HYDRAULIC EXCAVATOR

U10

OPERATOR'S MANUAL

广西玉柴装备科技有限公司

GUANGXI YUCHAI EQUIPMENT TECHNOLOGY CO,.LTD.

warn

Incorrect operation of this machine may result in injuries or fatalities. The following precautions must be observed prior to using the machine:

- Always remember the safety procedures and correct usage guidelines for this machine.
- Read and understand the safety instructions for operating this machine.
- Understand and familiarize yourself with all safety signs on the machine.
- Remove non-essential personnel from the work site.
- Prior to operating this machine at the workplace, you must have completed safety training.

You are responsible for complying with relevant laws and regulations, and for following Yuchai Equipment's guidelines on machine operation and maintenance.

Catalogue

4. Operation Manual

5. Maintenance

6. Attachment Guide

Product Model Composition and Its Representative Meaning

The product model U consists of two parts: U and 10.
Where: U — product category code: hydraulic excavator (hereinafter referred to as 'excavator');

10—The main parameter code is 10 (Note: The main parameter code of excavators is expressed as the total machine weight in tons multiplied by 10).

Random File List

filename	quantity
operating instruction	1
Three Guarantees Certificate (Warranty Manual)	1
work certificate	1
Instruction Manual (Engine)	1
Parts Catalog	1

Standard Configuration and Optional Accessories

project	standard configuration	apolegamy
engine	Kubota D722 10.4kW/250Orpn	Euro 4/Euro 5/T4 emission standards
basket	0.02 ㎥ bucket capacity	0.01 ㎥ bucket capacity
		0.04 ㎥ bucket capacity
dipper	900mm long boom	

Random tool list

order number	Name Quantity Quantity	Name
1	lever type grease gun	1
2	8X10 wrench	1
3	13X16 wrench	1
4	Wrench 18×21	1
5	22X24 wrench	1
6	27X30 wrench	1
7	Single-slot screwdriver 200X8	1
8	Cross-taper screwdriver 200X8	1
9	The tool bag measures 400x235x40 cm.	1
10		
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Preface

To users

Dear user:

shalom !

Welcome to Yuchai Equipment Excavators. We appreciate your strong support for our business.

This manual provides safety guidelines and instructions for proper operation and maintenance of the machine. Before the first startup, operation, or any maintenance, please thoroughly review this manual to fully understand the safety protocols, operational procedures, and maintenance requirements until you are fully proficient. For easy access, store this manual in a designated location for qualified operators to review regularly. If the manual is lost, damaged, or illegible, contact our company or authorized agents immediately. When transferring the machine, include this manual to ensure the next owner can use it correctly.

You should commission Yuchai Equipment's authorized agents or service centers to perform major repairs and adjustments, using only genuine parts and spare components provided by the company. While the use of non-genuine parts may not cause immediate issues, it could lead to a series of adverse consequences over time. Yuchai Equipment shall not be liable for any machine malfunctions caused by non-genuine parts or repairs at unauthorized facilities, even during the three-year warranty period.

Yuchai Equipment adheres to the principle of "customer first," continuously improving its products to deliver the best possible offerings to users. Any necessary enhancements may be implemented

at any time. For products currently in sale, no documentation updates or prior notifications will be provided.

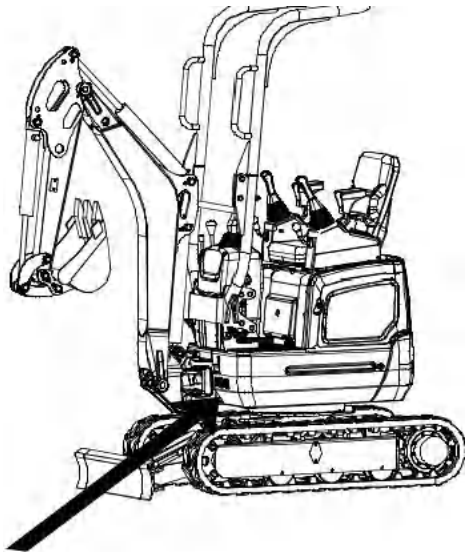
We sincerely hope that with your proper use and careful maintenance, this machine will serve you better and create greater value.

Guangxi Yuchai Equipment Technology Co., Ltd.

Product Information

When you need to check the basic information of the machine, you can view it at the location shown in the diagram.

●System information (the system nameplate is located on the right front side of the platform)



bunch

hydraulic excavator
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American Airlines:

Execution standard: 0/YCe 2038

Guangxi Yuchai Equipment Technology Co., Ltd.

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HYDRAULIC EXCAVATOR (∈

Modol

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Operating ms kr

Serial No.

Date of manufacture

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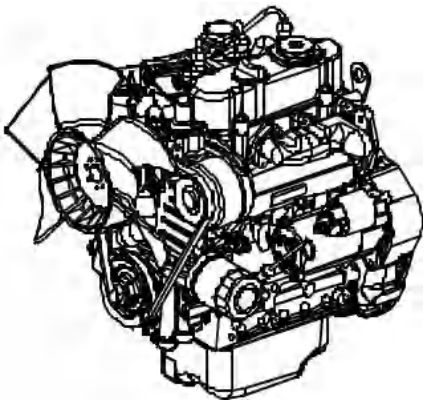
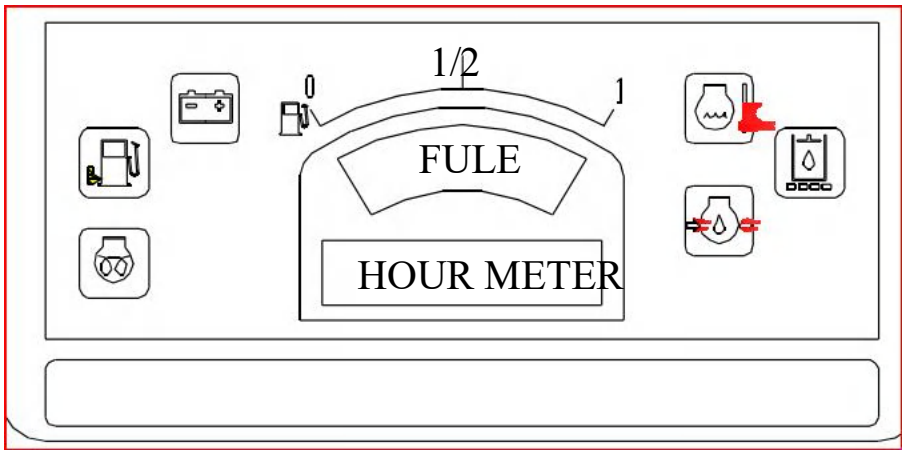
●Engine information



Model ESN

●Machine operation information (engine timer located on the combination instrument panel in the right control box of the machine)



machine archive

Enter your machine's product number and engine number in the table column below. If you need to purchase machine parts or request relevant information, you can provide these codes to Yuchai.

Please record these numbers and store them properly with the product certificate. If your machine is stolen, you can submit this information to the local public security authorities.

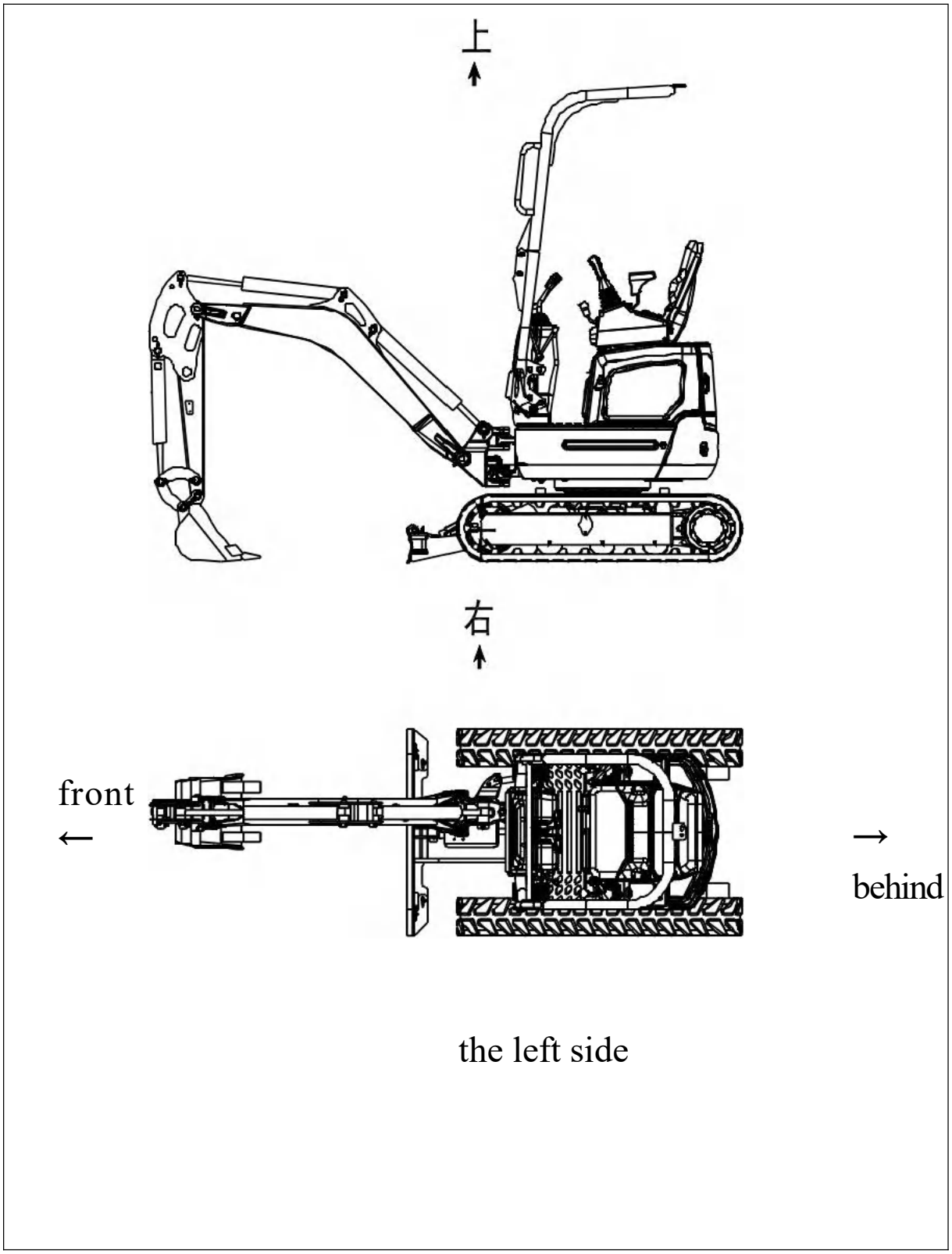
Machine model_____Product unit number

engine identification number

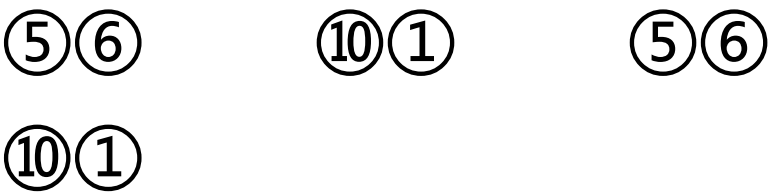
Dealer Information

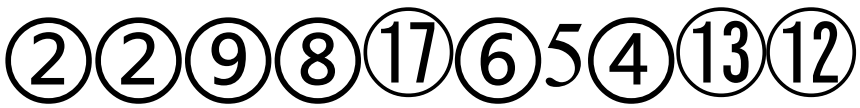
Direction of the entire machine

The directions of front, back, left, right, up, and down on this manual refer to the illustrated states.



Machine Composition





1. Bucket
2. Bucket Cylinder
3. Bucket Boom
4. Mast Cylinder 5. Boom
6. Boom Cylinder
7. Cockpit
8. Instruments
9. Saddle Assembly
10. Cover
11. Platform

12. Treadplate
13. Walking speed reducer
14. Drive wheel
15. Support wheel
16. Rotary bearing
17. Frame
18. Deflection Cylinder
19. Turn the head
20. Track tensioning device
21. Bulldozer cylinder
22. Bulldozer shovel

assignment

This machine is primarily used for the following tasks:

●Excavation work

●Loading operation

● Leveling work

●Crushing operations

● Other accessory operations

For detailed instructions on the key points of the assignment, please refer to the content of the operation guide and the attached guidelines.

running-in

This machine undergoes comprehensive adjustment and inspection before leaving the factory. Forced operation at the initial stage will accelerate performance degradation and shorten the service life of the machine. Therefore, during the first 100 hours (displayed time on the instrument), please maintain the load at 80% of full capacity for running-in.

Security-related information

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

By predicting potentially hazardous conditions, accidents can be prevented before they occur. Therefore, attention must be paid to the locations and types of hazards. (To perform such operations correctly, operators must receive specified training, possess the required technical skills, and have access to appropriate tools.)

Please read this manual and all safety notices, warnings, and accident prevention measures recorded on the machine carefully and understand their content until you fully grasp them. Under no circumstances should you operate, inspect, or maintain the machine without this knowledge. Ignoring these warnings may result in personal injury or death. Please take this seriously.

The safety warnings in this manual and the safety labels used on this machine are distinguished by the following warning phrases to indicate the potential degree of hazards. Additionally, preventive measures to avoid hazards are included.

 Hazard: indicates that failure to avoid it will result in death or serious injury, and is only applicable in a few of the most hazardous situations.

 Warning: If not avoided, the potentially dangerous consequences may result in death or serious injury.

Security-related information

 Note: Indicates that if not avoided, the potential dangerous consequences may result in low or moderate level injuries. It may also be used to alert to unsafe operations that may result in personal injury.

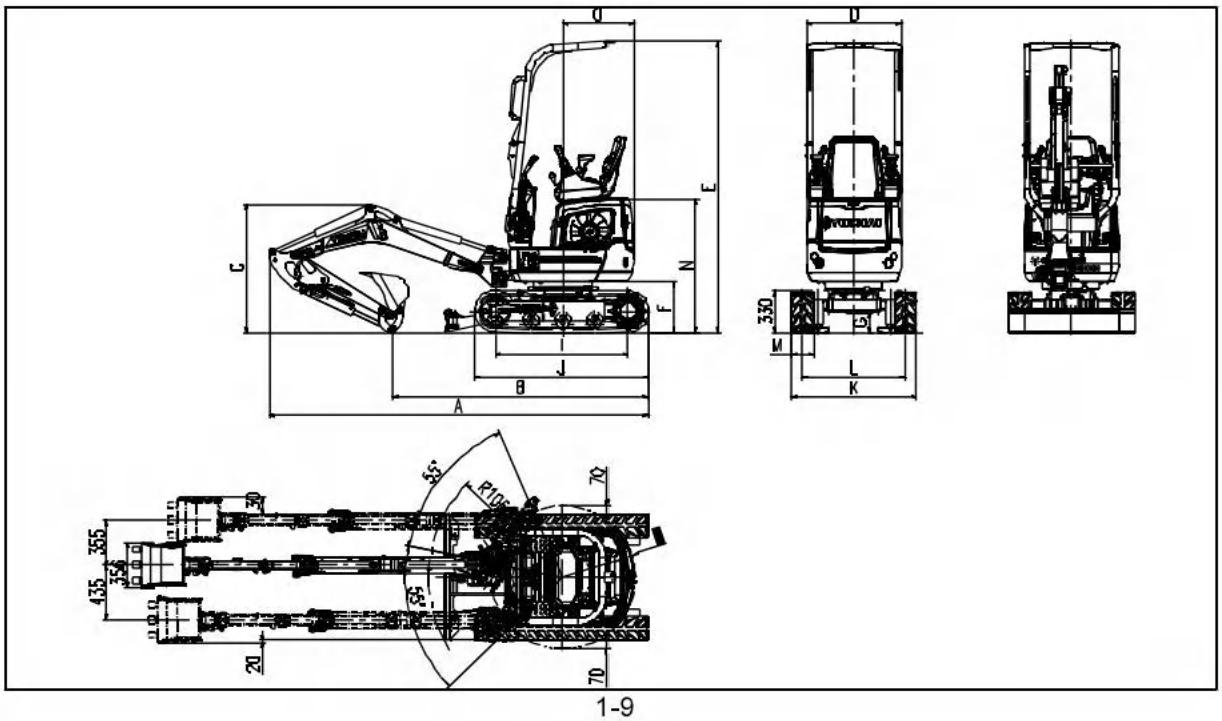
The company cannot predict all hazards associated with operation, inspection, maintenance, and repair under every environmental condition. Therefore, the warnings in this manual and on the machine do not cover all scenarios. If operations, inspections, maintenance, or repairs not covered in this manual are performed, users must independently consider necessary safety precautions. Users are solely responsible for implementing required safety measures.

Technical Specifications

1. Structural dimension parameters

code	project	unit	**U10-AF51**
	working weight	kg	1050
	standard bucket capacity	m 3	0.02
	engine type		Kubota D722 (Euro V/T4)
	engine power	kWW/rpm	Rated power: 10.4 kW at 2500 rpm (settable at 7.6 kW between 2100 and 2200 rpm)
A	Total length (during transportation)	mm	2985
B	total length of grounding	mm	2015
C	Total height (to the top of the boom)	mm	1010
D	overall bandwidth	mm	750
E	Total height (during transportation)	mm	2290
F	ground clearance	mm	400
G	minimum ground clearance	mm	155
H	tail radius of rotation	mm	565
	grounding length of track	mm	1040
J	tread length	mm	1365
K	gauge	mm	570/810
L	track width	mm	750/990
M	track width	mm	180
0	housing height	mm	1050
P	distance from the center of rotation to the rear end	mm	550
	maximum speed of rotation	rpm	8.3
	speed of travel	km/h	1.5/3.0

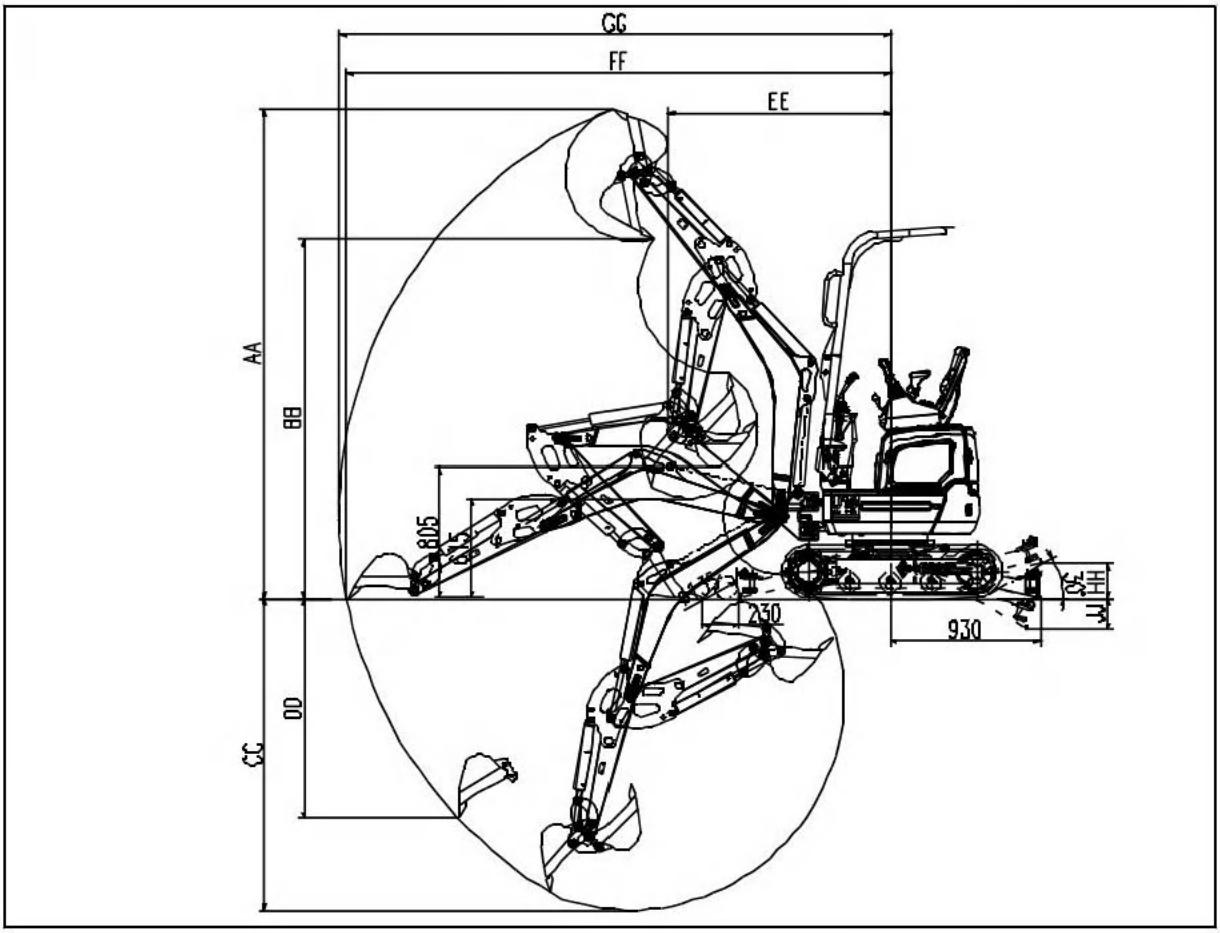
Note: The structural parameters listed above are nominal values. The manufacturer reserves the right to modify them without prior notice.



1-9

2. Working Parameters

code	project	unit	U10-AF51	
			standard boom + standard bucket	Norwegian spring quick-change and quick-change bucket
AA	maximum excavation height	mm	3020	3110
BB	maximum dump clearance	mm	2220	2130
CC	maximum excavation depth	mm	1925	2000
DD	maximum vertical excavation depth	mm	1360	1030
EE	minimum working radius of rotation	mm	1365	1365
FF	maximum ground excavation radius	mm	3345	3420
GG	maximum digging radius	mm	3395	3465
HH	maximum push-up of bulldozer	mm	215	
JJ	maximum pushing depth of bulldozer	mm	190	
	maximum digging force of bucket	kN	10.4	
	maximum digging force of the lever	kN	5.4	
	maximum left deflection angle of boom	0	55	
	maximum right turn angle of boom	0	55	



Note: No prior notice will be given when the manufacturer changes.

3. Walking mechanism

The hydraulic motor is driven by multi-stage planetary reducer.

	Walking speed (km/h)	climbing capacity
high speed	3.0	58%(30°)
low speed	1.5	

4. Hydraulic System

double pump quantitative throttling system

Maximum system flow rate: P1=P2=10.5 L/min

System rated pressure: P1=P2=17.2 MPa (175

bar) Rotational pressure: 9 MPa

Appendix 1: Operating Pressure/Flow Rate:

17.2 MPa/21L/min; Pilot Pressure: 3.5MPa

Oil return filter element: 10μm

Oil filter: Metal filter element

5. Electrical
System Voltage:
12V
Battery: 36AH

6. Usage Environment

Ambient temperature: -15 to 40°C

Environmental humidity: <85%

Altitude: ≤1500m

Transportation and storage temperature: -15 to 40°C

7. Interference of the fuselage

When the working device of the excavator is loaded with some non-standard working device, there may be interference with the boom cylinder or the lower cover plate of the boom. Therefore, when the machine is used with non-standard working device, the angle between the bucket boom and the boom should be paid attention to when the bucket boom is retracted, so as to avoid interference with the boom cylinder and damage the body.

Here are all non-standard auxiliary equipment provided by our company:

Lepidoptera	bucket attachment mounted directly on the bucket rod
	Bucket type accessories used with quick-change couplings
	A bucket type accessory used with a quick-change device
quartering hammer	Crusher Hammer Directly Installed on the Boom
	Crusher with quick-change device
drilling tools	Drilling device mounted directly on the boom
	drilling tool with quick-change device
crab bucket	grab installed directly on the boom

If your purchased device has any of the configurations mentioned above, you should be aware of the issues noted.

2
Safety Procedures

General Safety Provisions

By following the safety procedures outlined in this manual, you can prevent most accidents that may endanger machine operation and maintenance. Before operating or servicing the machine, you should thoroughly review and understand all safety information in this book and the safety diagrams related to the machine.

The safety-related content in this manual identifies potential scenarios during normal operation and maintenance of the machine, and provides corresponding troubleshooting measures.

The safety-related content is presented in the respective chapters of this manual, which together with this chapter form the comprehensive safety guidance of this manual.

This manual and the safety information on the machine do not cover all potential hazards and corresponding countermeasures. If you use methods or actions not recommended or permitted by this manual and the machine, you are responsible for taking necessary measures to ensure safety.

Under no circumstances shall the machine be used for purposes or operations prohibited herein. It is strictly forbidden to transport or lift personnel with this machine. During startup and operation, only the authorized operator may remain in the cab, and no unauthorized personnel shall enter the operational radius.

This excavator should be operated and maintained by trained personnel with relevant qualifications.

Before commencing work, all machine functions should be inspected. If any malfunction is detected, the machine must be immediately shut down to identify the cause. Work may only resume after the fault has been resolved.

Inspection, maintenance, and servicing shall be performed strictly in accordance with the provisions of this manual, and operators shall work and operate the machine according to the operating methods, safety regulations, and the machine's working range specified herein.

If you are under the influence of alcohol or drugs, do not operate or maintain the machine, as this may put you and others in danger.

It is necessary to understand the content of the relevant signals and gestures.

When walking on the road, you must be familiar with the relevant laws and regulations of the country or region you are in and strictly comply with them.

This machine is designed for normal ground excavation only. Do not use it in hazardous environments such as underwater, culverts, explosive zones, or toxic conditions.

Security Notice

1. Warning signs

In this manual, this warning sign indicates important safety information. When you see

When you see this sign, you should read the information and advice after the sign carefully to avoid possible injuries and deaths.

2. Safety Tips

This manual provides instructions for safe machine operation, including precautions, identification, and descriptions of potential hazards. Operators must carefully read this manual and the safety labels affixed to the machine before performing any operations, maintenance, or repairs, and must follow the relevant procedures.

The device's safety prompts use words like "Danger", "Warning", or "Caution". Here are their corresponding explanations:

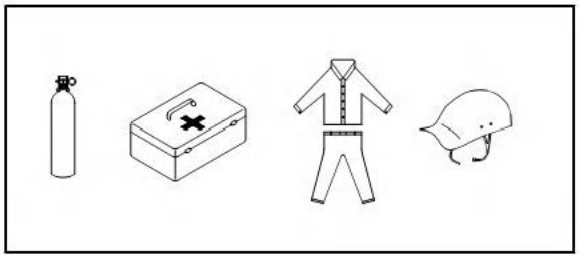
●▲ Hazard: indicates that failure to avoid a hazard will result in death or serious injury, and is only applicable in a few cases where the most serious hazard exists.

Warning: Failure to avoid may result in death or serious injury.

Note: Indicates that if not avoided, the potential dangerous consequences may result in low or moderate injury, and may also be used to indicate unsafe operations that may result in personal injury.

Safety Equipment

1. Protective equipment for operators



1) Operators must wear appropriate and tight-fitting workwear, safety helmets, work shoes, and other relevant safety protective equipment (e.g., earplugs, gloves, goggles, safety belts, etc.) before operation or maintenance.

2) If the operator's hair is too long, please tie it back and cover it with a safety helmet to prevent the machine from entangling your hair.

3) Users must configure emergency medications within the device and conduct regular inspections, adding medications when necessary to ensure availability for urgent use.

4) Before operation or maintenance, ensure all protective equipment functions properly.

Safety Label

Warning: If you cannot read the safety signs or if they are lost, it may result in injuries or fatalities. Replace any lost or damaged signs promptly and keep all safety signs clean and legible.

Before operating, maintaining, or repairing the machine, carefully read the user manual and the warning labels affixed to the machine to ensure full understanding of their contents and compliance with the relevant procedures.

The markings should be inspected before starting the machine each day. If they are illegible, the surface should be cleaned thoroughly.

When cleaning labels, only cotton cloth, water, and soap should be used. Organic solvents and gasoline must not be employed, as they may cause the labels to detach.

If the label is damaged, missing, or illegible, it must be replaced. If the label is on a part requiring replacement, ensure the new part is properly labeled.

Contact Yuchai Heavy Industry's authorized dealer for the latest safety certification.

1. Classification of Safety Signs

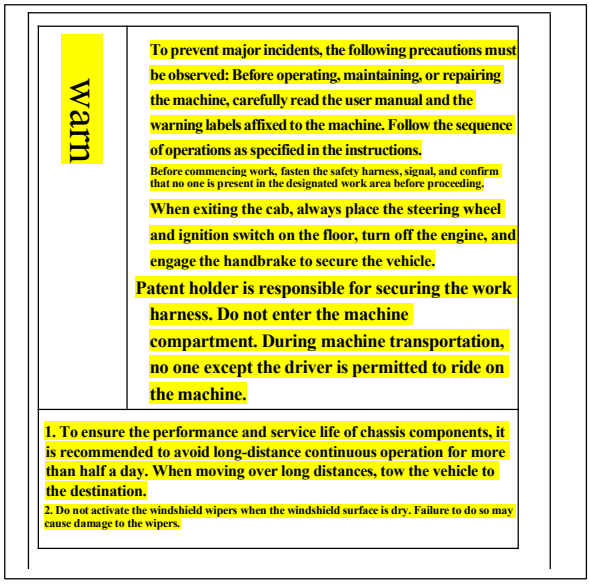
The safety labels on this manual and the machine include both pictorial and textual safety labels.

A. Diagram of safety signs

This security logo displays the security warning information in a simple and understandable way, making it easy to understand at a glance.

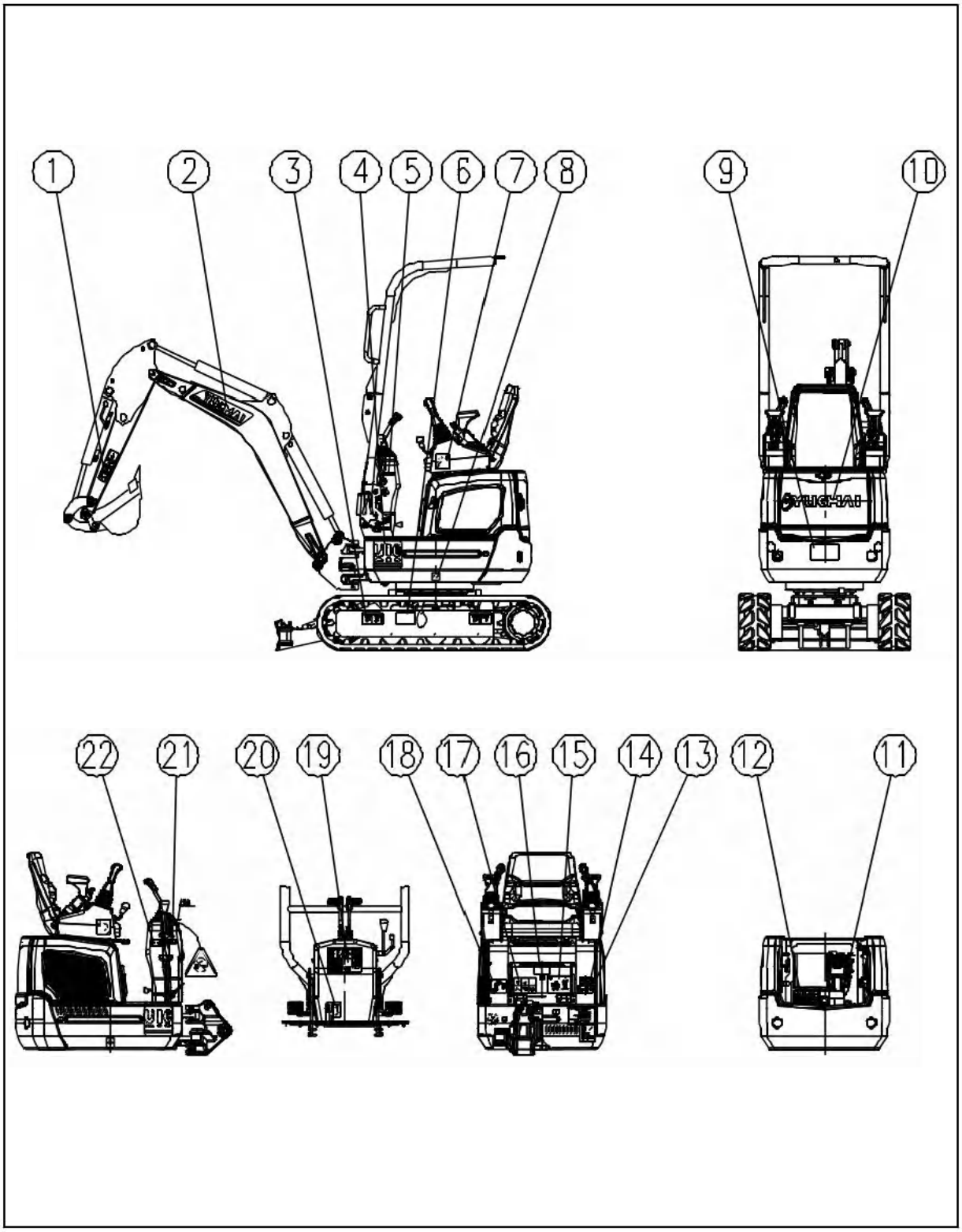
B. Text security labels

This kind of safety sign is more intuitive because it directly uses the corresponding words to explain the matters that must be paid attention to.



2. Location for safety label attachment

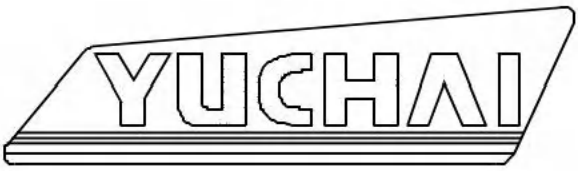
The diagram shows only the 'security labels' section among all labels, with other functional labels covered in later chapters.



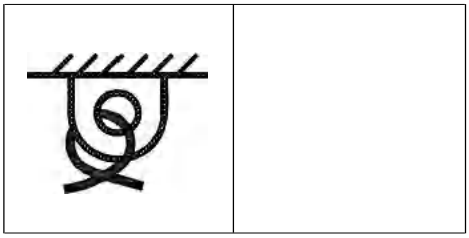
3. Safety Labeling Diagrams and Instructions 1) Attention and Distancing from Work Devices

Mobile working devices may cause personal injury.
Maintain a safe distance from the working area of the device.

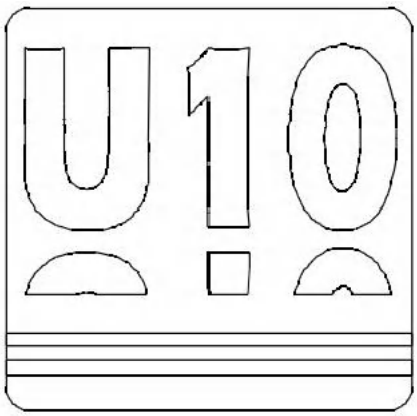
2) Boom identification



3) Lifting combination sign



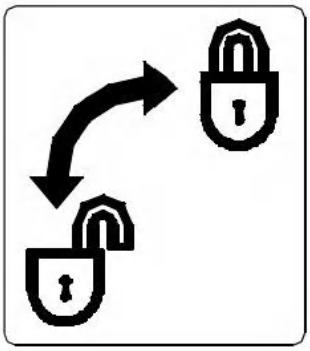
4) Whole machine recognition



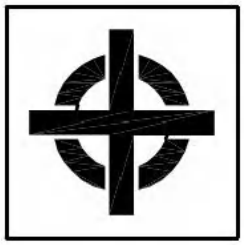
5) Throttle sign

6) Caution is required when adjusting the track tension due to the risk of high-pressure oil spray

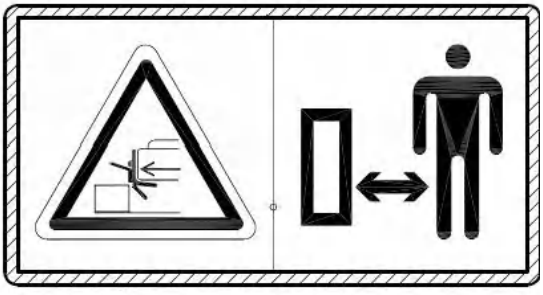
7) Power-on lock indicator (flip the left/right control box)



8) Rotary center marking



9) Tail safety sign

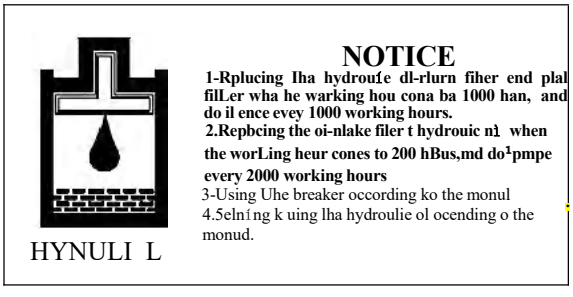


10) Tail logo

YUCHAI

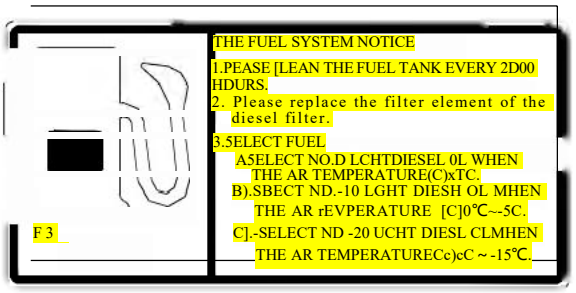
11) Hydraulic Filling Warning Sign

12) Hydraulic Oil Filling Marking

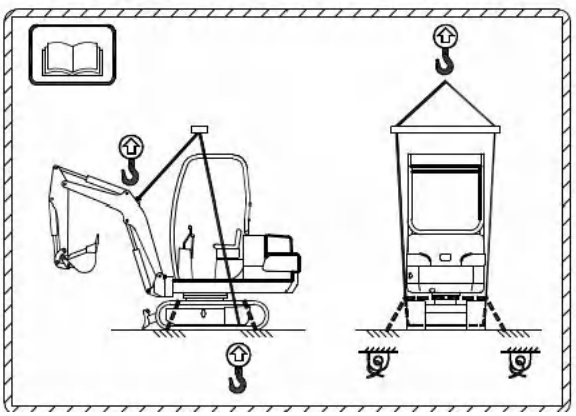


13) Fueling Warning Sign

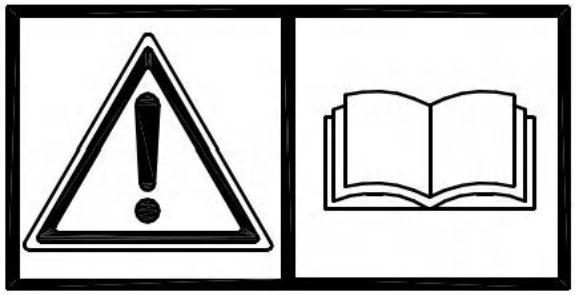
14) Fueling station sign



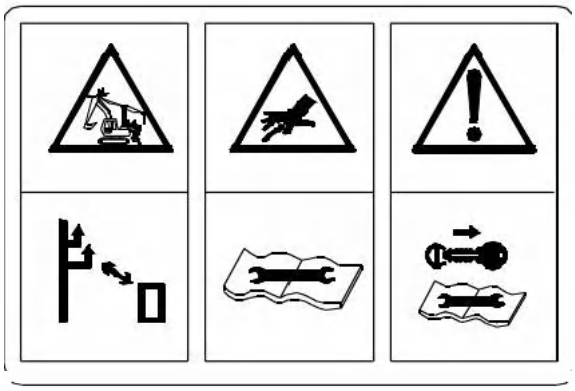
15) Lifting Markings for the Entire Machine



16) Read the instructions on the label

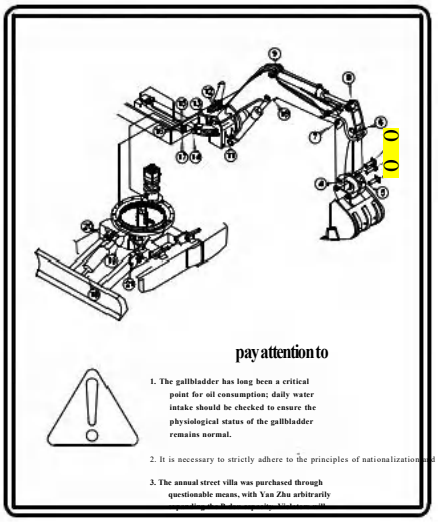


17) Electric Shock Warning Signs for Excavators

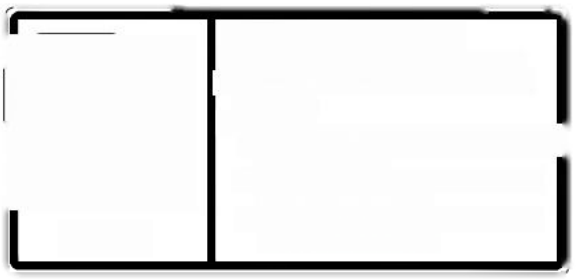


Electrical systems are prone to hazards such as electric shock, and maintenance must strictly follow the instructions and relevant guidelines.

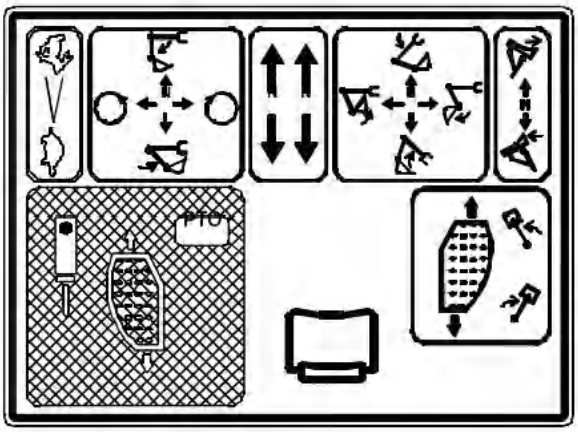
18) Lubrication Marking



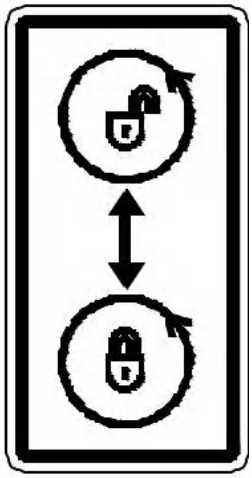
face penalties for improper rear chamber construction.



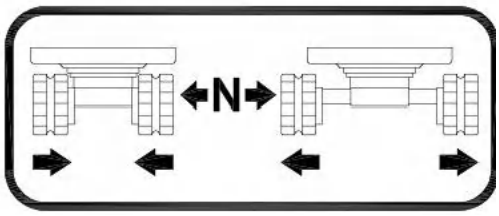
19) Manipulation of signs



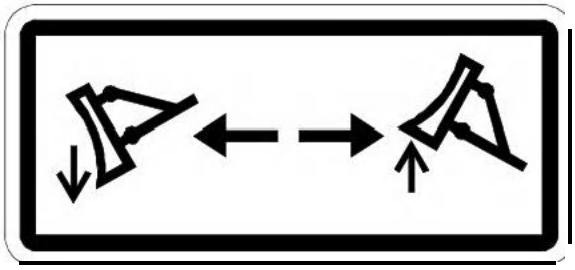
20) Rotary Locking Mark



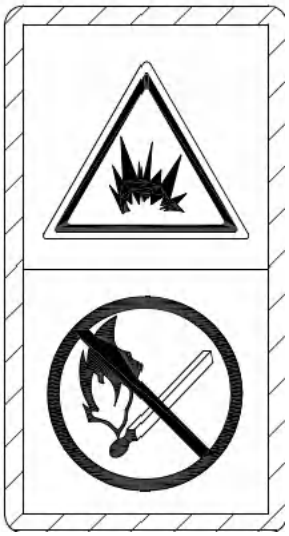
21) Chassis adjustment indicator



22) Bulldozer operation signs



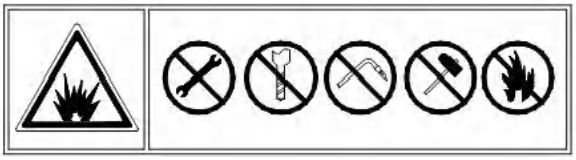
23) Fire Prevention Signs



24) The engine coolant cannot open its container cover at high temperatures.

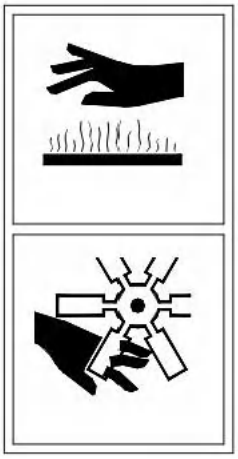
The high-temperature coolant is under high pressure. Opening the cap at this time will cause hot oil to spray out, potentially causing personal injury. Wait until the coolant has cooled before removing the cap.

25) High-pressure components such as accumulators and gas springs must not be disassembled, drilled, cut, or impacted, and should be kept away from open flames or high temperatures.



These components contain high-pressure gas, and improper handling may cause injury. Only experienced personnel should handle them.

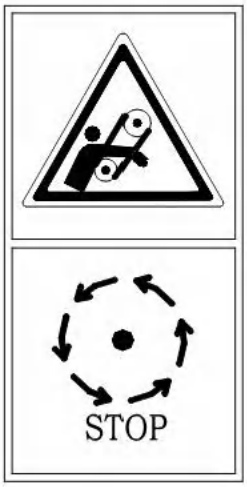
26) Be cautious of high-temperature components such as the engine, radiator, and muffler, as well as the risk of injury from the engine fan.



Do not touch directly. When servicing these components, turn off the engine and wait until the temperature drops to a safe level.

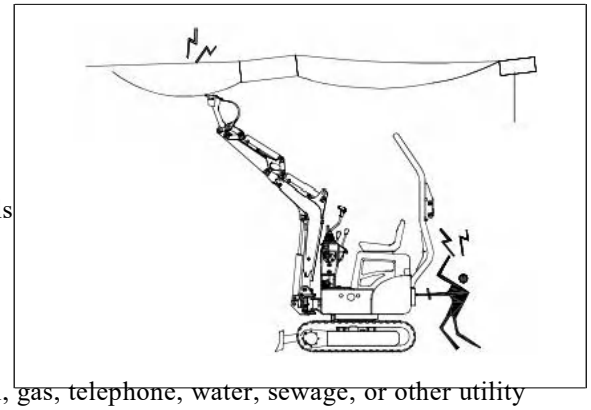
27) The engine cannot be started by short-circuiting the starter motor.

28) The engine must be shut down when performing internal maintenance or adjustments on the machine.



Workplace Safety

Learn as much as possible about the area where you will work. Check:



1. The location of the slope.
2. Open ditch
3. Falling objects or hanging objects
3. Soil condition (soft or hard)
4. Waterlogged and marshy areas
5. Rocks and tree stumps
6. Boundaries of buried foundations, root columns, or walls
7. Boundary of buried waste or fill soil
8. Holes, obstacles. Mud or ice
9. Traffic volume
10. Thick dust, thick smoke, thick fog
11. The exact locations of buried or overhead electrical, gas, telephone, water, sewage, or other utility pipelines. If necessary, before you begin work

Utilities should mark, shut down or relocate these facilities.

Warning: Before starting the excavation project, contact your local utility service system and department.

12. When working inside buildings, ascertain the clear height of overhead spaces, doorways, and corridors, as well as the load-bearing capacity of floors and ramps. Ensure adequate ventilation during indoor operations. Unidentified hazards may cause injury.

13. Determine the exact distances between electrical wires, telephone lines, and machinery, as well as between machinery and the ground. If possible, disconnect the power supply. If power cannot be disconnected, request guidance from the signalman.

W
a
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n

14. It is mandatory to maintain the legally prescribed minimum clearance from underground gas pipelines, electrical cables, telephone lines, and water pipes.

Warning: If you look into the damaged cable end, the severed fiber optic cable may cause serious eye injury.

15. This machine is prohibited from operation in culverts or underground areas.

16. Operations in areas containing chemical hazards are prohibited.

17. Do not use in explosive environments.

Safe Operation

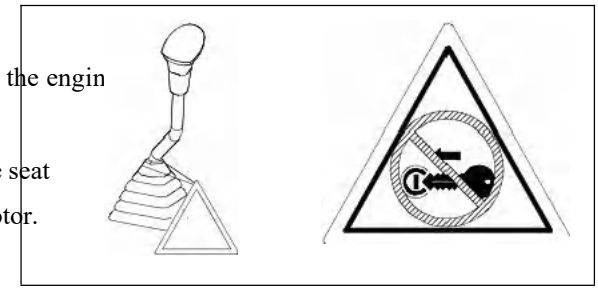
Warning: Do not use excavators to move or lift personnel.

Warning: Before operating the machine, you must fasten your seatbelt, sound the horn, and ensure the work area is unoccupied before starting.

Prohibited operations: This machine must not be used in culverts or underground environments, in areas containing hazardous chemicals, or in explosive conditions.

1. Start the engine

A.Security Procedures for Engine Starting



1) The horn must be sounded as a warning before starting the engin
2) No passengers other than the operator are permitted.
3) Only allow operation of the machine while seated on the seat
4) The engine must not be started by short-circuiting the motor.
5) The machine must be preheated in cold weather.

Warning: Do not start the engine when the control lever has a warning sign indicating engine start prohibition.

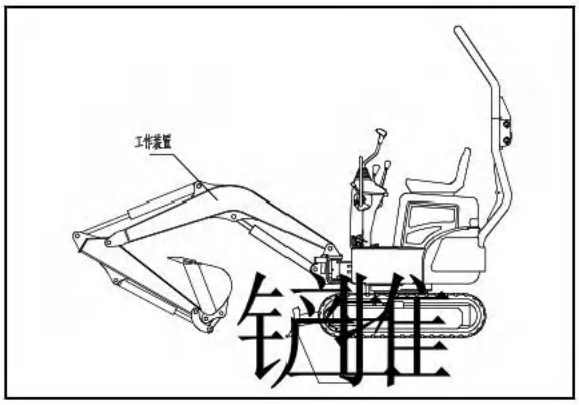
B. After starting the engine

After starting the engine, the following items must be checked:

1) Check if the seat belt is properly fastened.
2) Check if the working device, bulldozer, walking, rotating, and deflection mechanisms are functioning properly.
3) Check for any abnormalities in the machine's sound, vibration, odor, or instrument readings.
4) Check for any leaks in the engine oil or fuel.

2. Walking and Turning

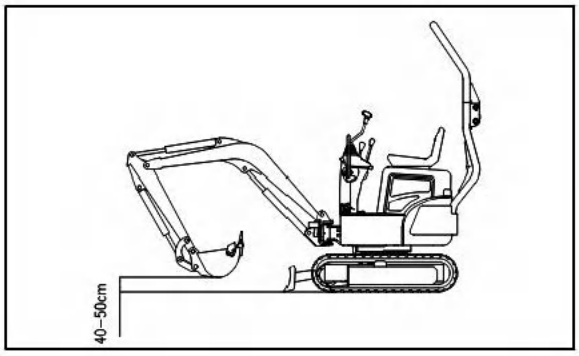
1) Before moving, rotate the machine platform to align the working device with the bulldozer blade. If the working device is oriented opposite to the blade, reverse the movement.



2) Always sound the horn before walking or turning to alert others in the work area.

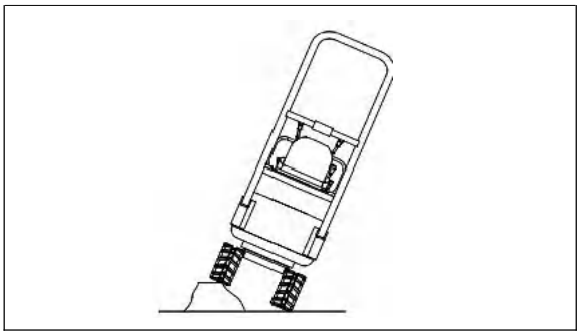
3) Excavators must operate on solid ground that is at least 1.5 times wider than the machine itself.

4) Before the machine retracts or rotates, if there are hidden areas at the rear, a signal commander must be assigned.



Safety rules for walking

1) When walking on flat terrain, first lift the bulldozer blade, lower the boom, retract the dipper, and position the center of gravity optimally, ensuring the blade and dipper maintain a 40-50 cm clearance from the ground.



2) When walking on rough or uneven surfaces, maintain a low speed and avoid sudden turns, as this may cause the machine to overturn and endanger personal safety.

3) The machine must not operate on uneven surfaces with obstacles on one side, as this may cause it to overturn.

4) When walking or operating, always maintain a safe distance from people, buildings, or other machinery to avoid contact.

5) When traversing confined spaces such as underground passages, under bridges, or beneath power lines, ensure there is a designated person providing verbal guidance. Additionally, maintain a safe distance from the guide.

6) Always lock the platform when going up or down slopes.

7) When passing over bridges, buildings, or supports, first verify whether they can adequately support the machine's weight.

8) Before using the highway, always check with the local traffic authorities and get their permission first.

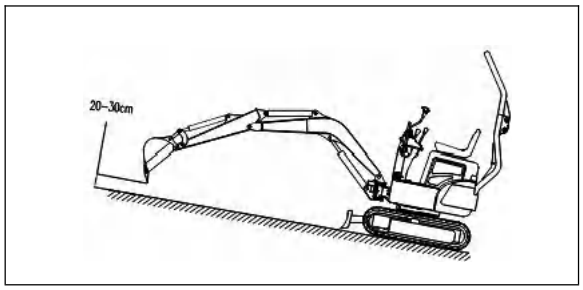
3. Walking or working on slopes

Excavators are extremely dangerous when operating on slopes, so extreme caution is required.

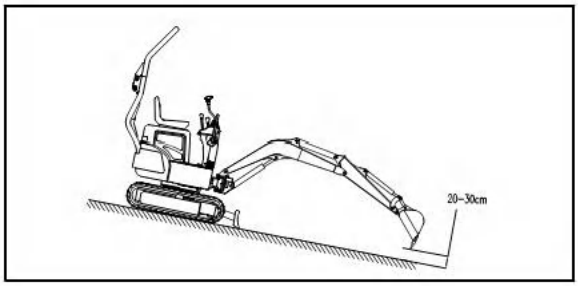
1) Avoid climbing or descending slopes steeper than 20 degrees.

2) Always wear a seatbelt when operating machinery, especially during uphill/downhill or hazardous operations.

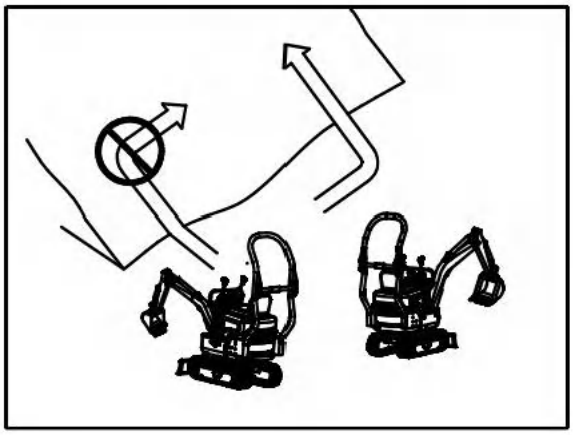
3) When driving the excavator uphill, the driving wheel should be positioned at the bottom of the slope. Lift the bucket fully, extend the boom and dipper arm parallel to the slope, and position the bucket teeth 20-30 cm above the ground. Lock the platform and proceed uphill at a low speed.



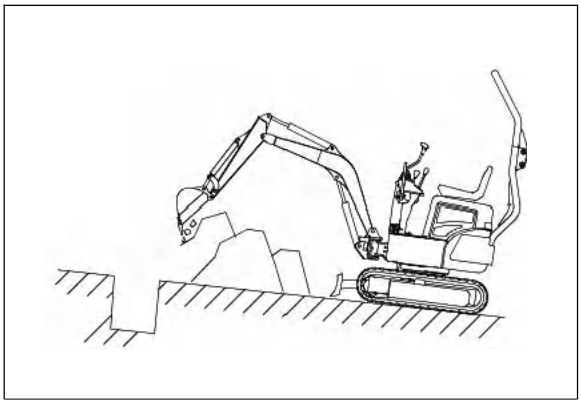
4) When the excavator is going downhill, the driving wheel should be on the slope side, the bucket should be lifted up, the boom and the dipper arm should be extended parallel to the slope, the bucket teeth should be 20 ~ 30cm above the ground, and the platform should be locked before going downhill at low speed.



5) Avoid turning or crossing slopes. Always descend to a flat area to adjust the machine's position before ascending the slope.



6) When working on a slope, always start from the higher elevation and work downward step by step. Position the bulldozer at the rear, firmly pressing against the ground, with the soil discharge area facing uphill.



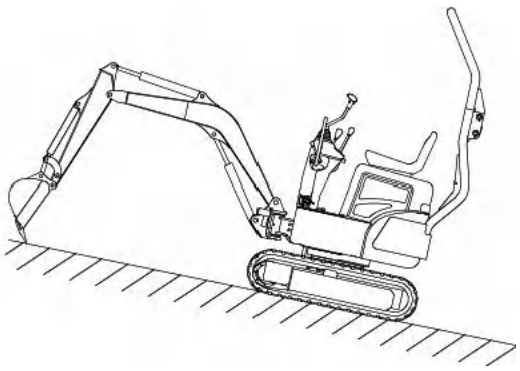
7) Move at a low speed on grass, leaf litter, or wet steel plates, as the machine may slip even on slight slopes.

8) Avoid sharp turns when climbing or descending slopes, as the machine may tip over.

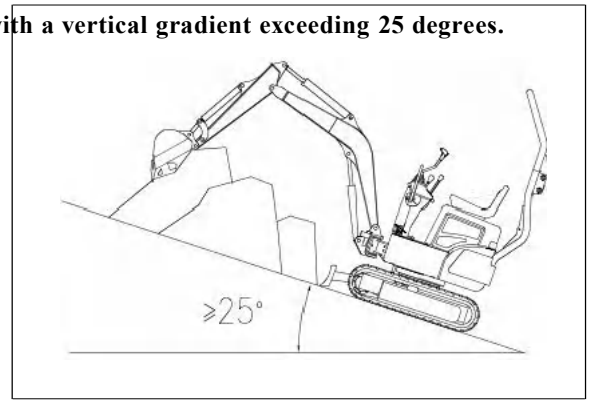
9) When stopping on a slope, the front bulldozer blade must be inserted into the soil, and the bucket lowered to engage with the ground. The machine may only be stopped after it has come to a complete stop.
Engine, the pilot can get off the plane.

danger

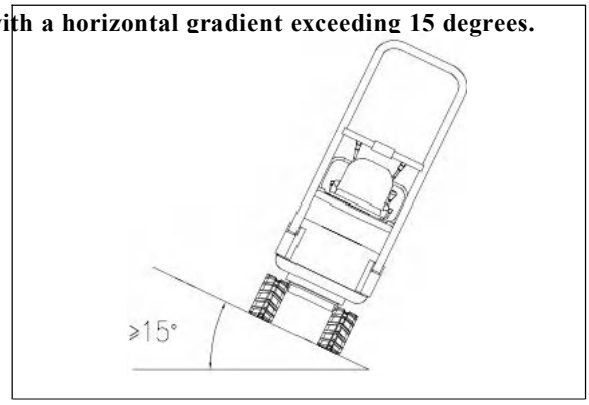
Operating on a slope is extremely hazardous! If forced to do so, follow these procedures: Should the engine stall on a slope, immediately lower the bulldozer bucket and shovel to ground level, set all controls to neutral, then restart the engine. Even for brief stops on slopes, lower the bucket and shovel to ground level, set all controls to neutral, and place sufficient stabilizing obstacles at the bottom of the slope.



10) It is strictly prohibited to walk or work on slopes with a vertical gradient exceeding 25 degrees.



11) It is strictly prohibited to walk or work on slopes with a horizontal gradient exceeding 15 degrees.

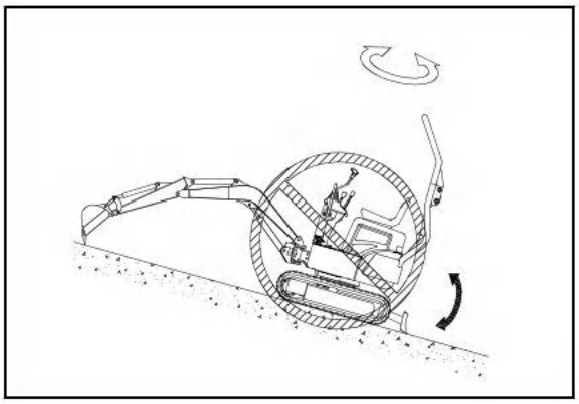


12) Maintain the machine's balance as much as possible. Do not walk on rocks or cross obstacles.

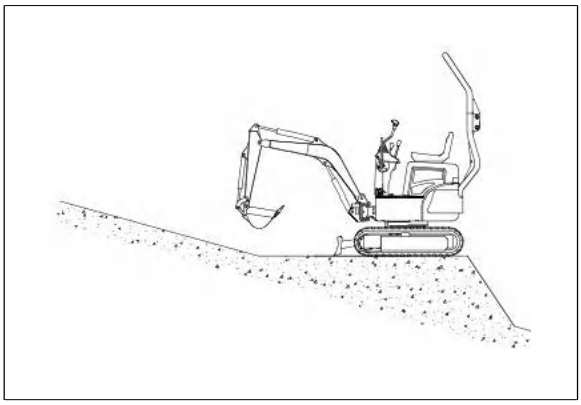
13) Do not change direction on the slope.

14) When climbing a slope, ensure the engine and hydraulic oil are properly preheated, otherwise it may cause accidents.

15) When the excavator's two tracks are at a 90-degree angle to the slope, turning is extremely dangerous and should be avoided. If turning is unavoidable, the bucket should be lowered to ground level while keeping it close to the machine, with the tracks pointing toward the slope's top, and the machine should turn slowly.



16) When operating on slopes, there is a risk of the machine losing balance and tipping over during the operation of the slewing or working device. This may result in serious injuries or equipment damage. Therefore, when performing these operations, a sturdy platform must be constructed using soil to maintain the machine's level.



4. Safe excavation operations

Warning: Operators must memorize all control levers to prevent accidental operation.

Warning: Improper use of excavators may cause tipping and slipping. Remember this section for proper guidance to ensure your personal safety.

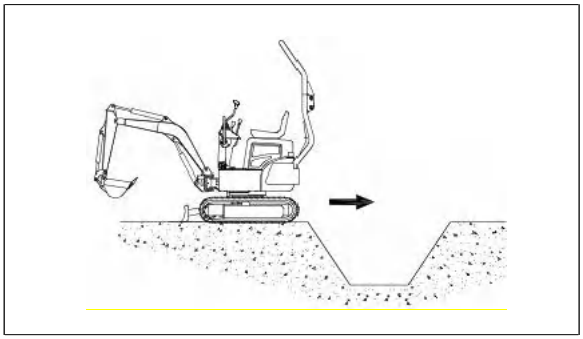
1) Before commencing work, all unauthorized personnel must be cleared from the excavation site.

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

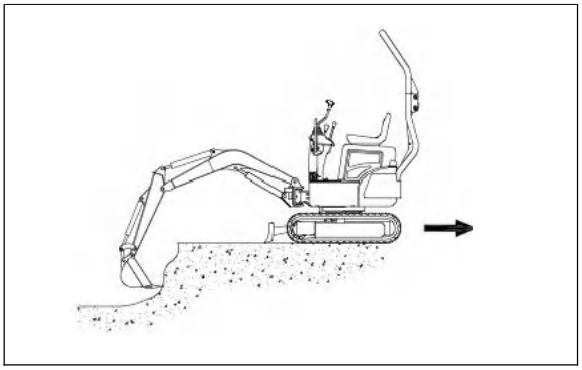
3) The two tracks of the excavator must remain on the same plane for safe operation.

4) Excavation may only proceed after confirming the absence of underground cables, gas pipelines, or water pipes in the work area, or after their exact locations have been identified.

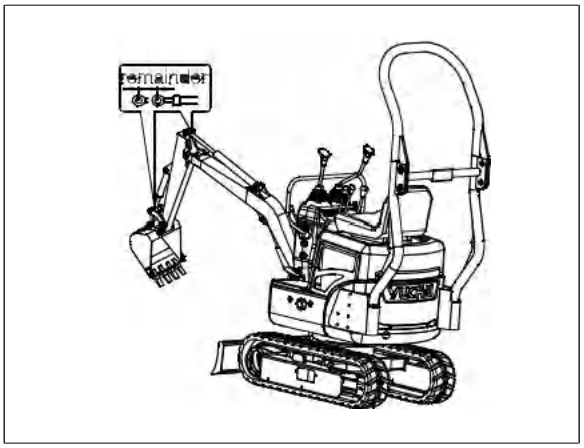
5) When the machine is performing backward operations (e.g., trench digging), inspect the travel path for smoothness and obstacles. Only proceed with the shift after confirming safety, as improper movement may cause the machine to tip over.



6) Do not move or turn the bucket when encountering ground resistance, as this may cause machine damage.



7) During operation, if the hydraulic cylinder reaches its stroke limit, force will act on the internal limit ring, thereby reducing the machine's service life. To prevent this, always maintain a small safety margin when operating the hydraulic cylinder.



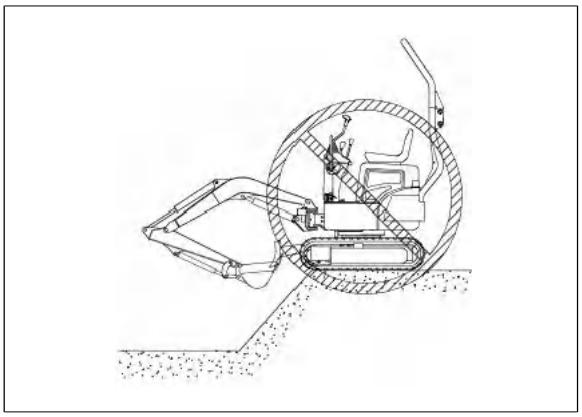
8) During deep excavation, prevent the boom base or bucket cylinder hose from contacting the ground.

9) When operating the machine, avoid contact with external objects on the boom, mast, bucket, or anti-rollover frame.

10) During machine rotation, avoid contact with the engine hood and rear counterweight.

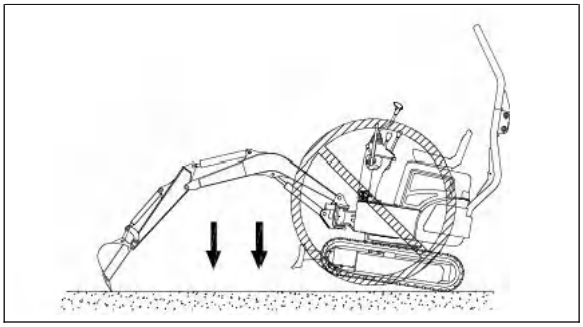
11) When lowering the boom, avoid abrupt stops to prevent equipment damage and ensure operational safety.

12) Do not dig into the aircraft fuselage.

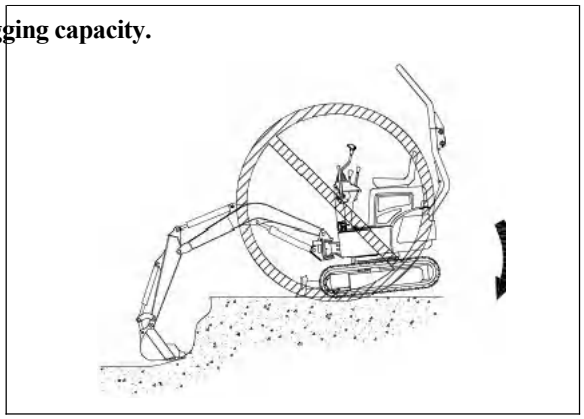


13) Do not operate machinery on soft surfaces or in marshy areas.

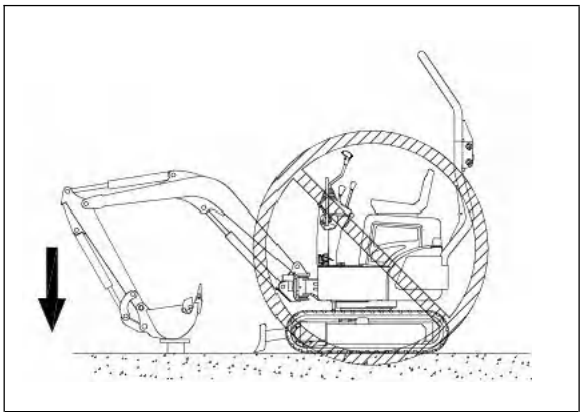
14) Do not perform excavation operations when the tracks are off the ground, as this may cause damage to the machinery and structure.



15) Do not use the machine's own weight to increase its digging capacity.



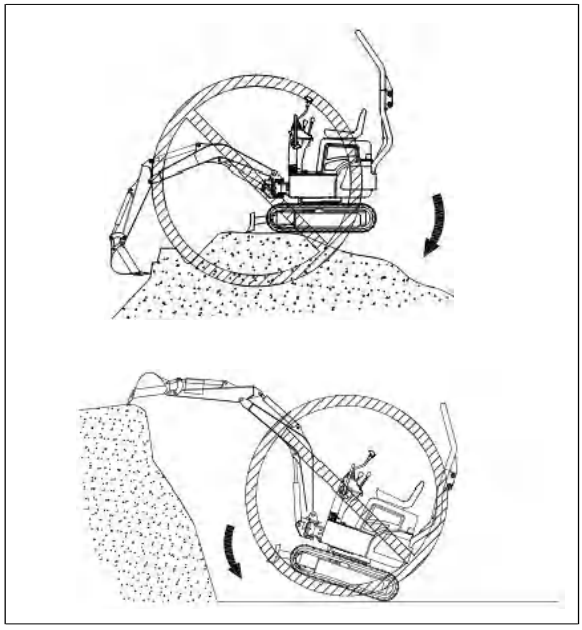
16) Do not use the bucket's downward force as a hand pick, crusher, or pile driver, as this will subject the rear of the machine to excessive force. This not only damages the machine but is also extremely dangerous.



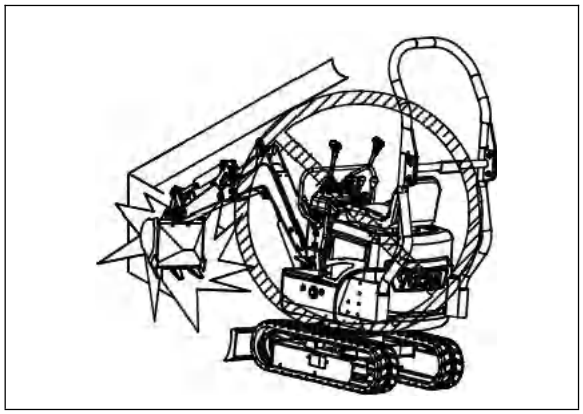
17) Avoid excessive use of the bucket to level the road surface, as this may overload the components and cause machine damage.

9

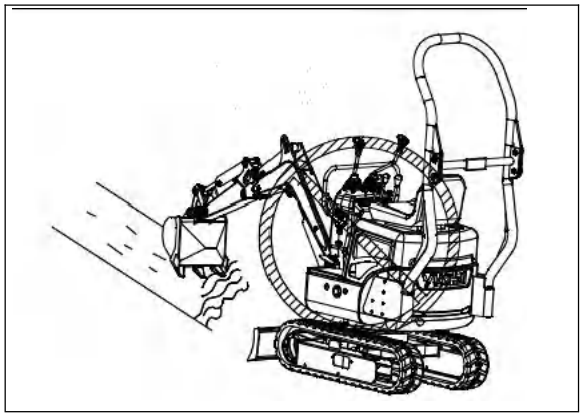
18) Do not use the machine's downward force for digging, as it may damage the equipment.



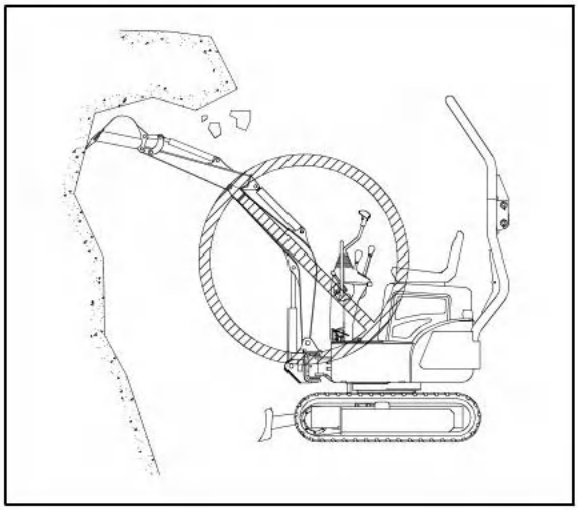
19) Do not use rotary force to compact soil or damage earthworks and walls. During rotation, avoid inserting bucket teeth into the soil, as these actions may damage the working device.



20) Avoid using the walking mechanism to dig when the bucket is buried in the ground, as this will subject the rear of the machine to excessive force.



21) Avoid excavating the working face below the unsupported section, as this may cause rockfalls or collapse of the unsupported area, potentially damaging the machinery.



22) Do not use the excavator to tow other equipment or objects.

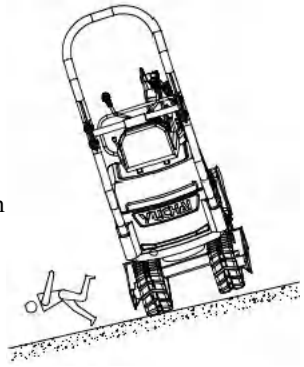
5. Anti-tilt, anti-slip and disposal during operation

Warning: 1) When turning on a slope, only large-radius turns are permitted. For right turns, extend the boom and dipper rod to the left, positioning the bucket approximately 30cm above ground, and secure the platform. The same applies for left turns.

2) If the equipment slips, immediately press the bulldozer shovel and bucket into the ground.

3) In the event of a vehicle rollover, the driver must never jump out of the vehicle, as this can easily lead to fatal injuries.

The following situations make the machine highly prone to tipping over and must be avoided:



1) The machine shifts on uneven ground, with one side of the two tracks higher than the other, or more than half of one track suspended.

2) When one track contacts loose soil while the other tracks solid soil.

3) When there is a karst cave or mud pit beneath one side of the machin

4) When working on slopes with a vertical gradient exceeding 25°, unloading heavy loads should be performed in the downhill direction.

5) When working on slopes with a horizontal gradient exceeding 15°, unloading heavy loads should be performed downhill.

6) On the slope, when the two tracks are perpendicular to the slope and the platform rotates more than 90 degrees.

7) When working on slopes, during sharp turns of machinery, rapid platform rotations, or sudden machine stops.

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

9) When working backward (e.g., trench digging) to realign uneven road surfaces.

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

11) Walking on frozen ground.

12) When using organic oil or lubricating oil on two-track machines, the equipment is prone to slipping.

6. Turn off the machine

Refer to the section "Parking the Machine" in Chapter 4.

Downtime for maintenance

Warning: A "Do Not Operate" sign must be displayed on the lever during any maintenance work on the machine.

●The excavator must be parked on a solid and level surface.

●After the excavator has come to a complete stop, lower the bucket to the ground, idling the engine at low speed for three minutes, then shut it down and remove the ignition key.

●When forced to stop on a slope, sufficient obstacles must be placed below both tracks.

● Always keep a safe distance from other machines when parking.

●Before repairing a machine, if you need to lift or support the machine or its accessories, ensure they are securely stabilized. Never operate the machine with only a 500-kg jack (approximately 1,000 lbs) supporting it.

●Do not lubricate or repair the machine after startup. Keep hands, feet, and clothing away from rotating parts.

●The machine must be supervised by a designated person when maintenance is performed during engine operation.

●Be cautious of personal injury caused by high-temperature components such as the engine, radiator, and muffler. Do not touch them during maintenance or repair. Always turn off the engine when inspecting these parts.

And wait until the temperature drops to the suitable temperature.

●High-pressure liquids may cause eye or skin splashes; avoid during maintenance.

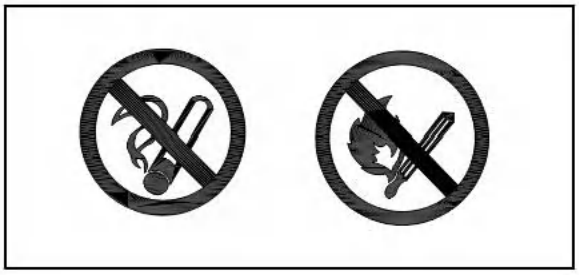
●Remove all debris from the machine to prevent accidental operation that could cause injury or damage.

● Dispose of waste liquids properly. Do not pour oil onto the ground, drains, streams, ponds, or lakes. Do not discharge engine oil, fuel, antifreeze, or their

Note: If the machine malfunctions and cannot operate, hoist the excavator onto a truck and leave the site before repairs. Refer to the 'Lifting Machines' section for hoisting procedures.

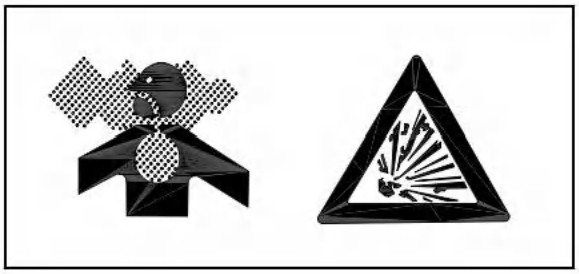
Fire, Explosion, and Poisoning Prevention

●Excavators must avoid contact with power lines during transportation, movement, or excavation, as this may cause severe accidents.



● Regularly inspect excavator electrical components and wiring. Replace any damaged, worn, or aged parts immediately to prevent short circuits that could cause fires.

● Maintain clean and securely fastened electrical connections. Inspect wires daily for looseness or damage, and tighten any loose connections or electrical components.



Wire clamp, repaired or damaged wire.

● Flammable and explosive materials must not be store

● When refueling, the engine must be stopped and the fueling process should be conducted away from any ignition sources.

● Do not let fuel spill onto overheated surfaces or electrical components when refueling.

●After refueling, wipe off any spilled fuel or oil, then tighten the fuel and oil tank covers.

●Remove promptly any accumulated or stuck flims, wood chips, paper scraps, and other flammable materials from the engine, exhaust pipe, muffler, and engine compartment.

●Do not place oil-soaked cloths inside the machine to prevent spontaneous ignition or combustion.

● Users should keep a fire extinguisher within reach at all times.

● Welding operations on machinery must never be performed without first isolating the hydraulic and fuel oil pipelines.

● Prevent fires caused by hydraulic pipelines: Inspect all hoses and pipes to ensure that clamps, guards, and cushioning pads are securely fastened. Loose components may vibrate during operation and rub

against other parts, leading to hose damage, high-pressure oil ejection, and potential fire hazards or severe injuries.

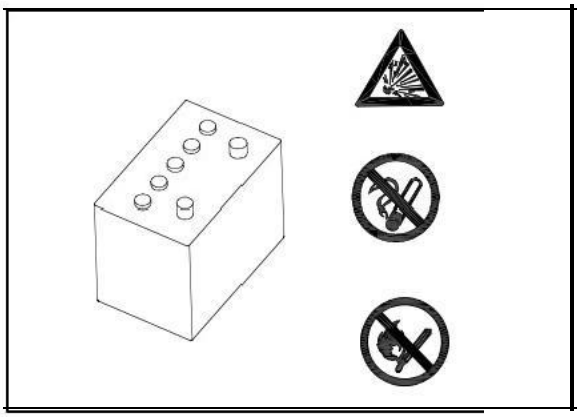
Keep the battery away from fire and high temperatures to prevent explosion.

● Operations in poorly ventilated areas are strictly prohibited to prevent driver asphyxiation.

●In case of fire, do not use water to extinguish it. Instead, use a powder fire extinguisher or sand to smother the flames. Alternatively, cover the fire with a blanket or tarpaulin to contain it.

Battery

General Safety Rules for Battery



The electrolyte in batteries contains sulfuric acid, which can produce flammable and explosive hydrogen gas. Incorrect operation may lead to severe injuries or fires. Therefore, the following precautions must be strictly observed:

● Regularly check the battery electrolyte level and replenish distilled water to maintain it between the "high level" and "low level" lines. If the electrolyte falls below the "low level" line, do not use or charge the battery.

●When handling batteries, wear safety goggles and rubber gloves.

●Do not smoke or use open flames near the battery.

●If sulfuric acid splashes on eyes, clothing or skin, rinse immediately with plenty of water and seek medical attention.

●Before operating the battery, set the key switch to the OFF position.

● Check the electrolyte level with a flashlight, and ensure the engine is turned off during inspection.

●A sealed battery with terminal expansion indicates it has frozen. Do not charge or attempt to start the engine with a frozen battery. Do not heat a frozen battery above 15°C, as this may cause it to explode.

Explosion-proof of Battery

Warning: Electrical sparks or flames may cause hydrogen in the battery to explode. To prevent explosions, please note:

1) When disconnecting the battery cable, first disconnect the cathode (-) cable;

2) When connecting the battery cable, the cathode (-) cable should be connected last.

3) Do not use metal components to short-circuit the battery terminals;

4) Welding, grinding, or smoking is prohibited near the battery.

Due to the risk of sparking, follow the steps below.

● Securely install the battery in its designated position.

●Do not let tools or other metal objects contact the battery terminals. Keep tools or metal objects away from the battery.

Connect or disconnect the battery terminals in the correct order. Secure the battery terminals firmly.

Battery

●When charging the battery, flammable hydrogen gas may be generated. Therefore, before charging, remove the battery from the lower part of the vehicle, place it in a well-ventilated area, and remove the battery cover.

● Firmly tighten the battery cover.

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

Hydraulic System

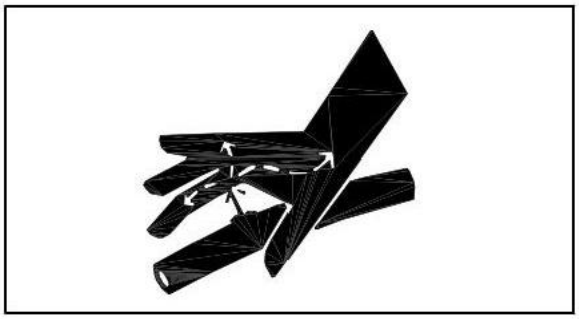
1. Safety Rules for High-Pressure Oil

The hydraulic system maintains internal pressure. When inspecting or replacing pipes or hoses, always verify that the hydraulic circuit pressure has been released. If pressure remains in the circuit, it may cause serious injuries or damage. Therefore, follow these procedures:

1) Do not perform inspections or replacements when the hydraulic system is under pressure.

2) If there is any leakage in the pipeline or hose, the surrounding area is wet.

Therefore, it is necessary to inspect whether the tubing or hose is ruptured and whether the hose is swollen. When conducting the inspection, goggles and leather gloves must be worn.



3) High-pressure oil leaking through the small hole can penetrate the skin, posing a risk of blindness if it comes into direct contact with the eyes. If the skin or eyes are injured by the high-pressure oil stream, rinse with clean water immediately and seek medical treatment without delay.

2. Safe Operation of High-Pressure Hose

If the high-pressure hose leaks oil or fuel, it may cause fires or operational failures, resulting in serious injuries or equipment damage. If bolts are found to be loose, stop the operation and tighten them to the specified torque. Welding operations on the machine must not be performed without isolating the hydraulic oil lines (hoses). If any hose damage is detected, immediately halt the operation and contact Yuchai's authorized service center.

Replace the hose if you find the following issues:

1) The hydraulic pipe joint is damaged or leaking;

2) The cladding is worn or broken, or the reinforcement layer steel wire is exposed;

3) The cladding shows localized expansion in certain areas;

4) The movable part is twisted or crushed;

5) There are impurities in the cladding.

3. Safety Rules for Hydraulic Oil

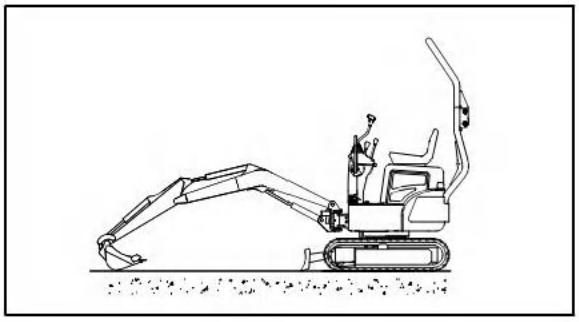
Uncooled hydraulic oil remains at high temperature and pressure during or after operation. To prevent burns from splashing oil or contact with hot components during inspection or oil drainage, wait until the oil cools to a

temperature where the cap or plug can be touched before starting the procedure. Even after cooling, slowly release the cap or plug before removing it to allow internal pressure in the hydraulic tank to dissipate.

4. Release the internal pressure of the hydraulic system

Release pressure steps:

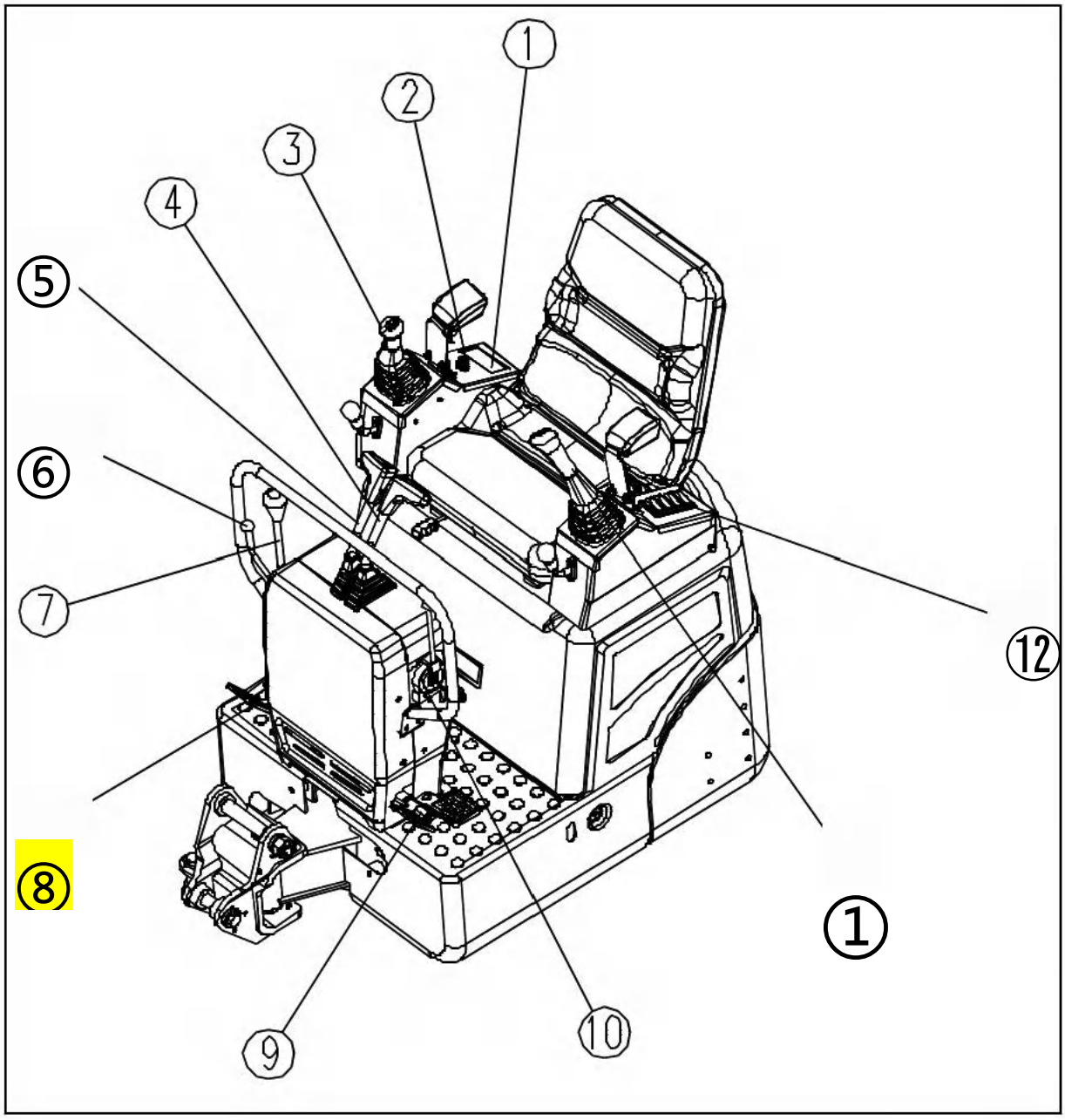
1) If the working device is not in the illustrated position, start the engine at low speed, extend the bucket cylinder, retract the dipper rod cylinder. Then lower the bucket, place the bulldozer blade on the ground, and shut off the engine.



2) Within 15 seconds after engine shutdown, switch the starter to the ON position and fully operate the lever (for working device or walking) in both directions to release internal pressure.

3
Component Introduction

Overview of the control device



1. Display instrument
2. Electric switch key
3 Right pilot control lever
4. Right steering column
5. Left walking control lever
6. Width adjustment control lever

7. Bulldozer control lever

8. Steering pedal

9. Auxiliary pedal

10. Throttle lever

11. Left pilot control lever

12. Switch Assembly

Secure Locking Part

1. Security Lock

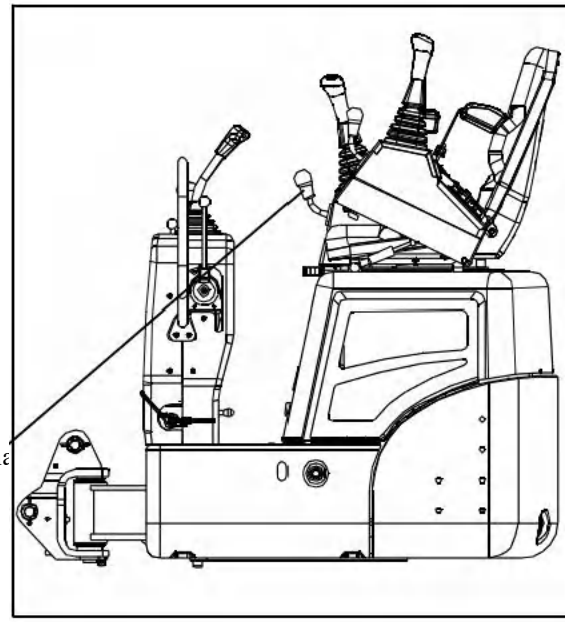
Warning: The safety locking mechanism of the working device is a critical component of the machine safety system. When the operator leaves the driving position...

During operation, safety locking must be performed. If the control lever locking mechanism is not in the locked position, the handle may shift, causing the working device to operate and resulting in an accident.

lead lock and release

The pilot safety lock handle rod must be pulled to the end position, and the left control box must be lifted before ignition can be initiated. The pilot system's main control is de-energized, rendering the machine's working mechanisms and platform rotation inoperable (except for left and right travel controls), thereby serving as a safety safeguard.

Push the pilot safety lock handle forward and press it to the bottom. After lowering the left control box, the pilot system will connect with the hydraulic source, and the machine can operate normally.



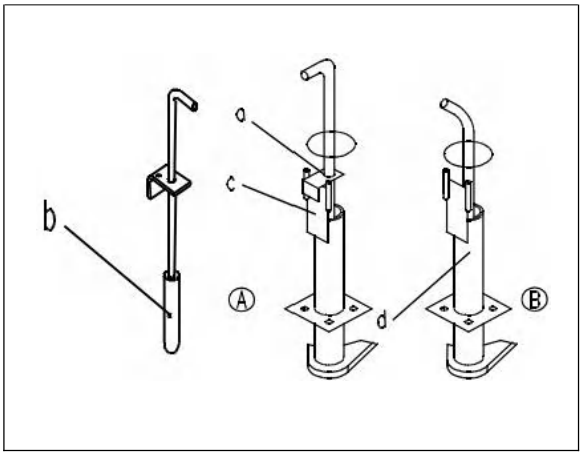
lead safety lock ha

2. Platform Locking Mechanism (Optional)

Warning: The platform locking mechanism is a critical component of the machine safety system. When the machine is in motion during transportation or operation, platform locking is required when parking or stopping on a ramp.

Lock and unlock

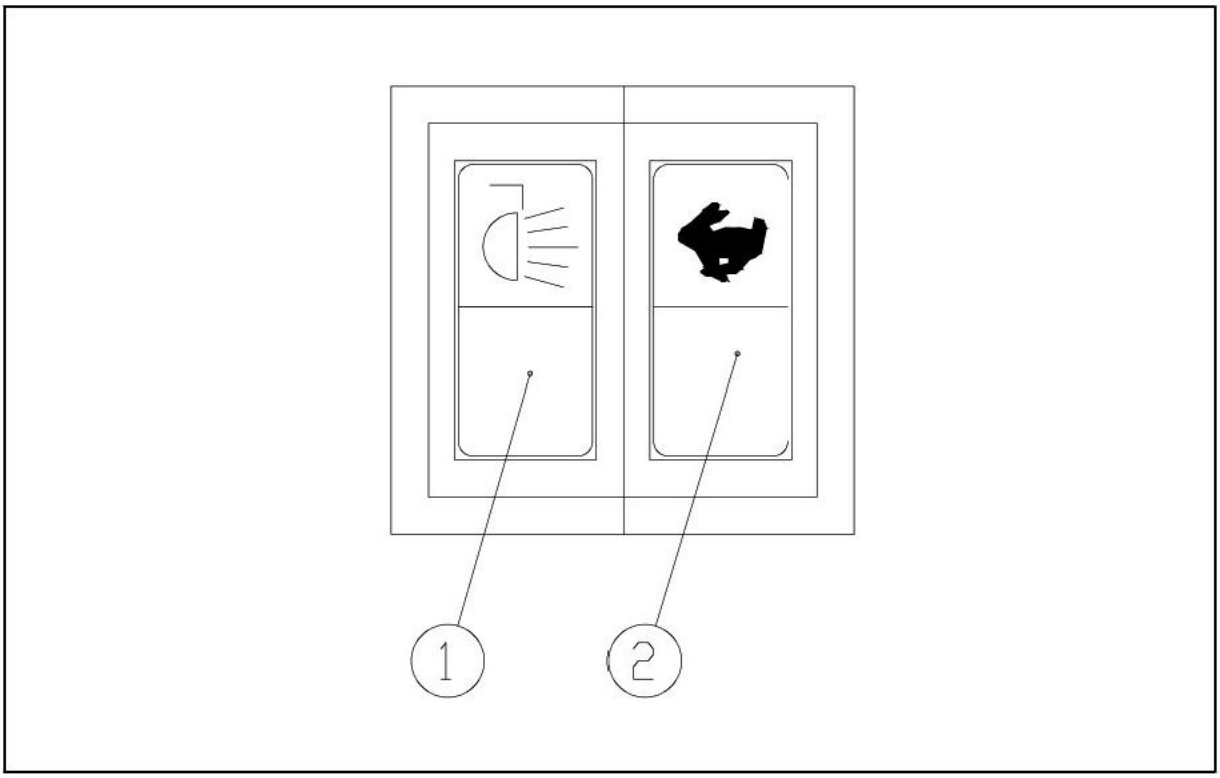
As shown in the diagram, lift the locking pin on the platform. The bent plate A on the pin is then attached to the lower box C, releasing the platform from the base frame. Lower the locking pin, place the bent plate on the lower box D, and the pin shaft B will lock the platform to the base frame, preventing any rotation between them.



Secure Locking Part

When locking, ensure the platform and the locking pin holes on the base frame are perfectly aligned.

Action button



1. Worklight switch

When the switch is turned on, the working light turns on.

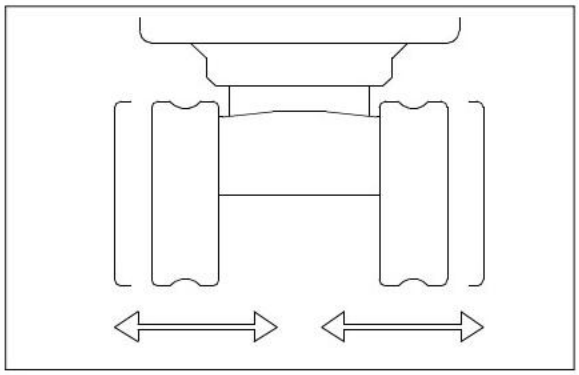
2. High-speed walking switch

When the switch is turned on, the excavator enters a high-speed walking mode.

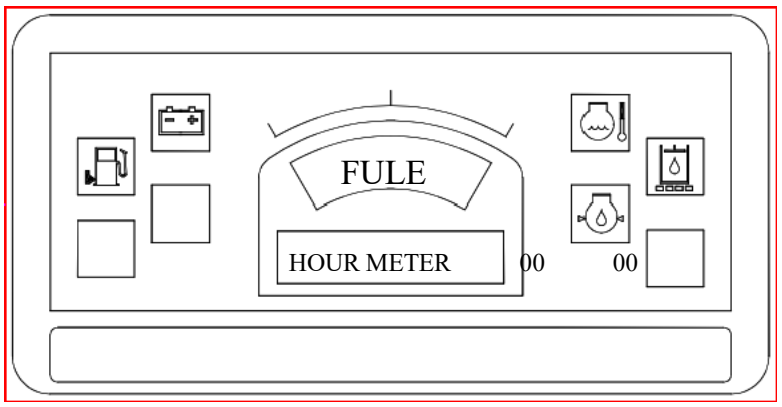
Adjustable chassis operation

chassis widening control

The chassis width can be increased by operating the chas

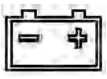


Instrument Panel



1. Low fuel level warning indicator light

The indicator light turns on when the fuel level drops below 10% of the tank capacity.



2. Power Supply Voltage Alarm Indicator Light

The indicator light turns on when the voltage drops below 12.5V or rises above 14.8V.

3. High water temperature alarm indicator light

The indicator light will turn on when the water temperature is too high.

4. Low oil pressure warning indicator

The indicator light will turn on when the engine oil pressure is too low.

5. Preheating indicator light

The indicator light turns on during preheating.

6. Hydraulic oil filter clogging alarm indicator light

The indicator light will turn on when the hydraulic oil filter becomes clogged.

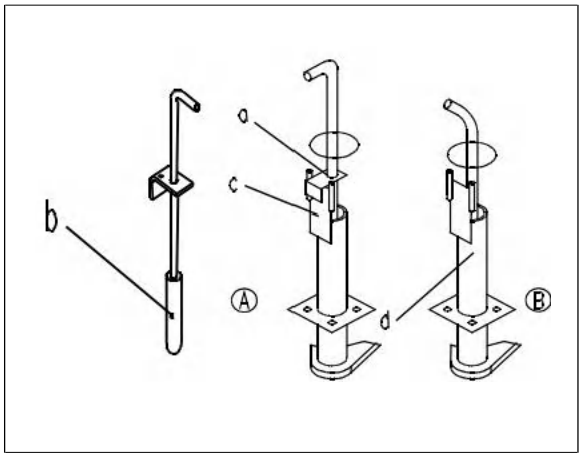
Platform locking components

platform locking mechanism

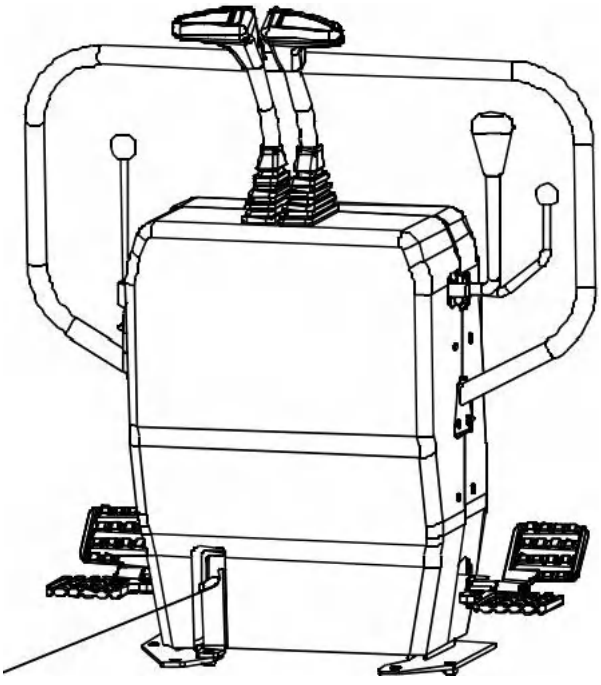
Warning: The platform locking mechanism is a critical component of the machine safety system. When the machine is in motion during transportation or operation,platform locking is required when parking or stopping on a ramp.

Lock and unlock

As shown in the diagram, lift the locking pin on the platform. The bent plate a on the pin is then attached to the lower box c, releasing the platform from the base frame. Lower the locking pin, and the bent plate is placed on the lower box d. The pin shaft b then locks the platform to the base frame, preventing any rotation between them.



When locking, ensure the platform and the locking pin holes on the base frame are perfectly aligned.



Platform locking components

Locking rod platform

Operation of Working Devices and Rotary Mechanisms

● Operation of excavation equipment and platform rotary mechanism

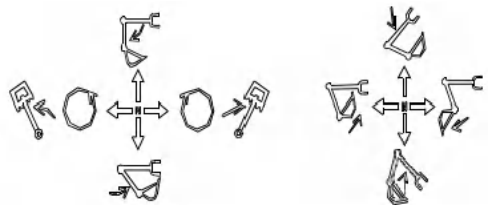
● Operation of excavation equipment and platform rotary mechanism

A. Left pilot valve handle

The lever is extended when pushing upward and retracted when pulling backward.

Platform rotation: The platform rotates right when swaying right, and left when swaying left.

Swing arm rotation: the right swing arm rotates to the right, while the left swing arm rotates to the left.



Left working device lever Right working device lever

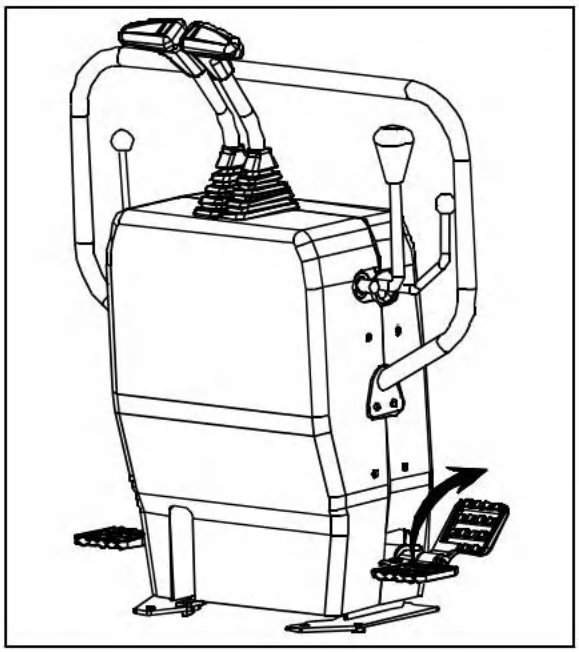
B. Right pilot valve handle

The boom is lowered when pushed forward and raised when pulled back. The bucket is turned outward when tilted to the right and inward when tilted to the left.

C.Bending of the boom

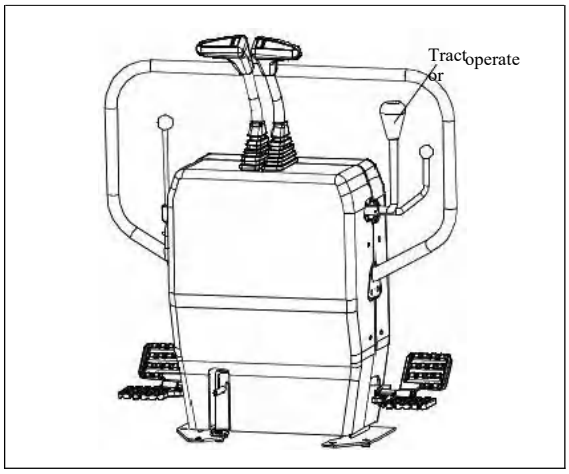
Pressing the deflection pedal forward deflects the boom to the left, while pressing it backward deflects the boom to the right.

When not in use, fold the pedal to prevent accidental operation.



● Operation of Bulldozer

Push the handle downward to cut the ground with the bulldozer blade. Pull it upward to raise the blade.



● Operation of Auxiliary Work Devices

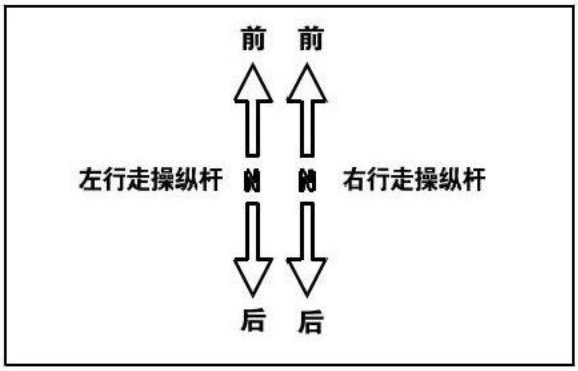
When the machine is equipped with auxiliary working devices, the auxiliary oil source can be activated by pressing the accessory pedal.

Walk Control

●directional control

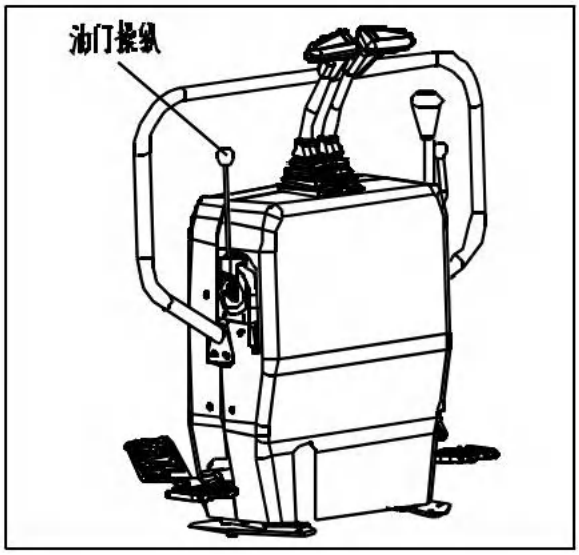
Control the left and right walking levers to operate the machine's tracks.

The steering lever can be manipulated to steer the machir



Throttle maneuver

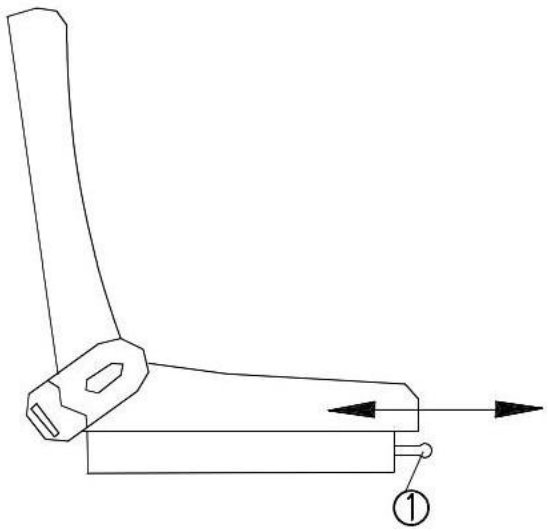
●Throttle lever



Pull the throttle lever back to increase throttle. Before stopping the engine, push the throttle lever forward to the dead center.

Driver's Seat

Warning: Accidental overturning or sudden movement of the machine may cause injury or even death. For safety, always fasten the seat belt and adjust the seat before starting the machine.



Seat handle for front and rear adjustment

●Seat adjustment: Turn the front/rear adjustment lever to move the seat, then release to lock it.

Note: Stop the machine when adjusting the seat. After adjustment, gently shake the seat to ensure the lock is secure.

Seat belt

Warning: The seat belt is a critical component of the machine's safety system. Always fasten it before operation.

If you are not wearing a seat belt, the cab or the machine may crush you when it overturns.

Warning: Before using the seat belt, check for any abnormalities in its installation. Replace the seat belt if it is worn or damaged.

●The seat belt should be replaced every 3 years even if no abnormalities are detected. The production date is indicated on the factory date label.

● Always wear a seatbelt while working.

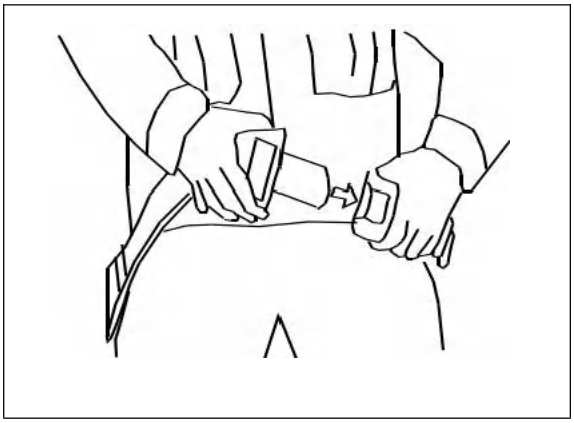
● Do not twist the seat belt when fastening it.

1. Fasten your seat belt

Hold the seat belt buckle, check for twisting, adjust the belt length, and securely insert the tongue into the buckle. Gently pull the seat belt to verify proper locking.

2. Remove the seat belt

Press the red button on the buckle, then remove the tongue to detach the seat belt.



4

Operation Manual

Preparations before operating the machine

1) Excavators must be operated by trained operators who meet regional driver requirements to ensure independent operation.

2) Drivers are strictly prohibited from operating the device without thoroughly reading the user manual.

3) Before operation, the driver must wear tight-fitting clothing and appropriate safety protective equipment suitable for the work, such as safety helmet, leather shoes, gloves, protective goggles, and seat belt.

4) Before daily operation, thoroughly inspect the machine according to the specified usage requirements.

5) Inspect the working device, hydraulic cylinder, and hose for any damage.

6) Clean the engine, radiator, and battery of dust and dirt.

7) Inspect the hydraulic system, oil tank, hoses, and fittings for leaks (check for visible oil stains on the parking area).

8) Inspect the lower frame components (such as tracks, drive wheels, and guide wheels) for damage, and check for loose bolts. Ensure the frame is securely fastened to the platform with no loosening of bolts.

9) Inspect all instruments and monitoring devices for any damage.

10) Clean the rearview mirror, check for damage, and adjust the angle to ensure proper visibility.

11) Check that the seat belt is undamaged.

12) Confirm that proper maintenance has been performed as required.

Warning: Before operating the machine, ensure you have fully understood and memorized the safety procedures outlined in this manual regarding safe machine operation.

Engine operation

Warning: Before starting the engine, review the safety details in this manual. Check all safety signs on the machine. No other personnel should be present at the workplace. Before operation, learn and practice safe procedures. When operating the machine, clearly understand and follow the operation and maintenance sections in the manual, and comply with relevant regulations.

1. Pre-start Engine Inspection

1) Check if the seat belt is fastened, sound the horn, and verify that no one is present around the work area or on the machine.

2) Inspect the engine, battery, and radiator for dust or debris, and remove any found.

3) Inspect the working mechanism, hydraulic cylinder, connecting rod, and hydraulic hose for cracks, excessive wear, or clearance. Replace or repair any abnormalities found.

4) Inspect the hydraulic system, including the hydraulic tank, hoses, and fittings, for any oil leaks.

5) Inspect the lower vehicle components (including tracks, sprockets, guide wheels, etc.) for damage, wear, loose bolts, or oil leaks.

6) Check if the instrument display is normal, verify all operational lights function properly, and inspect electrical circuits for any open circuits or short circuits.

7) Check whether the coolant, fuel, hydraulic oil, and engine oil levels are within their respective upper and lower limits.

8) In cold weather, check for freezing in coolant, fuel, hydraulic oil, battery electrolyte, engine oil, and lubricants. If frozen, thaw them before starting the engine.

9) Check if the locking handle is securely tightened.

10) Check the machine's current operating condition, direction, and position to provide operational guidance.

2. Start the engine

Warning: Do not start the engine when the engine start warning sign is displayed on the control lever.

Warning: Before starting the engine, ensure the safety lock lever is in the locked position to prevent accidental contact with the control lever during startup, which could cause sudden operation of the working device and lead to accidents.

Warning: If the battery electrolyte freezes, do not charge the battery or use other motors, as this may cause the battery to catch fire. To start the battery, first thaw the electrolyte by charging it or using another power source. Before starting, check for frozen or leaking electrolyte.

Before starting the engine, insert the key into the ignition switch and set it to the ON position. Check all indicator and warning lights on the digital combination instrument. If any warning lights are activated, perform the necessary troubleshooting before attempting to start the engine.

A. Starting the engine at normal temperature

Rotate the key clockwise to the ON position. When the alarm indicator lights out, the machine can start normally. Continue rotating to the START position and hold it for no more than 10 seconds. Release the key after the engine starts, and it will automatically return to the ON position. If the engine fails to start, wait 30 seconds before restarting.

Note: The consecutive start-up time should not exceed 30 seconds; the interval between two starts should be at least 15 seconds; if the engine fails to start three times in a row, check all engine systems for normal operation.

Warning: 1) Do not turn the key while the engine is running, as it may cause engine damage.

2) Do not start the engine while operating the excavator.

3) Do not start the engine by short-circuiting the starter motor circuit.

●Starting the Engine with Auxiliary Cable

Warning: When the battery electrolyte freezes, if (1) you attempt to charge the battery, or (2) you attempt to start the engine with a cross-connected battery, the battery

It may explode. To prevent the battery electrolyte from freezing, keep it fully charged. Failure to follow these instructions may cause injury to you or others.

Warning: The battery may produce explosive gases. Keep away from sparks, flames, and open flames. Ensure proper ventilation when charging or using the battery in enclosed areas. Wear an eye mask when working near the battery.

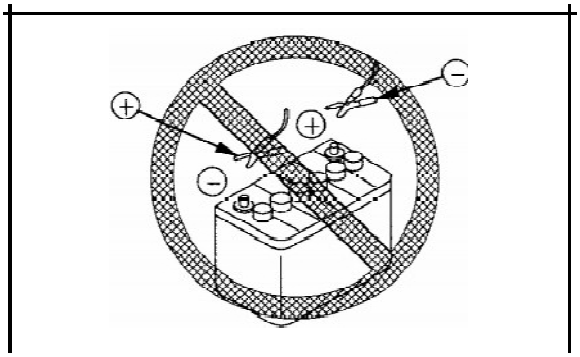
If the auxiliary cable connection method is incorrect, it may cause the battery to explode. Therefore, follow the following guidelines.

1) When using auxiliary cables for startup, two people must perform the operation (one seated in the operator's seat and the other controlling the battery).

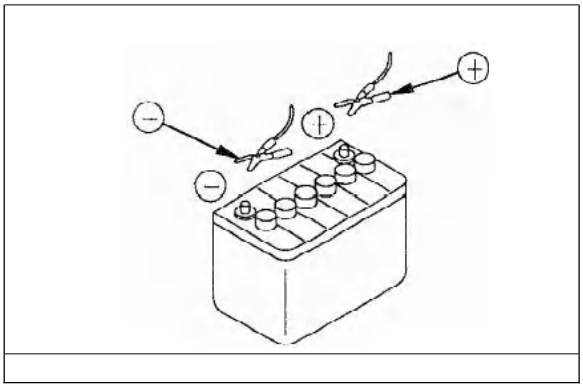
2) When starting another machine, avoid contact between the two units.

3) When connecting the auxiliary cable, switch the key switches of both the normal and faulty machines to the OFF position.

Otherwise, the machine may move when powered on.



4) When installing auxiliary cables, the negative terminal (-) of the battery must be connected last; when removing auxiliary cables, the negative terminal (-) cable of the battery pack should be disconnected first.



5) When removing auxiliary cables, ensure the cable clamps do not touch each other or the machine.

6) When starting the engine with auxiliary cables, always wear goggles and rubber gloves.

7) When connecting a normal machine to a faulty one via auxiliary cables, use the normal machine with the same battery voltage as the faulty one.

3. After starting the engine

A. Engine warm-up and machine warm-up

The normal operating temperature range for hydraulic oil is 50°C to 80°C. Operating hydraulic systems below 20°C may cause damage to hydraulic components. Therefore, if the oil temperature is below 20°C before starting the work, the following preheating procedure must be followed.

1) The engine should run at 200 rpm above idle for 5 minutes.

2) Set the engine throttle to neutral and run for 5-10 minutes.

3) At this speed, extend and retract each hydraulic cylinder several times, then gently warm them up using the rotation and travel motors. The system can only operate when the oil temperature exceeds 20°C. If necessary, extend or retract the bucket cylinder to the end of its stroke to fully warm up the hydraulic oil under full load, but each operation should not exceed 30 seconds. Repeat this process until the required oil temperature is achieved.

B. Checks after starting the engine

1) Check if all indicator lights are off.

2) Inspect for oil (lubricating oil or fuel) leaks and water leakage.

3) Inspect the machine for any abnormalities in sound, vibration, heating, odor, or instrument readings. If any abnormalities are detected, immediate repair is required.

4. Turn off the engine.

Note: Sudden shutdown before engine cooling will significantly shorten the engine's service life. Therefore, avoid abrupt engine shutdown unless in emergency situations.

If the engine overheats, avoid sudden shutdown. Instead, let it cool gradually at a moderate speed before shutting it down.

1) Run the engine at idle for about 5 minutes to allow gradual cooling.

2) Push the accelerator pedal forward to the floor and pull the parking lever back to the floor.

3) Set the key switch to OFF and turn off the engine. All indicator lights will turn off.

4) Remove the key to the starter switch.

5. Post-Engine Shutdown Inspection

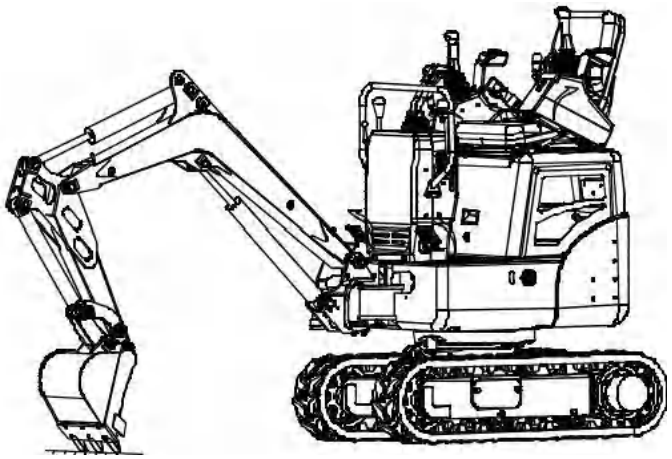
1) Inspect the inspection equipment, including the exterior and chassis, for any signs of water or oil leakage. If abnormalities are detected, perform repairs.

2) Refuel the fuel tank.

3) Inspect the engine compartment for paper scraps and debris. Remove any paper or debris to prevent fire hazards.

4) Remove the mud from the chassis.

Enter/Exit Machine



1) Ensure your feet are firmly planted on the conveyor b

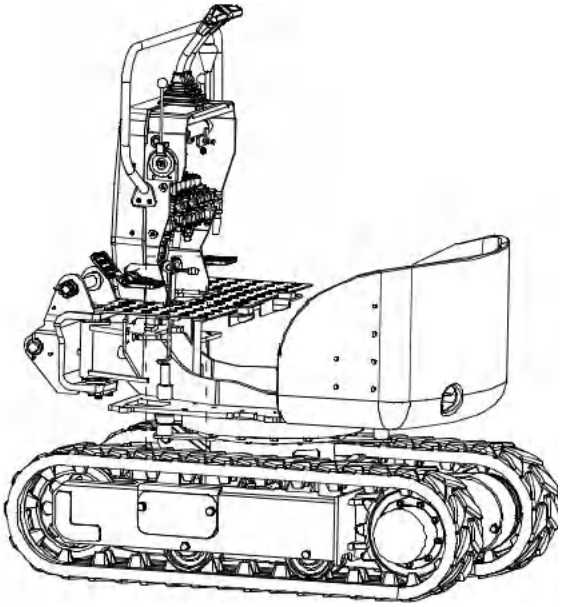
2) When moving the machine up or down, never use the c

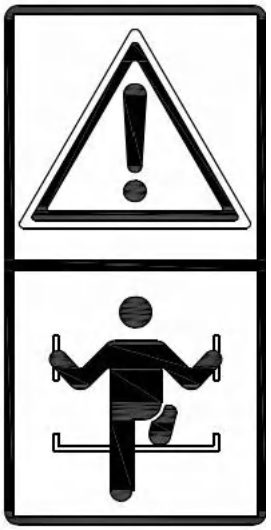
3) Before operating the machine, ensure the tracks and floor adhesive surface are free of mud, grease, or other slip-inducing substances. If present, clean them thoroughly.

4) Do not jump on or off the machine, and avoid moving it up or down during operation.

5) Before leaving the machine, ensure the working device is fully lowered to the ground, then lower the safety lock rod and platform lock handle to achieve complete machine locking. Turn off the engine and maintain this locked state until the next machine operation.

6) The longitudinal box of the control console must be lifted to prevent accidental operation of the pilot handle.





Machine movement

1. Safety Principles for Mobile Machinery

1) Before starting the excavator, inspect the surrounding area for pedestrians, obstacles, and ground load capacity.

2) Before starting the excavator, sound the horn to alert others.

3) Drivers are strictly prohibited from standing on the ground to start or operate the machine.

4) Excavators must operate on solid ground with a width exceeding 1.5 times their dimensions.

5) When walking through underground passages, bridges, or near high-voltage power lines, always use hand signals to guide your movement.

6) When walking, lower the boom and dipper to maintain optimal center of gravity.

7) During operation, the aircraft must be piloted by the authorized driver only; passengers are not permitted.

8) Before turning the left working device lever, check the direction of the track frame.

9) If the bulldozer is at the rear, the joystick control should be operated in the opposite direction.

10) Do not let anyone around the machine.

11) Remove all obstacles along the machine's path.

12) The rear of the machine is a blind spot, so extra caution is required when reversing.

Warning: Switching the steering wheel suddenly while driving at high speed is dangerous.

1) Avoid abrupt lever shifts to prevent sudden engine start.

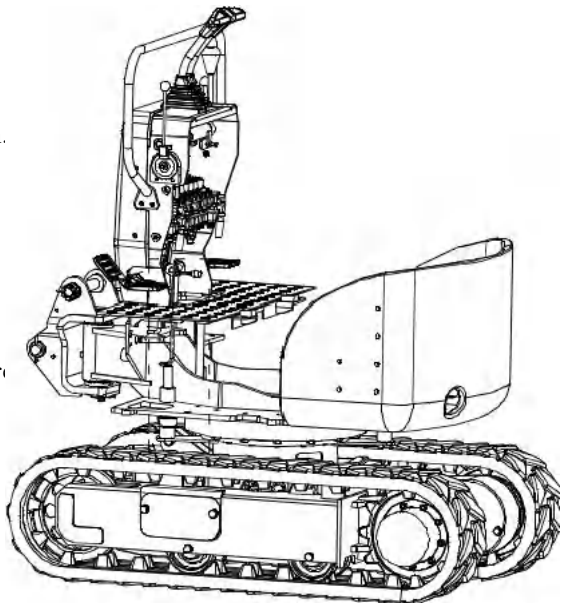
2) Avoid abruptly switching the control lever between forward and reverse (or vice versa).

3) Avoid abrupt lever transitions, such as sudden deceleration from high speed (release the lever).

2. Preparation for Moving the Machine

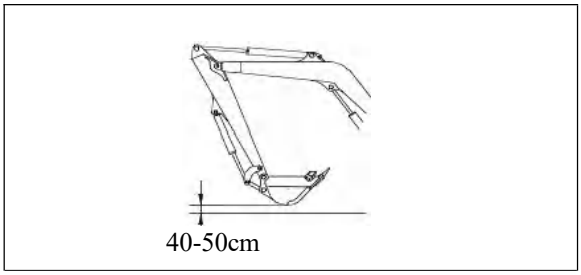
1) Lower the platform locking handle to secure the platform.

2) Turn the throttle lever to the high-speed position to incr



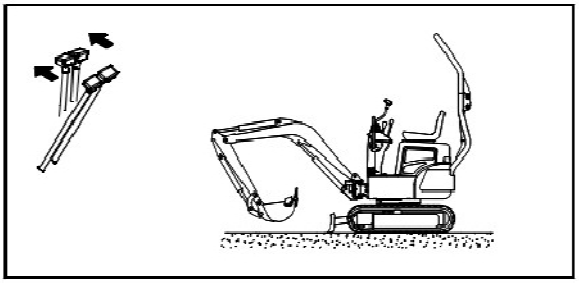
3. Move the machine forward

1) Set the control lever to the neutral position, then raise the working mechanism 40-50 cm off the ground.



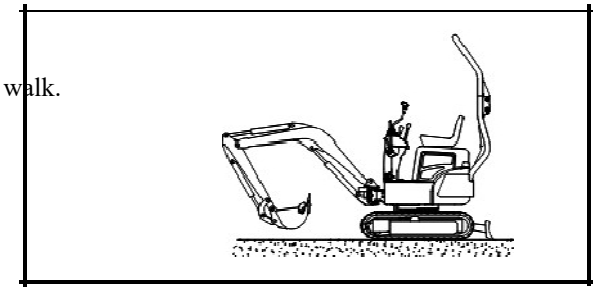
2) Follow these steps to operate the left and right walking control lever. When the bulldozer blade is in front:

Slowly push the front of the control lever to move the machir



When the bulldozer is at the rear of the machine:

Slowly pull the control rod backward to make the machine walk.



Note: If the machine exhibits abnormal walking speed at low temperatures, perform a thorough warm-up operation. Additionally, if the lower body of the machine is clogged with soil and the walking speed is abnormal, remove the dirt and soil from the lower body of the machine.

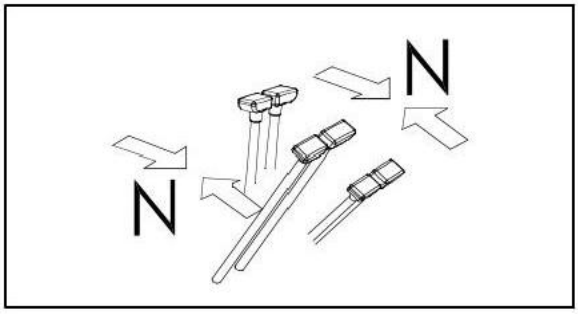
4. Move the machine backward

1) Set the control lever to the neutral position, then raise the working mechanism 40-50 cm above the ground.

2) The operation is opposite to moving forward.

5. Stop the machine

Place the left and right levers in the middle position to stop th



Note: Avoid sudden machine stops during operation. Ensure sufficient space when stopping.

Machine rotation

Note: Before operating the walking lever, check the position of the bulldozer blade. If the blade is at the rear, the walking lever will function in reverse.

Change the driving direction by using the left and right walking control lever.

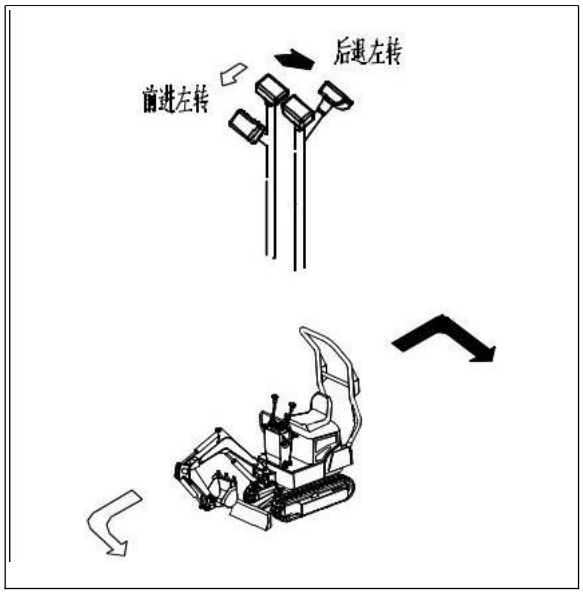
Avoid sudden changes in direction whenever possible. Especially when performing a reverse rotation (in-place turn), stop the machine before turning.

1. Turn when the machine stops

When turning left:

To move forward, push the right walking lever to the front, and the machine will turn left. To move backward, pull the right walking lever back, and the machine will turn left.

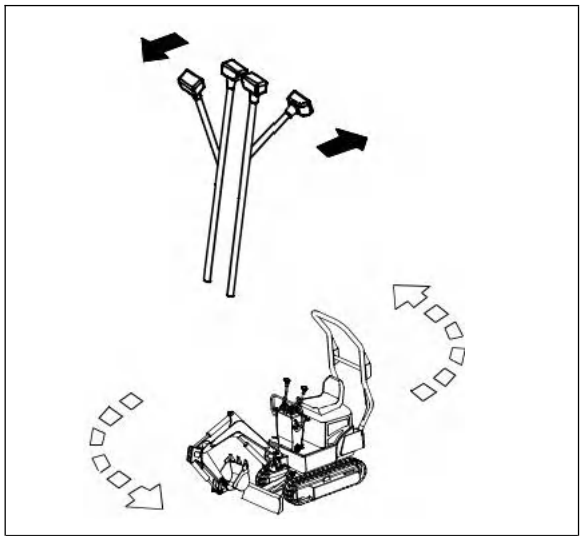
When turning right, operate the left steering column in the same manner.



pivot steering

When making a left turn on the spot, pull back the left steering lever and push forward the right steering lever.

When making a right turn on the spot, pull back the right steering lever and push forward the left steering lever.



Rotation of machine

●Before operating the upper structure of the rotary crane, check the surrounding area for safety.

●Confirm the platform locking pin has been raised, releasing the platform from the chassis.

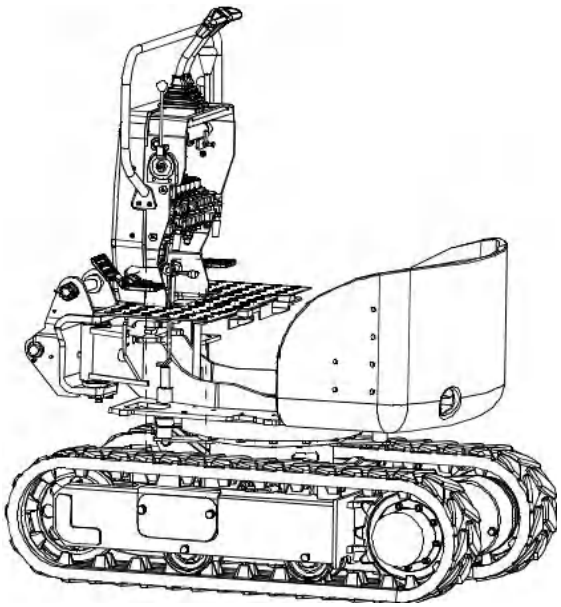
●A quick turn of the left pilot valve handle will cause the machine platform to rotate rapidly, while a slow turn will result in a gradual rotation. Pay attention to the speed of the pilot valve handle operation.

1) Before commencing the rotation operation, lift the platform locking pin to release the platform from the chassis.

2) Turn off the deflection switch to rotate the machine on the

3) Rotate the platform by operating the left pilot valve handle. The platform turns left when the handle is deflected left, and turns right when deflected right.

4) When not performing rotation, insert the platform positioning pin to lock the rotation.



Operation of the working device

If the working device lever is operated quickly, the working device will move rapidly; if the working device lever is operated slowly, the working device will move slowly.

The working device is operated by the left and right working device control rods. The left working device control rod operates the bucket rod and rotation, and also manipulates the swing of the steering head. The right working device control rod operates the boom and bucket.

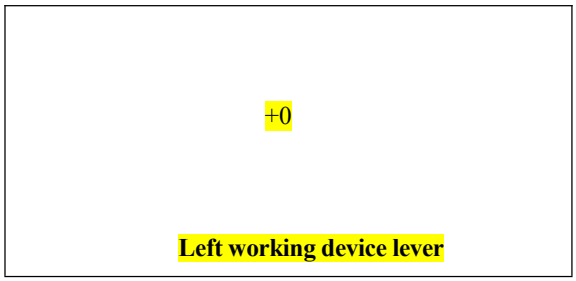
When the operating lever is released, the working devices automatically return to the neutral position, and the working devices remain in place.

If the lever is operated within 15 seconds after engine shutdown, the working device can be lowered to the ground.

In addition, the working device can be operated to release the residual pressure in the hydraulic circuit and lower the boom after the machine is loaded with a trailer.

1. Control of the game

The lever of the left working device is operated, the bucket lever is extended when pushing forward and retracted when pulling backward.

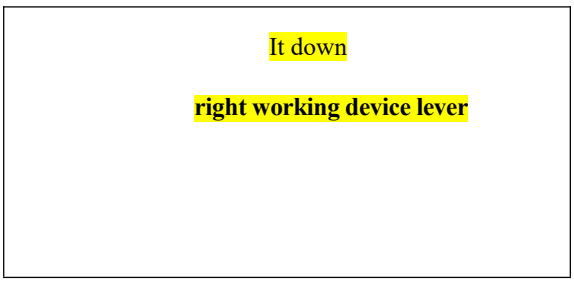


2. Rotation Control

When the lever of the left working device is deflected to the left, the platform turns to the left, and when it is deflected to the right, the platform turns to the right.

Before the rotation, the machine should be in the rotation state.

3. Dynamic Arm Control



Operation of the working device

The right working device lever is operated, the boom is lowered when pushing forward and raised when pulling backward.

4. Bucket control

The right working device lever is operated, the bucket is turned outward when the lever is turned to the right, and the bucket is turned inward when the lever is turned to the left.

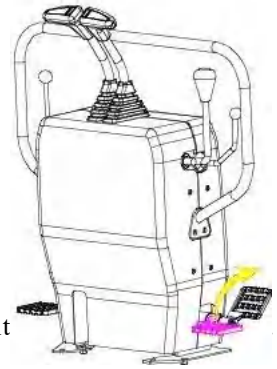
pharmacokinetics

right working device lever

5. Boom deflection (steering head) control

Pressing the deflection pedal forward deflects the boom to the left, while pressing it backward deflects the boom to the right.

When not in use, the rear pedal must be folded forward to prevent



6. Operation of Bulldozer

The operator pushes the handle down, and the bulldozer blade cuts into the ground. When lifting, the bulldozer shovel is raised.

Note: During boom operation, temporary pauses may occur. This is not a mechanical failure but a normal phenomenon of the excavator. The boom's self-weight accelerates its movement, which may lead to insufficient fuel supply.

Working on slopes or in water

Warning: Construction near foothill slopes is highly hazardous. Various working conditions—including rainwater, muddy surfaces, snow-covered areas, frozen ground, loose sand, and soft terrain—pose potential safety risks to operations. Therefore, when working in hazardous areas like mountain slopes or slopes, you must accurately assess safety conditions before making decisions.

●When walking, lift the bucket about 20-30 cm off the ground.

● Do not walk backward down a slope.

●When walking on protrusions or other obstacles, keep the working device close to the ground and proceed slowly.

● Avoid turning or crossing slopes. Always change direction at a flat area first.

●Avoid turning or operating the machine on slopes, as it may cause imbalance and overturning. When the bucket is loaded, downward turning is extremely dangerous.

If this is necessary, a platform should be built on the slope with soil to keep the machine balanced during operation.

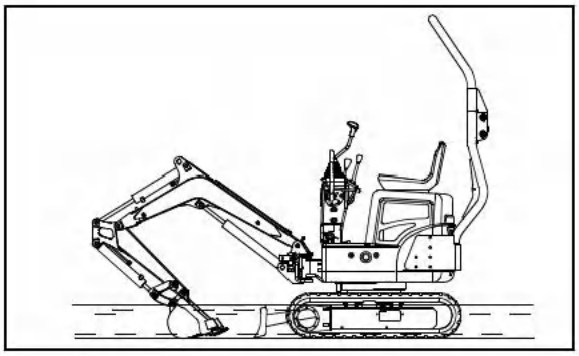
● Avoid steep slopes, as this may cause the machine to tip over.

●When climbing uphill, if the track plate slips or the track force alone cannot support the ascent, do not use the boom's pull to assist the machine, as this may cause it to tip over.

●When climbing a slope, ensure the engine and hydraulic oil are properly preheated, otherwise it may cause accidents.

permissible depth

Do not operate the machine in water deeper than the lov



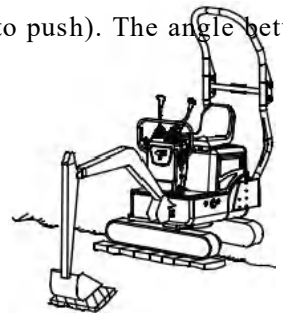
For parts that have been submerged in water for an extended period, apply grease until all the used grease is squeezed out.

Get out of the muddy environment

Always handle with care to avoid getting stuck in mud. If the machine gets stuck in mud, follow these steps to remove it.

A. Trapped on one side of the tracks

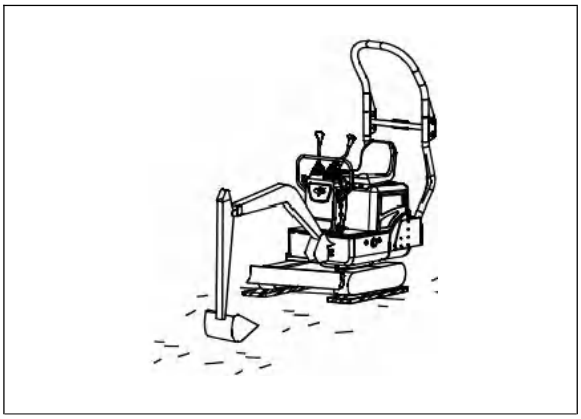
Note: When lifting the machine with the boom or mast, ensure the bucket base remains in contact with the ground (do not use the bucket teeth to push). The angle between the boom and mast should be between 90 and 110 degrees.



When only one side of the track is stuck in the mud, lift the track with the bucket, then place wooden boards or logs underneath to move the machine out. If necessary, place wooden boards under the bucket as well.

B. Both tracks are stuck in place.

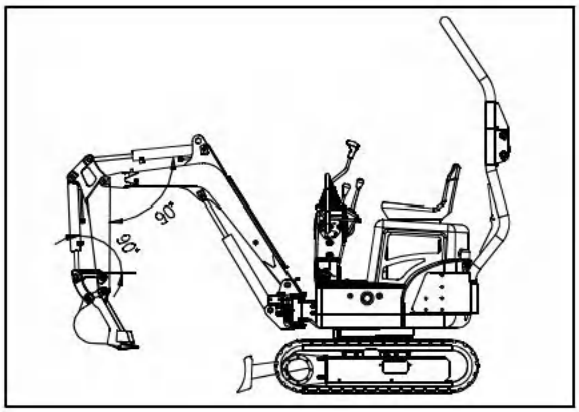
If both tracks become stuck in the mud and cannot be moved due to slipping, use the method described above by placing wooden boards or logs as padding. Insert the bucket into the ground ahead, operate the bucket handle in the same manner as during excavation, and adjust the travel lever to the forward position to pull out the machine.



Construction Work Guide

1. Reverse shovel operation

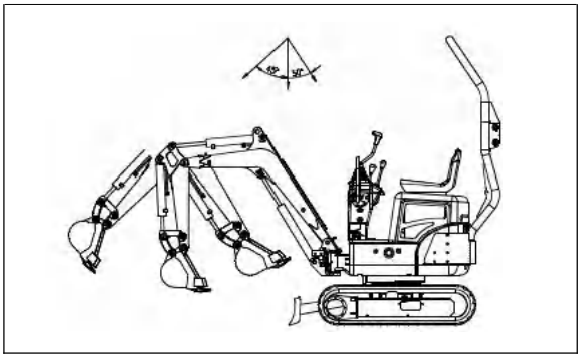
The reverse shovel is suitable for digging at the position lowe



When the machine is in the position shown in the right figure, that is, when the bucket cylinder is at 90° with the connecting rod and the bucket rod cylinder is at 90 ° with the bucket rod, the maximum digging force of the bucket can be obtained.

The angle is effective in the excavation, which can optimize the work efficiency.

The digging range of the boom is 45° away from the machine to 30° toward the machine.

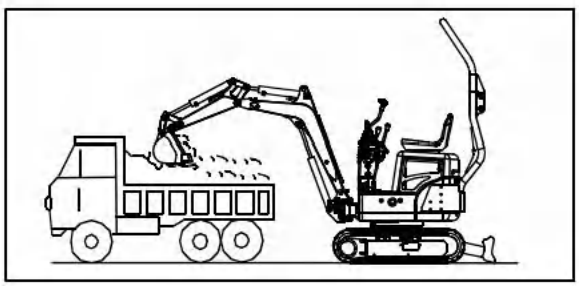


The operation depth may vary depending on the actual digging conditions, but always stay within the specified range and avoid pushing the hydraulic cylinder to its full stroke.

Note: It is advisable to excavate hard rock surfaces only after they have been crushed by other methods. This approach not only reduces equipment damage but also proves more economical.

2. Loading operation

In areas with small turning angles, positioning the dump truck within easy visibility of the operator enhances operational efficiency.



Loading from the rear of a dump truck is more convenient and allows for a greater load capacity compared to loading from the side.

3. Ditch excavation work

The bulldozer is pushed to the back and anchored into the soil surface.

Extend the boom and the dipper stick, and insert the dipper teeth into the soil surface.

When excavating with a bucket-pole hydraulic cylinder, adjust the bucket's cutting angle and soil loading angle as needed during the process, or switch to a bucket-pole hydraulic system. Avoid overloading the hydraulic system by inserting the bucket teeth too deeply into the soil, which could cause the bucket to stall. If the bucket stalls, slightly lift the boom to resolve the issue. Once the bucket is full, raise the boom and bucket-pole to elevate the bucket above ground level, then rotate the platform to an optimal position for unloading.

pay attention to：

1) Do not touch the overhead power lines.

2) First, inspect the underground pipelines and cables before digging to prevent damage and electric shock.

3) In case of an electric shock accident, the driver must remain seated and warn others to stay away. The vehicle should be moved to a safe area, and the driver should only leave after the power is disconnected.

4. Backfilling or leveling

To fill the ditch, the excavator moves perpendicular to its direction. After the bulldozer blade cuts into the soil to a certain depth, the operator releases the handle and starts the machine to push the blade into the ditch.

5. Shake out the mud and soil from the bucket

Keep the lever in a near horizontal position and the bucket in the unloading position. If the sand and soil still cannot be discharged, operate the right working device lever several times to shake out the sand and soil from the bucket, avoiding the method of using the end of the bucket cylinder stroke to impact and vibrate the sand and soil.

6. Precautions for the Use of Relevant Components

A. Precautions for using the履带 (track)

l) Excessive debris entering the tracks will increase their operational load and cause damage.

2) Avoid sudden turns on highly frictional surfaces.

3) Avoid exposure to saltwater or corrosive gases, as salt can corrode the tracks.

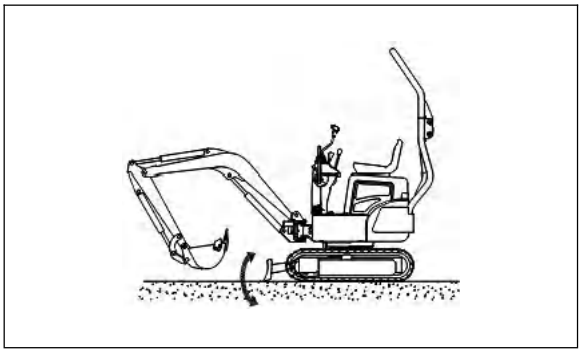
4) If the tracks are not to be used for an extended period, store them in a cool and dry place.

5) When one track and the front assembly are lifted, the other track should not be used for movement to prevent wear.

6) When walking, the tracks must remain taut to prevent them from detaching or sustaining damage.

B.Merits of using a bulldozer shovel

1) The bulldozer shovel is only for soil transportation. Do not use it to dig soil, as this may damage the shovel or track system. (See right figure)



2) The bulldozer shovel cannot handle heavy or unstable loads, as it may damage the shovel or track system.

3) When in motion, the bulldozer shovel must not hook onto any objects, as this could damage the shovel or track system.

4) When lifting the machine with a bulldozer, ensure the road surface is level and the bulldozer remains firmly on the ground.

Dismantling and Installation of the Bucket

security principle

●When striking the pin with a hammer, metal shavings may enter the eyes, causing severe injury. Always wear protective goggles, a safety helmet, gloves, and other protective equipment when performing this operation.

●When removing the bucket, ensure it is securely positioned.

●If the pin shaft is struck forcefully, it may fly out and injure personnel in the surrounding area. Therefore, before striking the pin shaft, ensure the surrounding area is

The domain is secure.

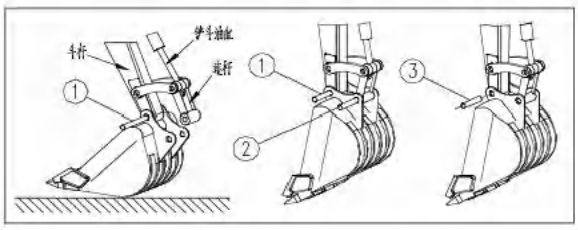
● When removing the pin, be sure not to stand under the bucket or place any part of your body there.

●When removing or installing the pin, be careful not to injure your hands.

●When aligning the hole, avoid inserting your fingers into the pin.

install

Position the machine on a solid, level surface. When performing connection work, ensure mutual understanding of signals and proceed with caution for safety.



Start the excavator and face the bucket. Operate the bucket boom until the hole of the bucket and the bucket boom are aligned. Then insert a 30mm steel rod ① into the hole.

The boom and the dipper are raised to suspend the dipper vertically on the dipper.

Adjust the joystick cylinder to align the connecting hole of the connecting rod with the bucket's mounting hole. Install shaft ②,

remove steel rod ①, and install shaft ③.

dismantle

Position the machine on a firm, level surface. Ensure the bucket is in contact with the ground. A heavy drop of the bucket will increase resistance, making it difficult to remove the pin.

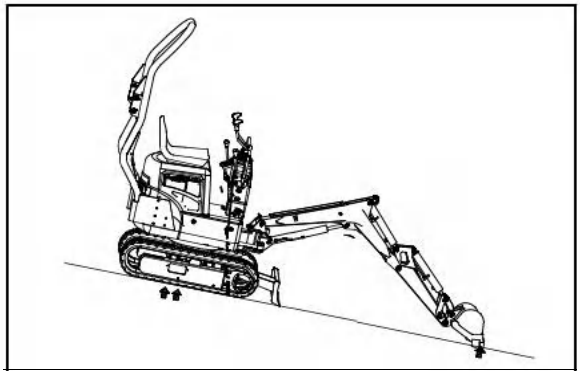
Remove the double nut from the locking bolt of each pin of the boom and connecting rod, then remove the bolt, and finally take off the boom pin ③ and connecting rod pin ② and the bucket.

Parking machine

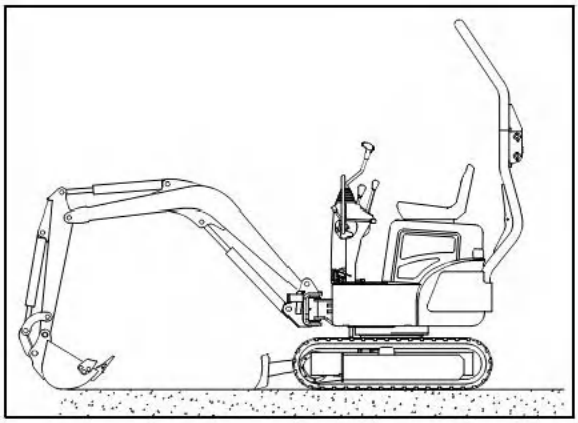
security principle

1) Avoid sudden parking. When parking the machine, leave as much space as possible

Large space.



2) Park the machine on a firm and level surface, place the bulldozer shovel and bucket on the ground, and maintain the machine body in a horizontal position. Avoid parking the machine on slopes. If it is necessary to park the machine on a slope, place blocks under the tracks and insert the working device into the ground to prevent the machine from moving.



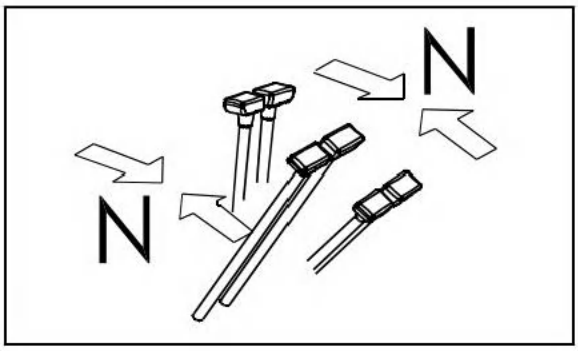
3) If the operator accidentally touches the control lever of the working device, the working device or machine may suddenly move, resulting in serious personal injury or accidents. Therefore, before standing up from the seat, it is essential to...

The full-lock control lever is firmly in the locked position.

Parking machine

1) Set the left and right walking levers to the neutral position. Stop the machine.

2) After heavy-load operation, avoid immediate shutdown. Let the engine idle for 5 minutes to cool down before stopping.

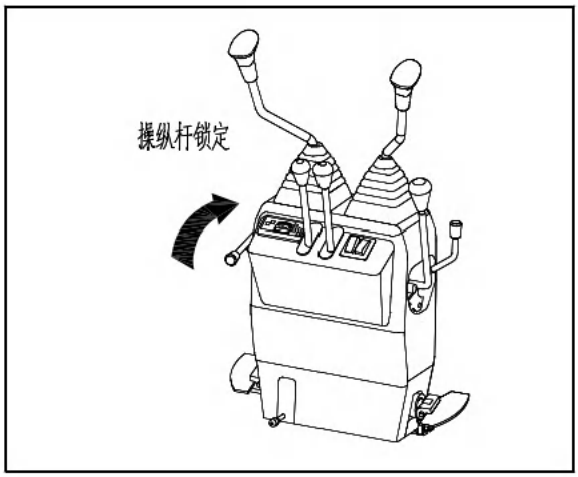


3) Lower the bucket and bulldozer blade to the ground while keeping the machine level.

4) Push the accelerator pedal forward to the floor and pull the parking lever back to the floor (if equipped).

5) Set the ignition key to the "OFF" position (all indicator lights will turn off).

6) After engine shutdown, the parking lever must be reset.



After the assignment

1. Examination

Check the engine water temperature, oil pressure, fuel pressure, fuel level on the machine digital monitor.

2. Lock it

Lock the following areas.

1) Fuel tank filler port

2) Hydraulic oil tank filler port

3) Battery compartment cover.

4) Engine hood

Note: Do not stand behind the engine hood when opening it, as the hood may spring up and cause injury.

Loading, unloading and transportation of machinery

1. Safety Rules for Machine Transportation

1) When operating the engine at low speed, handle the machine slowly during loading and unloading.

2) Do not install or remove the machine during automatic warm-up operation.

3) If the automatic warm-up is canceled during loading/unloading, the speed will change abruptly.

4) When loading/unloading machinery, select a solid and level ground surface. Maintain a safe distance from road edges.

5) Use ramps with adequate width, length, thickness, and strength. The board width should be 1.2 to 1.5 times the track width. To prevent accidents, the loading/unloading slope should be less than 15°, or the ramp length should exceed 3.5 times the height. When using a soil slope, ensure complete compaction of the piled soil and implement measures to prevent slope collapse.

6) To prevent the machine from slipping on slopes, remove all dirt and debris from the tracks before operation. Ensure the slope surface is clean and free of water, snow, ice, grease, or oil.

7) Do not correct the steering on the slope, as this may cause the machine to tip over. If turning is necessary, exit the slope, correct the direction, and then re-enter the slope.

8) Do not use the working device for loading or unloading operations, as it is dangerous.

9) Do not operate any control levers except the walking lever when on a slope.

10) At the junction between the ramp and the transport vehicle, the machine's center of gravity may suddenly shift, posing a risk of imbalance. Therefore, it is essential to proceed slowly when crossing this section.

11) When retracting the upper structure on the transport vehicle, the vehicle becomes unstable. Therefore, the working assembly must be retracted and the rotation performed slowly.

12) Whether boarding or alighting, the wheels of the transport vehicle must be wedged in place.

13) During transportation, secure the excavator to the transport vehicle using wooden wedges and a rope strap.

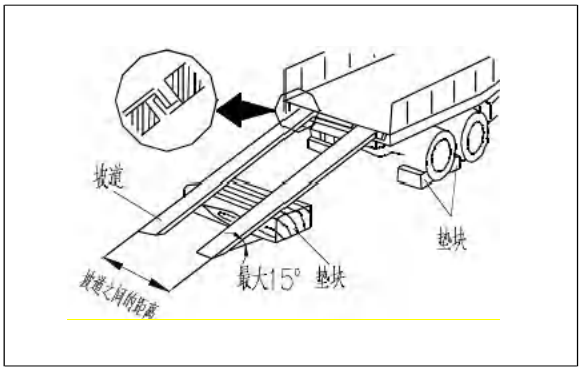
14) Before leaving the seat after completing tasks or ending operations, the driver must lock the control lever to prevent accidental or unintentional activation of the machine.

2. Loading

1) Loading must be performed on a solid, level surface, maintaining a safe distance from the roadside.

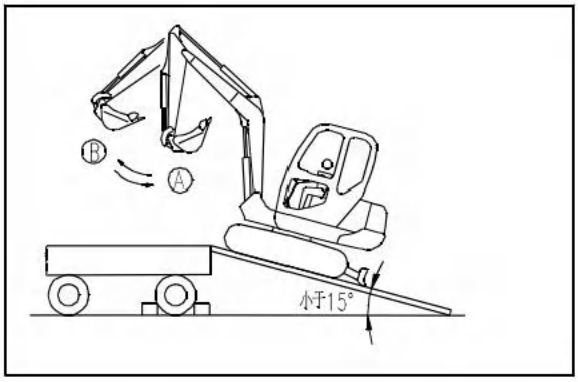
2) Apply appropriate braking to the transport vehicle and place a pad under the tire to ensure the transport vehicle does not move.

3) Install a ramp between the transport vehicle and the machine, ensuring both sides are level. The maximum slope angle should not exceed 15 degrees. Adjust the distance between the ramps to align with the track center.



4) Align the excavator with the board ramp, with the bulldozer shovel positioned at the rear. For safety, the excavator should approach the ramp and then slowly climb up until reaching the end of the ramp.

Note: When on a slope, operate only the walking lever. Do not operate any other levers or pedals.



5) Stop the excavator and extend the boom (position B in the diagram) to lower the front of the tracks onto the transport vehicle's floor. Ensure the working device does not contact the vehicle body during this lowering process. Continue driving the excavator to the designated position of the transport vehicle.

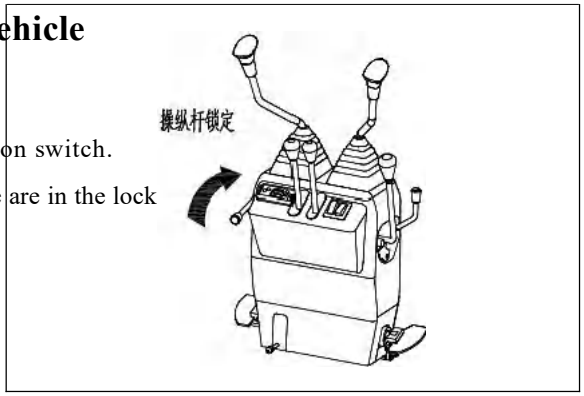
6) Lower the boom, place the bucket on the floor, then lower the bulldozer and park the machine at the designated spot on the transport vehicle.

Warning: Before leaving the seat after completing work or ending the operation, the driver must first operate the safety lock lever.

Lock all control levers to prevent unintended operation of the machine due to accidental or unintentional contact with the levers.

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

3. Secure the machine to the transport vehicle

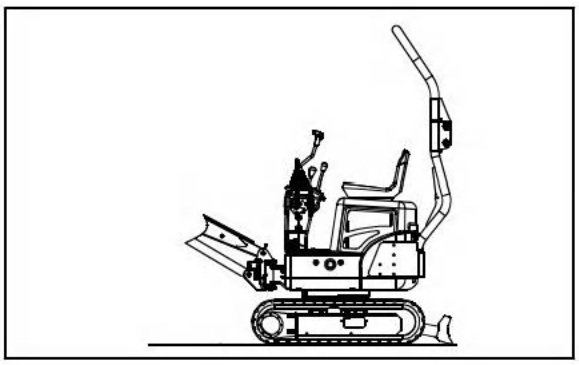


1) Set up the working device properly.

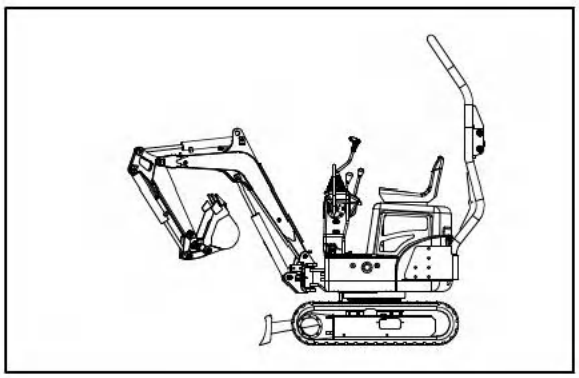
2) Turn off the engine and remove the key from the ignition switch.

3) Verify that the control lock lever and platform lock handle are in the lock

4) Place shims under both ends of the tracks to prevent the machine from shifting during transportation, and secure the machine firmly with a steel wire rope. Special attention should be paid to ensuring the machine is securely fixed to prevent it from sliding to one side.



4. Unloading from the transport vehicle



1) The operation must be performed on a solid, level surface, maintaining a safe distance from the roadside.

2) The transport vehicle applies the brakes, and blocks are placed under the tires to ensure the vehicle does not move.

3) Install a ramp between the transport vehicle and the machine. Ensure both sides of the ramp are on the same level. The maximum slope angle should not exceed 15 degrees. Adjust the distance between the ramps to match the center of the tracks.

4) Remove the steel wire rope that secures the machine.

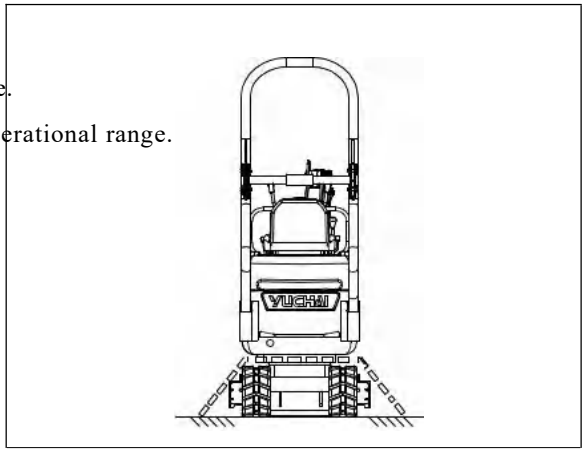
5) Start the engine. In winter, ensure thorough warm-up.

6) Lower the safety lock lever.

7) Lift the boom and bucket, then raise the bulldozer blade.

8) Ensure there are no obstacles within the excavator's operational range.

9) Remove the platform locking pin to rotate the platform 180 degrees, aligning the excavator's digging device with the slope and moving it forward.



10) The excavator moves forward slowly until it reaches the top of the scaffolding board, extending the boom to lower the tracks onto the ramp, then proceeds steadily back to the ground.

5. Hoisting machine

A. Safety Issues

1) Do not lift the machine when it is occupied.

2) Ensure the steel wire rope used for hoisting the machine has sufficient strength to support its weight.

3) Do not lift the machine in any position other than those specified in the following procedures, as this may cause the machine to lose balance.

4) Do not hoist the machine when the upper structure is tilted sideways. Before hoisting, rotate the working device to one end of the sprocket and align the lower belt with the upper structure.

5) Keep the machine level when lifting.

6) When operating lifting machinery, walking beneath the equipment is extremely hazardous. Never walk under the machinery.

B. Hoisting Procedures – Machines with Standard Technical Specifications

Note: The hoisting procedure applies to machines with standard technical specifications. A dedicated lifting device with sufficient capacity to handle the machine's weight must be used.

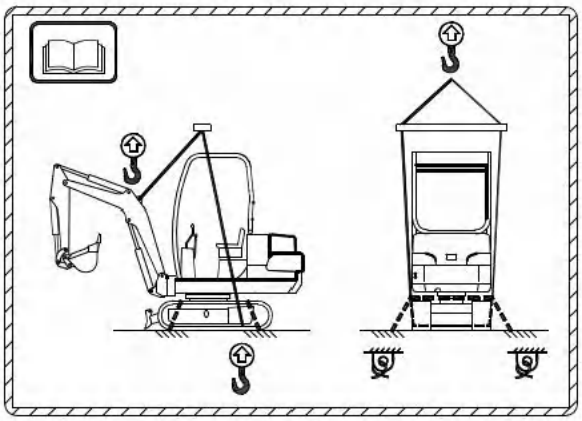
When lifting machinery, follow these steps on a level ground.

1) Rotate the upper structure to position the working device at one end of the sprocket.

2) Fully extend the bucket cylinder and boom cylinder, then lower the working device to the ground using the boom cylinder.

3) Turn off the engine, make sure there's nothing around the excavator, then leave the machine.

4) Install the steel wire rope between the guide wheel and the track support wheel from the front, and between the drive wheel and the track support wheel from the rear. Alternatively, the steel wire rope may be run beneath the track.



5) Set the wire rope's lifting angle to 30°-40°, then slowly hoist the machine.

6) After the machine leaves the ground, carefully check its balance before lifting it slowly.

Work in cold/hot climates

1. Operations in cold climates

Chilly weather may cause specific issues, requiring special precautions to prevent severe equipment damage. Regular maintenance in cold conditions can significantly extend the machine's lifespan.

1) Electrical system: Maintain battery cleanliness and ensure full charging. Inspect battery cables and connectors, clean connectors and apply a layer of grease to prevent corrosion.

2) Lubricant: Apply lubricating oil with appropriate viscosity at each joint. Use the oil recommended by the machine.

3) Fuel system: Verify whether the fuel supply is compatible with the cold weather conditions. Switch to low-viscosity fuel.

Check for moisture in the fuel system. Cold weather causes moisture to accumulate in the fuel tank. Inspect the fuel filter for moisture every 50 hours of operation. If no moisture is detected, the inspection interval may be extended. If moisture is present, inspect the fuel tank.

4) Cooling system: Before operating the machine in cold climates, inspect the coolant and adjust the appropriate mixing ratio. Use antifreeze suitable for ambient temperature conditions.

5) Working Device: Before operation, engage the lowest gear and start the machine slowly. Then stop the machine and operate the working device for approximately 10 minutes, or until all hydraulic cylinders are confirmed to function properly, before commencing work.

2. Working in hot climates

To prevent machine damage, follow these guidelines:

1) Ensure proper coolant level in the radiator.

2) Before the hot season begins, inspect the radiator and replace the coolant if needed.

3) Clean all dirt and grime from the radiator and engine surfaces.

4) Inspect the fan's rotating belt.

5) Use lubricating oil with appropriate viscosity.

6) Use the right proportion of coolant in the cooling system.

7) When working in harsh environments with high dust levels, regularly inspect the air filter.

Machine storage

1. Preparations before storage

When storing the machine for a long time, follow these steps.

1) Clean and rinse all components, then place the machine indoors. If outdoor storage is necessary, select a level ground and cover the machine with a protective cover.

2) Apply a thin layer of grease to the metal surface of the piston rod. Lubricate all lubrication points.

3) Remove the battery, refill with electrolyte, charge it, and store in a dry, non-freezing environment.

4) Drain the engine oil from the hot engine and replace it with anti-corrosion oil. For piston engines, use MIL-L-21260 grade anti-corrosion oil. During winter storage, use SAE10W grade 1 or 2 oil, and during summer storage, use SAE30 grade oil.

5) Add 4-6% of the same type of anti-corrosion oil to the fuel and ensure thorough mixing. To prevent condensation, the fuel tank should be refilled with this blended fuel.

6) Test the antifreeze performance of the coolant by adding antifreeze to achieve a minimum freezing point of-20°C. If the coolant lacks preservatives due to climatic conditions, add a corrosion inhibitor (e.g., 5% as specified in MIL-G4339C).

7) Start the engine and let it run for at least 15 minutes at various speeds without load. For hydraulic components and gearboxes, drain the lubricating oil, then run the engine before replacing it with fresh oil.

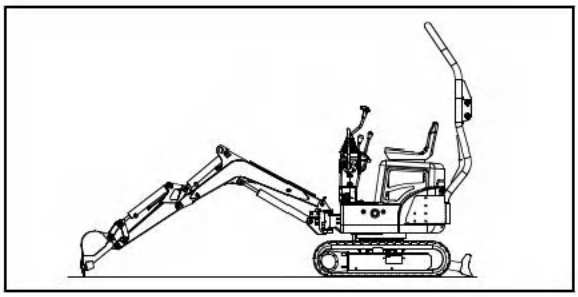
8) Seal the air intake of the air filter and the exhaust outlet of the exhaust pipe. For this purpose, it is recommended to use plastic thick paper and adhesive tape.

9) Lock the platform by tightening the safety lock lever to secure all control levers and pedals.

10) Set the shut-off valve for the machine's accessories to the locked position. Install a threaded plug on the elbow.

11) Keep the machine clean and store it in a dry place.

Note: When storing the machine, adjust it to the position shown in the figure on the right to protect the hydraulic cylinder piston rod and prevent rusting.



2. Storage period

1) During storage, the machine should be operated monthly to deposit a fresh oil film on the moving parts' surfaces. Additionally, the battery must be charged.

2) Turn the tracks.

Warning: When the machine is indoors, if rust prevention is necessary, open doors and windows to promote air circulation and prevent gas poisoning.

3. Recovery after storage

When using a machine that has been stored for a long time, follow these steps before use.

1) Remove the grease from the cylinder piston rod surface.

2) Add engine oil and lubricating grease to all components.

3) When the machine is stored for an extended period, moisture from the air may seep into the oil. Before or after starting the engine, inspect all oil components. If water is detected in the oil, replace the entire oil.

Note: 1) Under normal climatic conditions, the storage method described above can keep the excavator in use for one year. However, after six months of storage, each component should be rotated for 15 minutes without load, and lubrication should be applied to all components.

2) Before putting long-term stored excavators into operation again, necessary work and inspections must be performed. After one year of storage, the oil in the reducer and hydraulic circuit should be drained and replaced.

Technical Fault Cause and Solution

hitch	cause	countermeasure
1. The engine won't start or is very difficult to start.	●The starter motor has a problem	Replace or service the starter motor
	●The battery is not fully charged	● Charge or replace the battery
	Improper use of preheating circuit or preheating plug	●Repair or replace the preheating plug
	●Incorrect fuel injection timing	Check fuel injection timing
	● Oil pipeline blockage	●Clean the oil circuit
	● Fuel filter clogged	● Clean or replace the fuel filter
	● Water, dust, or air in the fuel system	●Vacuum the system and clean the oil circuit
	●The fuel injector is dirty or the fuel injection pressure is low	●Repair at a local service center
	●Fault of fuel injection pump	●Consult the company agent
	● Fuel is low	● come on
	●Blockage of the intake and exhaust system	● Ensure smooth operation of the intake and exhaust systems
2. Engine detonation, irregular operation, or shutdown	●Massive gas leakage	●Consult the company agent
	● Fuel filter clogged	●Clean the filter
	● The fuel system contains contaminants or air	● Exhaust and oil line cleaning
	● Filter clogged, nozzle dirty or faulty	●Repair at a local service center
	● High-pressure oil pipe damaged	●Replace the high-pressure oil pipe
	● Fuel is low	● come on
	●The governor connection cannot be adjusted	●Consult the company agent
	●The fuel injection pump is faulty	●Consult the company agent
	● Incorrect fuel injection timing or clogged fuel injector	● Check fuel injection timing and fuel injectors
3. Engine Power Reduction	● Fuel mixed with air	●Exhaust air
	● Poor oil flow in the oil circuit	● Inspection and cleaning
	● Fuel injection timing variation	Adjust according to the specified value
	● Injector malfunction	●Check working pressure and fuel atomization

Technical Fault Cause and Solution

	●Air filter clogged	● Clean the filter cartridge.
	●Incorrect clearance between intake and exhaust valves or valve leakage	● Adjust valve clearance
	●Cylinder head gasket failure with air leakage	●Replace cylinder head gasket
	●The fuel injection pump is malfunctioning	●Consult the company agent
	● engine overheat	● Check whether the coolant used is correct. Inspect the water pump and belt for looseness; if any, repair or replace them and remove obstructions from the water passage.

hitch	cause	countermeasure
4. Engine overheating	●The coolant level is too low	●Add coolant
	● Temperature sensor malfunction	●Replace the sensor
	●Air filter clogged	●Clean the air filter
	●The fan belt is loose or malfunctioning	● Tighten or replace
	●Contamination in the cooling system channel	● Clean the channel
	● Poor-quality engine oil or excessive oil	● Change the oil
5. Low engine oil pressure	●Low engine oil level	● come on
	● Oil filter clogged	●Clean the oil filter
	● Oil leakage in the pipeline	● Tighten and replace
	● Engine coolant temperature is too high	● Adjust the coolant mix ratio correctly or consult the local company agent
6. Engine emitting ash-black smoke	● Poor-quality fuel	Use the correct fuel
	●Air filter clogged	●Replace filter cartridge
	●Incorrect fuel injection timing	Adjust according to the specified value
	●Poor nozzle atomization	●Inspection, replacement of parts
7. The engine is emitting white smoke.	● Poor-quality fuel	Use the correct fuel
	● Excessive engine oil	Restore recommended oil level
	●Incorrect fuel injection timing	Adjust according to the specified value
	● Water present in the cylinder and fuel	●Check and change fuel
8. The battery cannot be charged.	●Loose or rusted connection	● Clean or tighten
	● Generator belt is loose or faulty	● Tighten or replace
	● Generator not charging	●Consult the company agent
9. Starter fails to operate or rotates slowly	●Loose or rusted connection	● Clean or tighten
	●The battery is not fully charged	● renewal
	●The line is damaged.	●Consult the company agent
10. Engine running with generator alarm	● generator failure	●Consult the company agent
	●Fault of electronic regulator	● renewal
	●The line is faulty	● examine and repair

light on		
11. Hydraulic system components operate too slowly	● Hydraulic oil cooling	●Control operation temperature
	●The pilot system pressure is too low	●Consult the company agent
	● Incorrect use of hydraulic oil	● Use the correct hydraulic oil
	The engine speed is too slow.	●Consult the company agent

hitch	cause	countermeasure
12. High temperature of hydraulic oil	● Incorrect use of hydraulic oil	● Use the correct hydraulic oil
	●Oil line blockage	●Consult the company agent
	● Hydraulic oil filter clogged	● Clean or replace
	● Oil pump wear	●Consult the company agent
	● Oil cooler clogging	● Clean the oil cooler
	● Oil cooler failure	●Consult the company agent
	●The main safety valve or the rotary system relief valve is under excessive pressure	●Consult the company agent
	●The oil is too dirty.	● change oil
	●Sensor malfunction	● renewal
13. Emulsification or foaming of hydraulic oil	●Gas leak in the pipeline between the fuel tank and the fuel pump	● Tighten during maintenance
	● Incorrect hydraulic oil	● Use the correct hydraulic oil
	● Water in hydraulic oil	● change oil
	●Low oil level	●Calibration oil level
14. Low or no hydraulic pressure	● Hydraulic pump damaged	●Consult the company agent
	●The system has insufficient fuel	● come on
	● Safety valve malfunction	●Consult the company agent
15. All components cannot function	● Hydraulic pump damaged	●Consult the company agent
A.The oil pump is making noise.	●No hydraulic oil	● come on
	●Oil suction pipe leakage	●Repair or replace
B.The noise level of the oil pump remains unchanged.	●Auxiliary pump failure	● renewal
	● Hydraulic safety control device fails to operate	Check and repair
16. The hydraulic cylinders or motors are either underpowered or non-functional.	● Hydraulic pump damaged	●Consult the company agent
	●The main safety valve pressure has decreased	●Re-adjust the pressure
	●Low oil pressure	● come on
	● Oil filter clogging	●Clean the oil filter
	● Oil seal damaged	●Repair or replace
	● Oil leakage caused by piston rod	●Repair or replace

	damage	
	●Failure of the control mechanism	●Check, repair, or replace
	● Oil pipe fracture or oil leakage	●Repair or replace
17. The two walking devices are not functioning	● Oil leakage in the central rotary joint	●Consult the company agent
18. The row walking device is not working.	●Damaged walking mechanism	●Consult the company agent
	●The control mechanism is damaged	● examine and repair

hitch	cause	countermeasure
19. Abnormal gait	●The tracks are too tight or too loose	● readjust
	●Oil pump performance degradation	●Consult the company agent
	●Trailer deformation	●Repair or replace
	● There are gravel or rocks in the track chain	Remove for repair
	● Oil leakage in control valve	●Consult the company agent
	●Motor performance reduced	●Consult the company agent
20. Abnormal rotation	●Oil pump performance degradation	●Consult the company agent
	●The rotary motor is damaged	●Consult the company agent
	●The control valve is not working	●Consult the company agent
21. Discontinuous rotation	●Gear wear	●Consult the company agent
	● Damage to the rotary bearing or ball bearings	●Consult the company agent
	●Lack of fat	●Consult the company agent
	Oil leakage in the control valve	●Consult the company agent

5

Maintenance

Maintenance Basics

new machine running-in

The initial 100 hours of operation constitute the break-in period. During this phase, the machine must be used with caution, and it should not be subjected to tasks with excessive load or high-intensity work. For the first 50 hours of the break-in period, only 80% of the rated workload is permitted. The performance during the break-in period significantly impacts the service life of the machine.

After the first 50 working hours, perform the initial machine maintenance according to the inspection and maintenance schedule, including oil and filter replacements. Simultaneously, check the hydraulic oil contamination level to ensure it does not exceed NAS9 grade. If it exceeds this standard, replace the hydraulic oil with new.

The engine must not be allowed to run at high speed when the hydraulic system is inactive. Only after the hydraulic oil temperature exceeds 20°C can the working device be operated.

Construction in dusty areas

When working in dusty environments, follow these steps:

- Regularly use the air filter clogging sensor to check for blockages and ensure frequent cleaning of the filter cartridge.
- Clean the radiator core frequently to prevent clogging.
- Clean and replace the fuel filter element frequently.
- Clean electrical components, especially the starter motor and alternator, to prevent dust buildup.
- When performing inspections or oil changes, move the machine to a dust-free area to prevent dust from entering the oil.

Oil and Filter Element

Use clean oil and grease, and do not let impurities mix into the oil container.

After oil change or filter element replacement, inspect the old oil and filter element for metal particles or impurities. If significant metal particles or impurities are detected, report to the machine supervisor and take appropriate measures.

Do not mix oils of different grades. If you need to add a different grade, drain the old oil completely and replace it with the new grade.

For the models of diesel oil filter cartridges, engine oil filter cartridges, and air filter cartridges, customers may contact Kubota's local authorized dealers or Yuchai's authorized dealers.

Timer reading

Check the timer on the dashboard daily to see if maintenance is due based on working hours.

Use genuine parts

The use of Yuchai genuine parts is an important factor to ensure the normal operation of the machine and prolong the service life of the machine.

waste disposal

To promote environmental protection, special attention should be paid to the disposal of waste:

●Place the oil discharged from the machine into a container. Do not discharge the oil directly on the ground, or into sewers, drains, rivers, oceans, or lakes.

●When handling hazardous substances such as engine oil, fuel, coolant, antifreeze, plastic components, solvents, filter elements, batteries, and other hazardous materials, comply with relevant environmental protection regulations.

Prevent items from falling into the machine

●When opening the fuel tank inlet for inspection, ensure that bolts, nuts, washers, or tools are not dropped into the machine. Such items may cause machine damage, malfunctions, or even accidents. If any object is found inside the machine, it must be immediately removed.

●Before and after inspection, always check all tools and parts to ensure nothing has fallen into the machine.

Regular inspection and maintenance

Regular inspection and maintenance according to the items listed in the 'Regular Inspection and Maintenance Schedule' is a crucial prerequisite for ensuring proper machine operation and extending its service life. Strict adherence to the inspection and maintenance cycles is mandatory.

Follow-up after maintenance

If no follow-up inspection is conducted after each check and maintenance, unexpected failures may occur, resulting in serious injuries or damage. Please check the following items:

● Have you missed any parts that should be inspected and maintained?

●All inspections and maintenance items have been performed correctly.

● Check for any tools or parts that may have fallen into the machine. If a part enters the machine and becomes stuck in the linkage mechanism, it can be extremely dangerous.

●Inspect the machine for leaks (water or oil) and ensure all bolts are properly tightened.

Maintenance Summary

lube

●Use oil that matches the grade and temperature specified in the "Oil Selection Table" of this manual.

Replace the oil within the specified time, even if it is not yet contaminated.

●Prevent contaminants (water, metal particles, dust, etc.) from entering the lubricating oil. Most machine failures are caused by such impurities.

●Do not mix lubricants of different grades or brands.

●Always maintain the recommended fuel level. Both excessive and insufficient fuel can cause engine malfunctions.

●When changing the oil, always replace the corresponding filter element. This is especially important when replacing the oil filter. Before installation, ensure the new filter is filled with fresh, clean, and properly regulated engine oil.

fuel oil

●When storing or adding fuel, be extra careful to prevent impurities from entering.

●The fuel specified in the "Fuel Selection Table" of this manual must be used. When selecting fuel, the ambient temperature must be considered, as fuel is prone to solidification at low temperatures (especially below-15°C/5°F). Therefore, the fuel must be replaced with one compatible with the ambient temperature.

●To prevent condensation of moisture in the air inside the fuel tank, ensure the tank is refilled after daily work.

● Before starting the engine or 10 minutes after refueling, drain sediment and water from the fuel tank.

●If the engine's fuel is depleted or the filter element has been replaced, the air in the fuel line must be expelled.

grease

● Grease prevents twisting and noise at the connection.

If any component becomes stiff or makes noise after prolonged use, apply lubricant.

●Remove the old grease squeezed out during lubricant application.

●Always wipe off old grease from all surfaces, as sand or dust adhering to it may cause wear on rotating components.

Maintenance Summary

anti-freeze fluid

- Antifreeze must be used in all weather conditions.
- Check the coolant level as required and replenish promptly if low. Low coolant can cause engine overheating.
- Select the appropriate coolant and antifreeze based on ambient temperature and the required mixing ratio.
- Do not add coolant when the engine is overheated and has not cooled down.

filter element

●Replace all filter elements regularly. However, when operating under harsh conditions, filter elements should be replaced at shorter intervals based on the type of lubricating oil and fuel (sulfur content).

● Do not reuse the cleaned filter cartridge (filter cartridge type). Replace with a new one.

●When replacing the filter cartridge, check for metal particles adhering to the old one. If any are found, contact Yuchai Heavy Industry's authorized dealer.

● Do not open the packaging of the spare filter cartridge before use.

hydraulic pressure system

●During and after operation, the hydraulic system remains at high temperatures. It also operates under high pressure. Therefore, when inspecting or maintaining the hydraulic system, it is essential to allow the temperature to cool down and release the pressure from the hydraulic cylinder lines.

●When removing the plug, screw, or hose connector, avoid standing in front of the components. Gradually loosen them before disassembly to release internal pressure.

●When inspecting or maintaining the hydraulic circuit, ensure all air is expelled to release internal pressure.

● Hydraulic system maintenance includes: checking oil level, replacing filter elements, and adding hydraulic oil.

●When removing the high-pressure hose, check if the O-ring is damaged. Replace it if damaged.

●When removing components from areas sealed with O-rings or gaskets, clean the installation surface and replace with new parts.

●When installing the hose, avoid twisting or bending it into small loops. This may damage the hose and significantly reduce its lifespan.

Forced replacement parts

Critical safety components, particularly hydraulic hoses, undergo material degradation over prolonged machine operation. These materials are prone to aging, wear, or deterioration, impairing functionality and creating safety risks. Since such issues are often difficult to detect, replacement of these parts is mandatory after their specified service life.

If these parts malfunction before the specified deadline, they must be repaired or replaced immediately. When replacing the hose, the corresponding sealing components should be replaced simultaneously.

Oil Selection Table

Select appropriate fuel based on ambient temperature, operating conditions, and other factors. The fuel must comply with the following specifications.

	Lubricating oil or fuel oil	**end-use temperature**	**dynamic viscosity**	**Recommended alternative oil**
engine lubricating oil	Cold regions: CF45W/40 General area: CF415W/40	-15°C~+40°C -12C~+40°C		
hydraulic fluid	Low-temperature region: HS46+ General area: HMP46+	above-35°C above-12°C	at 40°C 41.5~52.5mm²/s	
Walking reducer lubricating oil	heavy-duty vehicle Gear oil (GL-5)	Suitable for both winter and summer		SAE80W/90
lubricating oil for rotary reducer	heavy-duty vehicle Gear oil (GL-5)	Suitable for both winter and summer		SAE80W/90
grease for guide wheel and idler wheel	Axle oil lubrication Hz-23	Various temperatures	at 50°C 20 ~ 25mm²/s	
grease	Lithium Molybdenum Disulfide Grease (No.3)	-20°C~160°C		
fuel oil	Use No.0 light diesel oil in summer. Use light diesel oil with grades-10, -20, and-35 in winter.	>0°C 0°C~-5°C -5°C~-15°C - 15°C~-28°C		
coolant liquid	Antifreeze (50% water and 50% ethanol) ethylene glycol or propylene glycol	>-32℃		

Oil Selection Table

●oil capacity data

class	unit	numeric value
fuel tank	rise	11
hydraulic oil tank	rise	12
Engine oil	rise	3.7

Tightening torque

Refer to the values in the table below for the tightening torque of bolts and nuts on the machine. Failure to achieve the specified torque may cause loosening or damage to the fastened or connected components, resulting in machine failure or operational issues.

Tightening torque of general parts

grade of bolt strength	yield strength N/mm2	Nominal diameter of the screw, mm							
		6	8	10	12	14	16	18	20
		Tighten 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

grade of bolt strength	yield strength N/mm2	Nominal diameter of the screw, mm						
		22	24	27	30	33	36	39
		Tighten 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

Tightening Torque of Hydraulic Hose

metric thread rotating nut			
metric thread	**outer diameter of steel pipe**	**N m 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
M30×2	20 22	135	115~155
M36x2	25 28	166	140~192
M42x2	30	240	210~270
M45×2	35	290	255~325
M52x2	38 42	330	280~380

Tightening Torque of Hydraulic Hose

BSP SPINNING WIRE AND ROTATING NUT		
BSPP screw thread	**metric torque N m**	**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

R F S rotating nut			
UNF screw thread	**Underline style**	min **N m**	**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

Regular inspection and maintenance schedule

Conduct regular inspections and maintenance of the machine according to the schedule in the table below, based on the machine's operating time indicated by the engine timer. If the machine is in poor working condition, under heavy workload, or equipped with accessories such as hydraulic breakers, the inspection and maintenance intervals for certain components should be shortened.

order number	page number	Check and maintain	maintenance PERIOD (TOTAL WORK HOURS)					
			10	50	**100**	250	500	1000
1		**routine inspection**						
		●Check for leaks in engine oil, coolant, and fuel	▲					
		●Appearance of mechanical parts and hoses	▲					
		● Bolt and hydraulic joint fixation condition	▲					
		●Operating components, working illumination, and indicator light conditions	▲					
		●Operating Conditions of Diesel Engines	▲					
2		**engine fuel system**						
		Check the oil level and replenish if necessary	▲					
		● Remove condensate and impurities			▲			
		●Clean the fuel tank				▲		
		Check fuel injection pressure					▲	
		●Replace filter cartridge		☆		▲		
3		**engine cooling system**						
		●Check the condition of the rubber hose and clamp	▲					
		Check the cooling water level	▲					
		● Clean the radiator fins					▲	
		●Replace the coolant		☆				
		Check coolant concentration	▲					
		Engine lubrication system and other						

4		●Check the oil level (add oil if needed)	▲					
		● Change the oil		☆		▲		
		●Replace the oil filter element		☆		▲		
		●Check the tension of the fan belt		☆	▲			
		●Check the valve clearance					☆	▲
		● Check cylinder head tightness					☆	▲
		Check the engine support fastening		☆			▲	

Regular Inspection and Maintenance Schedule

order number	page number	Check and maintain	maintenance PERIOD (TOTAL WORK HOURS)						
			10	50	100	250	500	1000	2000
5		**engine intake system**							
		● Empty the dust collection tank	▲						
		●Clean the air filter cartridge			▲				
		Replace the air filter element					▲		
6		**hydraulic pressure system**							
		Check the hydraulic oil level (add oil if needed)	▲						
		● Remove water and debris from the fuel tank				■			
		●Replace hydraulic oil and clean the oil inlet filter							☆▲
		Replace the filter elements in the hydraulic oil return and pilot circuit				☆	▲		
		●Check system pressure					▲		
7		**storage battery**							
		●Check the electrolyte level		▲					
		●Check acidity and charging status					▲		
8		**reduction box**							
		Check the oil level and top up the oil				▲			
		● Change the oil						☆▲	
		●Check the tightening torque of the reducer connection bolts		☆			▲		
9		**track**							
		● Check and adjust the tension of the tracks	▲						
10		**supporting wheel, guide wheel and leading wheel**							
		●Check the tightening torque of the		☆			▲		

		support wheel mounting bolts							
		Check the oil level in the guide wheel and support wheel						▲	
11		**lubricating**							
		● Apply lubricating oil to all lubrication points		▲					

▲ Proceed with the normal cycle ☆ Perform during the ■ initial maintenance and annually in spring and autumn

Routine Examination

Perform general routine checks on the machine every day or every 10 hours.

1) Conduct a leak test to check for oil, water, or fuel leaks in all machine components.

2) Inspect all elastic connectors and accessories for scratches, fractures, or deformation.

3) Check the fixation and connection of the hydraulic device.

4) Examine the appearance of mechanical components.

5) Inspect the operation devices, control indicator lights, and all types of indicators for functionality.

6.)Check the engine's operational status. Observe exhaust color and detect any abnormal sounds, then locate the source of the noise.

7) Check the seat adjustment mechanism.

Engine fuel system

maintenance instruction

The fuel tank has a capacity of..... 11 liters.

Oil level check..... 10 hours

Drain the oil from the tank and remove impurities.....

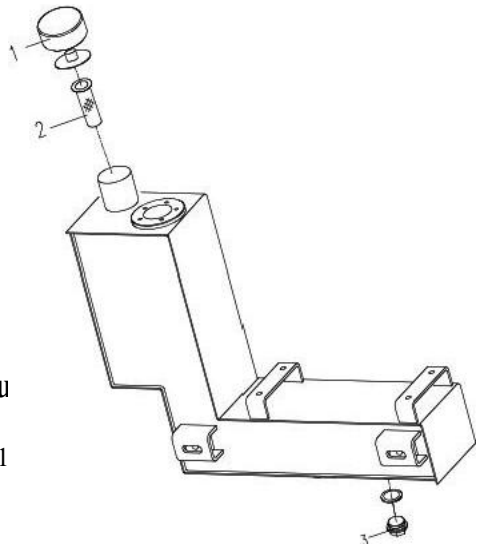
100 hours. Clean the tank..... 250 hours.

Check fuel injection pressure every 500 hours and replace the fuel filter every 250 hours.

1. Oil level check and refilling

The fuel level can be checked using the fuel gauge on the side of the fuel tank or the fuel level indicator on the combination instrument panel in the right front of the cab. Inspect once daily or every 10 hours.

To prevent condensation, the fuel tank should be refilled after each workday. The fuel inlet is located in front of the fuel-hydraulic tank.



2. Drain water and impurities from the fu

Condensate and sediment removal should be performed every 1

Open the oil valve to discharge the condensate and sediment. Once fuel oil is discharged, reinstall the drain plug. Depending on the type of fuel oil used, the user can determine the frequency of condensate discharge.

3. Clean the fuel tank

Clean every 250 hours.

1) Prepare a container to collect the discharged fuel oil

2) Remove the drain valve and take out the filter screen from the fuel inlet. Fill the tank halfway and then drain it again.

3) Clean the fuel filter and reinsert it into its original position.

4) Reinstall the drain plug and fill the fuel tank to full through the filter screen in the fuel filler port.

4) Remove air from the oil circuit.

Note: When cleaning the oil tank interior, do not use trichloroethylene; only diesel oil is permitted.

4. Exhaust of fuel circuit

If air enters the fuel circuit due to a fuel filter replacement, disconnected fuel lines, cleaned fuel filter, or accidental tank emptying, the air must be expelled before restarting the engine.

5. Exhaust of fuel circuit

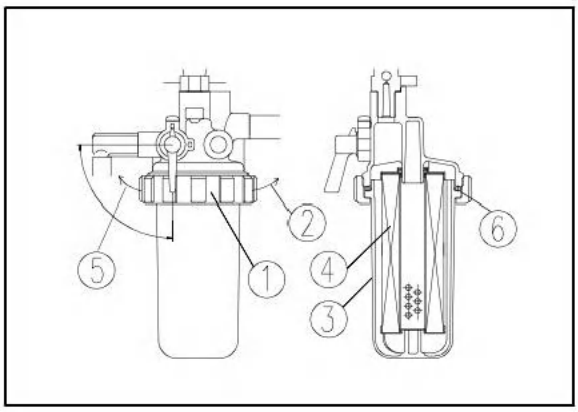
1. Set the key switch to the ON position for 10-15 seconds, at which point the fuel system will start pumping fuel via the electric self-priming pump.

2. Do not start the starter motor while pumping oil. This may cause the starter motor to overheat and damage the coil, pinion, and/or bevel gear.

6. Replace the fuel filter element

Replace the filter element every 500 hours. Always use genuine filter elements.

1. Stop the machine and allow it to cool down.
2. Turn off the fuel switch on the diesel filter/oil-water separator.
3. Rotate the fixed ring (marked 1) to the left (marked 5 in the
4. Carefully remove the fuel cup, transfer the fuel to a designated container, and dispose of it properly. Cover the bottom of the fuel cup with a towel to prevent fuel leakage. Wipe away any spilled fuel.
5. Remove the filter cartridge (marked 4 in the diagram).
6. Replace the filter element
7. Clean the inner surface of the fuel cup with clean fuel.
8. Inspect the O-ring (marked 6 in the diagram) and repl
9. Mount the oil cup onto the installation flange and tighten the fixing ring (marked 1) to the right (marked 2) on the diagram. Manual tightening is sufficient.
10. Turn on the fuel switch for the diesel filter or oil-water separator.
11. Check for any oil leaks.



Note: To minimize fuel leakage risks, ensure the fuel filter is properly secured without over-tightening. Over-tightening may damage the filter. When the upper surface of the filter gasket contacts the mounting plate, tighten it

three-quarters of a turn in a counterclockwise direction.

Engine cooling system

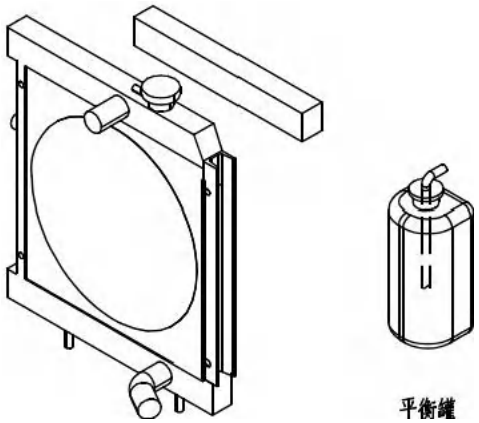
maintenance instruction

.....: 0.75L radiator capacity. Coolant level check.....: Daily or every 10 working hours. Check rubber hoses and clamps condition.....: Daily or every 10 working hours. Clean radiator fins.....: Every 500 working hours. Coolant replacement.....: Once per spring and autumn.
Check the coolant concentration..... daily or every 10 working hours

1. Check the coolant level

Before the new machine is activated, the coolant level in the radiator should be checked, and then check once a day or every 10 hours.

Remove the radiator (water tank) cap and check the coolant level. When the engine is cold, the coolant should be full.



radiator

Observing the position of the coolant level in the balance tank When the engine is cold, the coolant level should be between the highest and lowest marks.

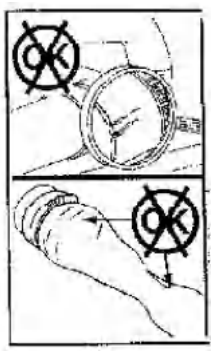
Warning: When removing the radiator cap, hot coolant may spray out. Procedure: After the system has cooled, slightly loosen the cap until the pressure is fully released. If the cap is removed too quickly, coolant may spray out, potentially causing personal injury.

2. Inspect the condition of the rubber hose and clamp

Check every 10 hours or daily.

Inspect the rubber hose for cracks or signs of hardening due to aging, and replace it with a new hose.

Check if the hose clamp is properly tightened. Replace it immediately if it shows signs of looseness or damage.



3. Cleaning and inspecting radiator fins

Clean every 500 hours.

Dust accumulation on the radiator (water tank) surface may impair cooling efficiency, requiring prompt cleaning.

Remove the engine hood and use high-pressure water or compressed air to blow away debris such as dust or leaves that clog the radiator and oil cooler fins. Simultaneously, clean the grille in front of the oil cooler. For air-conditioned machines, also clean the condenser fins.

Warning: If compressed air, high-pressure water and steam hit the body directly, or are used to blow away dust or dirt, there is a risk of serious injury. Always wear goggles, a dust mask and other protective masks.

Note: To prevent damage to the radiator fins, the nozzle of high-pressure water or compressed air must be at least 500mm away from the radiator (water tank) surface. Damaged fins may cause leaks or overheating. In dusty environments, inspect the fins daily without being restricted by maintenance intervals.

4. Change the coolant

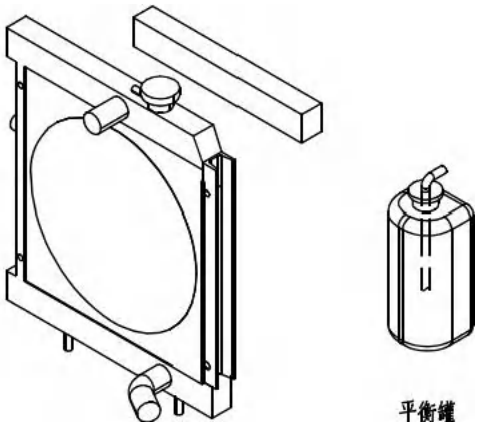
The first replacement should be performed after 50 hours of operation. Subsequent replacements shall be conducted twice annually, with one in spring and one in autumn. The antifreeze solution consists of 50% water and 50% ethylene glycol or propylene glycol.

1) Remove the radiator (water tank) cover and open the drain valve to allow coolant to drain;

2) Clean the cooling circuit by closing the drain valve, filling it with the dedicated cleaning fluid, then start the engine and let it idle for 10 minutes before stopping to drain the fluid.

3) Re-close the drain valve;

4) Add coolant to the engine and let it idle for a few minutes to ensure the coolant fills the entire cooling circuit.



radiator

Warning: Do not open the radiator (water tank) cover from a hot engine. Wait until the coolant temperature drops below 50°C.

Only then can you open the radiator cap. Otherwise, high-temperature coolant or

steam may be ejected, potentially causing personal injury!

5. Check the coolant concentration

Before the cold season begins, check the coolant concentration. The coolant should function at-20°C ambient temperature. If the ambient temperature is lower, increase the antifreeze density.

Warning: The coolant is toxic. Keep out of reach of children and pets. Dispose of according to local environmental regulations if no longer used.

Warning: Antifreeze must be used in all weather conditions!

Do not use water as the coolant alone, as it may cause corrosion damage.

River water contains high concentrations of calcium and other impurities. Its use may lead to the formation of scale deposits that adhere to engine cooling channels and radiators, resulting in heat exchange failures and overheating. Drinking water unsuitable for human consumption must not be utilized.

Antifreeze is flammable, so keep it away from open flames.

If antifreeze splashes into the eyes, immediately rinse with water and seek medical attention promptly.

Engine lubrication system

maintenance instruction

Oil.....:3.7liters.

Oil level check.....:Every 10 hours or daily.

Oil or filter element replacement.....:Every 250 hours.

1. Oil level check

Check the oil level once before the new machine is activated, and then every 10 hours thereafter.

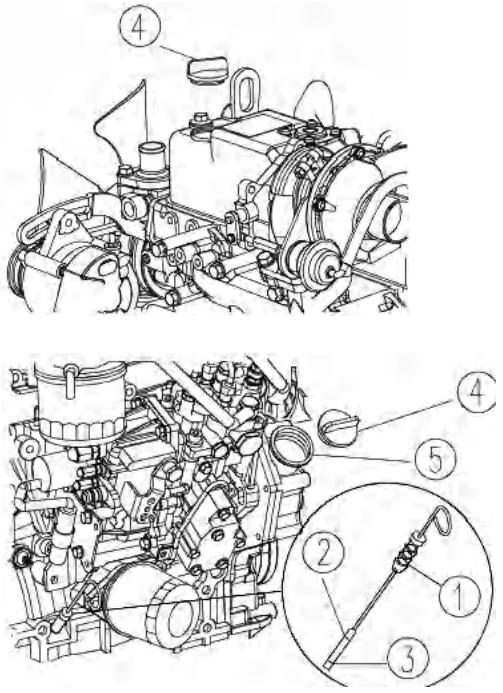
1) Park the excavator on a level surface and shut down the engine.

2). Remove the oil gauge (marked 1 in Figure 1) and wipe it with a clean cloth.

3). Insert the oil dipstick to the bottom.

4). Remove the oil dipstick. The oil level should be between the upper limit (marked 2 in Figure 1) and the lower limit (marked 3 in Figure 1).

5). If necessary, add oil through the oil inlet to raise the oil level to the specified level.



graph 1

Warning: After engine shutdown, components and oil remain at high temperatures, which may cause severe burns. Wait until the temperature drops before starting maintenance.

2. Change engine oil

The first replacement should be performed after 50 hours of operation following device activation, with subsequent replacements conducted every 250 hours thereafter.

1. Check that the engine is mounted horizontally.

2. Start the engine to reach the operating temperature.

3. Stop the engine

4. Remove one of the oil filter covers (marked 2 in Figure 2), then open the crankcase drain to facilitate oil drainage.

5. Place an oil collection tray beneath the engine to collect wast

6. Remove the drain valve (marked 1 in Figure 2) to drain t

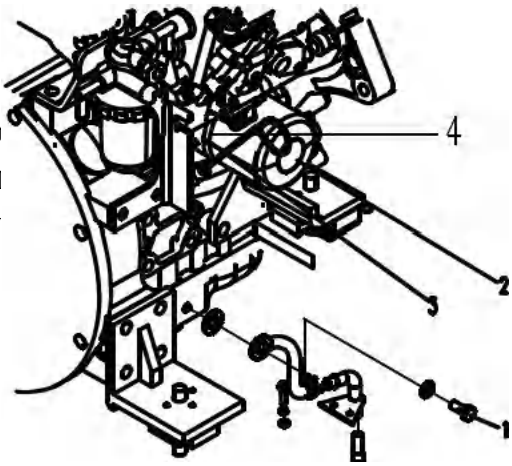
7. After all the engine oil has been drained, install the drain val

8. Add engine oil to the top and side oil filler ports (marked 4 in Figure 1) according to the oil level indicated on the table.

Check the oil level after 9.3 minutes.

10. If you need to add more.

11. Install the oil cap (marked 4 in Figure 1) and tighten it. Over-tightening may damage the cap.



graph 2

Avoid inhaling oil vapors, ingestion, and prolonged exposure to used oil.

3. Replace the engine oil filter element

The first cleaning should be performed 50 hours after the new machine is commissioned, and then every 250 hours.

Oil Filter Replacement

1. Turn the engine oil filter (marked 3 in Figure 2) counterclockwise using a wrench (marked 2 in Figure 2).

2. Clean the mounting surface of the oil filter.

3. Place the gasket onto the new oil filter and apply a suitable amount of engine oil to its surface. Rotate the filter to the right (position 4 in Figure 2) until its surface contacts the engine. Then tighten it by 3/4 turn using a wrench.

4. Add engine oil according to the procedure specified in the previous section.

5. Warm up the engine for about 5 minutes and check for oil leaks.

6. After the engine warms up, let it idle for about 10 minutes.

7. Check the oil level again.

8. Add engine oil (marked 5 in Figure 1) until the oil level is between the upper and lower marks on the dipstick (marked 1 in Figure 1).

9. Install the oil filter cover (marked 4 in Figure 1). If oil leaks, wipe it off immediately.

Engine intake system

maintenance instruction

Dust collection tank cleaning cycle:..... every 10 hours or daily. Air filter element cleaning cycle:..... every 10C hours.

The replacement cycle..... for air filter cartridges is every 500 operating hours.

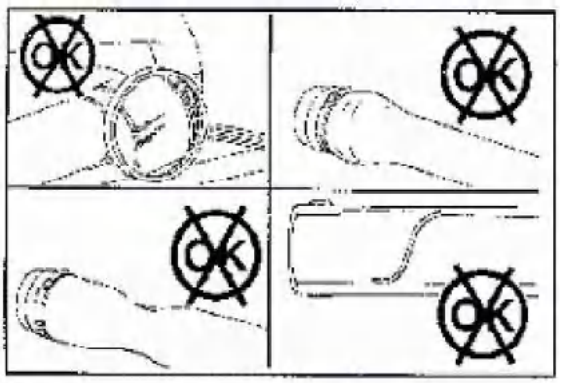
1. Replace the air filter cartridge

Replace the air filter element every 500 hours.

2. Intake manifold inspection

Check the intake pipe daily for signs of wear, damage, loose clamps, or ruptured pipes that could harm the engine.

Replace damaged pipes and tighten loose clamps if needed to prevent leaks in the intake system.



Other engine maintenance

Warning: Do not perform maintenance while the engine is running to avoid injury. If it is necessary to do so, maintenance must be performed with at least two people present and in accordance with the following rules:

There must always be one person seated in the operator's seat and ready to shut down the engine at any time. All personnel must keep in touch with each other.

When operating near the fan, fan belt, or other rotating components, there is a risk of being caught by these parts, so special attention must be paid.

Do not drop or insert tools or other objects into the fan or fan belt, as this may cause parts to break or fly out.

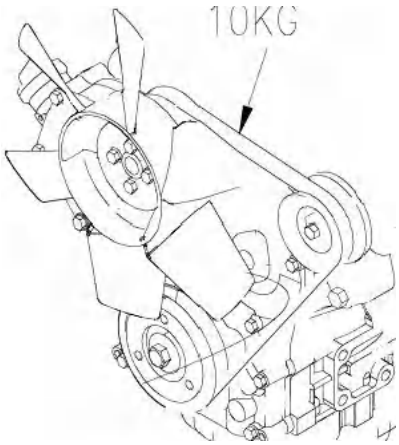
Warning: Excessive noise from the machine may cause temporary or permanent hearing impairment. When operating the enginewearearmuffs or earplugs when working in noisy environments or when you are exposed to noise for long periods of time.

●Check the tension of the fan belt

The first inspection shall be conducted after 50 hours of operation. Subsequent inspections shall be performed every 100 hours.

To ensure the normal operation of the generator and the service life of the belt, the fan belt must be properly tensioned.

For a properly tensioned belt, applying 10kg perpendicular to the belt between the fan pulley and the generator pulley results in a belt sag of approximately 8-12mm.



If the belt is found to be damaged, it needs to be replaced.

Other engine maintenance

For the maintenance cycle and specific methods of other engine components, please refer to the 'Diesel Engine User Manual' included with this machine.

Hydraulic system maintenance

maintenance instruction

Hydraulic oil tank capacity..... 12 liters

Oil level check..... every 10 hours

Filter replacement..... every 2000 hours

Hydraulic oil replacement..... every 2000 hours

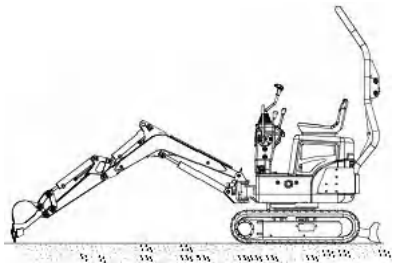
System pressure check..... every 500 hours

Warning: Hydraulic oil or grease, if injected into the skin, may cause severe injury and death. Keep your hands or body away from areas where pressure oil leaks. Use cardboard or paper to inspect for leaks. If hydraulic oil is accidentally injected into the skin, seek immediate medical attention.

Warning: To prevent burns, perform maintenance only after the hydraulic oil has cooled or before daily operation. When removing the oil filler cap, slowly rotate the cap to release internal pressure and prevent oil spray.

1. Check the oil level in the hydraulic tank

Check the oil level of the hydraulic tank every 10 hours.



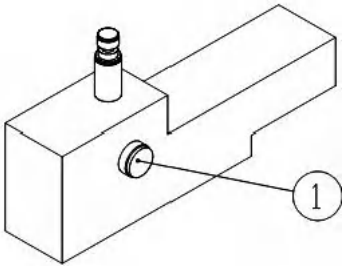
1) Place the machine on a flat surface.

2) Start the engine to make each cylinder reciprocate.

3) Retract the boom cylinder, extend the bucket cylinder, then lower the bucket to the ground, place the bulldozer blade on the ground, and turn off the engine. As shown in the figure.

4) Monitor the hydraulic oil level via the gauge on the tank.

The hydraulic oil level is monitored via the oil gauge tube (as shown in Figure ①).

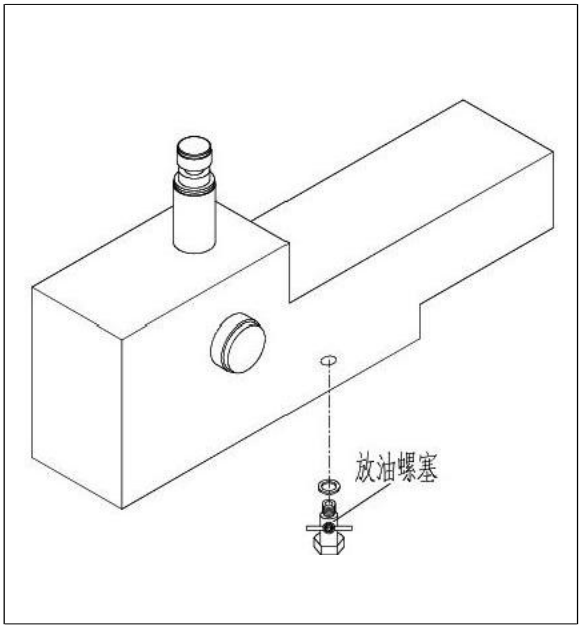


The hydraulic oil level must be clearly visible within the gauge range. Overfilling the tank, which obscures the gauge, may damage the hydraulic circuit or cause oil spray. If the tank is overfilled, stop the engine and allow the oil to cool before draining excess oil through the drain plug. If the gauge shows a low level or the oil is not visible, promptly replenish the tank by adding oil through the top filler port.

Hydraulic system maintenance

Note: The hydraulic oil level may fluctuate with rising operating temperature. Before operation, the oil level is centered on the dipstick. During normal operation, as the oil temperature increases, the level will gradually approach the upper end of the dipstick.

2. Remove moisture and contaminants from the hydraulic oil tank



Drain water and dirt from the hydraulic oil tank every 250 hours.

1) After the oil temperature has cooled down or before daily operations begin, purge the air from the oil tank.

2) Slowly release the oil drain valve or drain plug at the tank bottom (as shown in the figure).

3) Drain water or contaminants until clear hydraulic oil is discharged. Re-close the drain valve or tighten the plug.

4) If the fuel tank is low, refuel.

3. Change hydraulic oil and clean the tank

Replace the hydraulic oil and refer to Figure 5-27

Warning: 1) To prevent burns, drain the hydraulic oil only after it has cooled or before daily operation.

2) When removing the fuel inlet flange cover, gently rotate the cover to release internal pressure to prevent oil spray.

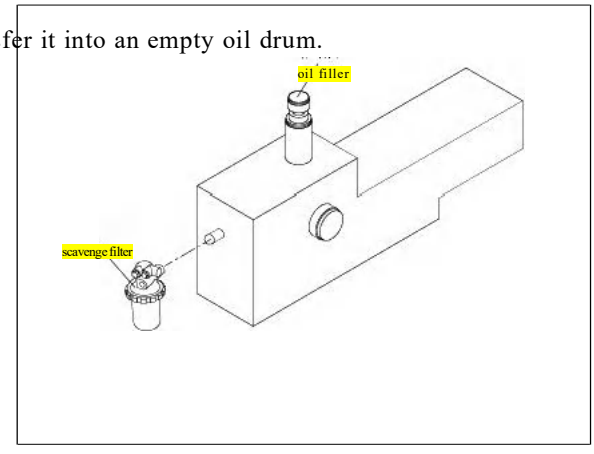
3) When changing the oil, ensure no water, dirt, or sand enters the oil tank.

Oil change procedure:

1) Park the excavator on a level surface.

2) Slowly release the fuel filler cap on the tank's top to reduce the air pressure inside.

4) Use the oil pump to extract the hydraulic oil and transfer it into an empty oil drum.



5) Open the drain valve or drain plug at the tank bottom to completely drain the remaining oil.

7) Thoroughly clean the interior of the fuel tank.

8) Clean the drain plug and reinstall it.

10) Add hydraulic oil that meets the specifications (refer to the oil selection table). When adding new oil, ensure the oil level reaches the midpoint of the oil gauge.

11) Close the fuel filler cap.

4. Drain the air from the hydraulic system

A. Remove the air from the pump.

1) Remove the exhaust plug from the exhaust port and check for oil leakage. The exhaust is now complete.

2) After exhaust, tighten the plug.

Note: Operating the pump without sufficient oil will cause abnormal overheating and premature damage.

B. Air between the discharge pump and the hydraulic oil tank

1) Start the engine and keep it running at a moderate to low speed.

2) Operate the working device slowly for about 5 minutes to purge air.

Note: If air trapped between the discharge pump and oil tank is not expelled while the engine is running at high speed, the pump will overheat and be damaged.

C. Remove the air from the cylinder

1) At low engine speed, extend and retract the cylinder 4-5 times to approximately 100mm from the end of the stroke (be sure not to reach the stroke end).

2) Then, operate each hydraulic cylinder to its stroke limit 3-4 times.

3) Finally, operate each cylinder 4-5 times to the end of its stroke to fully purge the air.

Note: If the engine is started and immediately operated at high speed or the cylinder is pushed to the end of its stroke, the air inside the cylinder may damage the piston seal, resulting in cylinder failure.

D. Ventilate the rotary motor (when oil is drained from the motor housing). Note: Do not rotate the machine under any circumstances during exhaust.

1) Start the engine at idle, then loosen the exhaust plug to check for oil leakage.

2) If no oil is leaking, remove the exhaust plug and fill the motor housing with hydraulic oil.

3) After completing the exhaust process, tighten the exhaust plug.

4) Finally, with the engine running at low idle speed, slowly rotate the upper part of the vehicle body left and right at least twice each until complete exhaust is achieved.

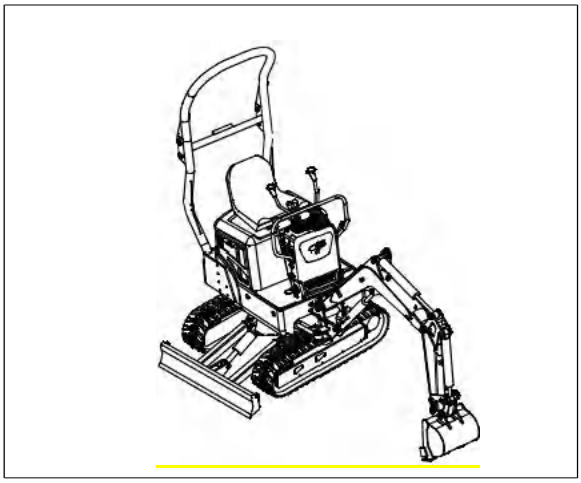
Note: If air is not expelled from the motor, it may damage the rotary motor bearings.

E. Discharge the air from the walking motor (when the oil inside the walking motor housing is drained)

1) Start the engine at idle and loosen the exhaust plug. If oil leaks, tighten the plug.

2) Start the engine at idle, rotate the working device 90 degrees to position it on the side of the track (as shown in the figure on the right).

3) Lift the machine using the working device, ensuring one side of the tracks is slightly off the ground. Rotate the tracks for 2 minutes under no-load conditions. Repeat this action for both left and right tracks, rotating them forward and backward equally.



F. Discharge of Air from Accessories

If the accessory is installed, run the engine at idle and operate the accessory pedal several times (about 10 times) until air is expelled from the accessory oil circuit.

pay attention to：

1. If the manufacturer specifies a particular exhaust method, the exhaust must be performed according to the prescribed procedure.

2. After completing the exhaust operation, shut down the engine and allow the machine to idle for at least 5 minutes before starting the next operation to eliminate air bubbles in the hydraulic cylinder oil.

3. Ensure no leakage during inspection and wipe away any spilled oil.

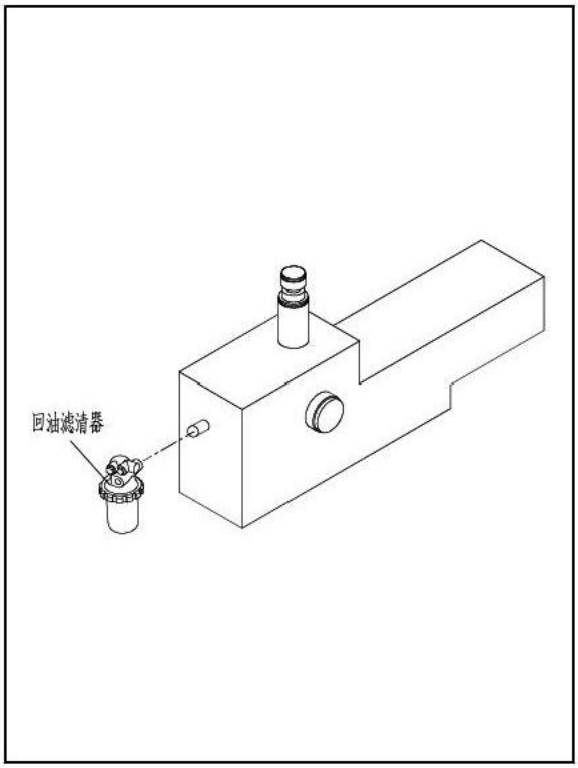
4. After completing the exhaust operation, check the oil level. If it is low, add oil to replenish.

5. Replace the oil return filter

Replace every 500 hours. The oil return filter is located on the inside of the hydraulic oil tank, therefore:

1) Remove the oil return filter.

2) Install the new oil return filter



■ Replacement cycle of hydraulic oil and filter elements when using accessories (e.g., breaker hammer)

The use of hydraulic hammers increases contamination in the hydraulic system and accelerates corrosion. Compared to excavation equipment, the replacement cycle for hydraulic oil and filter elements should be correspondingly shortened to prevent damage to the hydraulic pump and other hydraulic components. The recommended replacement cycles are listed in the table below (unit: hours):

hydraulic hammer operation rate	Hydraulic oil change cycle (H)	Filter cartridge replacement cycle (H)
50%	500	500
100%	250	250

Note: When using a hydraulic hammer, adjust the pressure in the hammering pipeline according to the hammer's specifications.

Reducer

maintenance instruction

Swing Reduction Gear Lubricating Oil Capacity.....: 0.5L

Travel Reducer Oil Capacity.....: 1L

Check oil level and top up oil.....: Every 250 hours

Change Oil.....: Every 1000 hours

Check reducer mounting bolt tightening torque.....: Every 500 hours

Warning: The oil in the walking reducer will heat up shortly after the machine starts. After turning off the engine, the walking reducer and oil remain at high temperatures, which can cause severe burns. Wait for the oil to cool down before starting operation. Loosen the exhaust plug by two to three turns to release the air pressure inside the housing before removing it. Quick removal of the plug is dangerous.

A: Walking speed reducer

1. Check the lubricating oil level in the walking reducer and add oil if necessary

Warning: The oil in the walking reducer will heat up shortly after the machine starts. After turning off the engine, the walking reducer and oil remain at high temperatures, which can cause severe burns. Wait for the oil to cool down before starting operation. Loosen the exhaust plug by two to three turns to release the air pressure inside the housing before removing it. Quick removal of the plug is dangerous.

Check every 1000 hours of operation.

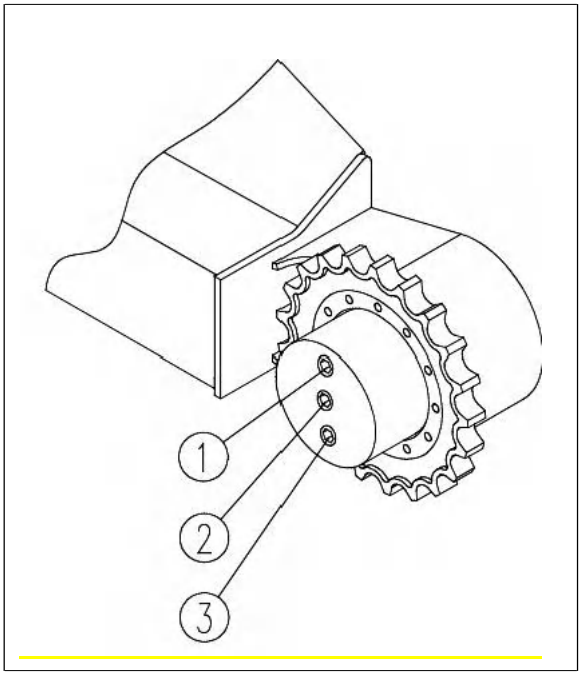
1) Prepare a hex key.

2) Park the excavator on a level surface.

3) Rotate the walking reducer until the three plugs on its outer end face are perpendicular to the ground, then stop the machine.

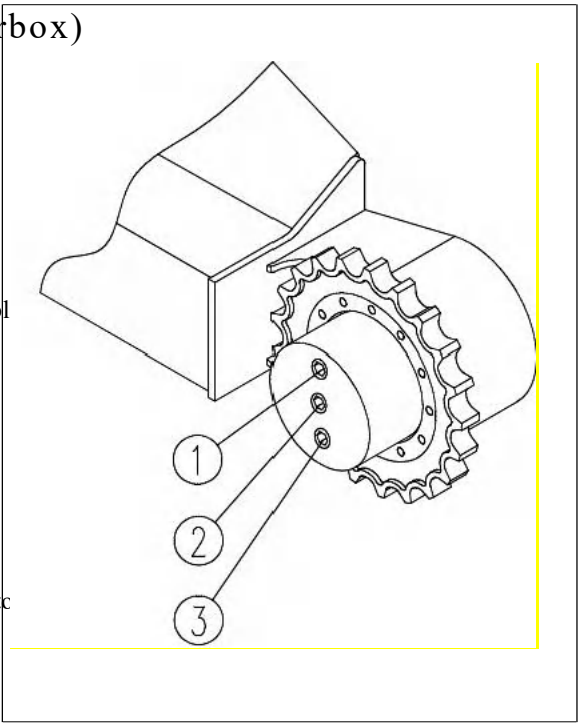
4) Remove the plug ① and check the lubricating oil level. The oil level should reach the bottom edge of the plug hole.

5) If necessary, add engine oil (follow the lubricant replacement procedure below)



7) Clean the plug ① and reinstall it.

2. Change the lubricating oil (per gearbox)



The first replacement occurs after 1000 hours of operation, followed by periodic replacements every 1000 hours thereafter.

1) Park the excavator on a level surface.

2) Rotate the reducer to align the three external end-face pl

Then, the machine stops.

3) Drain the oil when the reducer oil is hot.

Note: Do not let hot oil scald you.

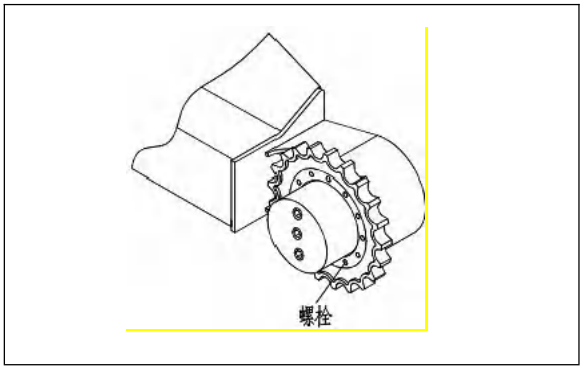
4) Remove plug ③ to begin draining oil, then release plug ① tc

5) Loosen bolt ②.

6) Add the required lubricating oil through the oiling hole ① until oil flows out from the oil level check hole ②.

3. Check the tightening torque of the connecting bolts between the walking reducer and the rotary reducer

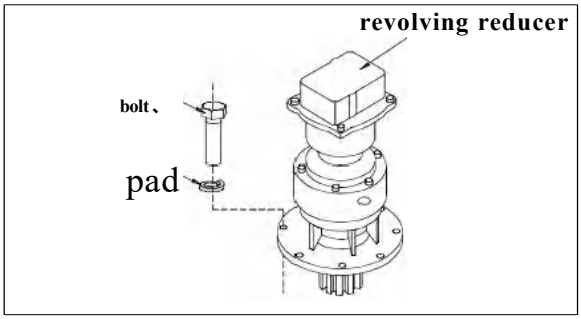
Inspection of the fastening bolt of walking reducer



The first inspection should be performed after 50 hours of operation, followed by subsequent inspections every 500 hours.

B. Inspection of the fastening bolts for the rotary decelerator

The first inspection is performed after 50 hours of operation, followed by subsequent inspections every 500 hours.


revolving reducer
bolt、
pad

Track

Check and adjust the tension of the tracks

Check every 10 hours.

1) Park the excavator on a level and hard surface.

2) Position the bulldozer plate at the rear, fully extend the hydraulic cylinder piston rod until the tracks are slightly lifted.

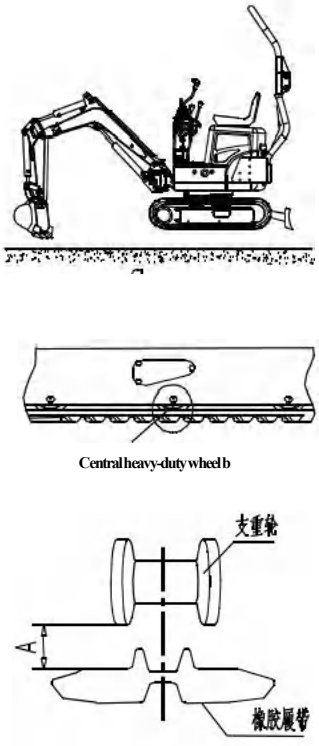
3) Place the bucket on the ground and raise the excavator's front section by operating the boom cylinder (see Figure 1a).

4) Properly tension the track to ensure a 10-15mm deflection (b in Figure 1) between the central load-bearing wheel and the track.

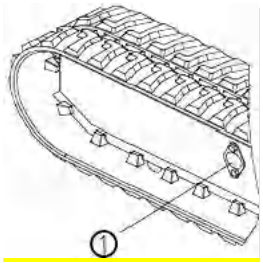
5) Remove the cover ① from each track frame (see Figure 2a) to expose the oiling nozzle of the tensioning device (marked ② in Figure 2).

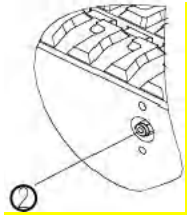
6) To loosen the tracks, first release joint ② (Figure 2) to allow the grease to drain, then retighten when the correct tension is achieved.

7) To tension the tracks, connect the grease gun connector (provided as a spare tool) to connector ② (Figure 2). Then apply grease using the grease gun until achieving proper tension.



Graph 1





Graph 2

Track

Warning: Do not tap the tension spring of the track. The spring may rupture explosively under extreme pressure, causing personal injury. Do not remove the spring while it is stretched.

Supporting wheel and guide wheel

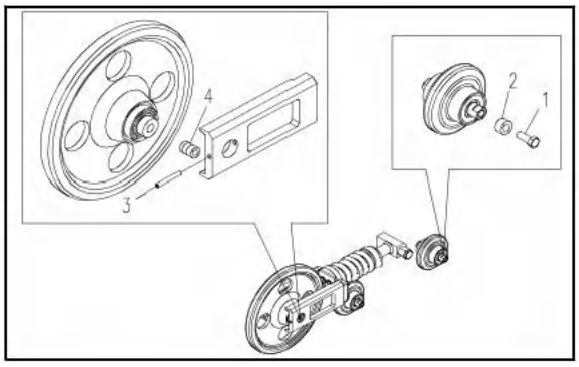
1. Check the tightening torque of the support wheel

The first inspection is performed after 50 hours of operation, followed by subsequent inspections every 500 hours.

The fastening torque of bolt ① should be 110 N ·m.

If any bolt is found to be loose, it must be removed, the thread-locking agent between the bolt threads must be thoroughly cleaned, and the threaded connection must be re-applied with thread-locking agent, then tightened to the specified torque.

If bolt replacement is necessary, bolts of the same specification and strength grade must be used.



1. Support wheel bolt 2. Support wheel plug

3. Guide Wheel Stop Pin

4. Guide wheel plug

2. Check the oil level in the support and guide wheels

Check every 500 hours.

1) Support wheel: Remove bolt ① from the outer side of each shaft, then remove plug ② from the inner side of each shaft.

Guide wheel: the stop pin ③ of the output shaft.

2) Remove the plug ④.

3) Add oil to the root shaft using an oil bottle.

4) If oil is observed flowing from the fuel inlet, retighten the plugs ② and ④, or reinstall the bolts (with a tightening torque of 104 Nm) or pins.

Lubrication

Lubricate all the lubrication points of the machine every 50 hours.

Lubrication steps:

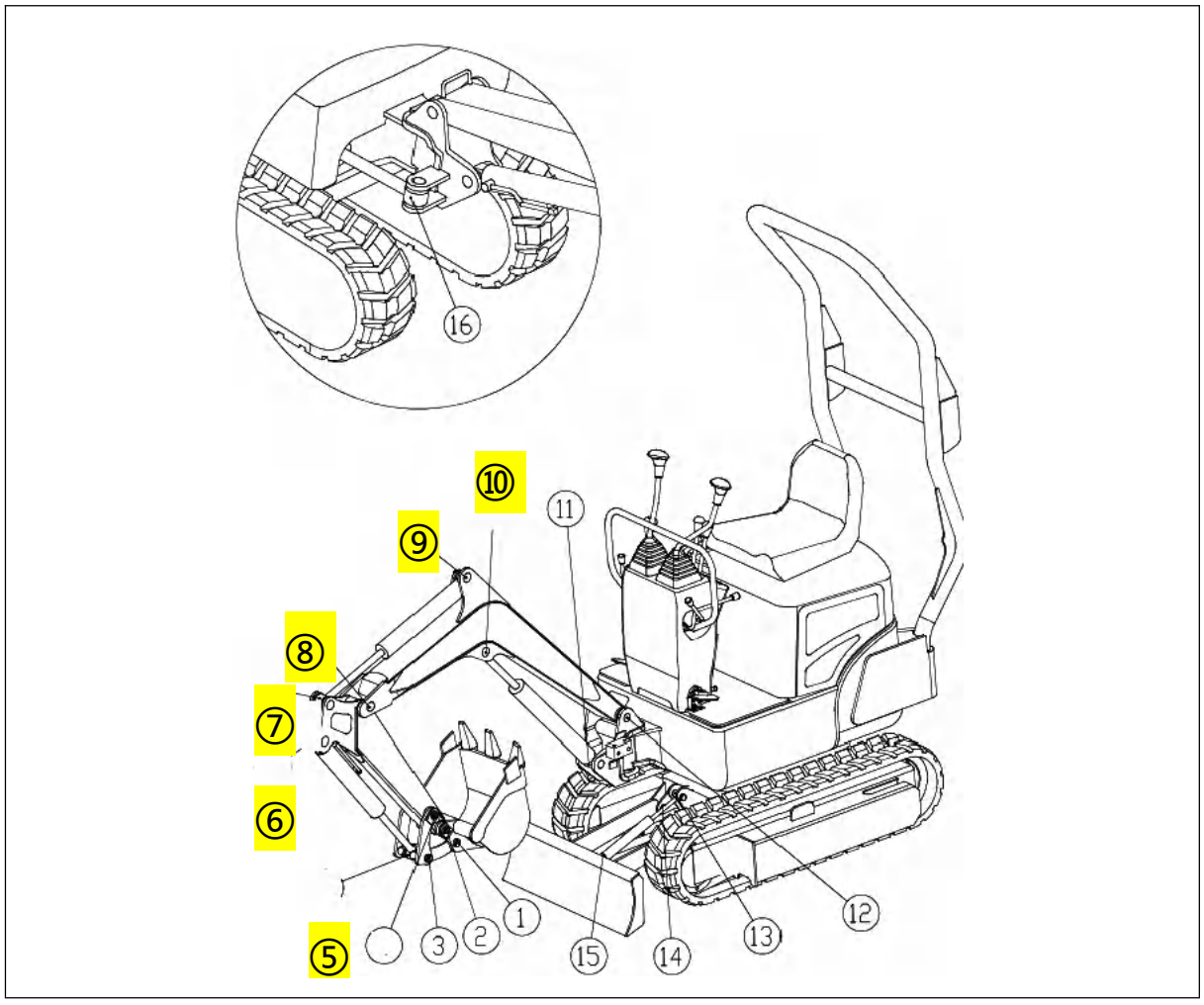
1) Start the working device and lower the bucket to the ground.

2) Place the bulldozer shovel on the ground.

3) Stop the engine.

4) Clean all fuel nozzles on the oil cups.

5) Lubricate all lubrication points and wipe off any excess grease that may have been squeezed out.



1. Linkage and bucket hinge point head hinge point
2. Hinge point between boom and bucket bulldozer bucket and frame
3. Hinge point of joystick and connecting rod the rear of bulldozer cylinder
4. Hinge connection point of joystick and boom deflection cylinder
5. Lubrication Point of Head of Bucket Cylinder
7. Bucket rod cylinder head lubrication point
8. Hinge point between boom and boom arm
9. Lubrication point at the rear of boom cylinder
10. Lubrication point of boom cylinder head
11. Lubrication Point of Tail of Boom Cylinder
13. Bulldozer cylinder
14. Hinge point between
15. Lubrication point at
16. Lubrication point of

Lubrication

6. Lubrication point of bucket cylinder tail

12. Hinge point of boom and platform

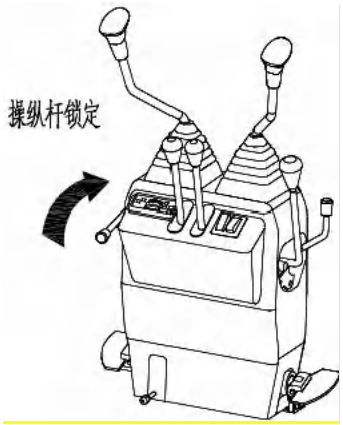
Rinsing of Floor Pad

Clean the floor mats promptly if they become dirty to prevent accidents caused by slippery floors or falls.

Warning: If the control lever is accidentally touched, the working device or machine may move suddenly, causing serious accidents. Therefore, before removing the floor mat, ensure the machine is firmly parked on a solid, flat surface. Before standing up from the seat, the operator must lift the safety lock lever and secure the control lever.

Floor mat cleaning procedure

1) Remove the floor adhesive mat from the platform.
2) Remove dirt or rinse the floor mat with water directly.
3) Use a dry mop to wipe the floor on the platform.
4) Once the floor mat is dry, reinstall it on the platform.



Maintenance of electrical systems

Electrical systems are a critical component of excavators, and maintenance must strictly follow the manufacturer's instructions. Always ensure the power is turned off before inspecting or servicing electrical parts.

1) First, check if the battery terminals are loose. As the battery is the main power source for the entire electrical system, the terminals must be securely tightened to ensure stable power supply.

2) Prolonged operation of excavators inevitably introduces oil residues, dust, and other contaminants to the wiring system. These contaminants may cause short circuits or open circuits, leading to mechanical failures. Therefore, the wiring condition should be inspected every two weeks, and the wiring and connections should be wiped clean with a clean towel.

3) Inspect the wiring appearance. Check for cracks, aging, or other defects. If any are found, have an experienced electrician replace the wires.

4) Check if the fuse of the working electrical appliance is functional. When the appliance fails to operate, first inspect whether the following fuses have blown. If so, replace the fuse. Note: Under no circumstances should iron wire or other conductors be used as substitutes for the fuse.

5) Exposure of electrical equipment to moisture or damage to wire insulation is highly hazardous, as it may cause electrical leakage and machine malfunctions. Do not use water to flush the upper platform components. When cleaning the machine, ensure water does not enter the electrical parts.

6) Do not install any electronic components other than those specified by Yuchai Heavy Industry. External electrical interference may cause system malfunctions. Always consult Yuchai Heavy Industry dealers before installing radio receivers or other wireless devices.

8) When working on the beach, thoroughly clean the electrical system to prevent corrosion.

9) When installing other equipment, it must be connected to a dedicated power supply. The selected power supply must never be connected to fuses, starting switches, or relays.

6

Attachment Guide

Security Matters

If you install accessories or optional parts not approved by Yuchai Heavy Industry, it will not only affect the service life of the machine, but also cause some safety problems.

When installing accessories not approved by Yuchai Heavy Industry, contact their authorized agent first.

You have not contacted Yuchai Heavy Industry, and we will not be liable for any accidents or damages.

1. Safety Operation Accessories

● Accessories provide robust auxiliary functions. To prevent severe injury or damage, use them correctly.

●Read the instruction manual of the attachment thoroughly. Do not use the attachment without fully understanding its contents. If the instruction manual is lost, request a new copy from the manufacturer or the attachment sales company.

● Install the required front guard on the machine according to the attachment specifications.

●Given the attachment conditions, vibration noise may hinder colleagues from conveying operational instructions. Before commencing operations, designate a supervisor and confirm the signals to be used.

● Avoid turning sideways when the vehicle is overloaded, especially on slopes, as this is extremely dangerous.

●Compared with machines equipped with buckets, those fitted with crushers bear heavier loads at the front of the working device and are more unstable. To avoid the risk of overturning, do not operate when the attachments are turned sideways.

●When accessories are installed, the machine's rotation range and center of gravity may differ, potentially causing unintended movement. Always verify the machine's condition.

●Before starting the operation, set up a warning line around the machine to prevent people from entering. Do not operate the machine if someone is near it.

●To prevent serious accidents caused by accidental operation, do not place your foot on the pedal except when operating it.

●When accessories are installed, retracting them toward the fuselage may cause interference. Handle accessories with care.

2. Remove or install accessories

When removing or installing accessories, follow these steps to ensure safe operation.

●Perform disassembly and installation on a solid, level surface.

●When two or more people are operating, ensure signals are used and follow them during the operation.

●Always use a crane when lifting or moving heavy objects (over 25kg).

●When removing heavy components, secure them before disassembly. When using a crane for lifting, pay special attention to the center of gravity.

●Operating a crane while lifting a load is hazardous. Prepare a scaffold and ensure it is in a safe condition.

●When placing removed or installed accessories, ensure they remain stable and do not tip over.

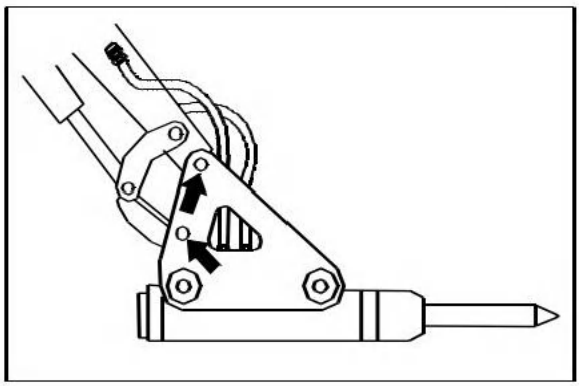
Security Matters

●Do not walk under the load lifted by the crane. Stand in a safe location where the load will not fall and pose a danger.

Warning: Operating a crane requires a valid qualification certificate. Unlicensed personnel are not permitted to operate the crane. For details on disassembly and installation procedures, please contact Yuchai Heavy Industry's authorized agent.

Installation/Disassembly steps for attachments

1. Disassembly steps



1) Place the attachment on the ground and shut down the e

2) Set the start switch to ON and position the left control lever to the free position.

3) Perform 2-3 full strokes (forward, backward, left, right) of the control levers and auxiliary pedals for each working device to release internal pressure in the hydraulic circuit.

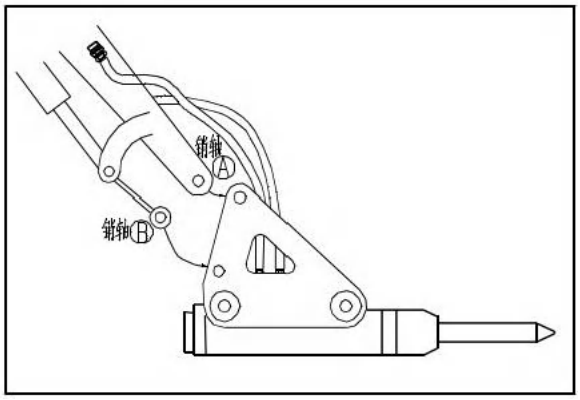
4) After confirming the oil temperature has decreased, lock the rotary valve connected to the boom-side inlet and outlet pipes.

5) Remove the hose from the accessory side, install the blocking sleeve with the combination washer, and tighten it onto both outlets.

6) Remove the attachment by disassembling the pin shaft (2 pieces). Then install the shovel bucket.

7) Wrap the unconnected ends of the two hoses of the hydraulic hammer with a clean plastic bag and implement dust-proof measures. Store the accessories properly.

2. Installation Steps



1) Remove the bucket.

2) Place the attachment on a flat surface, then sequentially connect the boom to the hydraulic hammer and the connecting rod to the hydraulic hammer using pin A and pin B.

3) After confirming the oil temperature has decreased, remove the plugs from both the outlet and inlet. Ensure no dust or dirt adheres to the hose joints. Replace the damaged gasket with a new one.

4) Connect the hose to the attachment side. During connection, check the oil flow direction and ensure correct connection.

5) Unlock the rotary valve connected to the boom-side inlet and outlet pipes.

6) After installing the accessories, verify the proper oil level in the hydraulic tank.

Attachment Guide

This section introduces the precautions to be observed when operating a hydraulic excavator equipped with accessories.

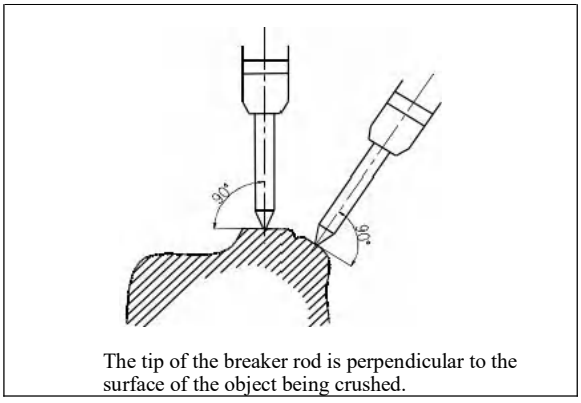
Note: Select the most suitable accessory for your host. Different machine models support accessory installation. For accessory and model selection, contact Yuchai Heavy Industry's authorized agent.

Hydraulic breaker

1. Hydraulic Hammer Operation Manual

Hydraulic breaker is the most common working accessory. It is widely used in demolition of buildings, road breaking, tunneling, crushing of steel slag, stone blocks, and crushing operations in quarries.

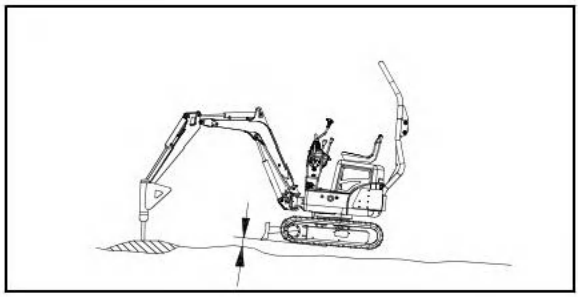
1) During crushing operations, ensure the tip of the breaker rod is perpendicular to the surface of the material being crushed and maintain this orientation as much as possible. If the rod is tilted relative to the material surface, it may slip off, potentially damaging the rod and affecting the piston.



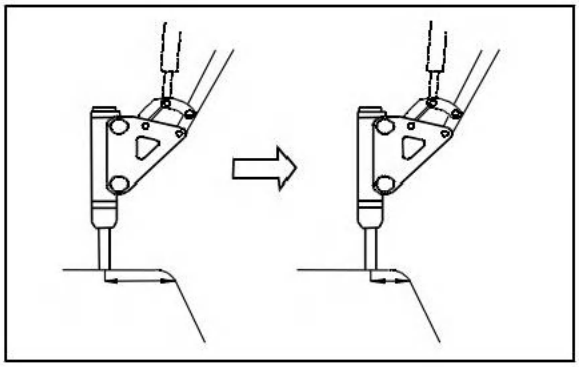
The tip of the breaker rod is perpendicular to the surface of the object being crushed.

When breaking, select the appropriate striking point and ensure the solder rod is firmly secured before striking.

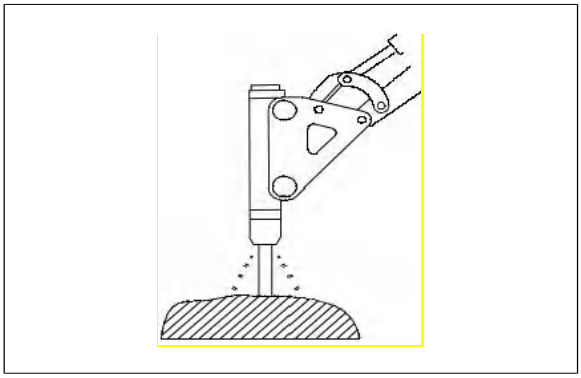
The bucket cylinder should be adjusted continuously during the operation to keep the penetration direction of the rod and the direction of the body of the breaker in a straight line.



3) When continuous impact is applied to the same surface, if the brazing rod cannot penetrate or break through the surface within one minute, the impact location should be changed to the edge area for fragmentation.



4) The brazing rod must maintain proper contact with the surface to prevent excessive force when there is no resistance.



When rocks or targets are already broken, immediately stop the breaker hammer's operation. Uncontrolled hammering will only loosen and damage the pre-and main bolts, and may even damage the excavator itself.

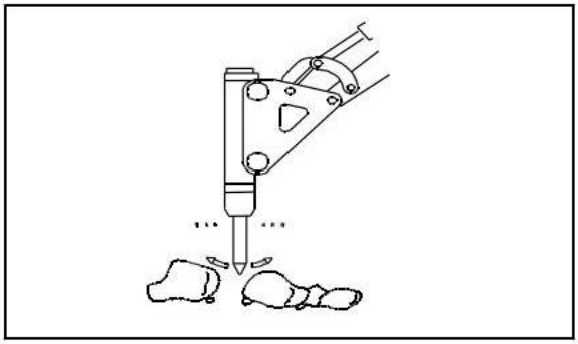
The aimless hammering, besides improper insertion, may also be affected by the use of a shaken hammer.

2. Contraindications for Hydraulic Breaker Operation

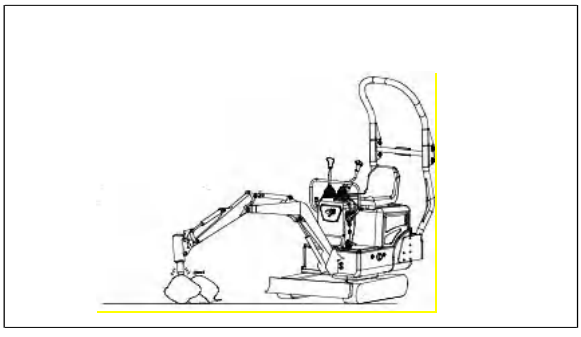
To ensure the machine has a long service life and safe operation, do not operate the machine in any of the following ways:

Note: Never fully extend all cylinders to the end of their stroke. Always maintain a 5cm clearance.

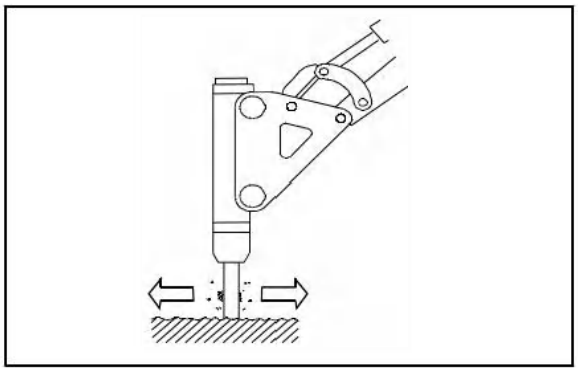
1) Use a breaker hammer to move heavy objects or large stones.



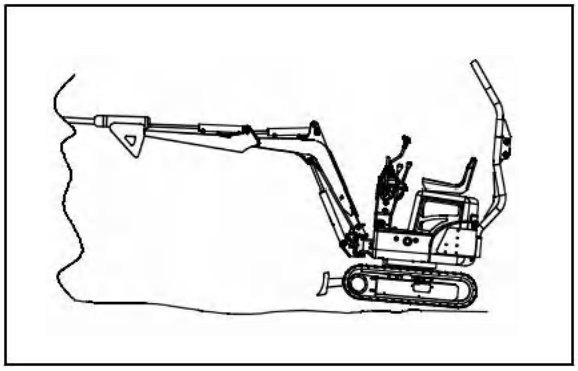
2) Operate with rotary force.



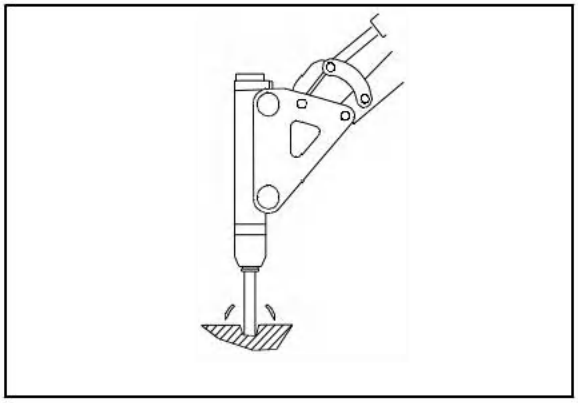
3) Move the drill rod during impact operations.



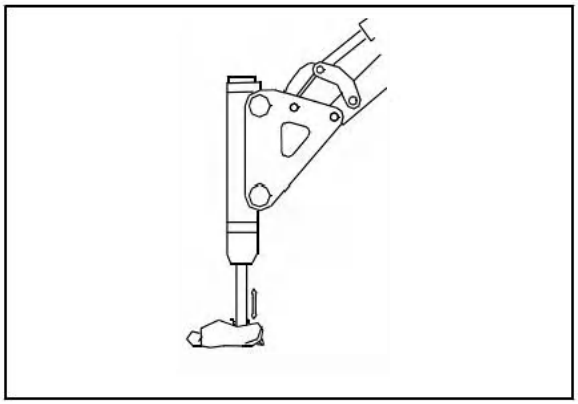
4) Apply impact force horizontally or upward



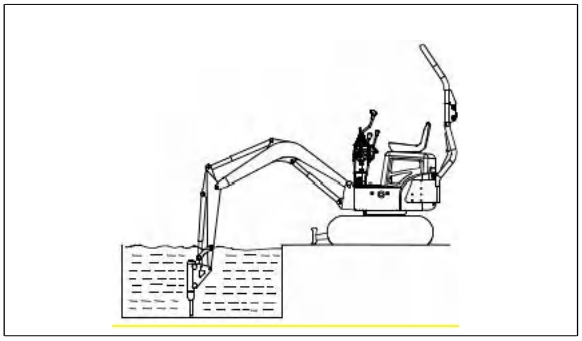
5) Swing the breaker when it has penetrated the rock



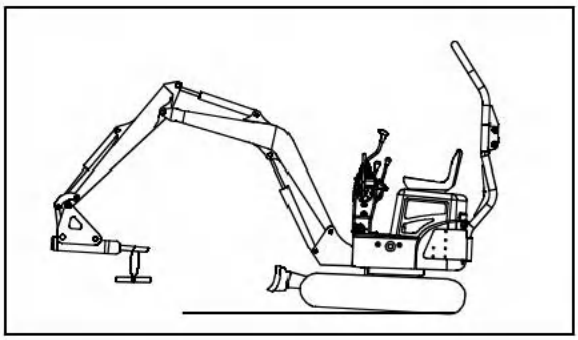
6) Pecking operation



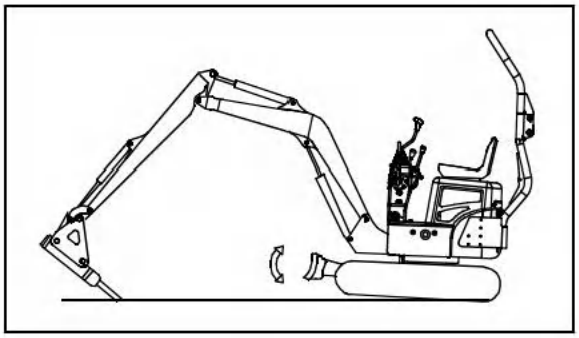
7) Crushing operations in water or muddy conditions



8) Use a breaker hammer as the tool for lifting heavy objects.



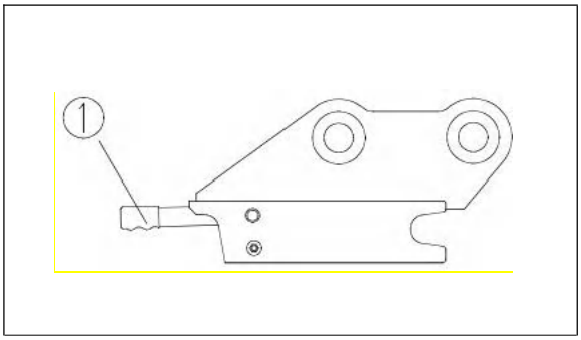
9) Fully extend the bucket cylinder to lift the machine off the ground.



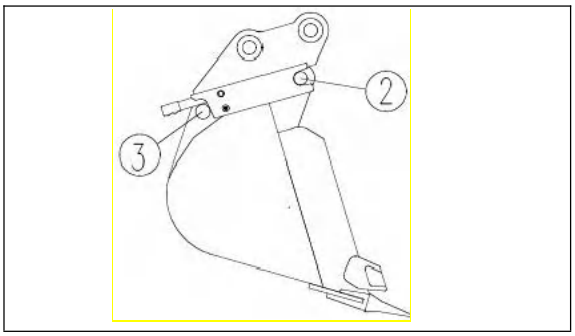
Quick-change connector

1. Installation of the bucket

1) Use a crowbar to lift ①.



2) Insert the bucket pin shaft into positions ② and ③, lower the lever, and the bucket is installed.



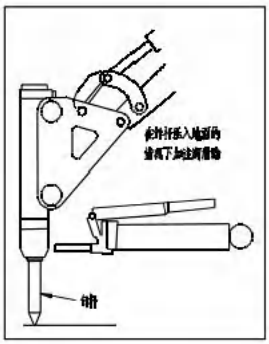
2. Remove the bucket

1) Use a crowbar to lift ①.

2) Remove the bucket.

Daily Inspection of Hydraulic Crusher

The daily inspection and maintenance of hydraulic breaker should be carried out according to the table below.

number	Check or maintain items	Checkpoints	Repair method
1	Check for any loosening or loss of bolts and nuts	Main bolt and side plate bolt	Tighten the bolt or install a new one
2	Check hose parts for looseness, hose damage, and oil leakage.	Crusher hydraulic pipeline high pressure oil pipe	Re-tighten the loose parts and replace the severely damaged components
3	lubricating 	Apply lubricating oil before operation and after each continuous operation of 2 to 3 hours. Apply lubricating oil 5-10 times per lubrication cycle.	Lubricating Oil Injection from Lubricating Oil Injection Hole of the Pre-hammer
4	Check the hydraulic oil level and contamination	Condition of hydraulic oil	The variation of hydraulic oil quality is different according to the working environment. The simple way to judge the change of oil quality is to observe whether the color of oil quality has changed. When the oil quality deteriorates severely, immediately drain the hydraulic oil from the tank, clean it, and then refill it with new hydraulic oil.

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