玉柴装备
YUCHAI EQUIPMENT

Y20E Hydraulic Excavator

Operation Manual

广西玉柴装备科技有限公司
GUANGXI YUCHAI EQUIPMENT TECHNOLOGY CO., LTD.

WARNING

Incorrect operation of this machine can result in injury or death. Before using this machine , you must do the following:

- ●Memorize the safety regulations and correct operating specifications for this machine.
- ●Read and understand the content in the manual regarding the safe operation of this machine.
- ●Understand and become familiar with all safety labels on this machine.
- ●Keep unauthorized personnel away from the work area.
- ●Before operating this machine in the work area, you must have received prior safety operation training for the machine.

You are responsible for complying with relevant laws and regulations and following the guidance from Yuchai Equipment regarding the operation and maintenance of this machine.

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Preface

To the User

Dear User,

Greetings!

Welcome to using Yuchai Equipment excavators, and thank you for your strong support for Yuchai's business.

This manual is intended for safety guidance and the proper use and maintenance of the machine. Before starting and operating the machine for the first time, or performing any maintenance on it, you must carefully read this manual and fully understand all safety procedures, operating guidelines, and maintenance instructions to ensure complete mastery. For convenient reference, please keep this manual properly stored in a designated location so that qualified machine operators can read it regularly. If this manual is lost, damaged, or illegible, please immediately order a new one from our company or our authorized dealers. When transferring the machine, please also transfer this manual to facilitate proper use by the next owner.

Please entrust major repairs and adjustments of the machine to Yuchai Equipment's authorized dealers or service stations, and use only genuine parts and components provided by our company. If non-genuine parts or components are used, although there may be no obvious impact on the machine immediately, they are very likely to cause a series of adverse consequences for the machine in the future. For machine failures caused by the use of non-genuine parts, components, or repairs performed by institutions not authorized by our company, Yuchai Equipment will not assume any warranty obligations even if the machine is still within the warranty period.

Adhering to the principle of "Customer First", Yuchai Equipment continuously improves its products to provide users with the best possible products. Therefore, improvements may be implemented at any time, and product replacement materials for the then-current sales will be provided without prior notice.

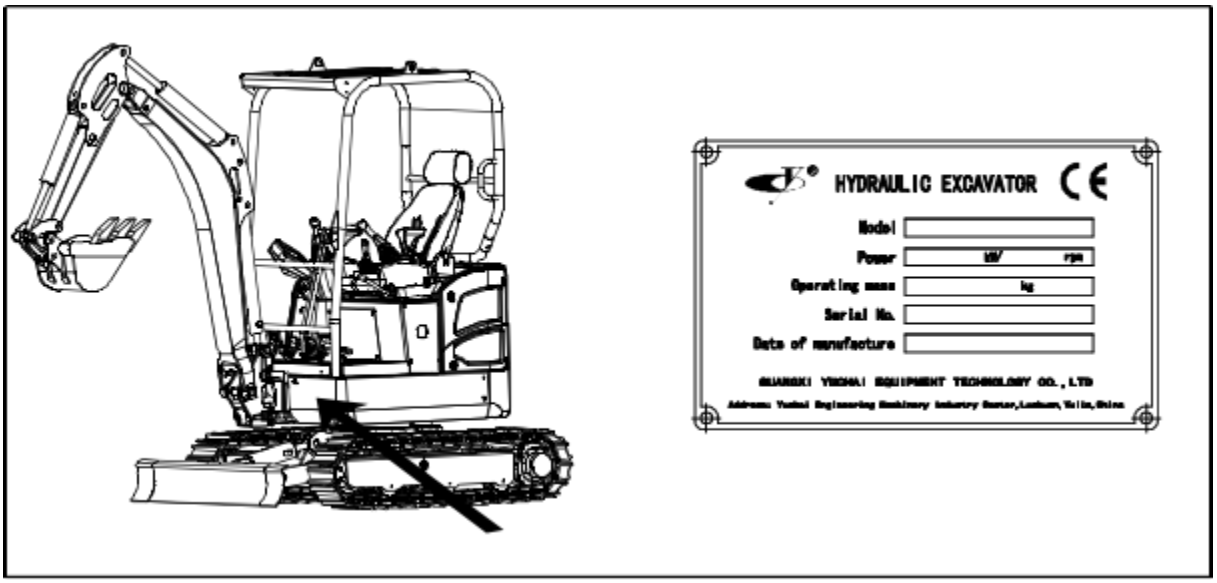
It is our sincere hope that, with your correct use and careful care, this machine can better serve you and create greater value.

Guangxi Yuchai Equipment Technology Co., Ltd.

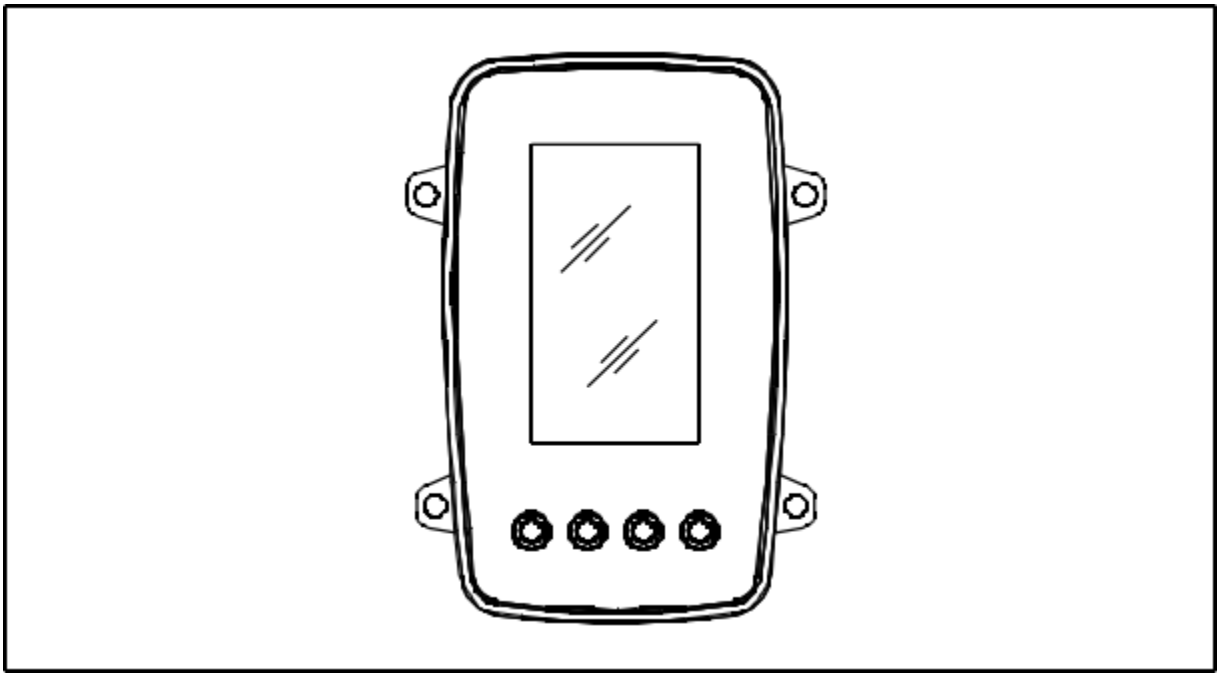
Product Information

When you need to check the basic information of the machine, you may refer to the position shown in the diagram.

- **Machine Information** (The machine nameplate is located on the right side of the upper carriage.)



- **Machine Operation Information** (Located on the combination meter of the right control console)



Machine File

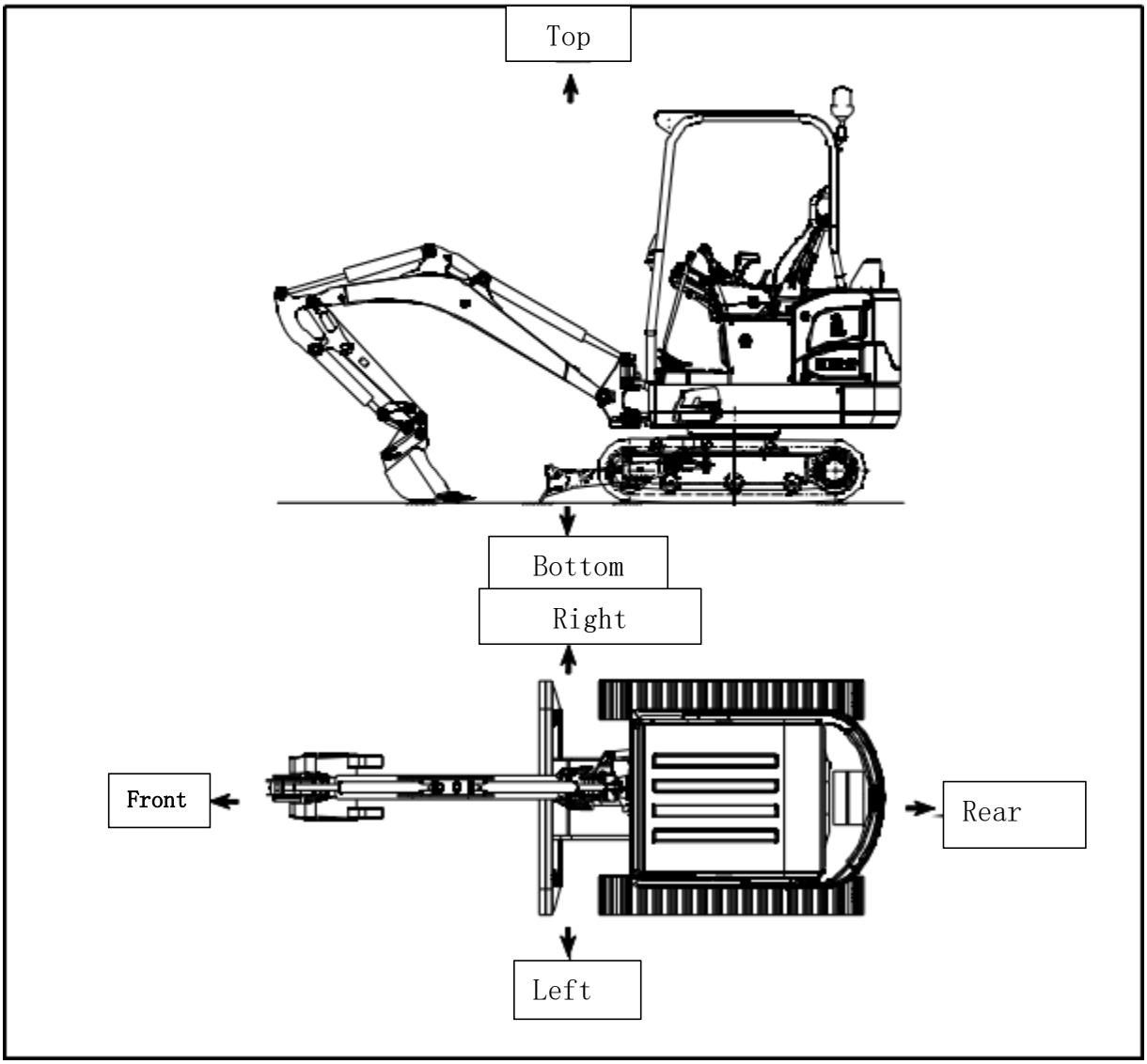
Fill in the product serial number and other data of your machine in the table below. When you need to purchase machine parts or obtain relevant information, you can inform Yuchai of these codes.

Please record these numbers and keep them properly together with the product certificate. In the event that your machine is stolen, you can submit these materials to the local public security organ.

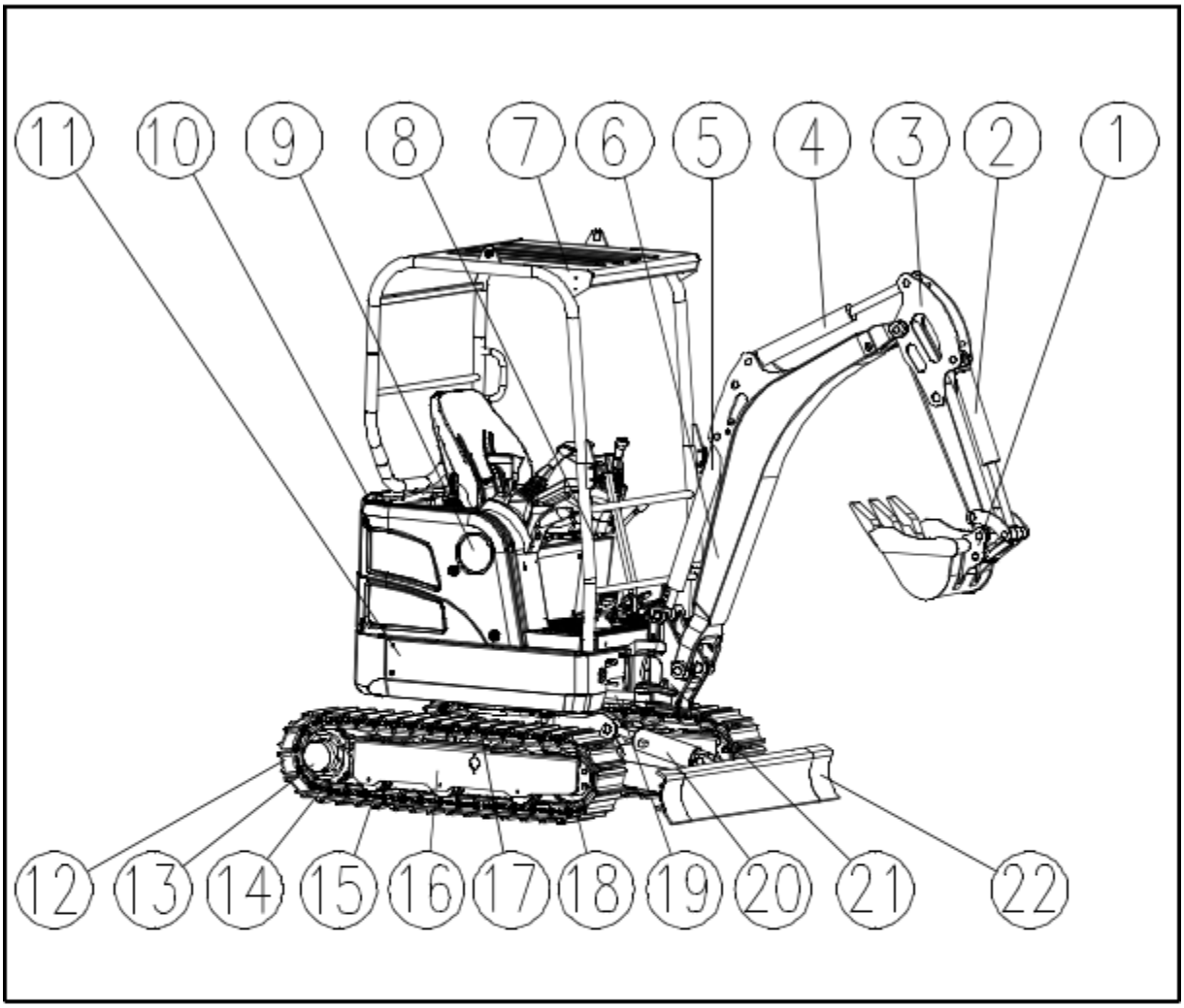
Machine Model	
Product Serial Number	
Dealer Information	

Machine Orientation

The terms front, rear, left, right, top, and bottom in this manual refer to the directions in the illustrated state.



机器组成



1. Bucket
2. Bucket Cylinder
3. Dipper Arm
4. Dipper Arm Cylinder
5. Boom Cylinder
6. Boom
7. Canopy / Operator's Cab
8. Hydraulic Oil Tank
9. Battery System
10. Cover Assembly
11. Platform

12.Track
13.Travel Reducer
14.Drive Sprocket
15.Idler
16.Frame
17.Slewing Bearing
18.Tensioner
19.Offset Cylinder
20.Dozer Cylinder
21.Rotating Head
22.Dozer Blade

Designated Operations

This machine is mainly used for the following operations:

- Excavation
- Loading
- Leveling
- Crushing
- Other attachment operations

For detailed instructions on operating procedures, please refer to the operating manual and the attached guide.

Break-in Operation

This machine has undergone thorough adjustments and checks before leaving the factory. Forced operation immediately will accelerate performance degradation and shorten the machine's lifespan. Therefore, during the first 100 hours (as indicated by the instrument display), please maintain the load at 80% of full load for break-in operation.

Security-related information

Most accidents related to operation, inspection, maintenance, and repair work are caused by neglecting basic safety precautions and hazard prediction.

Accidents can be prevented by predicting potentially hazardous situations. Therefore, it is essential to pay attention to the location and type of hazards. (To perform such work correctly, operators must have the prescribed training, skills, and tools.) Please carefully read and understand all safety precautions, warnings, and accident prevention methods described in this manual and on the machine until you have fully mastered them; otherwise, never operate the machine or perform inspection and maintenance work. Ignoring these warnings may result in personal injury or death; please take precautions.

The safety tips in this manual and the safety signs used on this machine distinguish the degree of potential danger using the following warnings. It also includes preventative measures to avoid hazards.

 Danger: Indicates that failure to avoid the danger will result in death or serious injury; only applicable to the few situations where the most dangerous conditions exist.

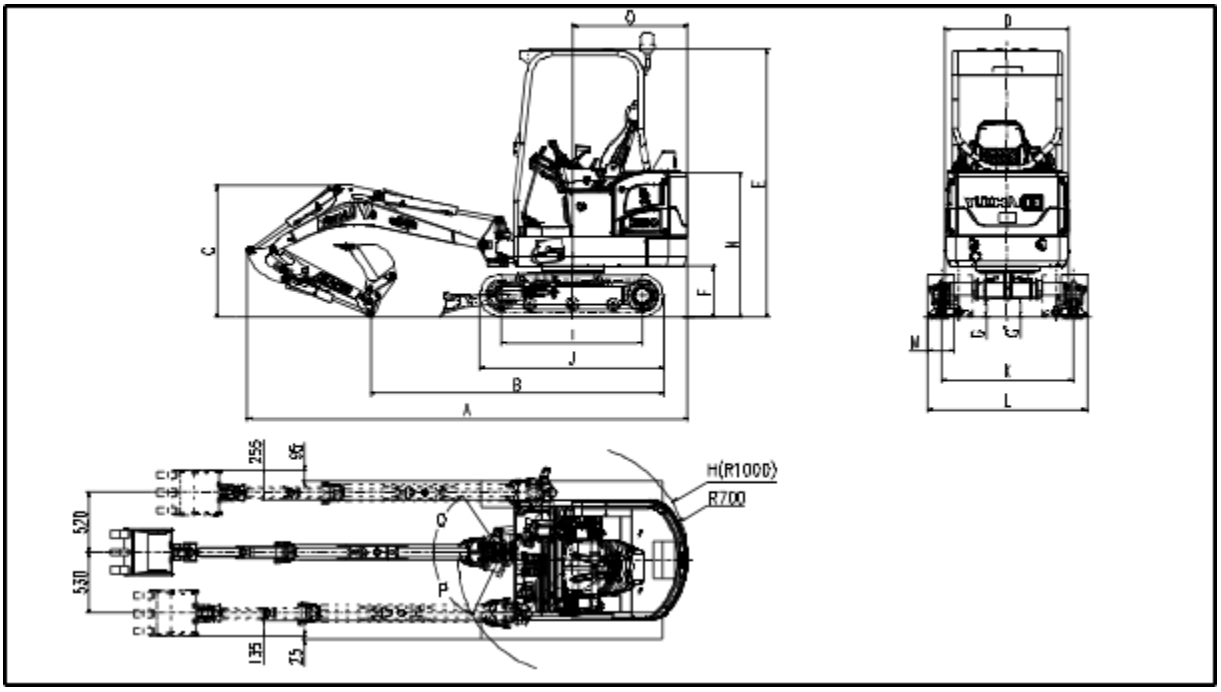
 Warning: Indicates that failure to avoid a potential hazard may result in death or serious injury.

 Caution: Indicates that failure to avoid a potential hazard may result in minor or moderate injury. It can also be used to warn of unsafe operations that may cause personal injury.

Our company cannot predict all hazards associated with operation, inspection, maintenance, and repair in all environments. Therefore, the warnings marked in this manual and on the machine do not cover all situations. If performing operation, inspection, maintenance, or repair not covered in this manual, the user should consider the necessary safety precautions. The user is solely responsible for taking necessary safety precautions.

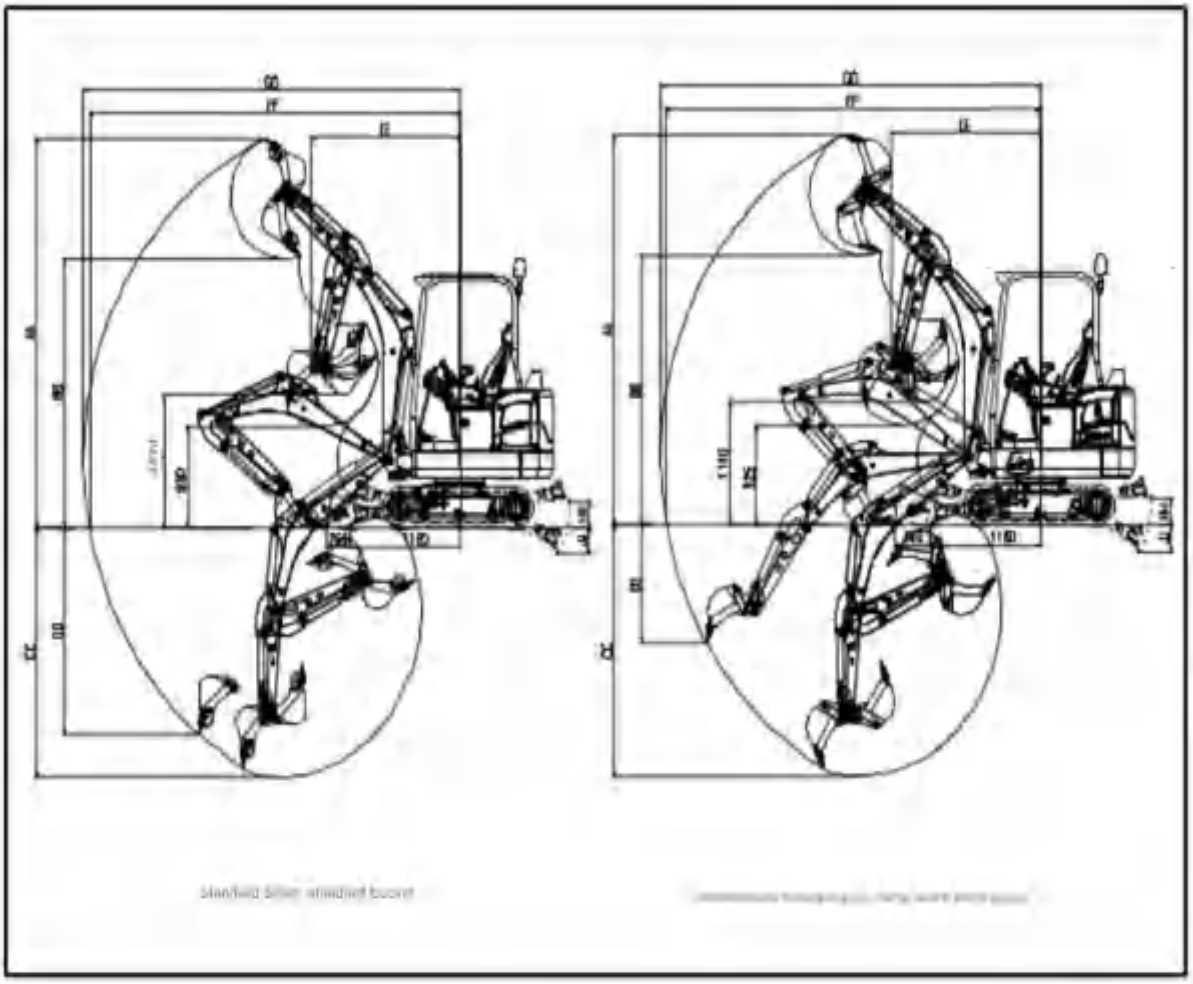
1. Structural dimensional parameters

code	project	unit	Y20E-AE51
	working weight	kg	2080 (rubber tracks, driver's cab, quick-change springs)
	Standard bucket capacity	m^3	0.05
	Battery capacity/nominal voltage/current		33.38 kWh/ 347.76 V/96 Ah
	Motor power/speed	kW/rpm	Rated 12/2200, Peak 25/5000
	Set the maximum operating speed	rpm	2200~2300
	Motor speed setting	rpm	There are 10 speed settings: 1000/1300/1500~2300 rpm.
A	Tracklength during transport	mm	3845
B	Total ground length	mm	2550
C	Total height (to the top of the boom)	mm	1150
D	overall width	mm	1080
AND	Total height (during transport)	mm	Driver's cab 2335 / Driver's cab 2345
F	Counterweight ground clearance	mm	450
G	Minimum ground clearance	mm	145
H	Tail turning radius	mm	1000
I	Track ground length	mm	1230
J	track length	mm	1600
K	gauge	mm	850/1170
L	Full track width	mm	1080/1380
M	Track width	mm	230
O	Hood height	mm	1270
P	Distance from the above to the ground	mm	700 (without additional weight)



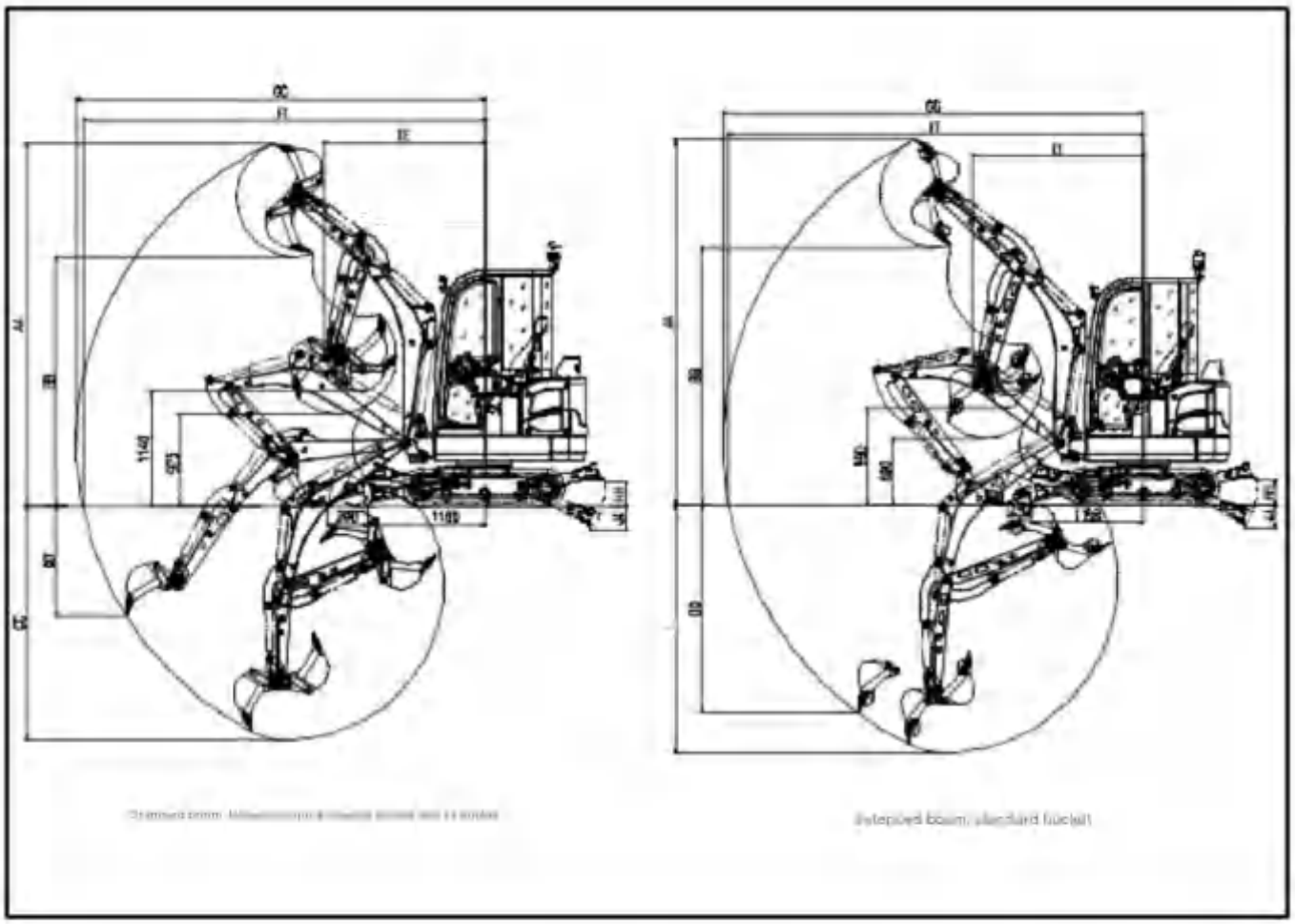
2. Working parameters

code	project	unit	Y20E-AE51
AA	Maximum digging height	mm	3600
BB	Maximum unloading height	mm	2485
CC	Maximum digging depth	mm	2315
DD	Maximum vertical digging depth	mm	1920 (without quick change) / 1090 (with quick change)
EE	Minimum slewing radius of the working device	mm	1590
FF	Maximum ground excavation radius	mm	3965
GG	Maximum digging radius	mm	4025
HH	Maximum lifting height of bucket pivot	mm	245
JJ	Maximum sink depth of bucket hinge	mm	245
	Bucket maximum digging force	kN	17.2
	Maximum digging force of bucket rod	kN	9.5
	Maximum leftward deflection angle of the boom	°	65
	Maximum right turn angle of the boom	°	55
	Maximum rotation speed	rpm	10



Standard bucket: shredded bucket

code	project	unit	Y20E-AE52
AA	Maximum digging height	mm	3600/3770
BB	Maximum unloading height	mm	2485/2655
CC	maximum digging depth	mm	2315/2560
DD	Maximum vertical digging depth	mm	1090/2160
EE	Minimum swing radius of the working device	mm	1590/1765
FF	Maximum ground connection radius	mm	3965/4300
GG	Maximum digging radius	mm	4020/4355
HH	[illegible]	mm	245
JJ	[illegible]	mm	245
	Bucket maximum digging force	kN	17.2
	[illegible]	kN	9.5
	Maximum retracted dump angle of the bucket	°	65
	Maximum right swing angle of the boom	°	55
	Maximum rotation speed	rpm	10



Standard boom, standard bucket

Integrated boom, standard bucket

[illegible]

3. Walking mechanism:
Independently driven by a hydraulic motor through a multi-stage planetary reducer.

	Walking speed (km/h)	Climbing ability
High speed	4	58%(30 e)
Low speed	2	

4. Hydraulic System Load Sensitive System

Maximum System Flow Rate: 61.6 L/min (at 2200 rpm)

Rated System Pressure: 24 MPa (LS = 21.5 MPa, load compensation differential pressure 2.5 MPa)
Slewing/Yaw Working Pressure/Flow Rate: 9 MPa/18 Lpm

Auxiliary System 1 Pressure/Flow Rate: 21 MPa, Large Chamber 18 Lpm/Small Chamber 10 Lpm (Small Flow Rate)
Auxiliary System 2 Pressure/Flow Rate: 21 MPa/36 Lpm (Large Flow Rate)

Pilot Pressure: 3.5 MPa
Return Oil 10 μm Filter

Suction Filter: Metal Filter

5. Electrical System Control Voltage: 12V

Battery: 12V-5 Ah

External Discharge Power: 6.6 kW

Portable Fast Charge Input Voltage/Current: AC380V/75A

Portable Fast Charge Output Voltage/Current: Portable fast charger (DC347 V / 96 A, CATL battery cell): 40 kW
National standard public fast charger output voltage/current: DC347 V / 250 A (upper limit)
National standard public fast charger power: 87 kW

6. Operating Environment
Ambient temperature: -15 to 40℃
Ambient humidity: <85%
Altitude: ≤1500M
Transportation and storage ambient temperature: -15 to 40℃

7. Machine Body Interference

Due to potential interference between certain non-standard working devices on various excavator series and the boom cylinder or boom lower cover plate, care should be taken when using non-standard working devices to ensure proper angle between the boom and stick during retraction to prevent interference with the boom cylinder and potential damage to the machine body.

The following are all non-standard auxiliary working devices provided by our company:

Bucket attachments	Bucket attachments directly mounted on the boom
	Bucket attachments for use with quick-change couplings
	Bucket attachments for use with quick-change couplings
Cyclice hammers	Cyclice hammers directly mounted on the boom
	Cyclice hammers for use with quick-change couplings
Drilling tools	Drilling devices directly mounted on the boom
	Drilling tools for use with quick-change couplings
Grab buckets	Grab buckets directly mounted on the boom

If the model you purchased has any of the above configurations, you need to pay attention to the issues mentioned above.

2

Safety procedures

Following the safety procedures outlined in this manual can prevent most accidents that could endanger machine operation and maintenance. Before operating or repairing the machine, you should thoroughly read and understand all safety information in this manual and the relevant machine safety diagrams.

The safety aspects of this manual describe potential situations that may arise during normal operation and maintenance of the machine, and provide possible solutions for these situations.

Safety-related information is found in various chapters of this manual and, together with this chapter, forms a comprehensive safety guide for this manual.

This manual and the safety information on the machine do not cover all potential hazards and possible countermeasures. If you use methods or actions not recommended or permitted in this manual or on the machine, it is your responsibility to take the necessary precautions to ensure safety.

Under no circumstances should you engage in any use or operation prohibited by this manual.

This excavator should be operated and maintained by trained and qualified personnel.

Before starting work, check all machine functions. If any malfunction is found, stop the machine immediately, investigate the cause, and only resume work after the fault has been rectified.

Inspection, maintenance, and upkeep must be strictly performed according to the specifications in this manual. Operators must operate and work the machine according to the operating methods, safety regulations, and working range outlined in this manual.

Do not operate or maintain the machine while under the influence of alcohol or drugs, as this will endanger you and others.

Understand the meaning of relevant signals and hand gestures.

When walking on public roads, be familiar with and strictly abide by the relevant laws and regulations of your country or region.

Operate the machine only after ensuring that no one else is in the work area.

This machine is for normal excavation work on land only. Do not use it underwater, in culverts, in explosive locations, or in toxic environments.

Safety Warnings

1. Warning Symbol

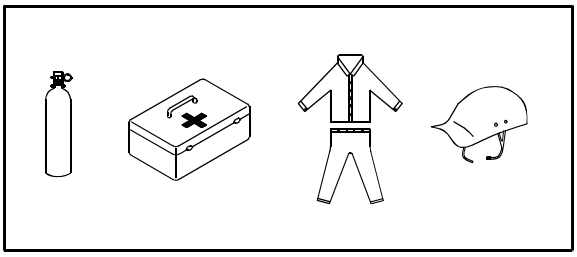
In this manual, this warning symbol indicates important safety information. When you see this symbol, you must carefully read the information and warnings following it to avoid possible fatal or serious injury accidents.

2. Safety Alert Words

This manual provides precautions, labels, and potential hazard descriptions for the safe use of the machine. Operators must carefully read this manual and the safety labels affixed to the machine before operating, maintaining, or repairing the machine, and follow the relevant procedures.
The safety alert words in this manual are marked with DANGER, WARNING, or CAUTION. Their definitions are as follows:
DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This word is only used for the most severe hazard situations.
WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices that could cause personal injury.

Safety Equipment

1. Operator Protective Equipment



Mandatory PPE: Before operating or repairing the machine, the operator must wear suitable personal protective equipment (PPE), including a work uniform, safety helmet, and safety shoes. Additional required items are: ear protectors, gloves, safety goggles, and a safety belt.

Hair Security: Long hair must be tied up and covered with a safety cap to prevent entanglement in the machine.

First Aid Kit: The user must configure a first aid kit inside the machine and conduct regular inspections, adding supplies as necessary for emergency use.

Pre-operation Check: Before performing any operation or maintenance, ensure all protective equipment is in proper working condition.

Safety signs

Warning: Failure to understand safety signs or loss of safety signs may result in injury or death. Please replace any missing or damaged signs promptly and keep all safety signs clean and legible.

Before operating, maintaining, or repairing the machine, you must carefully read the instruction manual and the warning labels affixed to the machine, and ensure that you fully understand their contents and follow the relevant procedures.

Before starting the machine each day, check the markings. Clean them if they are illegible.

When cleaning markings, use only cotton cloth, water, and soap. Do not use organic solvents or gasoline, as these can easily cause the markings to fall off.

If markings are damaged, missing, or illegible, replace them. If the marking is located on a part that needs to be replaced, ensure that the marking is properly fitted to the new part. Please contact your Yuchai dealer for new safety markings.

1. Classification of safety signs

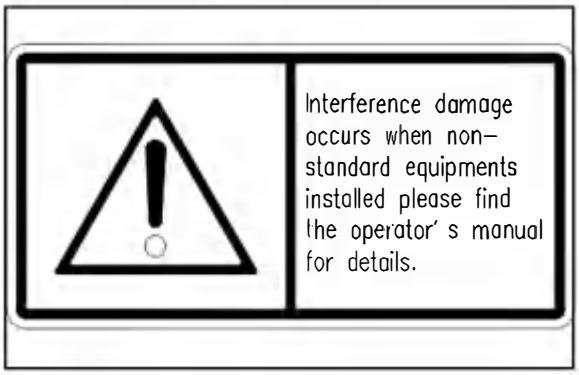
Safety markings in this instruction manual and on the machine include both "illustrated safety markings" and " textual safety markings".

A. Illustrated safety signs

These safety signs use graphics to represent safety warnings, making them simple, easy to understand, and readily apparent.

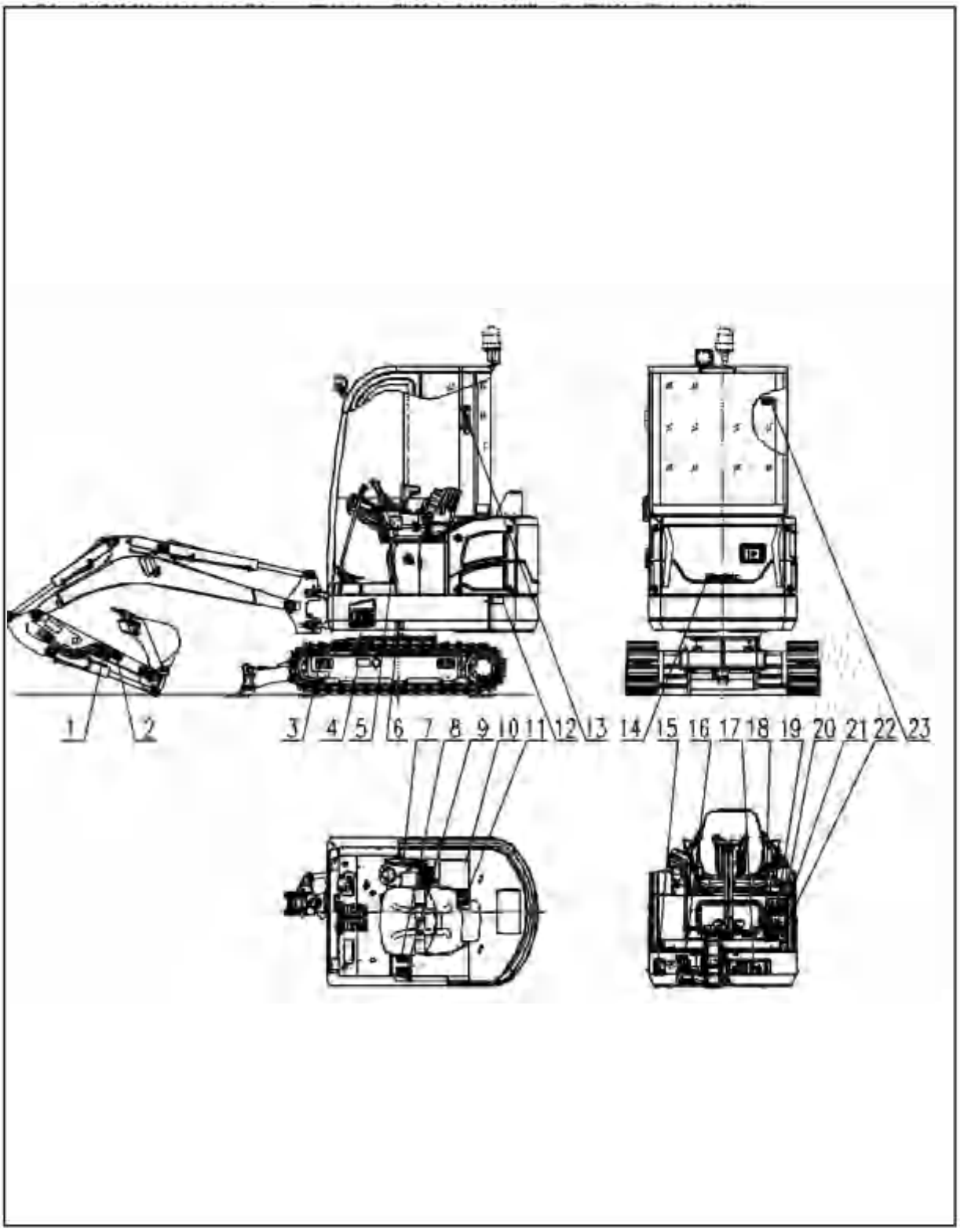
B.Graphic safety signs

These safety signs are accompanied by illustrations and corresponding explanatory text , and are used where graphics cannot fully express safety information and text is needed to provide explanation.



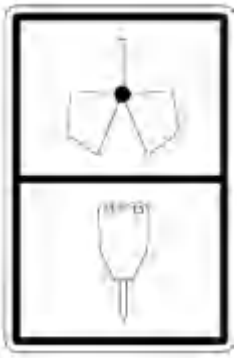
2.Safety sign placement

The identifiers shown in this chapter are only the general identifiers among all identifiers; the remaining functional identifiers will be introduced one by one in subsequent chapters.



3.Safety sign illustrations and explanations

1)Dual-attached control markings

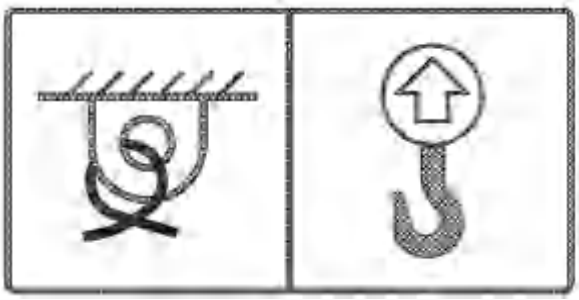


1) Can be connected to a one-way hydraulic line for a hydraulic breaker.
2) Can be connected to a double-acting hydraulic line for a thumb clamp.

2)Keep away from work equipment.

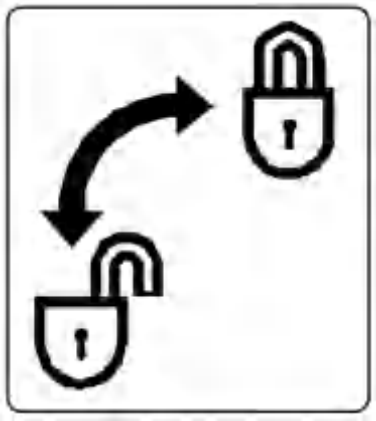
Mobile work equipment can cause personal injury. A safe distance must be maintained from the area where the work equipment is operating.

3)Lifting Combination Marking

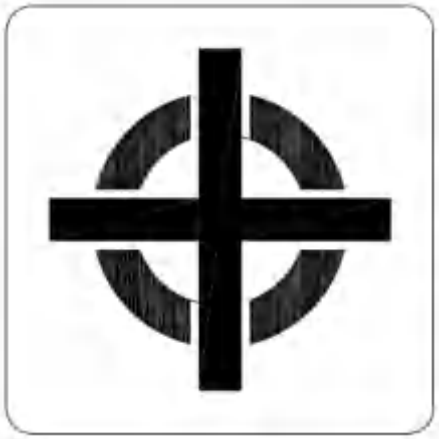


4)警示

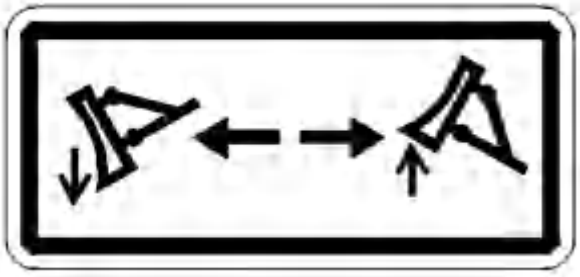
5)Safety switch markings



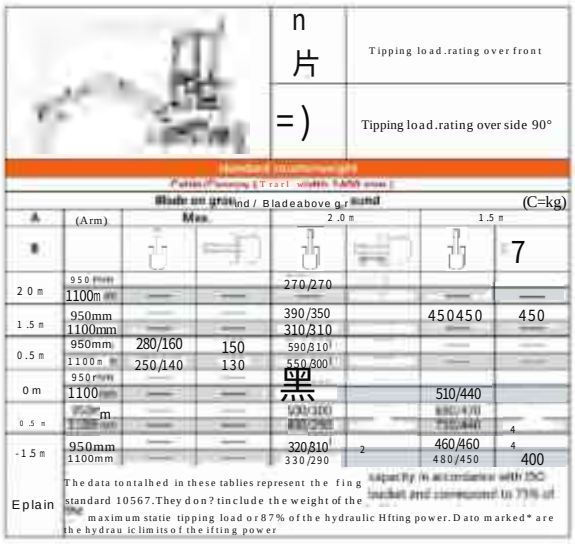
6)Turning Center Marking



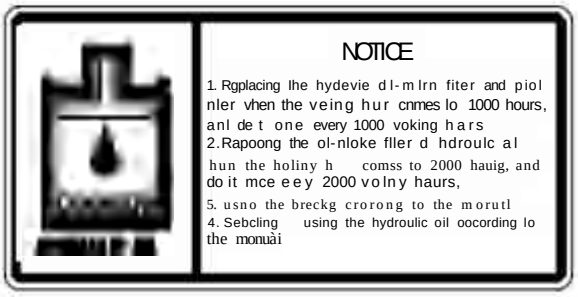
7)bulldozing control



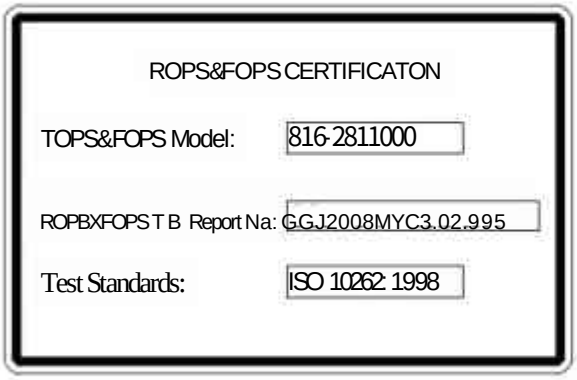
10) Improvement Abilities Table



8) Hydraulic oil filler label

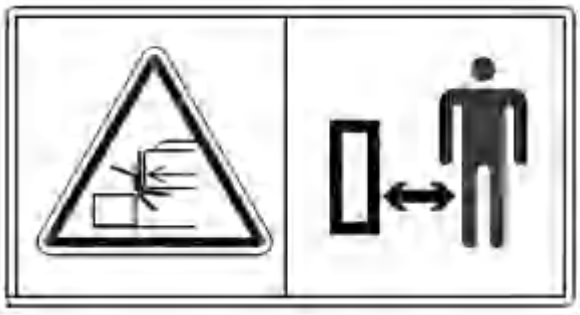


11) Anti-tipping sign



9) logo

12) Safety signs

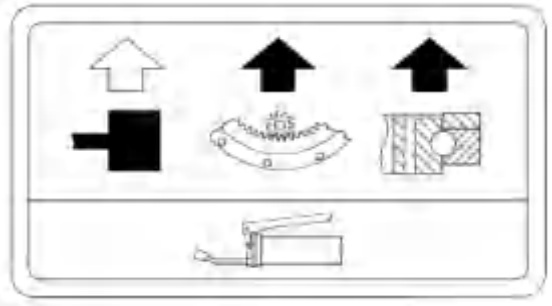


13)fire extinguisher

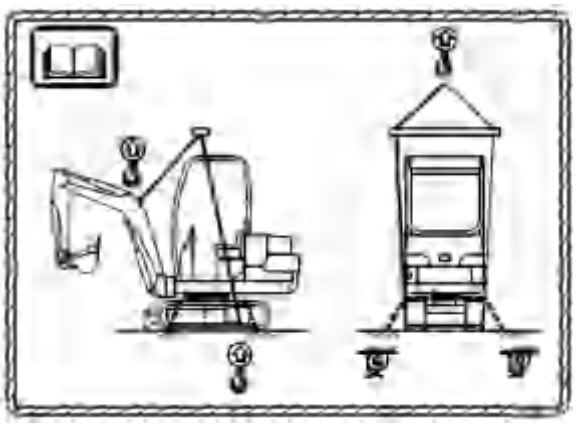
14)Electricity identification

15)External noise markings

16)Butter filling

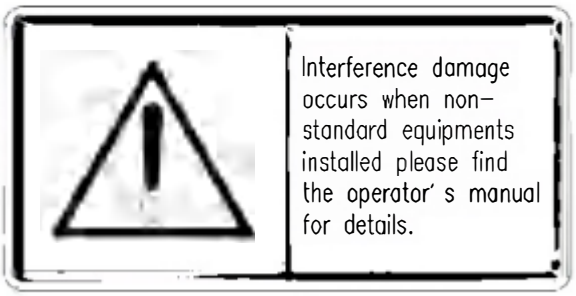


17)Whole machine lifting mark



18)Read the instruction manual labels

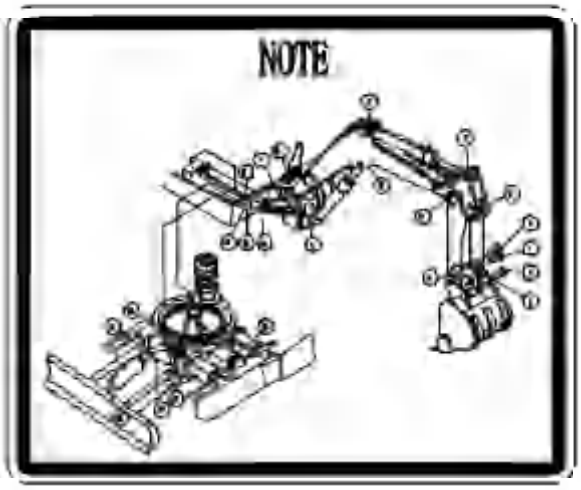
19) Warning signs



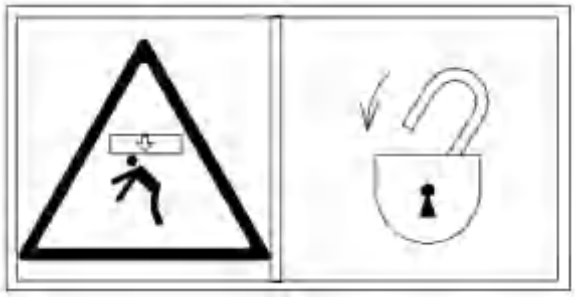
20)Manipulation indicator

21) Warning signs

22）注油



23) Warning signs

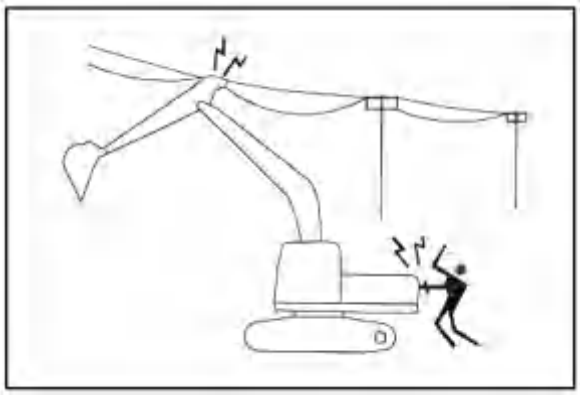


24) Maintenance warning sign

Workplace safety

Familiarize yourself with the area where you will be working as much as possible in advance. Please check:

1. Location of the slope
2. Open ditches
3. Fallen or hanging objects
4. Soil conditions (soft or hard)
5. Waterlogged and swampy areas
6. Rocks and tree stumps
7. Buried foundations, root posts, or wall boundaries
8. Boundaries of buried garbage or fill
9. Holes, obstacles, mud, or ice
10. Traffic volume
11. Dense dust, smoke, or fog



12. The exact location of any buried or suspended electrical, gas, telephone, water, sewage, or other utility lines. If necessary, have the utility company mark, shut down, or relocate these facilities before you begin work.

Warning: Before commencing any excavation project, please contact your local utility services system and relevant departments.

12. When working inside a building, ascertain the clearance overhead, in doorways, corridors, etc., as well as the load-bearing capacity of floors and ramps. Ensure adequate ventilation when working indoors. What you don't know can cause you harm.
13. Know the precise distances between electrical and telephone lines and machinery, and between machinery and the ground. If possible, disconnect the power supply. If the power cannot be disconnected, request guidance from a signalman.

Warning: Touching or approaching a power source or a machine connected to a power source may cause electric shock. Do not allow any part of the machine to come near an overhead power cord unless necessary safety precautions have been taken.

14. Know the depth of underground gas pipes, cables, telephone lines and water pipes, and avoid these areas during work to avoid damaging these public facilities.

Warning: If you look into the damaged cable end, the severed fiber optic cable can seriously damage your eyes.

15. This machine is prohibited from operation under culverts.

16. Operation is prohibited in mud, swamps, and marshes.

17. Operation is prohibited in areas containing hazardous chemicals.

18. Operation is prohibited in areas with a risk of explosion.

Safe Operation

Warning: Excavators are strictly prohibited from moving or lifting personnel.

Warning: Before operating the machine, you must fasten your safety belt, sound the horn, and confirm that no one is around the work area before starting work.

1. Starting the Electric Motor

A. Safety Rules for Starting the Electric Motor

1) A warning horn must be sounded before starting the electric motor.

2) No one other than the operator is allowed to ride on the machine.

3) The machine may only be operated while seated.

4) The electric motor must not be started by short-circuiting it.

5) The machine must be preheated in cold weather.

Warning: Do not start the motor when a warning sign prohibiting motor starting is displayed on the control handle.

B. After starting the motor

After starting the motor, the following must be checked:
1) Is the safety belt fastened?

2) Are the moving parts such as the working device, bulldozing device, traveling mechanism, slewing mechanism, and working device yaw mechanism functioning normally?

3) Are there any abnormalities in the machine's sound, vibration, odor, or instruments?

4) Is there any oil leakage?

2. Traveling and Turning

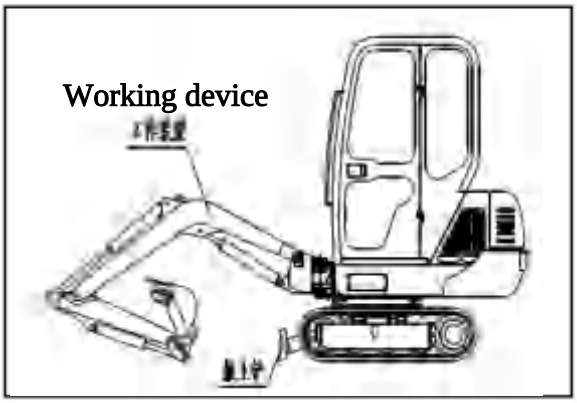
1) Before traveling, turn the upper part of the machine platform to a suitable position, with the working device and the bulldozer blade facing the same direction. If the working device and the bulldozer blade face opposite directions, the operation is reversed.

2) Sound the horn before traveling and turning to alert personnel in the work area.

3) The excavator must travel and operate on solid ground at least 1.5 times its width.

4) Before reversing or turning the machine, if there is an area behind the machine that cannot be seen, a signalman must be assigned.

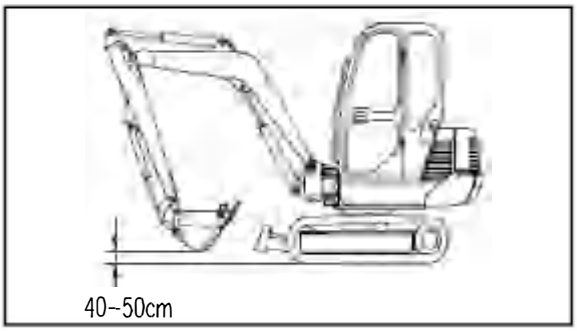
5) Before traveling, close and lock the cab door. Cab windows, tilt-and-turn windows, and sunroofs are allowed to be opened, but must be locked.



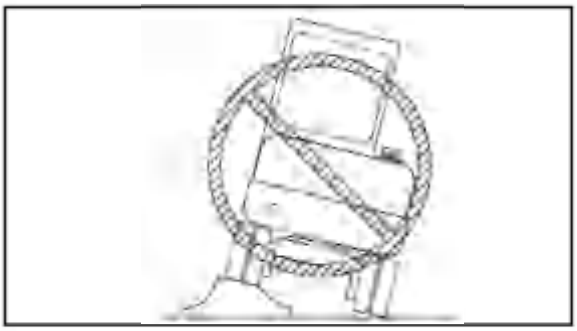
Safety Rules During Movement:

1) When moving on a flat surface, the boom must be lowered, the stick retracted, and the center of gravity maintained at its optimal position. The bottom of the bucket should be 40-50 cm above the ground.

2) When moving on rough or uneven surfaces, travel at a low speed and avoid sudden turns, as these could cause the machine to tip over and endanger personal safety.



3) The machine must not move over obstacles that are tilted to one side, as this could cause it to tip over.



4) When walking or operating, always maintain a safe distance from people, buildings, or other machinery to avoi d contact.
5) When walking through underpasses, bridges, or under power lines, or in areas with height restrictions, use han d signals and maintain a safe distance.

6) Always lock platforms when going up or down slopes.

7) When crossing bridges, buildings, or supports, first confirm that they are sufficient to support the weight of the machinery.

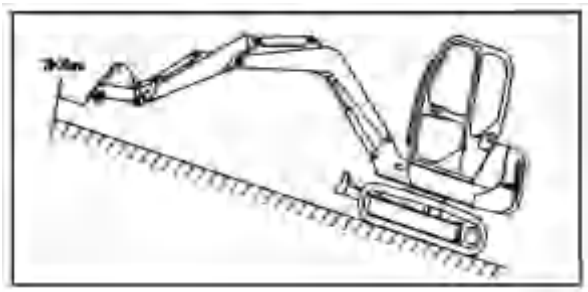
8) Before walking on public roads, consult the local traffic management department and obtain their permission.

3. Walking or Working on Slopes

Working or walking on slopes with an excavator is extremely dangerous; extra caution is required.

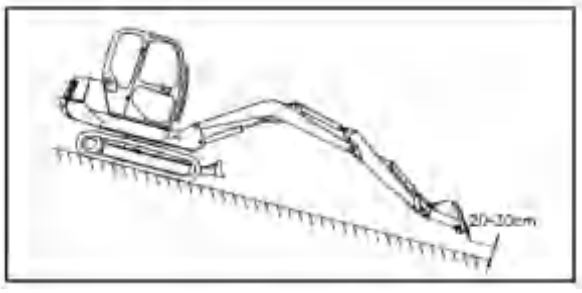
1) It is recommended not to go up or down slopes greater than 20 degrees for extended periods.

2) When the machine is working, especially up or down slopes and in dangerous areas, always wear a safety belt.

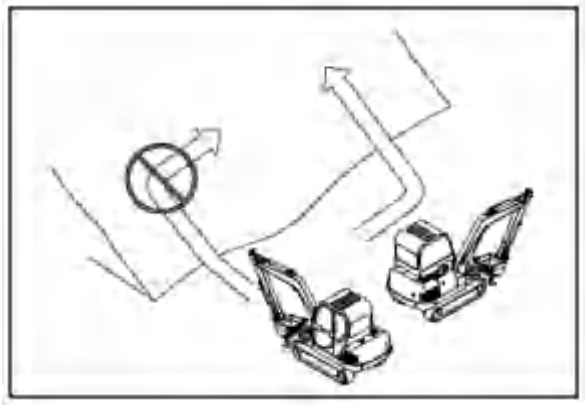


3) When the excavator is going uphill, the drive wheels should be on the downhill side, the boom and stick should be fully extended and parallel to the slope, and the bucket teeth should be 20-30cm above the ground. Lock the platform and go uphill at low speed.

4) When the excavator is going downhill, lock the platform, the drive wheels should be on the uphill side, the boom and stick should be fully extended, and the bucket teeth should be 20-30cm above the ground. Go downhill at low speed.



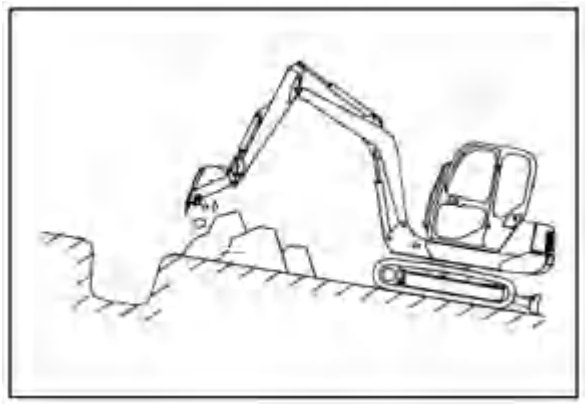
5) Do not turn or cross slopes. Always descend to a flat area to change machine position before ascending the slope.



6) When working on a slope, start from the higher point and gradually dig downhill, with the bulldozer blade at the rear and pressing down on the ground. Unload the soil from the uphill direction.

7) Travel at low speed on grass, fallen leaves, or wet steel plates, as the machine can slip even on a slight incline.

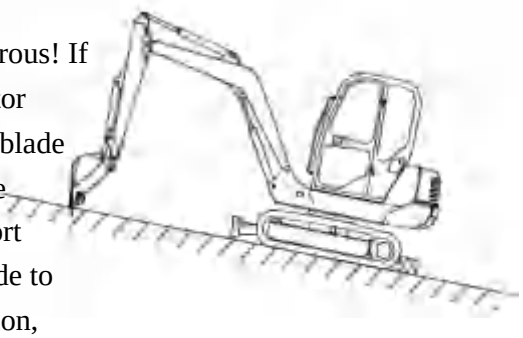
8) Sharp turns uphill or downhill are strictly prohibited, as this may cause the machine to tip over.



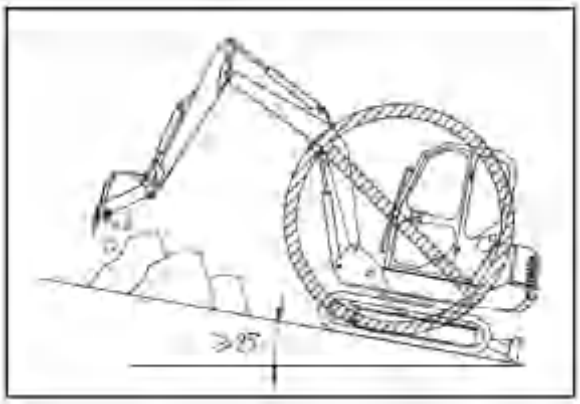
9) When stopping the machine on a slope, the front bulldozer blade must be inserted into the soil, and the bucket must be lowered to ensure it is fully submerged. Only after the machine has come to a complete stop can the motor be turned off, and the operator can dismount.

Danger!

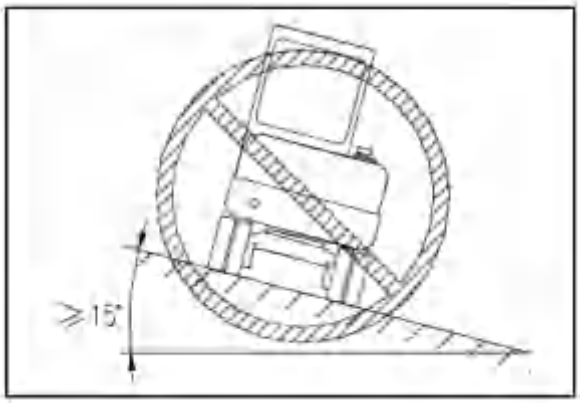
Stopping the machine on a slope is extremely dangerous! If unavoidable, be sure to do the following: If the motor stalls on the slope, immediately lower the bulldozer blade and bucket to the ground and place all handles in the neutral position, then restart the motor. Even for short stops on a slope, lower the bucket and bulldozer blade to the ground and place all handles in the neutral position, while placing sufficient fixed obstacles under the tracks.



10) Operation on slopes with a longitudinal gradient greater than 25 degrees is strictly prohibited.



11) Operation on slopes with a transverse gradient greater than 15 degrees is strictly prohibited.

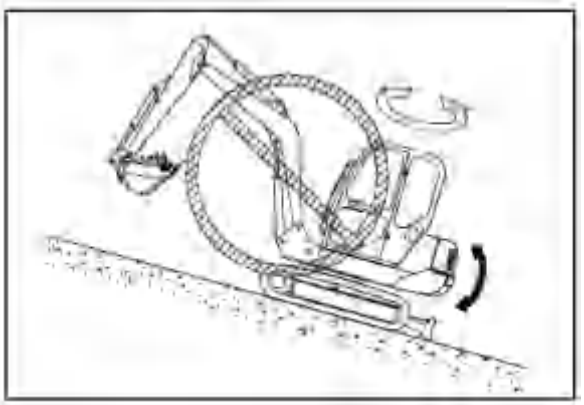


12) Maintain machine balance as much as possible; do not walk on rocks or cross obstacles.

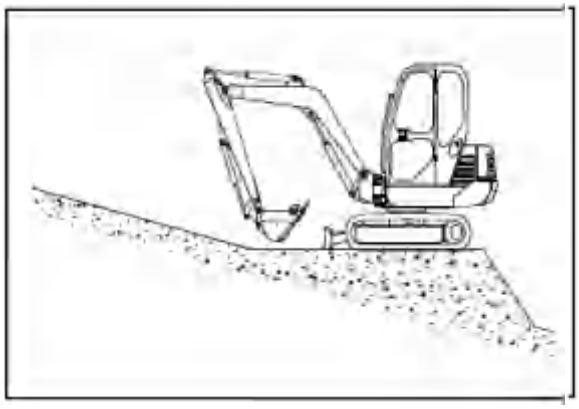
13) Do not change direction on a slope.

14) When going uphill, ensure the engine and hydraulic oil are properly preheated; otherwise, an accident may occur.

15) When the excavator's tracks are at a 90-degree angle to the slope, turning is extremely dangerous and should be avoided. If turning is unavoidable, bring the bucket close to the ground and close to the machine, with the tracks facing the top of the slope, and turn slowly.



16) When working on a slope, there is a risk of the machine losing balance and tipping over when operating the slewing or working device. This can cause serious injury or equipment damage. Therefore, when performing these operations, a sturdy platform made of soil should be built to keep the machine level.



4. Safe Excavation Operations

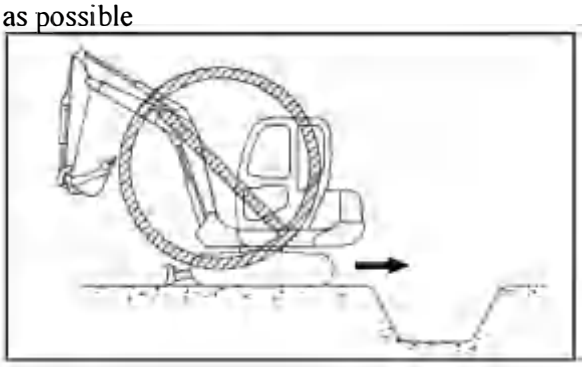
WARNING: Operators must memorize the functions of each control lever to avoid malfunctions.

WARNING: Improper use of the excavator can cause tipping and slippage. Memorizing this section is crucial for ensuring your personal safety.

1) Before starting work, remove any unauthorized personnel from the excavation site.

2) Ensure the work area can adequately support the machine before proceeding.

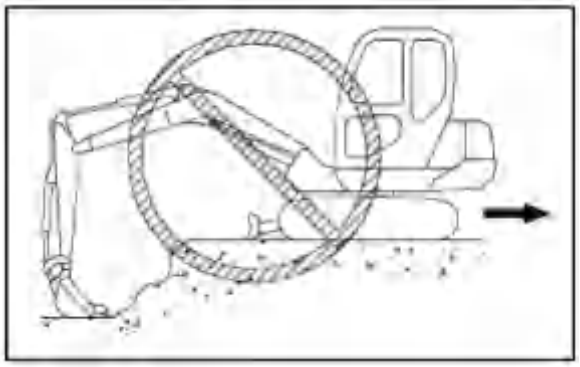
3) Keep both tracks of the excavator on the same plane as much as possible before starting work.



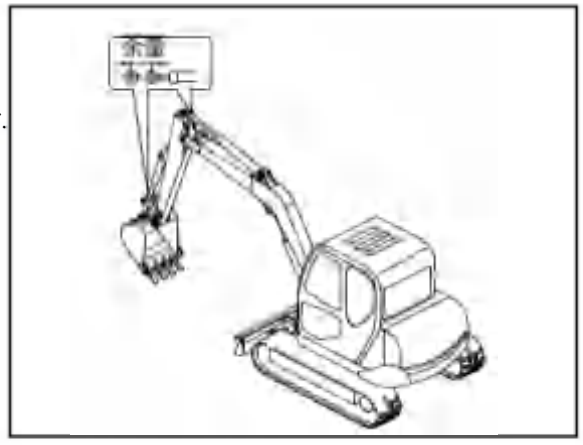
4) Ensure there are no cables, air pipes, or water pipes underground at the work site, or that their exact locations are clearly identified, before digging

5) When reversing the machine (e.g., digging trenches), observe the relocation path for flatness and obstacles. Only move the machine when it is safe to do so; otherwise, the machine may tip over.

6) Do not move or rotate the machine when the bucket encounters unusual resistance on the ground, as this will damage the machine.



7) During operation, if the hydraulic cylinder is operated to its maximum stroke, force will act on the limit ring inside the cylinder, reducing the machine's lifespan. To prevent this, always maintain a small margin of safety when operating the hydraulic cylinder.



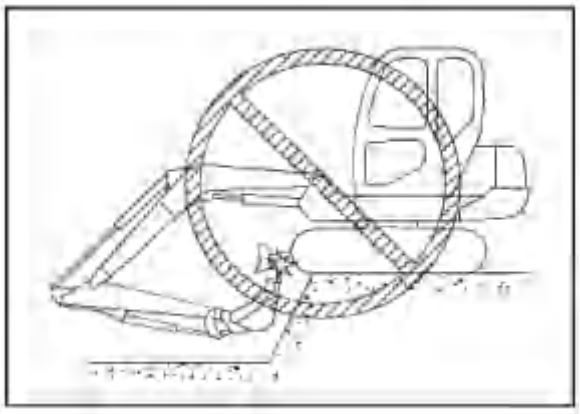
8) When digging deeply, avoid the bottom of the boom or the bucket cylinder hose from touching the ground.

9) When operating the machine, avoid foreign objects touching the boom, stick, bucket, or cab.

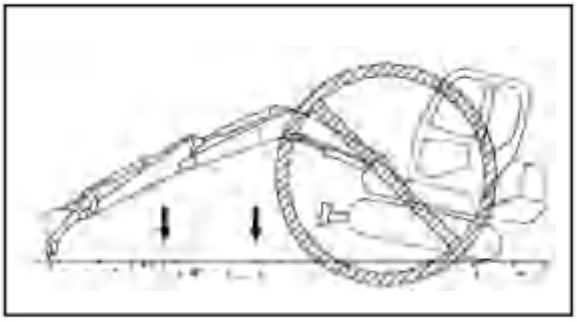
10) When the machine is rotating, avoid contact with the engine hood and rear counterweight.

11) When lowering the boom, avoid sudden stops to prevent damage to the machine and improve work safety.

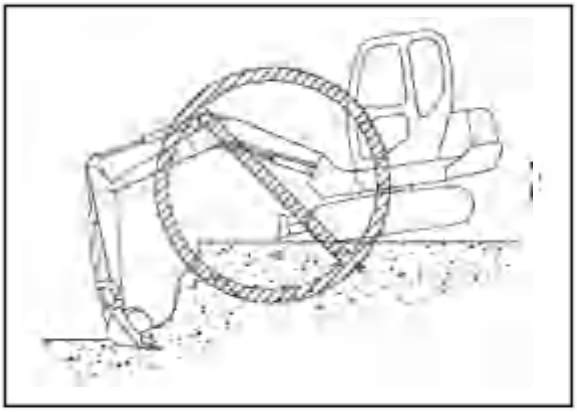
12) Do not dig into the machine body.



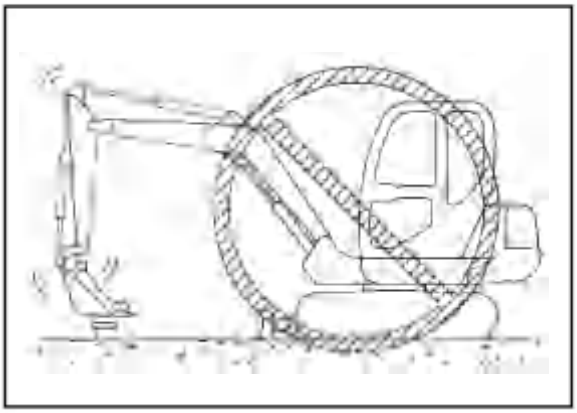
13) Do not dig when the tracks are off the ground, as this will damage the machine and its structure.



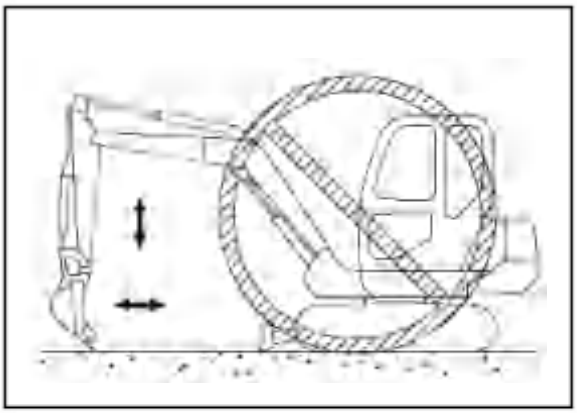
14) Do not use the machine's own weight to increase its digging force.



15) Do not use the bucket's downward force as if it were a pickaxe, breaker, or pile driver, as this will place excessive force on the rear of the machine. This will not only damage the machine but is also extremely dangerous.



16) Do not overuse the bucket to level the road surface, as this will overload the machine and damage its components.



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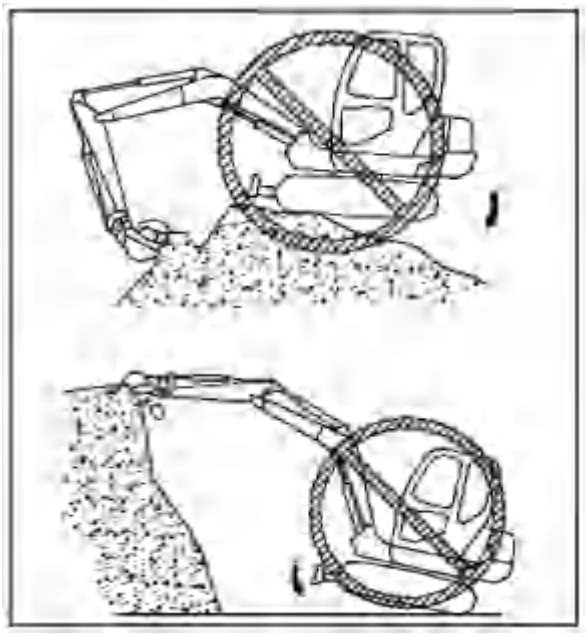

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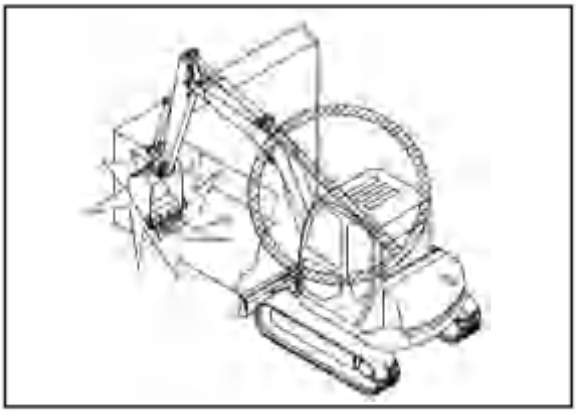

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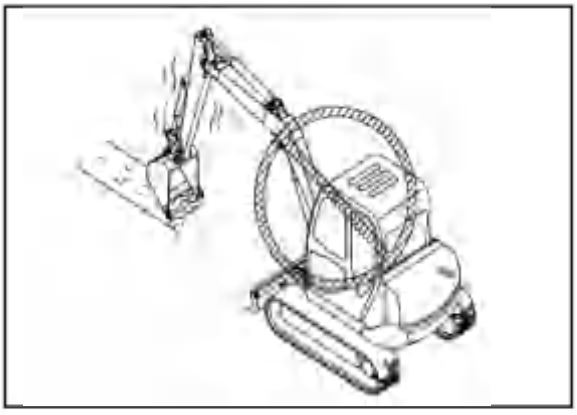
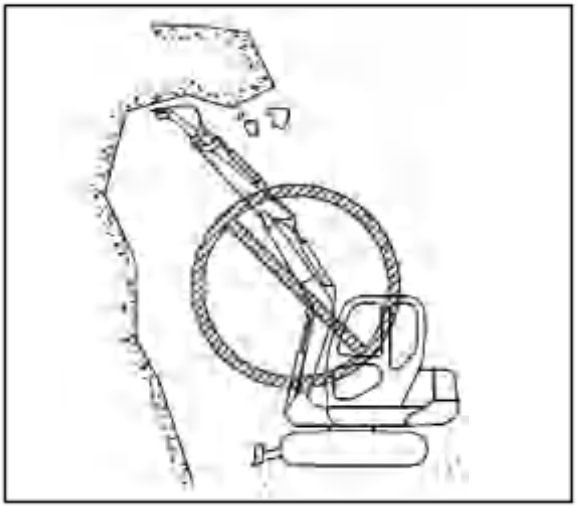


20) Do not excavate the working face below the suspended part, as this may cause the risk of falling rocks or the suspended part collapsing and hitting the machine.



5. Preventing Tilting, Slipping, and Handling During Operation

Warning: 1) When turning on a slope is unavoidable, only make wide-angle turns. When turning right, extend the boom stick to the left, with the bucket approximately 30cm off the ground, and lock the platform. The reverse is also true.2) If slipping occurs, immediately press the bulldozer blade and bucket to the ground.3) If the machine tilts, the operator must not jump out; instead, hold firmly to the pillars supporting the cab. Jumping out can easily cause injury or death

The following situations are highly likely to cause the machine to tip over and must be avoided:

1) The machine shifts on uneven ground, with one track higher than the other, or one track having more than half of its length suspended in the air.

2) One track is in contact with loose soil, while the other track is in contact with solid soil.

3) There is a sinkhole or mud pit on one side of the machine.

4) When unloading heavy loads on a slope with a longitudinal gradient greater than 25°, moving downhill.

5) When unloading heavy loads on a slope with a transverse gradient greater than 15°, moving downhill.

6) On a slope, with both tracks at a 90° angle to the slope and the platform rotating more than 90°.

7) When working on a slope, making a sharp turn, rapidly rotating the platform, or suddenly stopping.

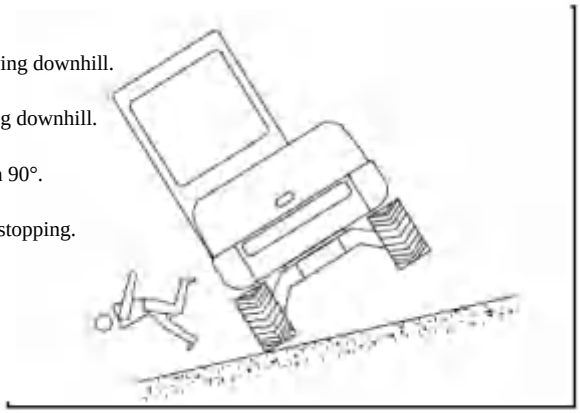
8) When the machine makes a 180° downward swing on a slope.

9) When reversing (ditching, etc.) on uneven ground.

10) When the machine is digging deep to the lower part of the machine body.

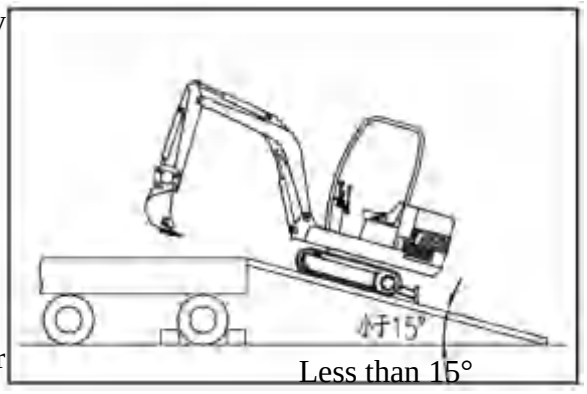
11) When traveling on frozen ground.

12) The machine is prone to slipping when both tracks have engine oil or lubricating oil.



Transporting and Loading/Unloading Machinery

The transport (loading/unloading) of excavators must strictly adhere to safety principles.



Less than 15°

When transporting excavators, national and local industry-specific safe transport (loading/unloading) rules and good practices must be followed.

When transporting excavators, no personnel or other items are allowed in the excavator cab; mixed loading and transport of personnel and machinery is strictly prohibited. During loading and unloading of excavators, no personnel or items that may obstruct loading and unloading are allowed within the operating radius of the crane boom (including the load being lifted).

During loading and unloading of excavators, no personnel or other items that may obstruct loading and unloading are allowed within the excavator's travel range (including its swing radius).

Besides using hoisting methods or driving directly from the dock, excavators can also be mounted on transport vehicles using two sufficiently strong ramps. The ramp's inclination angle should be less than 15°, the length of the ramp should be greater than 3.5 times its height, and the ramp's width should be 1.2-1.5 times the track width. Before ascending or descending the ramp, the positioning handles of the slewing platform must be lowered to prevent platform rotation. When ascending or descending the track, do not operate any handles other than the travel handle.

Load and unload the machine on a firm, flat surface.

When driving or traveling on the road, ensure that clearance flags, lights, and warning signs are in place and visible to other vehicles; ensure that following vehicles can see the "Slow Down" sign. Tracked machines may damage road surfaces and will have some limitations when traveling on such surfaces; therefore, transport the machine by truck.

Maintenance Stoppage

WARNING: When performing any maintenance work on the machine, a "Do Not Operate" warning sign must be hung on the control handle.

The excavator must be stopped on firm, level ground.

After the excavator has come to a complete stop, the bucket must be lowered to the ground, the engine run at low idle speed for three minutes, then the machine is stopped and the ignition key removed.

Release all hydraulic system pressure.

If it is unavoidable to stop the machine on a slope, sufficient obstacles should be placed under both tracks.

Always maintain a safe distance from other machines when stopping.

When repairing the electrical system or welding, disconnect the negative battery cable to prevent current flow.

If the machine or attachments need to be supported before maintenance, ensure they are securely supported. Do not work under a machine supported by only one jack.

After starting the machine, do not lubricate or perform maintenance. Do not allow hands, feet, or clothing to come into contact with rotating parts.

If maintenance work must be performed while the engine is running, the machine must be supervised by a designated person.

Do not carry loose items in your pockets to prevent them from falling into moving parts .

High-pressure liquids can splash and cause eye or skin injuries; avoid doing so during maintenance.

Remove all debris from inside the machine to prevent potential malfunctions that could cause injury or damage.

Dispose of waste liquids properly. Do not pour oil onto the ground, into drains, streams, ponds, or lakes. Follow environmental regulations when discharging hydraulic oil, antifreeze, plastics, batteries, and other hazardous waste.

Fire Prevention, Explosion Prevention, and Poisoning Prevention

Avoid contact with electrical wires during transport, movement, and excavation of the excavator, as this can lead to serious injuries or fatalities.
Regularly inspect the excavator's electrical systems and wiring. Replace any damaged, worn, or aged wires immediately to prevent short circuits and fires.

Keep electrical connections clean and securely fastened. Check for loose or damaged wires daily, tighten any loose connections or clamps, and repair any damaged wires.

Do not place flammable or explosive materials inside the excavator to prevent fires.

When refueling, the motor must be stopped, and refueling must be done away from heat sources. Do not leave the machine unattended.

Do not allow oil to spill onto overheated surfaces or electrical components.

After refueling, wipe away any spilled oil and tighten the fuel filler cap.

Promptly remove any accumulated or adhered blades, wood chips, paper scraps, or other flammable materials from inside the machine compartment.

Do not place oil-soaked rags inside the machine to prevent spontaneous combustion.

Users should keep a fire extinguisher inside the machine and place it within easy reach.

Welding on the machine is strictly prohibited without isolating hydraulic lines, electrical cables, and components.

To prevent fires caused by hydraulic lines: check that all hoses and pipe clamps, covers, and cushioning pads are securely fastened. Looseness can cause vibration and friction with other parts during operation, leading to hose damage, high-pressure oil spray, and potential fire hazards or serious injury.

Keep batteries away from heat sources and avoid high temperatures, as these can cause explosions.

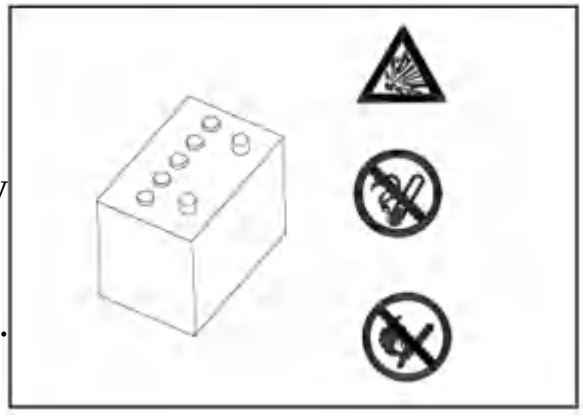
For excavators with sealed cabs, check the sealing of the intermediate partition to prevent engine exhaust fumes from entering the cab and causing driver poisoning.

Never work in poorly ventilated areas to prevent driver suffocation.

In case of fire, do not use water to extinguish it; use a powder fire extinguisher or smother the fire with sand. You can also use a covering or tarpaulin to extinguish the fire.

Storage Batteries

Battery Safety Guidelines



Storage batteries contain sulfuric acid in their electrolyte, which can produce flammable and explosive hydrogen gas. Incorrect operation can lead to serious injury or fire; therefore, the following precautions must be observed: The battery cover has an indicator showing the battery's status charge. When the indicator is green, the battery is functioning normally. When the indicator is black, the battery should be charged promptly; when the indicator is white, the batte ry should be replaced immediately.

Battery Explosion Prevention

WARNING: Electrical sparks or flames can cause the hydrogen gas inside the battery to explode.
To prevent explosion, please note:
1) When disconnecting the battery cables, disconnect the negative (-) cable first;
2) When connecting the battery cables, connect the negative (-) cable last;
3) Do not short-circuit the battery terminals with metal components;
4) Do not weld, grind, or smoke near the battery.

Due to the risk of sparks, follow these steps:Securely install the battery in its designated position.

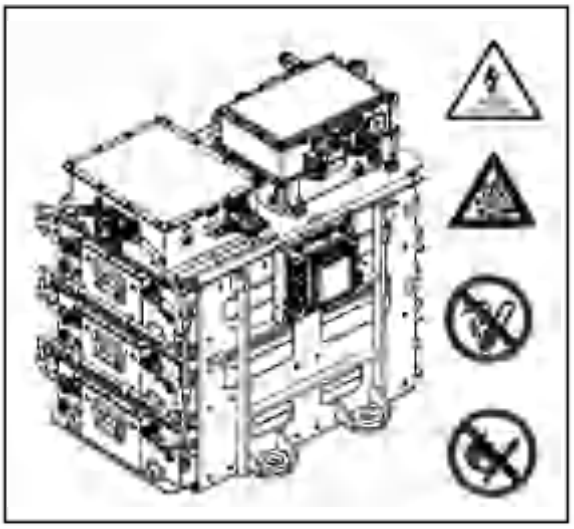
Do not allow tools or other metal objects to come into contact between the battery terminals. Do not leave tools or other metal objects near the battery. Connect or disconnect the positive and negative terminals of the battery in the correct order. Secure the battery terminals firmly. Flammable hydrogen gas is produced when charging the battery; therefore, before charging, remove the battery from the undercarriage, place it in a well-ventilated area, and remove the battery cover.

Tighten the battery cover securely.

Note: When repairing electrical systems or performing welding operations, disconnect the negative terminal of the battery to prevent current flow.

Lithium-ion Batteries

Lithium-ion Battery Usage Instructions



Lithium-ion battery cells contain chemicals;
incorrect handling can lead to serious injury or fire.
Therefore, please be aware of the following:

Please use a dedicated charger and charge according to the instruction manual.

Before charging, please turn off the vehicle's manual power switch/key switch. If you need to stop charging, press the charger's pause button first, then unplug the charging gun.

When the lithium-ion battery level is below 20%, please charge it promptly. Under normal use, it is recommended to fully charge the battery at least once a week. If the battery will not be used for more than 3 months, it should be recharged monthly.

Precautions

WARNING: To prevent accidents, please note:

- Do not use lithium batteries in environments exceeding 55°C or below -25°C.
- Do not directly rinse the lithium battery case.
- Do not place heavy objects or conductors on the surface of the lithium battery case.
- Do not over-discharge, overcharge, or over-charge.
- Do not subject the lithium battery case to external impacts or shocks.
- Keep the lithium battery case out of reach of children or other animals.
- Unauthorized personnel should not disassemble the lithium battery pack to prevent damage to internal components.

In case of a lithium battery fire, immediately move away from the fire. Try to control the fire with water while maintaining distance, and simultaneously notify firefighters for professional handling.

Caution: When repairing electrical equipment or performing welding operations, turn off the manual power switch of the entire machine to prevent electric shock.

Hydraulic Systems

1. Safety Rules for High-Pressure Oil

Hydraulic systems are always pressurized. When inspecting or replacing pipes or hoses, always check that the pressure in the hydraulic lines has been released. If the lines are still pressurized, it can cause serious injury or damage. Therefore, follow these guidelines:

1) Do not perform inspections or replacements while the hydraulic system is pressurized.

2) If there are any leaks in pipes or hoses, the surrounding area will be wet. Therefore, check for cracks in the pipes or hoses and for any bulging in the hoses. When inspecting, wear safety goggles and gloves.

3) High-pressure oil leaking from small orifices can penetrate the skin and cause blindness if it comes into direct contact with the eyes. If you are injured by a stream of high-pressure oil hitting your skin or eyes, rinse with clean water and contact a doctor immediately.

2. Safe Handling of High-Pressure Hoses

If a high-pressure hose leaks oil or fuel, it can cause a fire or operational malfunction, leading to serious injury or damage. If a bolt is found to be loose, stop work and tighten the bolt to the specified torque. When welding on the machine, it is strictly forbidden to do so without isolating the hydraulic oil lines (hoops). If any damage is found to the hose, stop operation immediately and contact the Yuchai dealer.

Replace the hose if the following problems are found:

1) Damaged or leaking hydraulic pipe joints;

2) Worn or broken cladding, or exposed reinforcing wires;

3) Expanded cladding in some areas;

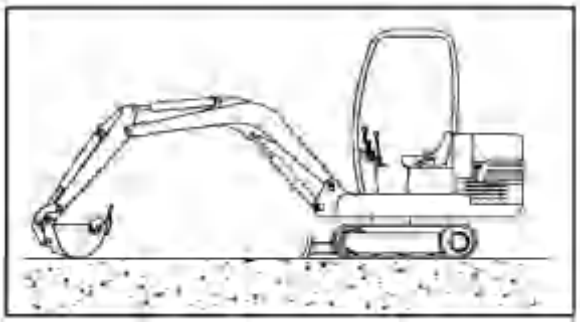
4) Twisted or crushed moving parts;

5) Impurities inside the cladding.

3. Safety Rules for High-Temperature Oil Hydraulic oil that has not been cooled during or after operation is at high temperature and pressure. To prevent burns from sprayed oil or contact with hot parts when checking or draining oil , wait for the oil to cool to a temperature suitable for the injection mold cover before starting operation. Even if the oil has cooled, slowly loosen the hydraulic oil tank air filter before removing the cover to release the pressure inside the hydraulic oil tank.

4. Releasing Internal Pressure in the Hydraulic System

During machine downtime, the hydraulic oil in the lines is at high temperature and high pressure. Oil may spray out when removing the oil port, so rotate the oil filler cap before disassembly to release internal pressure.
If the work equipment is not in the position shown in the figure, start the engine at low idle, extend the bucket cylinder, and retract the dipper stick cylinder. Then lower the bucket to the ground, place the dozer blade on the ground, and shut down the engine. Within 15 seconds after turningoff the electric motor, turn the start switch to the ON position and fully operate the control levers (work equipment, travel, swing) in each direction to release internal pressure.



5. Safe Operation of the Accumulator

Warning: The accumulator is a component filled with high-pressure nitrogen. Incorrect use may cause explosion and other hazards. Do not disassemble the accumulator, nor perform drilling, welding or other operations on it. Keep the accumulator away from fire sources and avoid collision and impact. Disposal of the accumulator must be carried out by professionals.

The machine is equipped with an accumulator in the control circuit, which is a pressure storage device. Even after the electric motor stops, the control circuit can be operated for a short time.

The work equipment can be lowered under its own weight by operating the control levers.

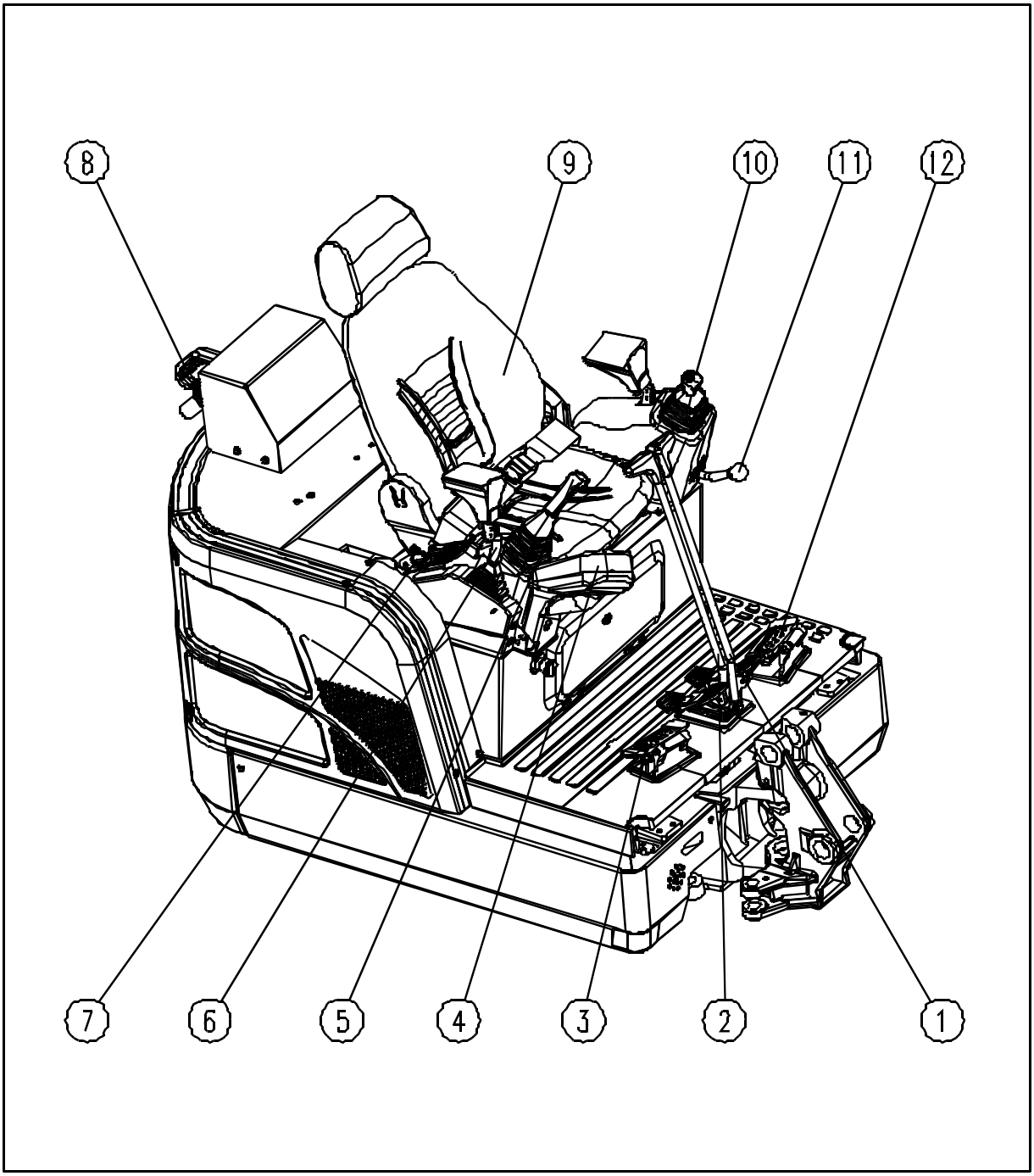
Pressure Relief Method for the Control Circuit of Machines Equipped with Accumulators

Lower the work equipment to the ground, then shut down the hydraulic breaker or other attachments.
Turn off the electric motor.
Turn the key of the start switch to the ON position again to allow current to flow in the circuit.
Move the safety lock control lever to the free position, then fully operate the work equipment control lever and attachment control pedals (if equipped) forward, backward, left and right to release pressure in the control circuit.
Move the safety lock control lever to the locked position to lock the control lever and attachment control pedals.

3

Parts Description

Control Device Overview



1. Left Travel Control Lever 2. Right Travel Control Lever 3. Right Attachment Pedal
4. Instrument Panel 5. Right Pilot Control Handle 6. Dozer Pilot Control Handle
7. Right Control Box Switch Assembly 8. Charging System
9. Operator Seat 10. Left Pilot Control Handle
11. Hydraulic Pilot Safety Lock Lever 12. Left Attachment Pedal

Safety Lock Components

1. Safety Lock

Warning: The work equipment safety lock mechanism is a critical part of the machine's safety system. The operator must engage the safety lock when leaving the cab. If the control lever locking device is not in the locked position, the handle may shift, causing the work equipment to move and resulting in an accident.

Pilot Locking and Release

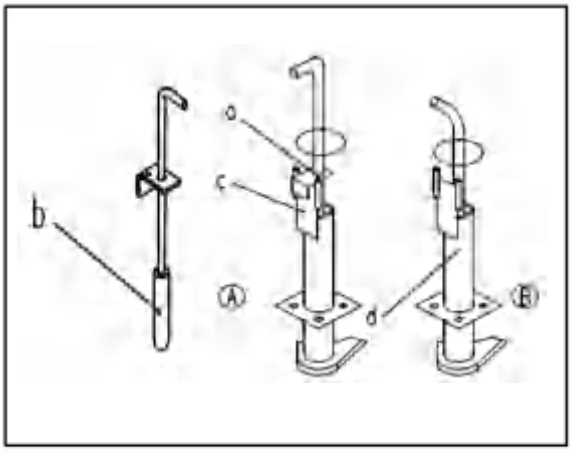
Pull the hydraulic pilot safety lock lever all the way up and lift the left control box to start the engine. The pilot system will stop supplying oil, and the machine's work equipment and platform rotation will be disabled (except for left/right travel control), providing safety protection. Push the hydraulic pilot safety lock lever all the way down and lower the left control box. The pilot system will reconnect to the oil supply, allowing normal machine operation.

2. Platform Locking Mechanism (Optional)

Warning: The platform locking mechanism is a critical part of the machine's safety system. The platform must be locked when transporting, traveling, parking, or stopping on a slope.

Platform Locking and Release

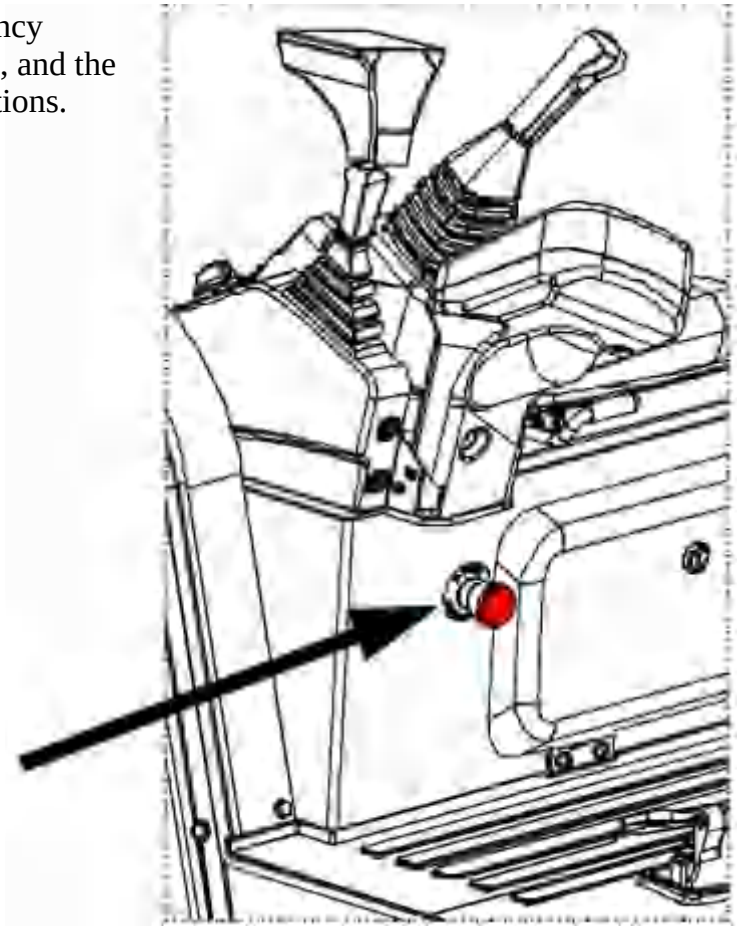
1. Optional swing motor with built-in stop lock and start unlock function.
2. Optional platform locking pin locking method. Lift the platform locking pin: hook the bent plate (a) of the pin onto the lower box (c) to release the lock between the platform and the undercarriage. Lower the locking pin: place the bent plate into the lower box (d), and the pin (b) will lock the platform to the undercarriage, preventing relative rotation.
When locking, ensure the locking pin holes on the platform and undercarriage are aligned correctly.



EMERGENCY STOP BUTTON

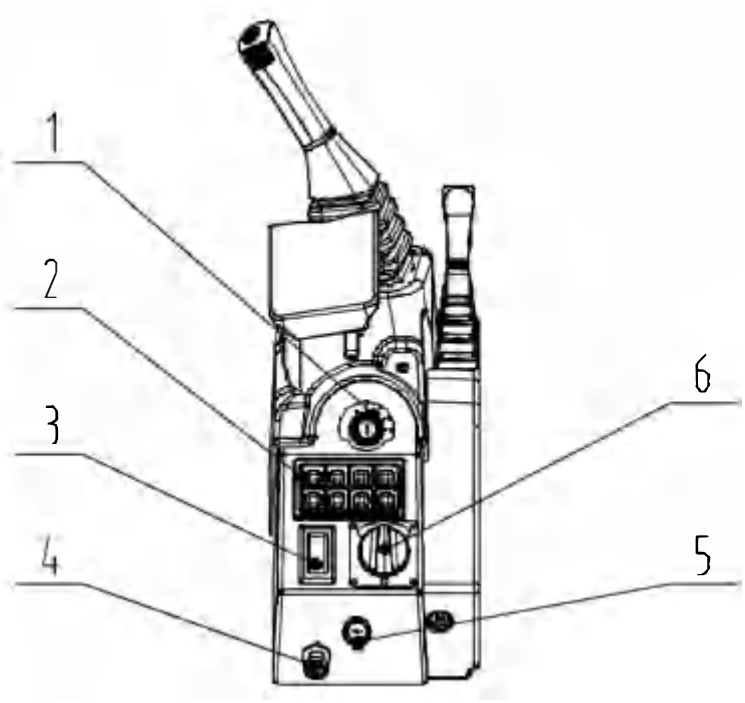
3.EMERGENCY

In an emergency, press the emergency stop button to stop the pump motor, and the entire machine will cease all operations.



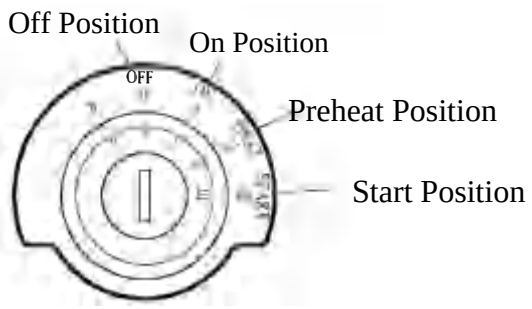
Right Control Box Components

1.Key (Start) Switch
2.Integrated Control Switch Assembly
3.Hydraulic Quick-Hitch Control Switch
4.Cigarette Lighter
5.USB Power Outlet
6.Electric Throttle Control Switch



1. Operation of the Key (Start) Switch

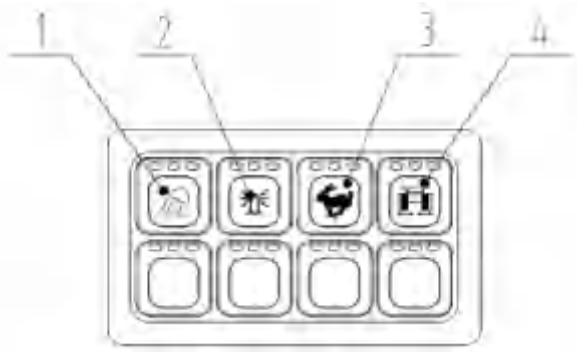
Off Position: The entire electrical system of the machine is shut down.
On Position: The electrical system of the machine is in normal operating condition.
Start Position: Turn the key clockwise from the Off position to the Start position to activate the engine starter motor.
Preheat Position: Turn the key to the Preheat position to initiate engine intake preheating; the preheat indicator light will illuminate. Note that the preheating time must not exceed 30 seconds. This position will automatically reset.



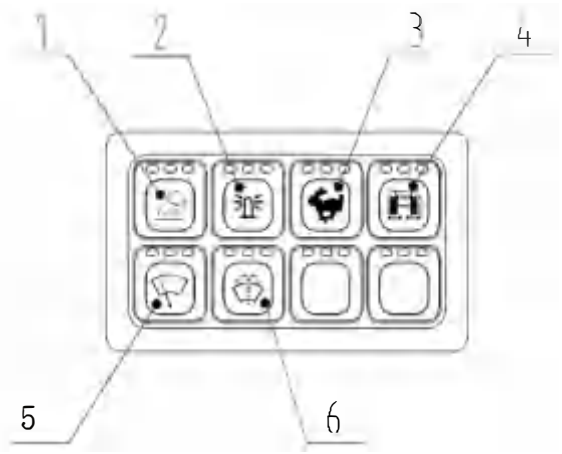
Ignition Key Switch

Switch Assembly

2.Integrated Control Switch Assembly



ROPS (Canopy) Configuration



Cab Configuration

1)Work Light Switch

Press the rocker switch: the side with the switch symbol is ON, an d the opposite side is OFF.**2)Warning Light Switch**

Press the rocker switch: the side with the switch symbol is ON, and the opposite side is OFF.

3)High-Speed Travel Switch

Press the rocker switch: the travel motor enters high-speed, low-torque travel mode.

4)Undercarriage Extension/Retraction Switch

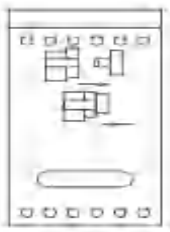
Press the rocker switch: the dozer lever switches to undercarriage extension/retraction mode.

5)Wiper Switch

Press the rocker switch: the side with the switch symbol is ON, and the opposite side is OFF.

6)Washer Switch

Press the rocker switch: the side with the switch symbol is ON, and the opposite side is OFF.



3. Hydraulic Quick-Hitch Switch (Optional)

Press the rocker switch: the side with the switch symbol is ON, and the opposite side is OFF.

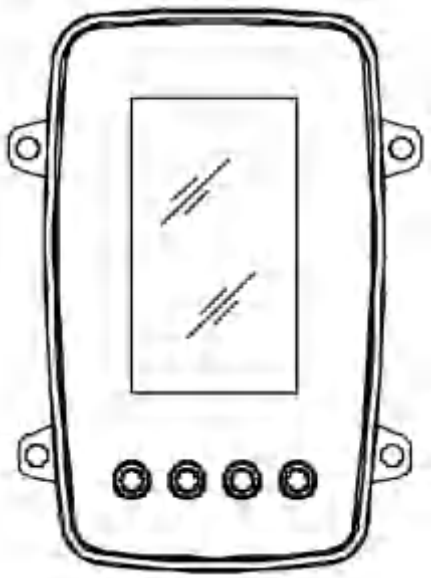
6. Electronic Throttle Position Switch

Turn left: engine speed increases. Turn right: engine speed decreases.

Engine Speed Gear									
1	2	3	4	5	6	7	8	9	10
1000	1300	1500	1600	1700	1800	2000	2100	2200	2300

Instrument Panel

LCD Instrument



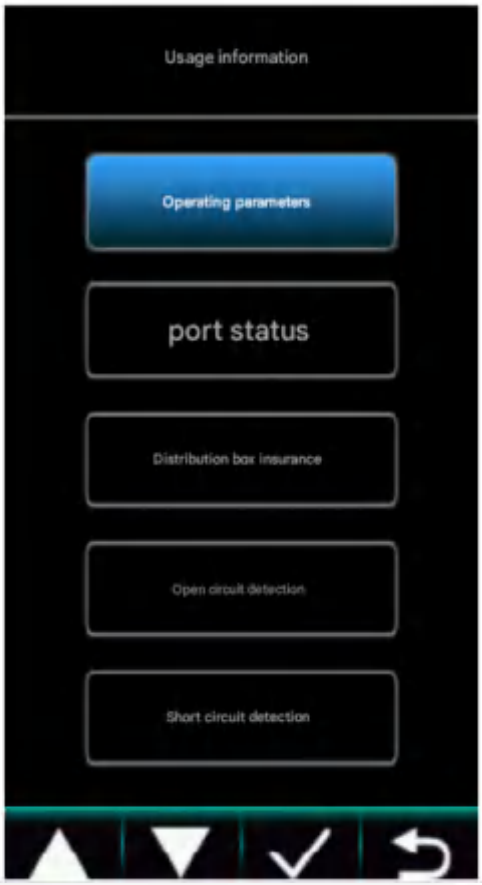
Main Interface

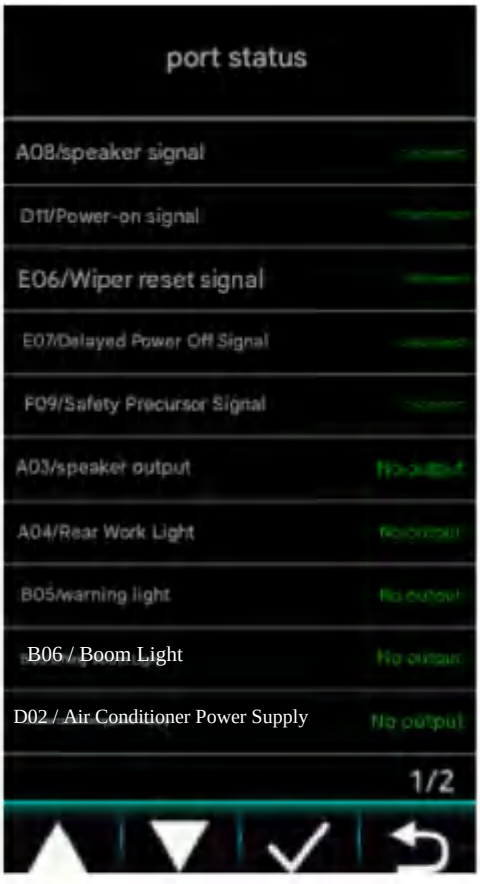
16 High System Voltage Low

Instrument Panel

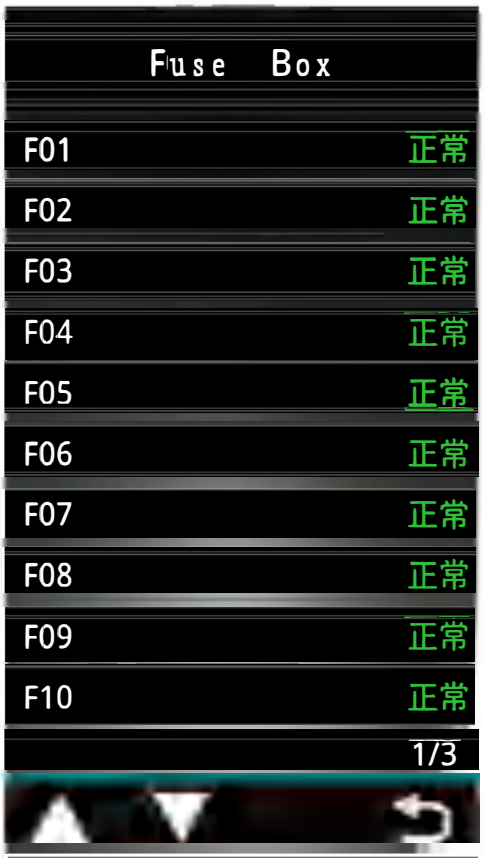
No.	Description	Remarks
1	Low-Voltage System Value	
2	High-Voltage Alarm	Yellow icon; disappears when no alarm is present
3	Low-Voltage Alarm	Yellow icon; disappears when no alarm is present
4	Motor System Alarm	Red icon; disappears when no alarm is present
5	Battery System Alarm	Red icon; disappears when no alarm is present
6	Motor Over-Temperature Alarm	Yellow icon; disappears when no alarm is present
7	Hydraulic Oil Over-Temperature Alarm	Red icon; disappears when no alarm is present
8	Motor Controller Over-Temperature Alarm	Yellow icon; disappears when no alarm is present
9	Battery Level Gauge, SOC Value	
10	Low SOC Alarm	Red icon; turns white when no alarm is present
11	Fault Information	Press the corresponding key to jump to the "Fault Information" page
12	Operating Parameters	Press the corresponding key to jump to the "Operating Parameters" page
13	Main Menu	Press the corresponding key to jump to the "Main Menu" page
14	Alarm Buzzer	Red icon when buzzing; press the corresponding key to stop the buzzer
15	Fan Reverse	Yellow icon; appears when the fan is in reverse mode
16	Text Prompt for All Alarms	
17	Charging	Green icon; disappears when not charging
18	High-Speed Travel	White icon; disappears when not in high-speed mode
19	Undercarriage Extension/Retraction	White icon; disappears when not in extension/retraction mode
20	Cab Heating	White icon; disappears when not in heating mode
21	Pilot Lock Status	Yellow icon; shows unlocked when pilot is on, locked when pilot is off
22	Emergency Stop Status	Yellow icon; disappears when the emergency stop is not pressed
23	Machine Total Hours	
24	Motor Speed Gear	Displays "N" when no knob is installed; normally displays 1~10
25	Motor Speed Gauge and Value	

Panel interface



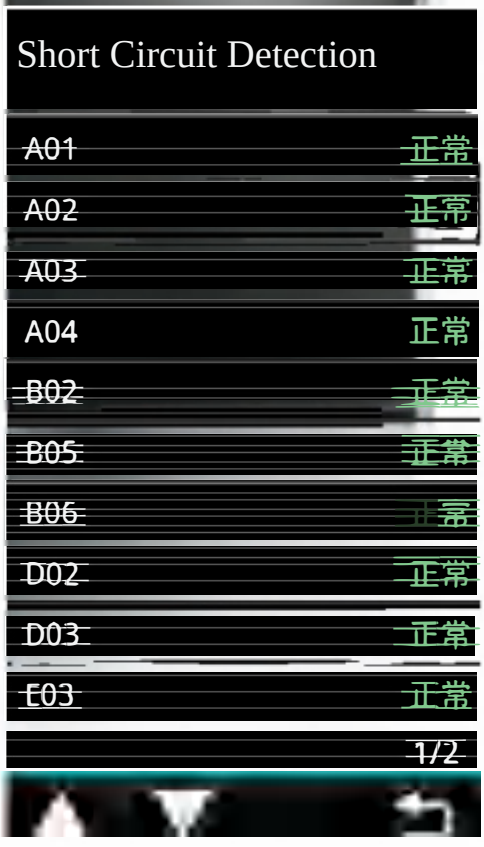


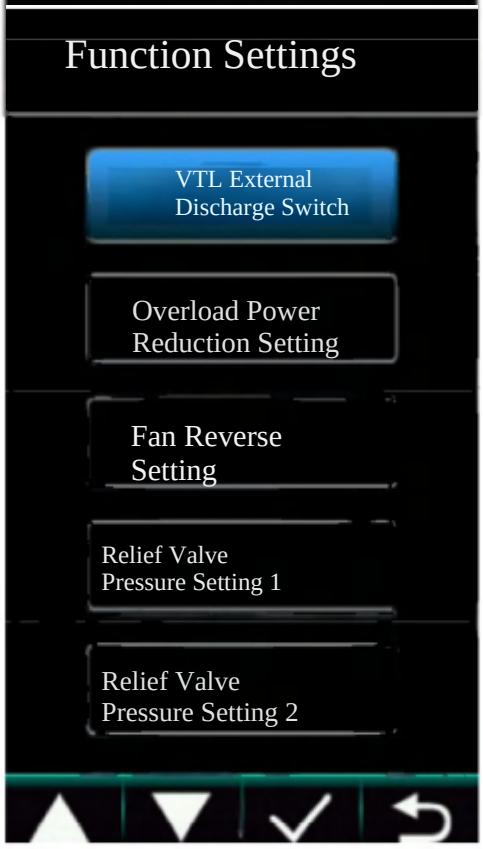
Panel Interface



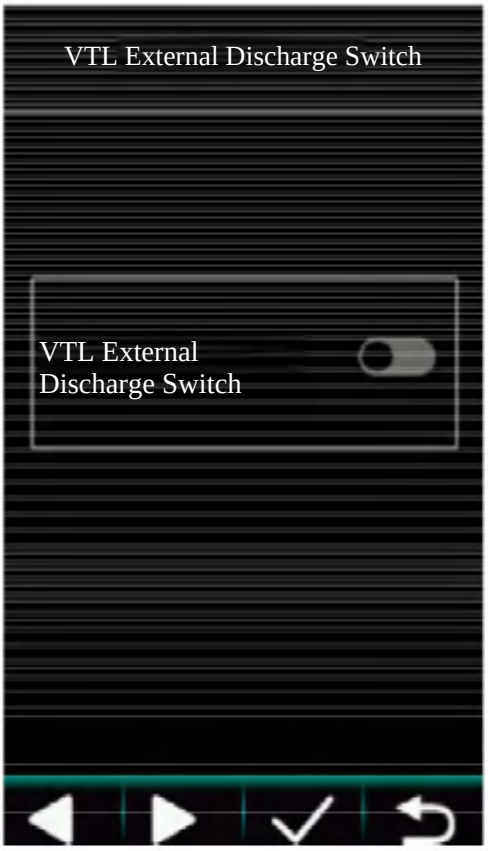
Normal

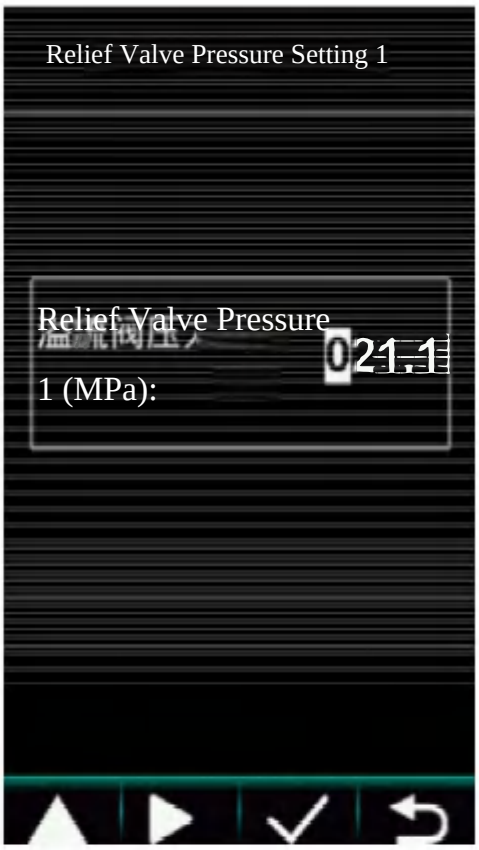
Normal

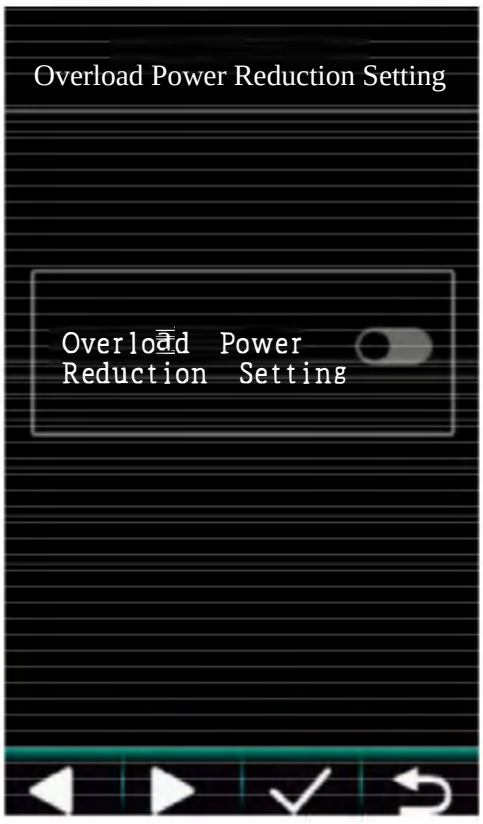


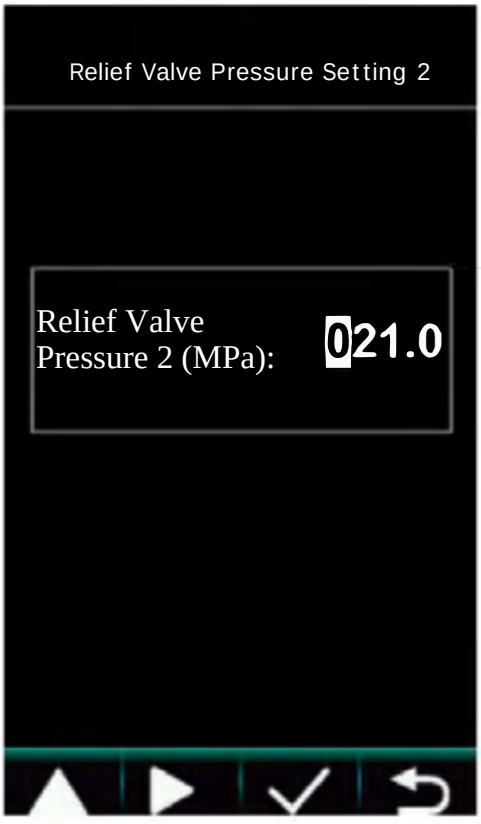


Panel Interface









Panel Interface

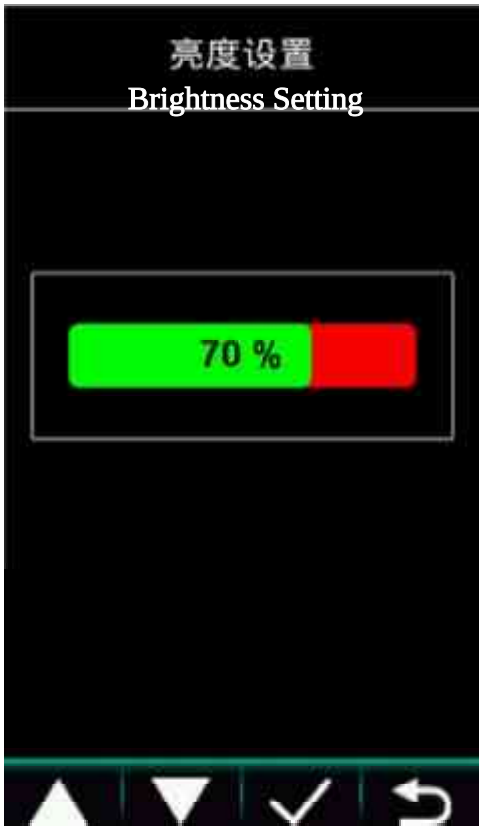
面板界面

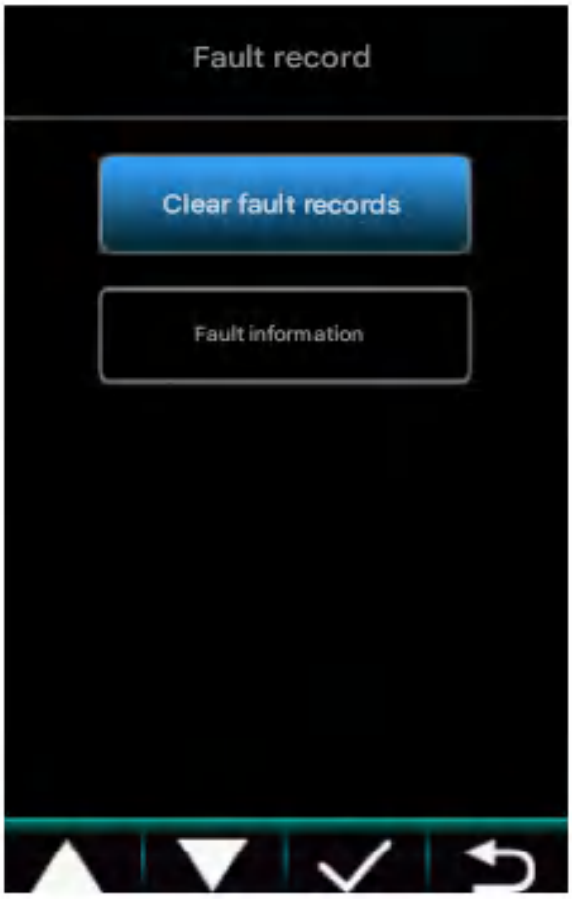
Fan Reverse Setting

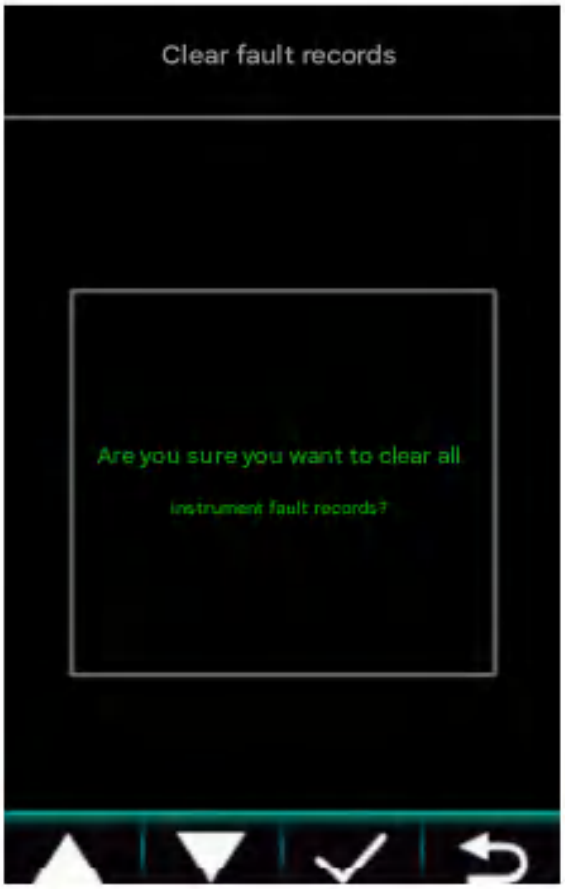
Please Enter Password

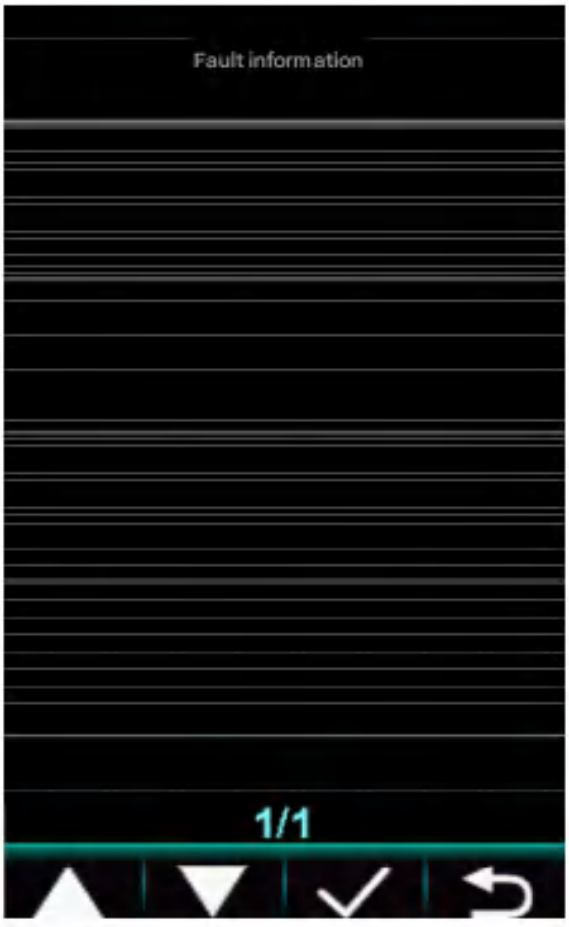
System Settings
系统设置

Panel Interface
面板界面




Fault record
Clear fault records
Fault information

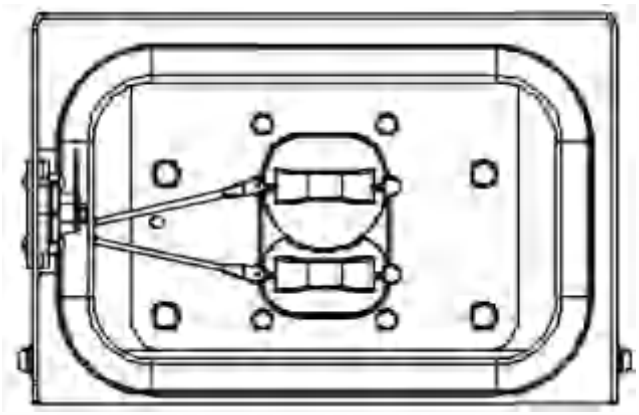

Clear fault records
Are you sure you want to clear all
instrument fault records?


Fault information
1/1

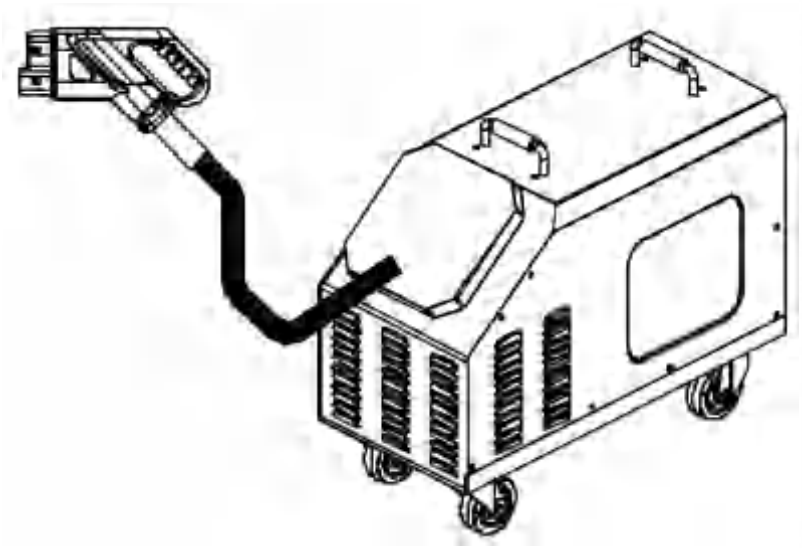

Version information
Instrument model:
YQ3.341.4339
Serial number:
NL1712345
Software version:
YQ0.280.3006_V11

Charging System

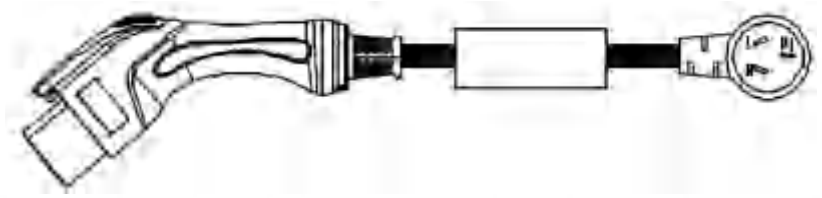
1. Rear Charging Socket (EU Standard)



2.Fast Charger (EU Standard, 40kW)

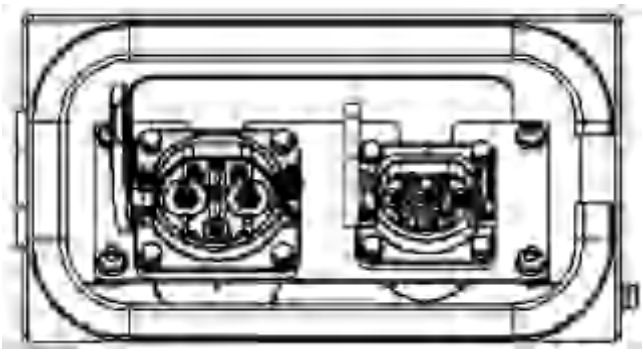


3.Portable New Energy Charging Gun (EU Standard, 3.3kW)

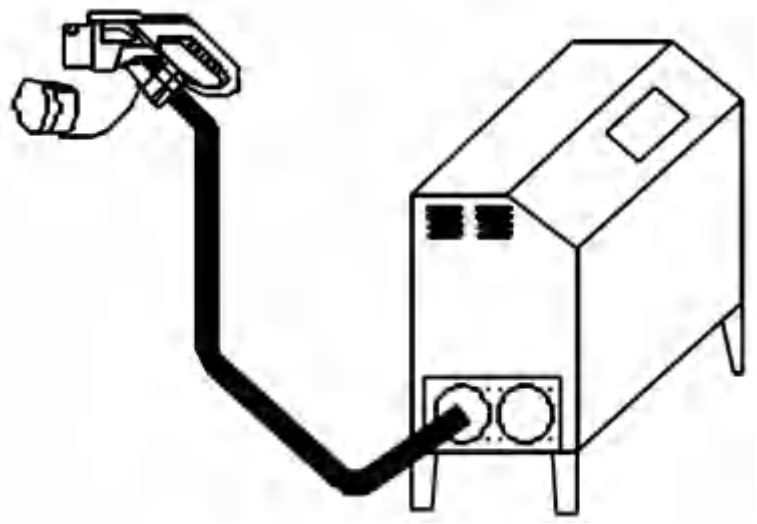


Charging System

1.Rear Charging Socket (GB Standard)



2.Fast Charger (GB Standard, 40kW)



3.Slow Charging Gun (GB Standard, 16A)

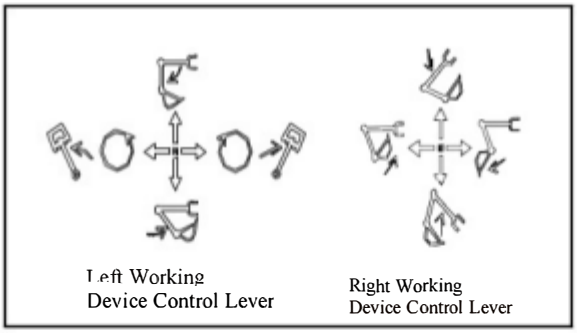
Control of Working Device and Slewing Mechanism

● Control of Excavation Working Device and Platform Slewing Mechanism

● Control of Excavation Working Device and Platform Slewing Mechanism

A. Left Pilot Valve Lever

Arm operation: Push forward to extend the arm; pull backward to retract the arm.
Platform slewing: Swing right to turn the platform right; swing left to turn the platform left.
Boom swing: Swing right to turn the boom right; swing left to turn the boom left.



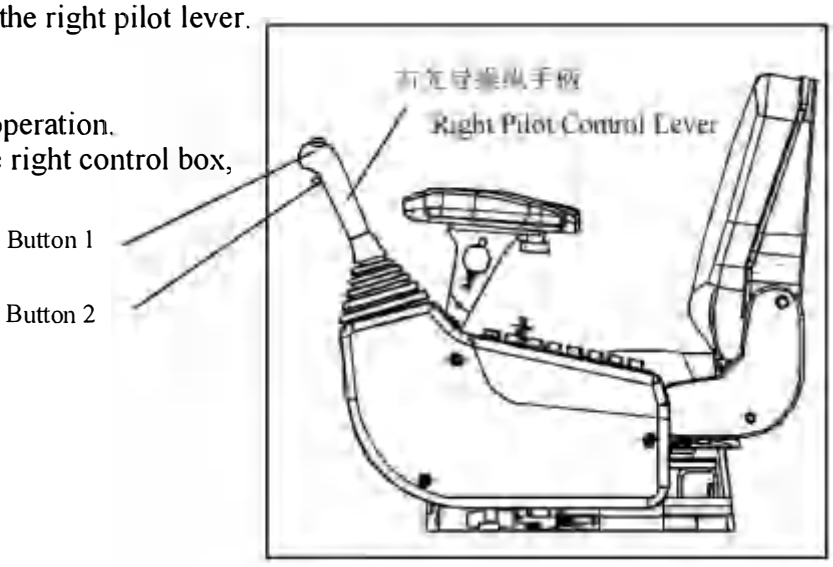
B. Right Pilot Valve Lever

Boom operation: Push forward to lower the boom; pull backward to raise the boom.

Bucket operation: Swing right to crowd the bucket out; swing left to curl the bucket in.

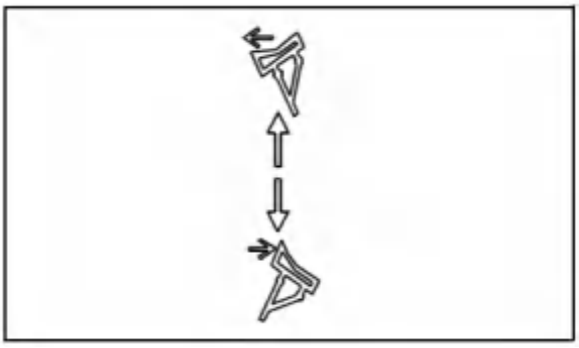
● Selection and Control of Slewing and Offset (Optional button to switch lever mode)

Both slewing and offset are controlled via the right pilot lever.
Default function: Slewing operation
Press Button 1 to activate offset operation.
Press Button 2 to reset to default slewing operation.
Note: If an offset switch is provided on the right control box, this setting is not available.



● Control of Dozer Blade

Push the control lever down to lower the dozer blade into the ground. Pull the lever up to raise the dozer blade.



● Control of Auxiliary Working Equipment

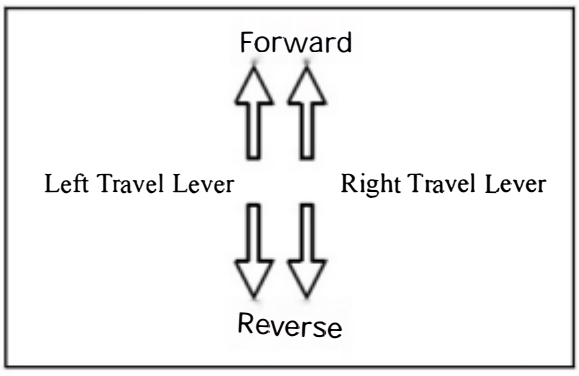
When the machine is equipped with auxiliary working equipment, press the auxiliary equipment foot pedal to activate the auxiliary hydraulic circuit

Travel Control

● Direction Control

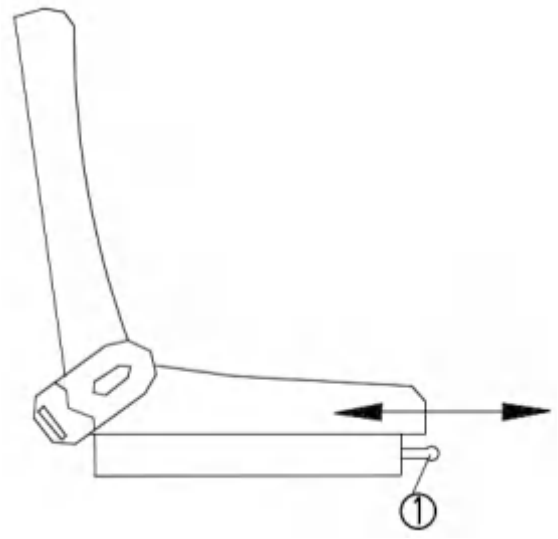
Operate the left and right travel levers to control the left and right crawler tracks.

Operate only one travel lever to perform a pivot turn.



Operator's Seat

WARNING: Unexpected tipping or sudden movement of the machine can cause serious injury or death. For safety, always fasten the seat belt and adjust the seat before starting the machine.



Seat Adjustment Lever (Fore/Aft)

Seat Fore/Aft Adjustment: Twist the seat adjustment lever to allow forward/backward movement. Release the lever to lock the seat in position.

NOTE: Stop the engine before adjusting the seat. After adjustment, gently shake the seat to confirm it is securely locked.

Seat Belt

WARNING: The seat belt is an essential part of the machine's safety system. Before operating, you must fasten the seat belt. Failure to do so may result in the cab or machine crushing your body and causing severe injury if the machine rolls over.

WARNING: Inspect the seat belt mounting for any abnormalities before use.
Replace the seat belt if it is worn or damaged.
Replace the seat belt every 3 years even if no abnormalities are visible. The production date is indicated on the label tag of the seat belt.
Always fasten the seat belt during operation.
Do not twist the seat belt when fastening it.

1. Fastening the Seat Belt

Grasp the seat belt buckle, check for twists, adjust the length to fit, and insert the tongue firmly into the buckle. Gently pull the seat belt to check if it is correctly locked in place.

2. Releasing the Seat Belt

Press the red button on the buckle to release the tongue and remove the seat belt.

4

操作指南
Operation Manual

PRE-OPERATION PREPARATION

作机器前的准备

1. Excavator operation shall only be performed by trained operators who meet regional requirements to ensure independent operation.
2. Operation is strictly prohibited before the operator has fully read and understood the operation manual.
3. Before operation, the operator must wear form-fitting clothing and appropriate personal protective equipment (PPE), such as safety helmet, safety shoes, gloves, safety goggles, and seat belt.
4. Carefully inspect the machine according to operating instructions before daily start-up.
5. Check the working equipment, hydraulic cylinders, and hoses for damage.
6. Remove dust and debris from around the motor, lithium battery, electrical control box, storage battery, radiator, and other components.
7. Inspect the hydraulic system, oil tank, hoses, and fittings for leaks (verify by checking for visible oil stains on the ground under the machine after parking).
8. Inspect all undercarriage components (tracks, drive wheels, idler wheels, etc.) for damage and loose bolts. Ensure no loose connections between the main frame and the platform.
9. Inspect all instruments, monitors, main wiring harness, and cables, especially the charging cables and connectors, for damage.
10. Clean the rear-view mirrors, check for damage, and adjust them for proper visibility.
11. Inspect the seat belt for damage.
12. Confirm that all required maintenance has been performed according to specifications.

WARNING: Before operating the machine, ensure that you have fully understood and memorized all safety operation procedures contained in the " SAFETY REGULATIONS" section of this manual.

START-UP OPERATION

WARNING: Before starting, read the safety details in this manual. Read all safety labels on the machine. No other persons are allowed in the working area. Before operation, learn and practice safe operation. When operating the machine, you must understand and follow the relevant operation and maintenance chapters in the manual, and comply with applicable regulations.

1. CHECKS BEFORE STARTING THE MOTOR

1) Check that the seat belt is fastened, sound the horn, and confirm that no personnel are present around, above, or below the machine in the working area.
2) Check that all window glass and rear-view mirrors provide good visibility.
3) Check for dust or debris around the motor, lithium battery, electrical control box, battery, radiator, etc., and remove them if present.
4) Check the working equipment, cylinders, connecting rods, and hydraulic hoses for cracks, excessive wear, or play. If abnormalities are found, replace or repair them.
5) Check the hydraulic system, hydraulic oil tank, hoses, and fittings for leaks.
6) Check the undercarriage components (tracks, sprockets, idlers, etc.) for damage, wear, loose bolts, or oil leaks.
7) Check that instrument displays are normal, all work lights function properly, and there are no open circuits or disconnections in electrical lines.
8) Check that the coolant level and hydraulic oil level are between the upper and lower limits.
9) In cold weather, check if coolant, hydraulic oil, battery electrolyte, engine oil, and lubricating oil are frozen; if frozen, thaw them before starting.
10) Check that the platform is in the locked state.
11) Check the machine's current working condition, direction, and position to obtain relevant information for operation.

2. STARTING THE MOTOR

WARNING: Do not start the motor when a "DO NOT START" warning tag is attached to the control levers.

WARNING: Do not start the motor while the machine is being charged.

WARNING: Before starting the motor, confirm that the safety lock lever is in the LOCK position to prevent accidental contact with the control levers, which could cause sudden movement of the working equipment and result in an accident.

WARNING: If the battery electrolyte is frozen, do not charge the battery or attempt to start the engine using an external power source. Doing so may cause the battery to catch fire.

Before starting the motor, insert the key into the start switch and turn it to the ON position. Check the status of all indicator and warning lights on the digital instrument cluster. If any alarms are present, troubleshoot and resolve the faults before starting the motor.

● JUMP STARTING USING AUXILIARY CABLES

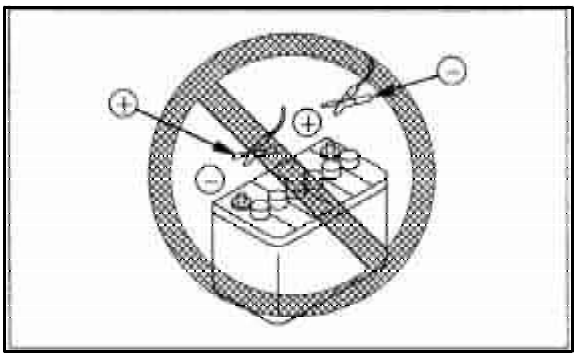
WARNING: If the battery electrolyte is frozen, (1) attempting to charge it or (2) jump-starting it may cause the battery to explode. To prevent the battery electrolyte from freezing, keep it fully charged. Failure to follow these instructions may result in injury to you or others.

WARNING: Batteries emit explosive gases. Keep away from sparks, flames, and smoking. Ensure good ventilation when charging or using batteries in enclosed areas, and wear eye protection when working near batteries.

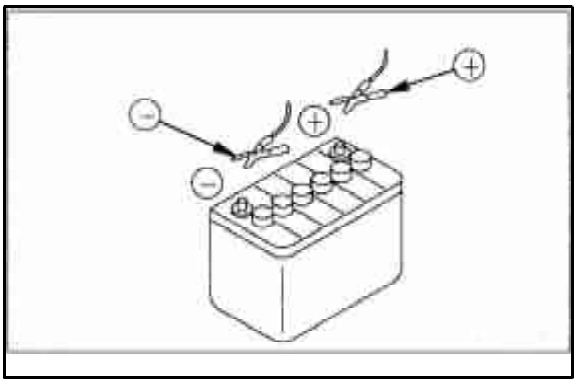
Incorrect connection of auxiliary cables can cause the battery to explode. Therefore, follow the regulations below:

1) When using auxiliary cables for jump-starting, the operation must be performed by two people (one sitting in the operator's seat, the other handling the battery).
2) When jump-starting with another machine, ensure the two machines do not make contact.
3) Before connecting the auxiliary cables, turn the key switches of both the normal machine and the faulty machine to the OFF position. Otherwise, the machine may move when the power is connected.
4) When installing auxiliary cables, always connect the positive (+) cable first; when removing auxiliary cables, always disconnect the negative (-) cable (ground side) first.
5) When disconnecting auxiliary cables, take care not to allow the cable clamps to touch each other or the machine.
6) Always wear safety goggles and rubber gloves when starting the engine using auxiliary cables.
7) When connecting the normal machine and the faulty machine with auxiliary cables, use a normal machine with the same battery voltage as the faulty machine.

(1)



(2)



3. AFTER STARTING THE ENGINE

A. MACHINE WARM-UP

The normal operating temperature of hydraulic oil is 50°C~80°C. Operating with hydraulic oil below 20°C may damage hydraulic components. Therefore, before starting work, if the oil temperature is below 20°C, the following warm-up procedure must be performed:

1) Run the engine at 200 rpm above idle speed for 5 minutes.
2) Let the engine run at neutral for 5~10 minutes.
3) At this speed, extend and retract each cylinder several times, and gently operate the swing and travel motors to warm them up. Work can only begin when the oil temperature reaches above 20°C. If necessary, extend or retract the bucket cylinder to the full stroke to warm up the hydraulic oil under full load, but do not exceed 30 seconds each time. Repeat until the required oil temperature is reached.

B. POST-START INSPECTION

1) Check that all indicator lights have turned off.
2) Check for oil or water leaks.
3) Check the machine for any abnormalities in sound, vibration, heating, smell, or instruments. If any abnormality is found, repair it immediately.

4. STOPPING THE ENGINE

NOTE: To protect the engine, run it at idle speed for 5 minutes before shutting it down.

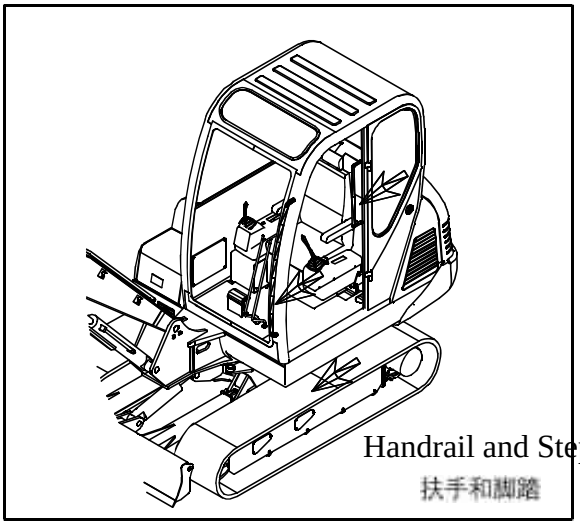
1) Run the engine at low idle speed for about 5 minutes to allow it to cool gradually.
2) Return the throttle knob to its initial position.
3) Turn the key switch to the OFF position to shut down the engine. All indicator lights will turn off.
4) Remove the start switch key.

5. INSPECTION AFTER STOPPING THE ENGINE

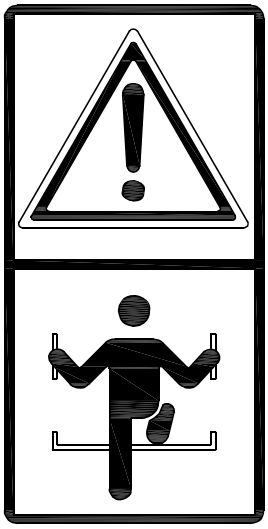
1) Inspect the working equipment, machine exterior, and undercarriage for water or oil leaks. If any abnormality is found, repair it.
2) Check the remaining power of the lithium battery; charge it in a timely manner if insufficient.
3) Check the engine compartment for paper scraps and debris. Remove them to avoid fire hazards.
4) Remove mud adhering to the undercarriage.

ENTERING AND EXITING THE MACHINE

1) Ensure you firmly grip the handrail at the cabin door or the pillar of the ROPS.
2) Ensure your feet are placed steadily on the tracks.
3) Do not use the control levers as handrails when entering or exiting the machine.
4) Before entering or exiting, check the handrail and track surfaces for slippery substances such as mud or grease. If present, clean them thoroughly.
5) Do not jump on or off the machine. Do not enter or exit while the machine is in motion.



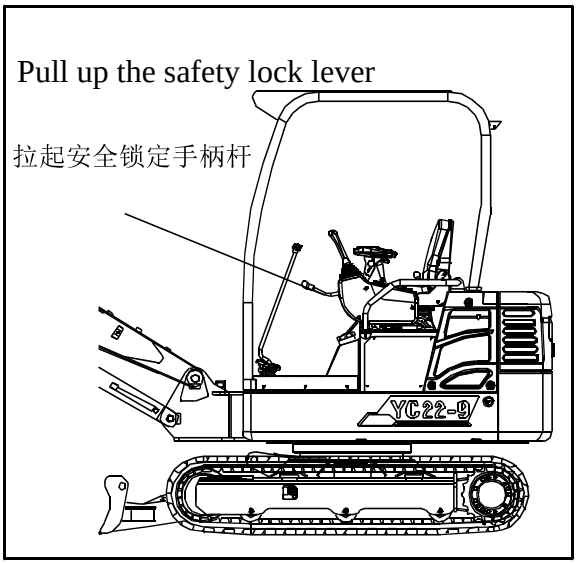
Handrail and Step
扶手和脚踏



6) Before leaving the machine, fully lower the working equipment to the ground and shut down the engine. Then, pull up the pilot valve safety lever to raise the left console into the locked state, and keep it in this state until the next operation.

NOTE: Remove the key and lock all doors and windows when leaving.

Do not climb onto the covers or the top of the cabin. Under no circumstances is anyone allowed on the working equipment (bucket, arm, boom, or attachments).



MOVING THE MACHINE

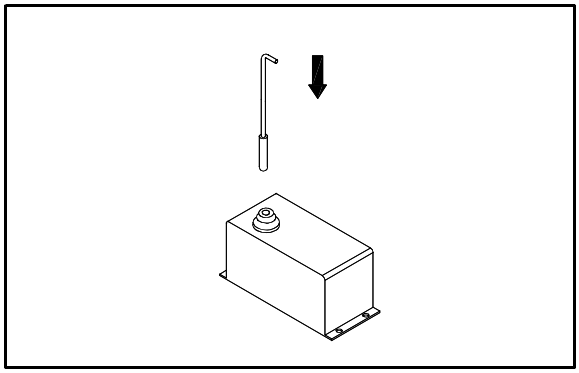
1. SAFETY PRINCIPLES FOR MOVING THE MACHINE

1) Before starting the excavator, familiarize yourself with the surrounding environment, including pedestrians, obstacles, and ground bearing capacity.
2) Sound the horn before starting the excavator to alert bystanders.
3) It is strictly prohibited for operators to start or control the machine while standing on the ground.
4) The excavator must travel and work on firm ground with a width greater than 1.5 times its own width.
5) When traveling through underground passages, bridges, or overhead high-voltage lines, ensure there is finger guidance.
6) When traveling, lower the boom and arm to maintain the optimal center of gravity.
7) When traveling, only the operator is allowed in the cabin; passengers are prohibited.
8) When traveling long distances on flat roads, the platform may remain unlocked, but must be locked when traveling uphill or downhill.
Before operating the steering levers, check the orientation of the track frame.
9) If the dozer blade is at the rear, the operation of the travel levers is reversed.
10) Keep all personnel away from the machine's surrounding area.
11) Remove all obstacles from the machine's travel path.
12) The rear of the machine is a blind spot, so pay special attention when traveling in reverse.

WARNING: Sudden operation of the control levers while traveling at high speed is dangerous.
1) Do not suddenly switch the control levers, as this may cause sudden movement.
2) Avoid suddenly shifting the levers from forward to reverse (or from reverse to forward).
3) Avoid sudden lever movements, such as stopping suddenly from high speed (releasing the levers abruptly).

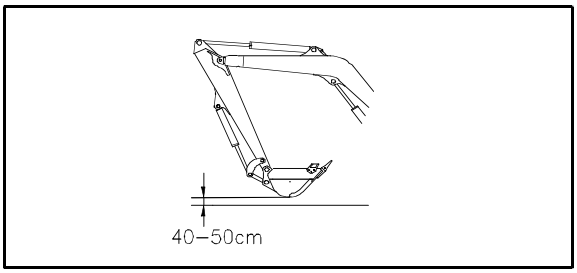
2. PREPARATION FOR MOVING THE MACHINE

1) Lower the platform lock pin to lock the platform swing.

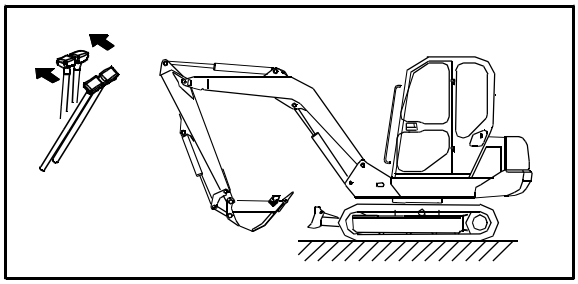


2) Turn the throttle knob to the high-speed position to increase engine speed.

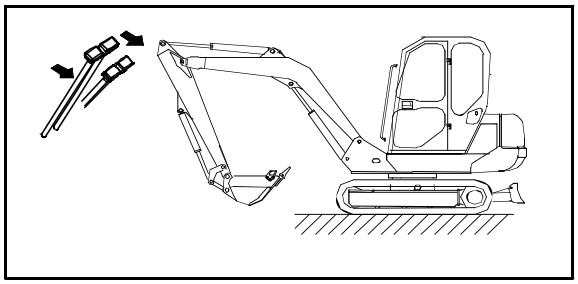
3. MOVING THE MACHINE FORWARD



1) Lower the left console, raise the working equipment , and lift it 40 to 50 cm above the ground.



2) Operate the left and right travel levers according to the following steps:
When the dozer blade is at the front:
Slowly push the front part of the levers forward to move the machine.



When the dozer blade is at the rear of the machine:
Slowly pull the levers backward to move the machine.

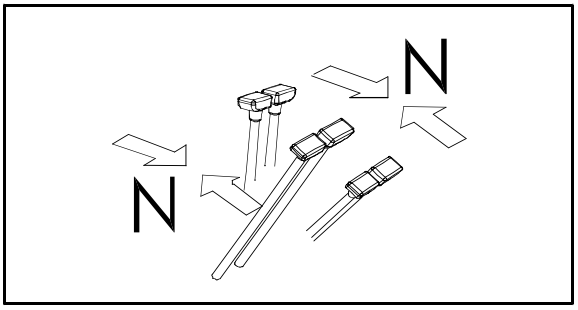
NOTE: At low temperatures, if the machine travel speed is abnormal, perform a thorough warm-up operation. Additionally, if the undercarriage is clogged with dirt, causing abnormal travel speed, remove the dirt and debris from the undercarriage.

4. MOVING THE MACHINE BACKWARD

1) Lower the left console, raise the working equipment , and lift it 40 to 50 cm above the ground.
2) Operation is the reverse of moving forward.

5. STOPPING THE MACHINE

Place both left and right travel levers in the neutral position to stop the machine.



NOTE: Avoid sudden stops while traveling. Ensure there is sufficient space when stopping.

STEERING THE MACHINE

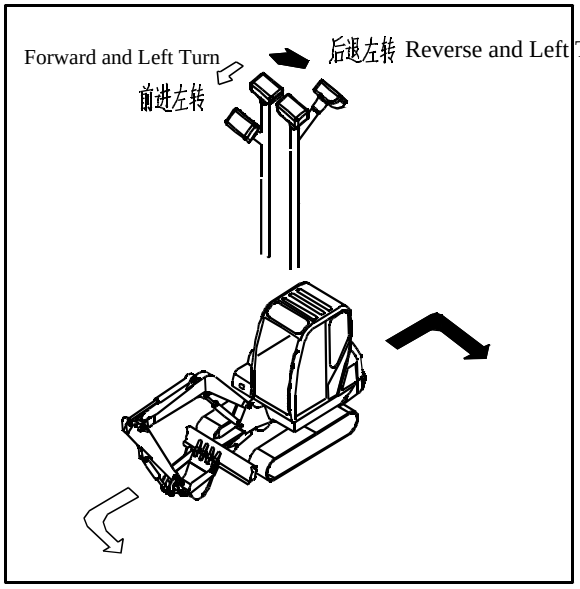
NOTE: Before operating the travel levers, check the position of the dozer blade. If the dozer blade is at the rear, the operation of the travel levers is reversed.

Use the left and right travel levers to change the direction of travel.
Avoid sudden changes in direction as much as possible. Especially when performing counter-rotation (pivot turn), stop the machine before turning.

1. STEERING WITH THE MACHINE STOPPED

When turning left:
When traveling forward, push the right travel lever forward to turn the machine left. When traveling backward, pull the right travel lever backward to turn the machine left.

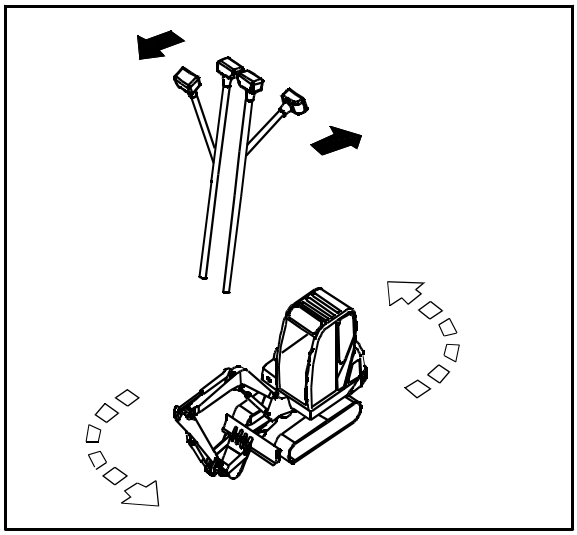
When turning right, operate the left travel lever in the same manner.



PIVOT TURNING

When performing a pivot turn to the left, pull the left travel lever backward and push the right travel lever forward.

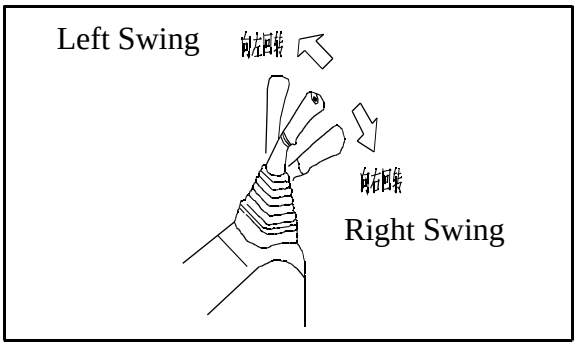
When performing a pivot turn to the right, pull the right travel lever backward and push the left travel lever forward.



SWINGING THE MACHINE

● Before swinging the upper structure, check that the surrounding area is safe.
● Confirm that the platform lock pin has been raised to release the lock between the platform and undercarriage.
● Operating the left pilot lever quickly will cause the platform to swing quickly; operating it slowly will cause the platform to swing slowly. Control the operation speed of the pilot lever carefully.

1) Before starting the swing operation, raise the platform lock pin to release the lock between the platform and undercarriage.



2) Disconnect the offset switch to place the machine in platform swing mode.

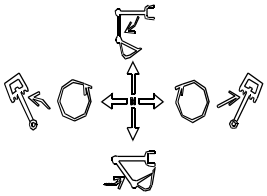
3) Operate the left pilot lever to perform the swing operation. Swinging the lever to the left turns the platform left; swinging the lever to the right turns the platform right.

4) When not performing swing operations, insert the platform lock pin to lock the platform swing.

OPERATION OF THE WORKING DEVICE

If the working device control levers are operated quickly, the working device will move quickly; if operated slowly, the working device will move slowly.
The working device is controlled by the left and right pilot control levers.
The left pilot lever controls the arm and swing (if equipped with an offset boom, the left pilot lever also controls the offset boom swing).
The right working device lever controls the boom and bucket.
When the pilot lever or dozer lever is released, they automatically return to neutral, and the working device or dozer stops.
The working device can be lowered to the ground within 15 seconds after the engine is shut down by operating the pilot controls.
Additionally, the pilot controls can be operated to release residual pressure in the hydraulic circuits and lower the boom after attaching a trailer to the machine.

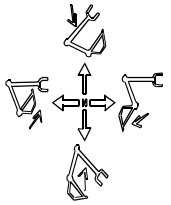
1. ARM CONTROL
Operate the left pilot control lever: push forward to extend the arm, pull backward to retract the arm.



Left Working Device Control Lever

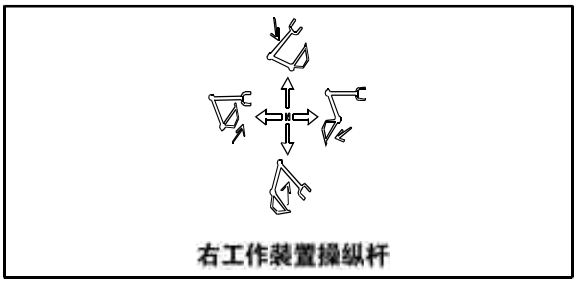
2. SWING CONTROL
Operate the left pilot control lever: swing left to turn the platform left, swing right to turn the platform right.
Before swinging, confirm the machine is in swing mode.

3. BOOM CONTROL
Operate the right pilot control lever: push forward to lower the boom, pull backward to raise the boom.



Right Working Device Control Lever

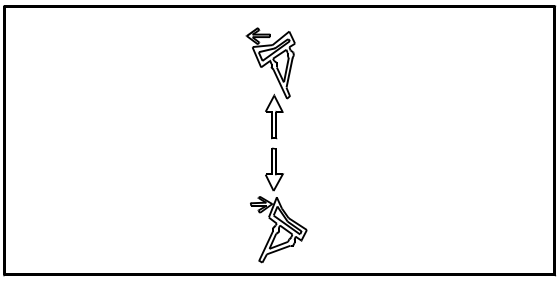
4. Bucket Control
Operate the right pilot control lever: move right to dump the bucket, move left to crowd the bucket.



Right Working Device Control Lever

5. Boom Offset (Angle Joint) Control
Operate the left pilot control lever: move left to turn the angle joint left, move right to turn the angle joint right.
Before offsetting the boom, confirm the machine is in boom offset mode.

6. Dozer Blade Operation
Push the dozer control lever down to lower the dozer blade into the ground.
Pull the lever up to raise the dozer blade.
Note: Stalling during arm operation is a normal phenomenon, not a mechanical fault. This occurs because the arm's weight accelerates its movement, which may cause a temporary reduction in oil supply



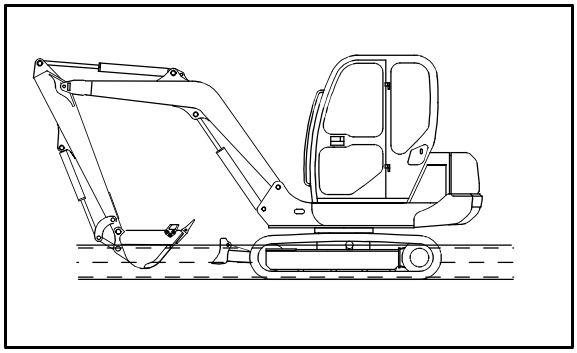
WORKING ON SLOPES OR IN WATER

WARNING: Working near hillside slopes is extremely dangerous. Various conditions, such as rain-soaked ground, muddy terrain, snow-covered ground, icy surfaces, loose sand, and soft ground, pose potential risks to operational safety. Therefore, when working on hazardous sites like hillsides or slopes, you must correctly assess whether safe operation is possible before proceeding.

When traveling, keep the bucket 20– 30 cm above the ground.
Do not travel downhill in reverse.
When traveling over raised objects or other obstacles, keep the working equipment close to the ground and move slowly.
Do not turn or cross slopes on an incline. Plan your turn on flat ground beforehand.
When working on a slope, turning or operating the working equipment may cause the machine to lose balance and overturn; therefore, avoid such actions. Rotating downhill with a loaded bucket is especially dangerous.
If such an operation is unavoidable, build a platform on the slope with soil to help maintain the machine’ s balance during operation.
Do not climb or descend steep slopes, as this risks overturning the machine.
When traveling uphill, if the tracks slip or the machine cannot climb under its own power, do not use the bucket’ s pulling force to assist climbing, as this risks overturning.
When traveling uphill, ensure the hydraulic oil has been properly warmed up; failure to do so may result in an accident.

PERMISSIBLE WATER DEPTH

Do not drive the machine in water deeper than the center line of the track frame.
Apply grease to components that have been submerged for extended periods until the old grease is completely forced out.

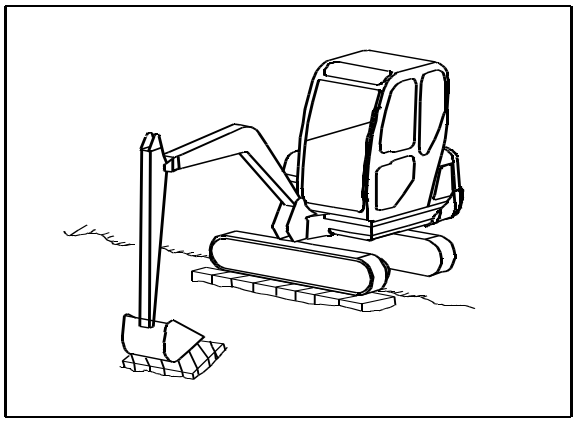


EXTRICATING THE MACHINE FROM MUD

Always operate carefully to avoid getting stuck in mud. If the machine becomes stuck, follow these steps to drive it out.

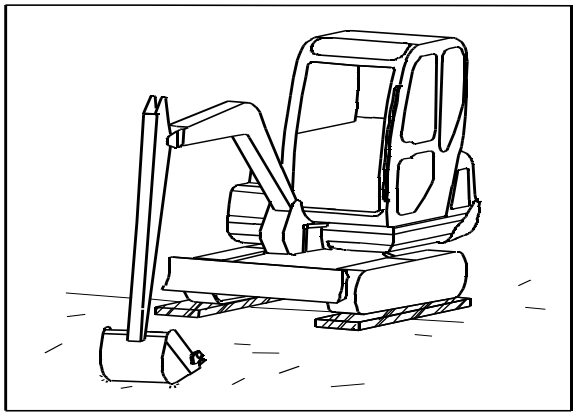
A. One Track Stuck

Note: When lifting the machine with the boom or arm, always keep the bottom of the bucket in contact with the ground (do not use the bucket teeth to push). The angle between the boom and arm should be 90° to 110°.



When only one track is stuck in the mud:
Use the bucket to lift the track, then place planks or logs underneath to drive the machine out. If necessary, also place planks under the bucket.

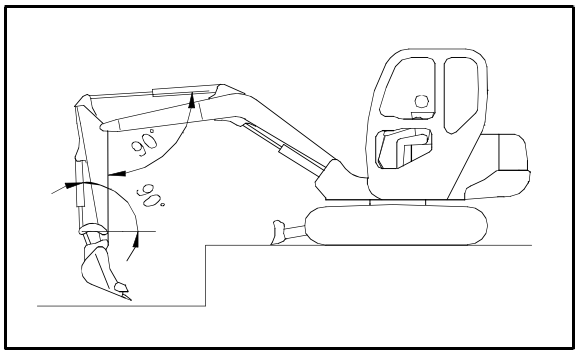
B. Both Tracks Stuck

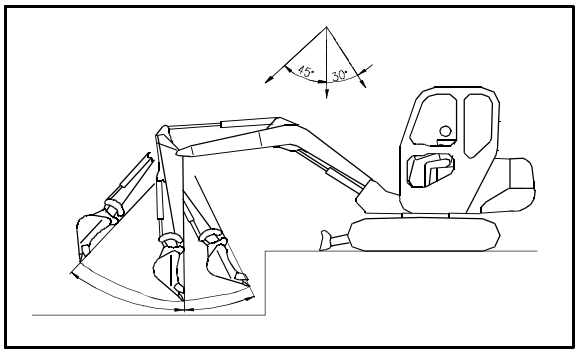


If both tracks are stuck in the mud and spinning without moving:
Use the method above to place planks or logs underneath. Dig the bucket into the ground ahead, operate the arm as you would when excavating, and set the travel levers to the forward position to pull the machine out.

1. BACKHOE OPERATION

Backhoe operation is suitable for excavating at positions lower than the machine.
When the machine is in the state shown in the figure (i.e., when the bucket cylinder, link arm, and arm cylinder form a 90° angle with the bucket) , the maximum breakout force of the bucket is achieved.
Using this angle effectively during excavation optimizes work efficiency.
The excavation range of the arm is from 45° away from the machine to 30° towards the machine.
This range may vary slightly depending on the excavation depth, but always try to operate within this range and avoid extending the cylinders to the end of their stroke.

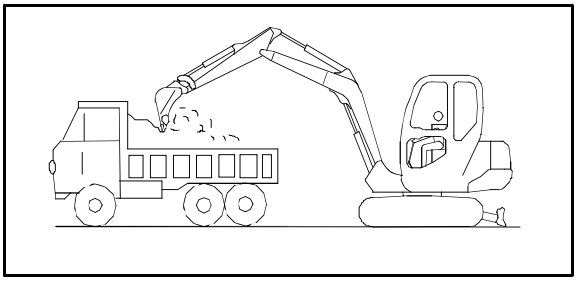




Note: For hard, rocky ground, it is best to break up the material using other methods before excavating. This not only reduces machine wear but is also more economical.

2. LOADING OPERATION

Position the dump truck in an area with a small swing radius, where the operator can easily see it, for more efficient operation.
Loading from the rear of the dump truck is generally more convenient and allows for larger payloads than loading from the side.



3. TRENCHING OPERATION

Position the dozer blade at the rear and anchor it into the ground.

Extend the boom and arm, then insert the bucket teeth into the soil.

Dig using the arm cylinder. During excavation, adjust the bucket’ s cutting and loading angles as needed, or switch to using the bucket cylinder for digging. Do not insert the bucket teeth too deeply into the soil, as thi s can overload the hydraulic system and prevent you from digging. If you cannot dig, slightly raise the boo m to resolve the issue. Once the bucket is full, raise the boom and arm to lift the bucket off the ground, then swing the platform to a suitable position to dump the material.

Notes:

Do not touch overhead power lines.

Confirm the location of underground pipes and cables before digging to avoid damaging them or causing electric shock accidents.

In the event of an electric shock, the operator must not leave the seat. Warn others to keep away. Move the machine to a safe location, shut off the power, and then exit.

4. BACKFILLING OR GRADING

To level a trench, position the excavator perpendicular to the trench. Lower the dozer blade into the ground to a certain depth, release the dozer control lever, drive the machine forward, and use the dozer blade to push soil into the trench.

5. REMOVING MUD AND SOIL FROM THE BUCKET

Position the arm nearly horizontally and the bucket in the dump position. If mud and soil still do not fall out , work the bucket control lever left and right several times to shake the material loose. Avoid using impact vibrations at the end of the bucket cylinder stroke to remove soil.

6. USAGE PRECAUTIONS FOR RELATED COMPONENTS

A. Track Usage Precautions

Excessive debris entering the tracks increases their workload and can cause damage.

Avoid sudden turns on high-friction surfaces.

Minimize contact with saltwater or corrosive gases, as salt can corrode the tracks.

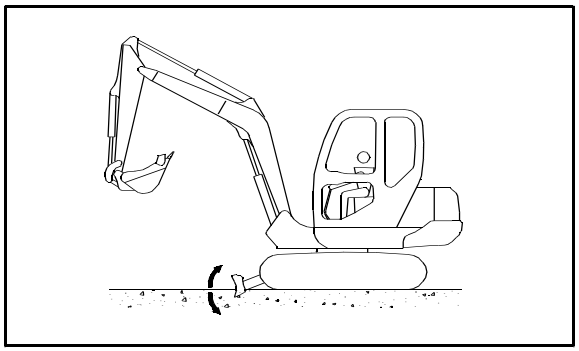
If the tracks will not be used for an extended period, store them in a cool, dry place.

Do not drive on one track when the other track and front attachment are lifted, as this will cause wear.

Tracks must not be loose during travel, as they may fall off or become damaged.

B. Precautions for Using the Dozer Blade

The dozer blade is only intended for moving soil. Do not use it for digging, as this may damage the dozer blade or track system. (See the figure on the right.)
The dozer blade cannot support heavy loads or objects with an unstable center of gravity, as this may damage the dozer blade or track system.
When traveling, the dozer blade must not catch on any objects, as this may damage the dozer blade or track system.
When lifting the machine with the dozer blade, ensure the ground is level and the dozer blade makes firm, stable contact with the ground.



BUCKET REMOVAL AND INSTALLATION

Safety Principles

When striking pins with a hammer, metal debris may fly into your eyes and cause serious injury. Always wear safety goggles, a safety helmet, gloves, and other protective equipment during this operation.

When removing the bucket, place it securely.

If force is applied to drive out the pins, they may fly out and injure people in the surrounding area. Therefore, ensure the surrounding area is safe before striking the pins.

When removing pins, do not stand under the bucket, and do not place your feet or any part of your body under the bucket.

When removing or installing pins, take care not to injure your hands.

When aligning holes, do not insert your fingers into the pin holes.

Installation

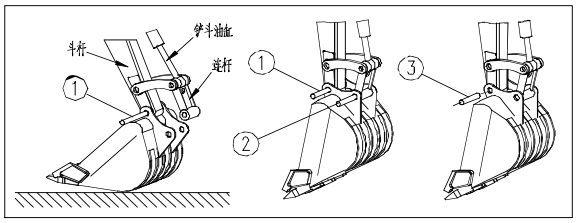
Park the machine on firm, level ground. When performing connection work, clarify signals with each other and work carefully for safety.

Place the excavator in working mode, facing the bucket.

Operate the arm until the holes in the arm and bucket are aligned, then insert a Ø30 mm steel bar ① into the hole.

Raise the boom and arm to suspend the bucket vertically from the arm.

Operate the arm cylinder to align the hole in the link with the connection hole in the bucket. Install pin ②, remove the steel bar ①, and install pin ③.



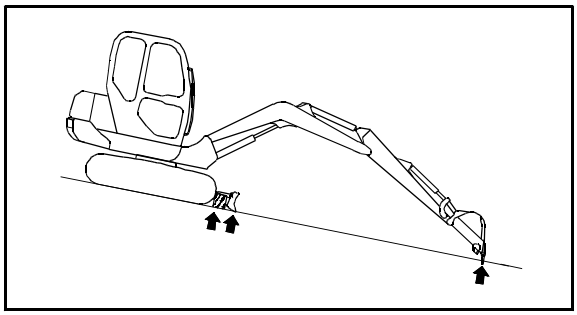
Removal

Park the machine on firm, level ground. Place the bucket so that it just touches the ground. If the bucket is dropped heavily onto the ground, resistance will increase, making the pins difficult to remove.

Remove the double nuts from the locking bolts of each pin on the arm and link, then remove the bolts. Next, remove the arm pin ③ and link pin ②, then remove the bucket.

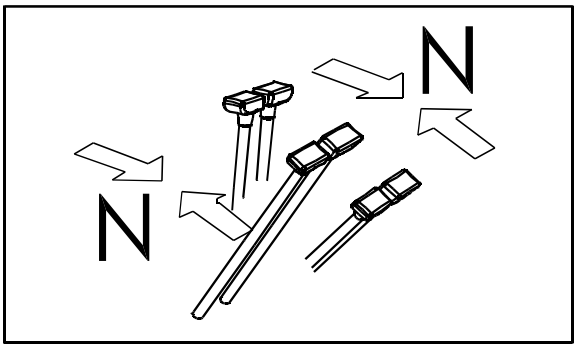
PARKING THE MACHINE

Safety Principles



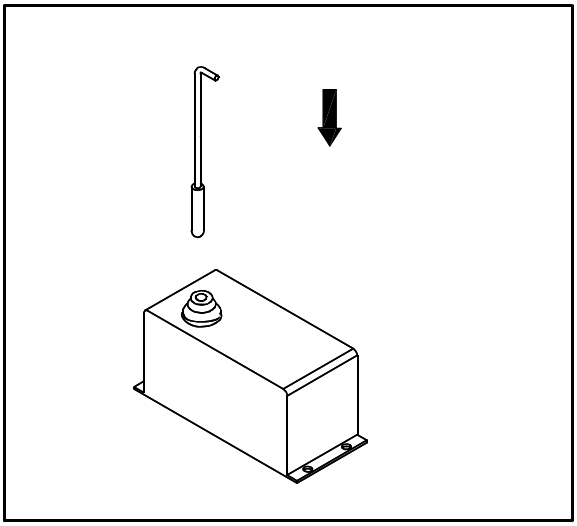
Avoid sudden stops. When parking the machine, leave as much space as possible.
Park the machine on firm, level ground. Avoid parking on slopes. If parking on a slope is unavoidable, place chocks under the tracks and insert the working equipment into the ground to prevent the machine from moving.
Accidentally touching the left/right pilot levers or travel levers can cause the working equipment or machine to move suddenly, resulting in serious injury or accidents. Therefore, before standing up from the seat, always raise the left control console to lock the machine.

Parking Procedure



Move the left and right travel levers to the neutral position to stop the machine.
After working under heavy load, do not shut down the engine immediately. Let it idle for 1– 2 minutes to cool do wn before stopping.
Lower the bucket and dozer blade to the ground.
Push the throttle fully forward, and pull the stop lever fully rearward (if equipped).
Turn the start key to the "OFF" position (all indicator lights will turn off).

After stopping the engine, reset the stop lever.
Lock the platform.
Use the pilot valve safety lever to raise the left control console, placing the machine in the locked state.



AFTER OPERATION

1. Inspection
Check the power level, motor temperature, hydraulic oil temperature, and other readings on the machine’ s digital monitor.
2. Locking the Machine
Lock the following components:
Cabin door
Engine hood
3. Charging
Charging requires a certain amount of time. Charge the machine in a timely manner to avoid insufficient power affecting subsequent work.

LOADING, UNLOADING AND TRANSPORTING THE MACHINE

1. Safety Rules for Loading the Machine

Run the machine at low speed, and operate it slowly during loading/unloading.
Do not load/unload the machine while the auto-warm-up function is active.
If the auto-warm-up function is canceled during loading/unloading, the speed will change suddenly.
Choose firm, level ground for loading/unloading, and maintain a safe distance from the road edge.
Use ramps with sufficient width, length, thickness, and strength. The ramp width should be 1.2 to 1.5 times the track width. To avoid accidents, the loading/unloading slope should be less than 15°, or the length of the slope should be more than 3.5 times its height. When using an earth ramp, compact the soil fully and take measures to prevent the slope from collapsing.
To prevent the machine from slipping on the ramp, remove all mud and debris from the tracks before starting. Ensure the ramp surface is clean and free of water, snow, ice, grease, or oil.
Do not correct the steering on the ramp, as this may cause the machine to overturn. If you must change direction, drive off the ramp, correct your heading, and then re-enter the ramp.
Do not use the working equipment for loading/unloading operations, as this is dangerous.
When on the ramp, do not operate any control levers except the travel levers.
At the junction between the ramp and the transport vehicle, the machine’ s center of gravity will change sud denly, posing a risk of losing balance. Therefore, move slowly when crossing this point.
When slewing the upper structure on the transport vehicle, the vehicle will become unstable. Therefore, retract the working equipment and slew slowly.
Chock the wheels of the transport vehicle, whether loading or unloading.
Secure the excavator on the transport vehicle using wooden chocks, and fasten it with ropes.
Before leaving the seat after completing work or operation, raise the left control console to cut off the pilot control circuit, preventing accidental or unintended lever movement from causing the machine to operate incorrectly.
Before driving up or down the ramp, lower the slew lock lever to prevent the platform from slewing.

2. Loading the Machine

Loading must only be carried out on firm, level ground, maintaining a safe distance from the road edge.

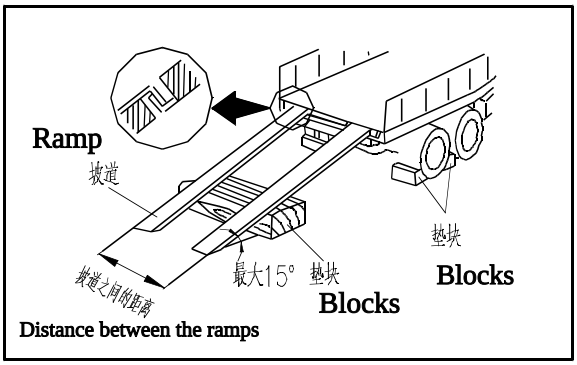
Apply the service brake to the transport vehicle and place chocks under the wheels to prevent it from moving.

Install ramps between the transport vehicle and the machine, ensuring both ramps are on the same horizontal plane. The maximum ramp gradient must not exceed 15°. Adjust the distance between the ramps to match the track centerline.

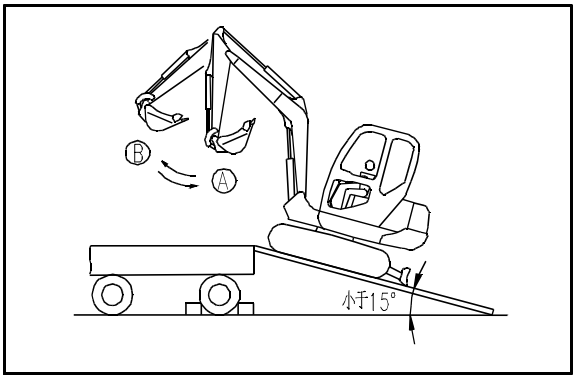
Lock the swing platform.

Align the excavator with the ramp, with the dozer blade at the rear. For safety, move the excavator slowly toward the ramp and drive up until the end of the ramp.

Note: While on the ramp, only operate the travel levers. Do not operate any other levers or pedals.



Stop the machine and extend the arm (to position B in the diagram) to lower the front of the excavator's tracks onto the transport vehicle deck. Take care not to let the working equipment strike the vehicle body as the machine tilts. Continue driving the machine to the specified position on the transport vehicle.



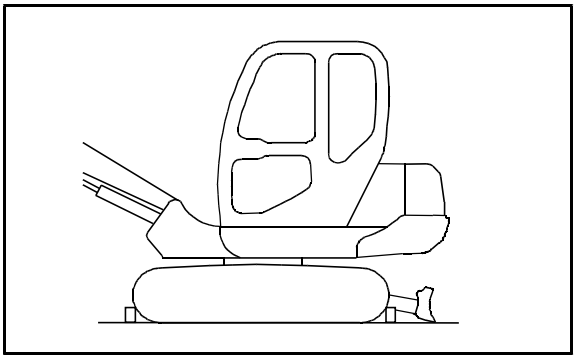
Lower the arm, rest the bucket on the deck, lower the dozer blade, and park the machine in the specified position on the transport vehicle.

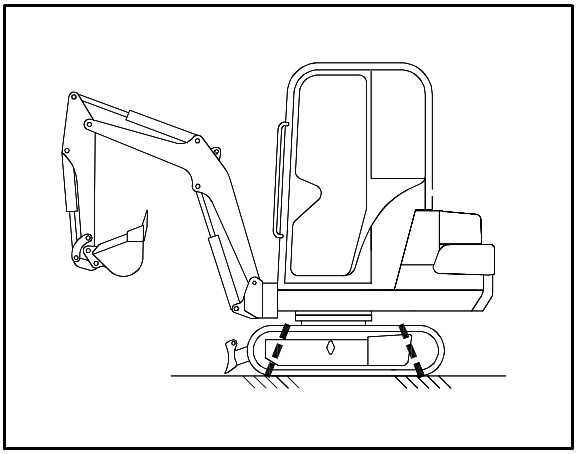
WARNING: Before leaving the seat after completing work or operation, always pull up the safety lock lever to raise the left control console and shut off the pilot control circuit. This prevents accidental or unintended operation of the levers, which could cause the machine to move unexpectedly.

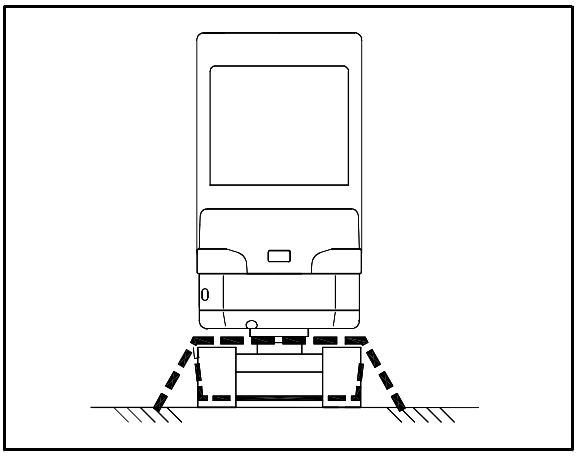
Note: Select a transport vehicle that matches the weight and dimensions specified in this manual.

3. SECURING THE MACHINE ON THE TRANSPORT VEHICLE

Position the working equipment properly.
Turn off the engine and remove the key from the start switch.
Lock the platform.
Lock the cabin door and engine hood.
Place chocks under both ends of the tracks to prevent the machine from shifting during transportation. Secure the excavator to the transport vehicle with steel wire ropes. It is especially important to fasten the machine securely to prevent it from sliding toward one side.







4. UNLOADING THE MACHINE FROM THE TRANSPORT VEHICLE

Perform loading/unloading on firm, level ground, maintaining a safe distance from the road edge.
Apply the brakes to the transport vehicle and place chocks under the tires to prevent movement.
Install ramps between the transport vehicle and the machine. Ensure both ramps are on the same horizontal plane. The maximum ramp gradient must not exceed 15°. Adjust the distance between the ramps to match the track centerline.
Remove the steel cables securing the machine.
Start the engine. In winter, perform a thorough warm-up.
Lower the left control console.
Raise the arm and bucket, and lift the dozer blade.
Check that there are no obstacles within the excavator’ s working range.
If equipped with a platform lock pin, pull it out. Rotate the platform 180° so that the working equipment faces the ramp and the excavator is in the forward direction.
Drive the excavator slowly forward to the top of the ramp. Extend the arm to lower the excavator’ s tracks on to the ramp, then proceed slowly forward to the ground.

5. LIFTING THE MACHINE

A. Safety Precautions

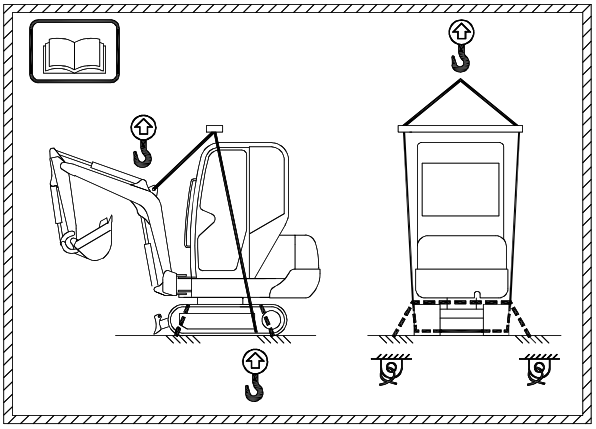
Do not lift the machine while there are people on it.
Ensure the steel wire ropes used for lifting have sufficient strength to support the machine’ s weight.
Do not lift the machine in any posture other than those specified in the following procedures; otherwise, the machine may lose balance.
Do not lift the machine with the upper structure slewed to the side. Before lifting, rotate the platform so that the working equipment is in the same direction as the dozer blade, and the lower tracks are parallel to the upper structure.
Keep the machine level while lifting.
It is dangerous to walk under the machine while it is being lifted. Do not walk under the machine.

B. Lifting Procedure – Standard Specification Machines

Note: The lifting procedure applies to machines with standard specifications. Use dedicated lifting equipment with a lifting capacity sufficient for the machine’ s weight.

For machines equipped with lifting points, lift the machine according to the following steps (as shown in the figure):

Slew the platform so that the working equipment is aligned with the dozer blade. Start the machine and position the working equipment as shown in the diagram: boom fully raised, arm and bucket fully retracted.



Shut down the engine and raise the left control console to lock the machine.

Check that the surrounding area is safe, then dismount from the machine. Close and lock all cabin doors and windows.

Securely hook the lifting eye on the boom (marked with the lifting hook symbol). Then pass the steel wire rope between the drive wheel and the first track roller.

Position the steel wire rope directly over the machine’ s center of gravity (for this model, locate d above the swing center), as shown in the diagram.

Before lifting, check for hydraulic oil leaks at the boom cylinder rod end that could cause the machine to shift.

When the machine lifts off the ground, stop hoisting and check that it remains level and balanced. Once stable, continue lifting.

Operation in Cold / Hot Climates

1. Operation in Cold Climates

Cold climates present special challenges; take extra precautions to prevent severe machine damage. Proper maintenance in cold weather will extend the service life of the machine.
Electrical System: Keep the battery clean and fully charged. Check battery cables and connections. Clean the terminals and coat them with grease to prevent corrosion.
Lubricants: Use lubricants of the correct viscosity at all joints. Use only the oil grades recommended for this machine.
Cooling System: Before operating the machine in cold weather, check the coolant and adjust the mixture ratio. Use antifreeze suitable for the ambient temperature conditions.
Working Equipment: Before operation, start the engine at low idle and run it slowly. Then stop the engine and cycle the working equipment for about 10 minutes, or until all hydraulic cylinders are operating normally, before beginning work.

2. Operation in Hot Climates

To prevent machine damage, follow these requirements:
Ensure the coolant level in the radiator is correct.
Before the hot season begins, inspect the radiator and replace the coolant if necessary.
Remove all dirt and scale from the radiator.
Check the fan operation.
Use lubricants of the correct viscosity.
Use coolant with the proper mixture ratio in the cooling system.
When operating in dusty or other harsh environments, perform frequent inspections.

STORING THE MACHINE

1. Preparation Before Storage

Follow these steps when storing the machine for an extended period:

Clean and rinse all components, then store the machine indoors. If outdoor storage is unavoidable, select a level surface and cover the machine with a tarp.

Apply a thin coat of grease to the metal surfaces of the piston rods. Lubricate all lubrication points.

Remove the battery, fully charge it, and store it in a dry, frost-free location.

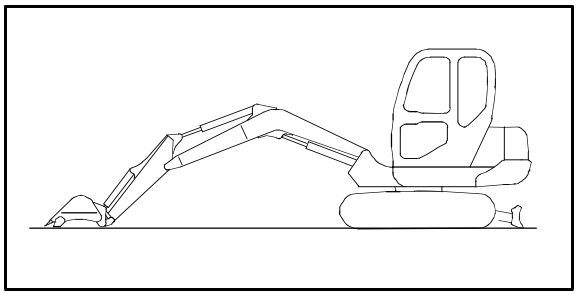
Check the antifreeze performance of the coolant; use antifreeze to ensure protection down to at least -20° C. If the coolant does not contain corrosion inhibitors due to climatic conditions, add corrosion inhibitor (e.g., 5% concentration in accordance with MIL-G4339C).

Start the engine and run it for more than 15 minutes at various speeds with no load. For hydraulic components and gearboxes where the lubricating oil is drained, run them as well before refilling with new oil for storage.

Lock the platform and raise the left control console to lock all levers and pedals.

Set the shut-off valves for attachments installed on the machine to the locked position, and install plugs on the elbows.

Keep the machine clean and store it in a dry location.



Note: When storing the machine, position it as shown in the diagram to protect the cylinder piston rods and prevent them from rusting.

2. During Storage

Monthly Maintenance: Operate the machine monthly to apply a new layer of oil to the surfaces of moving parts. Additionally, charge the battery and check the electrolyte level.
Air Conditioning: For machines equipped with air conditioning, run the air conditioning system.
Track Rotation: Rotate the tracks.

Warning: If the machine is stored indoors and anti-rust measures are necessary, open doors and windows to promote air flow and prevent gas poisoning.

3. Recovery After Storage

When using a machine that has been in storage for a long time, follow these steps before use:
Clean Grease: Wipe off the grease and anti-rust oil on the cylinder piston rod surfaces.
Lubrication: Apply grease to all lubrication points.
Oil Check: If the machine has been stored for a long time, water from the atmosphere may have entered the oil. Check all oil tanks; if water is present, replace all the oil.

Note:
Under normal climate conditions, the storage method described can allow the excavator to be stored for one year. However, after 6 months of storage, rotate all components for 15 minutes without load and add lubricant to all parts.
Before putting a long-stored excavator back into use, perform necessary repairs and inspections. If it has been stored for one year, also drain the gearboxes and replace the oil in the hydraulic circuit.

Technical Fault Causes and Solutions

Fault	Possible Causes	Solutions
1. High Hydraulic Oil Temperature	● Incorrect hydraulic oil used	● Use the correct hydraulic oil
	● Oil circuit blockage	● Consult the company dealer
	● Clogged hydraulic oil filter	● Clean or replace
	● Worn oil pump	● Consult the company dealer
	● Clogged oil cooler	● Clean the oil cooler
	● Faulty oil cooler	● Consult the company dealer
	● Pressure of the main relief valve or swing system relief valve is too high	● Consult the company dealer
	● Oil is too dirty	● Change the oil
	● Faulty sensor	● Replace
2. Hydraulic oil emulsified or foamy	● Air leakage in the pipeline from the tank to the pump	● Inspect and tighten connections
	● Incorrect hydraulic oil used	● Use the correct hydraulic oil
	● Water in the hydraulic oil	● Change the oil
	● Oil level is too low	● Adjust the oil level
3. Low or no oil pressure	● Damaged hydraulic pump	● Consult the company dealer
	● Insufficient oil in the system	● Add oil
	● Faulty relief valve	● Consult the company dealer
4.All components do not work	● Damaged hydraulic pump	● Consult the company dealer
A. Pump makes noise	● Insufficient hydraulic oil	● Add oil
B. Pump noise remains unchanged	● Air leakage in the suction pipe	● Repair or replace the pipe
	● Damaged auxiliary pump	● Replace the pump
	● Hydraulic safety control device does not work	● Inspect and repair the device
5. Each cylinder or motor works weakly or does not work	● Damaged hydraulic pump	● Consult the company dealer
	● Low pressure of main relief valve	● Readjust the pressure
	● Low oil level	● Add oil
	● Clogged suction filter	● Clean the filter
	● Damaged oil seal	● Repair or replace the oil seal
	● Oil leakage caused by damaged piston rod	● Repair or replace the piston rod
	● Faulty pilot valve	● Replace the pilot valve
	● Broken or leaking pilot pipe	● Repair or replace the pilot pipe
6. Both travel devices do not work	● Oil leakage in the central swing joint	● Consult the company dealer
7. One travel device does not work	● Damaged travel device	● Consult the company dealer
	● Damaged control mechanism	● Inspect and repair the mechanism

Fault	Possible Causes	Solutions
8. Abnormal travel	Track is too tight or too loose	Readjust
	Reduced pump performance	Consult the company dealer
	Track frame deformation	Repair or replace
	Gravel or rocks in the track chain	Remove debris and repair
	Control valve oil leakage	Consult the company dealer
	Reduced motor performance	Consult the company dealer
9. Abnormal swing	Reduced pump performance	Consult the company dealer
	Damaged swing motor	Consult the company dealer
	Pilot valve not working	Consult the company dealer
10. Intermittent swing	Worn swing gear	Consult the company dealer
	Damaged swing bearing or ball	Consult the company dealer
	Lack of grease	Consult the company dealer
	Internal leakage in control valve	Consult the company dealer
11. Air conditioning system noise	Loose electrical connections causing	Plug in the connector tightly or repair accordingly
	clutch noise	Adjust tension properly; replace if damaged
	Loose blower fan blades	Reinstall tightly
	Abnormal blower operation	Repair or replace
	Abnormal electronic fan operation	Repair or replace
	Damaged compressor bearing	Replace
	Damaged tensioner bearing	Replace
12. Air conditioning not cooling	Electrical circuit fault	Repair or replace
	Air conditioning switch fault	Repair or replace
	No refrigerant	Leak detection, repair, and recharge
	System blockage	Clean or replace
	Loose or broken belt	Adjust or replace
	Expansion valve fault	Clean or replace
	Abnormal compressor operation	Repair or replace
	Pressure switch fault	Replace
13. Hydraulic components move too slowly	Hydraulic oil is cold	Operate to warm up the oil
	Pilot system pressure too low	Consult the company dealer
	Incorrect hydraulic oil used	Use the correct hydraulic oil
	Pump motor speed too slow	Consult the company dealer

5

MAINTENANCE AND SERVICE

MAINTENANCE BASICS

New Machine Break-In

The first 100 hours of machine operation is the break-in period. Use the machine carefully during this time, avoiding heavy loads and high-intensity work. For the first 50 hours, the machine may only operate at 80% of its rated load. Proper break-in directly affects the machine’ s service life.
After the first 50 hours of operation:
Perform the first scheduled inspection according to the maintenance schedule.
Replace the relevant oils and filters.
Check the contamination level of the hydraulic oil, which must not exceed NAS Class 9. Replace the hydraulic oil if necessary.
When the hydraulic system is not operating, do not run the motor at high speed. Only operate the work equipment once the hydraulic oil temperature exceeds 20°C (68°F).

Operation in Dusty Conditions

When working in dusty environments, follow these steps:
Clean the radiator core frequently to prevent clogging.
Clean and replace filters frequently.
Clean electrical components, especially the battery box and control box, to prevent dust buildup from affecting heat dissipation.
When checking or changing oil, move the machine to a dust-free area to prevent contamination.

Oils and Filters

Use clean oil and grease; do not allow contaminants to enter oil containers.
When changing oil or filters, inspect the old oil and filter for metal shavings or debris. If found, report to the supervisor and take appropriate action.
Do not mix oils of different brands. If changing brands, drain the old oil completely before refilling with the new brand.
Use oil grades suitable for the local climate and temperature.

Hour Meter Readings

Check the hour meter on the instrument panel daily to determine if scheduled maintenance is due.
Use Genuine Parts
Using Yuchai Genuine Parts is essential for ensuring reliable machine operation and extending service life.

Waste Disposal

Environmental protection is encouraged. Pay special attention to waste handling methods:

Collect oil drained from the machine in containers. Do not discharge oil directly onto the ground, or into sewers, drains, rivers, oceans, or lakes.

When handling hazardous materials such as engine oil, coolant, antifreeze, plastic parts, solvents, filters, batteries, and other harmful substances, comply with relevant environmental regulations.

Preventing Items from Falling into the Machine

When performing inspections by opening the fuel tank filler port, take care not to drop bolts, nuts, washers, or tools into the machine. These items can cause damage, malfunctions, or accidents. If anything falls in, remove it immediately.

Before and after inspections, count all tools and parts to confirm nothing is missing and has fallen into the machine.

Periodic Inspection and Maintenance

Performing periodic inspections and maintenance according to the items listed in the Periodic Inspection and Maintenance Schedule is an essential prerequisite for ensuring proper machine operation and extending its service life. Always follow the specified maintenance intervals.

Recheck After Inspection and Maintenance

Failure to perform a recheck after each inspection and maintenance can lead to unexpected faults, serious injury, or damage. Pay attention to the following:

Whether any required inspection or maintenance items were overlooked.

Whether all inspection and maintenance procedures were performed correctly.

Check for tools or parts left inside the machine. Parts trapped in linkage mechanisms are extremely dangerous.

Perform a walk-around inspection for water or oil leaks, and verify that all bolts are tightened.

Maintenance Overview

Engine Oil

Use oil that meets the grade and temperature requirements specified in the "Oil Selection Table" of this manual. Even if the oil appears clean, it must be replaced at the specified intervals.
Prevent contaminants (water, metal particles, dust, etc.) from entering the lubricating oil. Most machine problems are caused by the entry of contaminants.
Do not mix different grades or brands of lubricating oil.
Add oil at the specified level. Too much or too little oil will cause malfunctions.
When changing oil, always replace the corresponding filter element. In particular, when replacing the engine oil filter, add fresh, clean oil that meets specifications to the new filter before installation.

Grease

Grease is used to prevent binding and noise at connection points.
If any part becomes stiff or noisy after prolonged use, apply grease.
Wipe away old grease squeezed out during re-greasing.
Always wipe away old grease from all parts. Sand or dust adhering to grease will cause wear on rotating components.

Coolant

Antifreeze must be used in all climates.
Check the coolant level as specified, and top it up promptly if low. Insufficient coolant will cause engine overheating.
Use a coolant and antifreeze mixture ratio suitable for the ambient temperature.
Do not add coolant while the engine is hot and has not yet cooled down.

Filters

Regular Replacement: Replace filters regularly. However, when operating in severe conditions, replace filters more frequently based on the lubricating oil and hydraulic fluid (sulfur content).
No Reuse: Do not reuse cleaned filter elements (filter cartridges). Replace with new ones.
Metal Debris Check: When replacing filters, inspect the old filter for metal particle adsorption. If metal particles are found, contact the Yuchai Dealer.
Sealing: Do not break the packaging of spare filter elements before use.

Hydraulic System

High Temperature & Pressure: During and after operation, the hydraulic system operates at high temperatures and pressures. When inspecting or maintaining the hydraulic system, always wait for the temperature to drop and release the pressure in the hydraulic cylinder lines first.
Slow Release: When loosening plugs, screws, or hose connections, stand in front of the parts and gradually loosen them to release internal pressure safely.
Pressure Relief: Always expel air to release internal pressure when inspecting or maintaining the hydraulic tank.
Maintenance Items: Inspect the hydraulic oil level, replace filters, and add hydraulic oil.
Hose & Seal Inspection: When detaching high-pressure hoses, inspect the C-rings (seals). Replace them if damaged.
Seal Replacement: When disassembling parts with O-rings or packing seals, clean the mounting surfaces and install new parts.
Hose Bending: Do not twist the hose or bend it to a small diameter during installation. This damages the hose and shortens its service life.

Electrical System

Water Damage: Water intrusion into electrical equipment or damaged wire insulation is extremely dangerous. It causes electric shocks and machine failure. Do not wash the interior of the cab with water. When washing the machine, be careful not to let water enter electrical components.
Battery Maintenance: Inspect and maintain the battery fluid level; replace bulbs, fuses, and relays as needed.
No Unauthorized Parts: Do not install any electrical components other than those specified by Yuchai.
Corrosion Prevention: When working on beaches, carefully clean the electrical system to prevent corrosion.
Power Connection for A/C: When installing cab air conditioners or other electrical equipment, connect them to special power terminals. Do not use power connected to fuses, starter switches, or battery relay circuits.

Wear-Parts

Seals, filter elements, bucket teeth, and cutting edges are subject to wear and must be replaced during scheduled maintenance or when they reach their wear limit to avoid affecting machine performance.

You may order genuine replacement parts from your Yuchwe Equipment dealer by using the part numbers listed in the table or the parts catalog.

Item	Part No.	Part Name	Quantity	Specification
	818-0501200	Hydraulic oil return filter element	1	TL253W
	801-0521500	Suction oil strainer	1	WU-63×100-J
		O-ring rubber seal	2	15×2.65 (GB/T 3452.1)
		O-ring rubber seal	2	18×3.5 (GB/T 3452.1)
		O-ring rubber seal	1	22.4×2.65 (GB/T 3452.1)
		O-ring rubber seal	4	6×1.7 (ISO)
		O-ring rubber seal	4	8×1.7 (ISO)
		O-ring rubber seal	2	11×2 (ISO)
		O-ring rubber seal	3	10×1.9 (GB/T 3452.1)
		O-ring rubber seal	3	14×1.9 (GB/T 3452.1)
		O-ring rubber seal	3	19×2.4 (GB/T 3452.1)
		O-ring rubber seal	1	20×2.4 (GB/T 3452.1)
		Combined sealing washer	3	18mm (ISO 8434-1)
		Combined sealing washer	2	22mm (ISO 8434-1)
		Straight-type pressure oil cup	5	M10×1 (JB/T 7940.1)
		Spare parts kit	1	-

Mandatory Replacement Parts

Certain critical safety components, primarily hydraulic hoses, degrade over time with machine operation. Their material properties change, leading to aging, wear, or deterioration that impairs function and creates hidden safety hazards. These conditions are not always easily detectable, so these parts must be replaced mandatorily once their specified service life is reached.

If abnormal behavior occurs before the service life is met, the part must be repaired or replaced immediately. When replacing hoses, always install the corresponding new seals at the same time.

Oil Selection Table

Select appropriate oils based on ambient temperature, operating conditions, and other factors. Must use oils that meet the specified specifications.

Item	Fluid	Operating Temperature	Viscosity	Recommended Replacement Oil
Hydraulic Oil	Low-temperature area: HS46+ General area: HMP46+	Above -35°C Above -12°C	At 40°C: 46 ± 4.5 (mm²/s)	Complies with Yuchai Enterprise Standard Engineering Machinery Hydraulic Oil Technical Specification
Travel Reducer Lubricating Oil	Heavy-duty vehicle gear oil (GL-5)	Winter & Summer General	-	SAE80W/90
Slewing Reducer Lubricating Oil	Heavy-duty vehicle gear oil (GL-5)	Winter & Summer General	-	SAE80W/90
lubricating oil for guide wheels and support rollers	Axle oil Hz-23 lubrication	Various temperatures	At 5°C: 20 ~ 25 (mm²/s)	-
Grease	Molybdenum disulfide lithium-based grease (No.3)	-20°C ~ 160°C	-	-
Coolant (Antifreeze) (Glycol-type Engine)	JT 225-1996 -25 号 -35 号 -45 号	> -15°C > -25°C > -35°C	-	-

● Oil Capacity Data

Category	Unit	Value
Hydraulic Tank	Liter (L)	17

Tightening Torque

Refer to the values in the table below for the tightening torque of bolts and nuts on the machine. If bolts or nuts are not tightened to the specified torque, the fastened or connected parts may loosen or become damaged , causing machine malfunctions or operational issues.

螺栓强度等级 Bolt Strength Grade	屈服强度 N/mm² Yield Strength (N/mm²)	Nominal Bolt Diameter (mm) 螺栓公称直径 mm							
		6	8	10	12	14	16	18	20
		拧紧力矩 Nm Tightening Torque (Nm)							
8.8	640	9~12	22~30	45~59	78~104	124~165	193~257	264~354	376~502
10.9	900	13~16	30~36	65~78	110~130	180~210	280~330	380~450	540~650
12.9	1080	16~21	38~51	75~100	131~175	209~278	326~434	448~597	635~847

螺栓强度等级 Bolt Strength Grade	屈服强度 N/mm² Yield Strength (N/mm²)	Nominal Bolt Diameter (mm) 螺栓公称直径 mm						
		22	24	27	30	33	36	39
		拧紧力矩 Nm Tightening Torque (Nm)						
8.8	640	512~683	651~868	952~1269	1293~1723	1759~2345	2259~3012	2923~3898
10.9	900	740~880	940~1120	1400~1650	1700~2000	2473~3298	2800~3350	4111~5481
12.9	1080	864~1152	1098~1461	1606~2142	2181~2908	2968~3958	3812~5082	4933~6577

Hydraulic Hose Tightening Torque			
Metric Thread	Steel Tube Outer Diameter	Nm Nominal Torque	min./max
M12x1.5	6	20	15~25
M14x1.5	8	38	30~45
M16x1.5	8 10	45	38~52
M18x1.5	10 12	51	43~85
M20x1.5	12	58	50~65
M22x1.5	14 15	74	60~88
M24x1.5	16	74	60~88
M26x1.5	18	105	85~25
M30x2	20 22	135	115~155
M36x2	25 28	166	140~192
M42x2	30	240	210~270
M45x2	35	290	255~325
M52x2	38 42	330	280~380

Hydraulic Hose Tightening Torque

BSP Thread and Swivel Nuts		
BSPP Thread	Metric Torque Nm	min./max
G1/4	20	15~25
G3/8	34	27~41
G1/2	60	42~76
G5/8	69	44~94
G3/4	115	95~135
G1	140	115~165
G1.1/4	210	140~280
G1.1/2	290	215~365
G2	400	300~500

ORFS Swivel Nut			
UNF Thread	Marking Specification	Nm min	max
9/16~18	- 4	14	16
11/16~16	- 6	24	27
13/16~16	- 8	43	47
1~14	- 10	60	68
1.3/16~12	- 12	90	95
1.3/16~12	- 14	90	95
1.7/16~12	- 16	125	135
1.11/16~12	- 20	170	190
2~12	- 24	200	225

Periodic Inspection and Maintenance Schedule

Perform periodic inspections and maintenance of the machine according to the table below, referencing the total operating hours indicated by the timer. If the machine operates in severe conditions, under high workload intensity, or is equipped with attachments such as hydraulic breakers, the inspection and maintenance cycles for certain components may need to be shortened.

No.	Page	Inspection and Maintenance Content	Maintenance Cycle (Total Operating Hours)						
			10	50	100	250	500	1000	2000
1		**General Inspection**							
		● Condition of battery box, cables and connectors	▲						
		● Condition of motor, cables and connectors	▲						
		● Operation of control instruments and controller	▲						
		● Condition of hoses, joints tightness and leakage	▲						
		● Condition of mechanical parts, controls, and work lights	▲						
2		**Hydraulic System**							
		● Check hydraulic oil level (add if necessary)	▲						
		● Drain water and contaminants from tank				▲			
		● Replace hydraulic oil, clean inlet oil screen							☆▲
		● Replace hydraulic return oil & pilot circuit filter elements				☆	▲		
		● Check system pressure					▲		
3		**Battery**							
		● Check electrolyte level		▲					
		● Check acidity and charging status					▲		
4		**Reducer**							
		● Check oil level and top up				▲			
		● Change oil						☆▲	
		● Check tightening torque of reducer mounting bolts		☆			▲		
5		**Track**							
		● Check and adjust track tension	▲						
6		**Carrier Rollers, Idlers & Bottom Rollers**							
		Check tightening torque of carrier roller mounting bolts		☆			▲		
		Check oil level in idlers and carrier rollers						▲	
7		**Lubrication**							
		Grease all lubrication points		▲					

▲ ☆ ■

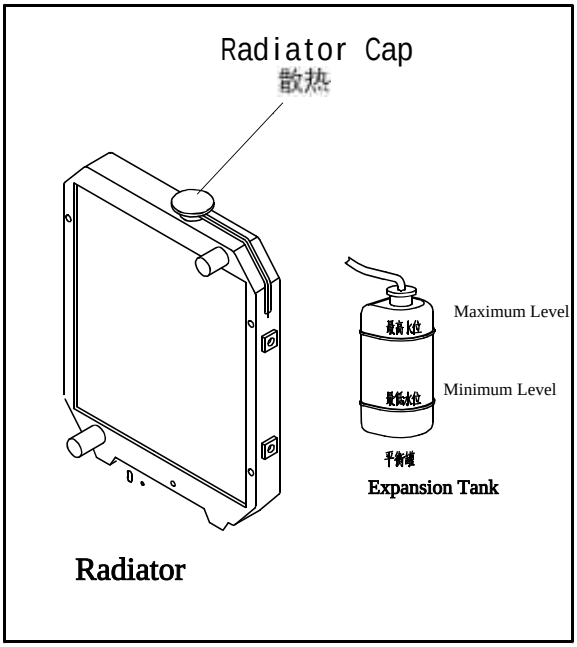
Cooling System

Maintenance Instructions

Check coolant level.....Daily or every 10 operating hours
Inspect condition of rubber hoses and clamps .....Daily or every 10 operating hours
Clean radiator fins .....Every 500 operating hours
Replace coolant..... Once every spring and autumn
Check coolant concentration .....Daily or every 10 operating hours

1. Check Coolant Level

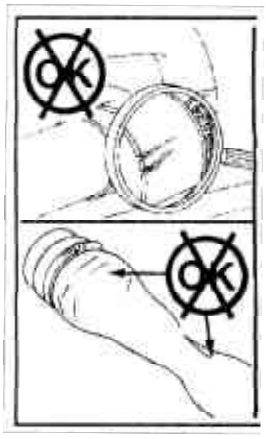
Before initial start-up, check the coolant level inside the radiator. Subsequently, perform this check daily or every 10 operating hours.
Remove the radiator (tank) cap and inspect the coolant level.
When cold: The coolant level in the balance tank should be between the maximum and minimum levels.
Observe the coolant level in the balance tank.
When hot: The coolant level in the balance tank should be between the maximum and minimum levels.



When removing the radiator cap, hot coolant may spray out.
Removal Procedure: Wait until the system has cooled down, slightly loosen the cap to release pressure completely. If the cap is removed too quickly, coolant may spray out, causing serious personal injury.

2. Inspect the Condition of Rubber Hoses and Clamps

Perform the check every 10 operating hours or on a daily basis.
Inspect the rubber hoses: Replace them if there are cracks , signs of aging, or if they have become hardened.
Inspect the hose clamps: Replace them if they are loose, damaged, or deformed.



3. Cleaning and Inspecting the Radiator Core

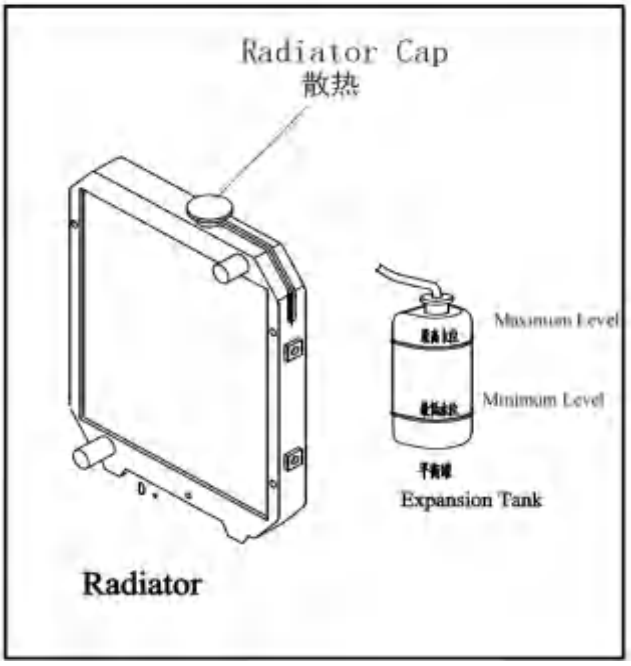
Interval: Every 500 operating hours.
The buildup of dust on the exterior of the radiator (water tank) will reduce cooling efficiency and must be cleaned promptly.
Remove the engine cover, then use high-pressure water or compressed air to blow out debris such as dust and leaves clogging the radiator fins and oil cooler fins. Also clean the protective screen in front of the oil cooler. On machines equipped with air conditioning, clean the condenser fins as well.

> Warning: Direct exposure to compressed air, high-pressure water, or steam poses a serious risk of injury. When blowing out dust or debris with these media, always wear safety goggles, a dust mask, and other protective equipment.

Note: To avoid damaging the radiator fins, keep the nozzle of the high-pressure water or compressed air at a distance greater than 500 mm from the surface of the radiator (water tank).
Damaged radiator fins can lead to leaks or overheating. In dusty environments, inspect the radiator fins daily, regardless of the maintenance schedule.

4. Changing the Coolant

The first coolant change is required after 50 operating hours. Subsequent changes are needed every 1000 operating hours.
Remove the radiator (water tank) cap and open the drain valve to let the coolant flow out.
Flush the cooling system: Close the drain valve, fill the system with dedicated cooling system cleaner, start the engine, and run it at low idle for 10 minutes. Then shut down and drain the cleaning solution.
Reclose the drain valve.
Fill with new coolant, then let the engine idle for a few minutes to allow the coolant to circulate through the entire cooling circuit.
Check the coolant level and top up if necessary.



> **Warning: Never open the radiator (water tank) cap on a hot engine. Allow the coolant temperature to drop below 50°C before removing the cap. Otherwise, high-temperature coolant or steam may spray out, causing serious injury.**

5. Checking Coolant Concentration

Before the start of the cold season, test the coolant concentration. The coolant must be rated for operation at -20°C. If the ambient temperature is lower, increase the proportion of antifreeze.

Warning: Coolant is toxic. Keep away from children and pets. Dispose of waste coolant in accordance with local environmental regulations.

Warning: Antifreeze must be used in all climates!
Do not use water alone as coolant, as this may cause corrosion damage.
River water contains high levels of calcium and other impurities. Using river water will form scale deposits, which adhere to cooling passages in motors, control boxes, and radiators, leading to heat transfer failure and overheating.
Antifreeze is flammable. Keep away from open flames.
If antifreeze gets into eyes, flush immediately with clean water and seek medical attention promptly.

Hydraulic System Maintenance

Maintenance Schedule

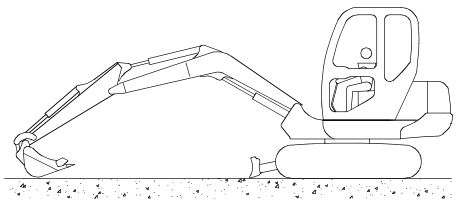
Hydraulic Oil Tank Capacity .....17 Liters
Oil Level Check .....Every 10 hours
Filter Replacement .....Every 2000 hours
Hydraulic Oil Change .....Every 2000 hours
System Pressure Check .....Every 400 hours

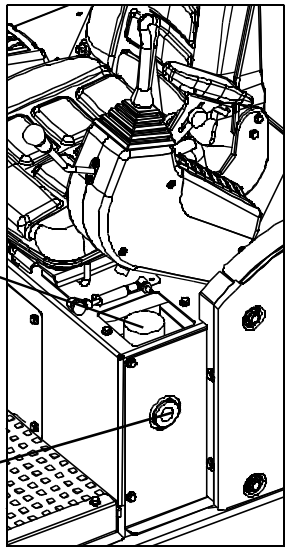
Hydraulic oil or grease injected into the skin can cause severe injury or death. Keep hands/body away from pressurized oil leak points. Use cardboard or paper to check for leaks. If hydraulic oil enters the skin, seek medical attention immediately.

To avoid burns, perform maintenance only when the hydraulic oil is cool (after cooling down or before daily startup). When removing the filler cap, slowly turn it to release internal pressure to prevent oil spray.

1. Checking the Hydraulic Oil Level

Check the hydraulic oil level every 10 hours.
Procedure:
Park the machine on level ground.
Run the machine and move all cylinders back and forth.
Retract the stick cylinder, extend the bucket cylinder, then lower the bucket to the ground and place the dozer blade on the ground. Shut off the engine (as shown in the diagram).
Check the hydraulic oil level through the sight gauge on the hydraulic tank.
Inspection Notes:
Observe the oil level through the sight gauge hole. The oil level must be clearly visible within the gauge range.
Do not overfill: This can cause damage to hydraulic components or oil spray. If overfilled, shut down the machine, let the oil cool, and drain excess oil through the drain plug.
If the level is low or not visible, add oil through the filler port on the top of the hydraulic tank.





Note: The hydraulic oil level will rise as the oil temperature increases during operation. The level should be in the middle of the sight gauge before operation. After normal operation, as the oil warms up, the level will approach the upper mark of the sight gauge.

2. Draining Water and Contaminants from the Hydraulic Oil Tank

Drain water and contaminants from the hydraulic oil tank every 250 hours.
Shut down the machine and allow the oil to cool, or perform the procedure before starting work each day. Vent the air from the tank.
Slowly open the drain valve or remove the drain plug at the bottom of the hydraulic oil tank (as shown in the figure).
Drain water and contaminants until clear hydraulic oil flows out. Close the drain valve or retighten the plug.
If the oil level in the tank is low, top up with hydraulic oil.

3. Changing Hydraulic Oil and Cleaning the Suction Strainer

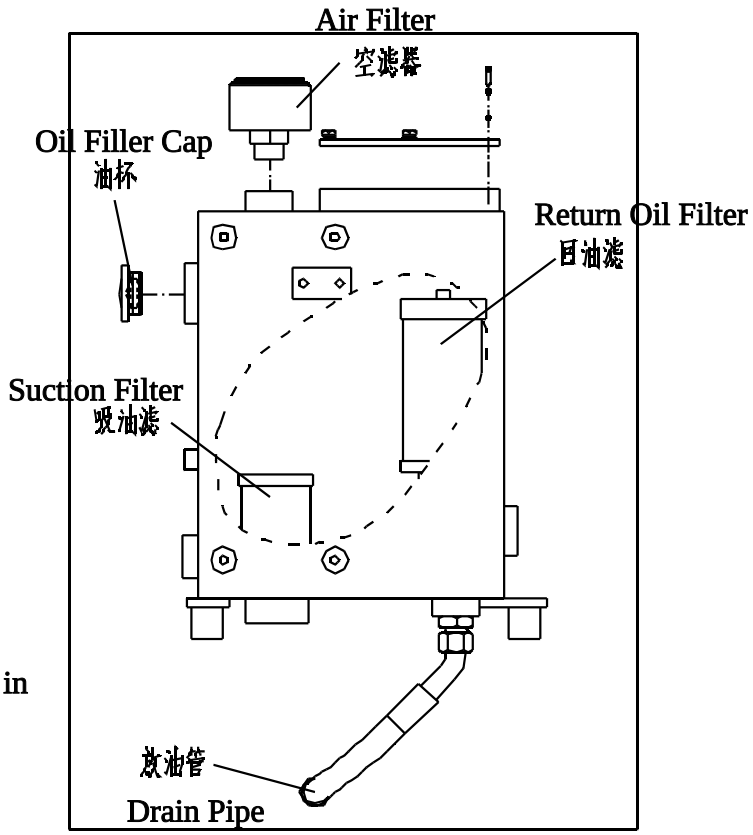
See Figure 5-31 for hydraulic oil change procedures.

> Warning:To avoid burns, only drain the oil when it has cooled or before starting work each day.When removing the filler cap, turn it slowly to release internal pressure and prevent oil spray.Take care not to let water, dirt, sediment, or other contaminants enter the tank during the oil change.

Cleaning the Tank

Drain the hydraulic oil while it is still warm.
Fully extend the piston rods of all hydraulic cylinders.
Shut down the machine; do not operate it.
Remove bolt 1, cover 3, and gasket 4.
Once the tank is empty, remove the strainer 5.
Carefully clean the strainer and reinstall it.
Reinstall the drain plug.
Fill the tank with hydraulic oil to the maximum level.
Start the machine and run it.
Extend and retract all cylinders of the excavator attachment.
Extend the piston rods of the hydraulic cylinders.
Fill the tank to the maximum oil level.
Re-seal the tank and run the machine.
Build up pressure in the hydraulic cylinders to retract the piston rods.

Note: After completing the final step, the oil level in the hydraulic tank will rise slightly.



Replacing the Hydraulic Oil Return Filter Cartridge

First replacement: After 2000 operating hours. Subsequent replacements: Every 2000 hours.
Fully extend all hydraulic cylinder rods, then shut down the machine.
Remove the tank plug to release pressure (perform every 2000 hours during filter replacement/cleaning).
Unscrew filter 6 and install a new cartridge (lubricate the sealing gasket before installation).
Start the engine and operate the excavator functions.
Check the hydraulic oil level and top up if necessary.
Retighten the plug and close the sight gauge cap.
Pressurize the hydraulic tank and retract all hydraulic cylinder rods.

4. Venting Air from the Hydraulic System

A. Venting Air from the Pump

Loosen the bleed screw at the discharge port and check for oil flow. Venting is complete once oil flows steadily.
Retighten the bleed screw after venting.

Note: Running the pump without full oil priming will cause overheating and premature pump failure.

B. Venting Air Between the Pump and Hydraulic Tank

Start the engine and run it at low idle.
Operate the work attachment slowly for approximately 5 minutes to purge trapped air.

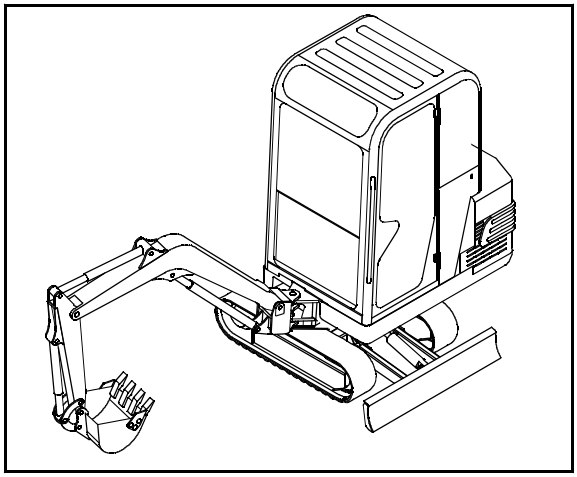
Note: Running the machine at high speed without venting air between the pump and tank will also cause pump overheating and damage.

C. Venting Air from the Cylinders

At low engine speed, extend/retract each cylinder to within ~100?mm of full stroke, repeating 4– 5 times (do not reach full stroke).
Next, operate each cylinder to full stroke 3– 4 times.
Finally, operate each cylinder to full stroke 4– 5 times to fully purge air.
Note: Starting the machine at high speed or operating cylinders to full stroke immediately will cause air to damage piston seals, leading to cylinder failure.

D. Venting Air from the Swing Motor (After Draining Oil from the Motor Housing)
Note: Do not rotate the machine under any circumstances during venting.
Run the motor at idle speed, loosen the bleed screw, and check if oil flows out from the screw.
If no oil flows out, remove the bleed screw and add hydraulic oil into the motor housing.
After venting is complete, tighten the bleed screw.
Finally, run the machine at low idle, and slowly rotate the upper structure left and right at least twice each to fully purge air.
Note: Failure to vent air from the motor may damage the swing motor bearings.
E. Venting Air from the Travel Motors (After Draining Oil from the Motor Housings)

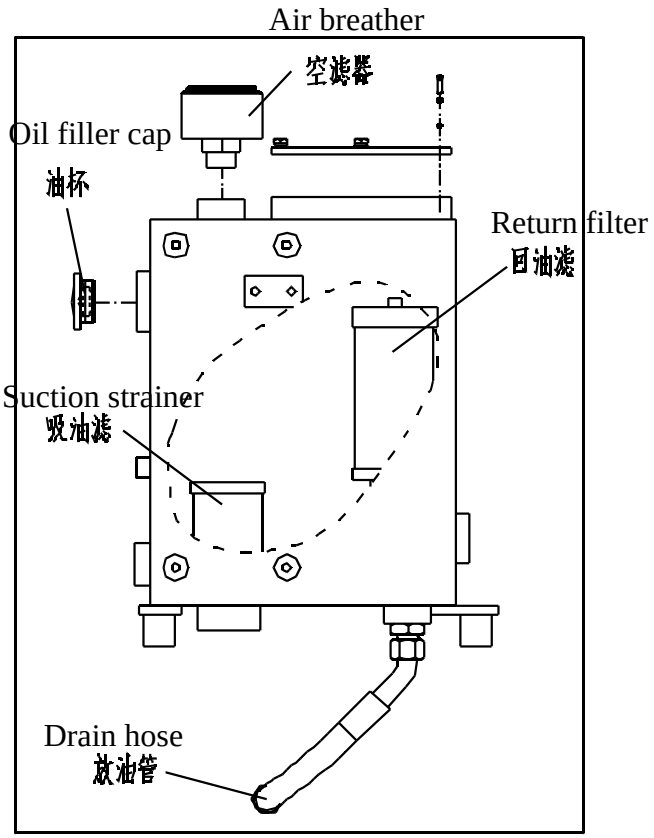
Run the motor at idle speed, loosen the bleed screw. If oil flows out, tighten the screw.
Run the machine at idle, and rotate the work attachment 90° to the side of the track (as shown in the diagram).
Use the work attachment to lift the machine slightly off the ground so one track is just clear of the ground. Run the track under no load for 2 minutes. Repeat this action for both left and right tracks, moving them equally forward and backward.



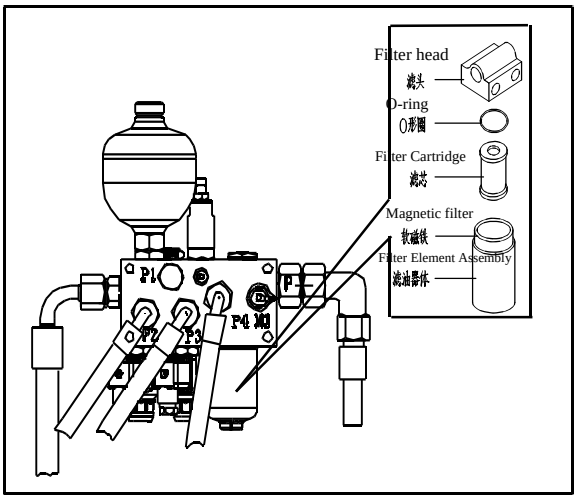
F. Venting Air from Attachments
If an attachment is installed, run the motor at idle and operate the attachment pedal several times (about 10 times) until air is purged from the attachment circuit.

General Notes
If the manufacturer specifies a particular venting procedure, follow that method.
After completing venting, shut down the engine and let the machine sit for at least 5 minutes before operation to eliminate bubbles in the hydraulic cylinders.
Check for leaks and wipe up any spilled oil.
After venting, check the oil level and top up if low.

5. Replacing the Return Filter Cartridge
Initial replacement: After 2000 operating hours; subsequent replacements every 2000 hours.
The return filter is located inside the hydraulic oil tank.
Fully extend all hydraulic cylinder rods, then shut down the machine.
Remove the tank bolt 1.
Unscrew filter 6 and install a new return filter cartridge (lubricate all sealing washers before installation).
Start the engine and operate the excavator functions.
Check the hydraulic oil level and top up if necessary.
Retighten the plug and close the sight gauge cap.
Pressurize the hydraulic tank and retract all hydraulic cylinder rods.



6. Replacing the Pilot Circuit Filter Cartridge
Initial replacement: After 1000 operating hours; subsequent replacements every 1000 hours.
Note: Always release pressure from the hydraulic tank before removing the filter cartridge.
Unscrew the filter housing.
Remove the old cartridge.
Fit the new O-ring into the filter head groove.
Before installing the new cartridge, coat the sealing surface with a thin layer of hydraulic oil, then install the cartridge into the filter head.
Clean the filter housing and magnet; ensure no dirt, dust, or water enters the housing.
Tighten the filter housing to the filter head to 25 − 35 N·m.
Reconnect the hoses, start the engine at low speed, and run continuously for 3 − 5 minutes to purge air from the system.
Park the machine on level ground, shut down the engine, and check the oil level. Top up if necessary, but do not exceed the maximum level.



■ **Replacement Intervals for Hydraulic Oil and Filters When Using Attachments (e.g., Breakers)**
When a hydraulic breaker is in use, contamination in the hydraulic system increases and corrosion accelerates. Compared with standard excavator attachments, the replacement intervals for hydraulic oil and filters must be shortened accordingly to prevent damage to the hydraulic pump and other hydraulic components.

Breaker Utilization Rate	Hydraulic Oil Replacement Interval (Hours)	Filter Replacement Interval (Hours)
50 %	500	500
100 %	250	250

Note: The intervals above apply to 100% bucket and breaker operations. When breaker or bucket work is performed intermittently, the intervals should be adjusted based on the actual duration of breaker or bucket usage.

Attention: When using a hydraulic breaker, the system pressure must be adjusted appropriately according to the breaker's specifications.

Battery

Warnings：Batteries contain sulfuric acid, which is highly corrosive. Keep away from children. Operators must wear protective goggles and rubber gloves. If eyes, skin or clothing come into contact with sulfuric acid, flush immediately with plenty of clean water and seek medical attention for serious cases.
Batteries produce hydrogen and oxygen during charging. Explosion may occur if exposed to open flames or if the vent plug is blocked. Keep batteries away from open flames and avoid short circuits.
The battery case is made of polypropylene plastic, which is flammable. Keep away from open flames.

1. Battery Storage

This series is maintenance-free flooded lead-acid batteries. They should be stored in a dry, clean, well-ventilated environment at 5– 25℃, away from direct sunlight and at least 2 meters from heat sources. High ambient temperatures will severely affect battery performance.

Do not store batteries upside down or on their sides. Do not subject them to mechanical shock or heavy pressure.

The self-life of these batteries at room temperature is 6 months. They can be used without additional charging within 6 months. Batteries stored for more than 6 months can still be used after supplementary charging.

2. Battery Charging

During charging, electrolysis of water produces hydrogen and oxygen, leading to water loss. Higher charging voltage accelerates water loss. This series of batteries requires no water addition during service. Constant voltage charging is strongly recommended; constant current charging should be avoided as much as possible.

2.1 Supplementary Charging

2.1.1 Constant Current Charging

Charge for 2– 4 hours at a current equal to 1/10 of the battery's 20-hour rated capacity (in Amperes).

2.1.2 Constant Voltage Charging

Charge at a constant voltage of 16V for 16 hours (max. current not to exceed 25A).

2.2 Normal Charging

2.2.1 Constant Current Charging

Charge at a current equal to 1/20 of the battery's 20-hour rated capacity (in Amperes) until the terminal voltage reaches 14.4V, then continue charging for 2– 3 hours.

2.2.2 Constant Voltage Charging

Charge at a constant voltage of 16.0V for 24 hours (max. current not to exceed 25A).

Charging Safety Notes
Batteries generate gas during charging. Regularly check that the battery vent holes are not blocked to prevent explosion.
When charging, connect the positive terminal of the charger to the positive terminal of the battery, and the negative terminal of the charger to the negative terminal of the battery. Reverse charging is strictly prohibited.
If the electrolyte temperature exceeds 45℃ during charging, reduce the charging voltage or current appropriately to prevent electrolyte spraying due to overheating.

3. Battery Installation

Before installation, observe the safety markings on the battery label to prevent unnecessary accidents.

Before installation, apply a small amount of petroleum jelly to the terminals to prevent corrosion. Ensure wiring is tight and reliable. Never strike the terminals, as loose terminals may cause acid leakage.

During installation, first connect the positive terminal of the battery to the positive terminal of the vehicle alternator, then connect the negative terminal of the battery to the negative terminal of the alternator.

Secure the battery firmly to the battery rack using top or bottom mounting methods to prevent damage from vibration or loosening.

4. Battery Maintenance

The battery cover is equipped with a state-of-charge indicator:

Green: The battery is in good condition and ready for use.

Black: The battery needs to be charged immediately.

White: The battery must be replaced immediately.

Promptly recharge batteries that have become undercharged during use to prevent performance degradation caused by sulfation.

Prevent overcharging during both use and charging to avoid premature failure due to excessive water loss, grid growth, or active material shedding.

For batteries installed in vehicles that will not be used for an extended period (typically over 15 days), remove them and store in a cool, dry place. Perform a supplementary charge every 3– 6 months (adjust based on indicator status).

For any battery-related issues, contact your Yuchai Heavy Industry dealer for assistance .

Reducer

Maintenance Instructions

Swing reducer lubricant capacity .....0.5 Liters
Travel reducer lubricant capacity .....1 Liter (per side)
Check lubricant level & fill .....Every 250 working hours
Replace lubricant .....Every 1000 working hours
Check bolt tightening torque .....Every 500 working hours

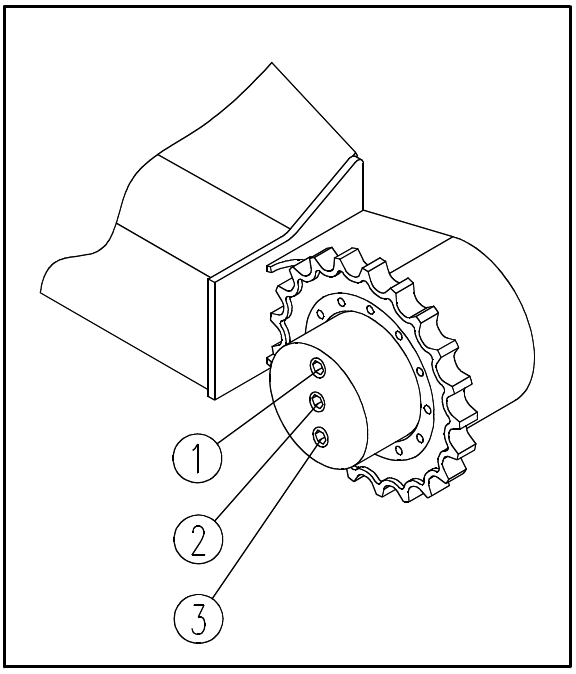
> Warning: The travel reducer will become hot shortly after machine operation. With the motor turned off, the reducer and oil remain hot and can cause severe burns. Always wait for the oil to cool down before starting maintenance. Loosening the vent plug while the tank is under pressure is dangerous.

A: Travel Reducer

1. Check Lubricant Level and Refuel

> Warning: The travel reducer will become hot shortly after machine operation. With the motor turned off, the reducer and oil remain hot and can cause severe burns. Always wait for the oil to cool down before starting maintenance. Loosening the vent plug while the tank is under pressure is dangerous.

Inspection frequency: Perform every 1000 working hours.
Procedure:
Prepare a standard hexagonal wrench.
Park the excavator on level ground and shut down the engine.
Rotate the reducer so that the 3 bolts on its outer side face vertically downward, then shut down the machine.
Remove the plug① and check the lubricant level. The oil level should reach the lower edge of the plug hole.
If the level is low, add lubricant (follow the steps for lubricant replacement as described below).
Clean the plug① and reinstall it tightly.



2. Changing Lubricating Oil (for Each Gearbox)

Initial change: After 1000 operating hours on a new machine.

Subsequent changes: Every 1000 operating hours.

Park the excavator on level ground.

Rotate the reducer so that the 3 plugs on its outer end face are perpendicular to the ground, then shut down the machine.

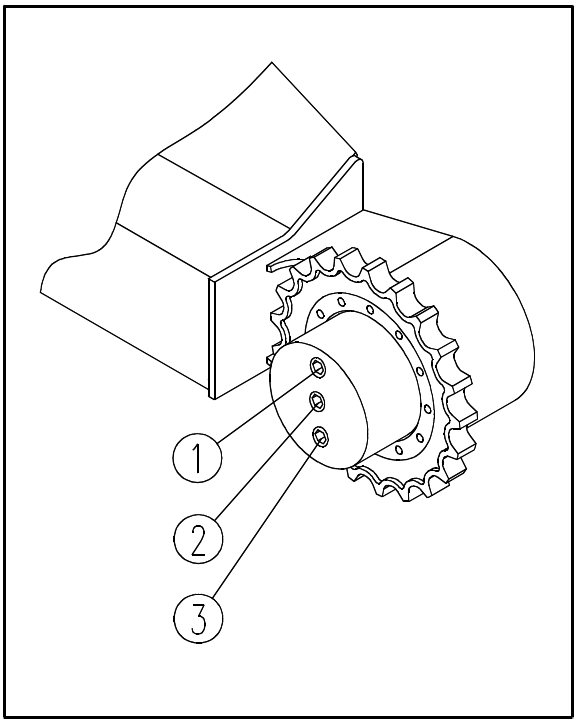
Drain the oil while it is still warm.

Note: Take care to avoid burns from hot oil.

Loosen plug ③ to begin draining oil, then loosen plug ① to fully empty the gearbox.

Loosen bolt ②.

Add the specified lubricating oil through the filler hole ① until oil flows out of the level check hole ②.

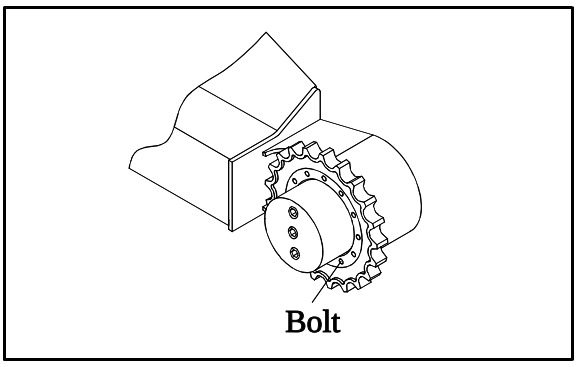


3. Checking the Tightening Torque of Reducer Mounting Bolts

Check the Tightness of Travel Reducer Mounting Bolts

Initial check: After 50 operating hours on a new machine.

Subsequent checks: Every 500 operating hours.

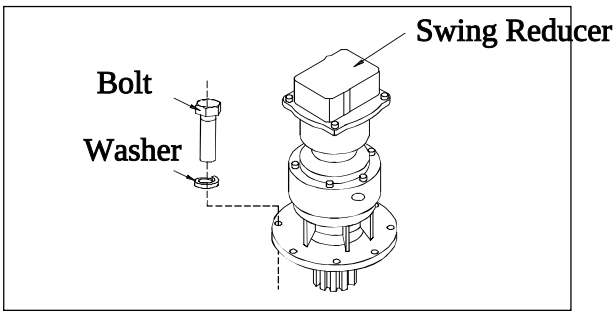


B. Fastening Check of Swing Reducer Mounting Bolts

Initial check: After 50 working hours.

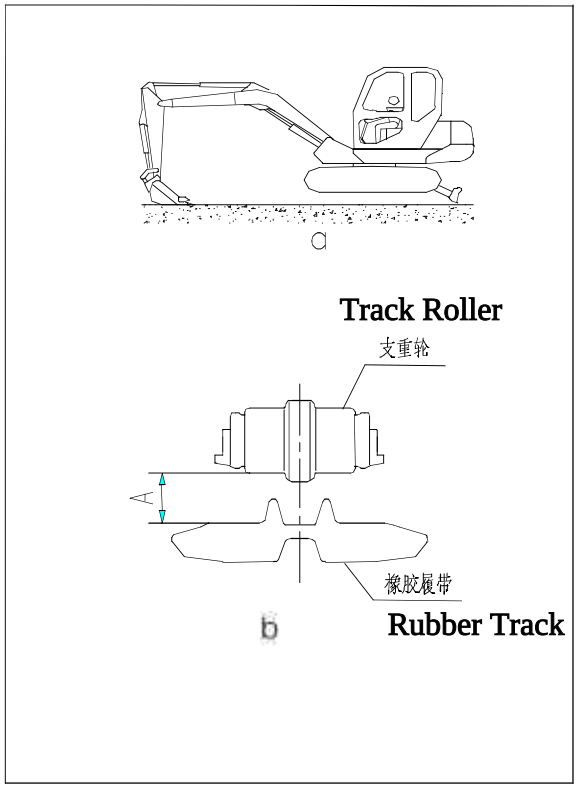
Subsequent checks: Every 500 working hours.

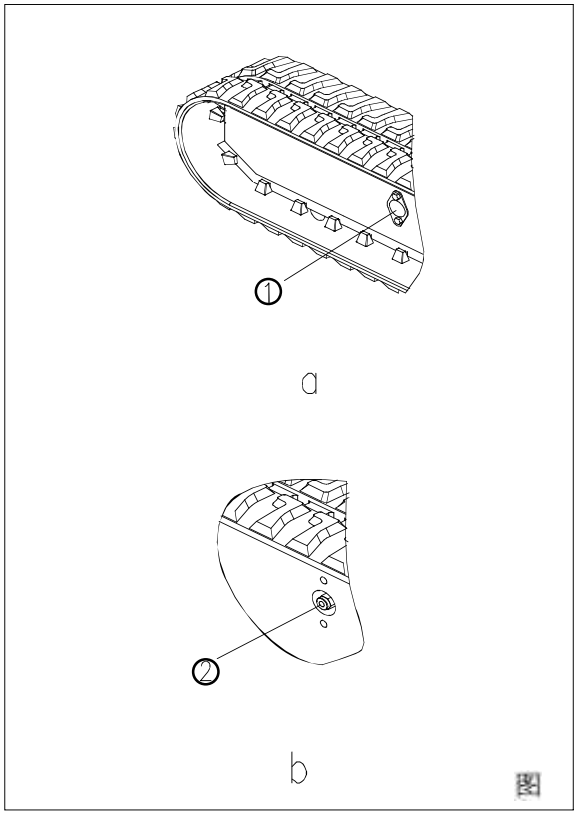
Tighten the bolts connecting the reducer to the platform.



Track

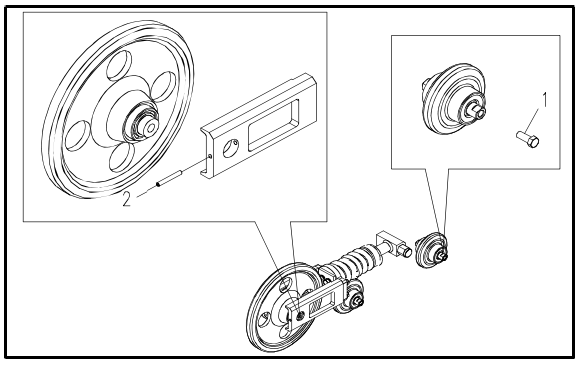
Checking and Adjusting Track Tension
Check every 10 operating hours.
Park the excavator on a firm, level surface.
Position the dozer blade to the rear, and fully extend the dozer cylinder rod until the track is slightly lifted.
Rest the bucket on the ground, and operate the boom cylinder to raise the front of the excavator (Figure 1a).
Adjust the track tension correctly to achieve 10– 15?mm of deflection (A) between the track roller and the tra ck at the midpoint (Figure 1b).
Remove the cover ① from each track frame (Figure 2a) to expose the grease fitting of the tensioner (Figure 2 ②).
To loosen the track: First loosen the fitting ② (Figure 2) to allow grease to drain. Retighten the fitting once the correct tension is achieved.
To tension the track: Connect the included grease gun adapter to fitting ② (Figure 2). Add grease with the gun until the correct tension is achieved.





Track Rollers and Idlers

1. Checking Track Roller Bolt Torque
Initial check: After 50 working hours.
Subsequent checks: Every 500 working hours.
The tightening torque for bolt ① must be 110 N·m.
If any bolt loosening is found:
Remove the bolt.
Thoroughly clean the old thread locker from the threads.
Apply new thread locker to the threaded portion.
Reinstall and tighten the bolt to the specified torque.
If replacement is necessary, the new bolt must be of the same specification and strength grade.



1.Track Roller Bolt
2.Idler Lock Pin

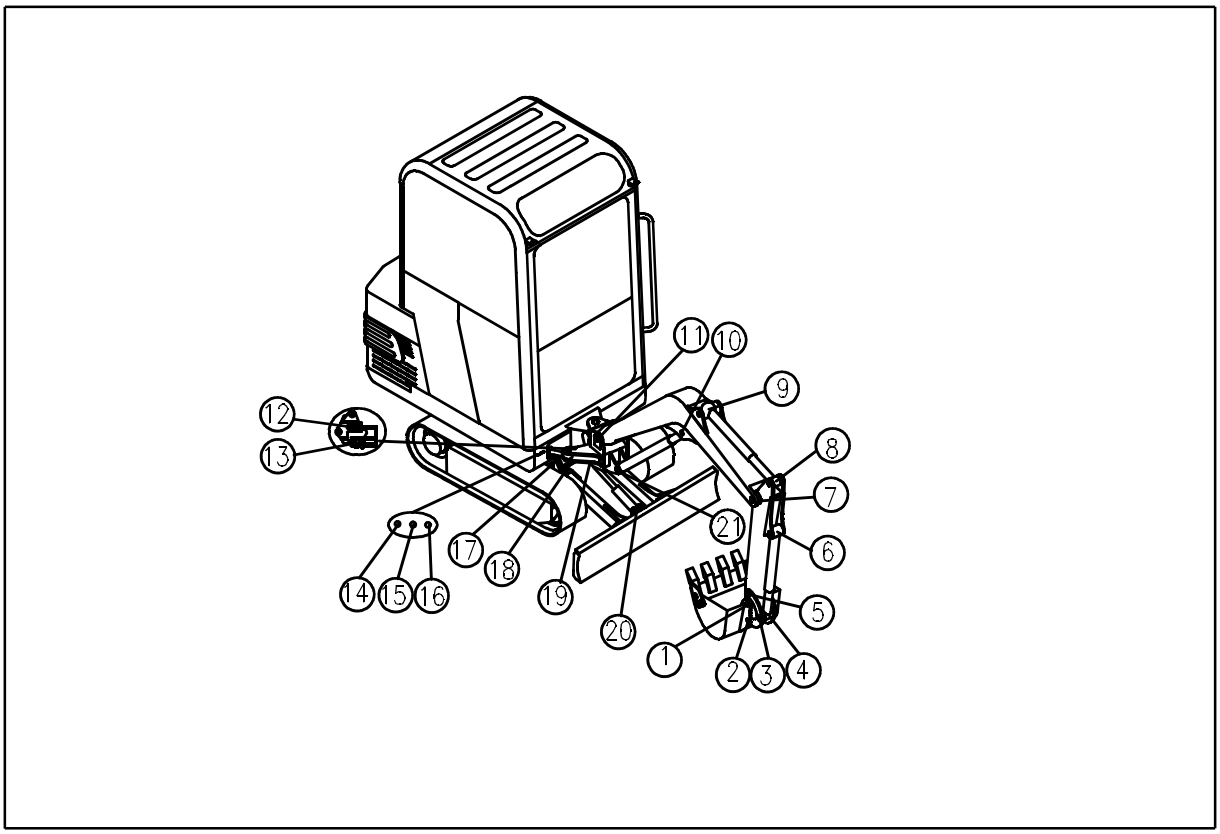
Lubrication

Maintenance Requirement

Lubricate all lubrication points on the machine every 50 operating hours.

Lubrication Procedure

Operate the work equipment and lower the bucket to the ground.
Lower the dozer blade to the ground.
Shut down the engine.
Wipe all grease fittings clean.
Lubricate all points and wipe off any excess grease that is squeezed out.



1 Bucket-to-dipper arm pivot
2 Bucket-to-link pivot
3 Link-to-rocker arm pivot
4 Bucket cylinder head pivot
5 Dipper arm-to-rocker arm pivot
6 Bucket cylinder rod end pivot
7 Boom-to-dipper arm pivot
8 Dipper arm cylinder head pivot
9 Dipper arm cylinder rod end pivot
10 Boom cylinder head pivot
11 Boom-to-superstructure pivot
12 Steering knuckle upper pin
13 Steering knuckle lower pin
14 Offset cylinder pivot
15 Swing motor raceway
16 Swing gear ring
17 Offset cylinder head pivot
18 Dozer blade-to-frame pivot
19 Dozer cylinder head pivot
20 Dozer cylinder rod end pivot
21 Boom cylinder rod end pivot

NOTES

If abnormal noise occurs at any lubrication point, perform additional lubrication outside the regular maintenance schedule.

During the initial 50 operating hours of the machine, lubricate every 10 hours.

When performing excavation operations in water, lubricate all submerged pins both before and after the operation.

When performing heavy-load operations or deep excavation, lubricate all mounting pins on the work equipment before each operation. Then cycle the boom, dipper arm, bucket, and cutting edge several times, and reapply grease. In addition, perform lubrication every 10 hours.

Use Molybdenum Disulfide Lithium-based Grease (No. 3) for general lubrication points. For the swing bearing and dozer assembly, use Molybdenum Disulfide Lithium-based Grease (No. 2).

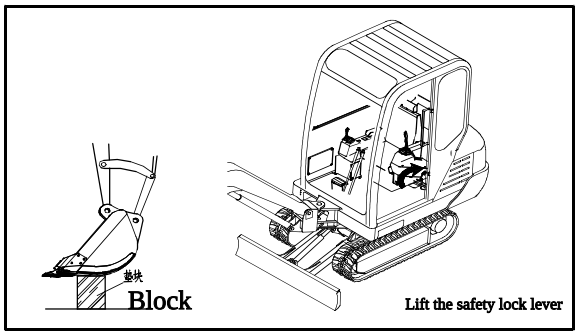
Bucket Tooth Replacement

Replace the bucket teeth before the tooth base wears out.

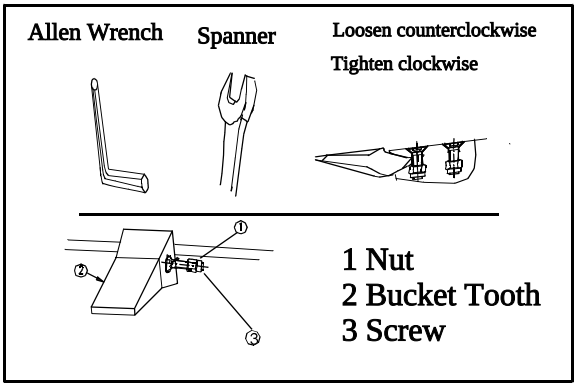
WARNING：Replacing bucket teeth while the work equipment can move accidentally due to misoperation is extremely dangerous.Therefore, before replacing the teeth, shut down the machine, then lift the left control lever box to place the work equipment in a locked state.Wear necessary protective equipment during replacement to prevent lock pins from flying out.

Replacing Bucket Teeth

Place the bottom of the bucket on blocks to facilitate removal. Check that the work equipment is in a stable state, and position the bucket horizontally. Shut down the engine.



Use an Allen wrench and spanner to loosen the screws and nuts on the bucket teeth, then remove the teeth.
Clean the mounting surfaces. Install the new bucket teeth into the tooth base, then use the Allen wrench and spanner to tighten the screws and nuts to secure the teeth in place.



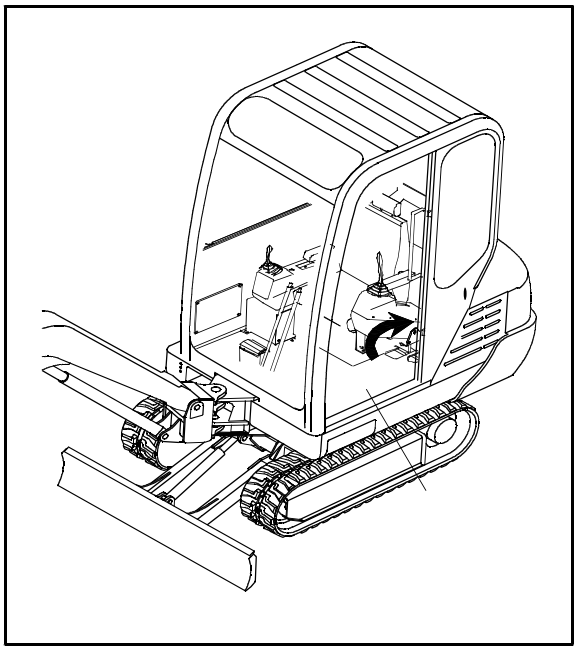
Floor Mat Cleaning

Clean the floor mat whenever it becomes dirty to prevent accidents caused by a slippery floor and falls.

WARNING：Accidentally bumping the pilot valve handles or control levers may cause sudden movement of the work equipment or the machine, leading to serious accidents.Therefore, before removing the floor mat, always park the machine on a firm, level surface. Shut down the engine completely before removing the floor mat.

Floor Mat Cleaning Procedure.

1)Remove the floor mat from the cab.
2)Use a brush to remove dirt, or rinse the mat directly with water.
3)Use a dry mop to thoroughly clean the cab floor.
4)After the floor mat is completely dry, reinstall it in the cab.



6

Attachment Guide

Safety Precautions

Installing attachments or optional parts not approved by Yuchai Equipment will not only reduce the service life of the machine but also cause safety hazards.
When installing attachments not approved by Yuchai Equipment, you must first contact your Yuchai Equipment dealer.
Yuchai Equipment shall not be liable for any accidents or damages if you fail to contact us in advance.

1. Safe Operation of Attachments

Attachments provide powerful auxiliary functions. To prevent serious injury or damage, use attachments correctly.
Read the attachment's operation manual thoroughly. Do not use the attachment until you fully understand the manual. If the manual is lost, request a new copy from the manufacturer or attachment sales company.
Install necessary front guards on the machine according to the attachment type.
Vibration and noise from attachments can make it difficult to communicate with coworkers. Before operation , assign a dedicated signal person and confirm the signals to be used.
Do not perform slewing operations to the side when the attachment is under heavy load, especially on slopes, as this is extremely dangerous.
Compared with machines equipped with buckets, machines with attachments such as breakers have a heavier and unstable load at the front of the work equipment. To avoid the risk of tipping, do not operate the machine with the attachment turned to the side.
When an attachment is installed, the machine's slewing range and center of gravity change, which may cause unexpected movement. Fully understand the machine's condition before operation.
Before starting operation, set up a warning line around the machine to prevent personnel from entering. Do not operate the machine when there are people nearby.
To prevent serious accidents caused by misoperation, do not place your feet on the pedals except when operating the pedals.

2. Removing or Installing Attachments

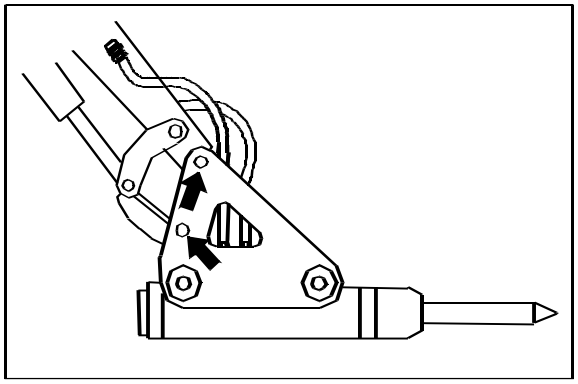
When removing or installing attachments, follow these steps to ensure operational safety:
Perform removal and installation operations on a firm, level ground.
When two or more people are working, confirm the signals and follow them during operation.
Use a crane when lifting or moving heavy objects (over 25kg).
When removing heavy components, support the parts before disassembly. Pay special attention to the center of gravity when lifting with a crane.
Operating with a suspended load from the crane is dangerous. Prepare a support and ensure its safety.
When placing removed attachments or installing new ones, ensure they are in a stable state and will not tip over.
Do not walk under a load suspended by a crane. Stand in a safe location where you will not be injured even if the load falls.

WARNING:Crane operation requires a valid qualification certificate. Untrained personnel are prohibited from operating cranes. For detailed information on removal and installation operations, contact your Yuchai Equipment dealer.

Attachment Installation / Removal Procedure

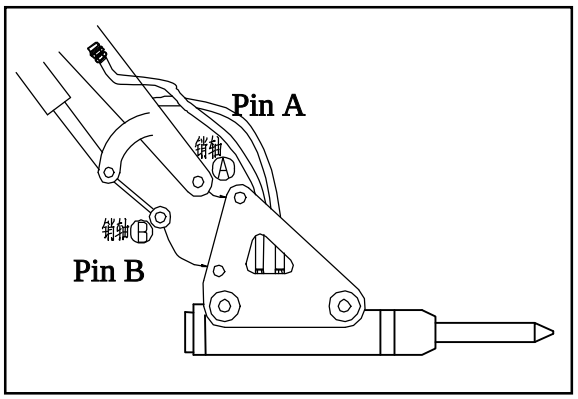
1. Removal Procedure

1)Lower the attachment to the ground and shut down the engine.
2)Turn the ignition switch to the ON position and move the left control lever box to the free position.
3)Operate all work equipment control levers and attachment control pedals through their full stroke (forward, backward, left, right) 2 to 3 times to release residual pressure in the hydraulic circuit.
4)After confirming the oil temperature has dropped, lock the directional valve connected to the inlet and outlet pipes on the dipper arm side.
5)Disconnect the hoses on the attachment side, fit the plug sets with combination gaskets, and tighten them onto the two outlets.
6)Remove the attachment by detaching the 2 mounting pins, then reinstall the bucket.
7)Seal the open ends of the hydraulic breaker hoses with clean plastic bags to prevent dust contamination, and store the attachment properly.



2. Installation Procedure

1)Remove the bucket.
2)Place the attachment on a flat surface, and use Pin A and Pin B to connect the dipper arm to the hydraulic breaker, and the link to the hydraulic breaker, in sequence.
3)After confirming the oil temperature has dropped, remove the plugs from the outlet and inlet ports respectively. Do not allow dust, dirt, etc., to contaminate the hose connections. Replace the combination gaskets with new ones if they are damaged.
4)Connect the hoses to the attachment side. When connecting, check the oil flow direction and ensure no misconnection.
5)Unlock the directional valve connected to the inlet and outlet pipes on the dipper arm side.
6)After installing the attachment, confirm that the hydraulic oil level in the tank is at the correct position.



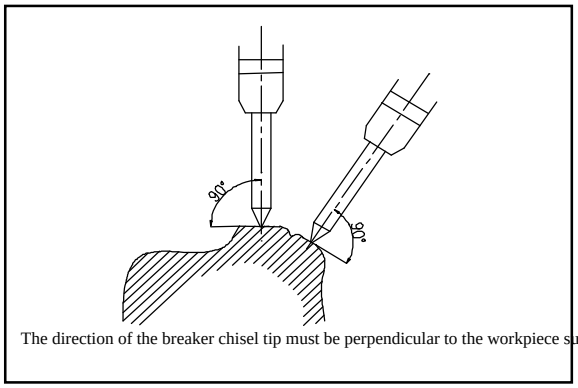
Attachment Operation Guide

This section outlines the precautions to be observed when operating an excavator fitted with attachments.
NOTE: Select attachments that are compatible with your host machine. Not all machine models support all attachments. For assistance with selecting the correct attachment and machine model, contact your Yuchai Equipment dealer.

Hydraulic Breaker

1. Hydraulic Breaker Operation Guide

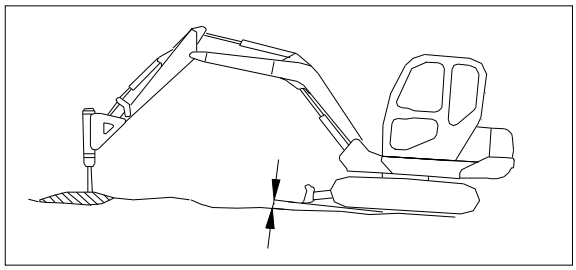
The hydraulic breaker is the most common work attachment, widely used for building demolition, road breaking, tunneling, steel slag and rock crushing, and quarry operations.
Maintain perpendicular chisel alignment during breaking
Ensure the direction of the chisel tip is perpendicular to the workpiece surface at all times. If the chisel is at an angle to the surface, it may slip, causing chisel damage and piston seizure.
Select the proper striking point, confirm the chisel is firmly seated, then begin breaking.
During operation, continuously adjust the bucket cylinder to keep the chisel penetration direction aligned with the breaker body.



The direction of the breaker chisel tip must be perpendicular to the workpiece surface.

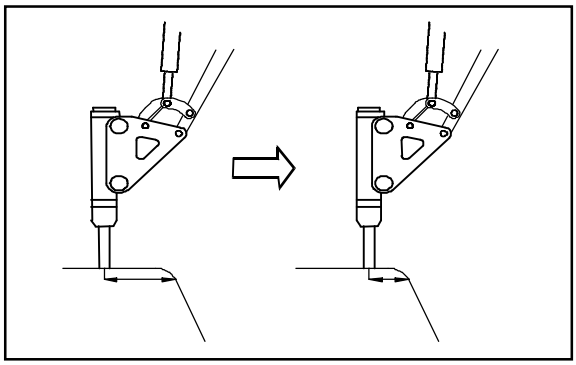
2.Control machine lift during impact

When applying impact, press the chisel firmly against the striking surface, lifting the tracks approximately 5 cm off the ground. Do not lift the machine excessively.



3.Avoid prolonged impact on the same point

If the chisel fails to penetrate or break the surface within 1 minute of continuous impact on the same spot, reposition the breaker and strike near the edge of the material instead.

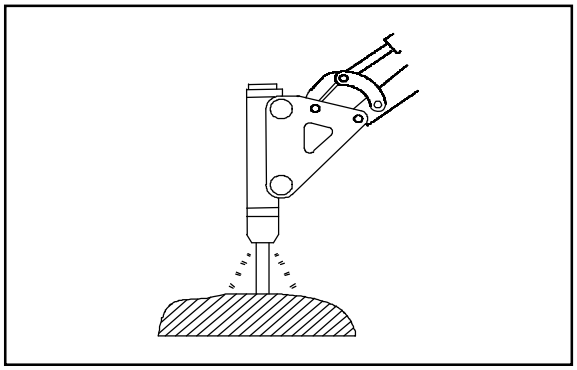


4. Maintain proper contact between the chisel and the impact surface at all times

Never apply impact force when the chisel is under no load. When the rock or target material is completely broken, immediately stop the breaker's striking action.

Continuous aimless striking will only cause loosening and damage to the front body and main body bolts, and may even damage the excavator itself.

In addition to improper insertion, wobbling the breaker during operation will also cause aimless striking and lead to the above damage.

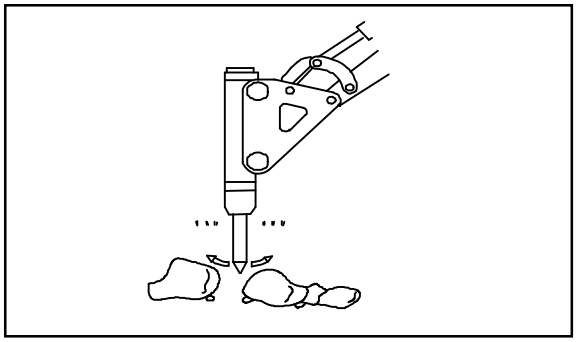


2. Hydraulic Breaker Operation Prohibitions

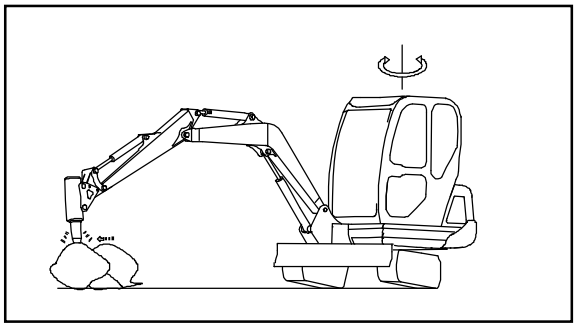
To ensure a long service life for the machine and safe operation, never operate the machine in any of the following ways:

NOTE: Do not extend any cylinder to the end of its stroke. Always leave approximately 5 cm of stroke remaining.

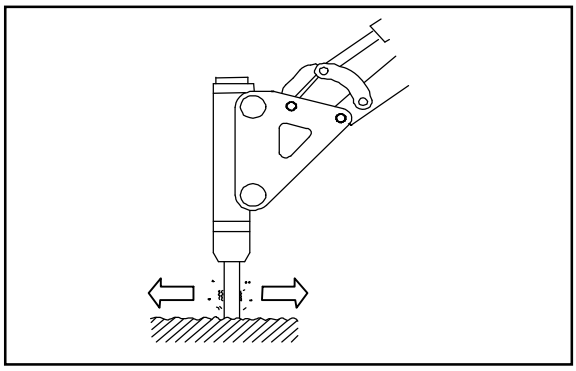
1)Do not use the breaker to push heavy objects or large rocks.



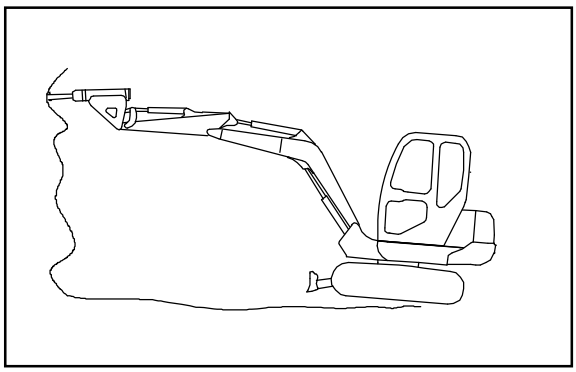
2)Do not operate using swing force.



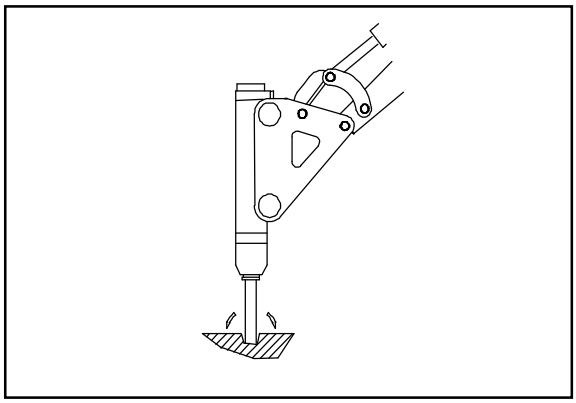
3)Do not move the chisel while performing impact operations.



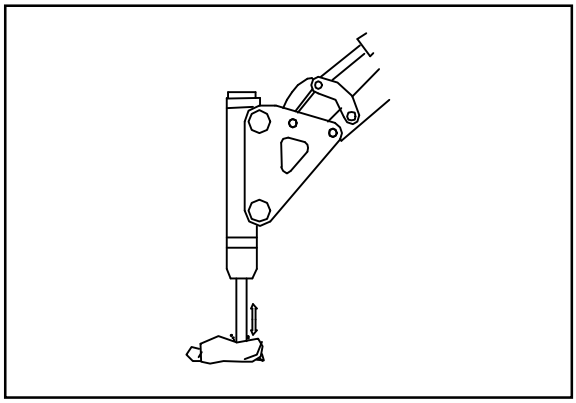
4)Do not apply impact force horizontally or upward.



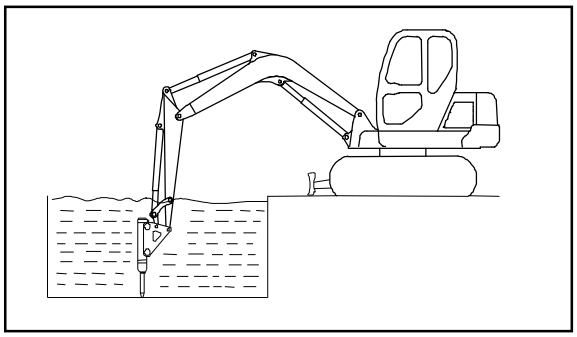
5)Do not swing the breaker when the chisel is embedded in rock.



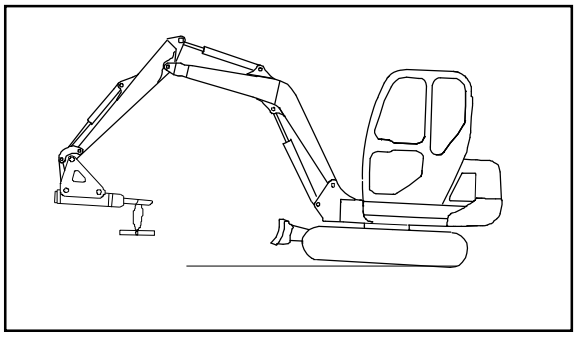
6)Do not perform pecking operations.



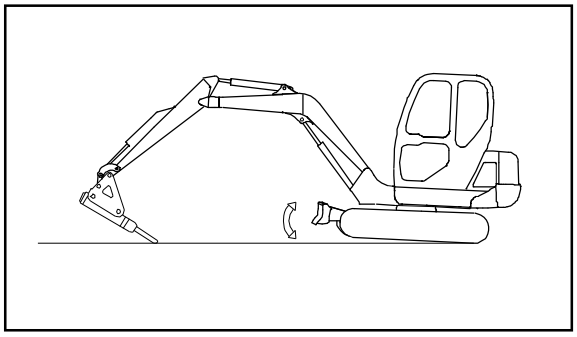
7)Do not perform breaking operations in water or muddy conditions.



8)Do not use the breaker as a lifting tool for heavy objects.

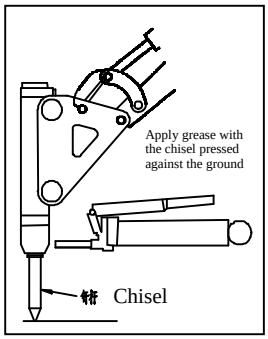


9)Do not fully extend the bucket cylinder to lift the machine off the ground.



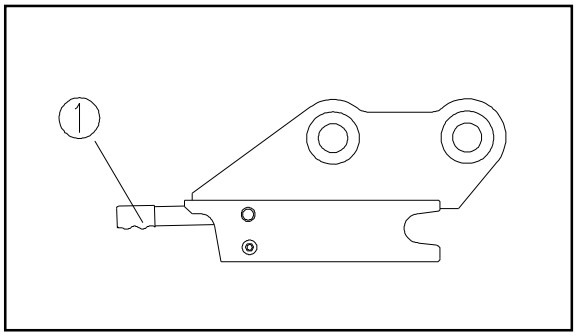
Daily Inspection of Hydraulic Breaker

Perform the daily inspection and maintenance of the hydraulic breaker in accordance with the table below.

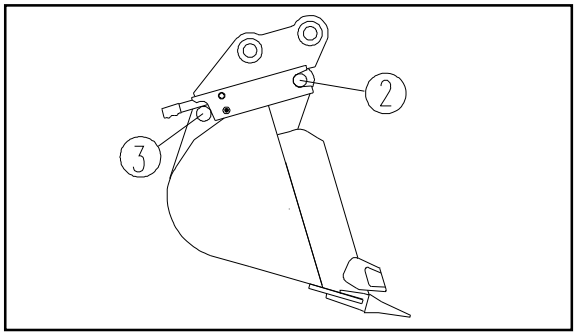
No.	Inspection or Maintenance Item	Inspection Points	Maintenance Method
1	Check bolts and nuts for looseness or loss	Main body bolts and side plate bolts	Tighten the bolts or replace new bolts as needed
2	Check hoses and components for looseness, damage or oil leakage	Hydraulic pipeline of the breaker High-pressure oil pipes	Tighten the loose parts thoroughly Replace the severely damaged parts
3	Lubrication 	Before operation and after every 2-3 hours of continuous operation, lubricate with 10ml of lubricating oil each time. Inject lubricating oil 5 -10 times.	Inject lubricating oil from the grease injection port on the front of the breaker
4	Check hydraulic oil capacity and contamination	Hydraulic oil condition Color of hydraulic oil	The quality of hydraulic oil varies with working environment. If the oil quality deteriorates significantly, drain the hydraulic oil from the tank, clean the oil tank, and refill with new hydraulic oil

Quick Coupler

1)Pry up lever ①.



2)Insert the bucket pins into positions ② and ③, then lower the lever. The bucket is now installed.



Bucket Removal

1)Use a crowbar to pry up lever ①.

2)Remove the bucket.

Clamshell Bucket

The clamshell bucket is designed for excavation or loading on one side in trenches or confined spaces. It is suitable for civil engineering projects such as cleaning debris in sewage ditches and unblocking access for water and sewer lines.

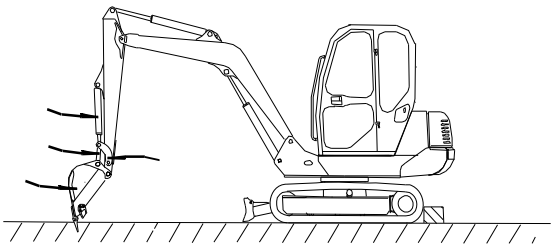


图1

1. Clamshell Bucket Installation

1)First, remove the bucket, bucket cylinder, link, rocker arm, or other attachments (as indicated by the arrows in Figure 1).
2)Install the clamshell bucket directly onto the dipper arm (as indicated by Arrow ① in Figure 2).
3)Install the clamshell bucket hose assembly onto the dipper arm connection mount (as indicated by Arrow ② in Figure 2).
4)Connect the original bucket cylinder's rod-side (large chamber) inlet port to the clamshell bucket cylinder's large chamber inlet port, and connect the original bucket cylinder's head-side (small chamber) inlet port to the clamshell bucket cylinder's small chamber inlet port (as indicated by Arrow ③ in Figure 2).

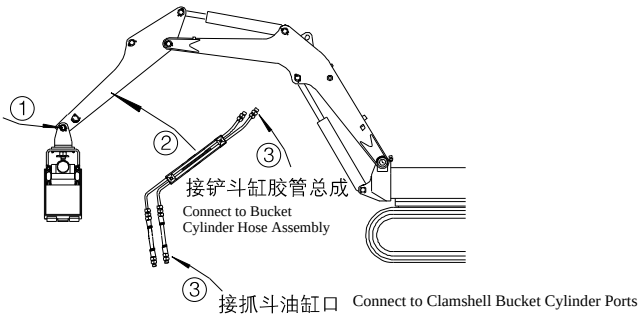
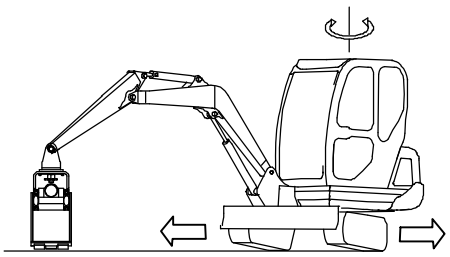


图2

2. Clamshell Bucket Operation

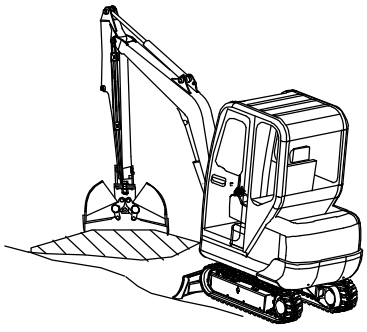
Operate the left pilot valve handle to control the forward/backward movement of the dipper arm. Operate the right pilot valve handle to control the boom lift/lower and the opening/closing of the clamshell bucket for excavation operations.



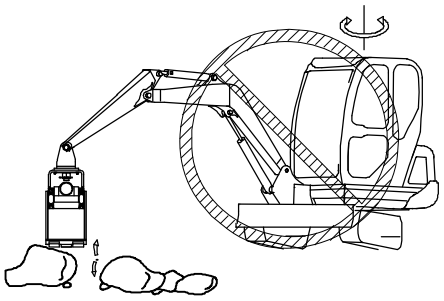
3. Clamshell Bucket Operation Precautions

1)For safety, avoid sudden travel, slewing, and stopping of the machine.

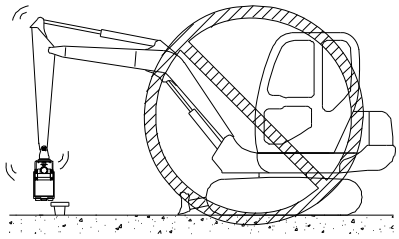
2)During excavation, keep the bucket teeth perpendicular to the working surface.



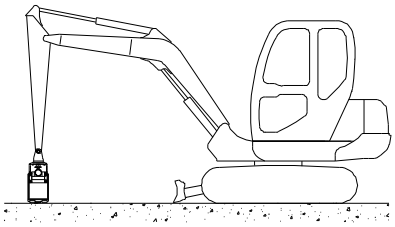
3)Do not use the clamshell bucket to crush rocks or cut into soil.



4)Do not use the clamshell bucket for pile driving or pile pulling.



5)Before leaving the machine, open the clamshell bucket and lower it to the ground.

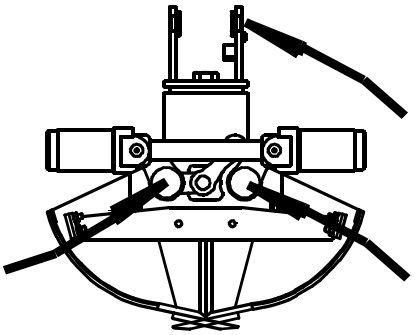


NOTE: Remove the clamshell bucket from the dipper arm when transporting the machine.

4. Clamshell Bucket Maintenance

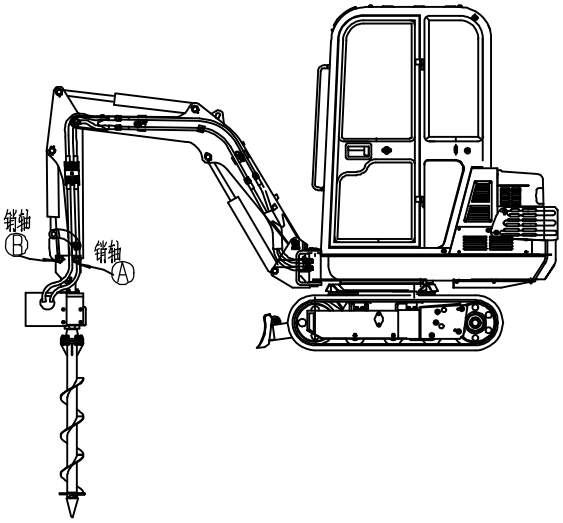
● Lubrication

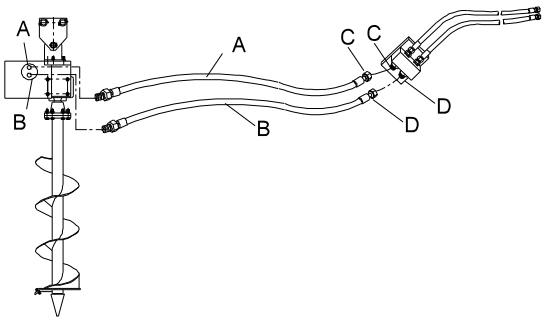
1)Park the machine on a firm, level surface, lower the work equipment to the ground, then shut down the engine.
2)Use a grease gun to inject lubricating grease into the grease fittings as indicated by the arrows in the diagram.
(There are 2 grease fittings on each side of the clamshell bucket, plus 1 grease fitting on the pin connecting the bucket to the dipper arm.)



Auger Attachment

1. Auger Installation
1)Remove the bucket or other attachments.
2)Place the attachment on a flat surface. Use Pin A and Pin B to connect the dipper arm to the auger, and the link to the auger, in sequence.
3)After confirming the oil temperature has dropped , remove the plugs from the outlet and inlet ports respectively. Do not allow dust, dirt, etc., to contaminate the hose connections. Replace the combination gaskets with new ones if they are damaged.
4)Connect the hoses to the attachment side. When connecting, check the oil flow direction and ensure no misconnection.
5)Unlock the directional valve connected to the inlet and outlet pipes on the dipper arm side.
6)After installing the attachment, confirm that the hydraulic oil level in the tank is at the correct position.





2. Auger Operation

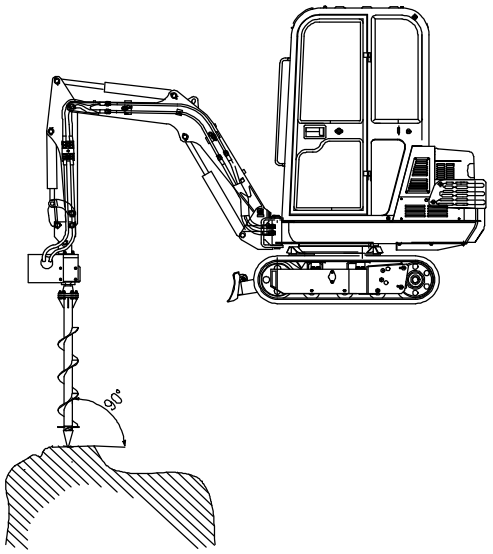
1)Operate the boom and dipper arm pilot valve handles to lift the auger vertically. Manipulate the boom cylinder to press the drill bit lightly against the ground, lifting the front of the machine to apply downward pressure to the drill bit during drilling.

2)Depress the auxiliary control pedal. The auger will start working (rotating) once a certain depth is reached. While the auger is still rotating, operate the boom and dipper arm cylinders to pull the drill bit out of the hole.

3)If mud adheres to the auger, operate the solenoid valve to reverse the rotation of the auger, and the mud will dislodge.

3. Auger Operation Precautions

1)Maintain vertical alignment during drilling
Ensure the drill bit direction is perpendicular to the work surface at all times. An angled position will cause auger damage. Select the proper drilling point, confirm the drill bit is stable, then begin operation.
Continuously adjust the bucket cylinder during operation to keep the auger penetration direction aligned with the auger body.



2)Do not continue drilling without sufficient depth
If the desired depth is not reached, pull the auger out first, then restart the operation.

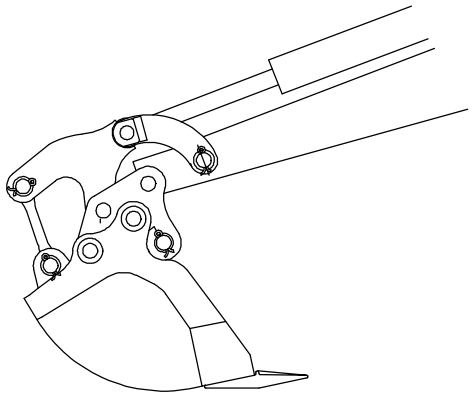
3)Use only in suitable ground conditions
The auger connection top is only for drilling in muddy ground. Never use it on rock or mixed rock/soil conditions.

4)Never pull the auger while it is not rotating
Pulling the auger when it is stationary will cause bending and damage.

5)Keep the auger connection mount vertical during drilling
This prevents auger detachment and avoids damage to the mount bolts.

6)Prohibit angled or skewed drilling
Never use the auger for crooked or diagonal drilling.

Backhoe Bucket with Scraper



1. Backhoe Bucket Installation

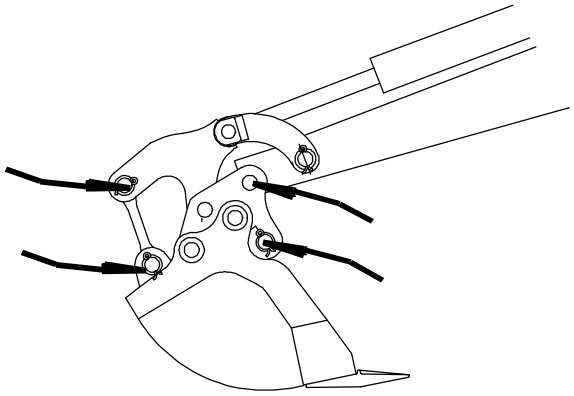
The installation method is the same as that of a standard bucket.

2. Backhoe Bucket Operation

Operate the right pilot valve handle:
When moved to the right, the backhoe bucket scraper retracts inward and the bucket curls outward.
When moved to the left, the backhoe bucket scraper extends outward and the bucket curls inward.

3. Backhoe Bucket Maintenance

Lubrication
1)Park the machine on a firm, level surface, lower the work equipment to the ground, then shut down the engine.
2)Use a grease gun to inject lubricating grease into the grease fittings (as indicated by the arrows in the diagram on the right).



广西玉柴装备科技有限公司
GUANGXI YUCHAI EQUIPMENT TECHNOLOGY CO., LTD.

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地址：中国广西玉林市天桥路168号（537005）
电话： 0775-3220068