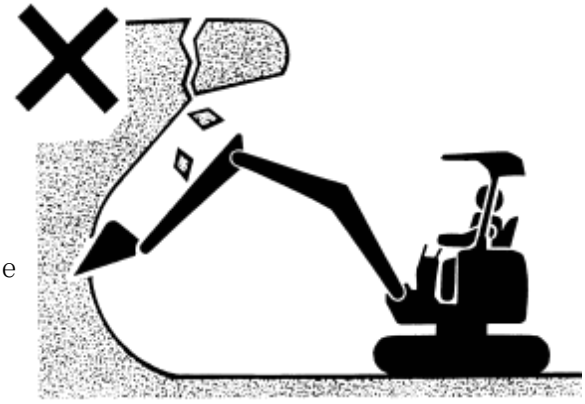
8. Do not perform swinging, rotating or digging operations on inclined sections, as there is a risk of overturning. If you have no choice but to work on a slope, place the machine at a level position before proceeding.
   Do not drive onto rocks or work on soft mounds of soil.
   There is a risk of rollover if you drive your car onto a rock or a bulge on a bumpy road, so do not climb slopes in such areas.

9. When driving or climbing slopes, please position the rotating frame and working device facing forward (place the idling wheel and the bulldozer shovel in front), and keep the bottom of the bucket 20 to 40cm off the ground. This way, in case of dangerous situations, it can be directly lowered to the ground to ensure stable driving. Do not go up or down a slope while it is swinging.
   Also, never drive on slopes of more than 15 degrees. There is a risk of rollover.
10. When going up or down soft soil slopes, lower the bucket immediately to act as a brake if the machine is likely to slip.



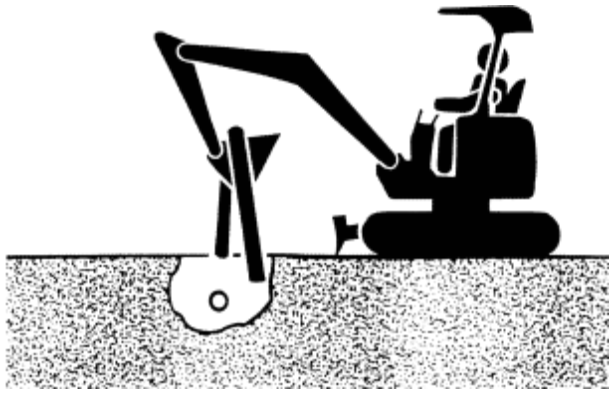
11. When moving near cliffs or embankments, leave sufficient leeway or take appropriate measures such as reinforcement to prevent the ground from collapsing. Also, do not approach sites where there is a risk of falling rocks.
    Driving after rain is even more dangerous. Never approach a cliff or embankment unprepared.
12. When digging beneath the machine body, be sure to pay full attention, otherwise it may overturn due to ground collapse.

13. Do not dig a pit under a cliff. It is dangerous. Cliffs and ground collapses can cause rockfalls.
14. If the work site or road conditions are poor, the stability of the machine will decline, and operational errors may cause accidents or even rollover. Therefore, while leveling the work site, also level the road surface or drive away from obstacles. Also, when driving on Bridges or buildings, investigate the allowable load and reinforce it if the strength is insufficient.



15. Generally speaking, it is more likely to roll over in the lateral direction than in the forward and backward direction. Therefore, when the working device is under heavy load, please do not perform lateral rotation.
16. When it rains or there is water, using wooden boards, iron plates, etc. is prone to slipping. Be sure to be fully careful when working in such slippery areas.

17. When working in places with electrical wiring, gas pipes, water supply and drainage systems, etc., experts should be present to guide.
18. When the bucket teeth are hung on stones, etc., they may overturn due to the reaction force when they fall off from the surface of stones, etc. Therefore, be sure to pay full attention when working.
    Also, never drive while the bucket is in the ground or dig while the body is floating, which is very dangerous.



19. When working in a building, pay full attention to the strength of overhead surfaces, exits, passages and floor surfaces.

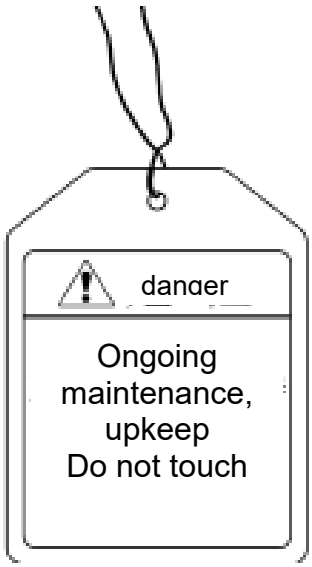
20. Regarding cargo lifting operations
The lifting operation of goods is dangerous because it may cause the goods to fall or the vehicle to overturn.
- Never use this machine instead of the crane for work.

Notes after work

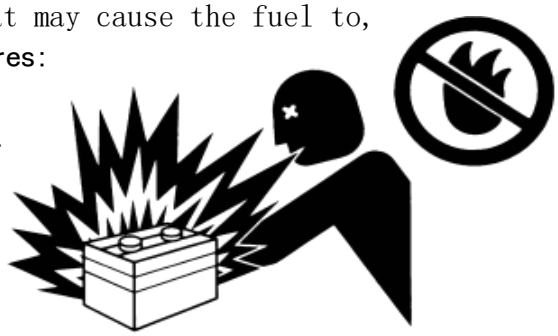
1. Please make sure to park your vehicle on flat ground.
   When it is unavoidable to park on a slope, insert the bucket teeth into the ground and brake the tracks.
2 When leaving the driver's seat,
   - Please lower the bucket to the ground
   - Lock the lever of the operating handle
   - Stop the engine and remove the key.
3 When storing the engine block, the guard used should be closed after the hot parts such as the muffler have cooled down.
   (Otherwise there is a risk of fire.)

Precautions for maintenance

1. Inspection and cleaning of the engine block and working apparatus, inspection and adjustment of all parts, or leaving the driver's seat as a result must be done after the engine is turned off. It is very dangerous to carry out the inspection while the engine is running. Choose a place where there is no danger and the ground is solid and flat before conducting the inspection.
2. When maintaining or servicing the machine, place a warning sign that says " Maintenance or servicing in **progress**" in a conspicuous position on the machine to prevent accidental contact by non-parties. Also, put up warning signs around the machine.



3. When maintaining and refueling, remove any fuel that may cause the fuel to, Items for igniting the cistern. Fire prevention measures:



- Use non-flammable oils to rinse parts, etc.
- Eliminate fire sources that pose a risk ofignition.
- Prepare fire extinguishers and other fire-fighting equipment.
- When inspecting fuel, oil and cistern solution, etc., please use explosion-proof lighting fixtures.
- Keep especially away from fire sources when doing grinding or welding work.

4. Gases from the storage - battery may cause fire and explosion.

●Do not create sparks near the storage battery, nor approach fire sources.

●Do not check the storage battery by short-circuiting the two poles with metal sheets. This is very dangerous.

Be sure to check with a voltmeter or hydrometer.

●Do not charge a frozen cistern.Otherwise there is a risk of explosion.When the cistern freezes, please ensure that the temperature of the cistern reaches above 15 ℃.

●Battery solution (dilute sulfuric acid) can cause blindness or burns. If the battery solution gets on the skin or clothes, please rinse immediately with plenty of clean water. In addition, if the battery solution splashes into the eyes, after rinsing with plenty of clean water, you should also see a doctor.

5. When taking care of yourself indoors or in a poorly ventilated area, make sure to ventilate well. Adequate ventilation is essential especially when the engine is emitting exhaust or when handling fuel, flushing oil, paint, etc.
6. Use proper tools that are suitable for the purpose during maintenance. If proper tools are not used during maintenance, not only will the work efficiency be low, but injuries may also occur.
7. Maintenance and inspection around the engine should be carried out only after the outer cover brackets are securely fastened.
8. When it is necessary to interrupt the operation to disassemble the hydraulic system part, lower the bucket and the bulldozer shovel to the ground and then shut down the engine.

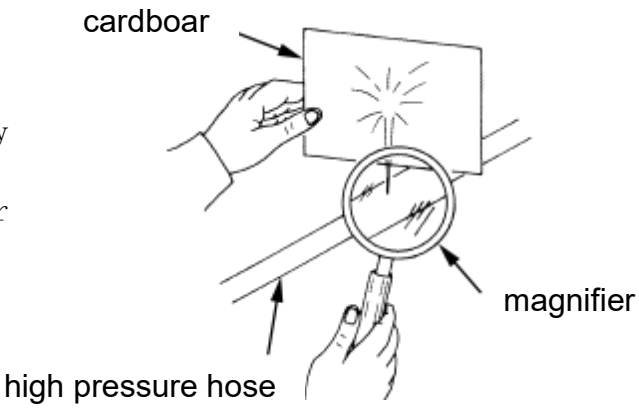
After starting the machine, all equipment and working oil and lubricating oil are at high temperature and high pressure. There is a risk of scalding when the working oil is at a high temperature.

The working oil sprayed out under pressure has the force to penetrate the skin and can cause injury. Also, since plugs or screws flying out can cause injury, disassemble components of the hydraulic system only after the temperature of each part has dropped and the residual pressure has been released. When loosening plugs or screws, do it slowly with your entire body away from the front.

Also, when fuel and oil are leaking under high pressure, be sure to be careful and never bring your hands or face close to the leaking area. It is extremely dangerous to face the leak.

9. Wear protective glasses and use straw board, etc. to help locate leaks from invisible small holes.

Once the oil penetrates the skin, it may cause a more severe allergic reaction, in which case you should see a doctor immediately.



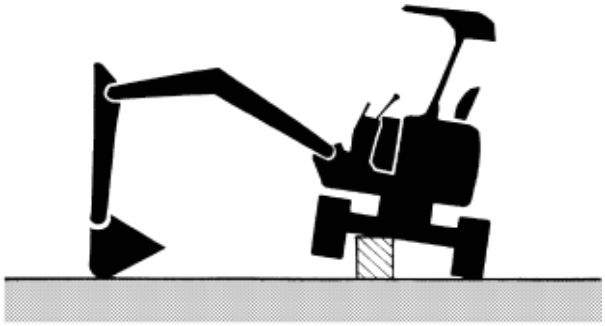
10. Please check, replenish and replace the radiator cooling water only after the engine has cooled down fully.

Immediately after the work is completed, if the Radiator cap becomes loose, steam or hot water will spray out, sometimes causing scalding. Also, loosening the vent plug or plug can sometimes cause scalding by hot water. Also, right after the engine stops, the Muffler remains at a high temperature. Please be careful not to touch it to avoid burns.

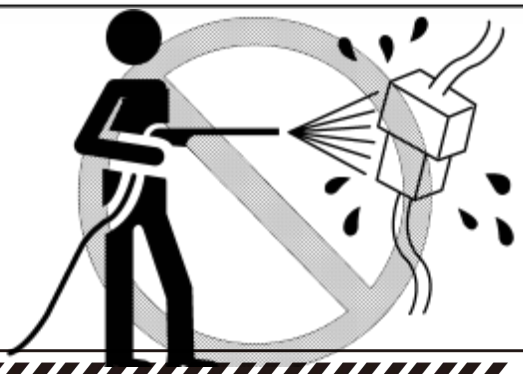
11. When welding directly on the machine body, please To the starter switch to the "STOP" position. Also, during the welding process, do not place components between the welding area and the ground that may cause the cylinder or sealed bearing to be electrified and result in poor conditions, as they generate heat and sparks.

12. Lift the machine with a working device for maintenance and repair

Do not enter the body at this time. If it is necessary to go down, place a safety pad and a safety pillar underneath to prevent a sudden drop. Also, please place the handle lock rod in the locked position.



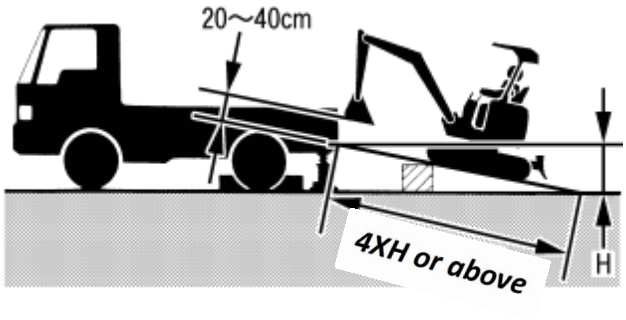
13. If the electrical system gets wet, it may sometimes cause a short circuit or poor operation. Please do not get the electrical installation parts such as the instrument, starter switch, cistern, sensor and connector wet under any circumstances.



Transport Precautions

● Please note: When moving this machine, be sure to use a truck for handling.

1. Please be sure to comply with transportation-related regulations and drive safely.
2. When loading and unloading, park the truck on a flat surface and apply the brakes, and apply the brakes in front of and behind the tires to ensure that the tires do not move, then set up a loading and unloading platform with sufficient strength and width for loading and unloading.



When it is unavoidable to use loading and unloading plates, make sure to use sturdy loading and unloading plates and remove oil or substances that may cause slippage from the plates before loading and unloading slowly.

Face the working device in the direction of travel, hold the bucket rod in a vertical or slightly lifted position to the loading plate, and leave 20 to 40cm of space between the bucket and the loading plate. Use loading plates that are more than four times the height of the cargo box (H).

If the loading and unloading board bends significantly, use a "**bracket**" (support platform) to prevent the loading and unloading board from bending.

Do not use loading and unloading boards for loading and unloading in rainy weather, as loading and unloading boards are prone to slipping and are very dangerous.

In the absence of loading and unloading platforms or loading and unloading plates, please do not load or unload the vehicle by lifting the body with the boom or boom, as it may cause the vehicle to fall and overturn, which is very dangerous. Also, do not adjust the direction on the loading and unloading plates.

3. On the truck, contact and fix the bucket and bulldozer shovel on the truck's cargo box surface, then brake the tracks and fix the body to the truck's cargo box surface with steel wire ropes.

Also, depending on the truck model, some trucks require the bucket to be stored in the truck's baffle and secured with wire ropes, etc. to prevent the bucket from moving.

4. Please do not make sudden starts, stops or sharp turns during transportation. Otherwise, the machine may move or lose its balance, which is extremely dangerous.

(For details, read the "**Trucking**" item carefully before proceeding with the above operations.)

Regular checks should be conducted

In order to use the machine safely and prevent problems before they occur, it is essential to conduct regular inspections. The time recorded in this document is the time indicated by the hour table. When actually inspecting, use this time as the basis and determine the date on a daily, weekly, or monthly basis for maintenance.

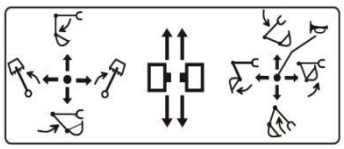
★ The main precautions are listed above for the purpose of preventing errors that are likely to occur during the use of the machine. In addition to this, this article provides a sign for attention in such cases. 

Read carefully and strictly.

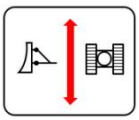
Mark the labels and where they are posted

◆ Safety labels are attached to this machine. Drive with full understanding. This is recorded below. Please read carefully.

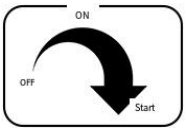
1. Operation



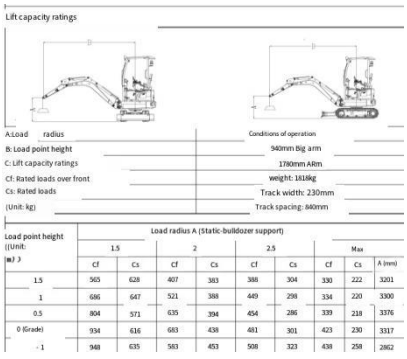
2. Bulldozer operating lever

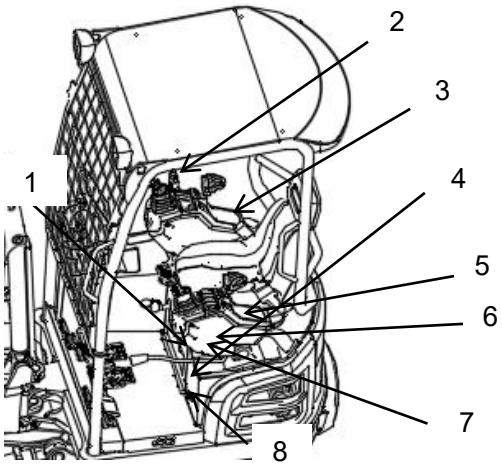


3. Key door

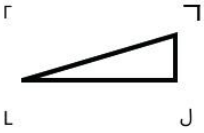


4.R18 calculation sticker





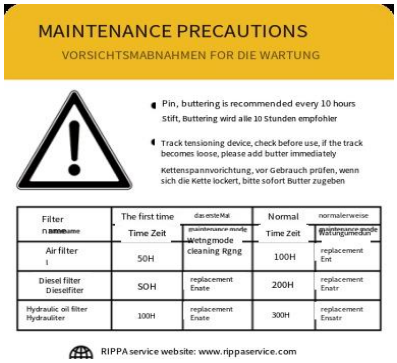
5. Throttle



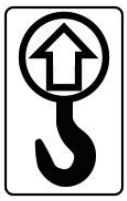
6 Wear ear-protecting gear when operating the

7. Release the operation lock after operating the

8. Maintenance stickers



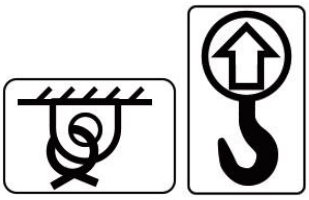
1. Hoisting



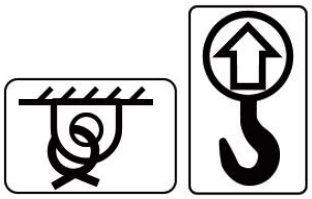
2. Brand models (1)

3. Noise

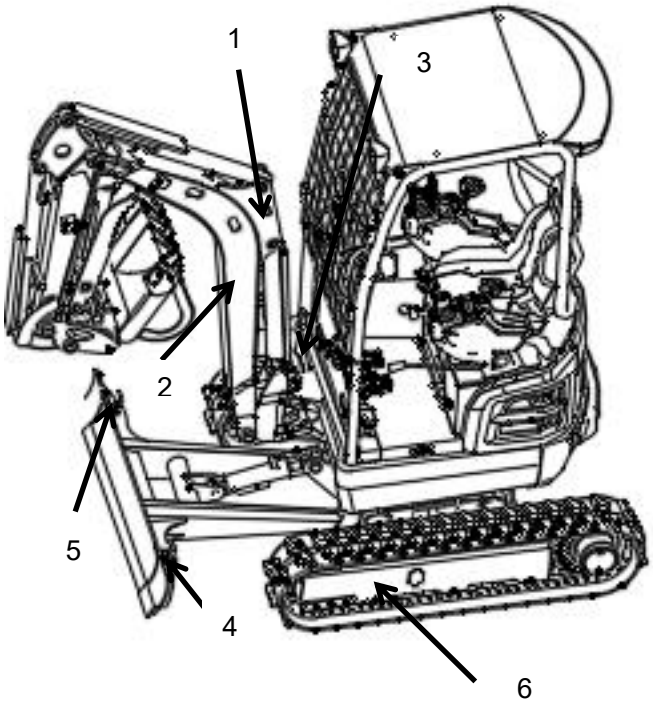
4. Binding transport points, hoisting



5. Binding transport points, hoisting

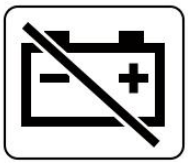


6. Direction



1. Hydraulic tank

2. Power off



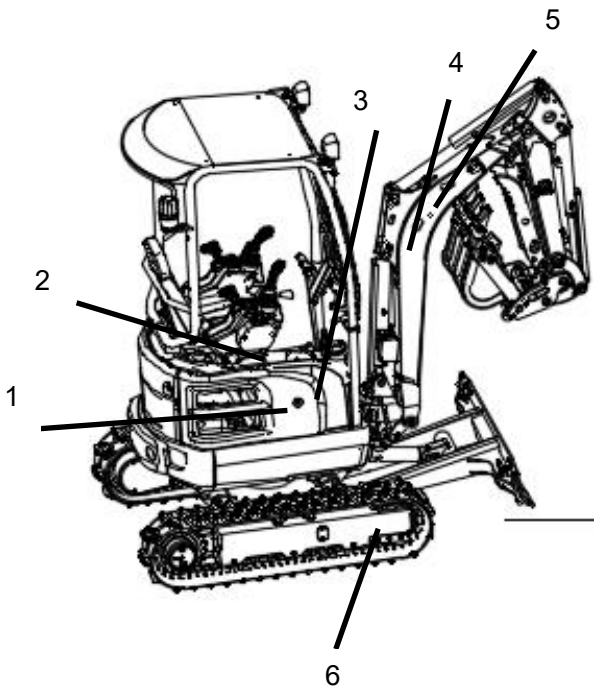
3. Diesel tank

4. Brand model (2)

R18 PRO

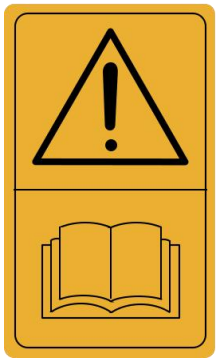
5 Stand strictly at the lower end of the working device

6. Direction

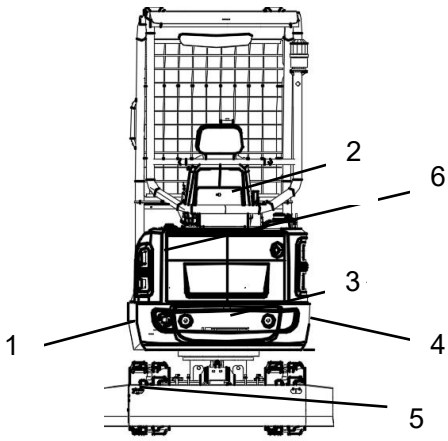


1. No one is allowed to stand within the work area

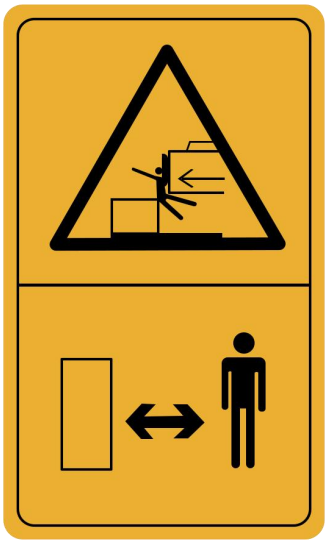
2. Precautions for operation, inspection and maintenance



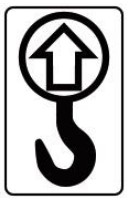
3. Brand model (back)



4 No one is allowed to stand within the work area



5. Hoisting



6.CE
Euro 5
EPA Level 4 emission standards

Label maintenance

1. Labels should always be kept clean and careful not to scratch them.
   If the label is dirty, rinse it with soapy water and then wipe it clean with a soft cloth.
2. If you wash your car with a high-pressure washer, it may cause the label to peel off. Therefore do not rinse the labels directly with high-pressure water.
3 If the label is damaged or lost, order it from the place of purchase and reattach a new label.
4. When applying a new label, thoroughly wipe off any dirt on the surface and reapply it to its original position after it has dried.
5 When replacing a part with a label, also replace the label at the same time.

Regarding maintenance and warranties

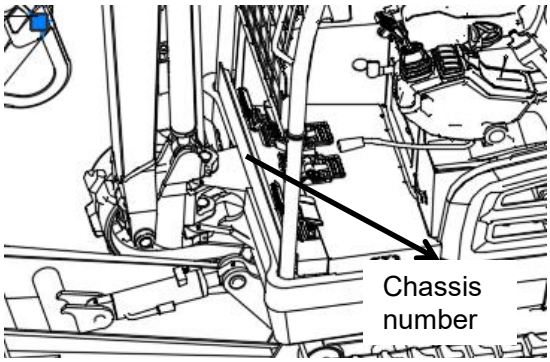
If there is a malfunction during use, or if there is something unclear, or if repair is needed, please contact the store where you purchased the product or the repair shop designated by our company.

Please inform us of the following when contacting

(1) Model name and chassis number

(2) Engine name and engine number

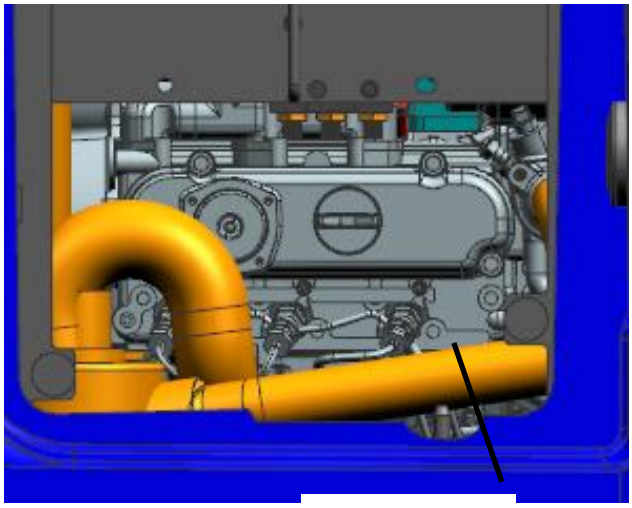
In addition, the sales store has an authentic parts list. When ordering parts, please negotiate with the sales store.

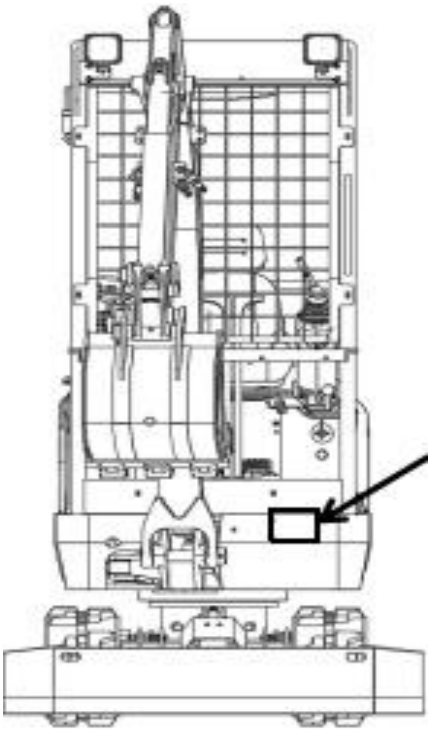


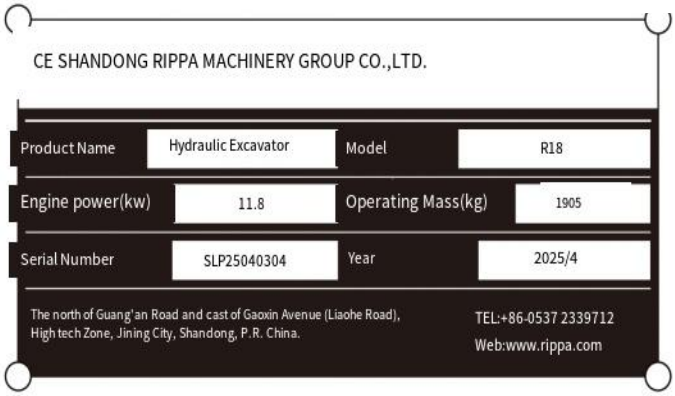
This product is equipped with an electronic key for anti-theft (hereinafter referred to as the anti-theft device), but this device is merely a device to suppress theft and does not guarantee that no theft will occur.

warning

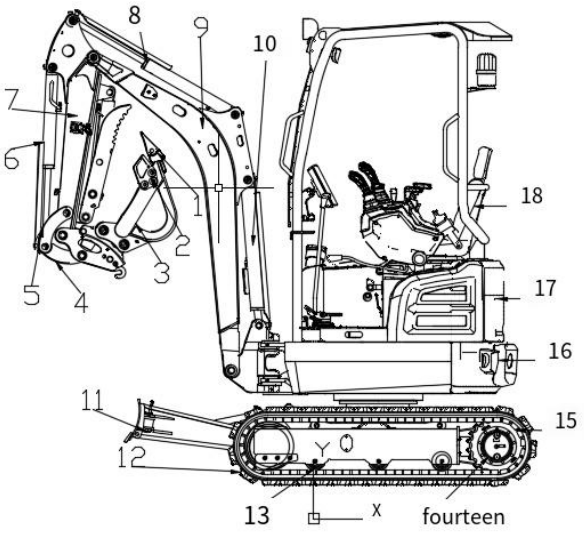
* Modifying the machine will be dangerous. Do not modify the machine. When the purpose of modification or use is different from the correct purpose described in the user manual, it is not covered by the manufacturer's warranty. Therefore, please be aware.

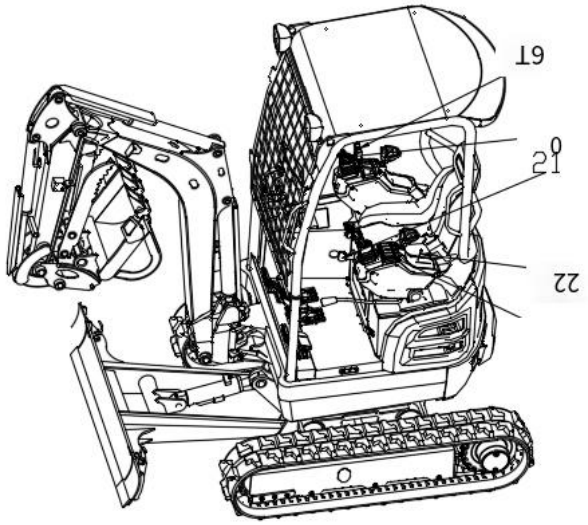






Instructions for each device





Serial numbers	Name
1	Bucket teeth
2	Side teeth
3	Bucket
4	Connecting rod
5	Rocker
6	Bucket cylinder
7	"Bucket rod"
8	Barrel cylinder
9	Boom
10	Boom cylinder
11	Spatula
12	Tracks
13	Support wheels
14	Walking motor
15	Drive sprocket
16	Counterweight
17	Rear guard
18	Seat
19	Bulldozer handle
20	Digging handle
21	Turn on the switch
22	Throttle pull cord
23	Skip work switch

The use of safety devices

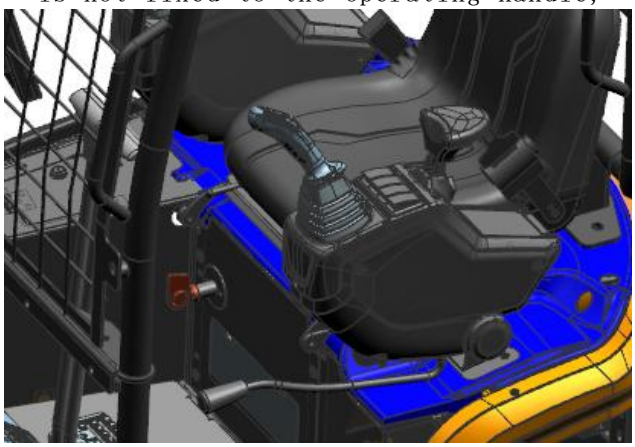
■ Operate the handle lock rod

note

* When parking or leaving the machine, be sure to lower the bucket to the ground and lock the operating handle lock rod. It is dangerous for the working device to fall. Therefore, make sure the lock is in the starting position before getting off. Also, remove the key to prevent others from operating the machine by mistake.

supplement

* The engine does not start when the handle lock rod is not in the "locked" position.
* Even if the operating handle lock rod is not fixed to the operating handle,



supplement

Pull the lock lever of the operation handle on the left, and the working device cannot be operated.
When getting on or off the vehicle, pull the lock lever on the left handle to the maximum position.

* When the handle lock lever is in the "locked" position, the driving handle is mechanically locked and in an unworkable state.

■ Starter switch

"SIARTER SWITCH CONTACT" (Starter switch contact)

The key can be inserted at the position of "SIARTER SWITCH CONTACT" (starter switch contact).

- "START" (Running)

  If you turn one position to the right from the "SIARTER SWITCH CONTACT" (starter switch contact) position to enter the"START" (operation) position, all circuits will be powered on, preheat and glow display.

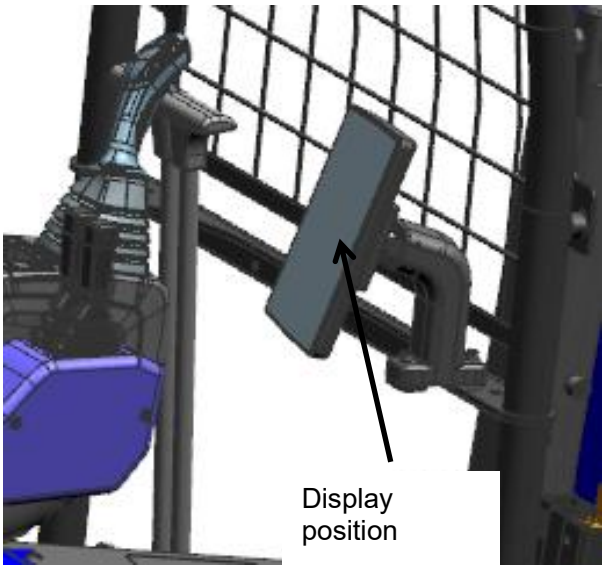
  At this point, the indicator light will be on for about 1 second to perform the light off check.

- "START" (start)

  The lock lever of the operating handle is in the "Locked" position. If the "SIARTER SWITCH CONTACT" (starter switch contact) position is turned one more

■ Electronic display

In the liquid crystal display area of the electronic instrument, gently twist the key to the "START" position



About the use of each device

■ Electronic instrument display area (usually)

◆ Water temperature gauge

note
* If opened during operation or just after the operation has stopped The radiator cap can sometimes be scalded by hot water spurting out. Therefore, do not open the radiator cap until the radiator has cooled down.

Rotational speed

Temperature

At the LCD display part of the electronic instrument, gently twist the key to the "START" (operation) position and release the key to start the display screen. The LCD display device will show the temperature of the cooling water. If the water temperature gauge approaches "H", then

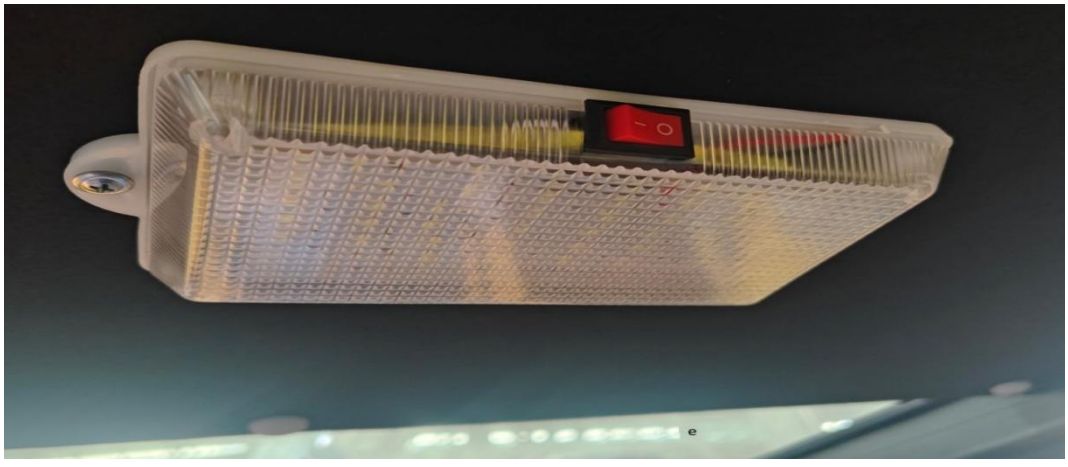
1. Stop working,
2. After leaving the engine idling (about 5 minutes),
3. Stop the engine and perform the following checks (1) to (3).
   (1) Check for the presence or leakage of cool
   (2) The fan belt is loose.
   (3) Whether there is dirt or dust attached to the radiator.

◆ Engine tachometer

* It is not abnormal that the contents of the LCD display are sometimes hard to see clearly due to different viewing angles.

■ Indoor lights

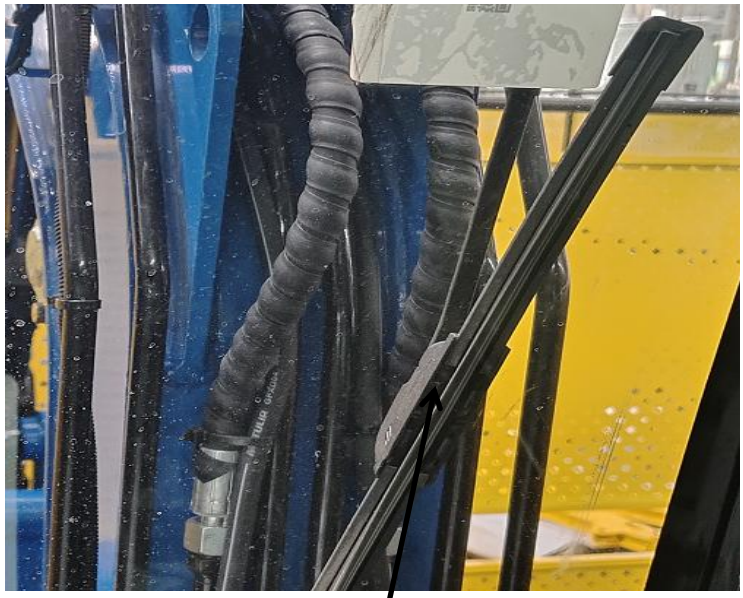
Gently twist the key to the "START" position and release the key, If the switch of the ceiling indoor light is in the on position, the indoor light will light up.



■ Wiper and window washer switch

When the starter key is turned on, if the wiper switch is pressed, the wiper motor will work; if it is pressed further down, the window washer will operate. (Even when pressed to the off position, the window washer still works.)

- Do not use the washer switch when the washer box is empty. Otherwise, the pump will be damaged.
- Dry wiping may damage the glass. So be sure to use the wiper only after spraying the cleaning fluid.
- When it's cold, check the wiper rubber and make sure it's not stuck to the glass before using the wiper. If the wiper works in a frozen state, it may cause the motor to malfunction.



■ Preheater switch

When the starter key is located at "SIARTER SWITCH CONTACT" (starter switch contact)

When in position, turn the preheater switch to the right and the preheating will start.

Seat adjustment

* As the seat is flipped forward while the engine is running
  If it flips over, it may trigger the driving handle and cause the vehicle to move.

warning

So be sure to turn off the engine before flipping the seat forward
Move the engine and put the handle lock lever in the "locked" position.

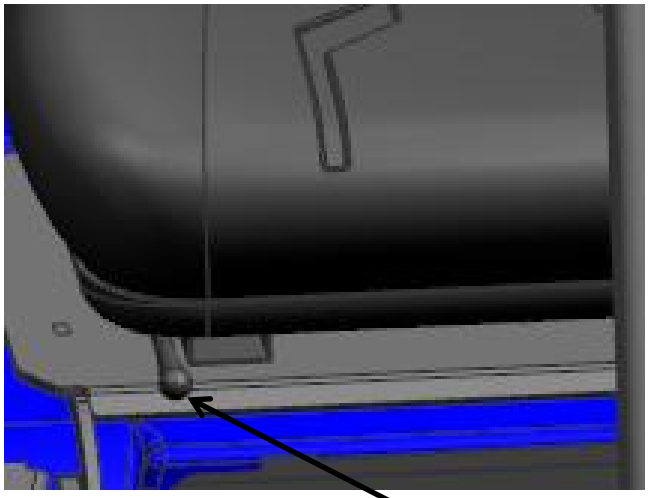
The seat is a seat that can slide forward and backward.

1. Before moving forward, you can adjust the seat adjustment lever at the front of the seat to move the seat forward and backward. Adjust the seat to a position that is easy to operate. Make sure the seat is securely fastened after adjustment.

supplement

* When restoring the seat, make sure the seat is securely fastened through the seat lock bar.

The seat adjustment lever is as shown in the picture below.



Disassembly of the Pedal

1. Rotate the main power switch counterclockwise to remove it.



2. Pull the pedal to the outermost limit position.



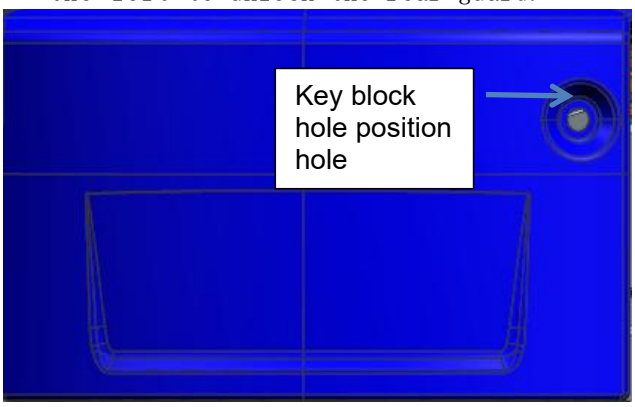
3. Tilt the pedal and take it out from the upper side to complete the disassembly.


The opening and closing of the rear hood

note

* Be careful not to pinch your hands when closing the rear hood.
* After the rear hood is closed, lock it securely.

Insert the start key into the keyhole and turn it to the right to unlock the rear hood. Press the keyhole section and pull the rear hood to the left to unlock the rear guard.



2. When closing, push the rear hood to the right until you hear a "click" to ensure that the rear hood is securely closed.
3. Please turn the start key to the left and lock it.

important

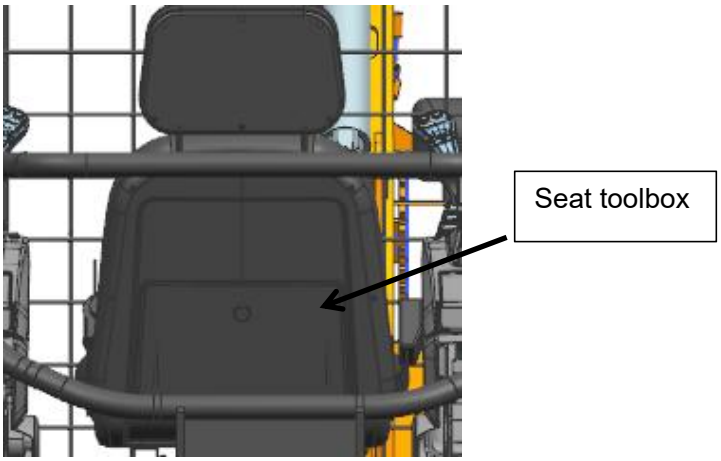
Do not operate the machine with the hood open. Otherwise it may cause damage to the hood.

Toolbox

warning

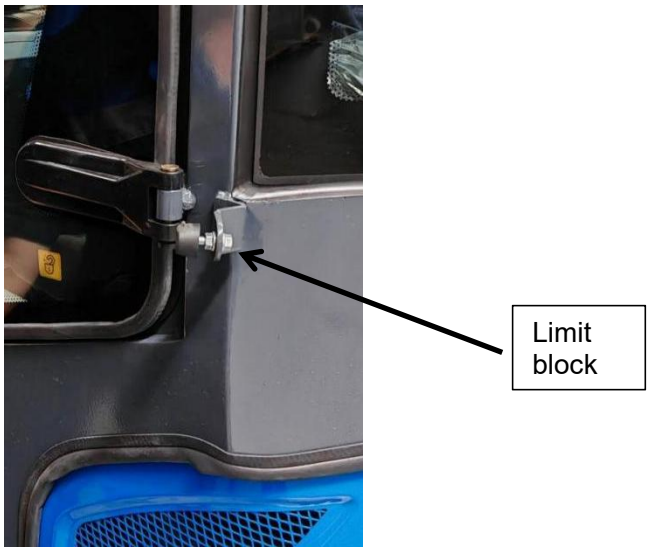
* Push the seat forward while the engine is running
  There is a possibility that the driving handle will be triggered, causing the vehicle to move.
  So be sure to turn off the engine before pushing or pulling the seat forward
  Move the engine and put the handle lock lever in the "locked" position.

There is tool storage space at the back of the seat. When in use, pull the lever at the bottom of the seat and push the seat forward.
Press the press button at the back of the seat an open the cover plate at the back of the seat.



Opening and closing of the cab door

1. When opening the door, use the key to unlock the door lock, hold the handle, and after opening the door, there will be a rubber block to fix the door, open the door to the maximum.

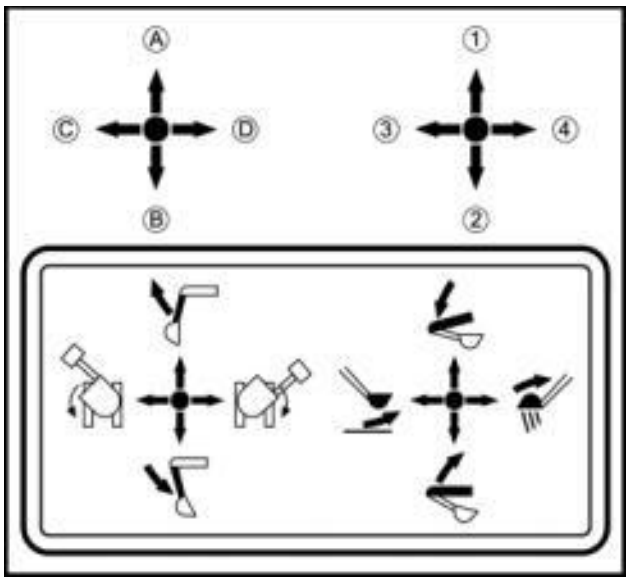


2. When closing, pull the inner handle of the glass door and use the air support of the door and window to slowly close the door

3. Lock the door when you are away from the machine for a long time.

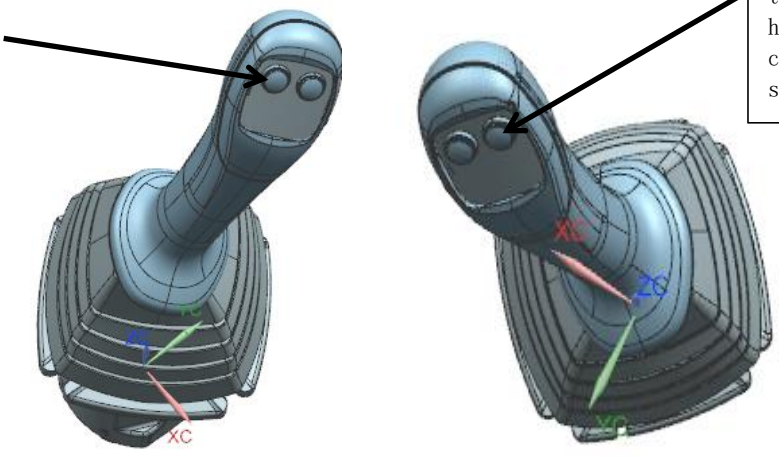
Use of the operating handle

Joystick		Action
Right joystick	1 2 3 4	Lower the arm Raise the boom Retract the bucket Open the bucket
Left joystick	A B C D	Lower the bucket stick Raise the bucket stick Rotate the cab to the left Rotate the cab to the right



Design highlights

(2-position 6-way valve control switch) After pressing the button, move the handle left or right to make the excavator's working device perform a swinging motion. When the button is released, moving the handle left or right will resume control of the excavator's rotation.

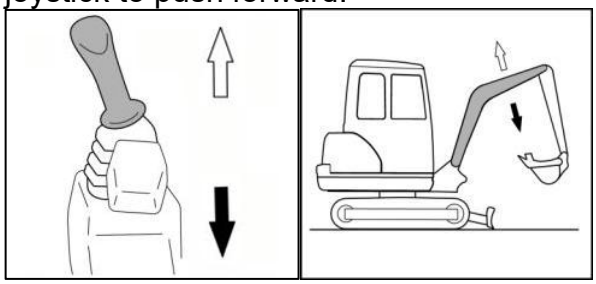


(Horn switch) Press the button to energize the horn for a continuous sound.

The remaining reserved buttons can be developed for new functions and are temporarily set aside.

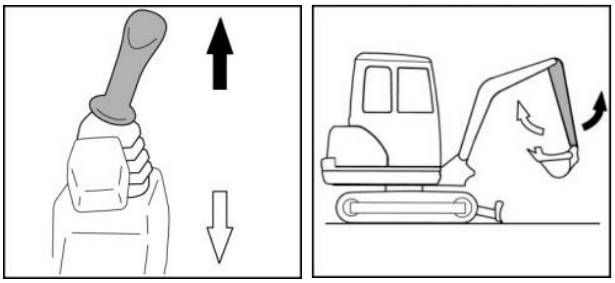
Arm operation

When the excavator is overloaded, always lower the boom until the load reaches the ground. To raise the boom, use the right lever to pull backward. To lower the active arm, use the right joystick to push forward.

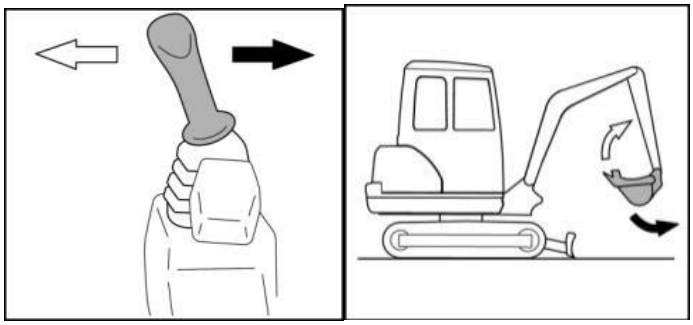


Operation of the boom

To lift the lever, push the left control lever forward. To retract the lever, pull the left lever backward.
Move the joystick as shown in the picture.



Lift the bucket and pull it to the left using the right joystick. To empty the bucket, use the right joystick to push to the right.
When installing the bucket, make sure the bucket teeth don't hit the front panel of the bulldozer.
Move the bucket, as shown in the picture.



■ Throttle knob

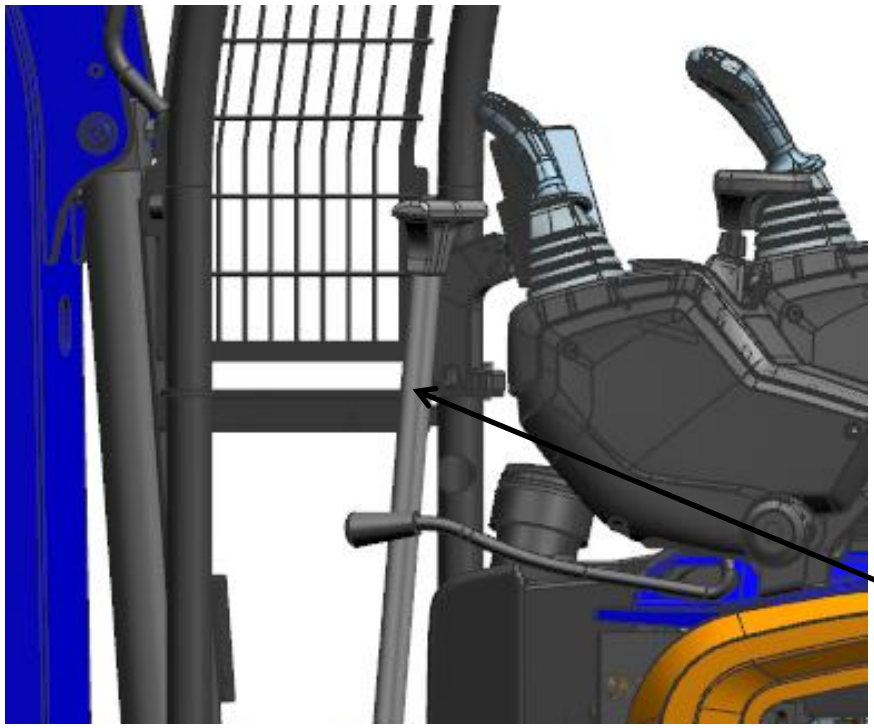
Sit in the driver's seat

If the throttle is pushed to the very bottom (the high-speed side), the engine speed will increase.

2. To turn off the engine, push the throttle all the way down and then set the starter SWITCH to the "SIARTER

Drive handle (right, left)

If sitting in the driver's seat, move forward when both handles are pushed forward and backward when



supplement

* Because of the hydraulic pilot system, the working device can only be operated when the engine is running. To make the bucket touch the ground, please do so after setting the engine to low-speed rotation.
* When getting on or off the vehicle, pull up the operating handle lock bar and make sure it is in the "locked" position.

When the temperature of the working oil is low, the response of the working device to the operating handle becomes sluggish. Therefore, it is essential to carry out warm-up operation.

* During the period when the working oil temperature is low, the operating handle feels slightly heavy, but this is not a fault.
* When disassembling the hydraulic equipment, follow the steps below.
  - Reduce the engine speed to make the bucket touch the ground.
  - Stop the engine and move the handle in all directions.
  - Please wait for more than 10 minutes to release the residual pressure in the hydraulic circuit.

  These steps are extremely necessary to prevent danger.

Inspection before operation

■ Check and replenish the cooling water

note

If it is hit during operation or just after the operation has stopped

When you open the radiator cap, sometimes steam or hot water may spray out and conduct out

Cause scalding. Therefore, turn on the radiator only after it has cooled down

Heat cap.

Please check if the tank is filled with the specified amount of cooling water. If the cooling water is insufficient, add it to the tank.

* When adding cooling water, do not let the water level exceed half the height of the secondary kettle.
* Never add mud water or seawater.
* Under normal circumstances, do not open the radiator cap.

supplement

* Please check the coolant through the radiator while the engine is cooling.
* Long-lasting coolant (mix ratio: antifreeze 50% water 50%) has been added as coolant at the factory.

■ Inspection and replenishment of fuel

note

* Be sure to stop the engine when refueling.
* Never approach a fire source.

D If you are careless...

It may cause a fire.

1. Check with an oil gauge.
2. When the fuel is low, open the fuel tank cap to refill it.
3. The fuel tank cap cannot be opened if the key is not inserted into it.

* Refuel after the job is done until the fuel tank is full, and then securely fasten the fuel tank cap.
* When refueling, make sure the fuel passes through the filter screen of the fuel tank.
*Please be fully careful not to let dust or water mix into the fuel tank.
* The fuel system generally does not get air in unless the fuel tank is emptied. If air is mixed in, please deflate it.

■ Inspection and replenishment of engine oil

1. Please check if the specified amount of engine oil has been filled in.
2. If the oil level is low, fill it up through the filler port.

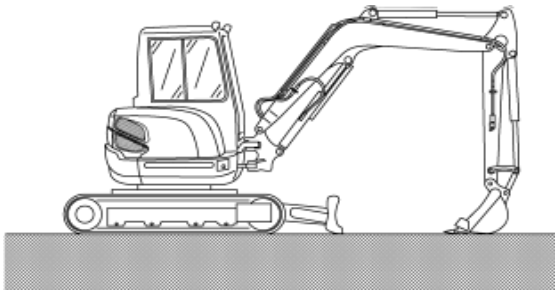
* Use engine oil with the appropriate viscosity depending on the temperature conditions.
* The correct amount of oil cannot be measured right after the engine has just stopped because there is still oil remaining in various parts. Please place the engine in a level state and wait for at least 5 minutes before checking.
* Insert the oil gauge securely after the check.

Inspection and replenishment of working oil

note

* Do not remove the filling port of the working oil tank until the oil temperature has completely dropped. Otherwise, the working oil will spray out, causing burns.

1. Park the machine body in a level place, extend the piston rods of each cylinder to approximately the middle position, and ensure that the bucket and the bulldozer shovel are in contact with the ground.



2 Check at room temperature whether the working oil is in the center of the oil level gauge.
3. If it is in the center of the oil level gauge, it is normal.
4. When the fuel level is low, fill it up through the filler port.
5. When the working oil is mixed with impurities such as water and a complete replacement is necessary, replace it promptly.
6. When replenishing, clean up nearby sand or garbage and be sure to use the same brand of working oil.

Inspection and cleaning of radiators and oil coolers

1. Check if the heat sink is clogged. If it is clogged, blow it with compressed air (or steam). Be sure to wear protective glasses at this point.
2. Also check the radiator hose.
   Replace the hose if it has cracks or becomes brittle, and also check if the clamps are loose.

Inspection and cleaning of the battery, wiring and around the engine

* If the wiring harness and battery (+) wires are damaged, it will conduct
  It can cause a short circuit, so be sure to check.
* If the battery, wiring, muffler or engine
  If there is garbage or fuel around, it may cause a fire
  Disaster, therefore, check before each day of work.

The wrapping of the wiring harness and battery (+) wires comes into contact with the corners of the components and will naturally age due to damage, so please check the following related items.

1. The wiring harness must not be damaged and the clamps must not be loose.
2. The connection parts of terminals and power strips (sockets) shall not be loose.
3. All switches must be functioning properly.

Starting and stopping the engine

Engine starting

warning

* Please be sure to sit in the driver's seat and make sure all levers are in place

Start in the "neutral" position.

D If you're careless...

While the engine starts, the machine will act, causing

It cannot operate normally, which is very dangerous.

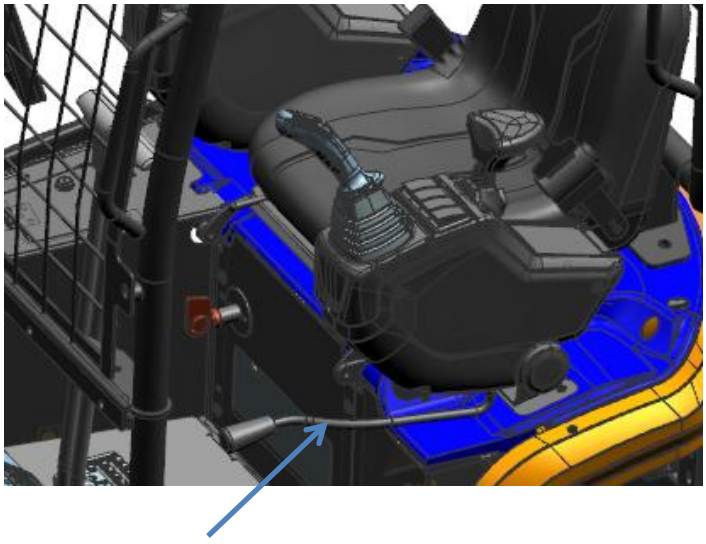
* The engine exhaust contains harmful carbon monoxide, causing poisoning

Dangerous.

Do not in rooms where exhaust gas tends to accumulate or poorly ventilated

Machines are in operation in the premises.

1. Make sure all handles and pedals are in the stop position before operating the switch.
2. Please place the lock lever of the operating handle in the "Locked" position.



3. Insert the key into the switch.

4. Turn the throttle knob to the maximum position on the high-speed side.
5. Rotate the key to the right to the end

6. Release the key after the engine starts. The key will automatically return to the "SIARTER SWITCH CONTACT" position.

important

* As the starter motor consumes a large amount of current, avoid using it continuously for more than 10 seconds. If it fails to start within 10 seconds, stop for more than 20 seconds and then repeat operations 6 and 7.
* If you have a battery, be sure to use a 12V battery when connecting to other batteries with an auxiliary cable, etc. Never use a 24V battery.

■ Starting in cold season

1. Make sure all handles and pedals are in the **stop** position before operating the starter switch.
2 Insert the key into the switch.
3 Turn the throttle knob to the maximum position on the high-speed side.
4. Place the starter key in the running position and keep it there until the display on the LCD screen disappears.
5 Release the key if the engine starts. The key will automatically return to **the (operating)** position.
6. If the engine does not start, please repeat operations 4 and 5.

supplement

*When the temperature of the working oil is low, the response of the working device to the operating handle becomes sluggish. Therefore, it is essential to carry out warm-up operation.
* During periods of low working oil temperature, the handle may feel slightly heavy. This is not a fault.
* When the working oil temperature is low, the automatic idle function may not work, which is not a fault.
*Before the cooling water temperature rises to the specified temperature, the function of increasing idle rotation operates.
* In the case of "Air Conditioning Specifications", set the air conditioning switch to (on).

■ Inspection of all parts

After the engine warms up, please confirm the following items.
- Check if there are any abnormal displays on the LCD display.
- Whether the exhaust color is normal.
- Are there any unusual sounds or vibrations?
- Check for leaks in oil, fuel, water, etc.

◆ Shut down the engine immediately in the following circumstances.

1. The rotational speed drops sharply or rises sharply.
2. Suddenly make an unusual sound.
3. The color of the exhaust gas gets worse.

important

Starting and stopping the engine

■ Precautions in case of overheating

note

If it is opened during operation or just after operation has stopped

The radiator cap can sometimes be scalded by hot water spurting out.

Therefore, do not open the radiator cap until the radiator has cooled down.

Once the cooling water temperature is close to the boiling point (the water temperature gauge shows "H")(what is called overheating), please take the following actions.

1. Stop the operation at a safe location. (Remove engine load)
2. Do not suddenly stop the engine. Instead, let it idle without load for about 5 minutes before turning it off.

3 Please wait for 10 minutes, or move away from the machine while it is emitting steam.

4. After confirming that there is no danger such as scalding, rule out the cause of overheating as described in the "Backhoe Excavator Problems and Solutions" section. Then restart the engine.

Engine stop

warning

* Do not work on the working gear when the engine has stopped

The position and the lifting status of the bulldozer shovel are ignored. Otherwise it will

It will fall slowly due to its own weight and cause an accident.

Turn the throttle knob to the maximum position on the low-speed side and let the engine idle for about 5 minutes to cool it down gradually.

1. Slowly move the operation handles of the left and right working devices and place the working devices on the ground.
2. Stop the engine and then remove the key.
3. Pull up the handle lock lever and place it in the "locked" position.

important

* The bucket should be in contact with the ground before stopping the engine. Do not touch the ground by the weight of the working device.
* The engine cannot stop at times when the throttle knob is in the high-speed position. At this point, be sure to set the throttle knob to the low speed position and then place the key in the (stop) position.

* Set a time interval of 2 seconds after the engine stops before restarting.

The operation of backhoe excavators

Running-in

important

* The first 100 hours of use will determine the lifespan of the machine. Therefore use it with caution.
  Do not apply excessive load, especially in the case of a new car.
  - Keep the load below 50% for more than 50 hours.
  - Keep the load below 70% before 100 hours.

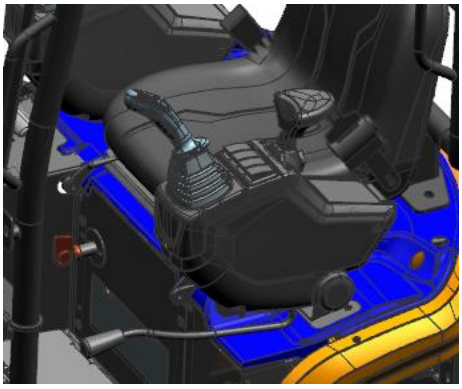
Start, drive

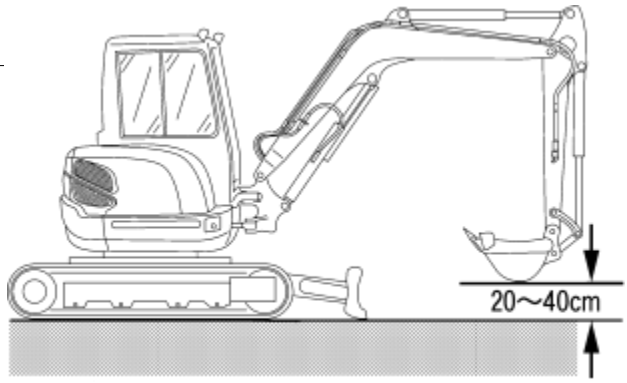
warning

* Make sure you are safe in all directions before starting.
* If the bulldozer is placed at the rear and operated with the handle, the machine will move in the opposite direction of the handle. So make sure the bulldozer is facing forward or backward. (The direction of the bulldozer blade is facing forward)
  D If not carefully confirmed... It will move in the opposite direction and sometimes cause injury incidents.

Please never drive on steep slopes with an Angle of more than 15 degrees.
▶If you're careless... It could cause a rollover, resulting in an injury accident.

1. Press the lock lever of the operating handle to the "release" position and operate the working device so that the bottom of the bucket is 20 to 40cm off the ground.





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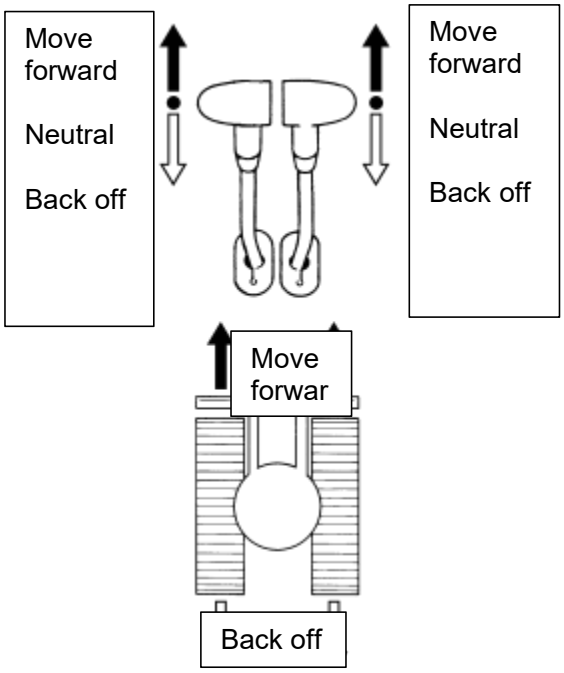
2. Pull the bulldozer operating handle backward to lift the bulldozer.

3. Slowly push the travel handle forward (forward) or backward (backward) to make



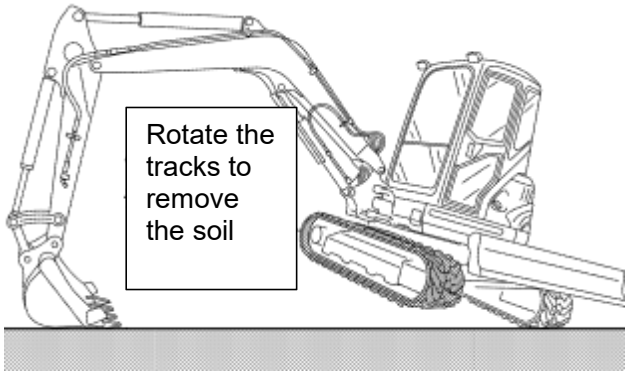
4. Drive at high speed

Increase speed if you press the rabbit button while operating the drive handle.

Pressing the turtle button disaccelerates and returns to normal driving speed.

note

* Do not use the driving accelerator pedal when going uphill or driving on uneven ground if there is a lot of drag.
* When driving on soft ground, if the tracks are clogged with soil and sand, causing them to be abnormally tight and unable to move, it is advisable to use the boom, boom, or bucket to lift one side of the tracks and make them rotate to remove the soil and sand until the tracks rotate smoothly.



Turn

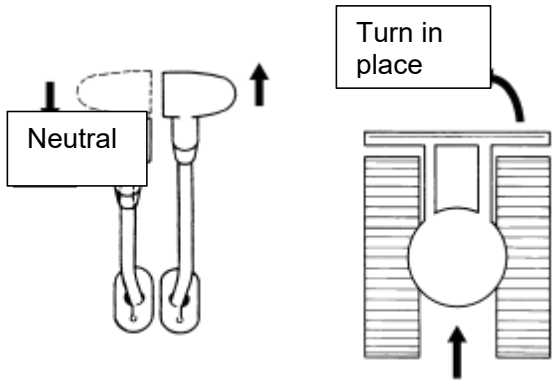
warning

* Do not turn (make a U-turn, etc.) when driving on a steep slope.
Then there will be a risk of overturning. Please perform the To on a flat ground
* Turn towards.
Please make sure there is no one around before turning.
* Under no circumstances should you make a turn in place or a circular turn; it should be unobstructed
Turn by increasing the number of zigzag turns.
▶If you're careless...
It can lead to injury accidents.

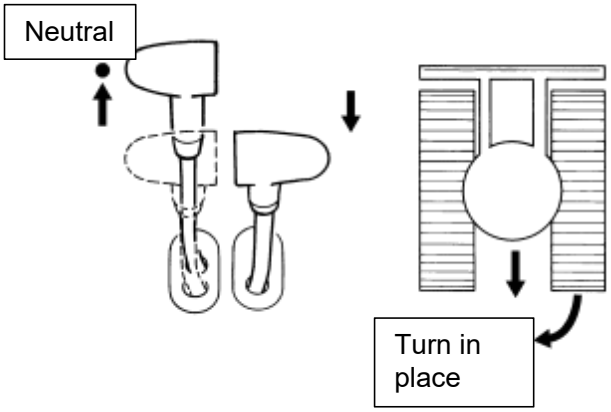
The following is an explanation of how to operate when the bulldozer is in front.

■ Turn while driving (turn in place)

When moving forward, if the left (right) driving handle is placed in the neutral position, then turn left (right).

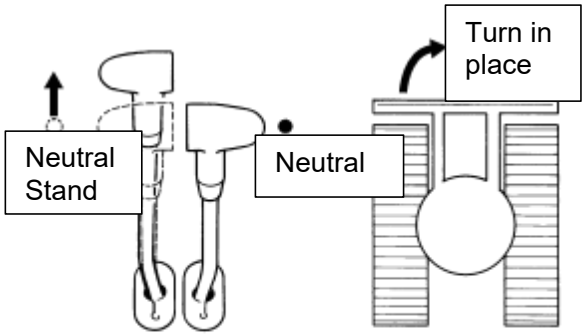


When reversing, if the left (right) driving handle is placed in the neutral position, then turn left (right).

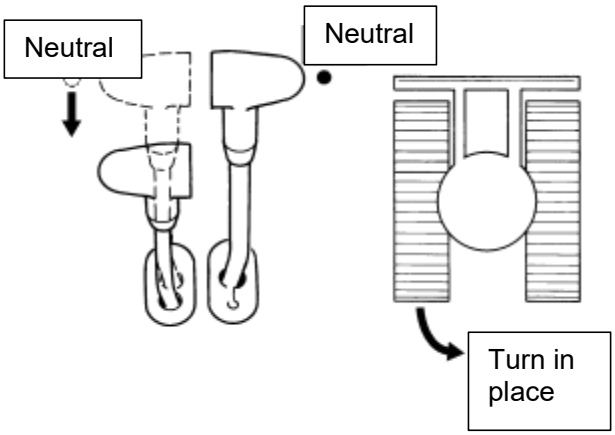


■ Steering at stop (in-place steering)

If you operate the left (right) drive handle forward, you will turn right (left).

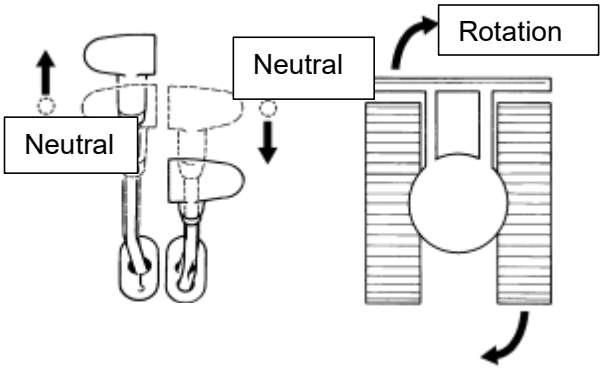


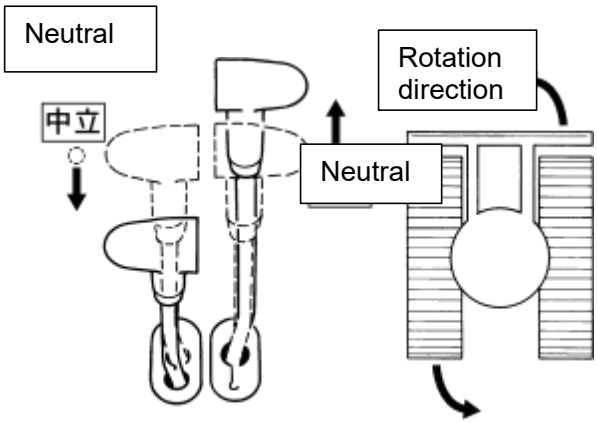
2. If you operate the left (right) drive handle backward, you will turn right (left).



■ Turn and turn

If you operate the left (right) drive handle forward or backward, you will To right (left) on the spot.



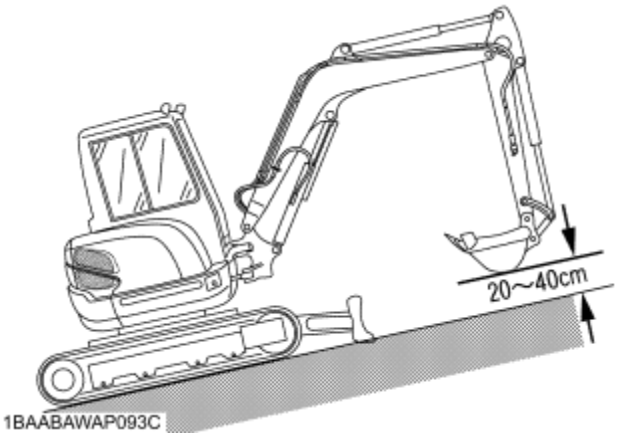


Up and down ramps

warning

* When driving on inclined sections, please make sure to keep the rotating frame in contact with the vehicle
  The frame is parallel to each other.
  ▶If you're careless...
  Then it is possible to rotate in the opposite direction, causing the vehicle to overturn
  An injury accident.
* When going uphill, lift the bucket so that the lower part of the bucket is off the ground
  Wait 20 to 40cm ahead before driving.
* When going downhill from a steep downhill ramp where tracks are prone to slipping, please
  Lower the bucket to the ground, allowing it to slide down while going down
  Let's go When going downhill from a not-steep slope, please hold the bucket
  Place it at a height that makes immediate contact with the ground.
* When going up or down slopes, adjust the throttle knob to drive slowly.
  * When going up or down slopes, set the automatic idle switch to "OFF". (Lights off) position.
  ▶If you're careless...
  The engine speed will change, which may cause damage
  Accident.

When going uphill



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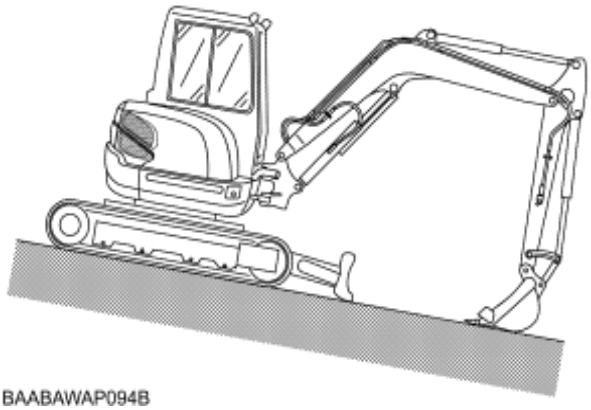
When going downhill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Vehicle parking on sloping sections

warning

* Parking on a slope is dangerous. So please don't

Park your vehicle on a slope.

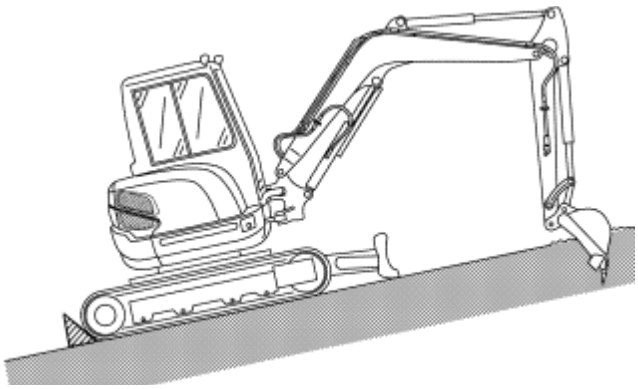
If you have no choice but to park your vehicle on a slope, please park

Insert the bucket into the ground and place all handles in neutral

Then apply the brake.

▶If you're careless...

The machine may slip and cause injury accidents.



Stop

1. Please park the machine on a flat, solid ground. Keep the bucket pole upright and lower the bucket to the ground.
2. Please turn the throttle knob back to the maximum position on the low-speed side and let the engine idle for about 5 minutes to gradually cool down the engine.

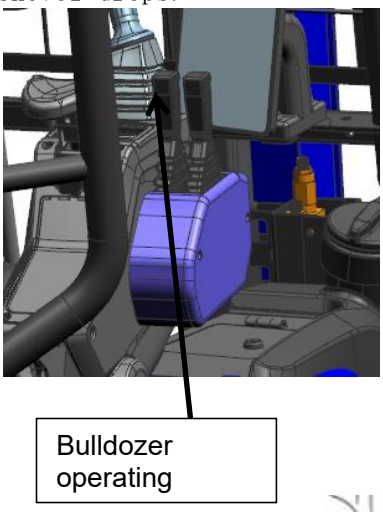
3 Place the starter key in the "STOP" position, turn off the engine, and then remove the key.

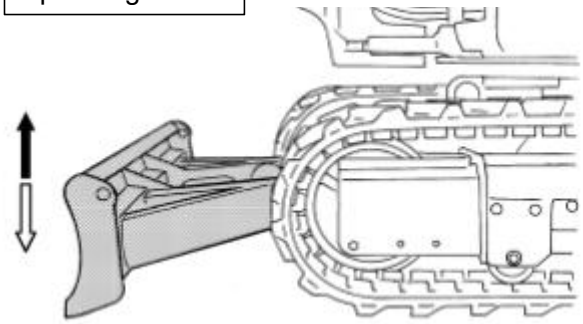
4 Pull up the handle lock bar and place it in the "Lock" position.

5. When leaving the machine, please close all the covers and lock the door.

Bulldozer operation

When you pull the handle of the bulldozer shovel backward, the bulldozer shovel rises; when you push it forward, the bulldozer shovel drops.



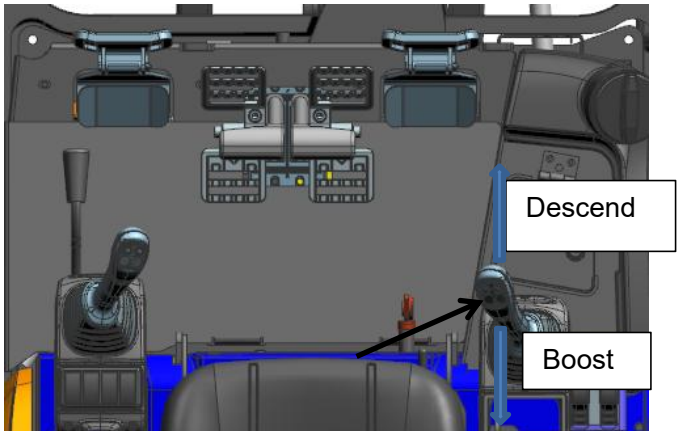


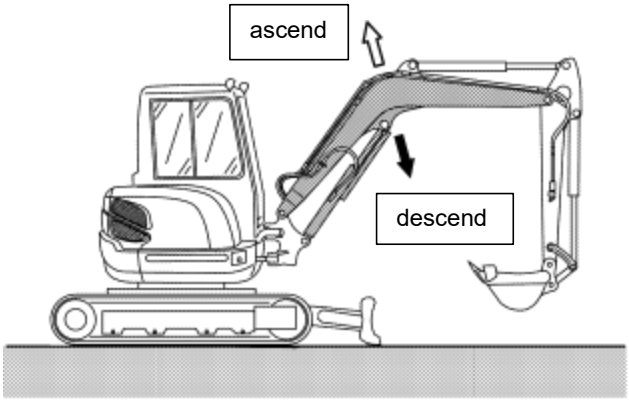
When performing the bulldozer operation, operate the two travel handles with your left hand and lift the bulldozer with your right hand.

Boom operation

Arm lift... Pull the right working device operating handle backward. The boom descends... Push forward the right working device operating handle.

To reduce soil drop in the bucket, a buffer structure is used at the lifting end of the boom.
When the working oil temperature is relatively low (such as shortly after the engine starts, etc.), the buffer time may sometimes be longer than the usual operation time.
This is due to the viscosity of the working oil and is not an anomaly.





supplement

* When "lowering the boom", be careful not to let the bulldozer blade collide with the boom cylinder, nor let the teeth of the bucket catch the bulldozer blade.

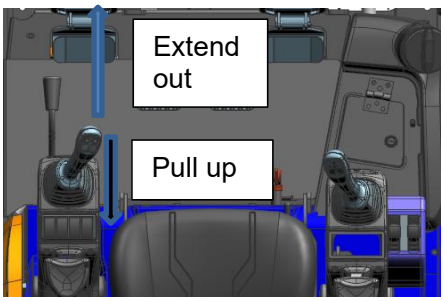
Boom operation bucket operation

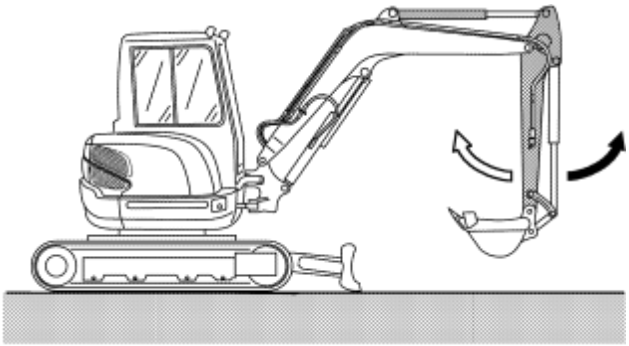
The bucket lever is pulled up... If you pull the left working device operating handle backward, then pull the bucket rod forward. To reduce the amount of soil falling from the bucket, a buffer structure is used at the extended end of the bucket rod.

The boom extends out... Push the left working device operating handle forward and the bucket stick will extend out.

important

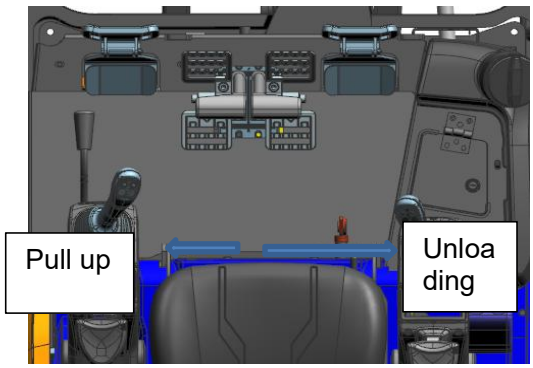
* When pulling up the lever, sometimes the action stops instantly if the lever is facing straight down. This is not a fault.

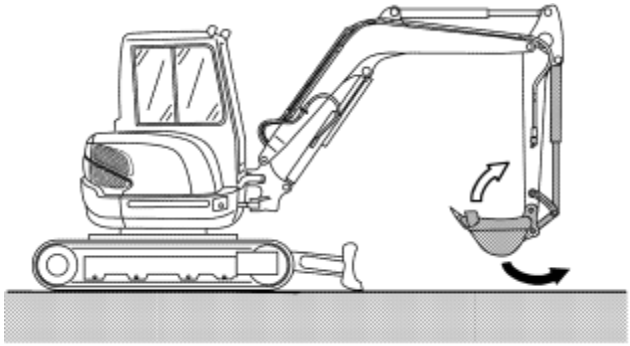




The bucket pulls up... Pull the right working device operating handle to the left.

Bucket dump... Turn the operating handle of the right working device to the right.





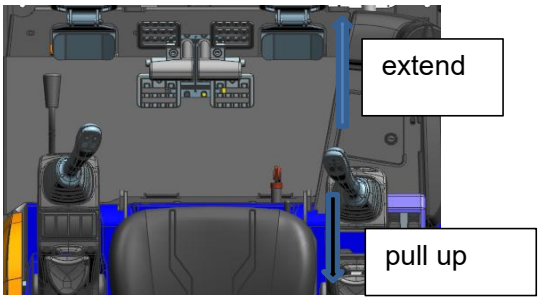
Stick operation (reverse hand)

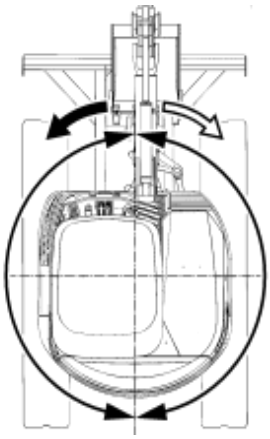
Stick retraction If the left working device operating handle is pulled backward, the stick will be drawn toward the operator. To reduce soil spillage from the bucket, the extending end of the stick is equipped with a buffer structure.

Stick extension Pushing the left working device operating handle forward extends the stick.

important

* When retracting the stick, if the stick is facing directly downward, the movement may stop momentarily. This is not a malfunction.

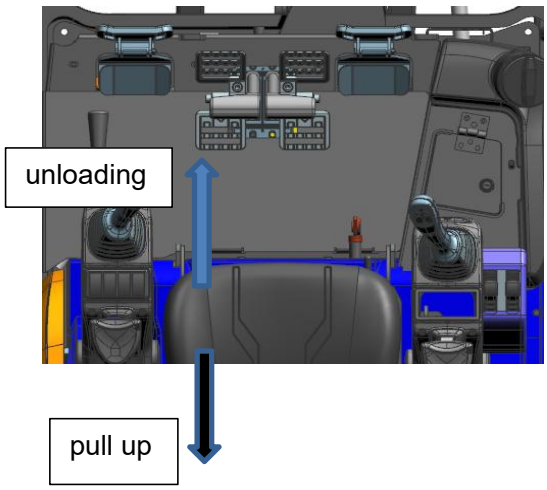


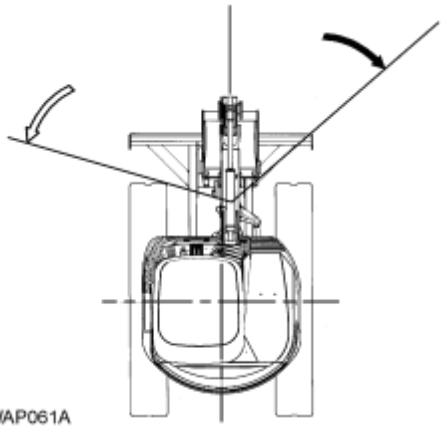


Boom operation (reverse hand)

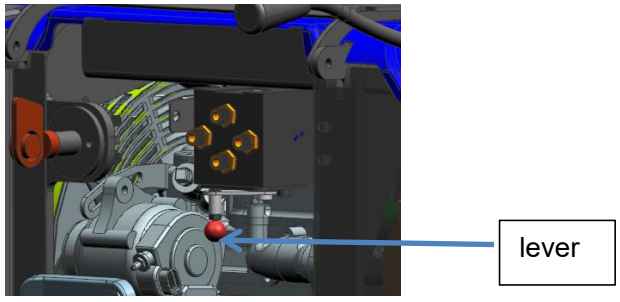
Boom lifting Pull the right working device operating handle to the left.

Boom extending Move the right working device operating handle to the right.





Forward/Reverse Control Switching Device (Forward/Reverse Switching Valve): Toggle the lever to the right to switch to the reverse state. When the lever is in the left position, it is in the normal passage.



Rotation operation

warning

* Do not perform rotation operations on inclined sections, otherwise it may tip over

The vehicle is dangerous. It is inevitable to perform operations such as rotation on inclined sections

When working and digging, please level the ground

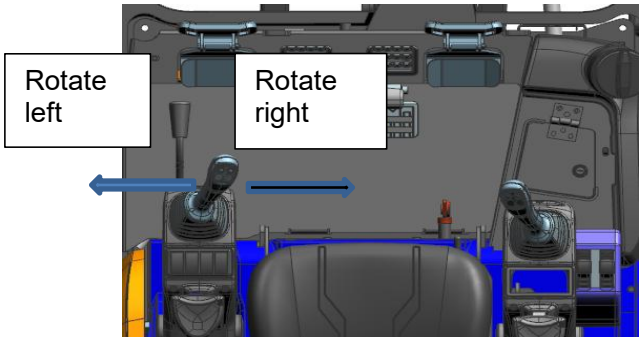
Proceed with the work.

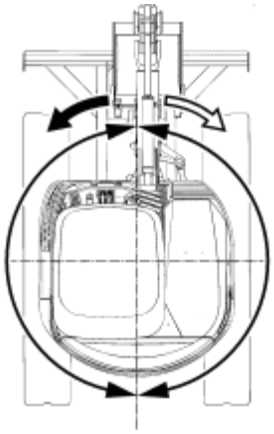
▶If one is careless...

It could cause a rollover, resulting in an injury accident.

The rotation operation can be carried out by using the operation handle of the left working device.

Rotate left... Turn the left working device operating handle to the left. Rotate right... Turn the left working device operating handle to the right.





important

Rapid rotation and reverse rotation will shorten the service life of the machine. Do not perform such operations.

Swing operation

warning

* Do not press the button to swing when you are not performing the swing operation

Lock the swing.

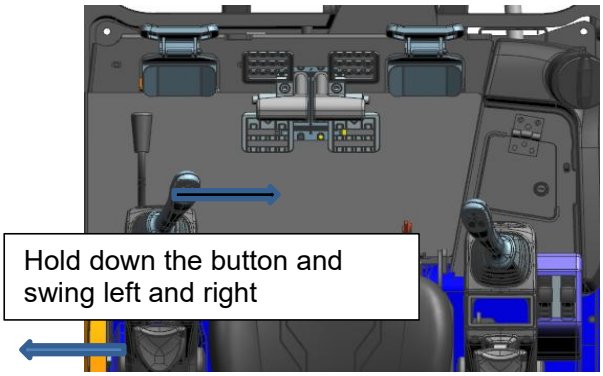
▶If you're careless...

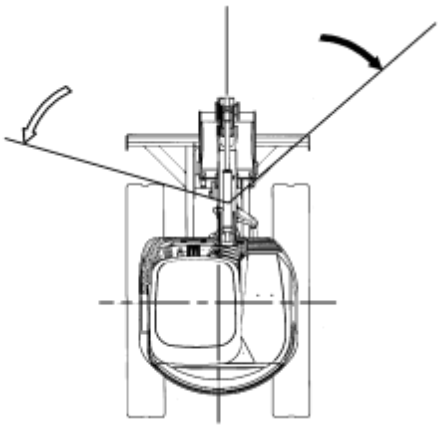
There is a possibility that the machine will go in the opposite direction due to misoperation

Swinging can cause injury accidents.

The swing lever can be used to swing the boom left and right. Swing left... Press the left button on the left lever while swinging the lever to the left.

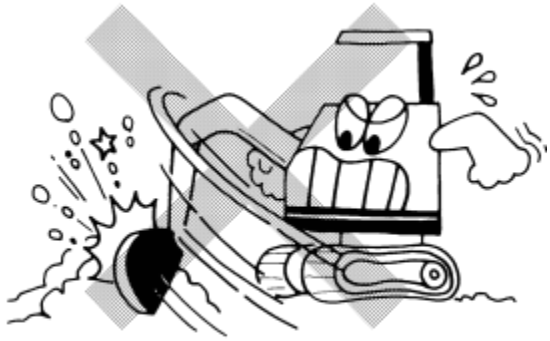
Swing right... While pressing the left button on the left lever, swing the manipulator lever to the right.



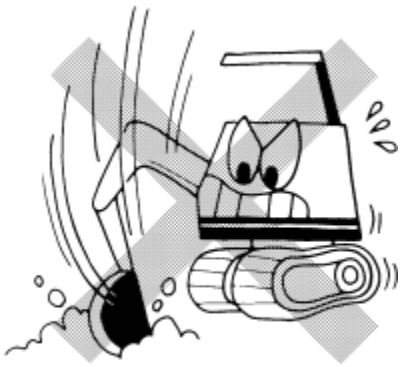


No operation allowed

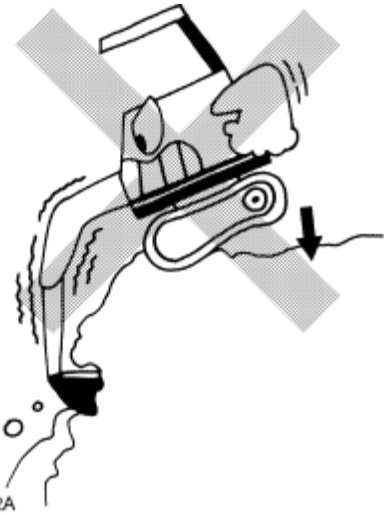
1. It is prohibited to use rotational force for operations. (Using a bucket for lateral push operations, etc.)



2. Do not use the falling gravity of the bucket for operations. (Using the bucket for pile driving, etc.)



3. Do not use the falling gravity of the main body for operations. (Using the falling force of the machine body for digging operations, etc.)



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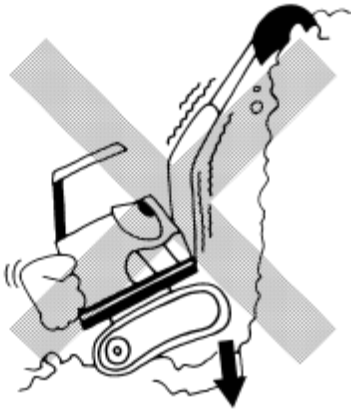
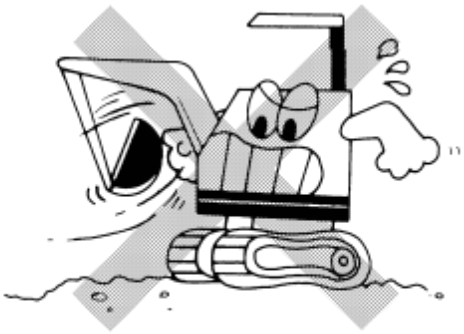


4. Do not use walking force for work. (Insert the bucket into the ground for driving, etc.)

5. Remove soil from the bucket. (Do not remove soil by hitting the end of the bucket)



Operation precautions

1. Pay attention to the bulldozer shovel.

When digging deep in front of the bulldozer, be careful not to let the boom and boom cylinder collide with the bulldozer.

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2. Pay attention to the folding of the working device!

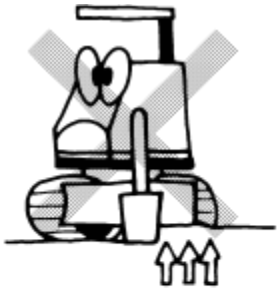
When folding the working device while in motion or transport, be careful not to let the bucket collide with the bulldozer.

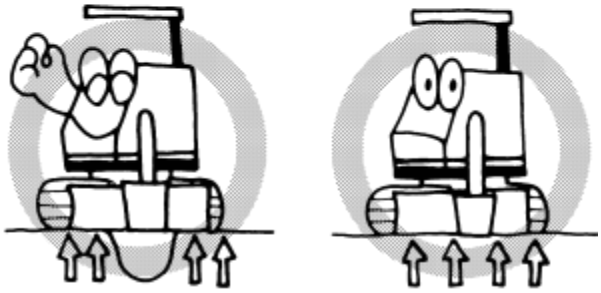
3. Be careful of the collision of the bulldozer blade!

Do not let the bulldozer shovel hit the rocks. Otherwise, it will cause premature damage to the bulldozer shovel and cylinder.

4. When using a bulldozer to support, do it on both sides simultaneously!

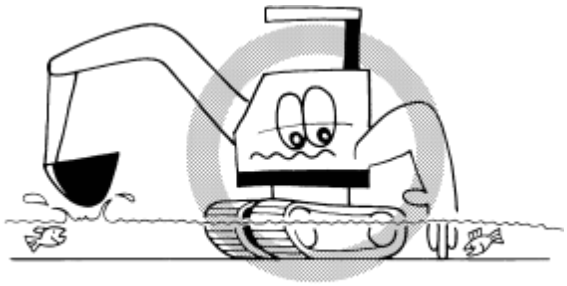
When using a bulldozer as a support foot, do not use only one side of the bulldozer for support.





5. Pay attention to the allowable water depth!

When operating in water, after confirming that all plug, plugs, etc. are tightened, use it within the depth range to the upper part of the track in the idling section.



important

* After the operation is completed, be sure to remove the dirt and rinse thoroughly, then apply grease to the fulcrum area, etc.
* After finishing work at the seaside, wash your car especially carefully to remove salt from it. Maintain the electrical components thoroughly to prevent corrosion of the mechanical parts.

warning

* Choose a truck that fits the weight and size of the machine and does not exceed it
  Load.
  D If one is careless...
  When loading, the driver's seat of the truck will float upwards, causing problems during transportation
  A safety hazard.
* Please securely hook the loading and unloading board onto the truck's cargo box surface
  Up. Also, wet loading and unloading plates will slip. Especially wood
  When making loading and unloading boards, be careful not to slip.
  D If you're careless...
  There is a possibility of injury accidents due to falls and flips.
* Do not use loading and unloading platforms or loading and unloading boards under any circumstances
  Loading should be done by lifting the machine body with the boom or the bucket rod
  Loading and unloading operations.
  D If you're careless...
  There is a possibility of injury accidents due to falls and flips.

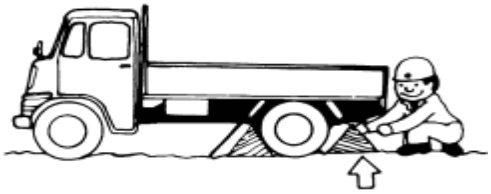
Please be sure to comply with the Road Traffic Safety Law, the Road Transport Vehicle Law, the Vehicle Restriction Order and other relevant regulations during transportation.

Loading and transporting

note

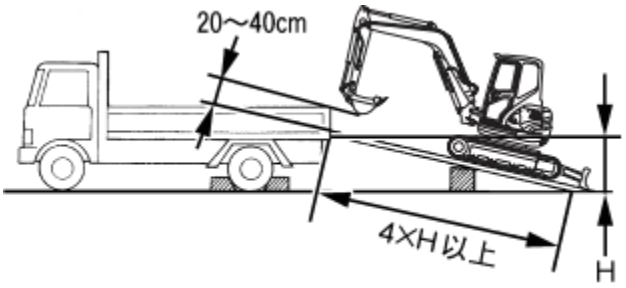
* If loading is carried out while the boom remains extended, it will
  The counterforce resulting from the offset of the center of gravity of the machine will damage the card "Car.

1. Engage the brakes of the truck and brake in front of and behind the tires to ensure that the tires do not turn.

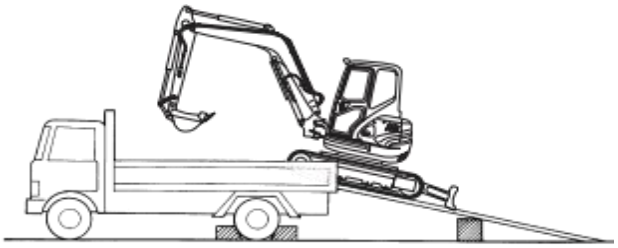


1BAABAUAP081A

2. Set up a loading and unloading platform with sufficient strength and width before loading.
3. When it is unavoidable to use loading and unloading plates, work on a flat and solid site. The loading and unloading plates used should have sufficient strength, width and length, be parallel to the left and right, and be aligned with the tracks. Also, the length of the loading and unloading plate should be more than four times the height (H) of the truck's cargo box surface. In addition to using loading and unloading plates with hooks to prevent them from detachering from the truck, check for cracks in all parts before use. Also, place support platforms under the loading and unloading plates to prevent them from bending.
4. When loading the machine onto the truck, the working device should face the direction of travel (upper side), the bucket rod should be perpendicular to the loading plate or slightly pulled up, and the bucket should be 20 to 40cm in height from the loading plate.



5. Before moving this machine into the truck compartment, please temporarily stop in the state shown below, allow the bucket to gently touch the truck compartment surface, and then move forward slowly. Then, keep the vehicle body in a horizontal position.



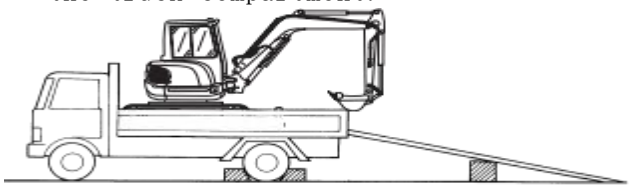
6. It is extremely dangerous to adjust the direction on the loading and unloading board. If you must adjust the direction, be sure to get off the loading and unloading board first, adjust the direction, and then get on the loading and unloading board.
7. After moving forward to the designated position on the truck's cargo box surface, slowly rotate the upper rotating body 180 degrees while the boom is lifted, and pay attention to the balance of the vehicle.
8. Lower the bucket onto the truck compartment, stop the engine, and place the operating handle lock lever in the "locked" position.
9. Secure the machine firmly to the truck bed with wire rope, etc.

supplement

When loading onto the truck, the total height should not exceed acertain level. If it exceeds a certain height, permission must be obtained from the local transportation department.

Unload from the truck

1. With the working device facing the direction of travel, move forward to the loading and unloading board while the boom is perpendicular to or slightly pulled up to the surface of the truck compartment.

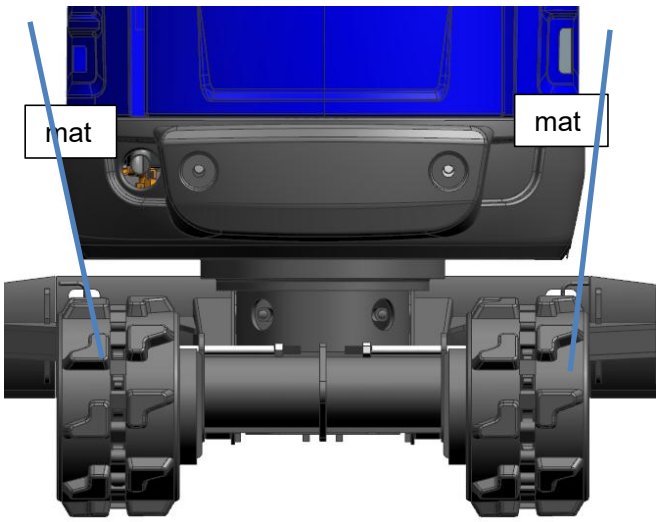


2. Stop the machine before moving to the loading plate, allowing the bucket to gently touch the ground or the loading plate, and then move forward slowly to prevent the center of gravity of the machine from moving too fast.
3. Stop the machine when about half of the entire track is out of the truck's cargo box, slowly lift the boom, and load the machine onto the loading plate.
4. Move the bucket forward after it has gently touched the ground and lower it off the loading and unloading plate. At this point, be careful to protect yourself from damaging the road.

Machine hoisting

note

* Do not lift when there are people in the vehicle. It is dangerous.
* The wire rope used for lifting should have sufficient strength relative to the machine.
* Do not use round bars when lifting. This is dangerous, so do not lift with a wire rope tied to a round bar.



Follow the instructions below when lifting the machine body.

1 Rotate the upper rotating body so that the bulldozer blade is 180 degrees opposite to the working device.
2 Lift the bulldozer to the highest position.
3. Raise the boom to maximize the pulling of the bucket and boom. Then place the operating handle lock lever in the "locked" position.
4. Without swinging the boom, place the swing pedal in the center position, close the pedal cover, and stop the engine.
5 Place pads around the boom corners and attach wire ropes. Also, as shown in the picture, add pads and hang wire ropes at the bulldozer shovel.
6. Keep the lifting Angle of the steel wire rope at 55 degrees and carry out the lifting.

supplement

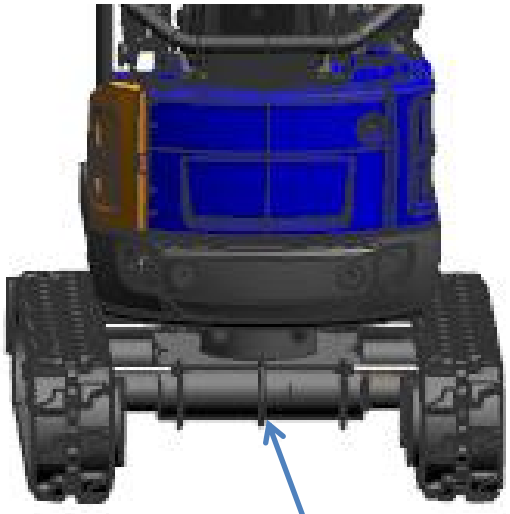
* Pay attention to the center of gravity position when lifting to maintain full balance.
* When lifting, do not swing the boom or rotate the upper part.

Main towing method

note

* The wire ropes, slings and hooks used should have sufficient strength
  Strength.
  Also, make sure there are no breaks or turtles before use
  Crack.

In an emergency where the machine is stuck in the mud and cannot be pulled out, use wire ropes, slings, hooks and loops as shown in the diagram to pull the machine out of the mud.



Pass through here with a sling

* When refueling and maintaining,
1. Place the machine on a flat and spacious surface
2. Lower the bucket and the bulldozer to the ground
3. Turn off the engine
4. Confirm whether the working device lever and the bulldozer lever have released residual pressure
5. Remove the key and confirm safety before proceeding with the work

Regarding the

Do not casually discard or burn waste, or you will not only cause environmental pollution but also be punished by law.
When disposing of waste
* Collect the waste liquid discharged by machinery into containers.
* Do not pour waste liquid into drains, rivers, lakes or oceans.
* When disposing of or burning waste oil, fuel, cooling water (non-freezing), refrigerants, solvents, filters, batteries, rubber, and other hazardous substances, consult with the sales store or industrial waste disposal unit so that they can be disposed of in accordance with the specified rules.

Regular checklist

No.	Period / Project		Quantity	The hour chart shows the time															After that
	Project			50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
1	Fuel	Drainage	1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Every 50 hours
2	Battery electrolyte	Check	1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Every 50 hours
3	Rotate the root surface of the bearing tooth	Add grease	1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Every 50 hours
4	Engine oil	Change	1	◎					○					○					○	Every 250 hours
5	Oil filter element	Replace	1	◎					○					○					○	Every 500 hours
6	Driving motor oil	Replace	2		◎										○					Every 500 hours
7	Fan belt	Check and adjust	1				○				○				○				○	Every 200 hours
8	Air filter element	Cleaning check	1				○				○				○				○	Every 200 hours
		Replace	1																	Every 1000 hours or every year
9	Rotate the ball part of the bearing	Add grease	1				○				○				○				○	Every 200 hours
10	Radiator hoses and clamps	Check	24				○				○				○				○	Every 200 hours
		Replace	24																	Every 2 years
11	Working oil return oil filter ☆ Protective filter ☆	Replace	1					◎										○		Every 500 hours
12	Fuel filter element	Replace	1										○							Every 500 hours
13	Working oil ☆	Replace	1																	Every 1000 hours
14	Working oil suction filter	Replace	1																	Every 1000 hours
15	Hydraulic pilot filter	″Clean	2																	Every 1000 hours or every year
16	Hydraulic pilot filter	Replace	1																	Every 1000 hours
17	Grease for idler wheels and support wheels	Replace	8																	Every 2000 hours
18	Alternator, starter motor	Check	–																	Every 2000 hours

No.	Project	Period	Quantity	The hour chart shows the time															Since then
				50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
19	Electrical wiring, Use of fuses	Check	—																Every year
20	Cooling water	Replace	1																Every 2 years

(1) ◎ symbols indicate only initial implementation.

(2) The ☆ symbol indicates that the replacement time will be shortened when using hydraulic front-end working devices such as breakers.

[Air Conditioning specifications]

No.	Project	Period	Quantity	The hour chart shows the time															Since then
				50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
1	Air conditioning belt	Check	1				○				○				○				○	Every 200 hours
2	Internal air filter ☆	Cleaning	1				○				○				○				○	Every 200 hours
		Replace	1																	Every 1000 hours
3	External air filter ☆	Cleaning	1				○				○				○				○	Every 200 hours
		Replace	1																	Every 1000 hours
4	Air conditioning condenser	″Clean	1				○				○				○				○	Every 200 hours
5	Air conditioning piping and hoses	Check	4																	Every year
		Replace	4																	Every 2 years
6	Refrigeration gas	Check	—																	Repair on demand

[Cooler specifications]

No.	Project	Period	Quantity	The hour chart shows the time															After that
				50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
1	Cooler belt	Check	1				○				○				○				○	Every 200 hours
2	Cooler filter ☆	Check	1				○				○				○				○	Every 200 hours
		Sweep	1				○				○				○				○	Every 200 hours
3	Cooler condenser	Cleaning	1				○				○				○				○	Every 200 hours
4	Cooler piping and hoses	Check	4																	Every year
		Replace	4																	Every two years
5	Refrigeration gas	Check	—																	Repair on demand

☆ If used in a dusty environment, the filter will need to be flushed and replaced more frequently. Replace the filter when it is severely dirty.

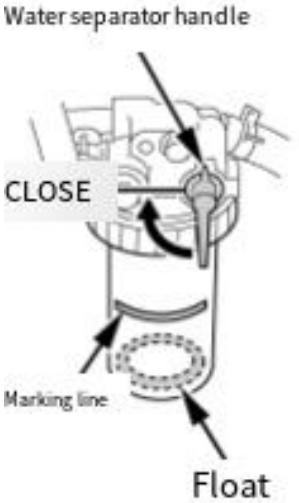
Maintenance every 50 hours of use

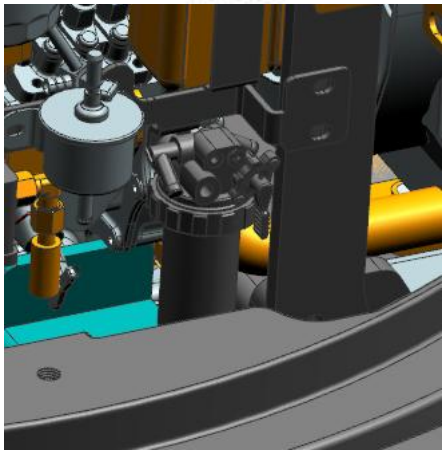
◆ Water separator

If water accumulates, the red float floats up. At this point, the oil cup should be removed and the water drained.

1 Place the water separator handle in the "CLOSE" position.

2 Loosen the fixing ring at the top of the oil cup, remove the oil cup and drain the water inside.





important

* Be careful not to get dust or dirt on the assembly.
* After draining the water from the oil cup, exhaust it. (See the "Fuel System Venting" item)

■ cistern liquid level inspection

danger

There are two types of cistern. One does not require water replenishment, while the other does. For cistern that require water replenishment, please abide by the following matters.

If the liquid level of the cistern is below the LOWER(the lowest liquid level line), please do not use or charge it.

If the battery continues to be used below the LOWER(minimum liquid level line), it will accelerate the aging of the internal parts of the battery, not only shortening the battery's service life but also possibly causing an explosion.

Add water immediately to bring the LEVEL between UPPER LEVEL and LOWER LEVEL.

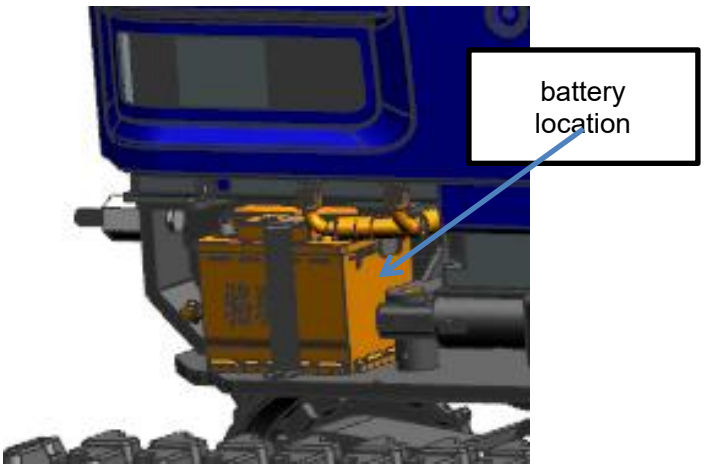
warning

* Do not get the battery solution on your body or clothes,
  If it gets on you, rinse immediately with plenty of water.
  D If you're careless...
  Dilute sulfuric acid can cause burns.
* Stop the engine when inspecting and removing the battery, and
  Place the starter key in the "STOP" position.
* There is a risk of fire and explosion as gas is produced during charging
  Dangerous. Please never approach a fire source and do not fire
  Flowers.
  When charging the battery, plug all the liquid ports of each battery
  Remove it.
* Be sure to wear glasses for safety when working near the battery
  Protect your eyes.

1.Open the right hood and confirm the battery indicator light.
2. Add distilled water if the solution is insufficient.
3.When the electrolyte decreases due to overflow, please go to a battery specialty store to replenish dilute sulfuric acid of the same concentration.

◆ Disassembly method of battery

1. Please STOP the engine and place the starter key in the "Stop" position.
2. Please remove the (-) wire of the battery.
3. Please remove the (+) wire of the battery.
4. Please remove the nuts of the battery bolts and then take off the battery bolts.
5. Stagger the fixed clamps of the battery and remove the battery.



note

When charging the cistern, please make sure to keep the battery off the main body
Remove it and do it in a well-ventilated area.
When removing wire from the battery, please do it from the (-) side
When installing, do it from the (+) side. If you do it in reverse, when it hits
It will cause a short circuit when the tool is used.
When charging, connect the (+) of the cistern to the charger respectively
On (+), the (-) of the battery is connected to the (-) of the charger.
Charge it in the usual way. Note, no
Make a mistake in the connection of the wire.
Please do not connect both the (-) and (+) batteries of this machine under any circumstances
Charge it while it is connected to the battery.
Loose terminal can cause sparks or electrical installation components
Fault. So fasten it tightly.
The display of the battery indicator light is only a rough standard. Therefore,
Not only confirm what the indicator light shows, but also actually do it
Check the liquid level, etc.

important

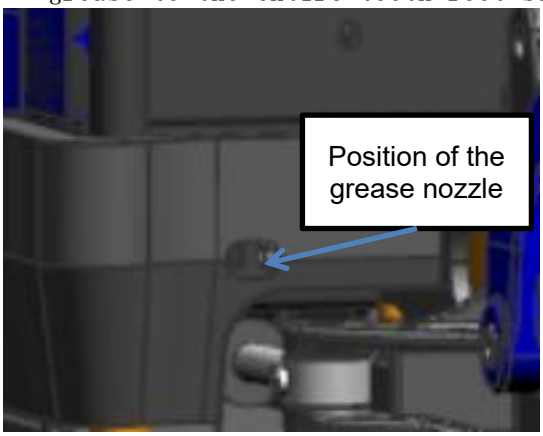
When the battery solution is insufficient, it will damage the cistern. When it is excessive, the solution will overflow and corrode the metal parts of the body.

* In addition to damage to electrical installation components, wiring can sometimes be damaged as well. Also, avoid rapid charging as much as possible. Otherwise, it will shorten the service life of the battery.

When connecting the wire to the battery, do not confuse (+) and (-). If there is a mistake, it will cause faults in the battery and electrical system.

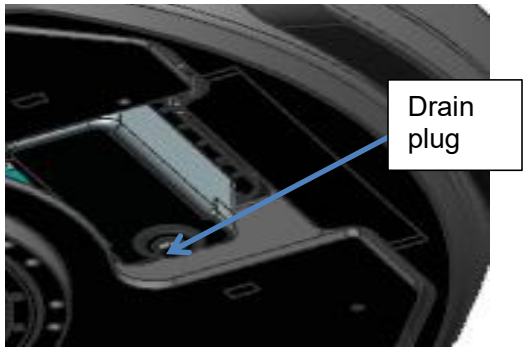
Grease injection on the root surface of the rotating bearing gear

1. Please inject grease from the grease gun nozzle marked with an arrow.
2. Rotate it approximately once every 90 degrees and add grease in four portions.
3. When applying grease to the tooth root surface, inject approximately 50g from the grease gun nozzle 1 (grease gun about 20 times and more) and apply grease to the entire tooth root surface.

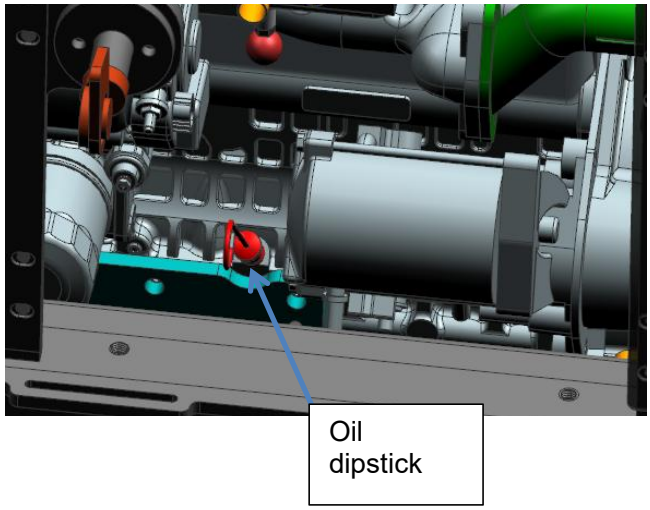


■ Oil change (50 hours for the first time, and every 250 hours thereafter)

1. Remove the oil drain plug at the bottom of the engine and drain the oil.
2. After draining the oil, tighten the oil drain plug firmly.



3. Add the specified amount of engine oil through the filler port.



4. Let the engine idle and then stop it for 5 minutes

Check the oil gauge later to see if the specified amount of engine oil has been added.

supplement

Engine oil level	R18	About 3.8L (including the filter)

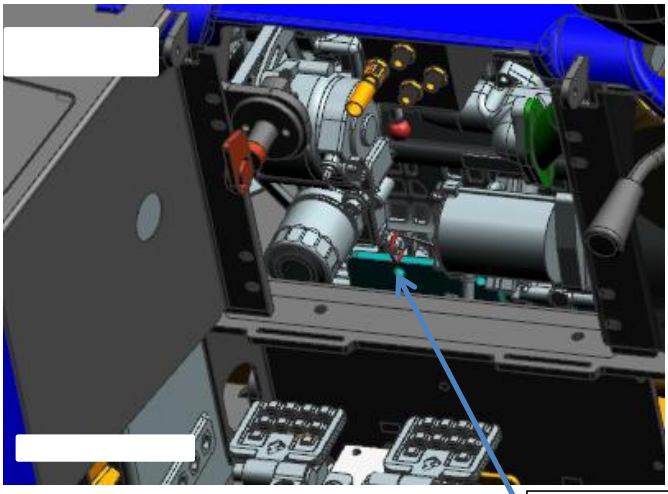
() indicates the filter and when the oil is replaced.

* Use engine oil of grade CF or above.

* Change every 6 months, even if it's less than 250 hours.

■ Oil filter element replacement (50 hours for the first time, and every 500 hours thereafter)

1. Do it at the same time as the oil change.
2. Use the included filter wrench to remove the filter element.



3. Apply a thin layer of engine oil to the O-ring of the new filter element and secure it in place by hand (without using a filter wrench).
4. Add the specified amount of engine oil to the engine.
5. Run the engine for about 5 minutes and turn it off after confirming that there is no "engine hydraulic anomaly" warning.
6. Check the oil level again with the oil gauge and replenish it if it is insufficient.

Maintenance every 200 hours of use

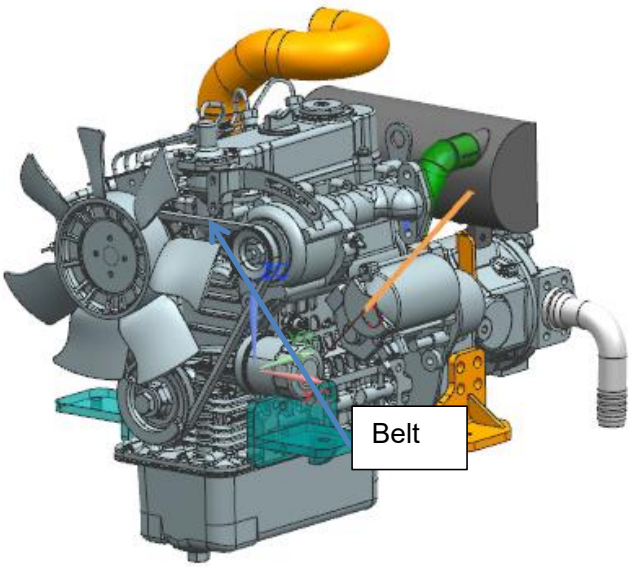
Please also perform maintenance every 50 and 100 hours.

■ Check the tension of the air conditioning belt

note

* First stop the engine and remove the key.
* After checking, be sure to put the belt cover back in its original position.

It is normal for the belt to sag by 12 to 15mm when pressed with [68.8N(7 kgf)].

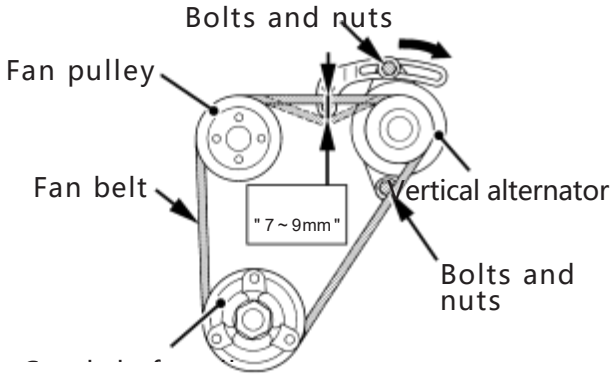


supplement

* If the air conditioning belt is too loose, discuss it with the store of sale or the repair factory designated by our company.

Inspection and adjustment of the tension of the Fan belt

1. Press the center of the [58.8 to 68.6N(6 to 7kgf)] belt with your fingertip. A bend of 7 to 9mm is appropriate. If it is not appropriate, loosen the bolts and move the generator in the direction of the arrow to tighten the belt.



2. Check for damage to the pulleys, wear to the V-grooves, wear to the V-belts, especially to check if the V-belts touch the bottom of the V-grooves.
3. Replace the belt if it is elongated, has no adjustment allowance, is scratched or cracked.

important

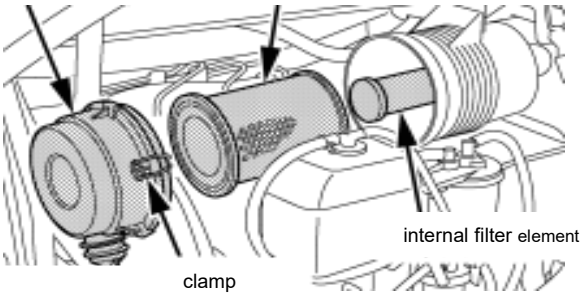
* If the belt continues to run at a low tension, it will slip, which not only reduces the engine's capacity but also shortens its lifespan, so check and adjust it.

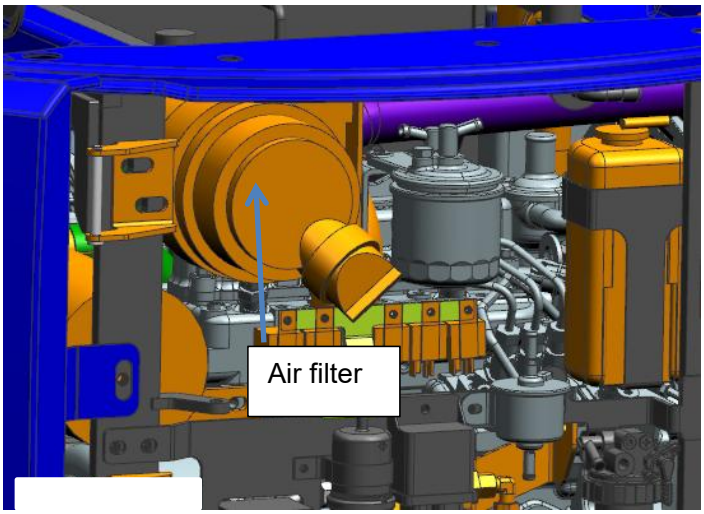
■ Cleaning and inspection of air filter elements

note

* As forced dust removal with compressed air can cause dust to fly in four places, please be sure to wear protective glasses.
  Clean and check as early as possible, especially when working in places with a lot of sand and dust.

Remove the clips, take out the external filter element, clean the external filter element and the inner side of the housing, and then reinstall it.
Do not remove the inner filter element.



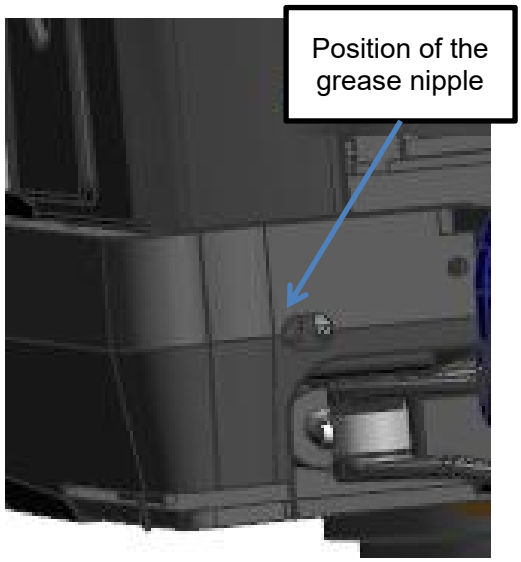


◆ Cleaning methods

Blow the outside of the filter element with dry compressed air [below 205kPa(2.1kgf/cm $^{2)}$] to forcefully sweep away the attached dust, then blow from the inside to the outside to remove all the dust.

Grease injection at the ball part of the rotating bearing

1. Apply grease from the grease nozzle marked with an arrow. (Central grease nozzle)
2. Rotate about 90 degrees and add grease in 4 portions.

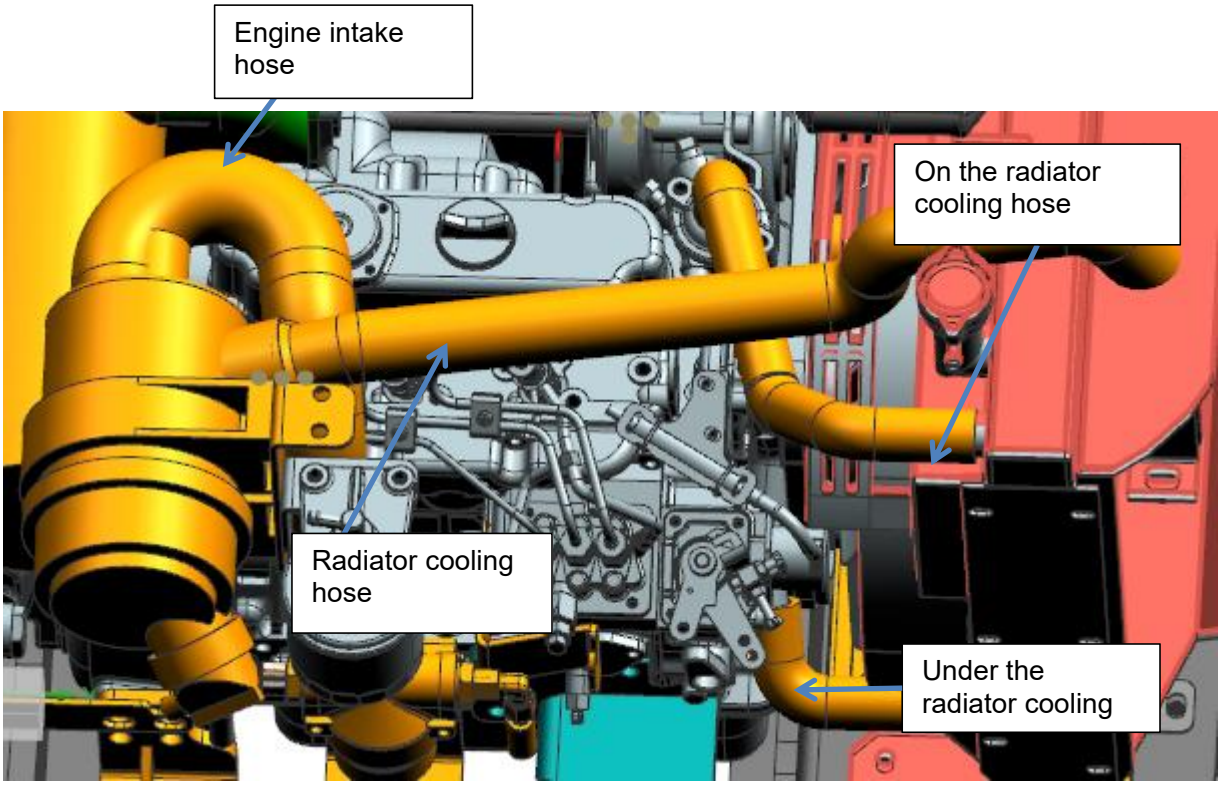


■ Inspection of radiator hoses and clamps

Check the radiator hose fastening every 200 hours of operation or every 6 months.

1. Tighten the clamps securely when they are loose or leaking.
2 When the radiator hose expands, hardens, or cracks, replace the hose and tighten the hose clamp firmly.

- When severely dirty
  Immerse in warm water with household neutral detergent, move up and down and left and right while cleaning, then rinse thoroughly with clean water to remove the solvent and let it dry naturally.



Maintenance every 250 hours of use

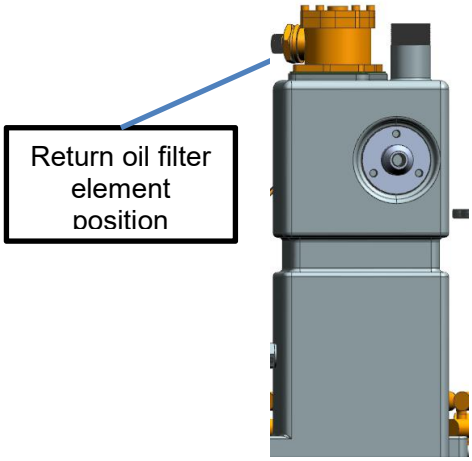
Also do the maintenance every 50 hours.

■ Oil change (50 hours for the first time, and every 250 hours thereafter)

For the method of changing the oil, see the "Maintenance every 50 hours of Use" item.

■ Replacement of the working oil return filter (for the first 250 hours, once every 500 hours thereafter)

Remove the filter after the oil temperature in the working tank has dropped.



1. Hold the upper part of the filter holder and remove it from the working oil tank.
2. Loosen the locating bolts, then remove the return oil filter from the filter holder and replace it with a new one.
3. Remove the cap bolts, take out the protective filter and replace it with a new one.

important

* When using hydraulic front-end working devices such as breakers, it is different from the above. In this case, please replace them according to the instructions below based on the frequency of use of the hydraulic front-end working devices.

The usage time ratio of the hydraulic auxiliary device	Change time of working oil	Return oil filter replacement time
Standard operation (backhoe operation)	Every 1000 hours	Every 500 hours (First every 250 hours)
Breaker hammer usage rate 20%	Every 800 hours	Every 200 hours
40%	Every 400 hours	
60%	Every 300 hours	Every 100 hours
More than 80%	Every 200 hours	

supplement

* Be sure to check the oil level after replacing the filter.

Maintenance every 500 hours of use

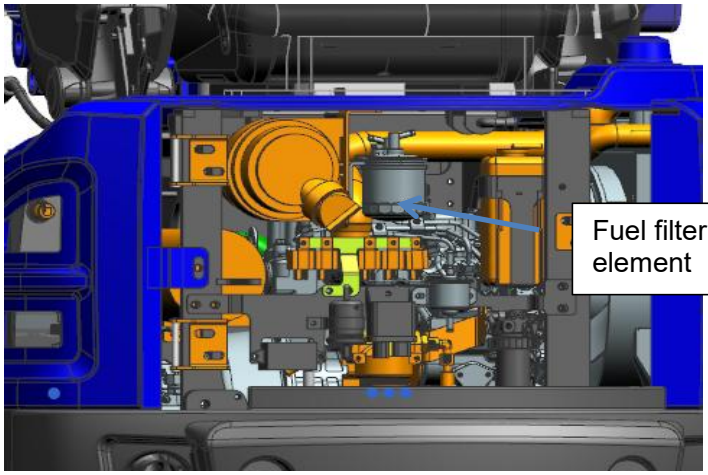
Please also carry out maintenance every 50, 100 and 250 hours of use simultaneously.

■ Replace the fuel filter element

1 Remove the filter using a filter wrench.

2. When assembling, after gently applying a layer of fuel on the seal layer, tighten the filter directly by hand without using the filter wrench.

3. Release the air.
(Please refer to the "Fuel System Exhaust" item)



important

* When assembling, be careful not to get dust or dirt on it.

■ Change of running motor oil (100 hours for the first time, and every 500 hours thereafter)

For the method of changing the engine oil, see the "Maintenance Every 100 hours of Use" item.

■ Replacement of the working oil return filter (250 hours for the first time, and every 500 hours thereafter)

For the method of replacing the return oil filter, please refer to the "Maintenance every 250 hours of Use" item

■ Oil filter element replacement (50 hours for the first time, and every 500 hours thereafter)

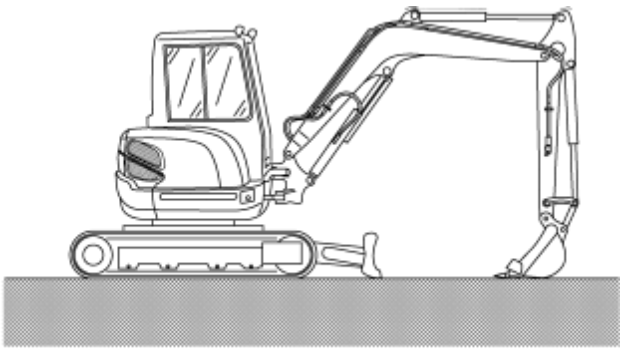
For the method of replacing the filter element, see the "Maintenance every 50 hours of Use" item.

Maintenance every 1,000 hours of use

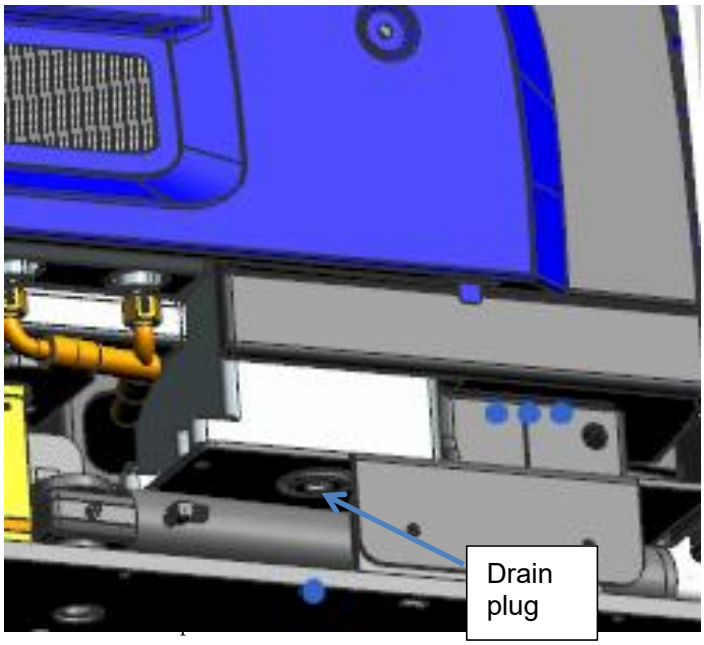
Please also perform maintenance every 50, 100, 200, 250, and 500 hours.

■ Change of working oil (Replace the suction filter in the working oil tank at the same time)

1 Place the machine in a level position with the piston rods of each cylinder extended to approximately the middle position and the bucket and bulldozer touching the ground.



2. Remove the drain plug at the bottom of the tank and drain the oil.



through the oil filler.

6 Let the engine idle for about 5 minutes. After stopping the engine, make sure you have added the specified amount of working oil.

3. Remove the suction filter with a wrench, etc., and then replace it with a new part.

4 Next, fasten the oil drain plug securely.

5. Add the specified amount of working oil through the oil filler.

6. Let the engine idle for about 5 minutes. After stopping the engine, make sure you have added the specified amount of working oil.

● Working oil replacement capacity

Working oil replacement capacity	R18	Total oil volume 15L

supplement

* Flush the inner surface when sediment accumulates in the tank.

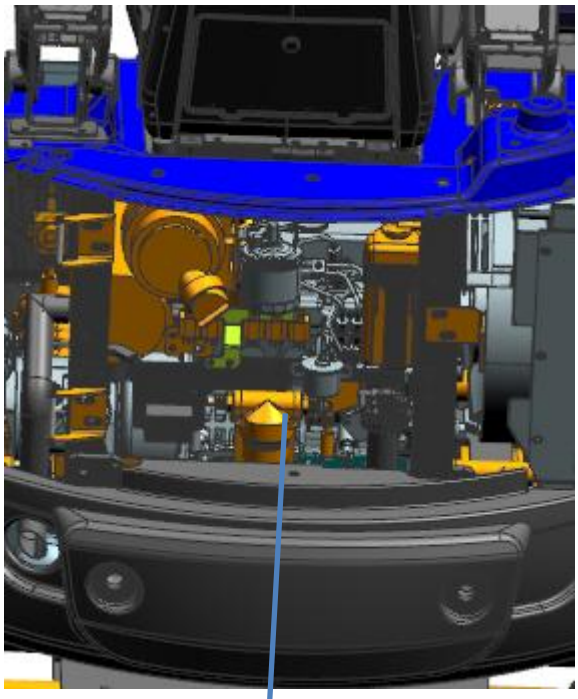
* Be careful not to mix foreign objects into the tank.

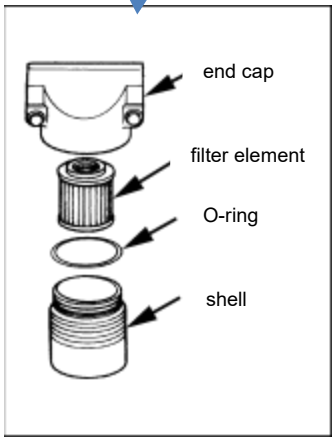
When replacing the suction filter, please negotiate with the sales store or the maintenance factory designated by our company.

■ Hydraulic pilot filter replacement

Replace the filter element after the oil temperature has dropped.

1. Open the rear hood and then the right hood.
2 Remove the housing of the pilot filter from the end cover.
3. While rotating the filter element, pull it out from the bottom.
4. Please replace the O-ring with a new one.
5. Apply a thin layer of clean working oil to the O-ring of the new filter element, then insert it firmly without damaging the O-ring.
6. Please fasten the housing to the end cap.
7. After replacement, let the engine idle for about 3 minutes to expel the air in the circuit.
8. Be sure to check the level of the working fuel tank.

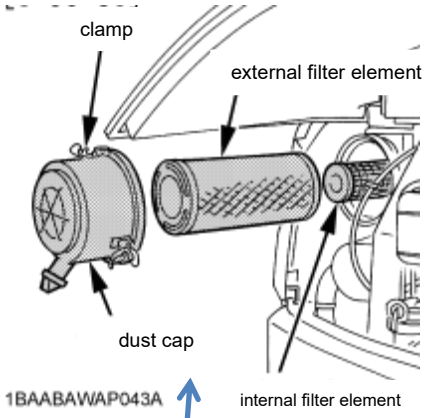


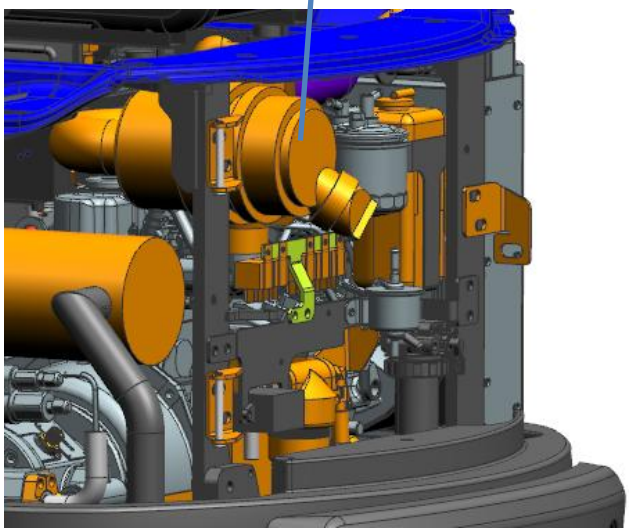


Every 1000 hours of use or every 1 year of use for maintenance

■ Replacement of the air filter element

Remove the clips, take out the external and internal filters, replace them with new ones and reinstall them.





Maintenance every 2,000 hours of use

Please also carry out maintenance every 50, 200, 250, 500, and 1000 hours.

■ Grease replacement of idler wheels, idler wheels and support wheels

Please negotiate with the sales store or the maintenance factory designated by our company.

■ Inspection of alternator and starter motor

Please consult with the sales store or the maintenance factory designated by our company.

Maintenance for each year of use

■ Inspection of electrical wiring and use of fuses

note

Short circuits may occur when the wiring harness and battery wire are damaged
So be sure to check.
If it is around the battery, wiring, Muffler and generator
If there is garbage and fuel attached, it can cause a fire, so Check it out.

Loose terminal parts of the wiring can lead to poor contact. If the wiring is damaged, it wil not only damage the performance of electrical components, but sometimes also cause short circuits, leakage of electricity or burnout an other accidents. Therefore, replace or repair damaged wiring as early as possible.

important

* When replacing a fuse and it immediately blo do not replace it with wire. Instead, have inspected and repaired at a repair shop designated by our company.
* Since the wiring harness of this machine has been fully considered for factors such as water resistance during wiring, do not repa and use it without authorization. It should inspected and repaired at the sales store o the maintenance factory designated by our company.

■ Inspect the air conditioning piping and hoses

note

Do not touch the Hose/ water pipe or the preheating plug. Otherwise it will cause scalding.

1. Make sure that all lines are securely connected to the hose clamps and there is no damage.
2. If wear or damage is found between the hose and the clamp, repair or replace them immediately.

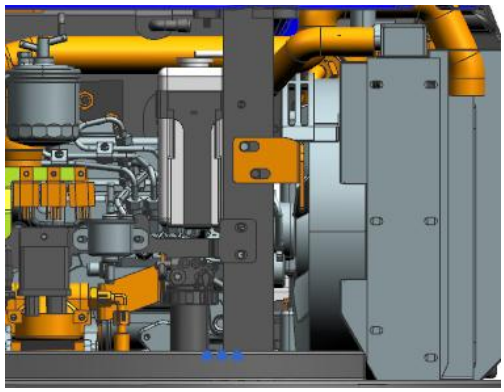
Maintenance every 2 years of use

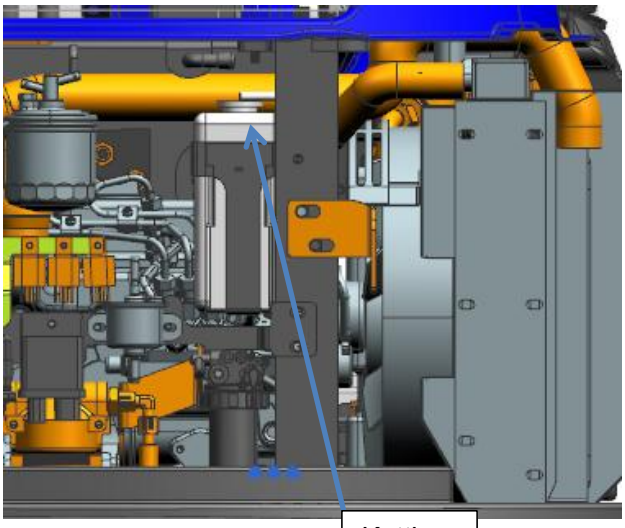
■ Replacement of coolant (when using long-lasting coolant)

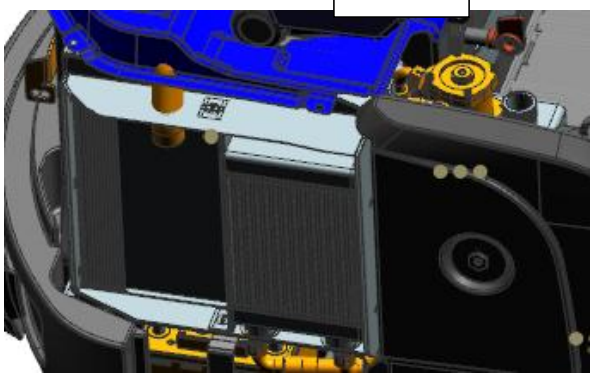
note

* If opened during operation or just after it has stopped
The radiator cap can be scalded by steam or hot water spurting out
Injury. Therefore, turn on the radiator only after it has cooled down Cover.

1. Remove the radiator cap, remove the drain plug at the bottom of the radiator, and drain all the cooling water.
To drain the radiator, remove the radiator, unscrew the radiator cap and drain the water.
2. Drain while filling the radiator with water and continue until clean water flows out of the drain.
3. Then, securely fasten the drain plug and inject long-lasting coolant into the radiator as well as the tank. After filling the water, tighten the cap, start the engine and let it idle for about 5 minutes, then turn off the engine and make sure the specified amount of coolant has been added.







The usage method of antifreeze
(In cases other than long-lasting coolant)

note

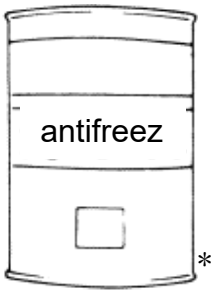
* Do not mix antifreeze from different manufacturers.

Antifreeze has the effect of lowering the freezing temperature of water, which can prevent damage to cylinders and radiators caused by the freezing of cold water.

When the temperature drops below 0 ° C in winter, be sure to mix the permanent type (PT type) antifreeze into clear water and then refill the radiator and water tank.

important

* The mix ratio of antifreeze varies by manufacturer and temperature. Please follow the mixing ratio specified in the "Cryogenic Preparedness" section.
* Do not mix antifreeze from different manufacturers.



* Antifreeze - long-lasting coolant has an effective service life of 2 years.

* Except for long-lasting coolant, change it once in spring and once in autumn each year.

supplement

* Long-lasting coolant (mix ratio: antifreeze 50% water 50%) has been added as coolant at the factory.

■ Replacement of Radiator hose and clamps

note

* Radiator hose and clamps will be produced when they have been in use for too long
  Rupture can cause hot water to spray out, sometimes unexpectedly
  It can cause a burn. So change as soon as possible.

Please replace the Radiator hose and pipe clamps every two years. If the Radiator hose is found to be swollen, hardened or cracked during inspection, it should be replaced even if it has not been two years.

■ Replace the air conditioning piping and hoses

note

* Do not touch the Hose/ water pipe or the preheating plug. Otherwise it will cause scalding.

Replace air conditioning piping and hoses every two years. If the hose or piping expands, hardens, or cracks, it must be replaced as soon as possible.

Inspection and use of the battery

warning

* Due to the possibility of a short circuit when removing the battery wire, as
  Please be sure to remove the negative wire first. Also, when assembling, please
  First, connect the positive wire.
* battery can produce flammable hydrogen, which may occur when close to a fire source
  There will be a fire and explosion, so please never get close to fire
  Source.
* Please do not place any tools on or around the battery under any circumstances
  Metal items or flammable materials. Otherwise, a short circuit may occur
  It can cause a fire and explosion, resulting in a fire.
* battery solution (dilute sulfuric acid) can cause blindness or burns.
  If the battery solution sticks to your skin or clothes, please do it immediately
  Rinse with plenty of clean water. In addition, if the battery solution
  If it splashes into your eyes, go after rinsing with plenty of clean water
  See a doctor.
* When charging, please remove all the liquid port plugs of each battery
  Come down.
* When working near the battery , please be sure to wear glasses for safety
  Protect your eyes.

The inspection and use of the battery should be carried out when the engine is off and the starter key is in the "STOP" position.

■ Maintenance and repair of battery

The latest battery has extremely high performance. If it is used incorrectly, it will shorten the service life of the battery and cause unnecessary expenses. Therefore, use it correctly to make the most of the battery.

1. The battery , serving as the power source for engine starting and indicator lights, is an essential component.
2. If the power stored in the battery decreases, the engine cannot be started, which is related to the misoperation of electrical components. By the time it becomes this state, it can sometimes be too late, so charge it as soon as possible.
3. Due to the evaporation of water in the electrolyte, the amount of solution in the battery will decrease during the charging process. Insufficient solution will damage the battery . When there is too much, the liquid will spill and corrode the body.
4. Please check if the plate separator is exposed. If it is insufficient, be sure to add battery solution or distilled water.
5. When storing this machine for a long time, please remove the battery from the machine for charging. After adjusting to the correct liquid level, store it in a dry place away from light.
6. Since the battery will also automatically discharge during storage, please perform a supplementary charge once a month.

■ Precautions when charging the battery

1. Please be sure to To the key to "STOP" before removing the battery from the vehicle body.
2. The battery will be damaged when the battery solution is insufficient. When there is too much, the fluid will overflow and corrode the metal parts of the vehicle body.
3. Avoid rapid charging as much as possible. Otherwise it will shorten the battery's lifespan.
4. The rapid charging method is a high-current charging method used to partially compensate for the discharge of a battery in a state of discharge for a short period of time, so it can only be done in an emergency.
5. Do not get (+) and (-) mixed up when connecting the wires to the battery. If you do, it will cause problems with the battery and the electrical system.
6. When removing wires from the battery, do it from the (-) side; when installing, do it from the (+) side. If you do it in reverse, a short circuit will occur when the tool touches the battery.
7. When charging, connect the (+) of the battery to the (+) of the charger and the (-) of the battery to the (-) of the charger respectively, and charge as usual.
8. When using the battery, in addition to measuring the specific gravity, remove the cable connected to the battery before checking the battery solution volume.
9. Please remove all the liquid plugs from each battery.

■ Check the battery level

For the method of checking the battery level, see the "Maintenance every 50 hours of Use" item.

■ Precautions when charging the battery while it is still loaded (only if necessary)

The correct approach is to do it after removing the battery from the body.

1. As applying abnormal voltage to the alternator can cause damage to it, insert the key and To to "STOP" (stop), then remove the (-) terminal wiring of the battery and charge it.
2. During the charging process, remove all the liquid port plugs to release the generated gas.
3. Pause charging when the battery overheats (the liquid temperature exceeds 45 ° C).
4. Stop charging immediately after it is fully charged. If charging continues beyond the necessary level, the following adverse conditions will occur.
   - Overheating of the battery
   - Reduced battery solution volume
   - Poor battery condition
5. When connecting the battery, be careful not to reverse (connect (+) and (-), (-) and (+) together).
   Otherwise it will cause damage to the alternator, etc.
6. Also, start the engine in this way and, as soon as possible after the operation is completed, perform the correct supplementary charging according to the instructions in the charger's user manual. If this supplementary charging is not carried out, it will significantly shorten the battery life, so be sure to pay attention.

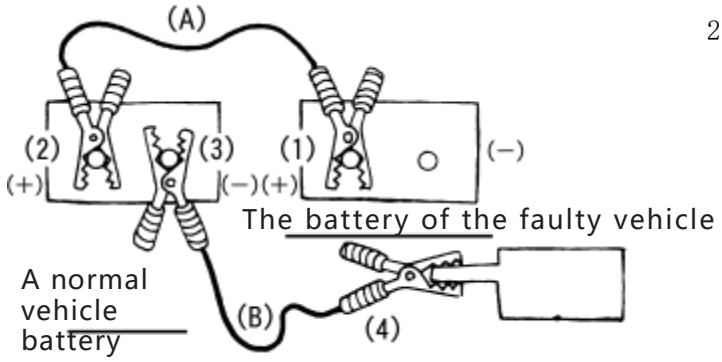
■ Start the engine using an auxiliary cable

1. Since the battery can produce flammable gas, it is extremely dangerous to spark near the battery or approach a fire source as it may cause an ignition explosion.
   Therefore, avoid using a boost cable to start the engine as much as possible.
2. To prevent failure, batteries that are approaching the end of their lifespan should be replaced with new ones as soon as possible.
   When it is inevitable to start the engine with an auxiliary cable, please use the cistern as follows to avoid accidents.

◆ Before connection

1. Use auxiliary cables and clamps with capacities suitable for the Battery.
2. Check whether the (+) and (-) terminals of the cable, wire clamps and Battery are broken or corroded.
3. Whether the starter key is in the "STOP" position.
4. The cistern of a regular vehicle should have the same capacity as that of the faulty vehicle.

◆ Connection of auxiliary cables



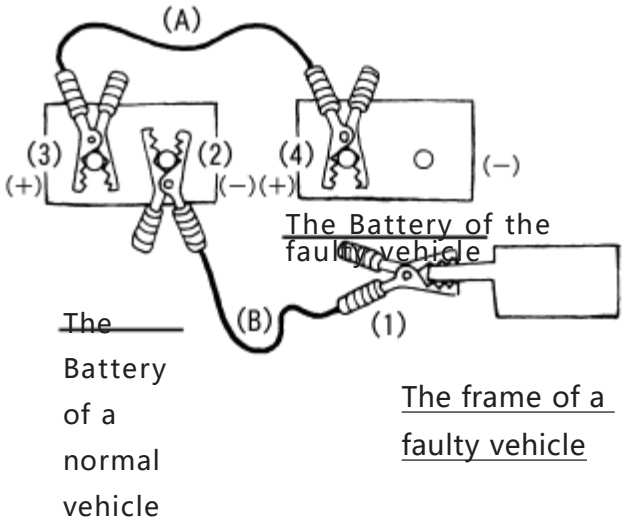
1. (1) Remove the clamps of the auxiliary cable (B) from the frame of the faulty vehicle, and (2) next remove the connection with the (-) terminal of the normal vehicle.
2. (3) After removing the clamp of the auxiliary cable (A) from the (+) terminal of the normal vehicle, (4) remove the (+) terminal connection of the faulty vehicle.

1. (1) Connect the clamps of the auxiliary cable (A) to the (+) terminal of the faulty vehicle, and (2) connect one of the clamps to the (+) terminal of the normal vehicle.
2. (3) Connect the clamps of the auxiliary cable (B) to the (-) terminal of the normal vehicle, and (4) securely connect one of the clamps to the body of the faulty vehicle.
   * Keep the connection to the vehicle body a little farther from the battery.
3. After all terminals are connected, make sure they are securely connected before starting the engine.

◆ The engine of the faulty vehicle starts

1. After confirming the connection, start the engine.
2. If the start fails, wait for a moment (2 to 3 minutes) before restarting the engine.

◆ Removal of auxiliary cables

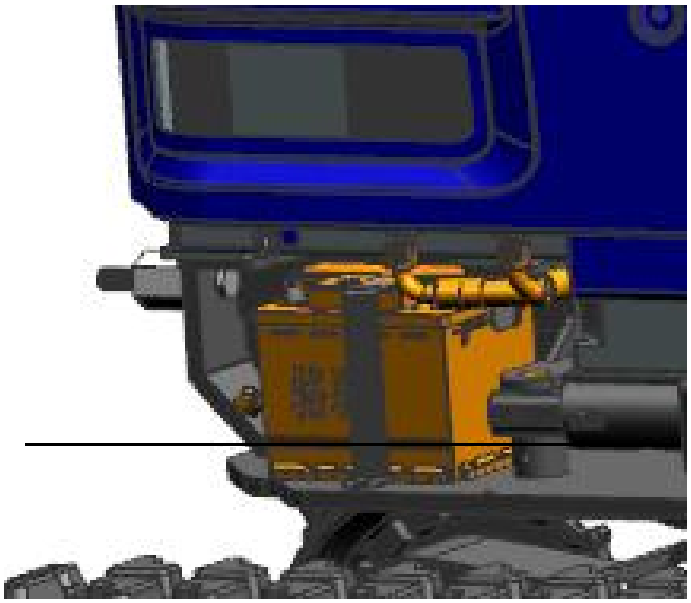


■ Notes on starting the engine and charging the battery

For the method of starting the engine when the battery is depleted and the use of the battery, please proceed as described below.

important

* Prohibited operations regarding charging and starting when the battery power is depleted
  (In the following circumstances, applying excessive voltage to electrical installation components (including controllers, instruments) may cause damage, so be careful when performing maintenance.)
  - Do not operate from large construction machinery with a 24V working voltage or Start after bridging a truck, etc. (Make sure to start with 12V.)
  - Do not charge when the battery terminals are not removed. (Please make sure to remove the terminals when charging.)
  - Please do not start with a cistern charger.
  - Please do not start with a 24V cistern. Please be sure to start with a 12V cistern.
  - Please do not remove the cistern terminals while the engine is rotating.



* Be sure to set the starter key to "STOP".
  Do the fuse, slow fuse after the engine has stopped
  Fuse replacement.
  ▶If you're careless...
  It will produce sparks and pose a danger.

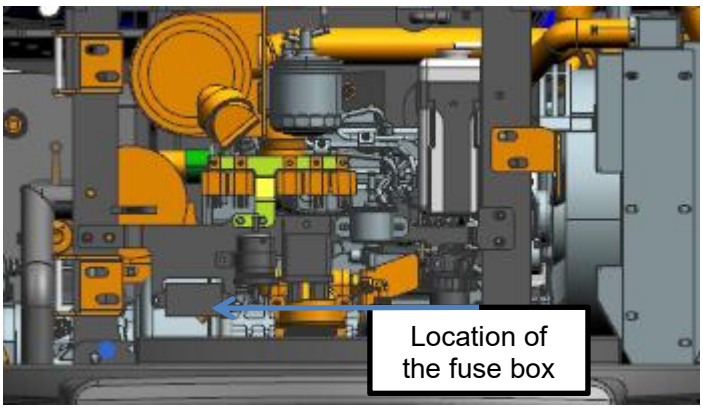
■ Fuse replacement

1. Place the starter key in the "STOP" position.
2. Remove the cover under the seat and open the cover of the fuse box.
3. Please replace with a fuse of the same capacity as the blown fuse. The fuse can be easily removed through the fuse box cover plate.

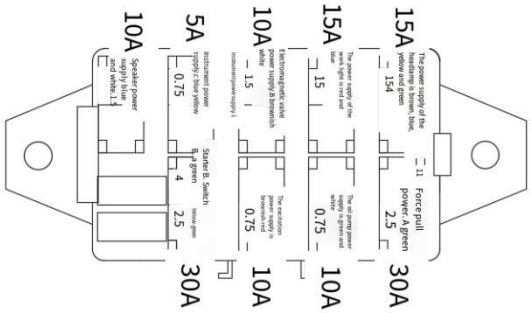
important

* When replacing a fuse and it melts immediately, do not use metal wire or silver foil cored wire as a substitute. Instead, have it inspected and repaired at the store of sale or at the repair shop designated by our company.

■ Position of the fuse box



■ Fuse capacity and compatible circuits



Do not use fuses other than the specified capacity.

■ Replacement of slow-blow fuses

Slow-blow fuses are used to protect wiring. If a slow-melt fuse blows, be sure to investigate the cause of the blow and never use a substitute but use an authentic part.

■Precautions for Relays

Relays are used to control electric current. During machine operation, pay attention to preventing relays from being crushed and ensuring they are waterproof; otherwise, internal components of the relays may be damaged. From left to right in the view, they are the horn relay, start relay, fuse relay, preheating relay, and reverse delay relay. If the above relays are damaged, the following faults may occur respectively: When the horn switch is pressed, the horn has no response; when the key switch is turned to the start position, the vehicle has electricity but the starter doesn't work and the vehicle fails to start; when the key switch is turned to the start position, there is no electricity in the whole vehicle; when the key switch is turned to the preheating gear, there is no electricity for preheating; when the travel lever is pushed backward and the excavator travels backward, the reverse image pops up without a delay phenomenon. If the above phenomena occur, it may be due to the damage of the corresponding relay.

■ Backup power (work lights, etc.)

When installing additional operation lights other than those included with the machine (55W). When using the canopy specification, do it through the branch harness (work light). The maximum installation capacity is 110W including the local work light.

When using cab specifications, there are terminals on the upper front of the cab. The maximum installation capacity is 27W × 2 lights.

For details, please re-consult the sales store or our designated repair factory.

Fuel system deflate

1. Please refill the fuel tank.
2 Insert the key into the starter switch and turn it to the "START" position

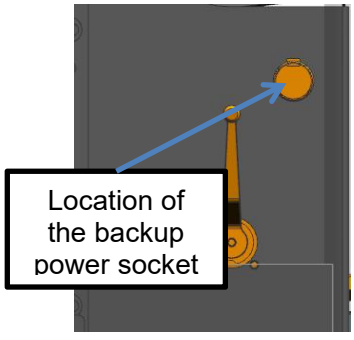
3. Perform about 1 minute of automatic air release.

supplement

* If the air is not completely vented in the first attempt, repeat operations 2 and 3 when you want to stop the engine after starting.

■ Backup power supply [U-50-3S]

The backup power socket must be within 120W.



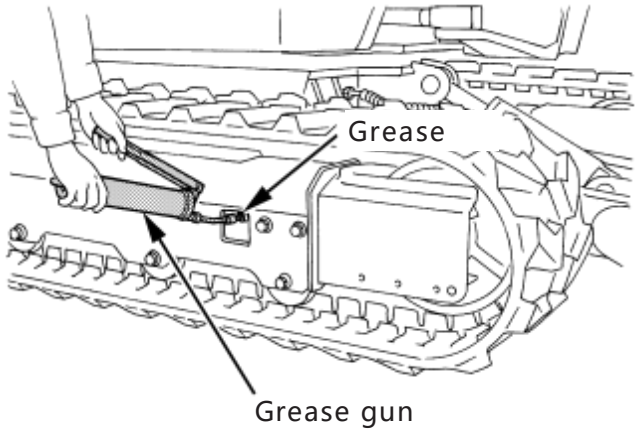
supplement

* The battery may run out if left idle for a long time while starting up additional electrical assemblies. Be careful not to let it idle for a long time.

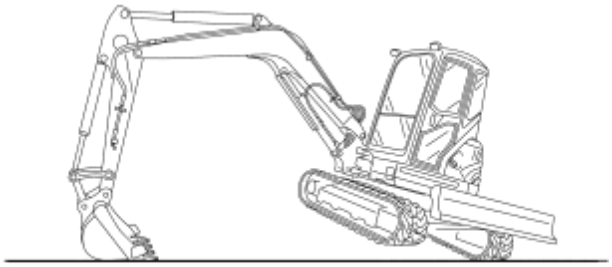
Track adjustment

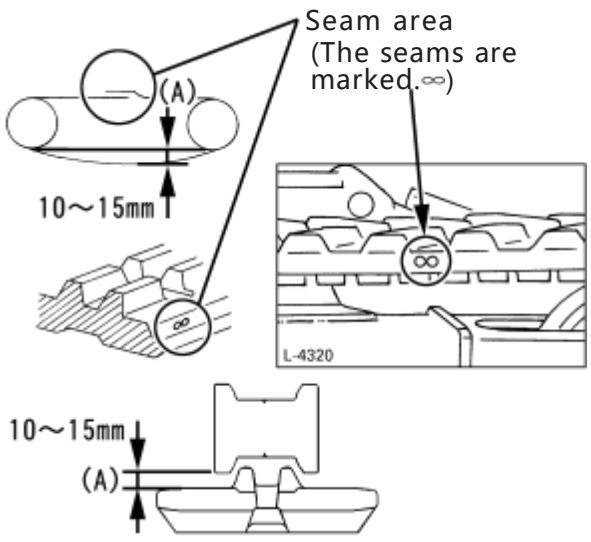
■ When tensioning rubber tracks

1 Insert the grease gun into the grease gun nozzle and add grease.



2. Track tensioning should be adjusted in the manner shown in the figure, that is, in the state of the floating track section (A), the size (the gap between the outer end of the central idler wheel and the tread of the track plate) should be 10 to 15mm. (The joint of the rubber track is located at the center of the upper part)





* After adjustment, turn the track 1 to 2 times to confirm the tension allowance.

■ When loosening the rubber tracks

note

* Since there is high pressure in the grease cylinder, therefore, if the grease cylinder
  If the nozzle relaxes too much or too quickly, the nozzle will fly out
  The high-pressure grease in the grease tank will also spray out, causing danger
  Danger, so keep your face, etc. close to the nozzle and stay
  Keep your body away from the front of the nozzle and release it slowly.
* Remove stones, etc. that get stuck in the final drive Proceed with the operation.

1. Insert the socket wrench into the base of the grease tank nozzle and slowly turn it 3 to 4 times to relax.

2. If grease flows out of the threaded section, spin the track idle while it is floating to allow for full relaxation.

After adjustment is completed

3. Tighten the hexagonal part of the nozzle with a socket wrench, etc.

※ The tightening torque is approximately 98 to 108 N·m(10 to 11kgf·m).

important

* Readjust if the relaxation allowance reaches 25mm.
* First check and readjust the tensioning allowance 30 hours after use, and then check and readjust it every 50 hours thereafter.
* If too tight, it will
  - Accelerate the wear of rubber tracks.
* If too loose, it will
  - Cause poor meshing in the final drive.
  - Accelerate the wear of rubber tracks.
  - Cause rubber tracks to come off.
* After the work is done, thoroughly clean the rubber track section. Do not leave it unattended as it is covered with dirt, etc.
* If the rubber track section becomes too tight due to being stuffed with dirt, etc., use the boom, boom and bucket to float the rubber track section and rotate it side by side without load to remove the dirt.
* Pay attention to the seams of the tracks

Rubber tracks have seams. When adjusting the track, be sure to move the seam to the center of the upper part. Additionally, in the upper moving wheel mechanism, bring the upper moving wheel between the connecting rods and then make the adjustment.

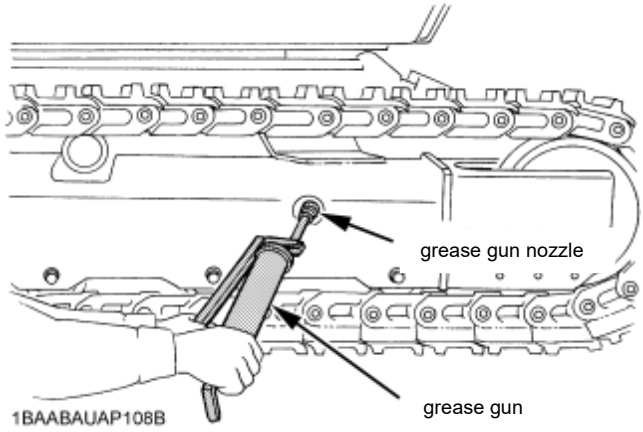
If the seam position is incorrect, it will result in a greater relaxation than the proper tension and will require readjustment instead.

■ For ease of using rubber tracks

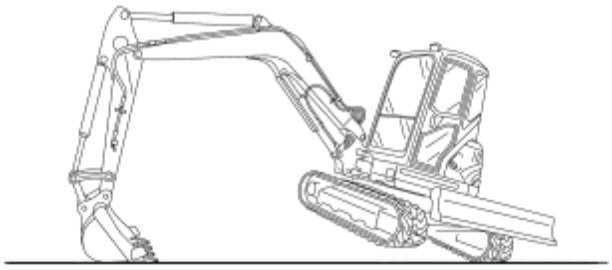
1. When turning, avoid turning in place as much as possible; instead, perform low-speed spins.
   (Reduces wheel claw wear and stones getting stuck)
2. When the safety valve operates due to sand getting stuck while turning, do not force the turn. Instead, go back immediately, remove the sand and then turn again.
3. Do not use it in such environments as it can damage the rubber and shorten the service life of the tracks when used on riversides, gravel ground, steel bars, and iron filings.

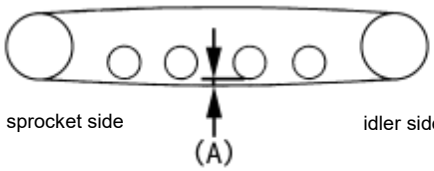
■ When tensioning the tracks of iron tracks

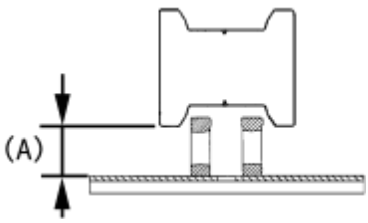
1. Insert the grease gun into the grease gun nozzle and add grease.



2. As shown in the figure, when the gap "(A) size" between the outer end of the central idler wheel and the upper part of the track plate reaches the value shown in the figure below, the track tension is optimal.







Gap (A	R18	25 to 80mm

When you want to loosen the track pieces, follow the instructions for rubber tracks.

Bucket replacement

note

* Wear a helmet, protective glasses, etc. when performing the replacement operation
  Protective gear.
* When working together, you should thoroughly understand the agreed signals, precisely
  Communicate with each other and pay full attention to safety.

The bucket replacement should be carried out following these guidelines.

important

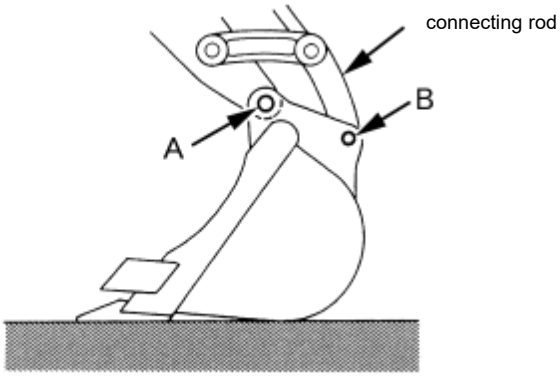
* Be careful not to let the pull-out pins come into contact with sand or dirt.

■ Removal of the bucket

1. Place the bucket in a flat, level position to touch the ground.
2. Stop the engine and release the pressure from the hydraulic system.
3. Remove the two anti-reverse nuts of the bucket bushing, pull out the fixing bolts and pins to remove the bucket

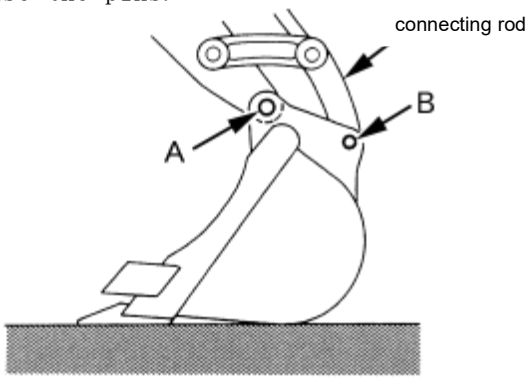
important

* When replacing the bucket, make sure the pins are not covered with sand or soil. Sand or soil can enter the bushing and cause it to wear out quickly.



■ Installation of the bucket

1 Align the bucket rod with hole A and connect it with a pin. Then align the connecting rod with hole B and engage it with a pin.
2 Install the locating bolts of the pins securely.
3 Grease the pins.



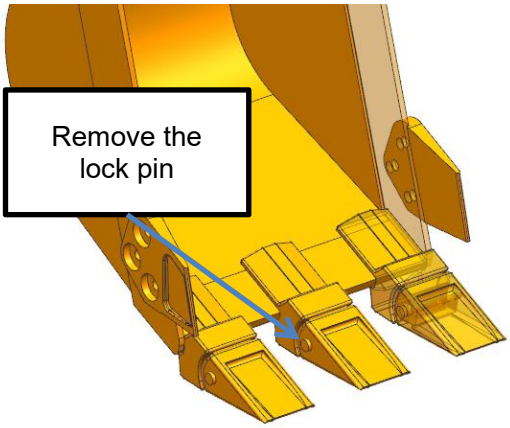
Replacement of bucket teeth and side teeth

■ Replacement of bucket teeth

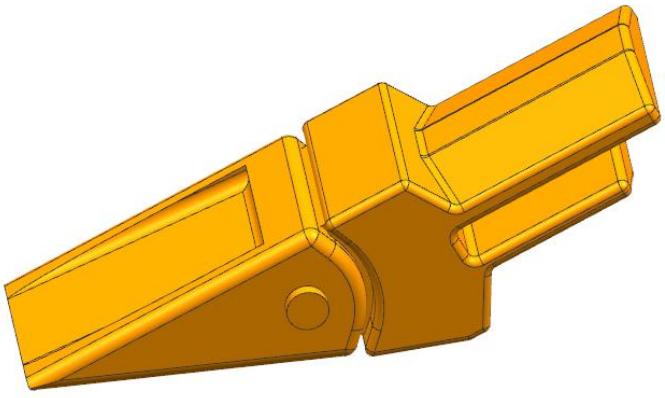
warning

* When working, be sure to use protective gear such as protective glasses.

1. Press the lock pin with a punch and then hammer off the lock pin first.
2. Use a hammer or similar tool to strike the worn bucket teeth and pull them out from the adapter=adaptor.
3. Remove the soil adhering to the adapter=adaptor.

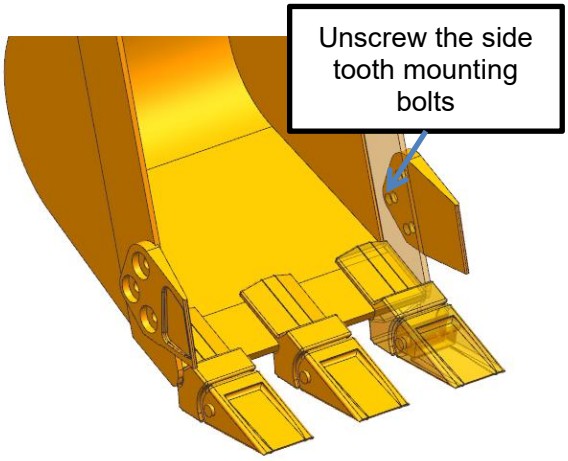


4. Align the new bucket teeth with the adapter=adaptor and insert them into the adapter=adaptor.



■ Replacement of side teeth

1. Unscrew the side tooth mounting bolts with socket wrenches, wrenches, etc.
2. Install the new side teeth. And temporarily tighten the bolts.
3. Please tighten the bolts after confirming that the contact surface of the side teeth is in solid contact with the metal adapter=adaptor of the bucket.



● Fasten the bolts with a fastening torque of 260 to 304N ·m(26.5 to 31kgf·m).
When the contact surface of the side teeth does not come into contact with the metal adapter=adaptor of the bucket or the clamping force is weak, the bolts may loosen.

Maintenance for long-term storage

■ When parking for a long time, please save as follows

1. After rinsing and cleaning all parts, store the machine indoors, not outdoors.
   If it has to be placed outdoors, choose a flat ground and put it on a piece of wood, then cover it with a cover cloth.
2. Do not forget to add oil, grease and change the oil.
3. Please apply sufficient grease to the exposed parts of the piston rod of the hydraulic cylinder.
4. Please remove the grounding wire of the cistern or take the cistern off the vehicle and then store it.
5. When the temperature drops below 0 ° C, add antifreeze to the coolant or drain the water completely.

■ When using after a long period of parking, follow these steps

1. Please wipe off the grease applied to the piston rod of the hydraulic cylinder.
2. Start the engine and perform the working device and driving actions without load to ensure the oil flows to all directions.
   When the parking period exceeds one month, please perform operations 1 and 2 once a month.

Use during the cold season

■ Cryogenic precautions

Engine oil, hydraulic working oil
Change to oil of the specified viscosity.
2. Fuel
Choose the appropriate diesel according to the temperature.
3. cistern
Under low-temperature conditions, the battery capacity will decrease, and when the charging amount reduces, the solution will also freeze. Therefore, when stopping the engine, make sure the charging rate is above 75% and pay attention to keeping warm in case of starting the next morning. When replenishing distilled water due to a low level, do not do it after the operation is completed, but do it before starting the operation the next morning to prevent freezing.
4. Cooling water
Add antifreeze, please.
If the temperature drops below 0 ° C during parking, add antifreeze to the coolant and replenish the radiator and water tank to prevent freezing.

● Table of mixing ratios of water and antifreeze

Minimum temperature (° C)	-5	-10	-15	-20	-25	-30	-35	-40
Antifreeze volume (%)	30	30	30	35	40	45	50	55
Water volume (%)	70	70	70	65	60	55	50	45

supplement

* Antifreeze should be of a permanent brand or long-life coolant.
* The mixture of water and antifreeze should be added after completely draining the cooling water and removing scale.
* Since rust inhibitors have been added to the antifreeze, there is no need to add detergents when using antifreeze.
* Cooling water
  Please refer to the "Cooling Water Replacement" section.

■Precautions After Completion of Work

Wipe off dirt and water attached to the vehicle body and place the tracks on concrete surface or in a dry area. Especially the dirt attached to the wheels, if not completely removed, can sometimes make it impossible to drive after freezing. So, if there is no proper place to park, you can park after laying a wooden board on the ground or on a straw mat. If you park directly on the ground, you may not be able to drive or cause damage such as a motor when the tracks freeze the next morning.
Especially wipe the surface of the hydraulic cylinder piston rod thoroughly to remove water droplets. If dirt and frozen water droplets get into the seal together, then the seal may be damaged.

Regarding regular replacement of important parts

To ensure the safety of operation and work at all times, the machine users must carry out regular maintenance and upkeep. In order to further enhance safety, especially the following important components related to safety and fire should be entrusted to the sales store or the maintenance factory designated by the company for regular replacement. These components can change in material over time and are prone to wear and tear or aging. Since it is difficult to determine their condition during regular maintenance operations, it is necessary to replace them with new ones after a certain period of use, even if no abnormalities are found, to ensure that they remain functioning properly throughout.

However, if certain abnormalities are found in these components before they reach the end of their service life, they should also be repaired or replaced with new ones as usual. For the hose section, when signs of aging such as deformation or cracking of the hose clamp are found, the hose clamp should be replaced with new ones at the same time.

In addition, the following checks should be carried out on hydraulic hoses other than regular replacement parts, and reinforcement, replacement, etc. should be carried out when abnormalities are found. When replacing the hydraulic hose, also replace the O-rings and sealing components.

The replacement of important parts should be entrusted to the sales store or the maintenance factory designated by our company.

- Check fuel hoses and hydraulic hoses as well during the following regular inspections.

Check categories	Check items
Daily checks	Oil leakage at the connection and riveting parts of fuel and hydraulic hoses
Monthly routine inspection	Fuel, hydraulic hose connections, riveting leaks fuel, hydraulic hose damage (cracking, wear, fuzzing)
Specific self-inspection (annual inspection)	Fuel, hydraulic hose connections, riveting leaks Interference, cracking, aging, squeezing, damage (cracking, wear, fuzzing) of fuel and hydraulic hoses

- List of important components

No.	Replace parts regularly	Quantity	Change time
1	Fuel hose (fuel tank - fuel filter)	1	Every 2 years or Change every 4,000 hours, whichever comes first.
2	Fuel hose (fuel filter - fuel pump)	1	
3	Fuel hose (fuel pump - fuel nozzle)	1	
4	Fuel hose (fuel nozzle - fuel tank)	2	
5	Hydraulic hose (main pump suction)	2	
6	Hydraulic hose (main pump output)	5	
7	Hydraulic hose (boom cylinder)	4	
8	Hydraulic hose (boom cylinder)	4	
9	Hydraulic hose (bucket cylinder)	4	
10	Hydraulic hose (swing cylinder)	2	
11	Hydraulic hose (bulldozer cylinder)	6	
12	Hydraulic hose (auxiliary device)	6	
13	Hydraulic hose (rotary motor	2	

Problems and solutions for backhoe excavators

If a small backhoe is in a bad condition, please diagnose it according to the table below and take appropriate measures. If you have any questions, please contact the store where you purchased the product or the repair shop designated by our company.

	Status Quo	Reasons	Disposal
Engine aspect	Cannot start	(1) Starting the engine with the wrong key. (2) The key has a metal part (key ring, etc.)	(1) If the instrument panel shows "Key Error",please use the correct key to start the engine. (2) Remove the metal parts from the key and start the engine.
	When it's difficult to start	(1) The fuel is not flowing.	(1) Check the fuel tank to remove settled impurities or moisture. (2) Check the fuel filter and replace it if it is dirty.
		(2) Air or water mixed into the fuel delivery system	(1) Check the piping and clamp the clamps, and replace them with new ones or repair them if damaged. (2) Deflate. (See the "Fuel System Venting" item)
		(3) In cold weather, the viscosity of the oil increases and the engine itself rotates heavily.	(1) Inject hot water into the radiator. (2) Use different types of engine oil depending on the temperature. (Use SAE10W30 in winter)
		(4) The battery power appears to be depleted, the rotational force weakens, and there is no momentum to exceed compression.	(1) Battery charging.
	When the output power is insufficient	(1) Insufficient fuel.	(1) Refuel.
		(2) Clogged air filter.	(1) Clean the filter element.
	When suddenly stopping	(1) Insufficient fuel.	(1) Refuel.
	When the exhaust gas color is abnormally black	(1) Poor fuel. (2) Excessive engine oil.	(1) Switch to high-quality fuel. (2) Adjust to normal fuel levels.
	When the water temperature gauge shows "H"(engine overheating)	(1) Poor sealing of the water pump. (2) The fan belt is extended or disconnected. (3) The thermostat is faulty. (4) Insufficient cooling water. (5) The radiator mesh and fins are clogged with dust. (6) Rust on the cylinder head and crankcase contaminates the coolant. (7) Poor radiator cap (evaporation). (8) Corrosion of the cooling water passage. (9) Continuous overload operation. (10) Damaged cover gasket (reduced cooling water). (11) Insufficient engine oil. (12) Poor fuel injection timing. (13) Poor fuel.	(1) Replace. (2) Make adjustments or replacements. (3) Make a replacement. (4) Replenish to the specified amount. (5) Carry out cleaning. (6) Replace the cooling water and add rust inhibitor. (7) Replace. (8) rinse. (9) Reduce the load. (10) Replace. (11) Adjust to normal oil levels. (12) Make adjustments. (13) Please switch to high-quality fuel.
Hydraulics	Working devices (boom, bucket, bucket) Rotating,traveling, insufficient force,slow speed or no action of the bulldozer shovel	(1) Insufficient working oil. (2) Oil leakage at hose and piping joints.	(1) Refill the working oil. (2) Reinforce or replace.
Driving	Not driving smoothly	(1) Track gets stuck in stones. (2) The tracks are too tight or too loose.	(1) Remove the stones. (2) Make adjustments.

Precautions for the use of hydraulic breakers

Precautions when installing a hydraulic breaker

Please install a breaker that fits the machine. If a breaker other than recommended is installed, it will not only affect the lifespan of the machine, but also pose safety concerns.

Also, when installing a breaker from a manufacturer other than the one below and the front end working device, please talk to the store of sale or the maintenance worker designated by our company in advance.

Precautions for the use of hydraulic breakers

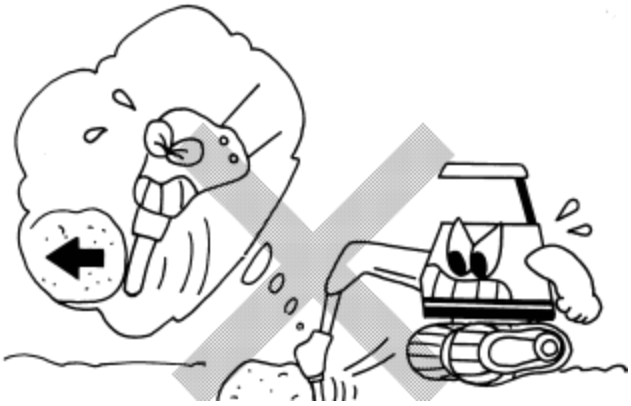
Precautions when using a breaker hammer

Prohibited 1 Working posture

If the strike is carried out with a lift of more than 5cm in front of the machine, then at the same time the rock is broken, the machine will also sharply lean forward, causing the main body of the breaker or the top part of the bracket to collide with the rock, sometimes resulting in damage. Also, since the vibration generated during the strike spreads to the track section, do not use this strike method for the protection of the track.

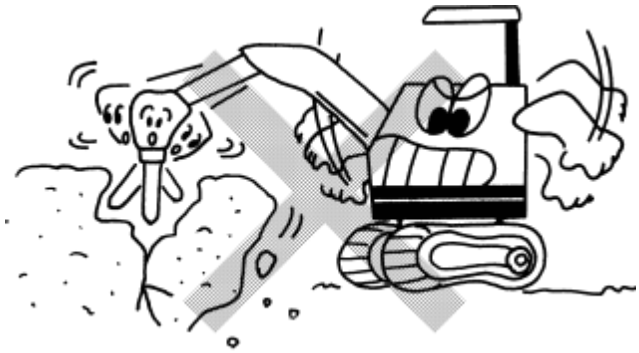
Prohibition 2 Do not move rocks, etc

As shown in the figure, do not use the hydraulic power of the boom, bucket rod, etc. of this machine to turn or knock over rocks through the top of the hammer rod or the side of the bracket, otherwise it may cause damage to the mounting bolts of the breaker, damage to the bracket, damage to the hammer rod and jamming, damage to the bucket rod and boom.



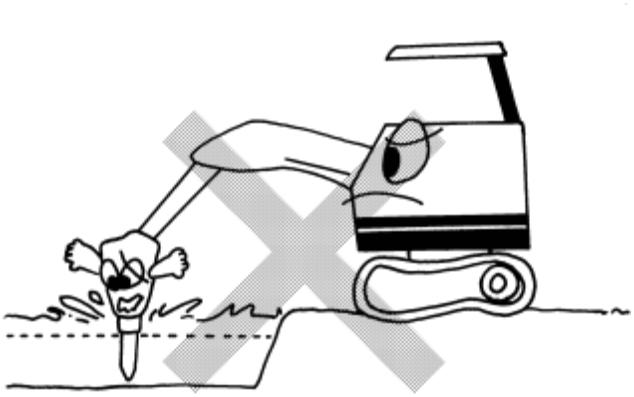
Prohibition 3 Prying crushing operations are prohibited

If rocks, etc. are broken by prying with a hammer rod, it will cause damage to bolts, hammer rods, etc.



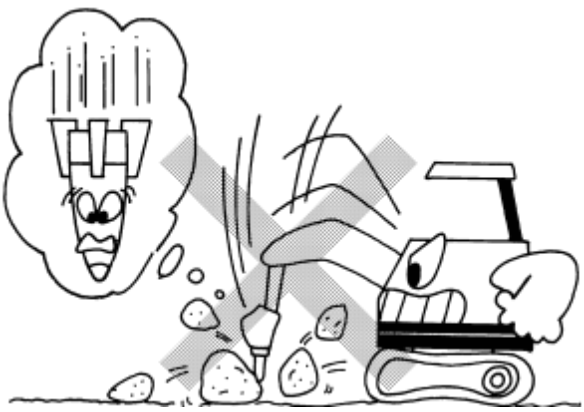
Prohibition 4 Do not perform crushing operations in water or mud

Do not perform crushing operations by placing parts other than the hammer rod in water or mud. Otherwise, the hammer will fail too early due to rusting of the piston and other parts.



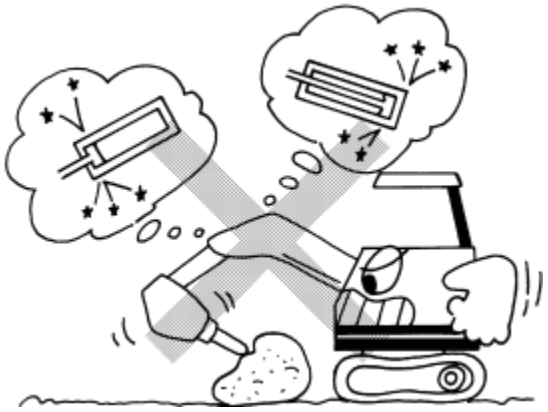
Prohibition 5 Do not let the breaker fall to break rocks, etc

If excessive force is applied to the breaker or the machine, it may cause damage to various parts of the breaker or the machine.



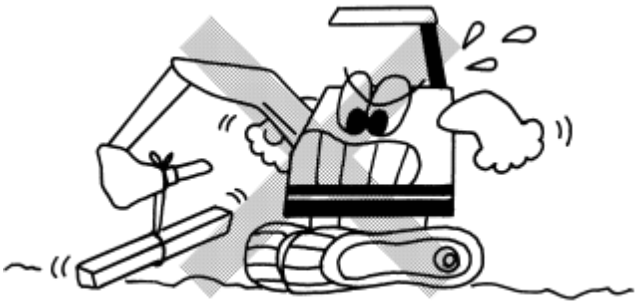
Prohibition 6 Do not perform crushing operations when the hydraulic cylinder of this machine is at the end of its stroke

If strike operations are carried out when each of the hydraulic cylinders of the machine is at the end of its stroke (when the hydraulic cylinders are extended to the maximum position or contracted to the maximum position), it may cause damage to the hydraulic cylinders of the machine or damage to various parts of the machine.



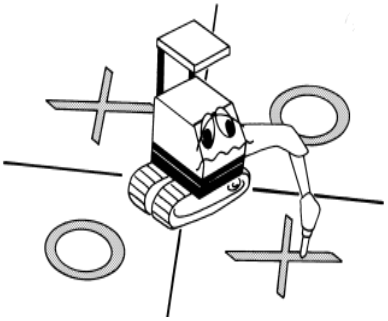
Prohibition 7 Do not lift cargo operations

Do not use hydraulic breakers for lifting goods.



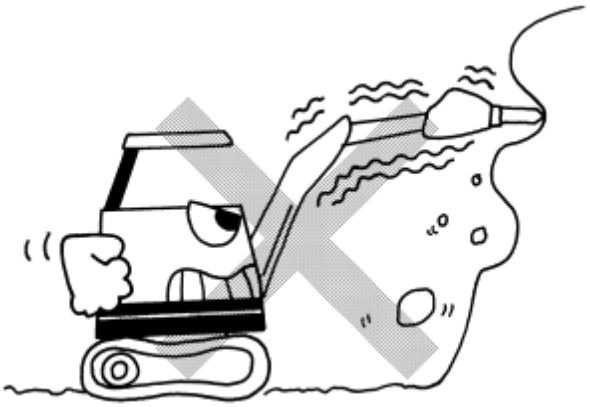
Prohibition 9 Do not work when the machine Is facing sideways

Please do not operate the breaker when the machine is facing sideways. Otherwise, it may cause the machine to tip over and reduce the lifespan of the wheel section.



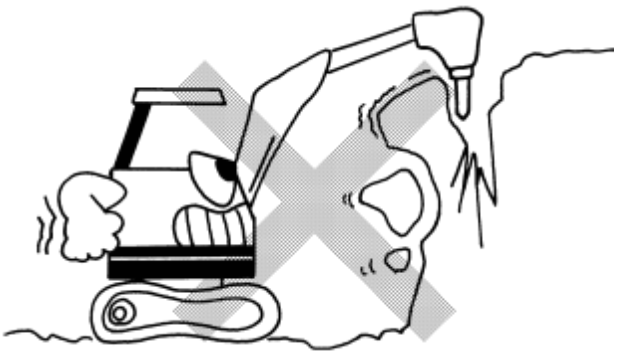
Prohibition 9

Horizontal, upward-facing strike operations are prohibited.



Prohibition 10

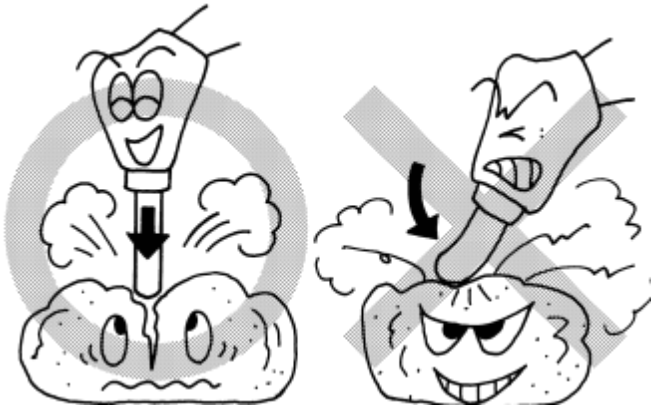
No high-altitude crushing. Otherwise it will cause rockfalls and overturns.



Precautions for using a hydraulic breaker

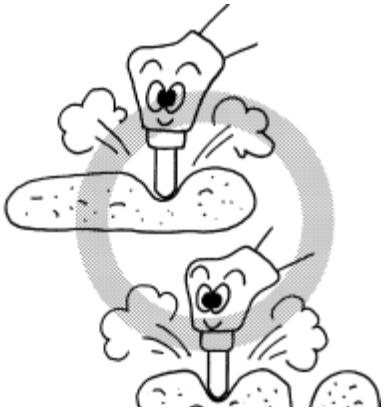
Notes 1

Strike by pressing the chisel vertically against the strike face. Also, be sure to apply thrust throughout the strike and never make an empty strike.



Notes 2

If you strike the same strike surface consecutively but fail to break and penetrate within 1 minute, change the strike surface and chisel from the top to break it.

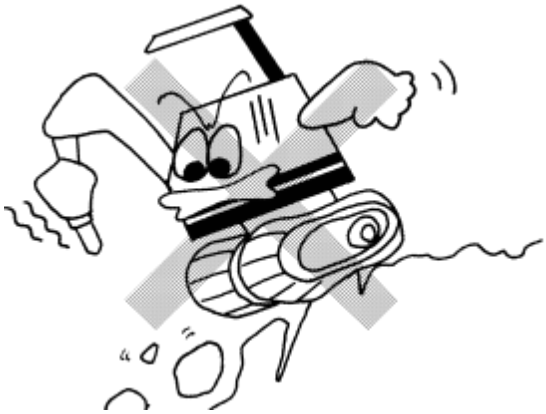


Notes 3

When lifting the hydraulic breaker, be careful not to let the steel rod strike the boom or the boom cylinder.

Precautions 4

Make sure the ground under your feet is solid before proceeding.



Recommended lubricating grease

■ Be sure to use the genuine RIPPA oils and greases shown in the table below.

Manufacturer	RIPPA working oil	RIPPA engine oil	Universal grease
SHELL	Hydraulic 46	D30CD or D10W-30CD	—
Cartel Oil	—	—	Engineering King (General Electric No. 3 lithium)

● Recommended lubricating grease

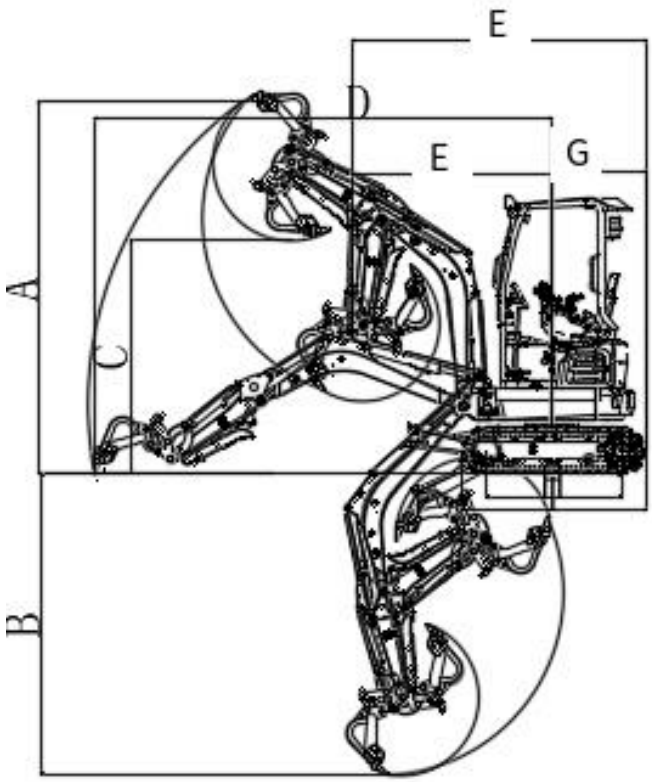
Producers	Engine oil	Hydraulic oil	Gear oil
Mobil	The Black Tyrant Delvac MX(15W-40) Super Tyrant Delvac Surper Multigrades(10W-30/15W-40)	DTE 25(VG46)	Vehicle gear oil Mobilube HD 80W-90
ESSO	Superflo(10W-40)	NUTO H46	Gear oil GX 80W-90
SHELL	RIMULA(SAE10W-30)	Tellus /Tellus ST46	SPIRAX EP90
Castrol CALTEX	Super Strongman (RX Super) SAE15W-40; Strongman (RX Super Plus) SAE10W-30	HYDRAULIC series (VG46)	
Gades TEXACO	Havoline a Motor Oil 10W-30		Havoline ■ Gear Oil 80W-90
Koei JOMO	High-grade DIESEL engine oil JOMO Diesel CF-4(SAE15W-40)/ Premium DIESEL Engine oil JOMO Diesel CD(SAE10W-30)	JOMO Hydlux (VG46)	Premium automotive GEAR oil JOMO GEAR 5

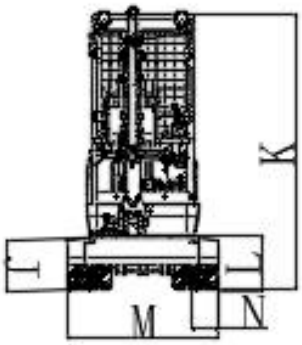
※ When changing the oil, drain all the oil before adding new oil. ※

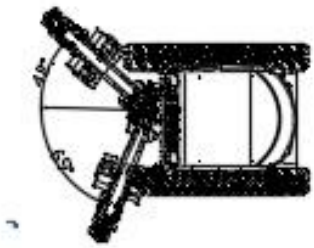
Please use the following fuels.

- 0# diesel: For summer use
- -10#, -20#, -35# : Winter, choose according to local temperature

Dimension diagram







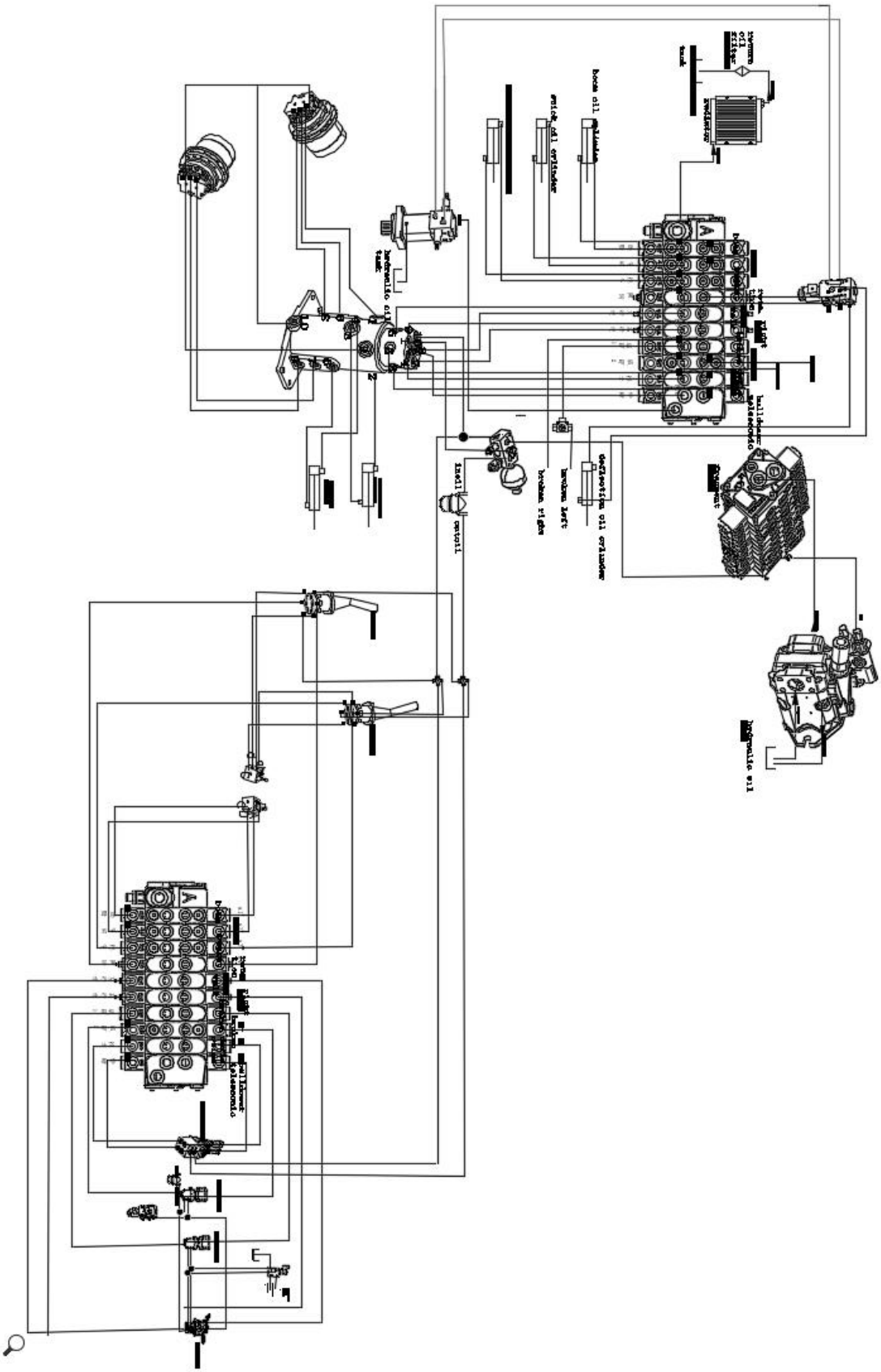
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
R18	3260	2627	2048	3990	2562	1733	785	182	1608	447	2403	486	1318

	(N)
R18	230

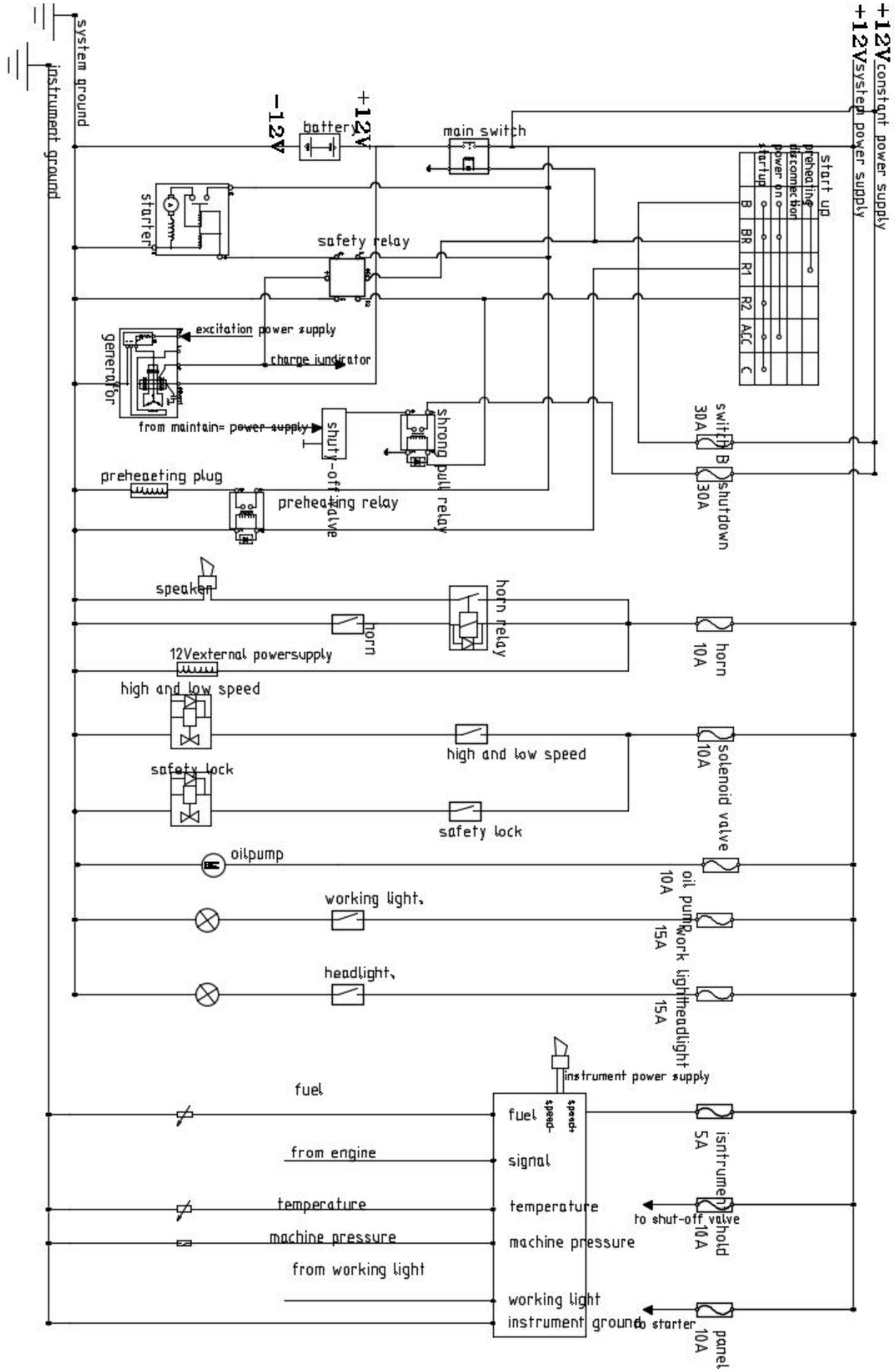
Unit:
mm

Hydraulic schematic diagram and detailed information

The hydraulic schematic diagram, as an essential part of the design of a hydraulic system, clearly shows how the hydraulic system works, its structure, and its control mode. The machine hydraulic circuit based on the hydraulic schematic diagram can better solve the problems of the hydraulic pipeline.



Electrical schematic diagrams, as an important part of circuit design, are used to clearly show how the circuit works, how it is structured, and how it is controlled. An electrical schematic diagram can provide a comprehensive understanding of the electrical layout of a machine and can also be used to troubleshoot electrical problems.



Excavator Parameter Table

Model information configuration status ● Standard ○ Optional			R18-5		
Basic Performance Parameters	Overall working weight (kg)	1905	Engine	Engine model	JBT D902
	Container capacity (m^3)	0.045		Maximum Horsepower (ps)	16.1
	Walking speed low/high (Km/h)	0-2.8-1.5/0		Maximum power (Kw)	11.8
	Climbing ability (%)	30%		Maximum rotational speed (rpm	2300
	Ground specific pressure (Kpa)	30.33		Displacement (L)	0.898
	Maximum digging force (kN)	12.8		Number of cylinders	3
	Maximum digging radius (mm)	3990		Cooling method	Water cooling
	Maximum digging depth (mm)	2627		Engine oil change volume (L)	3.7
	Maximum digging height (mm)	3260		Fuel form	Diesel
	Maximum unloading height (mm)	2048		Fuel grade	No. 0/-10
	Maximum deflection Angle (°)	111		Theoretical fuel consumption (L/h)	1.5-1.8
	Track extension range (mm)	989-1318	Body	Transport length (mm)	2562
				Transport width (mm)	989
Configuration	Cab	○		Transport height (mm)	2403
	Handrails	-		Counterweight ground clearance (mm)	486
	Quick change	●		Bucket width (mm)	400
	Hydraulic quick change	●		Boom length (mm)	1780
	Rake	○		Barrel length (mm)	1120
	Grabber	○		Width of the bulldozer board (mm)	990/1310
	Loosener	○	Fuel tank	Fuel tank (L)	22
	Breaker hammer	○		Hydraulic tank (L)	13
	Counterweight	●	Tracks	○- Rubber (bandwidth * pitch * number of sections)	48 * 230 * 74
	Tensioned form	Butter tension			
	air conditioner	-		○- Steel (bandwidth * pitch * number of sections)	230 * 90 * 39
Hydraulic system	Main pump type/model	Variable plunger pump /18			
	Main pump brand	Taifeng Hydraulics		Rubber blocks (pieces)	78
	Maximum flow rate of the main pump (L/min)	41.4			
	Multi-way valve	Taifeng			
	Multi-way valve brand	Taifeng			
	Rated set pressure (Mpa)	17			
	Maximum set pressure (Mpa)	18			
	Walking hydraulic motor type	Built-in LTM03CDK			
	Walking motor brand	Likechuan			
	Motor displacement	11/20			
	Rotary hydraulic motor type	Pai One			
	Displacement	245			

EC DECLARATION OF CONFORMITY

Original Declaration

MANUFACTURER:

Name: SHANDONG RIPPA MACHINERY GROUP CO., LTD.

Address: No. 6 Industrial Park, No. 2166 Chongwen Avenue, High tech Zone, Jining City, Shandong Province, P.R.China

AUTHORIZED REPRESENTATIVE:

RIPPA EUROPE LLC EOOD

1 Racho Dimchev str., entr. A, 1st floor, office 1 1000 Sofia, Bulgarien

AUTHORIZED TO HOLD TECHNICAL FILE ON BEHALF OF MANUFACTURER ABOVE

HEREBY DECLARES THAT THE BELOW MENTIONED MACHINE:

DESCRIPTION OF MACHINERY

PRODUCT NAME:	HYDRAULIC EXCAVATOR
MODEL/TYPE:	
SERIAL NO.:	
PRODUCTION YEAR:	

IN ACCORDANCE WITH:

MACHINERY DIRECTIVE	2006/42/EC EN 474-1:2022; EN 474-5:2022
EMC DIRECTIVE	2014/30/EU EN ISO 13766-1:2018; EN ISO 13766-2:2018

AS WELL AS TO THE FOLLOWING OTHER DIRECTIVES AND THE CORRESPONDING NATIONAL REGULATIONS:

NOISE DIRECTIVE	2000/14/EC & 2005/88/EC, DLGS 262/02

EQUIPMENT ACCORDING TO THE DEFINITION GIVEN BY ANNEX I, ITEM 20 OF NOISE DIRECTIVE.
CONFORMITY ASSESSMENT PROCEDURE FOLLOWED: ANNEX VII OF 2000/14/EC
NOTIFIED BODY: EUROPEAN CERTIFYING ORGANIZATION S.P.A. NB 0714, VIA MENGOLINA 33, FAENZA(RA), ITALY
HOLDER OF THE TECHNICAL DOCUMENTATION: MANUFACTURER
MEASURED SOUND POWER LEVEL: 92 dB(A)
GUARANTEED SOUND POWER LEVEL: 93 dB(A)

SIGNED ON BEHALF OF SHANDONG RIPPA MACHINERY GROUP CO., LTD

STAMP&SIGNATURE : Jacky Yan

NAME : Jacky Yan

POSITION : GENERAL MANAGER

PLACE : JINING, CHINA

DATE :

Attachment and spare parts list

Attachment list
Attachment List
1. Foot pads
2. Accessories

Accessory name	Quantity	Type
		R18-5
14-inch toolbox	1	○
Butter gun	1	○
Tool butter	1	○
Belt wrench	1	○
Tool wrench set	1	○
Hex socket wrench	1 set	○
New funnel	1	○
Open wrench	1	○
Air filter element	1	○
Return oil filter element	1	○
R18 complete car stickers	1	○
R18 Parts Manual	1	○
R18 Instruction Manual	1	○
Orthodontic	2	○
Side teeth	2	○
Bucket pivot	2	○

3. Random file
① One copy of the operation and maintenance manual
②. One copy of service voucher for three guarantees
③ One copy of qualification certificate
④ One copy of the engine manual