



山东立派机械集团有限公司  
SHANDONG RIPPA MACHINERY GROUP CO., LTD.

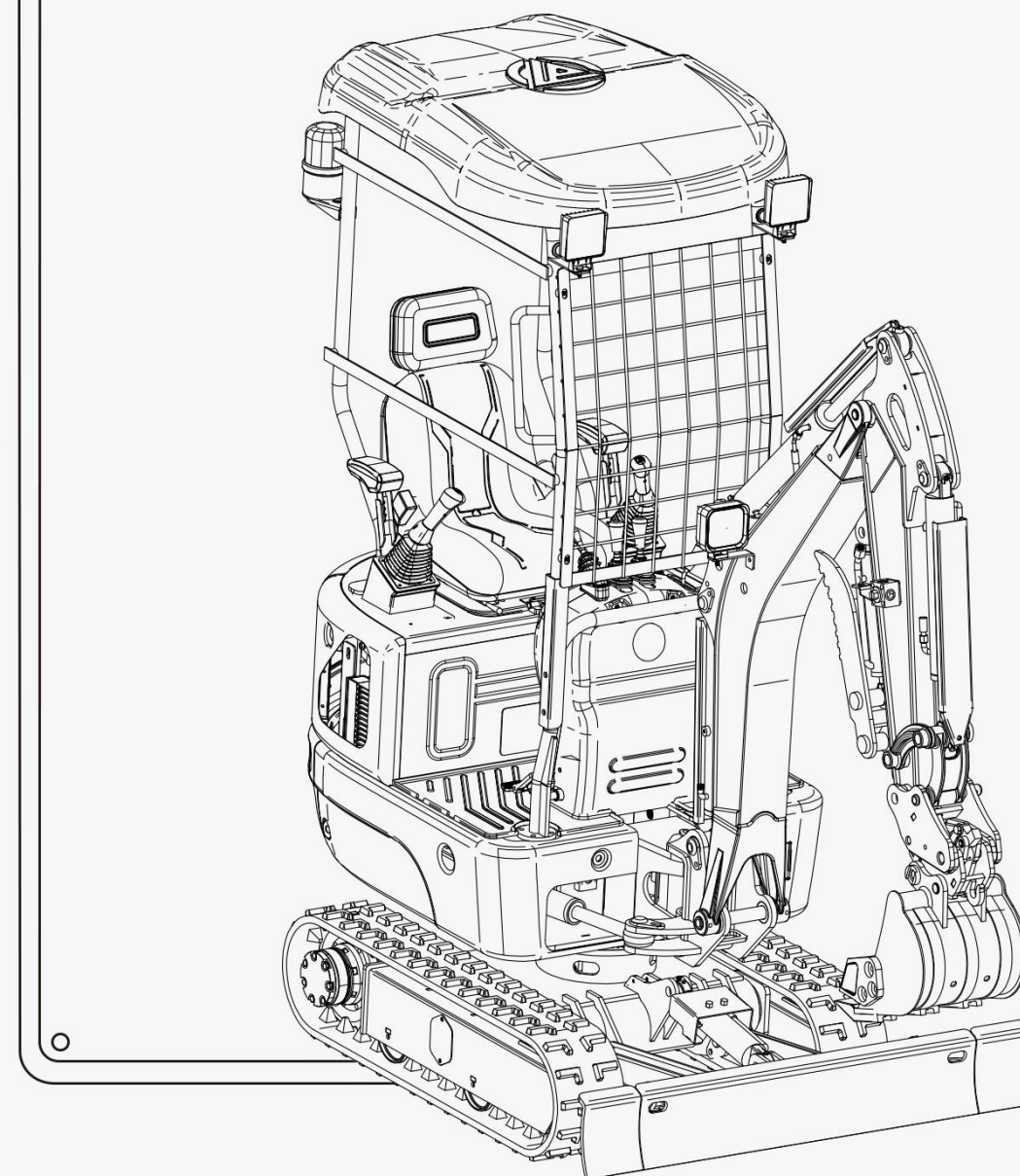
地址：山东省济宁市高新区广安路广安家园北36米

☎:(86) 0537-2339712

📞:(86) 18753778717

✉:rippamachine@gmail.com

WWW.RIPPA.COM



# 使用说明书



























## R10 ECO 液压挖掘机

本说明书仅展示零部件，详细操作步骤请参考相应型号的说明书。



## Symbols for operating devices

The operating device is marked with symbols to facilitate operation and maintenance management. The meanings of the symbols are as follows. Please fully understand and pay attention to avoid erroneous operations.

	Bucket dumping		Bucket pull up
	Boom down		Boom lifting
	go ahead		Back
	Rotate Left Swing left		Rotate Right Swing to the right
	Pull up the arm		Stick extended
	Bulldozer lowered		Bulldozer Lift
	Machine travels at low speed		High speed machine travel
	locking		unlock
	fuel ( Light oil )		Working oil
	Battery charging warning		Engine oil pressure
	trumpet		Engine warm-up
	Automatic idling		Work Light
	Arm limit		Water temperature gauge


## Foreword


Thank you for purchasing RIPPA products.

This instruction manual describes the correct use of the product and simple inspection and repair. Please read and fully understand this content carefully before use, in order to give full play to the excellent performance of the products you purchased, and to carry out safe and comfortable operations. The manufacturer cannot directly supervise and direct the use, operation, inspection and maintenance of the machine. Therefore, users should perform their work correctly and safely. Please note that matters not described in this instruction manual may be applied to relevant laws, regulations, rules and insurance conditions depending on the operation content. After reading this instruction manual, please keep it properly in the instruction manual collection folder so that you can read it at any time if you have any questions. When the user manual favorites are damaged, please be sure to replace them with new ones. In addition, due to changes in product specifications, the products you purchase may not be consistent with the contents of this manual, please understand.



### Safety first.

The precautions described in this book and the marked labels posted on machines  are important items that can lead to personal accidents. Be sure to read it carefully and follow it strictly.

In addition, if the label with the  symbol is dirty or falls off, please be sure to order it from a local sales store and post it at the designated location.

#### Indications on precautions

This instruction manual indicates the following matters that need special attention when using the machine.



#### **danger**

Indicates that failure to observe precautions can result in death or serious injury.



#### **warn**

Indicates risk of death or serious injury if precautions are not followed.



#### **note**

Indicates risk of injury if precautions are not followed.



#### **significant**

Indicates that failure to observe the precautions may result in damage to the machine or cause a malfunction.

#### **supplement**

Indicates additional information that helps with the use.



## About Specifications

This manual also describes different models and specifications of products, please confirm the model and specifications of your purchase before operating, so as not to make mistakes.



# Table of Contents

## Table of contents

In order to do the job safely.

Basic safety matters .....	8
Precautions before operation .....	11
Precautions during operation .....	13
Things to note after work .....	17
Precautions during maintenance .....	17
Transportation Notes .....	22
Regular inspections should be carried out .....	24
Labeling and posting locations .....	24
Maintenance of label .....	27

### About repair and warranty

### Description of each device

#### About the use of each device

Use of safety devices .....	30
Operating handle lock lever .....	30
Use of switches and instrument indicators .....	30
Starter switch .....	31
LCD display part ( Normally ) .....	32
indoor light .....	32
Wiper and window washer switch .....	33
Seat Adjustment .....	34
Opening and closing the rear hood .....	35
Toolbox .....	36
Opening and closing of cab door .....	36
Opening and closing of the front window of the cab .....	36
Use of the operating handle .....	37
Throttle knob .....	39
Driving handle( right, left ) .....	39

### Inspection before operation

Homework Check.....	40
Check and replenish cooling water.....	40
Check in grand Refilling Fuel.....	40
Checking and Refilling Engine Oil.....	41
Checking and Refilling the Operating oil.....	41
Inspection and cleaning of radiator and oil cooler.....	41
Check and clean the battery, wiring, and engine area.....	42

Starting the engine.....	43
Starting in cold weather.....	46
Inspection and confirmation after starting.....	47
Warming up .....	47
Inspection of various departments.....	47
Precautions for overheating.....	47
Stopping the engine .....	48

### Backhoe excavator operation

Run-in .....	48
Start and drive .....	48
Steering .....	48
Steering while driving ( Turn on the spot ) .....	51
Steering when stopped ( Turn on the spot ) ....	51
Rotation direction .....	52
Up and down ramps .....	53
Sloped lot parking .....	53
parking .....	54
Bulldozer operation .....	54
Boom Operation .....	55
Stick Operation .....	55
Bucket Operation .....	56
Rotation Operation .....	56
Swing operation .....	56
Prohibited homework .....	57
Operation precautions .....	58

# Table of contents

## Truck Transport

Loading and transportation .....	60
Unloading from the truck .....	61
Body lifting .....	63
Main traction method .....	64

## maintain

About waste disposal .....	6 5
Periodic Checklist .....	6 6
Each use 50 Hours of maintenance .....	7 0
Fuel tank draining .....	7 0
Battery fluid level check .....	7 1
Grease injection on the root surface of rotating bearings .....	7 3
Oil change ( First time 50 Hour, 2 After For each 250 Hour ) .....	7 6
Oil filter element replacement ( First time 50 Hour, No. 2 After each 500 Hour ) .....	7 7
Each use 100 Hours of maintenance .....	7 8
Travel motor oil replacement ( First time 100 Hour, No. 2 After each 500 Hour ) .....	7 9
Each use 200 Hours of maintenance .....	8 0
Check the air conditioning belt tension .....	8 0
Checking and adjusting the fan belt tension ...	8 1
Cleaning and inspection of air filter element ...	8 2
Grease injection in the ball area of swivel bearings .....	8 2
Inspection of radiator hoses and hose clamps .....	8 2
Air conditioning condenser cleaning .....	8 3
Each use 250 Hours of maintenance .....	8 3
Oil change ( First time 50 Hour, 2 After For each 250 Hour ) .....	8 4
Replacement of the working oil return filter ( First time 250 Hour, No. 2 After each 500 Hour 1 Second-rate ) .....	8 5
Each use 500 Hours of maintenance .....	8 7
Fuel filter element replacement .....	8 7
Each use 1000 Hours of maintenance .....	8 7
Replacement of operating oil ( Suction filter in the working oil tank Please also replace ) .....	8 8
Hydraulic pilot filter replacement .....	8 8
Each use 1000 Hours or per use 1 Years of maintenance .....	8 8
Air filter element replacement .....	8 8
Cleaning of hydraulic pilot filter .....	8 8

Each use 2000 Hours of maintenance.....	8 9
Grease replacement of track rollers, idlers and support rollers .....	8 9
Inspection of alternator and starter motor .....	8 9
Each use 1 Years of maintenance .....	8 9
Inspection of electrical wiring and use of fuses .....	8 9
Check the air conditioning pipes and hoses ....	9 3
Cooling water replacement ( When using extended -life coolant ) .....	9 3
Radiator hose and hose clamp replacement ...	9 3
Replacement of air conditioning pipes and hoses .....	9 3
Repair on demand .....	9 4
Check the refrigerant ( gas ) quantity .....	9 4
Check steps .....	9 4
Battery inspection and use.....	9 4
Battery maintenance and repair .....	9 5
Precautions when charging the battery .....	9 5
Battery fluid level check .....	9 8
When charging while the battery remains loaded Notes( Only when necessary ) .....	9 8
Starting the engine using the auxiliary cable ...	9 8
When starting the engine and charging the battery Precautions .....	9 9
About fuse .....	9 9
Fuse Replacement .....	10 0
Fuse Box Location .....	10 0
Fuse capacity and applicable circuit .....	10 0
Slow Blow Fuse Replacement .....	10 0
Backup power supply( Working lights, etc. ) .	10 1
Fuel system bleeding .....	10 1
Track adjustment .....	10 2
When tightening the rubber track .....	10 2
When loosening the rubber track .....	10 4
In order to use rubber tracks easily .....	10 4
When tightening the track shoes of the iron track .....	10 4
Bucket replacement .....	10 5
Bucket removal .....	10 5
Bucket Installation .....	10 5
Replacement of bucket teeth and side teeth .	10 6
Bucket teeth replacement .....	10 6
Replacement of side teeth .....	10 6
Long-term storage maintenance .....	10 7
When parking for a long time, please store it as follows .....	10 7
When using after long-term parking, please do the following .....	10 7
Use in cold seasons .....	10 7
Low temperature precautions .....	10 7
Things to note after the work is completed ...	10 8
About the regular replacement of important parts .....	1 09

## Backhoe Excavator Problems and Solutions

Easy Guide Display List.....	111
------------------------------	-----

## Precautions for using hydraulic breaker



# Table of contents

---

Precautions when installing hydraulic breaker	11 3
Precautions when using a breaker hammer ...	11 4

---

## Recommended grease

---

## Schedule






---

Dimensions .....	11 7
Main parameters .....	1 21
Accessories and spare parts list .....	125



## In order to do the job safely, be sure to read

---

Before using this machine, please read and understand this "operating instruction manual" carefully to ensure safe operation. In addition to the precautions shown below that must be observed in order to carry out work safely, this document is accompanied in this case by  **danger**,  **warn**,  **note**,  **significant**,  **supplement** signs to show attention.

### Pay attention to local regulations

Certain aspects require compliance with minimum government insurance levels, work permits or certificates, guardrails around work areas, operating hours, etc. There may be reference standards or restrictions on equipment when performing certain tasks. Check and comply with local underground installation and cable safety requirements.

For safe operation, please observe the following. Basic security matters

---

1. Before using this machine, please read this instruction manual carefully and operate safely on the basis of full understanding.
2. When lending the unit to others, please explain how to use it in detail and instruct the receiver to read the "Instructions for Use" carefully before using it.



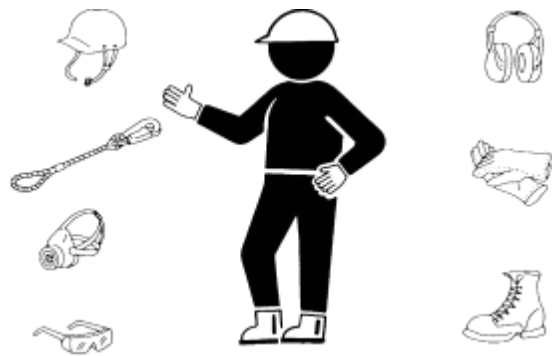
- 
3. When ROPS cab specifications are used, fasten your seat belt at all times while driving.  
Do not use seat belts without ROPS
  4. Do not modify the ROPS cab. In addition, if damage or bending affecting strength occurs, do not repair it and replace it with a new ROPS cab.
  5. Do not remove the ROPS cab.





## In order to do the job safely, be sure to read

6. We are helmet, safety shoes and safety clothing during operation and maintenance. Please wear protective glasses, dust mask, soundproof equipment, protective gloves and safety belt according to the operation content. Please confirm that all protective equipment functions properly before use.



Please keep the driver's seat clean.

If there is oil, grease, ice, snow and mud attached to the pedals and handrails, it is easy to cause slipping. In addition, please check whether there is mud attached to the shoes.

7. Prepare safety supplies

Please prepare safety supplies in advance for use in case of injury or fire.

- Please prepare a first aid kit and fire fighting equipment.
- Note down the addresses of emergency services such as emergency doctors, ambulances and fire departments.

8. Do not use this machine for alcohol, sleep deprivation, pregnant women, overtired people and sick people.



9. Please check daily.

- Please confirm whether there are abnormal phenomena (oil leakage, water leakage, loose bolts and nuts, broken wires of electrical wiring, loose terminals, etc.) during the last use. If there are abnormal phenomena, please take appropriate measures.

- Fuel, grease, please use the designated brand.

10. Be sure to install safety cover and protective cover before use.



11. Please shut down the engine during refueling, lubricating oil filling, inspection and adjustment.

Fireworks are prohibited during refueling. Also, take full care not to spill fuel.

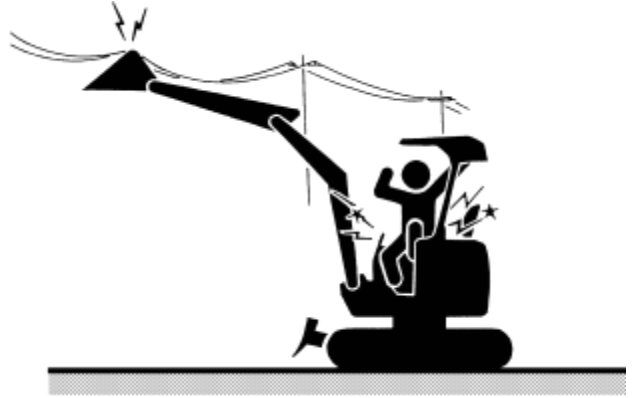




In order to do the job safely, be sure to read

---

12. When lifting the bucket, no one is allowed to enter under the bucket.
13. When lifting the bucket up, do not touch overhead wires or obstacles. Especially when touching wires, it may cause death due to electric shock, so please pay attention.
14. Do not drive when you drink alcohol, take drugs or are in poor health. Otherwise, it will cause an accident.





## In order to do the job safely, be sure to read Precautions before operation

1. Please make sure there are no people around the machine.



2. Be sure to check the following before starting the engine.

- Always sit in the driver's seat when starting.
- Make sure to confirm the "action" and "release" of the automatic idle switch.
- Please confirm that each operating handle is In the **neutral** position.
- Please "start" the engine while lifting the lock lever of the left operating handle.
- Since the muffler outlet pipe faces backward, make sure there is no one behind the machine. In addition, when working beside walls or trees, sometimes the walls will be blackened by exhaust gas, and trees will wither due to exhaust gas heat. Therefore, please take protective measures for walls or trees before working.
- Make sure there are no inflammable substances around the engine.
- Check whether the bucket is touching the ground.
- Exhaust gas emitted may cause poisoning, so when working indoors, etc., conduct adequate ventilation. In addition, inspection work should be carried out outdoors.



3. When getting on or off, please hold the handrail carefully to avoid slipping. Jumping up or down is extremely dangerous.

Please do not get caught by the operating handle when getting on or off the bus.

4. Adjustable In a machine with a driver's seat, adjust the driver's seat to the proper position.





5. Check the direction of the machine before shifting into gear. If you don't pay attention to the joystick, you may walk in the opposite direction against your will, which is very dangerous.
  6. After starting the engine, check the bucket, arm, boom, bulldozer, travel, and rotation. The inspection should be carried out in a spacious area free of people and obstacles.  
When an abnormality is found, repair it immediately.
- 



 In order to do the job safely, be sure to read

---

## Precautions during operation

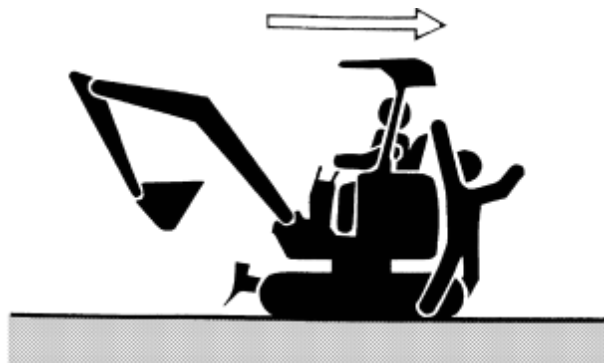
---

1. For those who are new to this machine, please operate at a low speed before getting used to it.
2. Please sit in the driver's seat and operate correctly (do not open the east and look west, jump up, jump down, etc.). Please do not allow anyone other than the driver to ride.  
Never sit on the bucket.



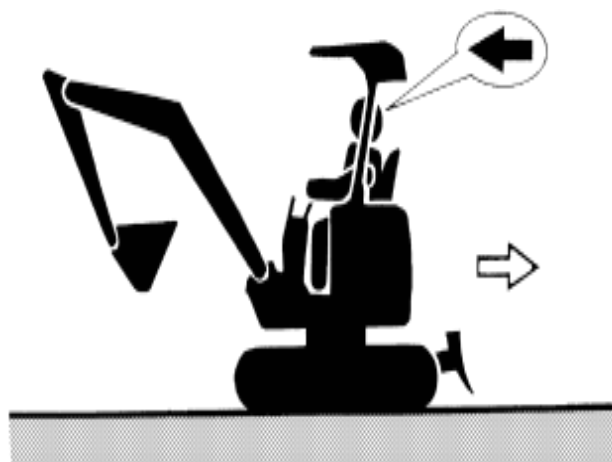
3. They may not be used for other purposes. Otherwise, it will not only cause the failure of the machine body, but also may cause unexpected accidents.

- 
4. When moving the machine, please fully confirm whether there are people and obstacles around before operating. During the operation, no one is allowed to enter the operation area.
  5. If you are working in the place with bad vision and bad terrain, please assign commanding personnel and work according to the signal of commanding personnel.



- 
6. Before operating the travel handle, confirm the direction of the body. When the wheel part is facing backward (the idler wheel and bulldozer blade are on the rear side), press the travel handle forward to move backward, and pull the travel handle backward to move forward. Before starting, make sure that the front, rear, left and right sides are in a safe state before operating.

(If you are careless, you will move in the opposite direction, which is very dangerous)





## In order to do the job safely, be sure to read

7. Please do not turn (U-turn) or cross in inclined sections, otherwise it will lead to rollover or oblique sliding, which is very dangerous. Turn on flat ground. Follow the line of maximum inclination when going up and down slopes.



8. Do not perform operations such as swinging or rotating, as well as excavation operations on inclined sections, otherwise there is a danger of rollover. When working on inclined sections as a last resort, place the machine on a horizontal footing before working.

Do not drive on rocks or work on soft mounds.

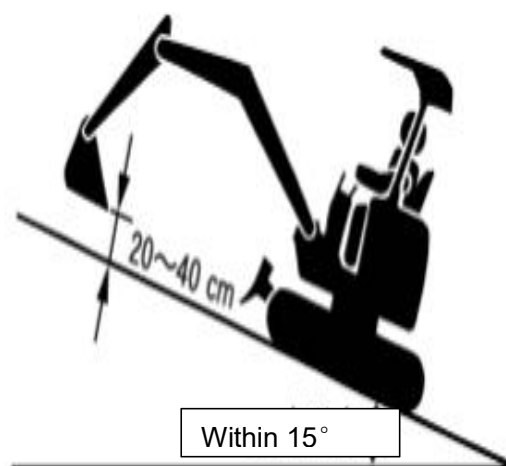
When climbing inclined sections, if you drive to stones or protruding parts and drive on uneven roads, there is a danger of rollover, so please do not climb in such places.



9. When driving and climbing, please face the rotating frame and working device to the front (put the idle wheel and bulldozer in front), and keep the bucket below the ground 20~40cm, so that in case of dangerous conditions, you can directly lower to the ground to ensure stable driving. Please never go up or down a ramp while swinging.

Also, never drive on a slope of more than 15 degrees. Otherwise, there is a danger of rollover.

10. When going up and down a soft soil slope, lower the bucket immediately to act as a brake when the body may slip.



 In order to do the job safely, be sure to read

11. When moving near cliffs or embankments, sufficient room should be left or appropriate treatment such as reinforcement should be carried out to avoid ground collapse. Also, do not approach the scene where there is a risk of falling rocks.

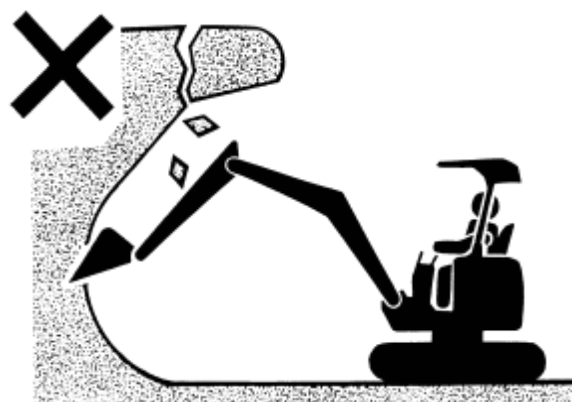
Driving after rain is more dangerous. Do not approach cliff so embankment without preparation.

12. When digging under the machine body, please pay full attention, other wise it will cause rollover due to ground collapse.



13. Don't dig under the cliff, it's dangerous. Cliff sand ground collapses can cause falling rocks.

14. If the job site or road conditions are poor, the stability of the misoperation machine will decline, and may cause accidents or even rollover. Therefore, while leveling the job site, it is also necessary to level the road surface or avoid obstacles. In addition, when driving on bridges or buildings, the allowable load should be investigated, and reinforcement should be carried out in case of insufficient strength.

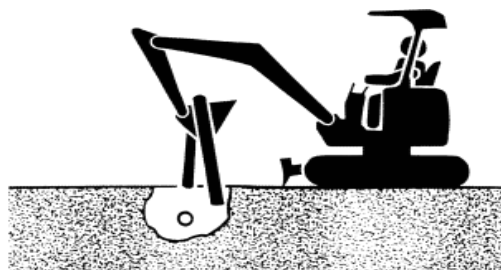


15. In general, it is easier to roll sideways than fore-and-aft. Therefore, do not rotate laterally when the working device is subjected to heavy loads.

16. In the case of rain or water, it is easy to slip when using wooden boards, iron boards, etc. Be careful when working in such slippery places.

17. When working in places with electrical wiring, gas pipelines, sewers, etc., experts should be present to guide them.

18. When the bucket tooth is hung on a stone, etc., and when the bucket tooth falls off from the upper



surface of the stone, etc., it may cause rollover due to reaction force. Therefore, be sure to pay full attention when working.

Also, never drive with the bucket digging into the ground or dig with the body floating, which is very dangerous.

---

19. When working in a building, due attention should be paid to the strength of overhead, exits, passages and floor surfaces.



20. About cargo lifting

Cargo lifting is dangerous because it may cause the cargo to fall or roll over.

- Never replace the crane with this machine.



## In order to do the job safely, be sure to read

---

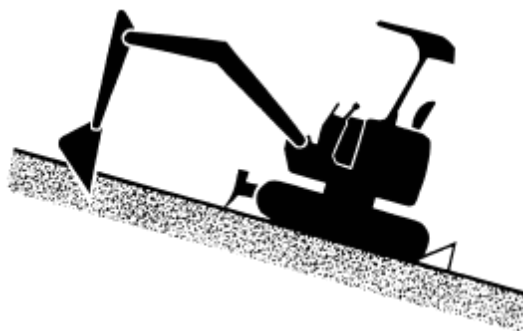
### Post-operation precautions

---

1. Make sure you park your vehicle on flat ground.

If you have no choice but to park your vehicle on inclined terrain, insert the teeth into the ground and brake the tracks.

2. When leaving the driver's seat,
  - Lower bucket to ground
  - Lock the operating handle lock lever
  - Stop the engine and remove the key.
3. When storing the engine body, the shield used should be covered after the muffler and other high temperature part have cooled down.  
Otherwise there is a risk of fire.



### Precautions during maintenance

---

1. Check and clean the engine body and working equipment, check and adjust each part, or leave the driver's seat for this reason, be sure to do it after turning off the engine. It is very dangerous to check with the engine running.  
Please select a place where there is no danger and the ground is firm and flat before checking.
2. When carrying out maintenance on the machine, please hang the warning board of "Maintenance in progress" on the conspicuous position of the machine to avoid unintentional contact with the machine by non-parties. In addition, please hang warning signs around the machine.





In order to do the job safely, be sure to read

3. During maintenance and refueling, remove any fuel that may cause damage to the fuel, Battery-ignited

items. **Fire**

**precautions:**

- Wash parts with nonflammable oil.
- Please eliminate ignition hazards.
- Please prepare fire fighting equipment such as fire extinguishers.
- When checking fuel, oil, battery solution, etc., please use explosion-proof lighting equipment.
- Keep away from kindling especially when grinding or welding.

4. Battery gases may cause fire and explosion.

- Do not spark near the battery or approach the source of fire.
- Please do not use metal sheet short circuit to check the battery. It's dangerous.

Always check with a voltmeter or hydrometer.

- Do not charge frozen batteries. Or there's a risk of explosion. When the battery is frozen, please keep the battery temperature above 15°C.

- Battery solution (dilute sulfuric acid) will cause blindness or burn, if the battery solution sticks to the skin, clothes, please immediately wash with plenty of water. In addition, if battery solution splashes into your eyes, see a doctor after rinsing with plenty of water.





## In order to do the job safely, be sure to read

5. If the battery level is below LOWER, do not use or charge it.

If it continues to be used below the LOWER (lowest level line), it will promote the aging of the internal parts of the battery, which will not only shorten the service life of the battery, but also may lead to explosion.

Make up the water immediately so that the liquid level is between UPPERLEVEL and LOWER LEVEL. (rechargeable battery)



6. When maintaining indoors or in places with poor ventilation conditions, please conduct adequate ventilation. Adequate ventilation must be carried out, especially when engine exhaust is discharged or fuel, wash oil or paint is treated.
7. For maintenance, please use proper tools suitable for the purpose. If proper tools are not used during maintenance, not only is work inefficient, but injuries may also result.
8. Maintenance and overhaul around the engine should be carried out after fixing the bracket of the outer cover.
9. When work must be interrupted to remove parts of the hydraulic system, lower the bucket and bulldozer to the ground and shut down the engine.

After starting the machine, all equipment and working oil and lubricating oil are in a state of high temperature and high pressure. Risk of scalding when oil is at high temperature. When pressurized, the working oil sprayed has the strength to penetrate the skin and cause injury. In addition, since the plug or screw flying out may cause injury, the disassembly of hydraulic system components must be carried out after the temperature of each part has dropped and the residual pressure has been removed. When loosening plugs or screws, loosen them slowly while avoiding the front side of the body.

In addition, when fuel and oil leak under high pressure, please be careful not to put your hands or face close

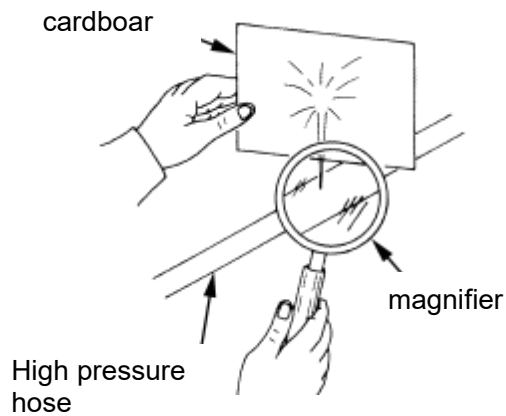


to the leak position. Facing the leak site is extremely dangerous.

---

10. When looking for oil leaks caused by invisible holes, please wear protective glasses and use straw cardboard to help locate them.

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



11. Please check, supplement and replace the radiator cooling water after the engine is fully cooled.

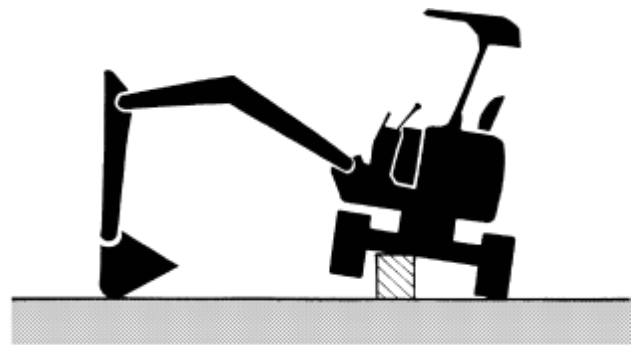
If the radiator cap is loosened immediately after work, steam or hot water will spurt out, sometimes causing burns. In addition, loose drain cocks or plugs can sometimes be scalded by hot water. In addition, just after the engine stops, the muffler is still in a high temperature state, please be careful not to touch to avoid burns.



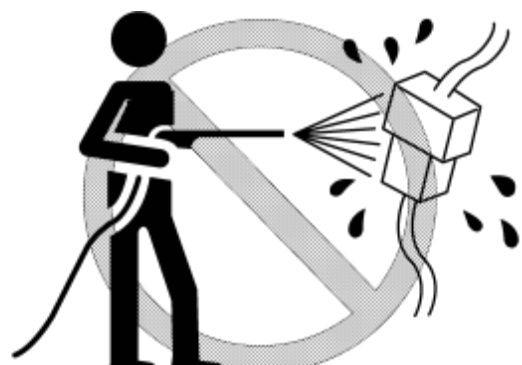
12. When welding directly on the machine body, turn the starter switch to the "STOP" position. In addition, since heat and sparks may be generated during welding, do not place parts that may cause electrical problems such as oil cylinders or seal bearings between the welded part and the grounded part.

12. For maintenance and repair, lift the machine with a working device.

Do not enter below at this time. When it is necessary to enter below, safety blocks and safety pillars should be placed below to prevent sudden falls. Also, place the joystick lock lever in the locked position.



13. If the electrical system is immersed, it may sometimes lead to short circuit or poor operation. Never wet electrical installation parts such as meters, starters, switches, batteries, sensors and connectors.



## Transportation precautions

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

1. Be sure to observe the laws and regulations related to transportation and drive safely.
2. When loading and unloading, the truck shall be parked on a flat place and the brakes shall be stepped on, and the brakes shall be applied in front of and behind the tires to ensure that the tires will not move, and then a loading and unloading platform with sufficient strength and width shall be set for loading and unloading.

When using the loading plate as a last resort, be sure to use a strong loading plate and remove oil or substances that are likely to cause slippage from the loading plate, and then load and unload slowly.

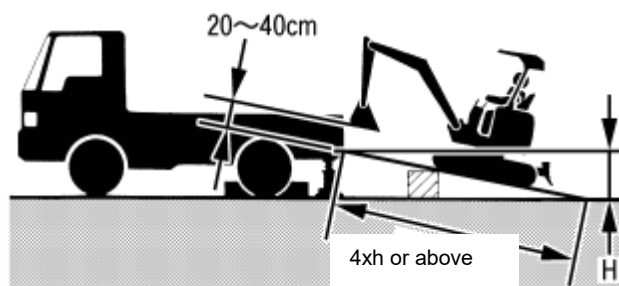
With the working device facing the direction of travel, place the arm and the loading plate in a vertical or slightly raised position, leaving a distance of 20 to 40 cm between the bucket and the loading plate. Please use a loading plate that is more than 4 times the height (H) of the trunk.

If the loading plate is bent to a large extent, use a "stand" (support table) to prevent the loading plate from bending.

Do not use the loading and unloading plate for loading and unloading in rainy days, because the loading and unloading plate is easy to slip and is very dangerous.

Do not load or unload the vehicle by lifting the body with boom or arm without using loading platform or loading plate, because it may cause falling and overturning, which is very dangerous. In addition, it is strictly prohibited to adjust the direction on the loading plate.

3. On the truck, contact and fix the bucket and bulldozer on the truck body surface,





brake the track, and fix the body on the truck body surface with the wire rope.

In addition, due to different truck models, some trucks need to store the bucket in the truck's baffle and fix it with wire ropes to prevent the bucket from moving.

4. Please do not make sudden start, emergency stop or sharp turn during transportation, otherwise the machine will move or lose balance, which is extremely dangerous.

(For details, read the Trucking item carefully before proceeding with the above operation.)





**⚠ In order to do the job safely, be sure to read**

## Regular inspections should be carried out

In order to use the machine safely and prevent problems before they occur, be sure to check it regularly. The time recorded in this article is the time indicated in the hour table. The actual inspection should be based on this time, and the maintenance should be carried out on a daily, weekly and monthly basis.

★ The above lists the main precautions to prevent errors that are easy to occur during the use of the machine. In addition, this article in this case are attached **⚠ danger**, **⚠ warn**, **⚠ note**, **⚠ significant**, **supplement** signs to show attention. Please read it carefully and observe it strictly.

**⚠ In order to do the job safely, be sure to read**

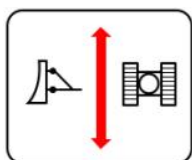
## Labeling and posting location

◆ Safety labels are posted on this machine. Drive with full understanding. Please read this carefully.

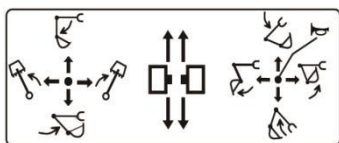
1. Close the operating lock after operating the



2. bulldozer lever



3. operation



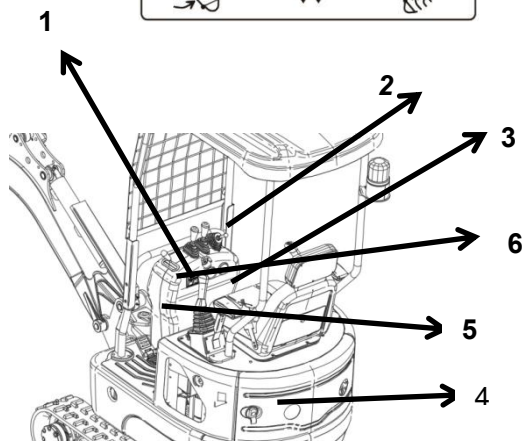
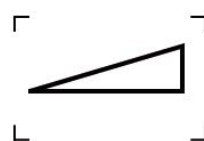
4. No one is allowed to stand in the operation area



5. Wear ear protection when operating digging machines



6. accelerator



1. hoisting



2. Brand model (1)



3. noise



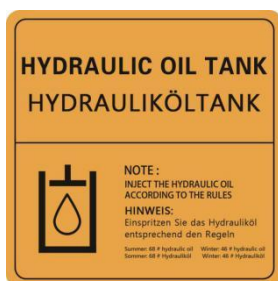
4. Bundling transport points, lifting





5. direction



6. hydraulic fluid chamber



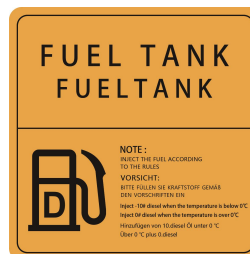
7.R10 Calculation Sticker

Lift capacity ratings										
										
A: Load radius					Conditions of operation					
B: Load point height					1480mm BOOM					
C: Lift capacity ratings					800mm Aftm					
Cf: Rated loads over front					The backhoe SAE load is 0.014M <sup>3</sup>					
Cs: Rated loads over side					rack plate is 180mm wide					
(Unit: kg)										

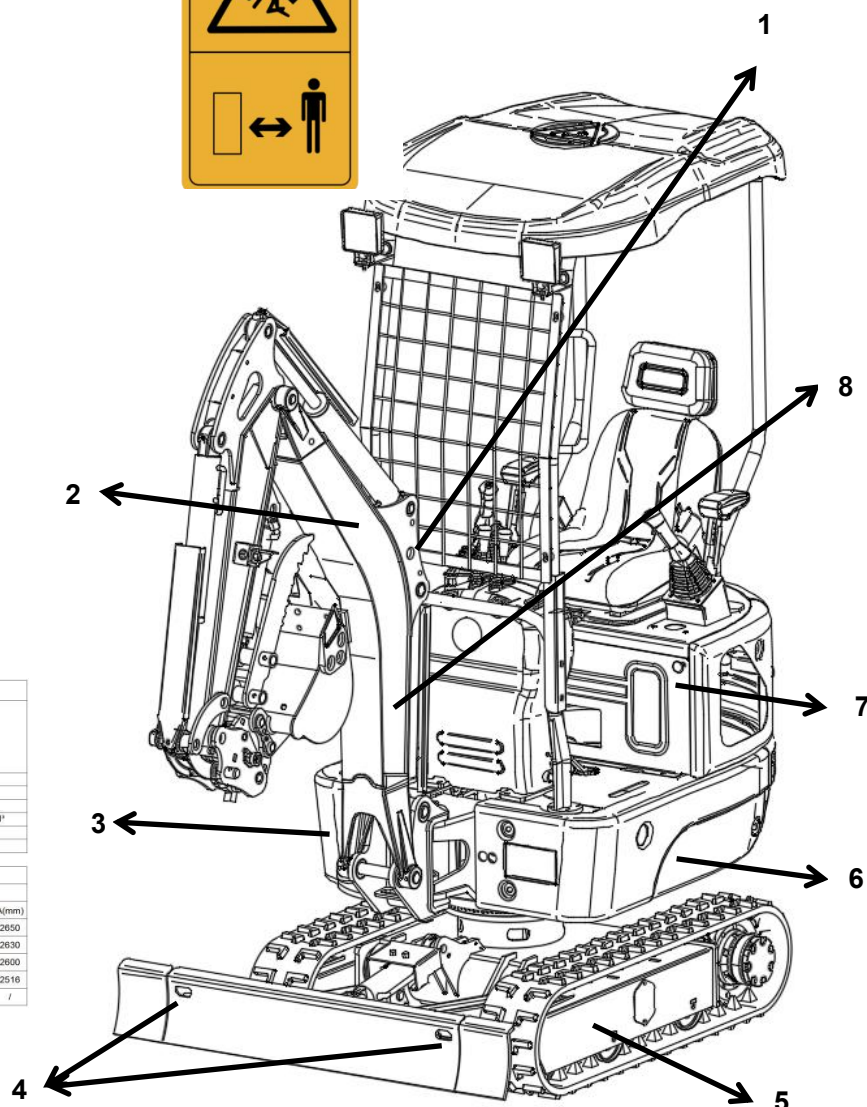
8. Maintenance car stickers



9. diesel tank



10. The lower end of the working device stands strictly

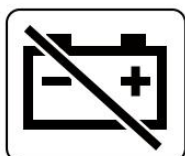




1. Precautions for operation, inspection and maintenance



2. outage



3. Brand model (rear)



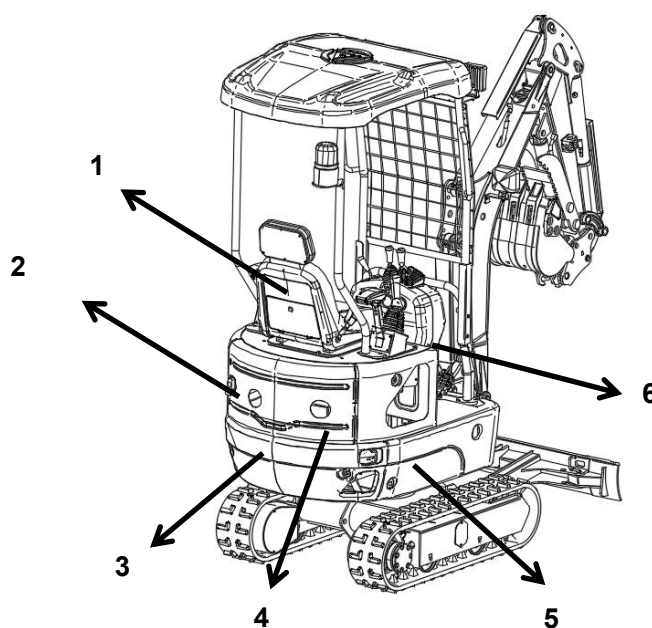
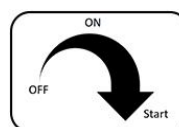
4. No one is allowed to stand in the operation area



5.CE  
ERUO V  
EPA IV emission  
standard



6. Key gate





In order to do the job safely, be sure to read

---

## Label maintenance

---

1. Labels should always be kept clean and careful not to scratch.  
If the label is dirty, rinse it with soapy water and wipe it off with a soft cloth.
2. If you wash the car with a high-pressure washer, the label may peel off. Therefore, do not rinse labels directly with high pressure water.
3. If the label is damaged or missing, please order from the place where the product was purchased and re-attach the new label.
4. When putting up new labels, wipe off the dirt thoroughly and re-post them in their original place after drying.
5. When replacing a labeled part with a new one, replace the label at the same time.

# About maintenance and warranty

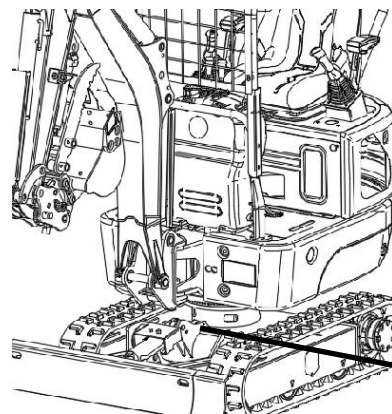
If there is a malfunction or confusion during use and maintenance is required, please contact the sales shop where you purchased the product or the designated maintenance factory of the company.

Please inform us of the following when contacting:

- (1) Model name and chassis number
- (2) Engine name and engine number

In addition, the sales shop has authentic parts list, please consult with the sales shop when ordering parts.

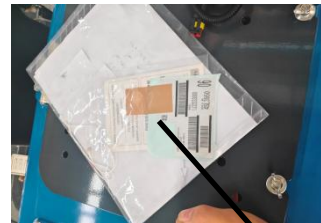
This product is equipped with an electronic key for theft prevention (hereinafter referred to as anti-theft device), but this device is only a device to suppress theft and cannot guarantee that theft will not occur.



chassis number



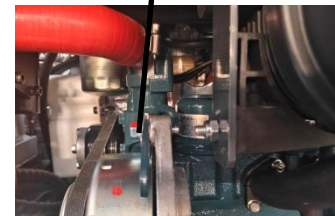
\*It is dangerous to modify the machine. Do not modify the machine. Because the purpose of modification or use is different from the correct use purpose described in the instructions for use, it does not belong to the scope of manufacturer's warranty, so please note.



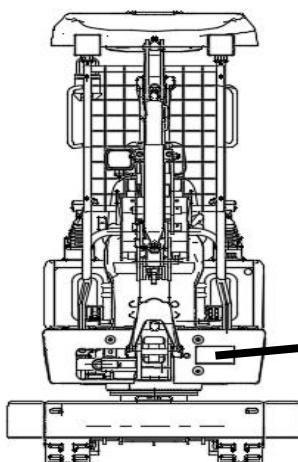
Kubota engine model



Bridge stone engine model



Type of vertical engine

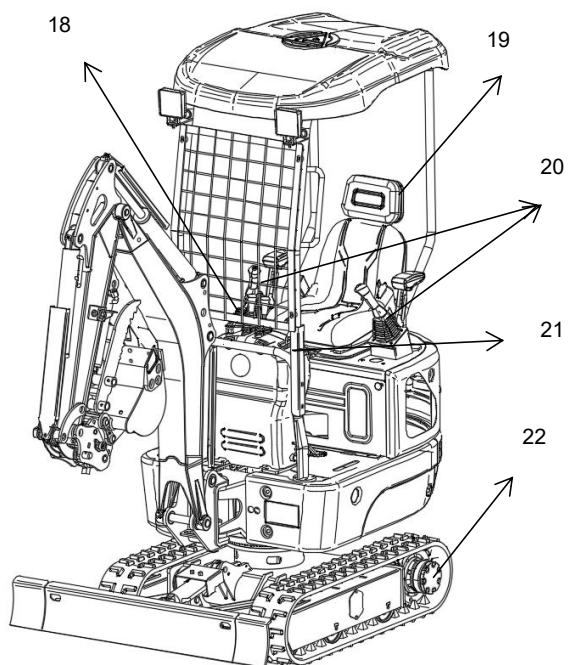
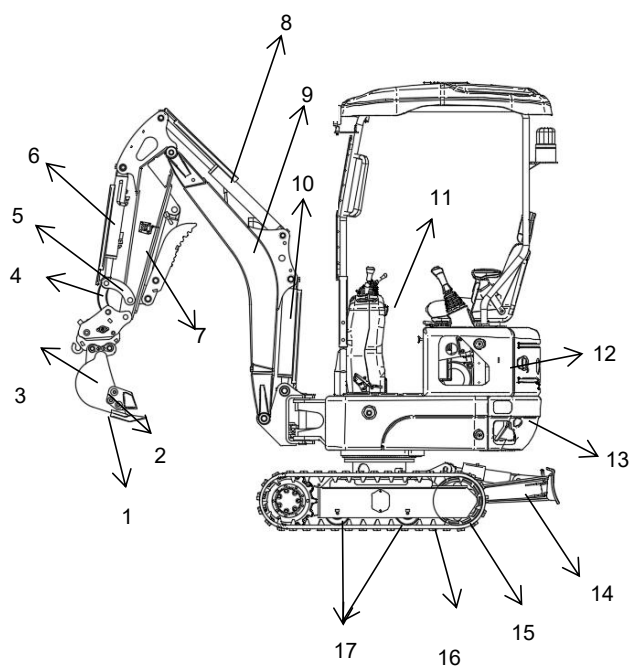


nameplate





# Description of each device



serial num ber	name
1	bucket teeth
2	side teeth
3	bucket
4	connecting rod
5	rocker
6	bucket cylinder
7	bucket rod
8	the stick cylinder
9	swing arm
10	boom cylinder
11	off-duty switch
12	seat guard
13	bob-weight
14	dozer blade
15	drive sprocket
16	track
17	thrust wheel
18	dozer handle
19	seat
20	digging handle
21	accelerator cable
22	travel motor



# Use of each device

## Use of safety devices

### ■ Operating handle lock lever



#### **note**

\*When parking or leaving the machine, be sure to lower the bucket to the ground and lock the safety lock switch. It's dangerous to drop work gear. Therefore, make sure that the lock is in the activated position before getting out of the vehicle. Also, please pull out the key so that no one else can operate the machine by mistake.

#### **supplement**

- \* This model is a mechanical multi-way valve. When the safety lock position is not in the "lock" position, it is easy to touch the handle by mistake when getting on the train. Pressure relief occurs even when the mechanical valve is shut down in the "locked" position.





## ■ Starter switch

- "SIARTERSWITCH CONTACT"

The key can be inserted in the position "SIARTER SWITCH CONTACT".

- "START" (operation)

If you turn one gear to the right from the "SIARTER SWITCH CONTACT" position in to the "START" position, all circuits will be energized and preheat and glow display will occur.

At this time, in order to perform the lamp off check, the indicator lamp is lit for about 1second.

- "START"

If the operating handle lock lever is in the "lock" position and the "SIARTER SWITCH CONTACT" position is rotated to the right by one gear to enter the "START" position, the starter motor rotates and the engine starts. When you release the key, the key will automatically return to the "SIARTER SWITCH CONTACT" position, so release the key after the engine starts.



# Use of each device

## ■ Electronic meter display position (normal)

### ◆ Water temperature gauge



#### **note**

\* If it is opened during operation or immediately after operation is stopped  
Radiator cover, sometimes hot water will spray out and cause burns.  
Therefore, open the radiator cover only after the radiator has cooled.

Turn the key gently to the **START** position on the LCD display of the electronic instrument and release the key to activate the display. The LCD will display the cooling water temperature. If the water temperature gauge is close to "H",

1. Abort operation,
2. After placing the engine at idle speed (approx. 5 minutes)
3. Stop the engine and perform the following inspections (1) to (3).
  - (1) Whether cooling water exists or leaks.
  - (2) Loose fan belt.
  - (3) Whether there is dirt or dust attached to the radiator.

## ■ Indoor lights

Turn the key gently to the **START** position and release the key.

If the switch of the ceiling indoor lamp is turned on, the indoor lamp lights up.



### ■ Wiper and window washer switches

When the starter key is on, if the wiper switch is pressed down, the wiper motor will operate, and if pressed down again, the window washer will operate. (The window washer works even when pressed to the OFF position.)

- Do not use the washer switch when the washing tank is empty. Otherwise the pump will be damaged.
- Dry cleaning may damage the glass. Therefore, be sure to spray cleaning solution before using the wiper.

windshield



### ■ R10 Kubota Preheater Switch

When the starter key is in "STARTERSWITCH CONTACT" position, turn the preheaters switch to the right to start

start button



## ■ Seat adjustment

\* since the seat is turned forward in a state where the engine is started

It is possible to touch the travel handle and cause the vehicle body to travel.



So be sure to turn off the engine before tipping the seat forward.

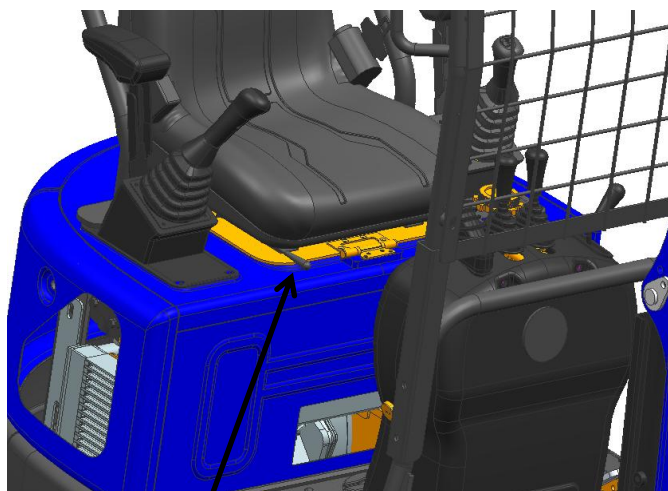
Motivate and place the operating handle lock lever in the "locked" state.

The seat is a seat that slides back and forth.

1. The seat adjustment lever, which adjusts the front of the seat by moving it forward, moves the seat forward and backward. Adjust the seat to a position that is easy to operate. Make sure that the seat is secured after adjustment.


### **supplement**

\* When restoring the seat, make sure

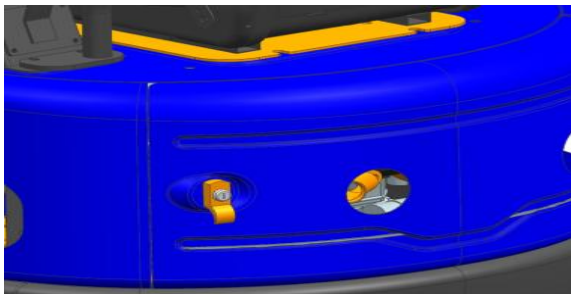


seat  
adjustment

## Rear hood opening and closing

	<b>note</b>
<p>* Be careful not to pinch your hands when closing the rear hood.</p> <p>* After the rear hood is closed, lock it securely.</p>	

1. Insert the starting key into the keyhole and turn left to unlock the rear hood. Press the keyhole and open the rear hood to the right.




2. To close, close the rear hood to the left until you hear a click to ensure that the rear hood is properly closed.
3. Turn the starting key to the right and lock it.



**significant**

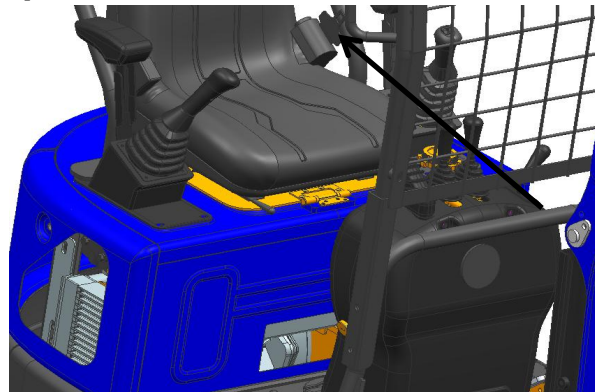
- \* Do not operate with the hood open. Failure to do so could result in hood damage.
- \* The rear hood is lifted by the pressure of the cylinder.

## tool cabinet

	<b>warn</b>
<p>* since the seat this pushed forward in a state where the engine is started</p> <p>It is possible to touch the driving handle and cause the vehicle body to travel.</p> <p>So be sure to close the seat before pushing and pulling the seat forward.</p> <p>Motivate and place the operating handle lock lever in the "locked" state.</p>	

There's tool storage at the back of the seat. To use it, pull the lever at the bottom of the seat and push the seat forward.

Press the button at the back of the seat and open the cover at the back of the seat.



seat fore and aft  
adjustment lever



Seat toolbox





# Opening and closing of the cab door

1. When opening the door, use the key to open the door lock, pull the handle, open the door, there will be a thimble to fix the door, open the door



thimble

2. To close, press the button inside the door and close it.



button

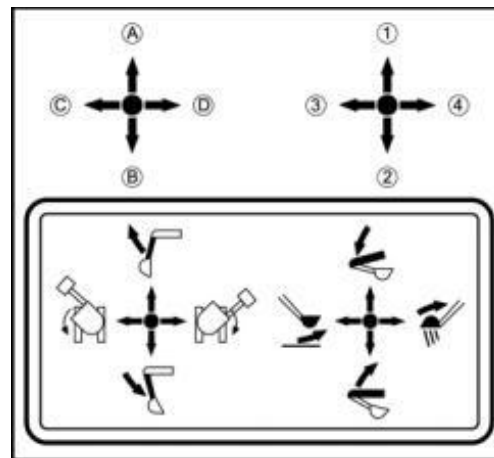
3. Please lock the door when leaving the machine for a long time.





## Use of operating handles

joystick		movement
right joystick	1	Lower boom
	2	raise the boom
	3	stow bucket
	4	Open bucket
left joystick	A	Lower the stick.
	B	Raise the arm
	C	Turn the cab to the left.
	D	Rotate the cab to the right

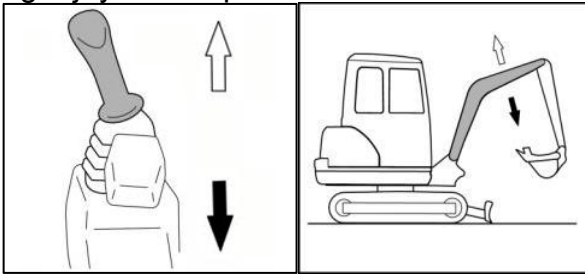






## Boom operation

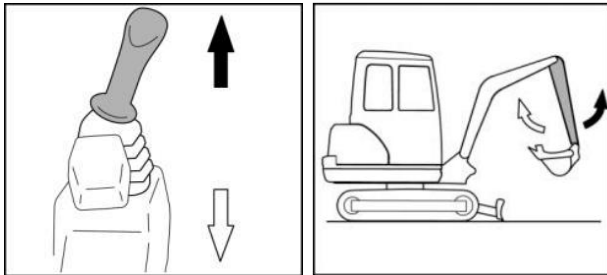
When the excavator encounters overload, be sure to lower the boom until the load reaches the ground. To raise the boom, use the right lever to pull rearward. To lower the master arm, use the right joystick to push forward.



## Arm operation

To raise the stick, push the left control lever forward; to retract the stick, pull the left control lever rearward.

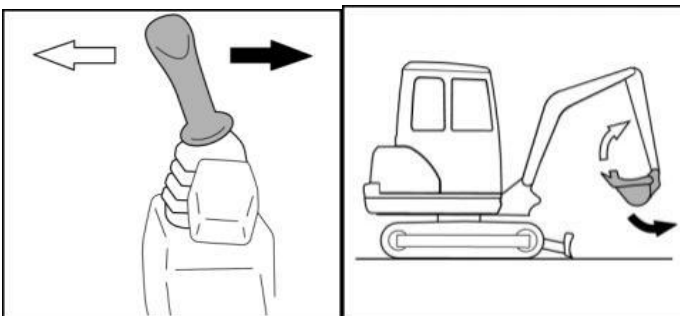
The joystick moves as shown.



Lift the bucket and use the right joystick to pull it to the left. To empty the bucket, use the right joystick to push to the right.

When installing the bucket, make sure that the bucket teeth do not strike the front plate of the bulldozer.

The bucket moves as shown.





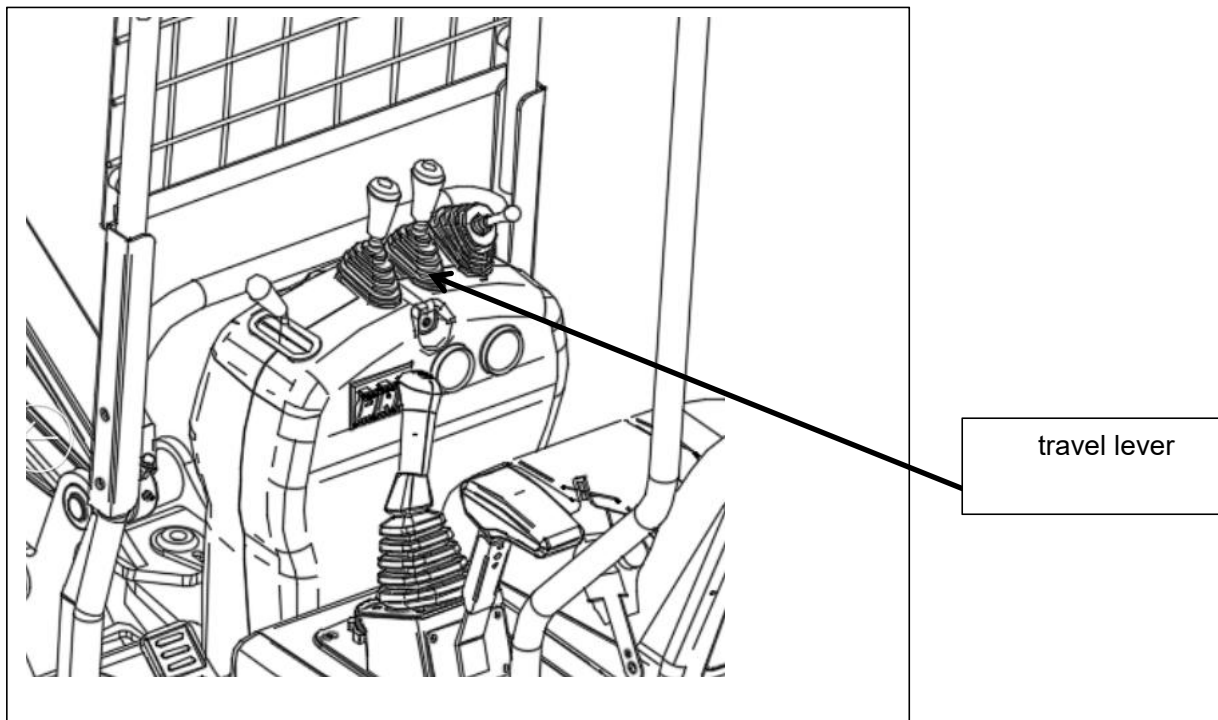
### ■ Throttle knob

sitting in the  
driver's seat

1. If the throttle is pushed to the lowest position (high speed side), the engine speed will be increased.
2. To shut down the engine, push the throttle all the

Travel handle (right, left)

If you sit in the driver's seat, push the two handles forward and push the handles backward.



### supplement

- \* Due to the hydraulic system, the working device can only be operated when the engine is running. To bring the bucket into contact with the ground, do so after turning the engine at low speed.
- \* When getting on or off, press the rocker switch and be sure to put it in the "locked" position.
- \* Since the responsiveness of the operating device to the operating handle becomes slow when the operating oil temperature is low, be sure to perform warm-up operation.
- \* During periods of low operating oil temperatures, the operating handle feels slightly heavy, but this is not a fault.
- \* To remove hydraulic equipment, follow the steps below.
  - Lower the engine speed so that the bucket touches the ground.
  - Stop the engine and move the handle in all directions.
  - Please wait more than 10 minutes to remove the residual pressure of the hydraulic circuit.

These steps are essential to prevent danger.





## pre-run inspection

### ■ Check and supplement cooling water



**note**

- \* If you hit during operation or immediately after operation stops  
Open the radiator cover, sometimes steam or hot water will spray out and guide cause burns. Therefore, please turn on the radiator after the radiator has cooled down.  
Heater cover.

Please check whether the water tank is filled with the specified amount of cooling water. If cooling water is insufficient, replenish cooling water to the tank.

- \* When filling cooling water, please do not make the water level exceed half of the height of the auxiliary kettle.
- \* Never add muddy water or seawater.
- \* Under normal circumstances, do not open the radiator cover.

### ■ Fuel inspection and replenishment



**warn**

- \* Be sure to stop the engine while refueling.
- \* Do not approach fire sources.
  - ▶ If we're careless...  
Could cause a fire.

0

1. Check with oil gauge.
  2. When fuel is low, open the fuel tank lid to replenish it.
  3. The fuel tank lid cannot be opened without inserting the key into the fuel tank lid.
- \* After completion of the operation, refuel until the fuel tank is full, and then tighten the fuel tank cap securely.
  - \* When refueling, make sure that the fuel passes through the filter screen of the fuel tank.
  - \* Please take care not to mix dust or water into the fuel tank.
  - \* The fuel system generally does not admit air unless the fuel tank is emptied. If air is mixed, deflate.



## ■ Oil inspection and replenishment

1. Check that the specified amount of oil is filled.
  2. If the oil measured by the oil gauge is within the range shown in the figure, it is normal.
  3. If the oil is insufficient, replenish it through the filler.
- \* Use oil with the appropriate viscosity according to the temperature conditions.
  - \* After the engine has just stopped, the correct oil quantity cannot be measured because there is still oil left in each part. Please keep the body level and wait at least 5 minutes before performing the test.
  - \* Please insert the oil label after inspection.

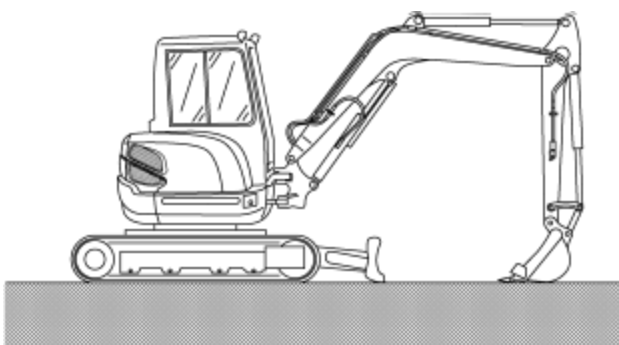
## Inspection and supplement of working oil



**warn**

- \* Remove the filler neck of the working tank only after the oil temperature has completely decreased. Otherwise, the oil will spray out, resulting in burns.

1. Park the machine in a horizontal position, extend the piston rod of each cylinder to approximately the middle position, and make the bucket and bulldozer touch the ground.



2. Check whether the working oil is in the center of the oil level gauge at normal temperature.
3. If it is in the middle of the oil level gauge, it is normal.
4. When the oil is insufficient, please replenish it through the filler.
5. When the working oil is mixed with impurities such as water and must be replaced, please replace it in time.
6. When replenishing, please clean up the sand or garbage nearby, and be sure to use the same brand of working oil.




# Pre run inspection

## Radiator, oil cooler inspection and cleaning

1. Check for blocked fins. If blocked, purge with compressed air (or steam). At this point, be sure to wear protective glasses.
2. Also check the radiator hose.  
If the hose is cracked or brittle, replace it and check that the clamp is loose.

## Inspection and cleaning of battery, wiring and engine surroundings

	<b>note</b>
<p>0* If the harness and battery(+) wire are damaged, it will lead to Short circuit, so be sure to check.</p> <p>* If the battery, wiring and muffler or engine Garbage or fuel attached to the surroundings may cause fire Disaster, so please check before daily operation.</p>	

The harness and the battery(+)wire wrap will contact the corners of the component and cause natural aging due to damage, so check the following items.

1. Harnesses shall not be damaged and clamps shall not be loose.
2. Terminal, wiring board (socket) connection part must not have loose.



# Engine starting and stopping

## KUBOTAENGINE STARTING



\* Be sure to sit in the driver's seat and make sure that the operating handles are in

"Neutral" position before starting.

►If we're careless...

At the same time as the engine is started, the machine will generate actions, resulting in

It doesn't work properly. It's dangerous.

\* Engine exhaust contains harmful carbon monoxide, which is toxic  
Danger.

Do not stay indoors where exhaust gas is likely to accumulate or where ventilation is poor

Machine operation in the premises.

1. Make sure that the handles and pedals are in the stop position before operating the switch.
2. Please place the operating crocker switch in the "locked" position.



operate rocker switch

3. Insert key into switch.

4. Turn the throttle knob to the maximum position on the high side.

5. Turn the key to the right to the end



6. Release the key after the engine starts. The key automatically returns to the "STARTER SWITCH CONTACT" position.



- \* Since 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 the operations of 6 and 7.
- \* If battery is included, please use 12V battery when connecting to other battery with auxiliary cable.  
Never use 24V batteries.

## Start of U be r Engine



\* Be sure to sit in the driver's seat and make sure that the operating handles are in

"Neutral" position before starting.

►If we're careless...

At the same time as the engine is started, the machine will generate actions, resulting in

It doesn't work properly. It's dangerous.

\* Engine exhaust contains harmful carbon monoxide, which is toxic  
Danger.

Do not stay indoors where exhaust gas is likely to accumulate or where ventilation is poor

Machine operation in the premises.

1. Make sure that the handles and pedals are in the stop position before operating the switch.
2. Please place the operating rocker switch in the "locked" position.



operate rocker switch

3. Insert key into switch.
  4. Turn the throttle knob to the maximum position on the high side.
  5. Turn the key to the right to the end
  6. To start the Uber engine, you need to turn the throttle to the right position.
- If the startup fails, please try to increase the throttle, turn the startup key clockwise and pull the decompression cable

at the same time until the engine starts obviously. Loosen the decompression cable.

accelerator cable



decompression cable

## Bridge stone Engine Starting



\* Be sure to sit in the driver's seat and make sure that the operating handles are in

"Neutral" position before starting.

►If we're careless...

At the same time as the engine is started, the machine will generate actions, resulting in

It doesn't work properly. It's dangerous.

\* Engine exhaust contains harmful carbon monoxide, which is toxic  
Danger.

Do not stay indoors where exhaust gas is likely to accumulate or where ventilation is poor

Machine operation in the premises.

1. Make sure that the handles and pedals are in the stop position before operating the switch.
2. Please place the operating rocker switch in the "locked" position.



operate rocker switch

3. Insert key into switch.



4. Turn the throttle knob to the maximum position on the high side.

5. Turn the key to the right to the end

6. To start the Bridge stone engine, turn the start key clockwise and pull the relief cable until the engine starts visibly. Loosen the relief cable.



decompression  
cable



# Engine starting and stopping

---

## ■ Start-up in cold season

1. Make sure that the handles and pedals are in **the stop** position before operating the starter switch.
2. Insert key into switch.
3. Turn the throttle knob to the maximum position on the high side.
4. If it is a Kubota engine, turn the starter key counterclockwise to the preheat position and hold it for about 6 seconds, after which it can start smoothly.
5. If it's Bridge stone, you can pull up the engine and start it normally.
5. If the engine starts, release the key. The key will automatically return to **the** position.
6. If the engine does not start, repeat steps 4 and 5.

### supplement

- \* Since the responsiveness of the operating device to the operating handle becomes slow when the operating oil temperature is low, be sure to perform warm-up operation.
- \* The operating handle feels slightly heavy during periods of low operating oil temperature, which is not a fault.
- \* When the oil temperature is low, the automatic idle function may not work, but it is not a fault phenomenon.
- \* Before the cooling water temperature rises to a predetermined temperature, the function of increasing idle rotation is activated.

## ■ Inspection of each department

After the engine warms up, please confirm the following items.

- What her the instrument has abnormal display.
  - Whether the exhaust gas color is normal.
  - Whether there is abnormal sound or abnormal vibration.
  - Whether there is leakage of oil, fuel and water.
- ◆ Under the following circumstances, please shut down the engine immediately.
1. The speed drops sharply or rises sharply.
  2. Suddenly making strange noises.
  3. Exhaust gas color deteriorated.



# Engine starting and stopping

## Check and confirm after starting

### ■ Precautions when overheating



#### note

- \* If it is opened during operation or immediately after operation is stopped  
Radiator cover, sometimes hot water will spray out and cause burns.  
Therefore, open the radiator cover only after the radiator has cooled.

As soon as the cooling water temperature approaches boiling point (thermometer shows "H") (so-called overheating), take the following actions.

1. Please stop work at a safe location.  
(unloading engine)
2. Do not stop the engine, should be about 5 minutes after no-load idle operation and then shut down the engine.
3. Wait 10 minutes or stay away from the machine while it emits steam.
4. After confirming that there is no danger such as burns, eliminate the cause of overheating according to the instructions of the "Backhoe excavator problems and treatment measures". Then restart the engine.

## stopping of the engine



#### warn

- \* Do not load the engine with the engine stopped.  
and the lifting state of the bulldozer. otherwise it will  
Due to its own weight slowly falling, resulting in accidents.

Turn the throttle knob to the maximum position on the low speed side and allow the engine to idle for approximately 5 minutes to cool down slowly.

1. Slowly move the left and right working device operating handles and place the working device on the ground.
- 2 Stop the engine and remove the key.
3. Pull up the lever and place it in the **LOCKED** position.



#### significant

- \* Make sure the bucket touches the ground before stopping the engine. Do not rely on the weight of the working device to contact the ground.
- \* When the throttle knob is in the high speed position, the engine some times cannot be stopped. At this point, be sure to place the throttle knob in the LOW position and then place the key in the **(STOP)** position.
  - \* There is a time interval of 2 seconds between engine stops and restart.

# Operation of Backhoe Excavator

## running-in

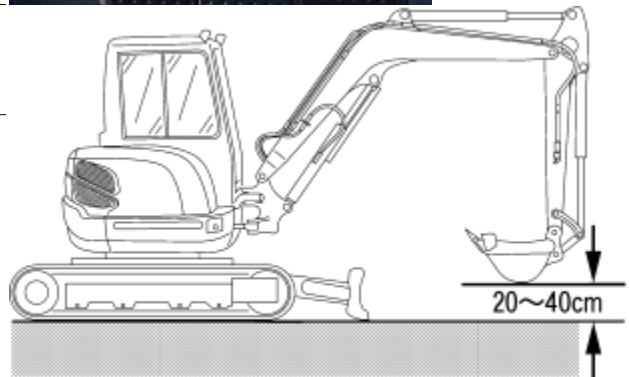


- \* The first 100 hours of use will determine the life of the machine. It should therefore be used with caution. Especially in the case of new cars, do not impose excessive loads.
    - The load is kept below 50% before 50
    - The load is kept below 70% before 100 hours.
- Start, drive**

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



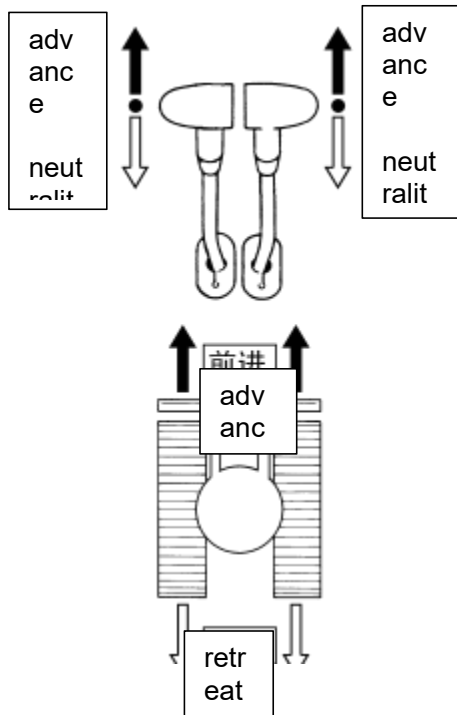
- \* Before starting, please confirm the front, rear, left and right safety conditions.
  - \* If the bulldozer is placed at the rear and the handle is operated, the body will travel in the opposite direction to the handle. So make sure the bulldozer is facing forward or backward. (The direction of the bulldozer is facing forward)
    - ▶ If you don't make sure... It moves in the opposite direction, sometimes causing injury.
- Never drive on steep slopes above 15°
- ▶ If you are careless..... it may lead to rollover, resulting in injury accidents.



2. Pull the blade operating handle backward and lift the blade.

# Operation of Backhoe Excavator

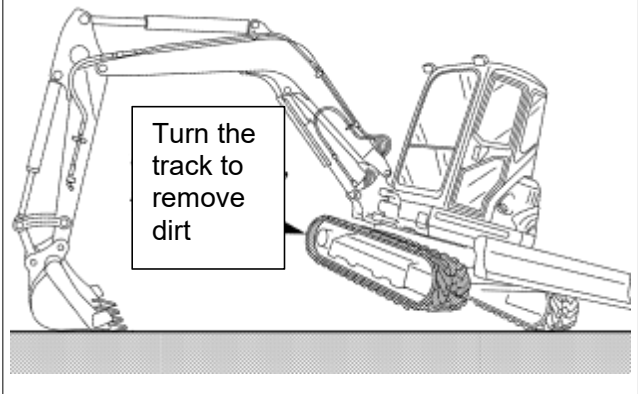
3. Slowly push the travel handle forward (FORWARD) or backward (REVERSE) to move



4. Turn the track to remove dirt
- If you press the rabbit button while operating the travel handle, increase the vehicle speed. Pressing the turtle button

## **note**

- \* When driving uphill or on uneven ground, do not use the travel accelerator pedal if the driving resistance is high.
- \* When traveling on soft ground, the track is filled with soil and sand, making it impossible to travel due to abnormal tension of the track. Use boom, arm and bucket to float one side of the track and rotate it to remove soil and sand until the track rotates smoothly.



# Operation of Backhoe Excavator

turn to



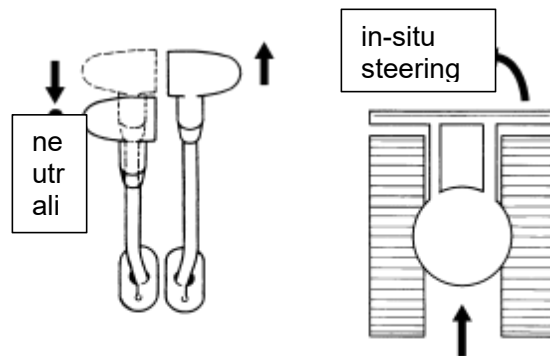
## note

- \* Do not turn (U-turn, etc.) when driving on steep slopes. No  
There is a danger of rollover. Turn on flat ground.  
To.
- \* Please make sure there is no one around before turning.
- \* Do not turn or turn in place.  
Turn by increasing the number of zigzag turns.  
► If we're careless...  
It may lead to injury accidents.

The following explains how to operate the bulldozer when the bulldozer is in front.

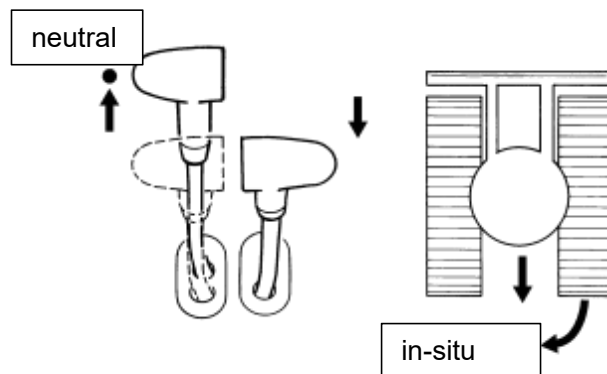
## Steering while driving (turning in place)

1. When moving forward, turn left (right) if the left(right) travel handle is in the neutral position.



1BAABAUAP053A

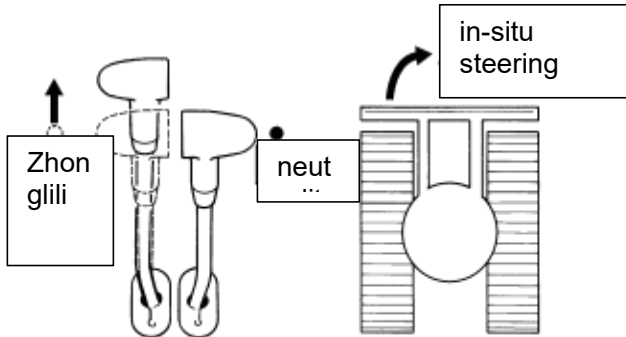
2. When reversing, turn left (right) if the left(right) travel handle is in the neutral position.



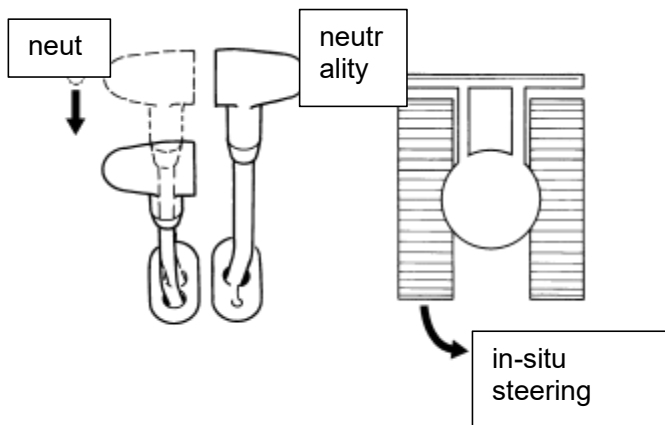
# Operation of Backhoe Excavator

## ■ Steering at stop (standing steering)

1. If you operate the left (right) travel handle forward, turn to the right (left).

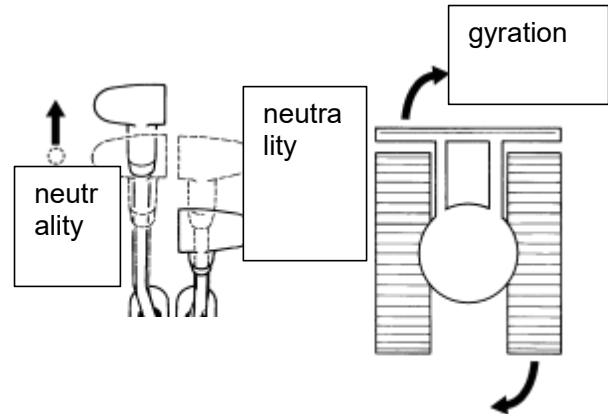


2. If you operate the left (right) travel handle backwards, turn to the right (left).

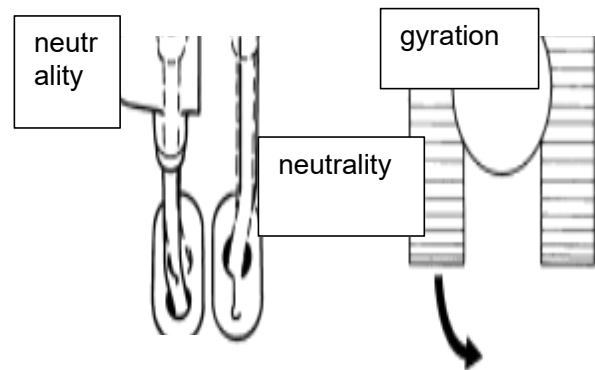


## ■ Turning

1. If the left (right) travel handle is operated forward and the right (left) travel handle is operated backward, turn right (left) in place.



1BAABAUAP057A



1BAABAUAP058A



# Operation of Backhoe Excavator

## up and down ramp



\* When driving on inclined sections, be sure to keep the rotating frame and the vehicle

The frames are parallel to each other.

►If we're careless...

It is possible to rotate in the opposite direction, resulting in a rollover.

injury accident.

\* When going uphill, lift the bucket so that the lower part of the bucket is off the ground.

Drive 20 - 40cm before driving.

\* When descending from steep slopes where tracks are prone to slipping, Lower the bucket to the ground and slide it downward

Let's go. When descending from a gentle slope, place the bucket Place at a height where you can immediately touch the ground.

\* When going up and down hills, adjust the throttle knob to drive slowly.

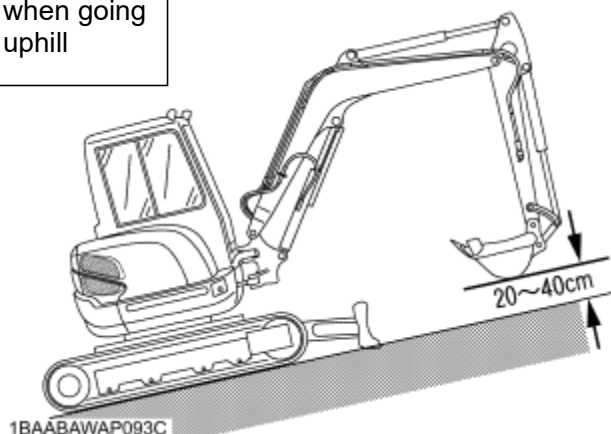
\*When going up or down, please turn the automatic idle switch to "OFF" (lights off) position.

►If we're careless...

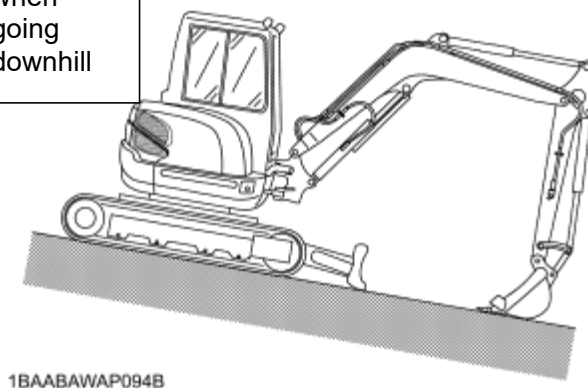
Engine speed will change, which may cause injury

Accident.

when going uphill



when going downhill



# Operation of Backhoe Excavator

## Parking of vehicles in inclined lots



\* It is dangerous to park your car on an incline. So please don't.

Parking is required on inclined sections.

If you have no choice but to park your vehicle on an inclined lot, please

Insert the bucket into the ground and place the handles in the neutral position.

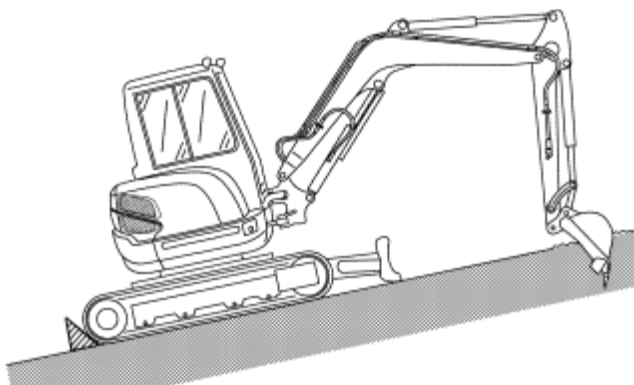
Then, brake again.

► If we're careless...

The machine may slip and cause injury.

## park

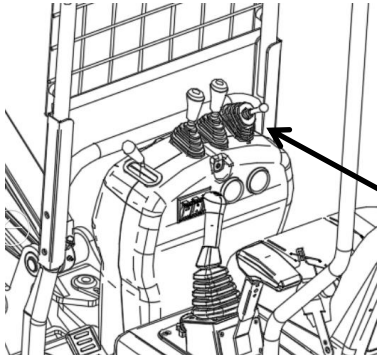
1. Please park the machine on flat, firm ground. Stand the stick straight and lower the bucket to the ground.
2. Turn the throttle knob back to the maximum position on the low speed side and allow the engine to idle for about 5 minutes to slowly cool down the engine.
3. Put the starter key in the **STOP** position, turn off the engine, and then remove the key.
4. Pull up the lever and place it in the **"locked"** position.
5. Close all covers and lock doors when leaving the machine.



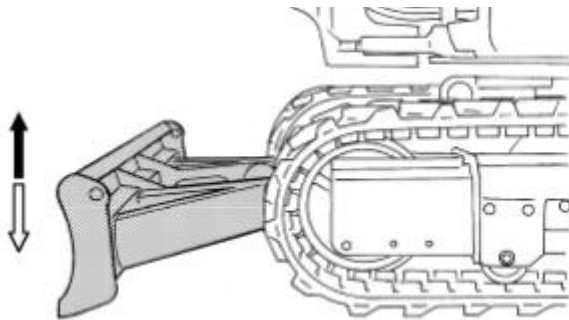
# Operation of Backhoe Excavator

## Bulldozer operation

When the blade operating handle is pulled backward, the blade is raised, and when the blade operating handle is pushed forward, the blade is lowered.



bulldozer operating



When working with the bulldozer, operate the 2 travel handles with your left hand and lift the bulldozer with your right hand.

## boom operation

Boom Lift...Pull back the operating handle of the right working device. BOOM LOWER...Push the right-hand attachment operating handle forward.

In order to reduce bucket soil drop, the boom lifting end uses a buffer structure.

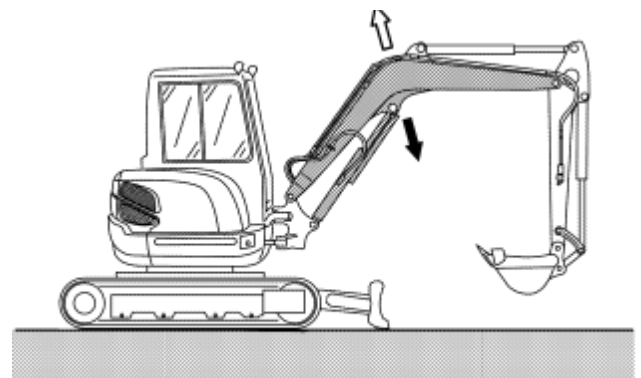
When the working oil temperature is low (such as the engine has just started, etc.), the buffer time is sometimes longer than the normal operation.

This is due to the viscosity of the working oil and is not an abnormal phenomenon.



decline

promote



## supplement

\*When "BOOM DOWN," be careful not to bump the blade against the boom cylinder or catch the blade with the bucket teeth.

# Operation of Backhoe Excavator

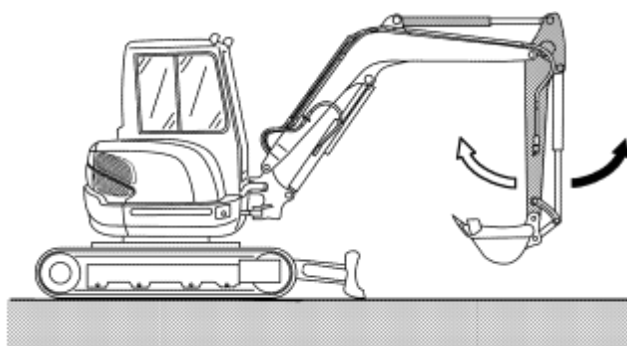
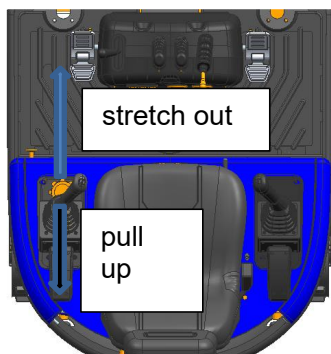
## the arm operation

Stick up...Pull the stick forward if you pull the lever of the left attachment backward. In order to reduce the bucket soil, the stick extended end adopts a buffer structure.

Stick out...Push the left attachment lever forward and stick out.



- \* When pulling up the arm, if the arm faces directly downward, the action sometimes stops instantaneously. This is not a malfunction.

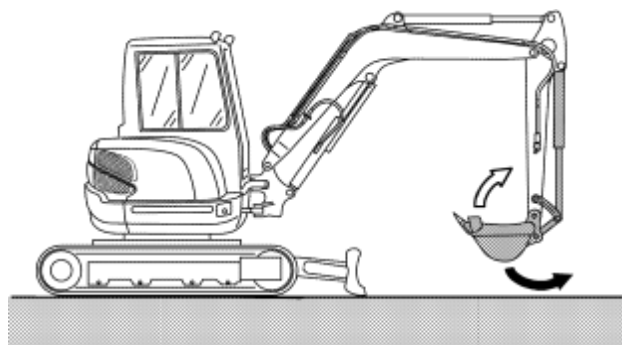
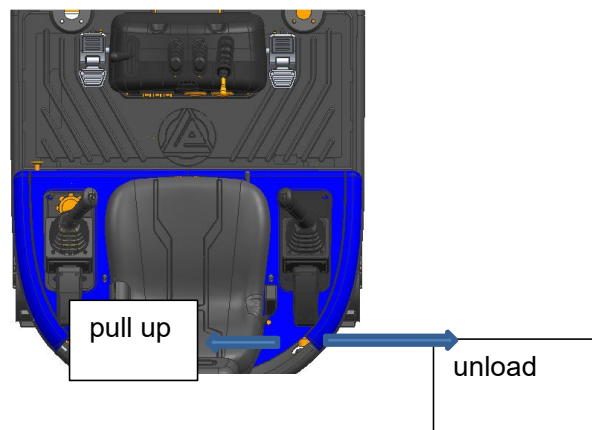


## bucket operating

Bucket pull up...Turn the right side work device operating handle to the left side.

Bucket

dump.....  
.....  
.....



# Operation of Backhoe Excavator

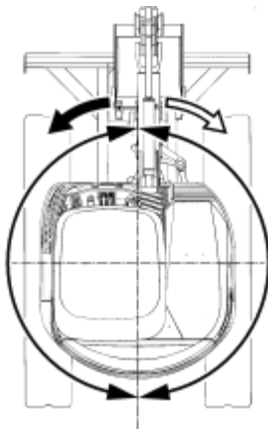
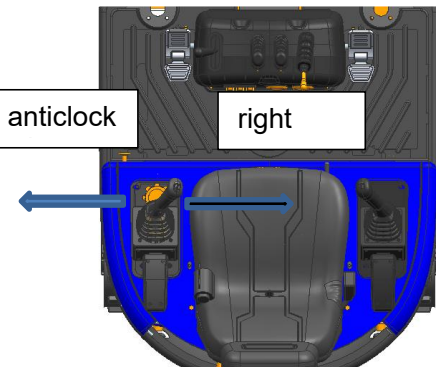
## rotation operation



\* Do not rotate in inclined sections, otherwise there will be overturning  
The car is dangerous. Do rotation and other exercises on inclined sections as a last resort  
When digging, level the ground  
Before we start our homework.  
▶ If we're careless...  
It may lead to rollover and cause injury accidents.

Rotation operation can be performed by using the operating handle of the left working device.

Turn left..... turn the operating handle of the left working device to the left. Turn right... Turn the operating handle of the left working device to the right.

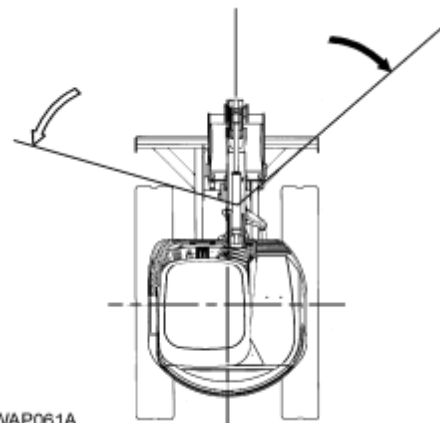
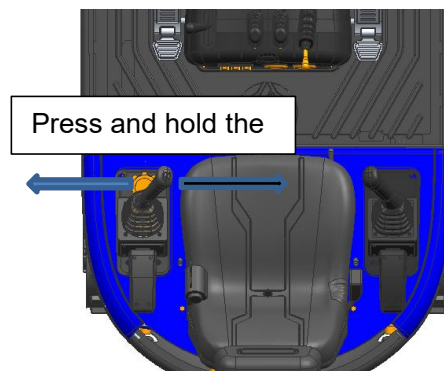


## swing operation



\* Do not press the button swing when not swinging  
Lock the swing.  
▶ If we're careless...  
it is possible to cause that machine to move in the opposite direction due to mis operation  
Swing, causing injury accidents.

Swing the boom to the left and right using the swing lever Swing left..... while pressing the left button on the left hand lever swing the lever to the left.  
Swing right.....swing the lever right while pressing the left button on the left lever.



1BAABAWAP061A

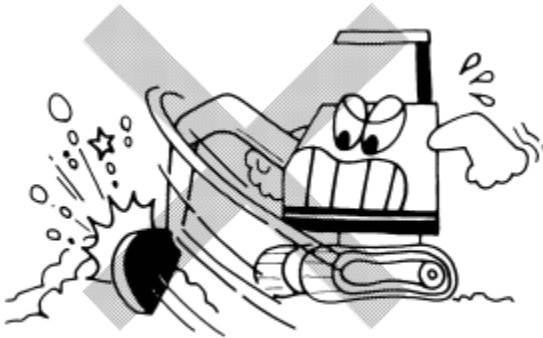
重要



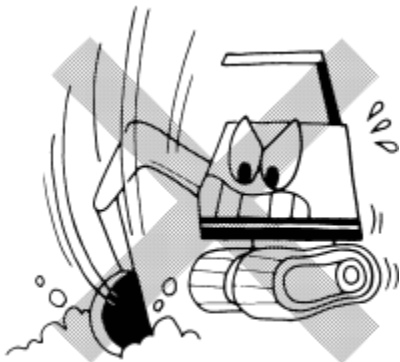
# Operation of Backhoe Excavator

## prohibited operation

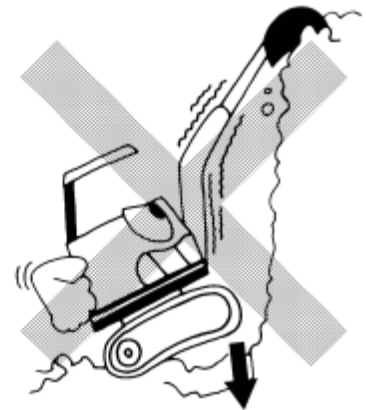
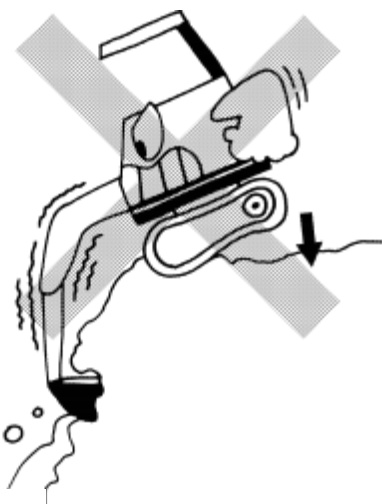
1. It is prohibited to work with rotational force. (Transverse pushing with bucket, etc.)



2. Do not use the falling gravity of the bucket for work. (Pile driving with bucket, etc.)



3. It is forbidden to use the falling gravity of the main body for operation. (Use of the falling force of the machine body for excavation work, etc.)

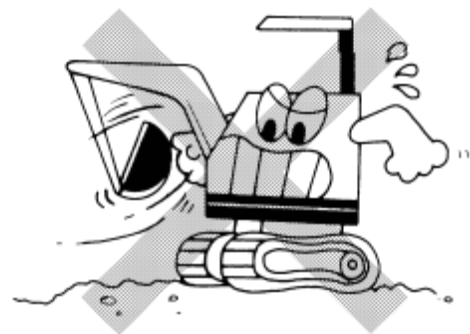


4. It is prohibited to use walking force for work. (Driving with bucket inserted into ground, etc.)



1BAABAUAP074A

5. Remove soil with bucket. (Do not remove soil by impact at bucket end)





# Operation of Backhoe Excavator

## Operation precautions

### 1. Watch the bulldozer.

When digging deeply in front of the blade, be careful not to allow the boom and boom cylinders to collide with the blade.



1BAABAUAP078A



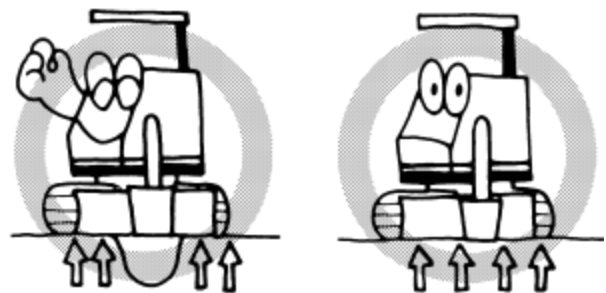
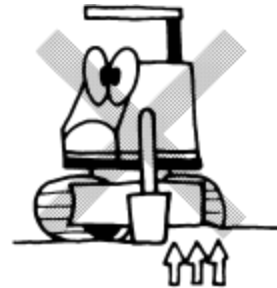
### 2. Pay attention to the folding of the working device!

When folding the working device while driving or transporting, be careful not to collide the bucket with the bulldozer.



### 4. When using bulldozer support, do it on both sides at the same time!

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



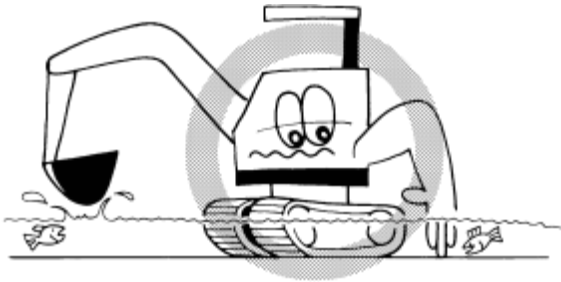
1BAABAUAP079A

### 3. Watch out for bulldozer collisions!

Don't let the bulldozer hit rocks. Failure to do so may result in premature blade and cylinder failure.

## 5. Note the allowable water depth!

When working in water, check that each pin, cock, etc. is fastened, and then use it within the depth range up to the upper part of the crawler belt at the idle part.



1BAABAUAP080A



- \* After the operation, be sure to remove the soil and wash it clean, and then add grease to the fulcrum.
- \* After working on the beach, wash your car very carefully to remove salt from it. Thorough maintenance of electrical components to prevent corrosion of mechanical components.

# truck transportation



\* Please select the truck suitable for the weight and size of the machine, do not exceed.

Carried.

► If we're careless...

Truck driver's seat will float upward during loading, resulting in transportation security risks.

\* Please hang the loading plate securely on the truck body surface with a hook

Up. In addition, wet loading plates can slip. Especially wood.

Make loading and unloading plates to pay attention to anti-skid.

► If we're careless...

It may cause injury accidents due to falling or overturning.

\* When not using loading platforms or loading plates, please never

To be installed by lifting the boom and arm up the body Truck and unloading operation.

► If we're careless...

It may cause injury accidents due to falling or overturning.

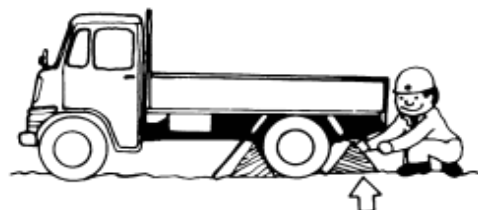
Please observe the Road Traffic Safety Law, the Road Transport Vehicle Law, the Vehicle Restriction Order and other relevant regulations when transporting.

## Loading and transportation



\* If loading with the arm extended, The reaction force due to the deviation of the center of gravity of the aircraft damages the card Car.

1. Put the brakes on the truck and apply the brakes in front of and behind the tires to make sure they don't spin.



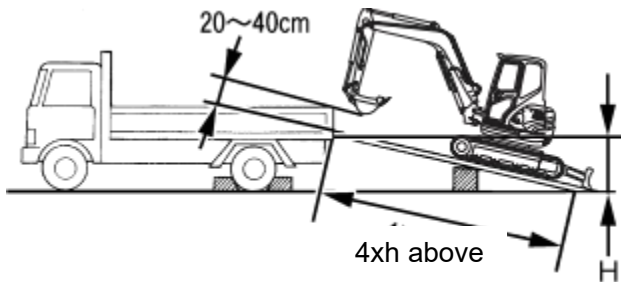
1BAABAUAP081A

2. Set up loading platforms with sufficient strength and width before loading.

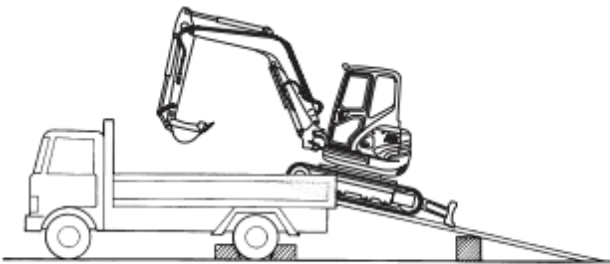
3. When you have no choice but to use the loading plate, please work in a flat and solid field. The loading plate used should have sufficient strength, width and length. The loading plate should be parallel to the left and right, and it should be aligned with the track. In addition, the length of the loading plate should be more than 4 times the height (H) of the truck body surface. In addition to using a loading plate with a hook to prevent the loading plate from separating from the truck, check each part for cracks before use. In addition, support stands are placed under the loading and unloading plates to prevent bending of the loading and unloading plates.

4. When you have no choice but to use the loading plate, please work in a flat and solid field. The loading plate used should have sufficient strength, width and length. The loading plate should be parallel to the left and right, and it should be aligned with the track. In addition, the length of the loading plate should be more than 4 times the height (H) of the truck body surface. In addition to using a loading plate with a hook to prevent the loading plate from separating from the truck, check each part for cracks before use. In addition, support stands are placed under the loading and unloading plates to prevent bending of the loading and unloading plates.

# truck transportation



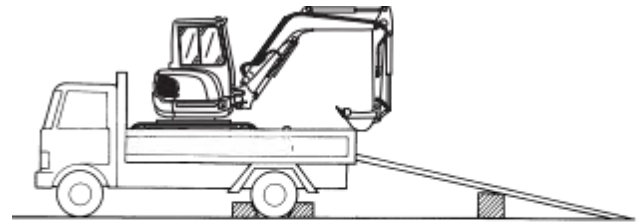
5. Before moving the machine to the front of the truck body, please stop temporarily in the state shown in the figure below, make the bucket gently contact the surface of the truck body, and then slowly move forward. Then, keep the car body level.



6. It is extremely dangerous to adjust the direction on the loading plate. If you must adjust the direction, please be sure to get off the loading plate first. After adjusting the direction, you can get on the loading plate.
7. After moving forward to the specified position on the truck bed surface, slowly rotate the upper rotating body 180 degrees with the arm pulled up, and pay attention to the balance of the truck.
8. Lower the bucket onto the truck bed, stop the engine, and place the operating handle lock lever in the LOCKED position.

## Unload from truck

1. With the working device facing in the direction of travel, advance to the front of the loading and unloading plate with the arm vertical to the truck bed or slightly raised.



2. Stop the machine before moving to the loading plate, so that the bucket gently touches the ground or loading plate, and then slowly advance so that the center of gravity of the machine does not move too fast.
3. When about half of the entire track is out of the truck body surface, stop the machine, slowly lift the boom, and install the machine on the loading plate.
4. Move the bucket forward after touching the ground gently and lower it from the loading plate. At this time, please take care not to damage the road surface.



9. Fix the machine firmly on the surface of truck body with wire rope, etc.

**supplement**

\* When loading onto trucks, the total height should not exceed a certain height. If you exceed a certain height, you must obtain permission from the local transportation department.



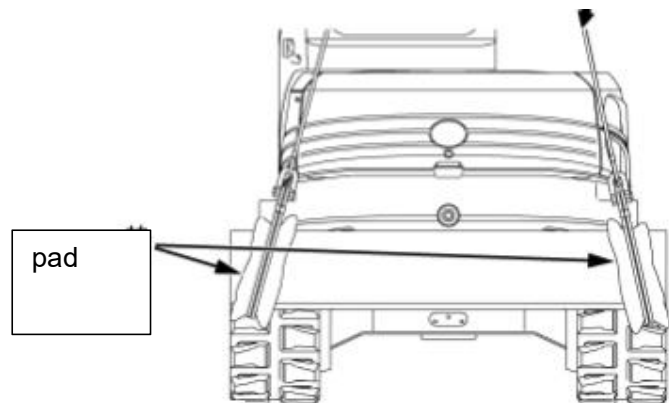
# truck transportation

## Hoisting of machine body



**warn**

- \* Do not lift when there are people in the car, it is very dangerous.
- \* The wire rope used for lifting shall have sufficient strength relative to the machine.
- \* Do not use round rods when lifting. This is very dangerous, so please do not tie the wire rope to the round rod for lifting.



Lift the engine body according to the following essentials.

1. Rotate the upper rotating body so that the blade is 180 degrees away from the working device.
2. Raise the bulldozer to the highest position.
3. Raise the boom in order to maximize the lift of the bucket and stick. The new place the joystick lock lever in the **LOCKED** position.
4. With the boom not swinging, place the swing pedal in the neutral position, close the pedal cover, and stop the engine.
5. Add pads around boom angle and hang wire rope. Also, pad the bulldozer and hang the wire rope as shown in the picture.
6. Keep the lifting angle of the wire rope at 55 degrees for lifting.

### supplement

- \* Please pay attention to the center of gravity position when lifting to maintain sufficient balance.
- \* Do not swing the boom or rotate the upper part during lifting.



# truck transportation

## Main body traction method



### **note**

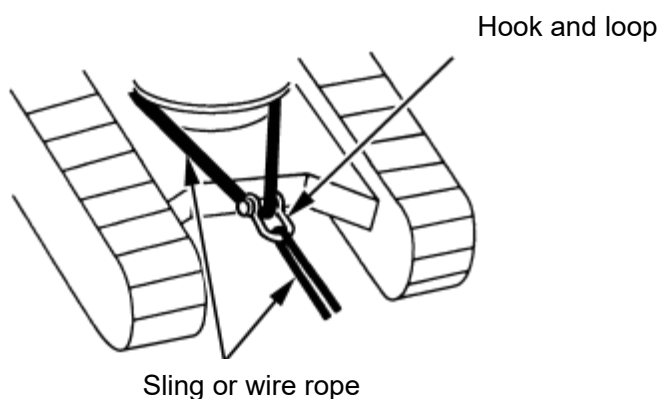
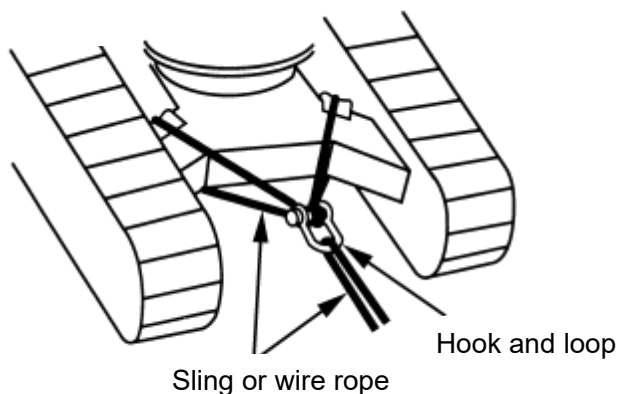
\* The steel wire rope, sling and shackle used shall have sufficient strength

degrees.

Also, please confirm whether there is any fracture or turtle before use.

Crack.

In case of emergency when the machine body is stuck in muddy ground and it is impossible to get out, please pull the machine out of muddy ground with wire rope, sling and shackle as shown in the figure.





## warn

- \* During refueling and maintenance,
  1. Place the unit in a flat, spacious place
  2. Lower bucket and bulldozer to ground
  3. engine off
  4. Verify that residual pressure is being released from the attachment control lever and the bulldozer control lever
  5. Remove the key and confirm safety before proceeding.

## About Waste



## warn

Do not discard or burn waste, otherwise it will not only lead to environmental pollution, but also be subject to legal sanctions.

When disposing of waste

- \* The waste liquid discharged by the machine is collected into a container.
- \* Do not pour waste into trenches, rivers, lakes or oceans.
- \* When waste oil, fuel, cooling water (non-freezing liquid), refrigerants, solvents, filters, batteries, rubber and other hazardous substances are to be discarded or burned, consult with the sales shop or industrial waste disposal unit so that they can be disposed of according to specified rules.

# maintain

## periodic checklist

No.	period		Th en um be r	hour meter showing time																hereafte r	
	project			5 0	1 0 0	1 5 0	2 0 0	2 5 0	3 0 0	3 5 0	4 0 0	4 5 0	5 0 0	5 5 0	6 0 0	6 5 0	7 0 0	7 5 0	8 0 0		
1	fuel	drain away water	1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Every 50 hours
2	battery electrolyte	examin e	1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Every 50 hours
3	rotary bearing tooth flank	Grea se fill ing	1	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Every 50 hours
4	engine oil	change	1	◎					○					○					○	every 250 hours	
5	oil filter element	change	1	◎					○					○					○	every 500 hours	
6	travel motor oil	change	2		◎										○					every 500 hours	
7	fan belt	chec k and adju st	1				○				○				○				○	Every 200 hours	
8	air filter element	Clea ning insp ecti on	1				○				○				○				○	Every 200 hours	
		change	1																	Every1000 hours or every year	
9	Rotary bearing ball parts	Grea se fill ing	1				○				○				○				○	Every 200 hours	
10	Radiator hoses and pipe clamps	examin e	2 4				○				○				○				○	Every 200 hours	
		change	2 4																	every 2 years	
11	Working oil return filter ◎Protective filter ◎	change	1					◎											○	every 500 hours	
12	Fuel filter element	change	1										○							every 500 hours	
13	Working oil ☆	change	1																	Every10 00hours	
14	working oil suction filter	change	1																	Every10 00hours	
15	hydraulic pilot filter	sweep	2																	Every1000 hours or every year	



16	hydraulic pilot filter	change	1																Every1000hours
17	Grease for idler wheels, idler wheels and	change	8																Every2000hours
18	Alternator, starter motor	examine	—																Every2000hours



# maintain

No.	period		Th en um be r	hour meter showing time																hereafter
	project			5 0	1 0 0	1 5 0	2 0 0	2 5 0	3 0 0	3 5 0	4 0 0	4 5 0	5 0 0	5 5 0	6 0 0	6 5 0	7 0 0	7 5 0	8 0 0	
19	Electrical wiring, Use of fuses	examine	—																Every 1 year	
20	cooling water	change	1																every 2 years	

(1)\* Symbol indicates initial implementation only.

(2)◆ Symbol indicates that replacement time will be shortened when hydraulic front working devices such as hammer breakers are used.

[Air conditioning specifications]

No.	period		Th en um be r	hour meter showing time																hereafter
	project			5 0	1 0 0	1 5 0	2 0 0	2 5 0	3 0 0	3 5 0	4 0 0	4 5 0	5 0 0	5 5 0	6 0 0	6 5 0	7 0 0	7 5 0	8 0 0	
1	air conditioner belt	examine	1				○				○				○				○	Every 200 hours
2	Internal air filter ☆	sweep	1				○				○				○				○	Every 200 hours
		change	1																	Every1 000hours
3	External air filter ☆	sweep	1				○				○				○				○	Every 200 hours
		change	1																	Every1 000hours
4	air conditioning condenser	sweep	1				○				○				○				○	Every 200 hours
5	Air conditioning piping and hoses	examine	4																	Every 1 year
		change	4																	every 2 years
6	refrigerant gas	examine	—																	on-demand maintenance

[Cooler specifications]

No.	period		Th en um be r	hour meter showing time																hereafter
	project			5 0	1 0 0	1 5 0	2 0 0	2 5 0	3 0 0	3 5 0	4 0 0	4 5 0	5 0 0	5 5 0	6 0 0	6 5 0	7 0 0	7 5 0	8 0 0	
1	cooler belt	examine	1				○				○				○				○	Every 200 hours
2	Cooler filter ☆	examine	1				○				○				○				○	Every 200 hours
		sweep	1				○				○				○				○	Every 200 hours
3	cooler condenser	sweep	1				○				○				○				○	Every 200 hours



4	Cooler piping and hoses	examine	4																Every 1 year
		change	4																every 2 years
5	refrigerant gas	examine	—																on-demand maintenance

If it is used in a dusty environment, it is necessary to wash and replace the filter more frequently. Replace the filter if it is heavily dirty.





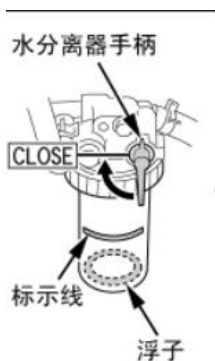
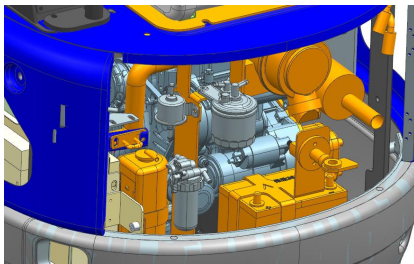
# maintain

## Maintenance every 50

### ◆ Water separator

If the water, then the red float float up, then remove the oil cup, pour out the water.

1. Please place the water separator handle in the **CLOSE** position.
2. Loosen the fixing ring on the upper part of the oil cup, remove the oil cup and pour out the accumulated water inside.



- \* Please be careful not to get dust or dirt when assembling.
- \* After draining the accumulated water in the oil cup, please exhaust it. (Refer to Fuel System Bleeding item)

### ■ Battery level check



There are two types of batteries, one that does not require replenishment and the other that requires replenishment. For batteries requiring water replenishment, observe the following.

- \* Do not use or charge batteries if their level is below LOWER.
- \* If it continues to be used below the LOWER (lowest level line), it will promote the aging of the internal parts of the battery, which will not only shorten the service life of the battery, but also may lead to explosion.
- \* Please replenish water immediately so that the liquid level reaches between UPPER LEVEL and LOWER LEVEL.

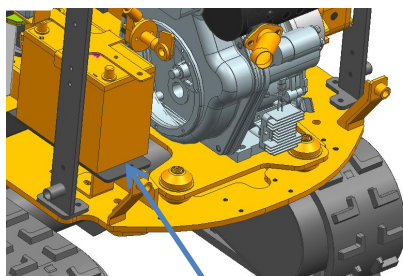
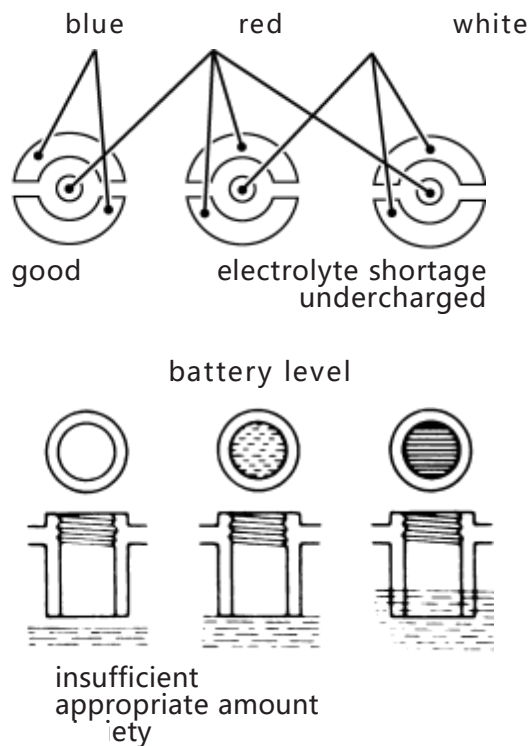


- \* Please do not get battery solution on your body or clothes.  
If stained, rinse immediately with plenty of water.  
► If we're careless...  
Dilute sulfuric acid can cause burns.
- \* Stop the engine and remove the battery when checking and removing it.  
Place the starter key in the STOP position.
- \* Due to the generation of gas during charging, there is a fire explosion.  
Danger. Please do not go near the fire source, and do not fire.  
Flowers.  
When charging the battery, please plug all the liquid ports of each battery  
Take it down.
- \* When working near batteries, be sure to wear glasses to protect yourself.  
Eye protection.

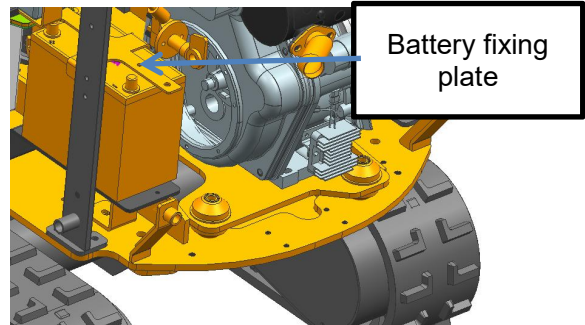
# maintain

1. Open the right hood and verify the battery indicator.
2. When the solution is insufficient, please supplement distilled water.
3. If the electrolyte is reduced due to overflow, please go to the battery store to replenish dilute sulfuric acid of the same concentration.

View method of indicator light



Yupu battery location



Battery fixing plate



Bridgestone battery location



Kubota battery location

#### ◆ Battery disassembly method

1. Stop the engine and place the starter key in the **STOP** position.
2. Remove the (-) wire from the battery.
3. Remove the (+) wire from the battery.
4. Remove the nuts of the battery bolts and remove the battery bolts.
5. Remove the battery by staggering the battery fixing fixture.



\* When charging the battery, be sure to remove the battery from the main body.

Disassemble and carry out in a well-ventilated place.

\* When removing the electric wire from the battery, proceed from the (-) side.

When installing, please proceed from the (+) side. If you turn it upside down, when you touch

A short circuit can occur when a tool is used.

\* When charging, connect the (+) of the battery to the (+) of the charger respectively.

(+) on the battery (-) connected to the charger (-),

Charge according to the normal charging method. Please note, no. Make the wrong connection.

\* Please never connect both (-) and (+) batteries

Charging is performed while connected to the battery.

\* Loosening of terminals may cause spark or electrical installation component failure

Obstacles. So make sure it's tight.

\* The battery indicator display is only approximately standard. in this way,

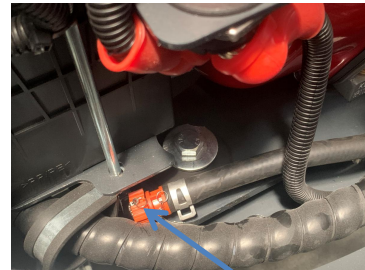
Not only to confirm the indicator light display, but also to carry out Check of liquid level, etc.

# maintain



- \* Insufficient battery solution will damage the battery, too much solution will overflow, thus corroding the metal parts of the body.
- \* In addition to damage to electrical installation parts, wiring and the like are sometimes damaged. Also, avoid rapid charging as much as possible. Otherwise, the battery life will be shortened.
- \* Do not confuse (+) and (-) when connecting the wires to the battery. If wrong, it will cause battery and electrical system failure.

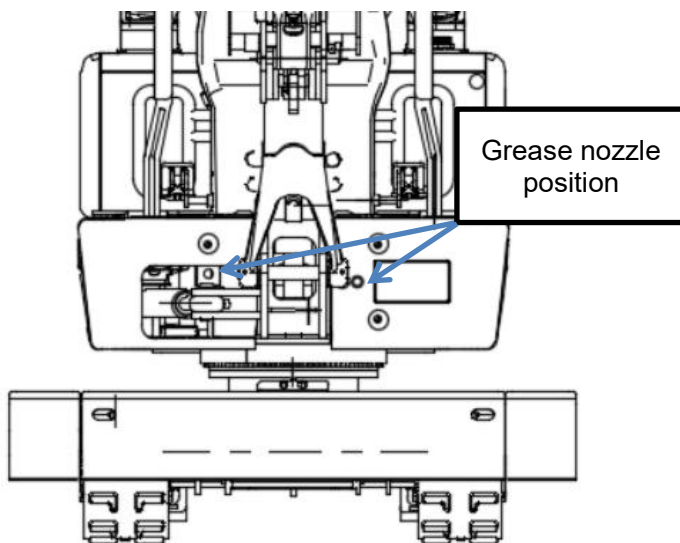
2. After draining the oil, tighten the drain plug securely.



Blow down  
plug

## ■ Grease injection of rotary bearing tooth root surface

1. Inject grease from grease gun nozzle marked with arrow.
2. Grease approximately once every 90 degrees and in 4 increments.
3. When greasing the tooth flank, inject approx. 50g from grease gun nozzle 1 (grease gun approx. 20 times more) and grease the entire tooth flank.

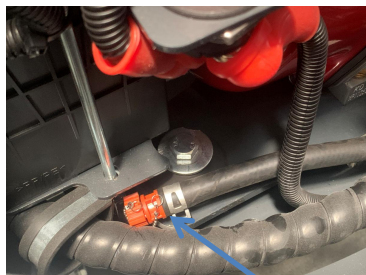


## ■ Oil change (50 hours for the first time, every 250 hours after the second time)

### Yupu Engine Oil Change

1. Remove the oil drain plug at the bottom of the engine and drain the oil.





drain outlet

3. Add the specified amount of engine oil from the filler neck.



oil filler

oil level gauge



4. Allow the engine to idle and then stop the engine for 5 minutes

Later, check whether the specified amount of oil has been added by oil standard.

5. UPU engine operating environment:

① When the engine is working in a large dust environment, oil bath air filter should be selected to effectively filter dust. Better guarantee normal engine operation. When using an oil bath air filter, you should also clean the filter element and replace the oil in the filter bowl regularly. (There is no oil in the filter cup before delivery. Add oil when using it. The oil can be filled to half of the circular step in the center of the filter cup.)

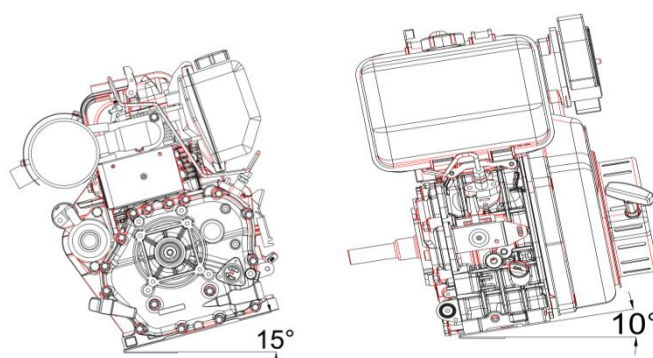
② Operating at ambient temperature of 30~40 °C , good ventilation and heat dissipation of engine should be ensured. Oil should be CF15W-40 and CF15W-50. (Use brand engine oil, it is recommended to buy at Sinopec gas station)

③ High altitude use, in the case of engine performance adjustment, the altitude should be  $\leq 2300$  meters, power correction: due to the thin air in the plateau area, the power of the single-cylinder diesel engine will decrease. For every 0 m rise, the power of the non-supercharger decreases by about 6-10%,

UPU Engine Tilt Angle:

According to the structural characteristics of the engine, under the condition of engine operation, the inclination angle should ensure that the left and right inclination angle of the output shaft is  $\leq 15$  degrees, and the front and rear inclination angle is  $\leq 10$  degrees.

as shown





## Yu pu engine maintenance:

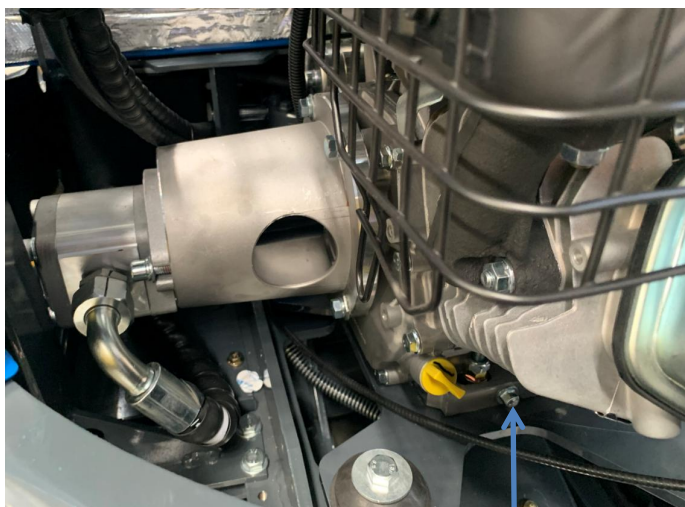
Change the oil for 10~20 hours for the first time, 20~30 hours for the second time, 30~50 hours for the third time, and then change the oil according to the frequency of use. If the frequency of use is high, change the oil for 40~50 hours. If it is not used for a long time or the frequency of use is low, change the oil once every 3 months. The oil filter must be cleaned every time the oil is changed. When not used for a long time, the engine should be started once a week for about 5 minutes, and the air filter element should be replaced in time according to the environment. (Oil bath air filter cleaning and oil replacement) Check the oil and air filter element before each startup. (Use brand engine oil, it is recommended to buy at Sinopec gas station) Do not use inferior engine oil, which is easy to cause engine damage.





## Bridge stone Engine Oil Change

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

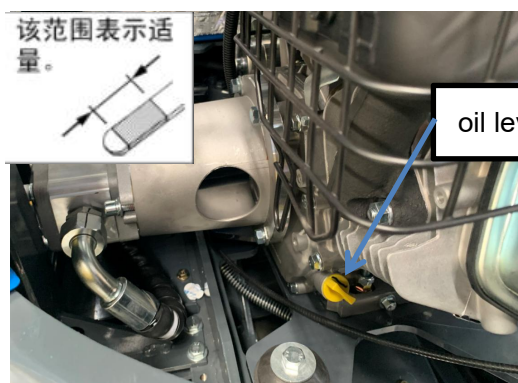


drain plug

3. Add the specified amount of engine oil from the filler neck.



oil filler



oil level gauge

4. Allow the engine to idle and then stop the engine for 5 minutes

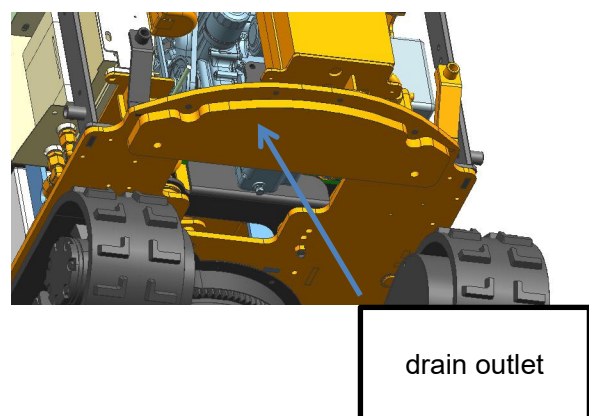
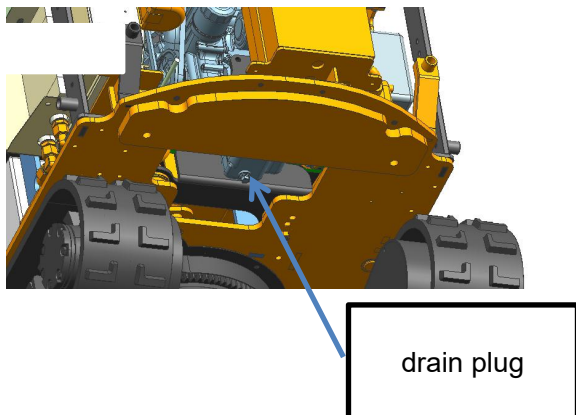
Later, check whether the specified amount of oil has been added by oil standard.



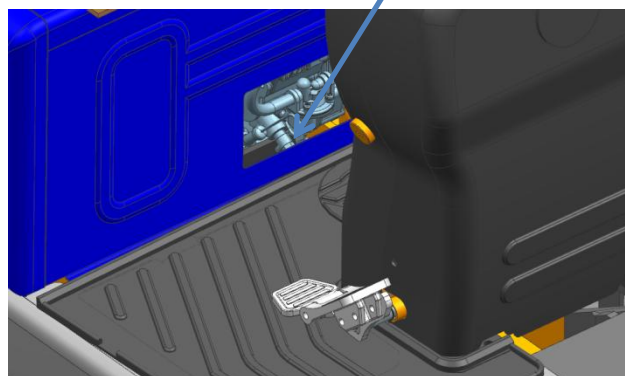
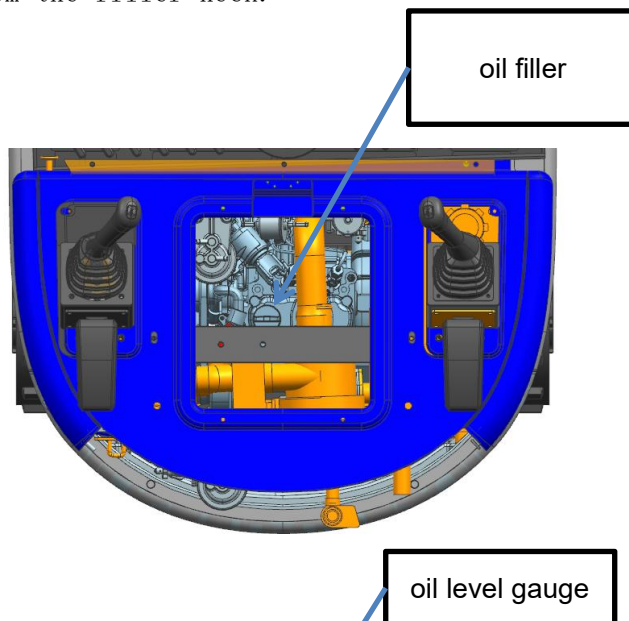
drain outlet

## Kubota Engine Oil Change

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



3. Add the specified amount of engine oil from the filler neck.



4. Allow the engine to idle and then stop the engine for 5 minutes

Later, check whether the specified amount of oil has been added by oil standard.

## supplement

## Maintenance per 100

oil quantity	R10 Bridgestone	Approximately 0.95 L
oil quantity	R10 is working.	Approximately 1.325 L
oil quantity	R10 Kubota	Approx. 1.5 L (with filter)

Please also perform maintenance for every 50

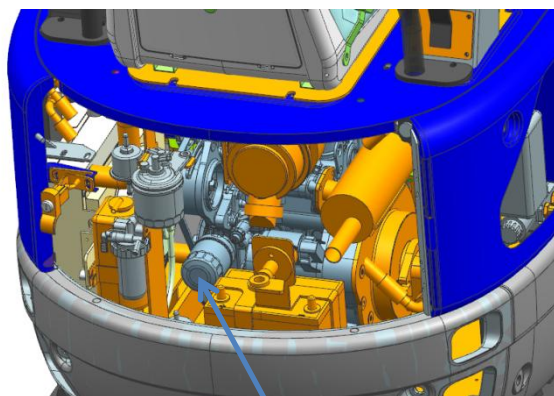
( ) indicates when the filter and oil are changed.

\* Please use oil above grade CF.

\* Even if it is less than 250 hours, please replace it once every 6

### ■ Oil filter element replacement (50 hours for the first time, every 500 hours after the second time)

1. Do this at the same time as the oil change.
2. Remove the filter element using the supplied filter wrench.



engine oil filter

3. Apply a thin coat of oil to the O-ring of the new filter element and hold it in place by hand (without using a filter wrench).
4. Add the specified amount of oil to the engine.
5. Run for approximately 5 minutes and shut down the engine after confirming that there is no "Abnormal Engine Hydraulic Pressure" warning.
6. Please confirm the oil level with oil standard again. If it is insufficient, supplement it.

# maintain

## Maintenance every 200

### ■ Cleaning and inspection of air filter elements

Cleaning and inspection of air filter element of Be lit on engine series



\*Please wear protective glasses because dust will be scattered in four places when forced to remove dust with compressed air.  
Especially when working in places with a lot of dust, please clean and inspect as early as possible.

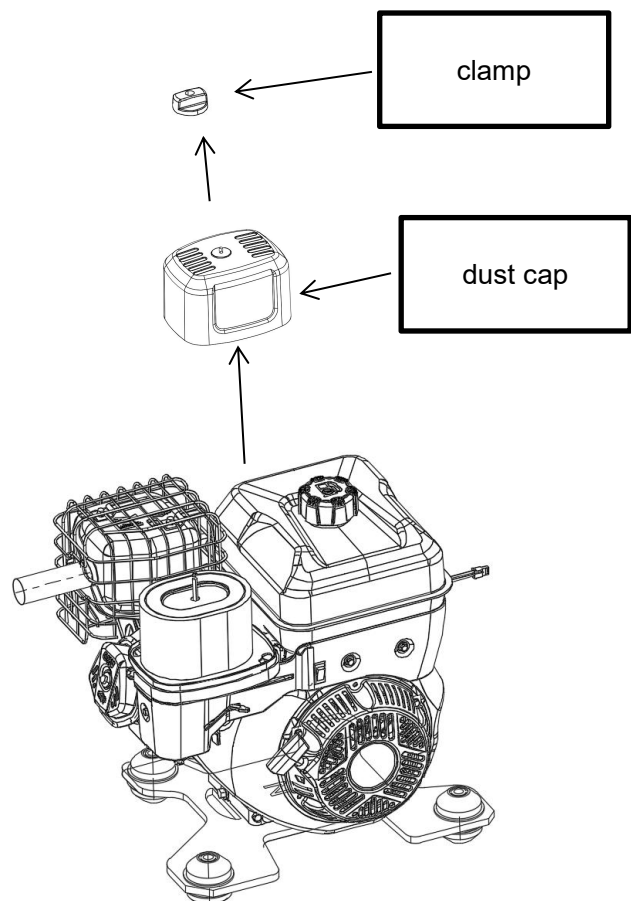
### ◆ Cleaning method

Purge the outside of the filter element with dry compressed air[205 k Pa (2.1 kg f/cm<sup>2</sup> or less)] to forcibly remove the attached dust, and then purge from the inside to the outside to remove all dust.



Remove the clip, remove the outer filter element, clean the outer filter element and the inside of the housing, and install it.

Do not remove the inner filter element.





## Popular science engine series air filter cleaning, inspection



\*Please wear protective glasses because dust will be scattered in four places when forced to remove dust with compressed air.  
Especially when working in places with a lot of dust, please clean and inspect as early as possible.

Remove the clip, remove the outer filter element, clean the outer filter element and the inside of the housing, and install it.

Do not remove the inner filter element.



Air filter  
location

### ◆ Cleaning method

Purge the outside of the filter element with dry compressed air[205 k Pa (2.1 kg f/cm<sup>2</sup> or less)] to forcibly remove the attached dust, and then purge from the inside to the outside to remove all dust.



## Cleaning and inspection of Kubota series air filter elements



### note

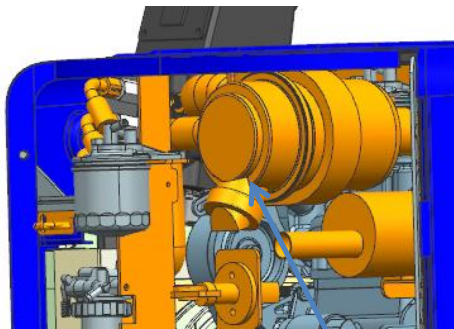
\*Please wear protective glasses because dust will be scattered in four places when forced to remove dust with compressed air.  
Especially when working in places with a lot of dust, please clean and inspect as early as possible.

Remove the clip, remove the outer filter element, clean the outer filter element and the inside of the housing, and install it.

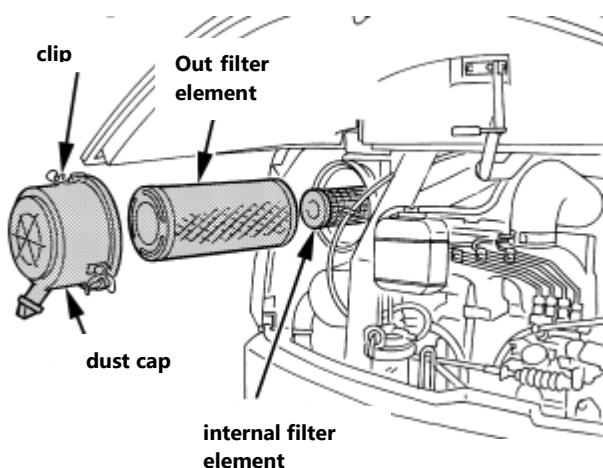
Do not remove the inner filter element.

### ◆ Cleaning method

Purge the outside of the filter element with dry compressed air[205 k Pa (2.1 kg f/cm<sup>2</sup> or less)] to forcibly remove the attached dust, and then purge from the inside to the outside to remove all dust.

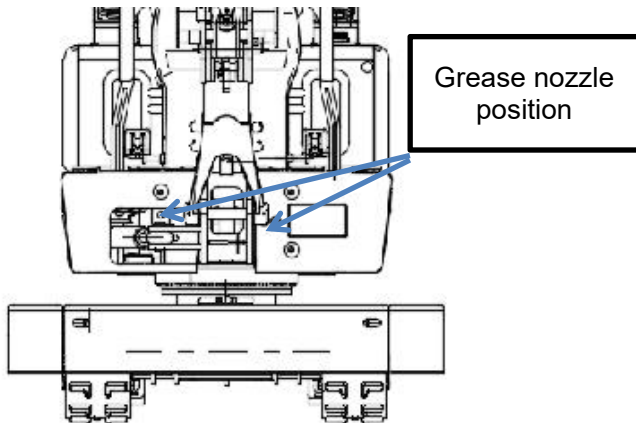


Air filter  
location



## ■ Grease injection for ball parts of rotary bearings

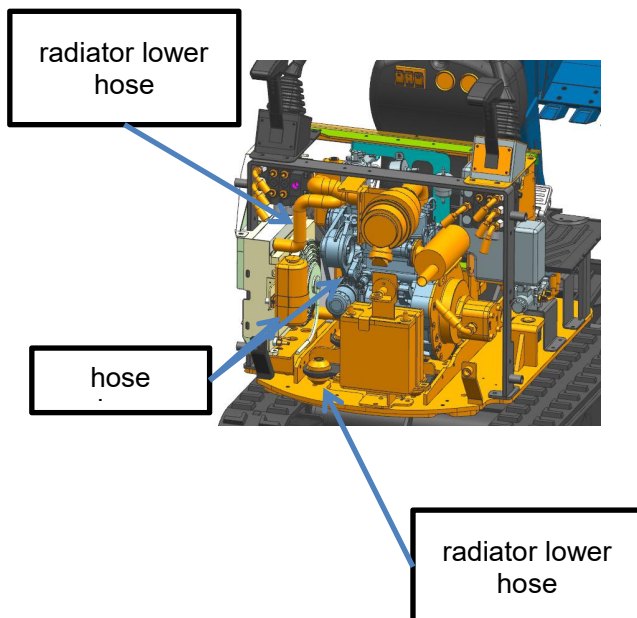
1. Fill grease from grease nozzle marked with arrow. (Grease nozzle in center)
2. Rotate approx. 90 degrees and add grease in 4



## ■ Radiator hose and pipe clamp inspection

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

1. When clamping the pipe clamp loose or leakage, please tighten the pipe clamp firmly.
2. When radiator hoses expand, harden, or crack, replace hoses and tighten clamps securely.



- When heavily dirty  
Immerse in warm water dissolved with household neutral detergent, wash while moving up and down, and then wash off the solvent with water to make it completely dry naturally.





## Maintenance every 250

---

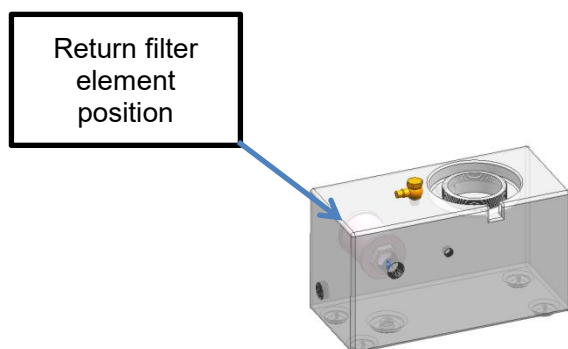
Please also perform maintenance for every 50

### ■ Oil change (50hours for the first time, every 250hours after the second time)

For oil change methods, refer to the "Maintenance every 50hours".

### ■ Replacement of working oil return filter (250hours for the first time, once every 500hours after this time)

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



1. Remove the filter bracket from the service tank by holding it at the top.
2. Loosen the retaining bolts, then remove the return filter from the filter bracket and replace with a new filter.
3. Remove the bolts from the cover, remove the protective filter and replace it with a new one.





\*When using hydraulic front working devices such as hammer breakers, it is different from the above. In this case, please replace them according to the frequency of use of hydraulic front working devices.

Ratio of hydraulic auxiliary devices to	Change time of working oil	Return filter replacement time
Standard operations (backhoe operations)	Every 1000 hours	every 500 hours (initial every 250 hours)
Hammer usage ratio 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

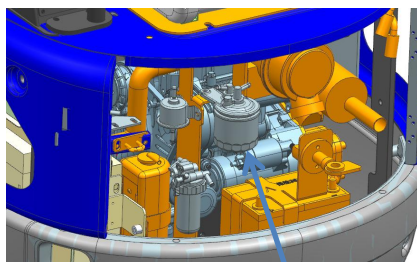
\* Always check the oil level after changing the filter.

## Maintenance every 500

Maintenance should also be carried out for every 50, 100 and 250

### Fuel filter element replacement

1. Use a filter wrench to remove the filter.
2. When assembling, lightly coat the sealing layer with fuel and tighten the filter directly by hand without using the filter wrench.
3. Please deflate.  
(Please refer to "Fuel System Exhaust" item)



Fuel filter elements



\* When assembling, please be careful not to get dust or dirt.

Replacement of travel motor oil (100hours for the first time, every 500hours after these condition)

For oil change methods, refer to the item "Maintenance every 100 hours".

■ Replacement of working oil return filter (250hours for the first time, every 500hours after these condition)

For replacement of the return oil filter, refer to the item "Maintenance every 250hours of use."

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

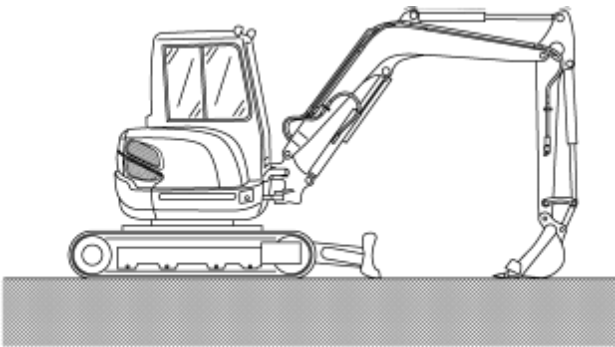
For replacement of the filter element, refer to the "Maintenance every 50hours" item.

## Maintenance per 1000

Maintenance should also be carried out for each 50, 100, 200, 250 and 500 hours of use.

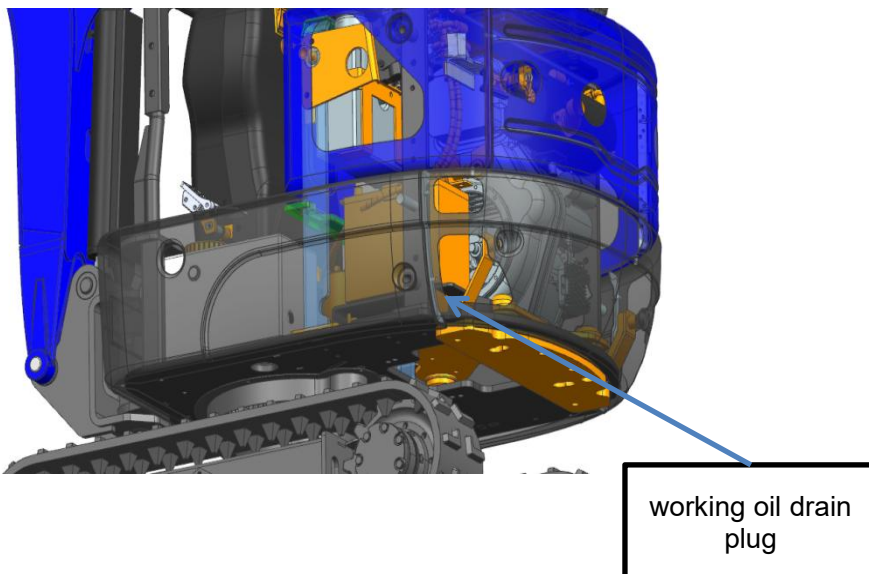
### ■ Replacement of working oil (also replace suction filter in working oil tank)

1. Park the machine in a horizontal position, extend the piston rod of each cylinder to approximately the middle position, and contact the bucket and bulldozer blade with the ground.



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

Method Refer to oil change method for every 50 hours maintenance





3. Remove the suction filter with a wrench, etc. and replace it with a new one.
4. Next, tighten the drain plug securely.
5. Fill the specified amount of operating oil from the filler.
6. Allow the engine to idle for about 5 minutes.  
After stopping the engine, confirm whether the specified amount of operating oil has been added.

● Operating oil replacement capacity

Oil replace ment capacit y	R10	Total oil 12.5 L
--	-----	------------------

**supplement**

- \* When sediment accumulates in the oil tank, wash the inner surface.
- \* Be careful not to mix foreign matter into the fuel tank.
- \* When replacing the suction filter, please consult with the sales store or our designate maintenance factory.



## ■ Replacement of hydraulic pilot filter

Mechanical models without pilot filter

Maintenance per 1000 hours of use  
or 1 year of use

---

## ■ Air filter element replacement

### Popular science Air filter replacement

Remove the clamp, remove the outer filter element and inner filter element, replace with new one, and reassemble.



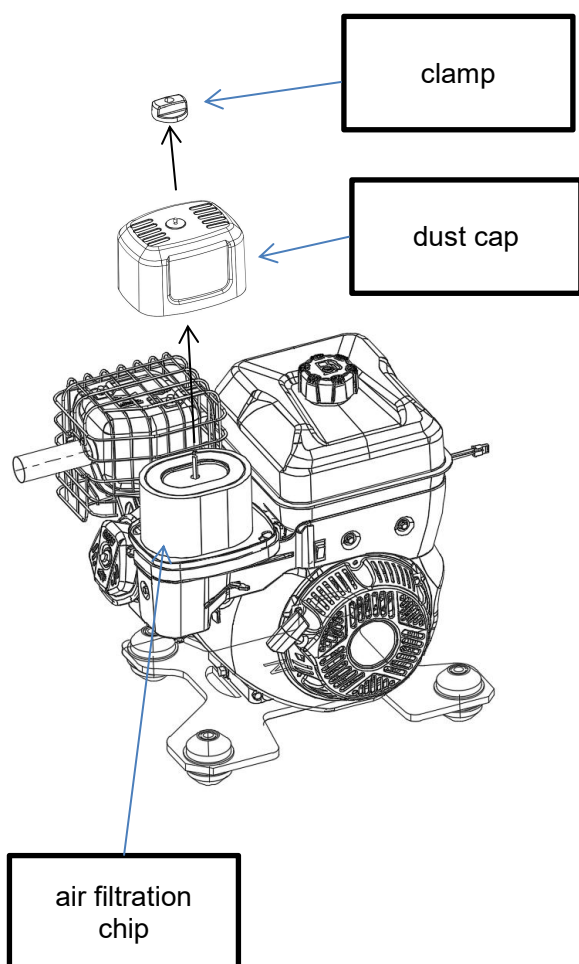
Air filter  
location

## Bridge stone Air Filter Replacement

Remove the clamp, remove the outer filter element and inner filter element, replace with new one, and reassemble.

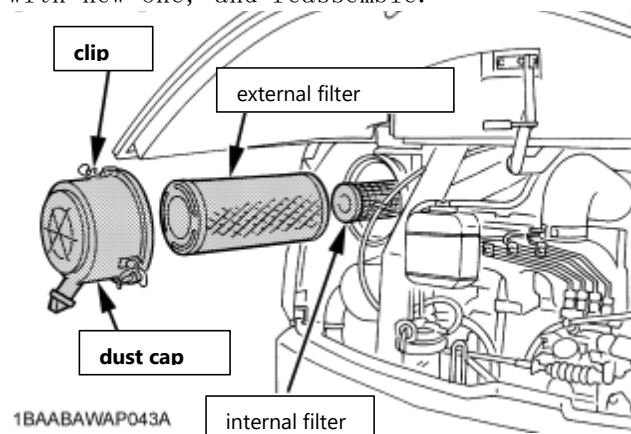


Air filter location



## Kubota Air Filter Replacement

Remove the clamp, remove the outer filter element and inner filter element, replace with new one, and reassemble.





# maintain

## Maintenance per 2000

Maintenance should also be carried out for each 50, 200, 250, 500 and 1000 hours of use.

### ■ Grease replacement of idler pulley, idler pulley and idler pulley

Please consult with the sales shop or our designated repair factory.

### ■ Inspection of alternator and starter motor

Please consult with the sales shop or our designated repair factory.

### ■ Check air conditioning piping and hoses



**note**

\*Do not touch water pipes or glow plugs. Otherwise it will cause burns.

## Maintenance per year of use

### ■ Wiring inspection and fuse usage



**note**

- \* Due to the harness and battery wire damage will cause short Road, so be sure to check.
- \* If the battery, wiring and muffler, generator surroundings Garbage and fuel can cause fires, so Please check.

Loosening of wiring terminals will lead to poor contact. If the wiring losses are damaged, it will not only damage the performance of electrical components, but also sometimes cause accidents such as short circuit, leakage or burning. Therefore, replace or repair damaged wiring as soon as possible.



**significant**

- \* When fuse is replaced but blown immediately, please do not replace it with metal wire, but check and repair it in the designated maintenance factory of our company.
- \* Since the wiring harness of this machine has been fully considered for waterproof and other factors, do not repair and use without authorization. Check and repair it at the sales shop or the maintenance factory designated by the company.







1. Verify that all wire and hose clamps are securely connected and not damaged.
2. Repair or replace hoses and clamps immediately if worn or damaged.

## Maintenance every 2

---

### ■ Replacement of cooling water (when using long-lasting coolant)

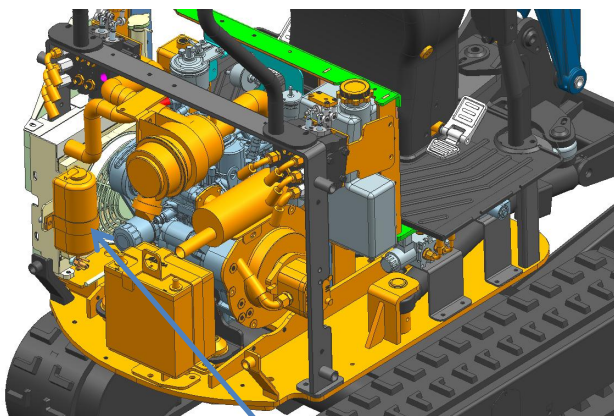


**note**

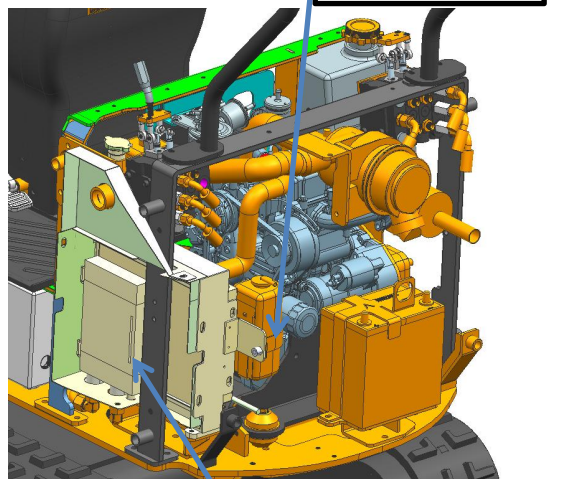
\* If it is opened during operation or immediately after operation is stopped  
Radiator covers, steam or hot water can spray out and cause scalding injury. Therefore, turn on the radiator after it has cooled down  
Guy.

1. Remove the radiator cover, remove the drain plug at the lower part of the radiator and drain all the cooling water.  
To drain the water tank, remove the tank, unscrew the tank cap and drain.
2. Drain water from the radiator while filling it with water and continue until clean water flows out of the drain.
3. Then, tighten the drain plug securely and fill the radiator and tank with long-life coolant. After filling, tighten the cap, start the engine and run at a slow speed for about 5 minutes, then shut down the engine and confirm whether the specified amount of cooling water has been added.

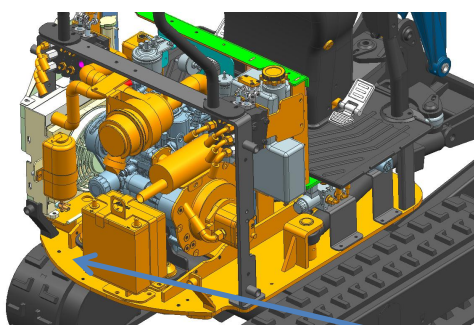




auxiliary kettle



water tank



outfall

- ◆ How to use antifreeze  
(in case of other than long-life coolant)



\* Do not mix antifreeze solutions from different manufacturers.

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

When the temperature reaches 0°C or less in winter, be sure to mix permanent (PT) antifreeze into clean water and then supplement it to the radiator and water tank.



- \* Mixing ratio of antifreeze varies with manufacturer and temperature. Please observe the mixing ratio recorded in the "Low Temperature Precautions" item.
- \* Please do not mix antifreeze solutions from different manufacturers.



1BAABAUAP100A

- \* Antifreeze-Long-life coolant has a useful life of 2 years.
- \* In the case of other than long-lasting coolant, please replace it once a year in spring and autumn.

# maintain

## supplement

- \* Long-lasting coolant (mix ture ratio: antifreeze 50% water 50%) is added as cooling water at the factory.

### ■ Replacement of radiator hose and pipe clamp



- \* Radiator hoses and pipe clamps can cause damage when used for too long. Rupture, causing hot water to spew out, sometimes accidentally burn. Please replace them as soon as possible.

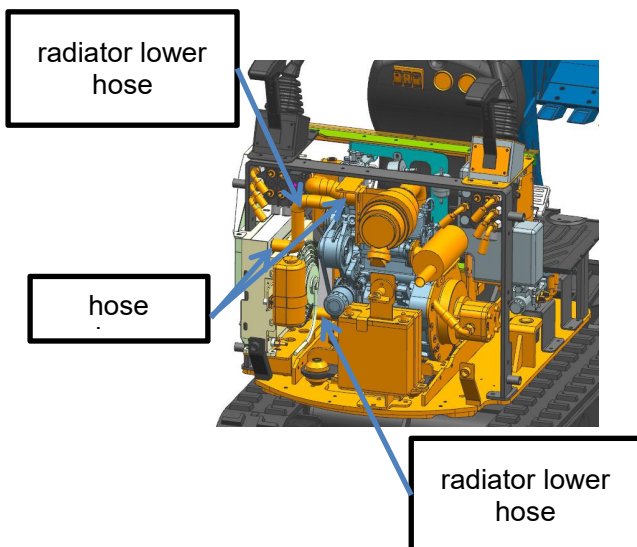
Replace radiator hoses and pipe clamps every 2 years. If the radiator hose is found to be swollen, hardened or cracked during inspection, replace it even if it is less than 2 years old.

### ■ Replace air conditioning pipes and hoses



- \* Do not touch water pipes or glow plugs. Otherwise it will cause burns.

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.



## on-demand maintenance

### Battery inspection and use



- \* Because removing the battery wires may cause a short circuit,  
Be sure to remove the negative wire first. Also, when assembling, please Connect the positive wire first.
- \* Batteries produce flammable hydrogen gas, which may be close to fire sources  
Fire and explosion may occur, so please do not approach the fire at all.  
Source.
- \* Never place tools on or around the battery  
Metallic or combustible objects.  
Otherwise, a short circuit may occur  
It could cause a fire, an explosion, a fire.
- \* Battery solution (dilute sulfuric acid) can cause blindness or burns,  
If battery solution sticks to skin or clothing, immediately  
Rinse with plenty of water. In addition, if the battery solution Splash into the eyes, rinse with plenty of water, but also remove  
See a doctor.
- \* Remove all plugs from batteries during charging  
Come down.
- \* When working near batteries, be sure to wear glasses to protect yourself.  
Eye protection.

to incorrect operation of electrical components. After becoming this state, it is sometimes too late, so please charge as soon as possible.

3. Due to evaporation of water in the electrolyte, the amount of solution decreases during charging of the battery. Insufficient solution can damage the battery. Overtime, the liquid will overflow and corrode the body.
4. Please check whether the plate separator is exposed, and be sure to supplement battery solution or distilled water when it is insufficient.
5. When storing the unit for a long time, remove the battery from the unit for charging, and store it in a dry place away from light after adjusting it to the correct liquid level.
6. Since the battery will discharge automatically during storage, please recharge once a month.

Please check and use the battery when the engine is stopped and the starter key is in the "STOP" state.

#### ■ Battery maintenance

The latest batteries have extremely high performance and, if used incorrectly, shorten their service life, resulting in unnecessary overhead. Therefore, please use the correct method to give full play to the function of the battery.

1. Battery as engine start, indicator light power supply, is a necessary component.
2. If the battery reserves are reduced, the engine cannot be started, which is related

## ■ Precautions for battery charging

1. Always turn the key to **STOP** and remove the battery from the vehicle.
2. Insufficient battery solution can damage the battery. When excessive, the liquid will overflow and corrode the metal parts of the car body.
3. Avoid rapid charging as much as possible. Otherwise, the battery life will be shortened.
4. Rapid charging is a high-current charging method used to compensate for partial discharge of batteries in a short period of time, so it can only be carried out in emergency situations.
5. Do not confuse (+) and (-) when connecting the wires to the battery. Mistakes can cause battery and electrical system failures.
6. Remove the electric wire from the battery from the (-)side and install it from the (+)side. If reversed, it will cause a short circuit when the tool hits the battery.
7. When charging, connect the (+) of the battery to the (+)of the charger, and connect the (-) of the battery to the (-) of the charger, and charge according to the ordinary charging method.
8. When using batteries, in addition to specific gravity measurement, check the battery solution amount after removing the cable connected to the battery.
9. Please remove all the plugs from each battery.

## ■ Battery level check

Refer to the item "Maintenance every 50 hours" for the method of checking the battery level.

## ■ Precautions when charging with battery loaded (only as a last resort)

The correct way to do this is after removing the battery from the body.

1. Since abnormal voltage applied to the alternator will cause damage, insert the key to turn to **STOP**, remove the (-) terminal wiring of the battery and charge it.
2. During charging, remove all liquid plugs to vent gas generated.
3. When the battery is overheated (liquid temperature exceeds 45 °C), the charging is suspended.
4. Please stop charging immediately after charging. If charging continues beyond what is necessary, the following undesirable conditions may result.
  - Battery overheating
  - Battery solution volume decreases
  - Poor battery condition
5. When connecting the battery, be careful not to reverse the connection (connect (+) and (-), (-) and (+) together). Otherwise, it will cause damage to alternators and the like.
6. In addition, after starting the engine in this way, please carry out correct supplementary charging as soon as possible according to the instructions in the charger manual. If this supplementary charging is not carried out, the service life of the battery will be seriously shortened, so please pay attention.

## ■ Starting the engine with auxiliary cables

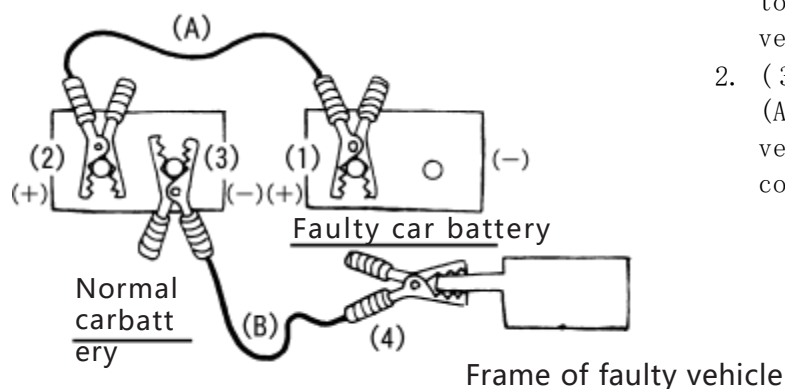
1. Since batteries produce flammable gases, it is extremely dangerous to spark near the battery or close to a fire source because it may cause ignition and explosion. Therefore, avoid using boost cables to start the engine as much as possible.
2. In order to prevent failure, the battery should be replaced as soon as possible.

When you have no choice but to start the engine with an auxiliary cable, use the battery as follows to avoid accidents.

### ◆ Before connection

1. Use auxiliary cables and clamps with capacity suitable for battery.
2. Cable, clamp and battery (+), (-) terminals are broken or corrosion.
3. Is the starter key in the **STOP** position?
4. The battery of the general vehicle shall have the same capacity as that of the faulty vehicle.

### ◆ Auxiliary cable connection

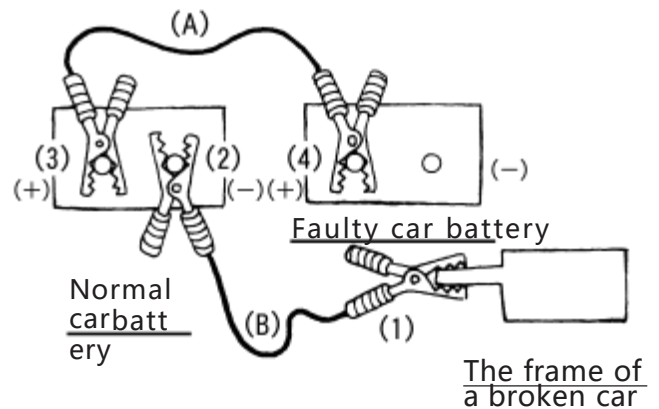


1. (1) Connect the clamp of auxiliary cable (A) to the (+) terminal of the faulty vehicle, and (2) connect one of the

## ◆ Engine start of faulty vehicle

1. After connection confirmation, start the engine.
2. When the engine fails to start, wait for a while (2~3minutes) and restart the engine.

### ◆ Auxiliary cable removal



1. (1) Remove the clamp of the auxiliary cable (B) from the frame of the faulty vehicle, (2) Next remove the connection to the (-) terminal of the normal vehicle.
2. (3) Remove the clamp of auxiliary cable (A) from the (+) terminal of normal vehicle, and (4) remove the (+) terminal connection of faulty vehicle.





- clamps to the (+) terminal of the normal vehicle.
2. (3) Connect the clamp of auxiliary cable (B) to the (-) terminal of normal vehicle, and (4) Connect one of the clamps reliably to the body of defective vehicle.
    - \* Keep the connection to the vehicle body away from the battery.
  3. After the terminals are connected, confirm that they are properly connected before starting the engine.

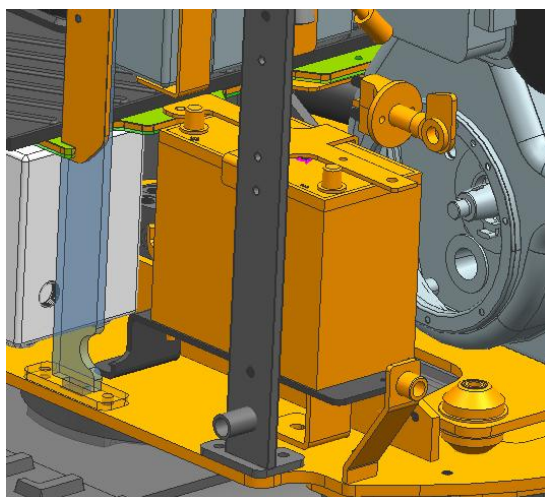


## ■ Notes on engine starting and battery charging

For engine starting methods when the battery is exhausted and battery usage, proceed as follows.



- \* Prohibition on charging and starting batteries when they are depleted  
(In the following cases, excessive voltage applied to electrical installation components (including controllers and instruments) may cause damage, so pay attention to maintenance.)
  - Please do not operate from 24V large construction machinery or Start after the truck, etc., is jumpered. (Be sure to start with 12 V.
  - Do not charge the battery with the battery terminals removed.  
(Be sure to remove terminals when charging.)
  - Do not start with battery charger.
  - Do not start with 24V battery.  
(Always start with 12V battery.)
  - Do not remove the battery terminals while the engine is rotating.





### *note*

\* Please make sure that the starter key is set to "STOP"

Position to stop the engine before fuse, slow fuse

Replacement of fuses.

► If we're careless...

Sparks can be generated, causing danger.

### ■ Fuse replacement

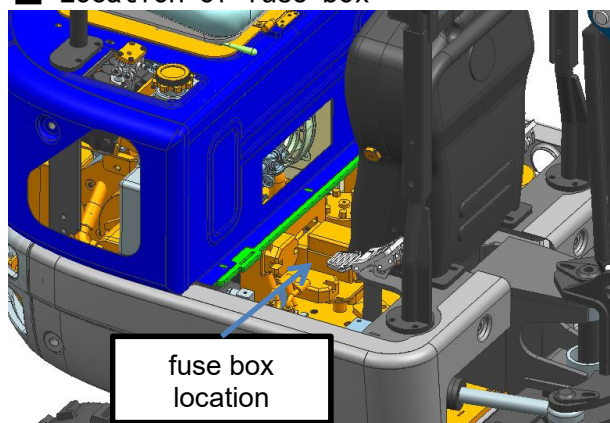
1. Put the starter key in the **STOP** position.
2. Remove the cover under the seat and open the fuse box cover.
3. Please replace with a fuse of the same capacity as the blown fuse. Fuses can be removed simply through the fuse box cover.



### *significant*

- \* When replacing the fuse but melting immediately, please do not use metal wire or silver foil covered wire instead, but should be inspected and repaired in the sales shop or the maintenance factory designated by the company.

## Location of fuse box





## Slow fuse replacement

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



30A fuse

## Fuse capacity and circuit adaptation

 12V80A Preheating relay	V80A start relay			A
				Air conditioning
				30A
				Reverse valve
12V80A Start relay	30A Start switch	30A Protecting		20A
				Excitation
				20A Left
				Rocker panel electric
				20A Left
				Rocker panel electric
				0A
				Instrument
				

Do not use fuses other than those specified.

## ■ Backup power supply (work lights, etc.)

When installing additional work lamps other than the work lamp (55W) attached to the unit. When the ceiling specification is adopted, it is carried out by branching the harness (work lamp). The maximum installation capacity is 110W including the local work lamp.

There are terminals at the front upper part of the cab when cab specifications are adopted. The maximum installation capacity is 27W × 2 lamps.

For details, please contact our sales shop or our designated repair factory.

## fuel system bleed

1. Please refuel the fuel tank.
2. Insert the key into the starter switch and turn to the **START** position.



3. Perform automatic deflation for approximately 1

### supplement

- \* If the air is not exhausted once, repeat the operations 2 and 3

### supplement

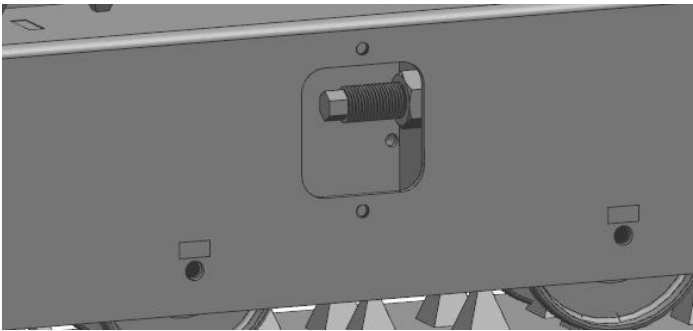
- \* If the additional electrical assembly is allowed to idle for a long time while it is started, the battery may be exhausted. Please be careful not to allow it to idle for a long time.

## Adjustment of tracks

\* After adjustment, turn the track 1~2 times to confirm the tension margin.

### ■ When tightening rubber tracks

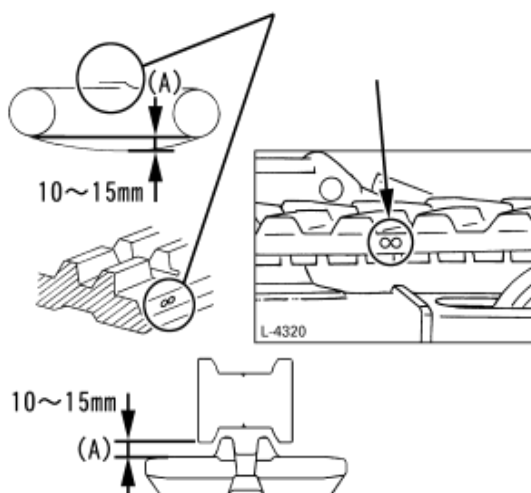
1. Tighten the nut, use a wrench to turn the hexagon at the top of the tightening lever until the track is tightened properly, and tighten the nut to fix it.



2. Adjust the tension condition of the track as shown in the figure, that is, in the state (A) where the track part is floating, so that the size (clearance between the outer peripheral end of the center roller and the tread surface of the track shoe) reaches 10~15mm. (The seam of the rubber track is located in the center of the upper part)



joint position  
(Seam ∞ marked.)





## ■ When loosening rubber tracks

1. Loosen the nut and use a wrench to turn the hexagon at the top of the tensioning lever until the track is properly tensioned.



- \* If the slack margin reaches 25 mm, adjust again.
- \* First check the tension margin and readjust 30 hours after use, and then check the tension margin and readjust every 50 hours.
- \* If it is too tight, it will
  - Accelerate the wear of rubber tracks.
- \* If it is too loose, it will
  - Cause poor final drive meshing.
  - Accelerate the wear of rubber tracks.
  - Causing rubber track to fall off.
- \* After the operation, please clean the rubber track part sufficiently, and do not let the soil adhere and ignore it.
- \* If the rubber track portion is too tight due to being filled with soil or the like during operation, float the rubber track portion by using the boom, arm and bucket, and rotate side by side without load to remove the soil.
- \* Note the seams of the track  
 Rubber track with seams. When adjusting the track, be sure to move the seam to the upper center position. In addition, in the upper traveling wheel mechanism, make the upper traveling wheel reach between the connecting rods and then adjust it.  
 If the seam is misplaced, more slack than the proper tension will occur and readjustment will be required.



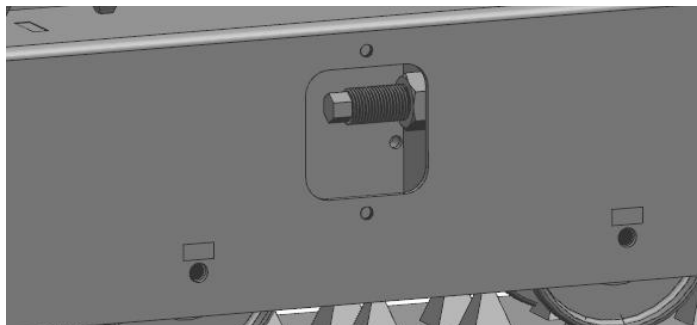


## ■ In order to use rubber tracks easily

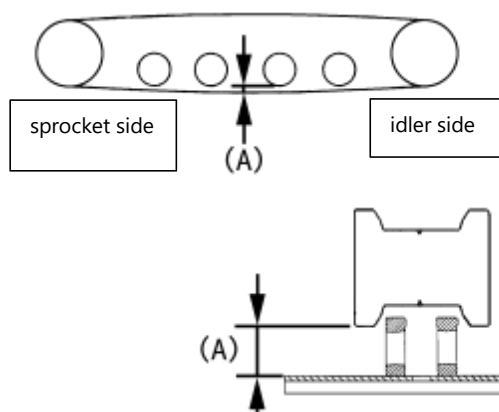
1. When turning, avoid turning in place as much as possible and rotate at low speed.  
(reduces claw wear and stone entrapment)
2. When the safety valve is activated due to sand sticking during turning, please do not turn forcibly, but immediately retreat and turn again after removing sand.
3. Because it will damage rubber and shorten the service life of track when used on riverside, gravel ground, steel bar and iron filings, please never use it in this environment.

## ■ Tight iron track shoes

1. Tighten the tension lever using a wrench.



2. As shown in the figure, when the gap "(A)" between the outer peripheral end of the center roller and the upper surface of the track shoe reaches the value shown in the figure below in the state where the track part is floating, the tension condition of the track reaches the optimum state.



Gap (A)	R10	25 ~ 35mm
---------	-----	-----------

## Bucket Replacement



- \* Wear helmets, protective glasses, etc. when performing replacement work Protective gear.
- \* When working together, the agreed signals should be thoroughly understood and exactly Communicate with each other and pay full attention to safety.

Please replace the bucket as follows.



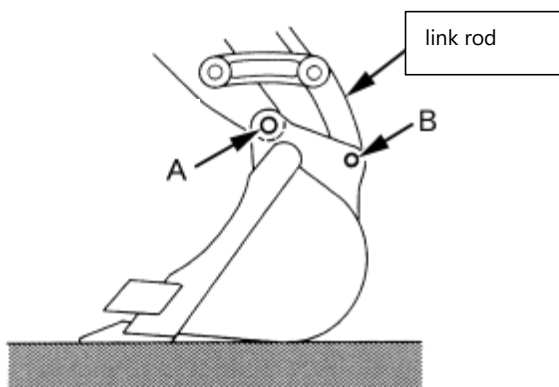
- \* Be careful not to get sand or dirt on the pin.

### ■ Bucket removal

1. On a flat, horizontal place, bring the bucket into contact with the ground.
2. Stop the engine and depressurize the hydraulic system.
3. Pull out pins A and B.

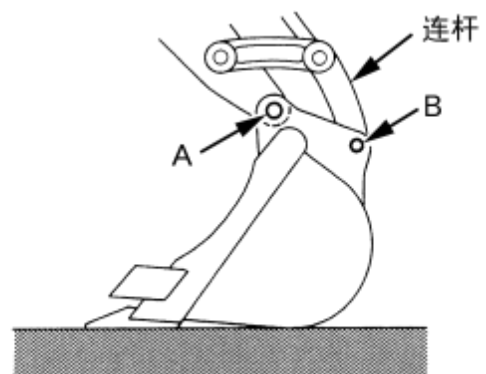


- \* When replacing the bucket, make sure that the pin is not stained with sand or dirt, which can enter the bushing and cause wear of the bushing quickly.



### ■ Bucket installation

1. Align the arm with hole A and pin it. Then align the connecting rod with hole B and pin it together.
2. Install the dowel bolt of the pin securely.
3. Grease the pin.



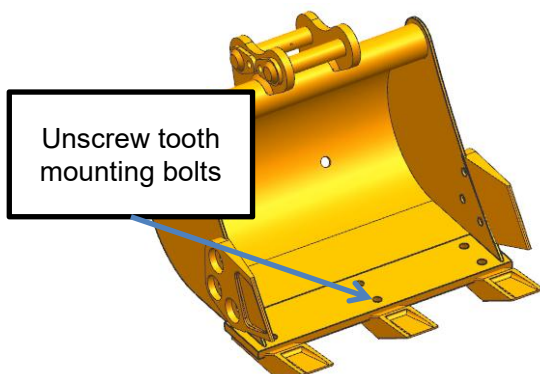
## Replacement of bucket teeth and side teeth

### ■ Replacement of bucket teeth



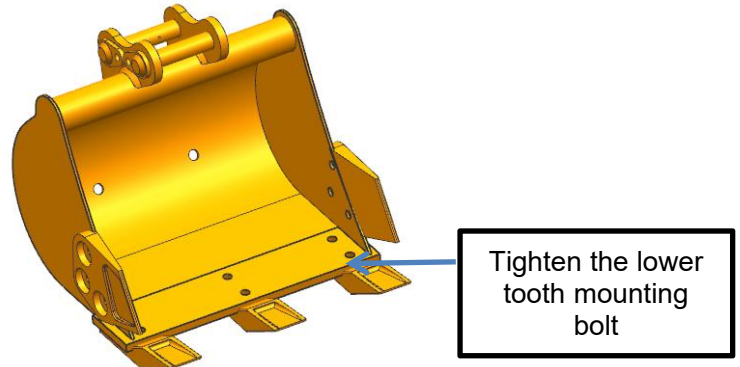
\* When working, be sure to use protective equipment such as protective glasses.

1. Unscrew the tooth mounting bolt with a socket wrench, wrench, etc.
2. Remove soil from buckets.
3. Please install new side teeth. and temporarily tighten the bolts.



### ■ Replacement of side teeth

1. Tighten the lower tooth mounting bolt with a socket wrench, wrench, etc.
2. Please install new side teeth. and temporarily tighten the bolts.
3. Tighten the bolt after confirming that the contact surface of the side teeth is in contact with the bucket metal joint.

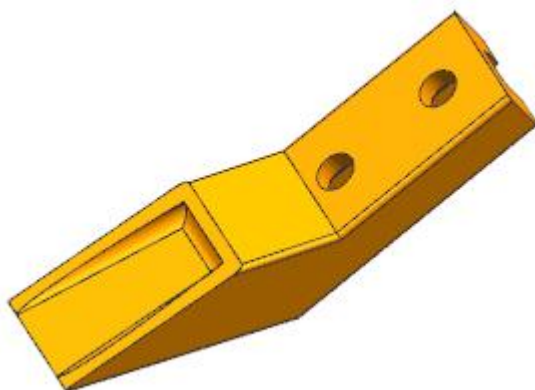


- Tighten bolts with tightening torque of  $260 \sim 304 \text{ N} \cdot \text{m}$  ( $26.5 \sim 31 \text{ kgf} \cdot \text{m}$ ).

When the contact surface of the side teeth is not in contact with the bucket metal joint or when the tightening force is weak, the bolt may be loose.

When weak, bolts may loosen.

4. Tighten the bolt after confirming that the contact surface of the side teeth is in contact with the bucket metal joint.



# maintain

## Maintenance during long-term storage

### ■ When parking for a long time, please collect as follows

1. After washing and cleaning all parts, please store the machine indoors, not outdoors.  
When you have to put it outdoors, please choose a flat ground, put it on wood, and then cover it with a cloth.
2. Don't forget to add oil, grease and change oil.
3. Apply grease well to the exposed part of the cylinder rod.
4. Remove the battery ground wire or remove the battery from the vehicle and store it.
5. When the temperature drops below 0 °C, antifreeze should be added to the cooling water, or the water should be completely drained.

### ■ When using after a long period of parking, please do the following

1. Wipe off grease from the piston rod of the hydraulic cylinder.
2. Start the engine, and perform the operation of the working device and the driving under the unloaded state, so that the oil can flow to all places sufficiently.  
(If the parking time exceeds 1 month, please perform operations 1 and 2 once a month.)

## Cold season use

### ■ Low temperature precautions

1. Oil, hydraulic oil  
Please replace with oil with specified viscosity.
2. fuel  
Choose the right diesel according to the temperature.
3. battery  
At low temperatures, battery capacity decreases and the solution freezes when the charge decreases. Therefore, when stopping the engine, ensure that the charging rate is above 75%, and pay attention to heat preservation for starting the next morning. When replenishing distilled water due to low liquid level, do not replenish it after the end of the operation, but before starting the operation the next morning to prevent freezing.
4. cooling water  
Please add antifreeze.  
If the temperature drops below 0 °C during shutdown, add it to the cooling water and replenish to the radiator and water tank to prevent freezing.

### ● Water and antifreeze mixing ratio table

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

### supplement

- \* Antifreeze should use permanent brand or long-lasting coolant.
- \* The mixture of water and antifreeze should be injected after the cooling water has been completely drained and scale removed.
- \* Since anti-rust agents have been added to antifreeze, there is no need to add detergents when using antifreeze.



Refer to item "Cooling water replacement  
Cooling water

■ Notes after completion of work

Clean the dirt and water attached to The vehicle body, and place the track on concrete ground or dry place. In particular, if the soil attached to the wheel is not completely removed, it will sometimes be impossible to drive after freezing.

Therefore, if there is no suitable parking space, then you can park your car after the ground is paved with boards or park your car on a straw mat. If it stops directly on the ground, it may not be able to drive or cause damage to the driving motor after the track freezes the Next morning. In particular, thoroughly wipe the surface of the piston rod of the hydraulic cylinder. If soil and frozen water droplets enter the seal together, the seal may be damaged.



## About regular replacement of important parts

In order to ensure safety in operation and operation at all times, the machine user must carry out regular maintenance. In order to further improve safety, especially the following important parts related to safety and fire, regular replacement should be entrusted to the sales shop or the maintenance factory designated by the company.

These parts will change in material over time and are prone to wear or aging. Since it is difficult to determine the usage status during regular maintenance, etc., after a certain period of use, even if no abnormality is found, it is necessary to replace it with a new one to ensure that normal functions are maintained.

However, if some abnormality is found before these parts reach the end of their service life, repair or replace them with new ones according to the usual practice. For the hose part, when it is found that the hose clamp has deformation, cracking and other aging phenomena, it should be replaced with a new one together with the hose clamp.

In addition, hydraulic hoses other than regularly replaced parts shall be inspected as follows, and when abnormalities are found, reinforcement and replacement shall be carried out. When replacing hydraulic hoses, replace O-ring and seals at the same time.

Please entrust the replacement of important parts to the sales shop or the repair factory designated by the company.

● When performing the following periodic inspections, please also check the fuel hose and hydraulic hose.

inspection classification	inspection item
routine inspection	Fuel, hydraulic hose joint, rivet leakage
Monthly routine inspections	Fuel, oil leakage at the joint and rivet parts of the hydraulic hose Fuel, damage to the hydraulic hose (cracking, abrasion, fuzz)
Specific autonomous inspections (annual inspections)	Fuel, hydraulic hose joint, rivet leakage Fuel, hydraulic hose interference, cracking, aging, extrusion cracks, damage (cracking, wear, fuzz)

● List of important components

No.	Replace parts regularly	quantity	replacement time
1	Fuel hose (fuel tank ~ fuel filter)	1	Every 2 years or Change every 4000 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 (arm cylinder)	4	
9	Hydraulic hose (bucket cylinder)	4	





10	Hydraulic hose (swing cylinder)	2	
11	Hydraulic hose (bulldozer cylinder)	6	
12	Hydraulic hoses (auxiliary devices)	6	
13	Hydraulic hose (rotary motor)	2	



# Problems of Backhoe Excavator and Its Treatment Measures

If a small backhoe is in poor condition, diagnose and take appropriate action according to the table below. If you have any questions, please contact the sales shop where you purchased the producer or our designated repair factory.

	current situation	cause	disposition
engine side	cannot be started	(1) Misuse of incorrect key to start engine. (2) Keys with metal parts (key rings, etc.)	(1) "Key Error" is displayed on the instrument panel. Please use the correct key to start the engine. (2) Remove metal from key and start engine.
	When starting is difficult	(1) Fuel does not flow.	(1) Check the fuel tank to remove impurities or moisture that have settled. (2) Check the fuel filter and replace it if it is dirty.
		(2) Air or water mixed into fuel delivery system	(1) Check the piping and clamp pipe clamp, if damaged, replace with new one or repair. (2) Degassing. (Refer to <b>Fuel System Bleed</b> item)
		(3) When it is cold, the oil viscosity increases and the engine itself rotates heavily.	(1) Fill the radiator with hot water. (2) Use different oils according to the temperature. (SAE10W30 for winter use)
		(4) The battery seems to be exhausted, the rotational force is weakened, and there is no momentum beyond compression.	(1) Battery charging.
	When the output power is insufficient	(1) Fuel is low.	(1) Refuel.
		(2) The air filter is clogged.	(1) Clean the filter element.
	when suddenly stopped.	(1) Fuel is low.	(1) Refuel.
	When the exhaust gas color is abnormally black	(1) Poor fuel. (2) Excessive oil.	(1) Replacement with premium fuel. (2) Adjust to normal oil volume.
	When the water temperature gauge displays "H" (engine overheating)	(1) The water pump seal is poor. (2) Fan belt extended or disconnected. (3) Bad thermostat. (4) Cooling water is low. (5) Radiator mesh, radiator fins stuffed with dust. (6) Rust on cylinder head and crankcase contaminated cooling water. (7) Bad radiator cover (evaporation). (8) Cooling water path corrosion. (9) Continuous overload operation. (10) Cover gasket broken (cooling water reduced). (11) Low on oil. (12) Poor fuel injection timing. (13) Poor fuel.	(1) for replacement. (2) to adjust or replace. (3) for replacement. (4) Supplement to the prescribed amount. (5) cleaning. (6) Change cooling water and add rust inhibitor. (7) for replacement. (8) Rinse. (9) Reduce the load. (10) for replacement. (11) Adjust to normal oil volume. (12) Make adjustments. (13) Please replace the high quality fuel.



hydraulic	Working devices (boom, arm, bucket) Rotation, travel, bulldozer insufficient power, slow speed or no action	(1)Insufficient oil. (2)Oil leakage at hose and pipe joints.	(1)Replenish working oil. (2)Reinforce or replace.
Driving	Can't drive smoothly	(1)The track got stuck in a stone. (2)Tracks too tight or too loose.	(1)Remove the stones. (2)Make adjustments.





# Hydraulic hammer use precautions

---

## Precautions when installing hydraulic hammer

---

Please install a breaker suitable for the machine. If you install a hammer other than the recommended one, it will not only affect the service life of the machine, but also cause safety problems.

In addition, when installing hammers and front end attachments from manufacturers other than the ones listed below, please consult the sales shop or our designated maintenance manufacturer in advance.

# Hydraulic hammer use precautions

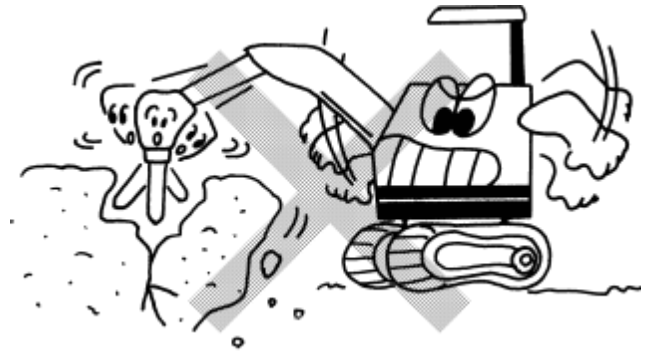
## Precautions when using the hammer

### Prohibited 1 Working Posture

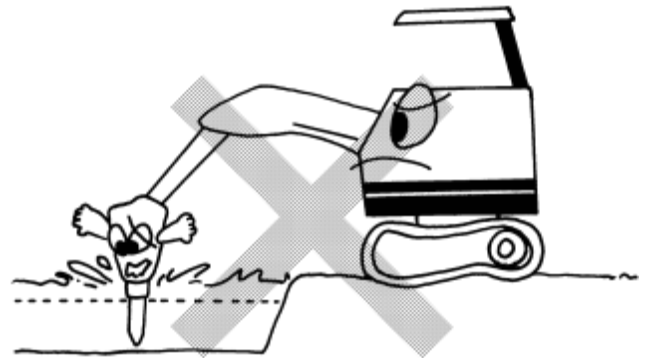
If the hammer is struck when the front of the hammer is raised more than 5 cm, the hammer body or the top of the bracket may crash into the rock when the rock is broken and the machine is rapidly reversed to the front, sometimes causing damage. In addition, since the vibration generated during the strike will be transmitted to the track part, in order to protect the track, please do not use this strike method.



**Prohibition 3** Pry crushing is prohibited  
If the hammer lever is used to break rocks, etc., it will cause bruising of bolts, hammers, etc.

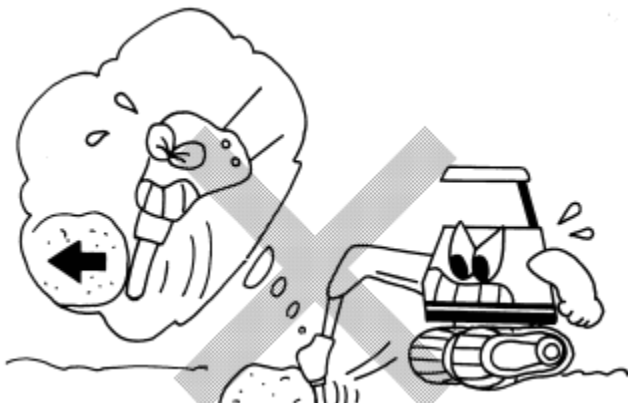


**Prohibition 4** Crushing operations in water or mud are prohibited  
Please do not put the parts other than hammer rod into water or mud for crushing operation. Otherwise, due to piston rust and other causes of premature hammer failure.



**Prohibition 2** Prohibition of movement of rocks, etc.

As shown in the figure, please do not use the hydraulic pressure of the boom and arm of this machine to rotate or fall the rock through the top of the hammer rod or the side of the bracket, otherwise, it may cause bruising of the hammer mounting bolt, damage of the bracket, bruising of the hammer rod and jamming, damage of the arm and boom.



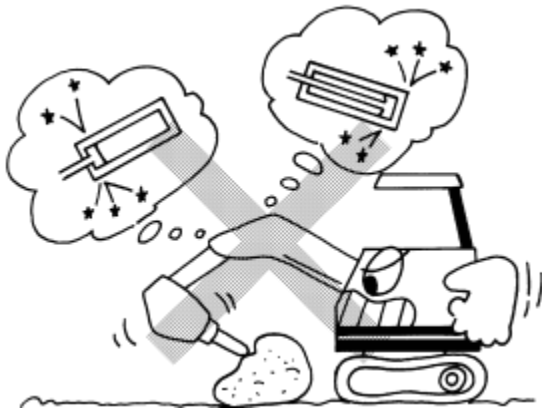
**Prohibition 5** Prohibition of dropping a hammer to break rocks, etc.

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

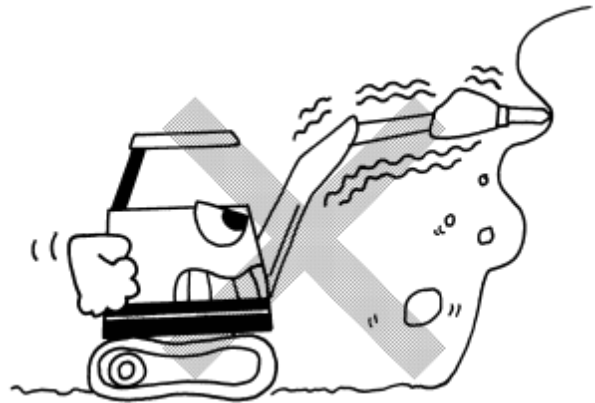


# Hydraulic hammer use precautions

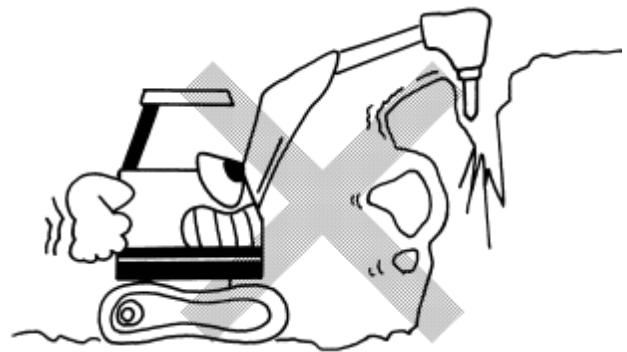
**Prohibition 6** It is forbidden to crush  
If the striking operation is performed when each cylinder of the machine is at the stroke end (the cylinder is extended to the maximum position or retracted to the maximum position), the cylinder of the machine may be damaged or various parts of the machine may be damaged.



**Prohibition 9**  
Horizontal and upward striking operations are prohibited.



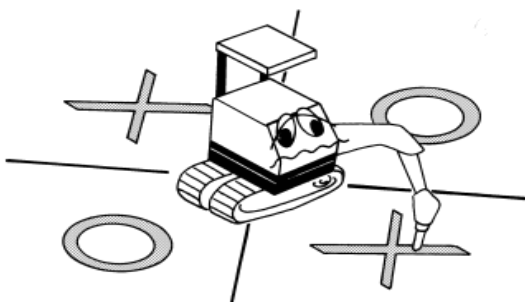
**Prohibited 10**  
Aerial crushing is prohibited. Otherwise, it will cause falling stones and rollover.



**Prohibited 7** Prohibited lifting operations  
It is forbidden to lift goods with hydraulic breakers.



**Prohibition 8** Do not work with the machine facing sideways  
Please do not work with the crusher facing sideways. Otherwise, it may cause the machine to tip over and reduce the service life of the wheel part.

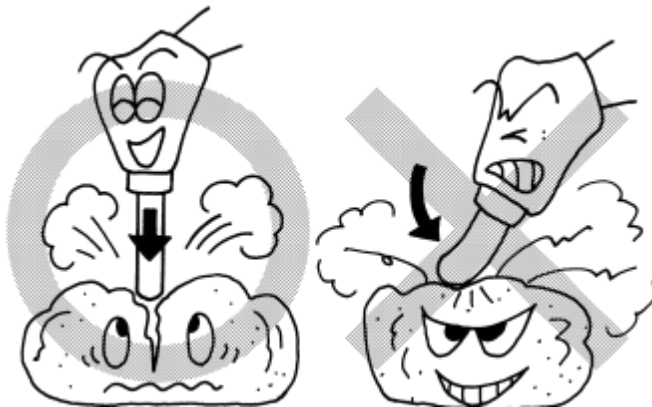




# Hydraulic hammer use precautions

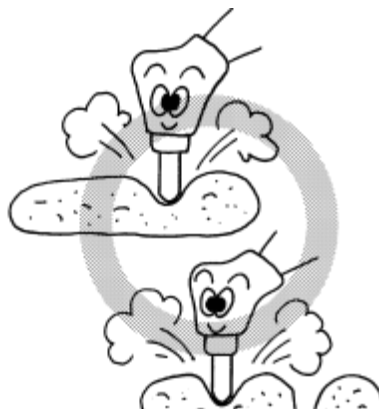
## precautions 1

Press the chisel vertically against the striking surface. In addition, pay attention to always apply thrust during the strike, and do not hit empty.



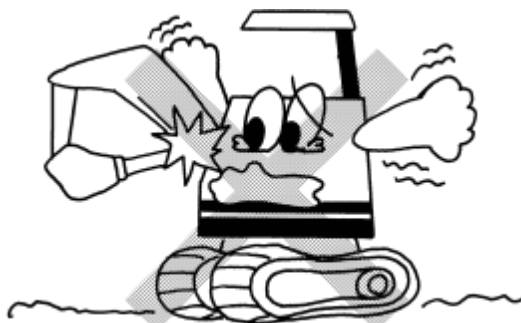
## Note 2

When hitting the same hitting surface continuously but failing to break and penetrate within 1 minute, please change the hitting surface and chisel from the top to break it.



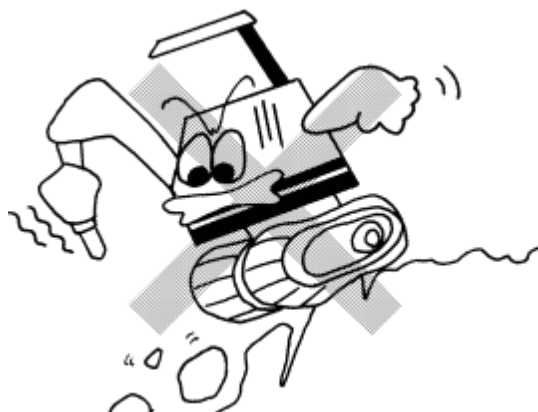
## Note 3

When pulling up the hydraulic hammer, be careful not to make the steel rod hit the boom or boom cylinder.



## Note 4

Make sure that the ground under your feet is firm before you start working.



# Recommended greases

■ Always use genuine RIPPA oils and greases as shown in the table below.

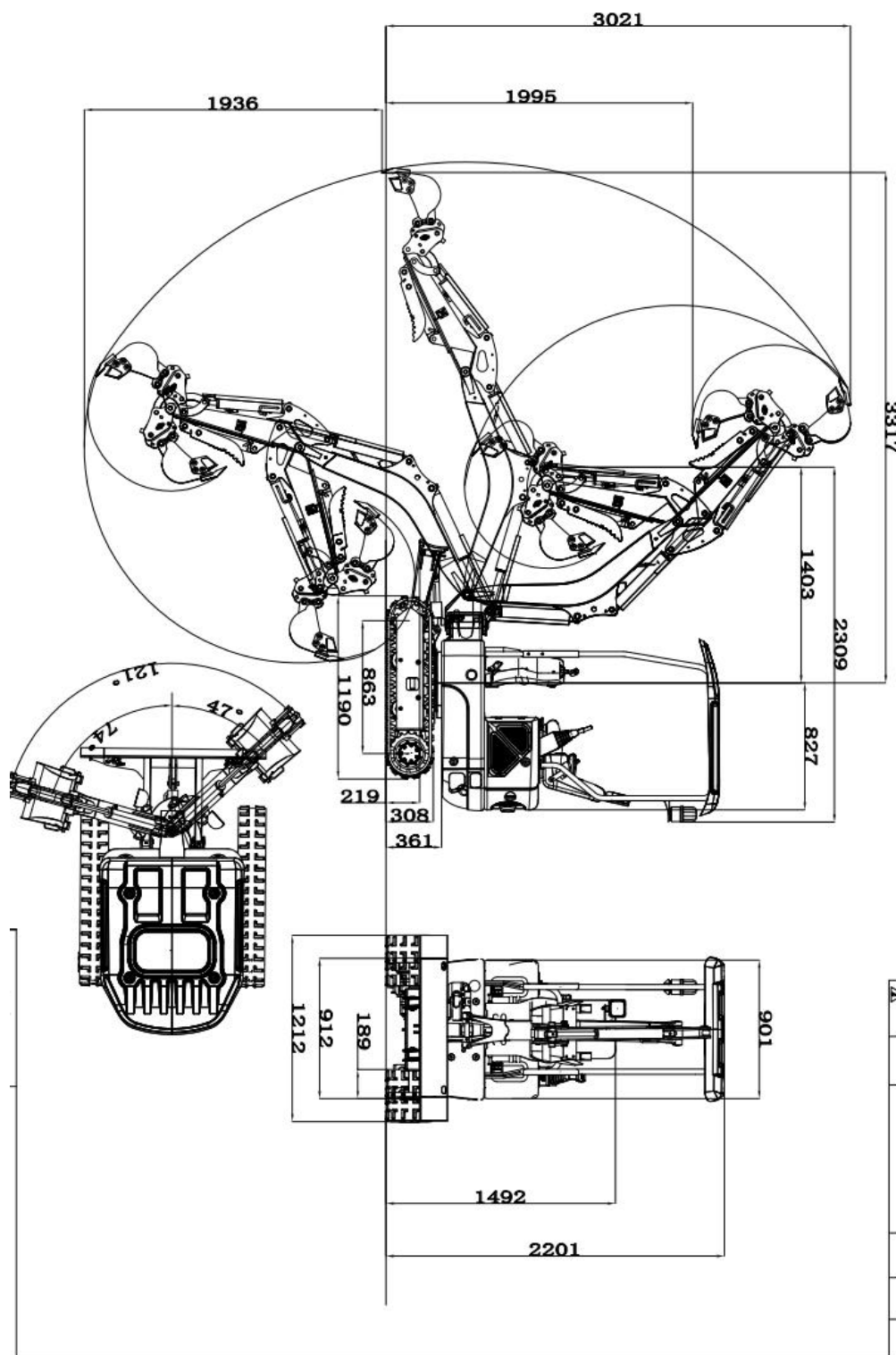
manufacturers	RIPPA working oil	RIPPA engine oil	universal grease
Shell	Hydraulic46	D30CDorD1 0W-30 CD	-
cartel oil	-	-	Engineering King (General Lithium No. 3)

## ● Recommended greases

producers	engine oil	hydraulic oil	gear oil
Mobil Mobil	Black Over lord Delvac MX(15W-40) Delvac Surper Multigrades(10W-30/15W-40)	DTE 25(VG46)	Mobilube HD80W-90
Esso ESSO	Superflo(10W-40)	NUTO H46	Gear oil GX 80W-90
Shell	RIMULA( SAE10W-30)	Tell us ST46	SPIRAX EP90
CASTROL CALTEX	RX Super SAE15W-40; RX Super Plus SAE10W-30	HYDRAULIC series hydraulic oil (VG46)	
GADERSTEXACO	Havoline <sup>a</sup> Motor Oil 10W-30		Havoline <sup>®</sup> Gear Oil 80W-90
JOMO	Premium diesel engine oil JOMO DIESEL CF-4( S AE15W-40)/ Premium diesel oil JOMO DIESEL CD( SAE10W-30)	JOMO Hydlux (VG46)	JOMO GEAR5

※ When changing oil, drain all oil and inject new oil. Please use the following fuel.

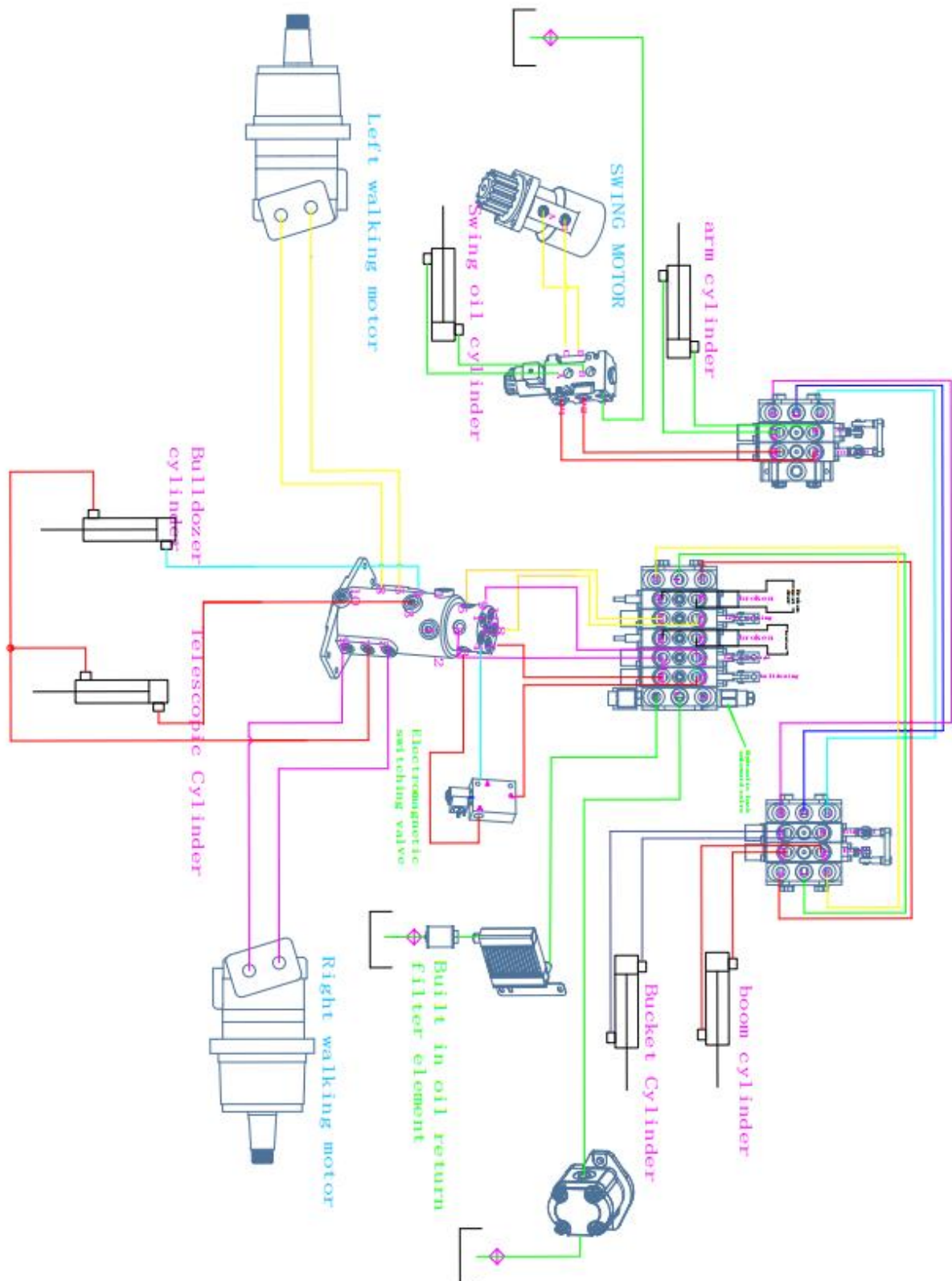
- 0# diesel oil: summer use
- -10#, -20#, -35#: winter, selected according to local temperature



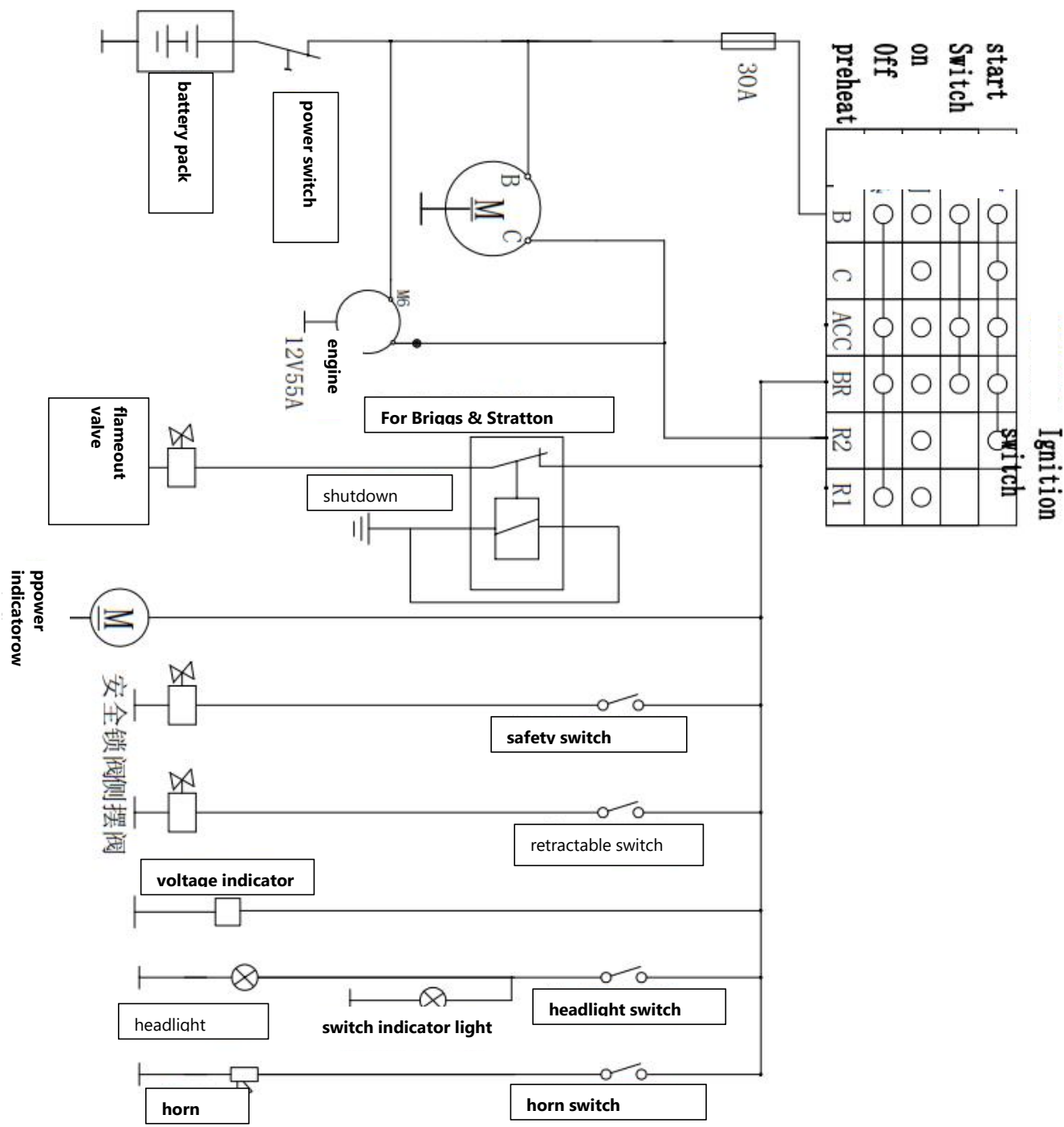
Unit:mm

## Hydraulic schematic diagram and details

Hydraulic schematic diagram as an important part of hydraulic system design, its role is to clearly show the hydraulic system's working principle, structure and control mode. According to the hydraulic principle diagram of the machine hydraulic circuit, can better solve the problem of hydraulic pipeline.



As an important part of circuit design, electrical schematic diagram is used to clearly show the working principle, structure and control mode of the circuit. According to the electrical schematic diagram, you can have a comprehensive understanding of the electrical layout of the machine, and it can also be used to troubleshoot electrical problems.



# Excavator parameter table

Model information Configuration ● Standard 0 Optional-None			Self-produced excavator R10-5 Eco-XD-JBT(Z482)-CLB-SS-CB-Y-DP-0-X-CY		
basic perform ance paramet ers	Working weight of whole machine (kg)(actual weight +75KG person weight)	1078	engine	engine brand	Kubota
	Bucket capacity (m³)	0.014		engine model	Z482
	Low/High Travel Speed (Km/h)	0-1.5		Maximum horsepower (ps)	11.234
	Climbing capacity (%)	30%		Maximum power (Kw)	8.2
	Ground Voltage (Kpa)	25.53		Maximum speed (rpm)	3000
	Maximum digging force (kN)	9.2		Displacement (L)	0.479
	Maximum digging radius (mm)	3233		number of cylinders	2
	Max. digging depth (mm)	1833		cooling method	water-cooling
	Maximum digging height (mm)	3021		Engine oil change quantity (L)	1.5
	Maximum unloading height (mm)	2247		the form of fuel	diesel
	Maximum deflection angle (°)	121		fuel mark	No. 0/-10
	Tracks telescopic range (mm)	900-1200		Theoretical fuel consumption (L/h)	0.8-1.2
configu ration	cab	○	vehicle body	Transport length (mm)	2430
	handrail	○		Transport width (mm)	912
	quick-change	○		Transport height (mm)	2201
	hydraulic quick change	-		Ground clearance of counterweight (mm)	361
	rake	○		Bucket width (mm)	300
	log grapple	○		Boom Length (mm)	1477
	Ripper	○		Stick Length (mm)	800
	breaker hammer	○		Width of bulldozer (mm)	912-1212
	bob-weight	-	fuel tank	Fuel tank (L)	5.5
	tension form	mechanical tensioning		Hydraulic oil tank (L)	12.5
	air conditioner	single warm	track	0-Rubber (bandwidth * pitch * pitch)	180*72*37
				0-steel (bandwidth * pitch * number of pitches)	180*72*37
				Rubber block (piece)	74
hydraul ic system	Main pump type/model	306	Shipping Referenc e	Boxing size (cm)	320*101*171
	Main pump brand	Tianjin Walk/Sheng jie		Outer size of wooden box after cab removal (cm)	320*101*171
	Maximum flow rate of main pump (L/min)	18L/min		Cab wooden box outer size (cm)	130*105*172
	Multitandem valve	2+2+5 couplet		40 high cabinet quantity	12
	Multiway valve brand	take off		Dismantling and assembling 40 high cabinets	28
	Rated set pressure (Mpa)	17MPa			
	Maximum set pressure (Mpa)	18MPa			
	Type of travel hydraulic motor	WDM-300			





	Walking motor brand	send a
	motor displacement	300
	Rotary hydraulic motor type	BM2-315
	displacement	315

Model information Configuration ● Standard 0 Optional-None			Self-produced excavator R10-5 ECO-XD-BLTD-CLB-SS-CB-Y-DP-0-X-CY		
basic perform ance param eters	Working weight of whole machine (kg) (actual weight +75KG person weight)	1078	engine	engine brand	Briggs Stratton
	Bucket capacity (m³)	0.014		engine model	Briggs Stratton
	Low/High Travel Speed (Km/h)	0-1.5		Maximum horsepower (ps)	13.5
	Climbing capacity (%)	30%		Maximum power (Kw)	10
	Ground Voltage (Kpa)	25.53		Maximum speed (rpm)	3600
	Maximum digging force (kN)	9.2		Displacement (L)	0.42
	Maximum digging radius (mm)	3233		number of cylinders	1
	Max. digging depth (mm)	1833		cooling method	forced air cooling
	Maximum digging height (mm)	3021		Engine oil change quantity (L)	0.95
	Maximum unloading height (mm)	2247		the form of fuel	gasoline
	Maximum deflection angle (°)	121		fuel mark	No. 92
	Tracks telescopic range (mm)	900-1200		Theoretical fuel consumption (L/h)	0.8-1.2
config uratio n	cab	○	vehicle body	Transport length (mm)	2430
	handrail	○		Transport width (mm)	912
	quick-change	○		Transport height (mm)	2201
	hydraulic quick change	-		Ground clearance of counterweight (mm)	361
	rake	○		Bucket width (mm)	300
	log grapple	○		Boom Length (mm)	1477
	Ripper	○		Stick Length (mm)	800
	breaker hammer	○		Width of bulldozer (mm)	912-1212
	bob-weight	-	fuel tank	Fuel tank (L)	5.5
	tension form	mechanical tensioning		Hydraulic oil tank (L)	12.5
	air conditioner	single warm	track	0-Rubber (bandwidth * pitch * pitch)	180*72*37
hydrau lic	Main pump type/model	306		0-steel (bandwidth * pitch * number of pitches)	180*72*37







system	Main pump brand	Tianjin Walk/Shengjie		Rubber block (piece)	74
	Maximum flow rate of main pump (L/min)	18L/min	Shipping Reference	Boxing size (cm)	320*101*171
	multitandem valve	2+2+5 couplet		Outer size of wooden box after cab removal (cm)	320*101*171
	Multi way valve brand	take off		Cab wooden box outer size (cm)	130*105*172
	Rated set pressure (Mpa)	17MPa		40 high cabinet quantity	12
	Maximum set pressure (Mpa)	18MPa		Dismantling and assembling 40 high cabinets	28
	Type of travel hydraulic motor	WDM-300			
	Walking motor brand	send a			
	motor displacement	300			
	Rotary hydraulic motor type	BM2-315			
	displacement	315			

Model information Configuration ● Standard 0 Optional-None		Self-produced excavator R10-5 ECO-XD-LG(Euro V)-CLB-SS-CB-Y-DP-0-X-CY(cylinder upper)			
basic performance parameters	Working weight of whole machine (kg) (actual weight +75KG person weight)	1078	engine	engine brand	Li Gong (Euro V)
	Bucket capacity (m <sup>3</sup> )	0.014		engine model	192F
	Low/High Travel Speed (Km/h)	0-1.5		Maximum horsepower (ps)	10.4
	Climbing capacity (%)	30%		Maximum power (Kw)	7.5
	Ground Voltage (Kpa)	25.53		Maximum speed (rpm)	3000
	Maximum digging force (kN)	9.2		Displacement (L)	0.499
	Maximum digging radius (mm)	3233		number of cylinders	1
	Max. digging depth (mm)	1833		cooling method	forced air cooling
	Maximum digging height (mm)	3021		Engine oil change quantity (L)	1.325
	Maximum unloading height (mm)	2247		the form of fuel	diesel
	Maximum deflection angle (°)	121		fuel mark	No. 0/-10
	Tracks telescopic range (mm)	900-1200		Theoretical fuel consumption (L/h)	0.8-1.2



configuration	cab	○	vehicle body	Transport length (mm)	2430
	handrail	○		Transport width (mm)	912
	quick-change	○		Transport height (mm)	2201
	hydraulic quick change	-		Ground clearance of counterweight (mm)	361
	rake	○		Bucket width (mm)	300
	log grapple	○		Boom Length (mm)	1477
	Ripper	○		Stick Length (mm)	800
	breaker hammer	○		Width of bulldozer (mm)	912-1212
	bob-weight	-	fuel tank	Fuel tank (L)	8.5
	tension form	mechanical tensioning		Hydraulic oil tank (L)	12.5
hydraulic system	air conditioner	single warm	track	0-Rubber (bandwidth * pitch * pitch)	180*72*37
	Main pump type/model	306		0-steel (bandwidth * pitch * number of pitches)	180*72*37
	Main pump brand	Tianjin Walk/Sheng jie		Rubber block (piece)	74
	Maximum flow rate of main pump (L/min)	18L/min	Shipping Reference	Boxing size (cm)	320*101*171
	Multi tandem valve	2+2+5 couplet		Outer size of wooden box after cab removal (cm)	320*101*171
	Multi way valve brand	take off		Cab wooden box outer size (cm)	130*105*172
	Rated set pressure (Mpa)	17MPa		40 high cabinet quantity	12
	Maximum set pressure (Mpa)	18MPa		Dismantling and assembling 40 high cabinets	28
	Type of travel hydraulic motor	WDM-300			
	Walking motor brand	send a			
	motor displacement	300			
	Rotary hydraulic motor type	BM2-315			
	displacement	315			



## 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, Bulgarian

**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 : \_\_\_\_\_



# List of accessories and spare parts

attachment list

attachment list

## 1. foot pad

## 2. accessories

parts name	quantity	type
		R10
14 inch toolbox	1	○
grease gun	1	○
Tool butter	1	○
Belt wrench	1	○
Tool wrench set	1	○
All en key	1 group	○
New funnel	1	○
open-end wrench	1	○
air filtration chip	1	○
oil return filter element	1	○
R10 Complete set of stickers	1	○
R10 Parts Manual	1	○
R10 Manual	1	○
spur teeth	2	○
side teeth	2	○
bucket pin	2	○

## 3. random file

- ①. Operation and maintenance manual 1 copy
- ②. One copy of service certificate for three guarantees
- ③. qualification certificate 1 part
- ④. engine manual 1 part