

MAIN DIMENSIONS	UNIT	XN80-E
(Operating Weight)	kg	8000
(Overall Dimension)	mm	5830x2150x2640
(Cab Dimension)	mm	1300x950x1520
(Bucket Capacity)	cbm	0.3
SYSTEM CONFIGURATION		
(Engine Type)		YANMAR
(Rated Power/Speed)	kw	33.7
(No. of Cylinders/Type)		4 cylinder / in line
(Starting Type)		Electric 12V
(Hydraulic Main Pump)		Rexroth
(Hydraulic System Pressure)	MPa	22
(Hydraulic System Flow)	L/min	150
(Pilot Pump)		DOOSAN
(Valve)		Rexroth
(Swing Motor)		EATON
(Max Swing Speed)	r/min	9 r/min
(Travel Motor)		EATON
(Speed)	km/h	H: 3.7km/h ; L: 2.3/km/h
(Bucket Digging Force)	Kn	58
(Arm Digging Force)	Kn	42
(Working Fuel Consumption)	L/h	7.08
(Diesel Oil Tank Capacity)	L	167
(hydraulic Oil Tank Capacity)	L	125
OPERATION RANGE		
(Boom Length)	mm	3300
(Arm Length)	mm	1750
(Radius to Rear End)	mm	1570
(Ground Clearance)	mm	345
(Blade Dimension)	mm	2024x345
(Max Digging Height)	mm	6320
(Max Dumping Height)	mm	4440

(Max Digging Depth)	mm	3540
(Max Digging Radius)	mm	6240
(Standard Machine With A/C)	A/C	Standard
(Packing Way)		2 units in a 40HQ
(Passed Certificates)		CE ISO

II .SAFETY INFORMATION

Working with an Excavator can be dangerous; it could result in injury or death if proper precautions are not taken! We urgent you to read this manual carefully! This safety information is provided to operators and maintenance mechanics to ensure the safe operation and maintenance of the Excavator. It's essential that you read and familiarize yourself with this information, which explains safety requirements and precautions and specific hazards of which you should be aware. This also applies to any personnel which might be working on the machine only occasionally. Such as during set up or maintenance.

Careful adherence to safety guidelines will permit safe operation and maintenance and potentially prevent personal injury to yourself and others, and possible damage to the excavator.

Important safety notes such as **DANGER**, **WARNING** or **IMPORTANT** are used throughout this manual to emphasize important or critical instructions.

In this manual DANGER, CAUTION or NOTE are defined as follows:

DANGER: denotes an extreme intrinsic hazard which could result in a high probability of death or serious injury if proper precautions are not taken.

WARNING: denotes a reminder of safety practices or directs attention to unsafe practices if proper precautions are not taken.

NOTICE describes operation and maintenance procedures which should be followed to keep your excavator operation and to insure long machine life and /or to facilitate certain procedures.

DESTINED USE

Destined use is considered part of observing and adhering to all regulations and inspection and maintenance guidelines given in this Operation and Maintenance Manual.

The excavator with the standard backhoe any only be used to loosen, pick up, move, load and dump soil, gravel, rock, or other material and to load trucks, barges, conveyor belts, or rock crushing system.

Special guidelines are applicable for machines used for lifting applications and special safety devices must be installed.

Any other use above and beyond the applications described above, such breaking out rock or demolishing building, pounding in posts etc. requires special attachments and safety devices.

If the machine is exposed to the risk of falling down objects during operation, the cab of the machine must be fitted with a safety device.

Transporting personnel or loads etc. is not considered destined use and is therefore prohibited. The manufacturer/dealer is not responsible for any resulting damage. Any risk must be carried by the user himself.

GENERAL SAFETY INFORMATION

Study the Operation and Maintenance Manual before operating or working on the excavator. Make sure that you have additional information for special attachments of your machine, read it and understand it!

Allow only authorized personnel informed about the safety rules to operate, service or repair the excavator.

Allow only properly trained personnel to operate or work on the excavator, make sure to clearly specify the person who is responsible for set up, maintenance and repairs.

Make sure the operator knows his responsibility regarding the observance of traffic regulations and permit him to refuse any unsafe instructions given by a third person.

Any persons still in training should only operate or work on the machine under the supervision and guidance of an experienced person.

Check and observe any person working or operating the excavator periodically and regularly, if they observe safety instructions and guideline given in the Operation and Maintenance Manual.

Wear proper work clothing when operating or working on the excavator. Ring, watches, bracelets and loose clothing such as ties, scarves, unbuttoned or unzipped shirts and jackets are dangerous and could cause injury! Wear proper safety equipments, such as safety glasses, safety shoes, hardhats, work gloves, reflector vests and ear protection.

Always tilt up the safety lever before leaving the operator's seat. Do not carry tools, replacement parts or other supplies while climbing on or off the excavator. Never use the steering column, control lever or joysticks as handholds. Never jump off the excavator, climb on or off the excavator using only the steps, rails and handles provided.

When climbing on or off the excavator, use both hands for support and face the machine. If needed, use the front window as an escape hatch.

If no other guidelines are given, perform maintenance and repairs utilizing the following precautions:

Parking excavator on firm and level ground. Rest the working attachment on the ground.

Placing all control in neutral position and raise the safety lever.

Turning the engine off and remove the ignition key.

Before checking the hydraulic circuit, move all joysticks and pedals with the ignition key in contact position to relieve the servo pressure and the remaining pressure in the different main circuits. In additions, relieve the pressure in the hydraulic tank as described in the Operation and Maintenance Manual.

Never operation the excavator without a complete walk around inspection. Check if all warning decals are on the machine and if they are all legible.

Secure all loose parts on the excavator.

Observe all danger and safety guidelines.

For certain special applications, the excavator must be equipped with specific safety equipment. Use the excavator only, if they are installed and functioning properly.

Never perform any changes, additions or modifications on the machine, which could influence the safety, without obtaining the written permission from the manufacturer. This also applies to the installation and adjustment of safety device and safety valve as well as to any welding on load carrying parts.

Do not install any equipment or attachments made by other manufacturers or any which are not specifically authorized by Shandong Rhinoceros Engineering Machinery Co., Ltd for installation without first obtaining the written permission from Shandong Rhinoceros Engineering Machinery Co., Ltd.

Never work underneath the excavator unless it is safely resting on the ground and /or is properly blocked and supported and /or it is properly blocked and supported.

Never use damaged or insufficient wire ropes, sling or chains. Always wear gloves when handling wire ropes.

Never reach into bore during attachment installation or removal. Never align bores with your fingers or hands. Use proper alignment tools when installing, changing or servicing attachments.

Keep objects away from the radiator fan. Rotating fans will swirl and throw out objects, which can become very dangerous and cause severe injury to yourself and others.

Avoid contact with any components containing coolant. At or near operating temperature, the engine coolant is hot and under pressure and could cause severe burns.

Check the coolant level only after the radiator cap is cool enough to touch. Remove the radiator cap slowly to relieve pressure.

Do not allow your skin to come into contact with hot oil or components containing hot oil. At or near operating temperature, engine and hydraulic oil is hot and can be under pressure.

Always wear safety glasses and protective gloves when handling batteries. Keep sparks or open flames away!

Never permit anyone to hand guide the bucket or grapple into position.

When working in the engine area, make sure the top covers and side doors are properly secured or closed with the appropriate supports.

FIRE AND EXPLOSION PREVENTION

Always turn off the engine while refueling the excavator.

Never smoke or allow an open flame in refueling area or where batteries are being charged, or where batteries or flammable materials are stored.

Always start the engine as described in the Operation and Maintenance Manual. Check the electrical system regularly and frequently. All defects, such as loose connections, burnt out fuses and bulbs, burnt or damaged cables must be repaired immediately by an electrician or especially trained personnel.

Never store flammable fluids on the machine except in storage tanks intended for the Excavator's operation.

Inspect all components, lines, tubes and hoses for oil and fuel leaks and/ or damage.

Replace or repair any damaged components immediately. Any oil, which escapes from leaks, can easily cause a fire.

Be certain that all clamps, guards and heat shields are installed. These components prevent vibration, rubbing, chafing and heat build-up. Install tie wraps to fasten hoses and wires, as required.

Cold start ether is extremely flammable. Use ether only in ventilated areas and as directed. Never use it near heat sources or open flames, do not permit anybody to smoke.

MACHINE START UP SAFETY

Before excavator start up, perform a thorough walk around inspection. Visually inspect the excavator, look for loose bolts, cracks, wear, any leaks and any evidence of vandalism.

Never start or operate an unsafe excavator.

Report all defects to your foreman or supervisor and make sure they are corrected immediately.

Make sure all covers and doors are closed and locked and all warning decals are on the machine.

Make sure all windows, as well as inside and outside mirrors are clean, and secure all doors and windows to prevent any unintentional movement.

Be certain that the area surrounding the excavator is free of other personnel, and that no one is working on or under the excavator before starting the engine.

After entering the cab, adjust the operator's seat and controls, the inside and outside mirror, the armrests and fasten and adjust the seat belt. Be certain that all controls can be reached comfortably.

All noise protection devices on the machine must be functional during operation.

ENGINE START UP AND OPERATING SAFETY

Before start up, check if all indicator lights and instruments are functioning properly, place all controls in neutral position and tilt the safety lever up.

Before starting the engine, alert any nearby personnel that the excavator is being started by sounding the horn.

Start the machine only when seated in the operator's seat, and with the seat belt fastened (if installed).

If you have no other instructions, start the engine as outlined in the Operation and Maintenance Manual.

Tilt the safety lever down and check all indicators, gauges, warning devices and controls for their proper indication.

Start and operate the engine only in a well ventilated area. If necessary, opening door and window. Warm up the engine and hydraulic system to operating temperatures.

Low engine and hydraulic oil temperatures can cause the excavator to be unresponsive.

Check that all attachment functions are operating properly.

Move the excavator slowly into an open area and check all travel functions for their proper operation, check travel and swing brakes, the steering function as well as the turn signals and lights.

MACHINE OPERATING SAFETY

Familiarize yourself with job site rules. Be informed about traffic and hand signals and safety signs. Ask who is responsible for signaling. Check your surrounding for any obstacles in the working and movement range, check the load carrying capacity of the terrain, and secure the job site to shield it from any jam traffic.

Always keep a safe distance from overhangs, walls, drop offs, and unstable ground.

Be alert of changing weather conditions, bad or insufficient visibility and of changing ground conditions.

Be alert for utility line, check the location of underground cables, gas and water lines, and work especially careful in that vicinity. If necessary and/or if required, call local authorities to mark the location.

Keep sufficient distance to electrical lines. When working in the vicinity of high voltage electrical lines, keep proper distance to assure that the attachment does not come close to the lines.

DANGER! You must inform yourself about safe distance.

In case you do touch a high voltage line by accident, proceed as follows:

Do not leave the machine,

Move the machine, if possible, from the danger zone until you obtain sufficient distance,

Warn any personnel in the vicinity not to come close to the excavator and not to touch it,

Instruct or initiate that someone turns off the voltage.

Do not leave the machine until you are absolutely sure that voltage in the line, which had been touched or damaged, has been turned off!

Before moving the machine, make sure that the attachments and equipment are secured properly to avoid accidents.

When traveling on public roads or highways, make sure to observe traffic regulations, and make sure that the machine meets federal and local public highway standards.

Always turn on the lights if visibility is bad or if you are still working during dusk.

Never allow other personnel on the excavator.

Report any problems or needs repairs to your foreman or supervisor and make sure they are corrected immediately.

Do not move the excavator until you are certain that surrounding area is safe.

On machines without negative brakes check the brake system before starting to work, as outlined in the **Operation Maintenance Manual**.

Never leave the operator's seat while the machines are still moving.

Never leave the machine unattended, with the engine running.

When moving the excavator, keep the upper-carriage in lengthwise direction and keep

the load as close as possible to the ground.

Prevent any working movements, which could tip the machine over. If the excavator begins to tip or slip on a grade, immediately lower the attachment and load to the ground and turn the Excavator facing downhill. If possible, always operate the excavator with the attachment positioned uphill or downhill, never sideways.

Always travel slowly on rough or slippery ground and on slopes.

Always travel downhill at permissible speed, so you don't lose control over the machine. The engine must run at nominal speed, use only the foot pedals to brake and slow down the machine.

Never shift during down hill travel, always shift to a lower gear before traveling downhill.

Never load over an occupied truck. Request that the driver leave the cab, even if a rock protection is installed.

If operating in visually obstructed terrain or whenever necessary, have another person guide you. Always have only one person signal you.

For demolition work, clearing, crane operation, etc. always use the appropriate protection device designed for this specific application.

Allow only experienced persons to attach loads or to guide operators. The guide must be visible by the operator and/or must be in voice contact with him.

Depending on the attachment combination, it is possible for the bucket teeth to hit the cab, the cab protection or the boom cylinders. Be very careful when the bucket teeth get in this range to prevent any damage.

MACHINE PARKING SAFETY

Park the excavator only on firm and level ground.

If it becomes necessary to park the machine on a grade, properly block and secure it with wedges.

Lock the upper-carriage with the lock pin.

Lower the attachments to the ground and anchor the bucket lightly in the ground.

Bring all operating levers in neutral position and engage the travel and swing brakes.

Turn the engine off as outlined in the **Operation and Maintenance Manual** and raise the safety lever before you leave the operator's seat.

Lock the machine, remove all keys and secure the excavator against vandalism and unauthorized use.

MACHINE TRANSPORTATION SAFETY

Use only suitable transporting and lifting devices with sufficient capacity.

Park the machine on the firm and level ground and block the chains.

If necessary, remove the working device during transport.

When loading the machine on a flatbed trailer or railroad car, be sure that the loading ramp incline is less than 30° and covered with wooden planks to prevent skidding.

Remove all mud, snow or ice from track components before moving up the ramp.

Before loading, secure the upper-carriage with the under- carriage with the lock pin.
Align the machine with the loading ramp.
Attach the manual control levers to the foot pedals for sensitive control.
Have another person guide and signal the operator.
Have blocks or wedges ready to block the machine, if necessary, to prevent the machine from rolling backwards.
Retract the working device as far as possible and lower the working device as close as possible to the loading surface and carefully drive up the ramp and onto the flat bed trailer.
When the Excavator is on the trailer, release the upper-carriage lock pin, turn the upper-carriage back and lower the working device. If the backhoe working device is attached, tilt the stick and bucket in and relock the upper-carriage.
Carefully secure the upper-carriage and other parts with chains, wedges and blocks to prevent slipping.
Release the hydraulic pressure, remove the ignition key, raise the safety lever, close and lock the cab and close and secure all other doors and leave the machine.
Carefully check out the transport route. Make sure that width, height and weight allowances are within the permitted limits. Check that there is enough clearance underneath all bridges, underpasses, utility lines, and in tunnels.
During the unloading procedure, proceed with the same care and caution as during the loading procedure. Remove all chains and wedges. Start the engine as outlined in the Operation and Maintenance Manual. Carefully drive off the loading platform. Keep the working device as close as possible to the ground level. Have another person guide and signal you.

MACHINE TOWING SAFETY

Only tow the Excavator if absolutely necessary and the towing should be done by the driver.
Be sure all towing and pulling device such as cables, hooks and couplers are safe and adequate.
Make sure that the cable or the towing rod are strong enough and are routed to the towing hook. Be aware that any damage to the machine caused by towing is never covered by Shandong Rhinoceros Engineering Machinery Co., Ltd.
Never allow anyone to stand near the cable when pulling or towing the Excavator.
Keep the cable tight and free of kinks.
Engage travel slowly, and do not jerk. With a slack cable, the sudden impact of the load being towed could snap and break.
During the towing procedure, keep within the required transport position, permissible speed and distance.
After the towing procedure is completed, return the machine to its previous state.

MACHINE MAINTENANCE SAFETY

The machine may not be made unsafe when performing maintenance work. Never attempt maintenance procedures or repairs you do not understand.

Check the Operation & Maintenance Manual for service and maintenance intervals. Make sure you use only appropriate tools for all maintenance work.

During maintenance, do not allow unauthorized personnel to enter the maintenance area.

Before any maintenance work and especially when working under the machine, make sure a “Do not operate” tag is attached to the starter switch and remove the ignition key.

Use only nonflammable cleaning fluids to clean the machine.

Any welding, torch or grinding work on the machine must be explicitly authorized. Written authorization is necessary for welding on carrying structures. Before any using a welder, torch or grinder, clean off any dust and dirt and remove any flammable materials from the surrounding area. Make sure the area is sufficiently ventilated.

Observe all product safety guidelines when handling oils, grease, and other chemical substances.

When using hot service fluids, be very careful. They can cause severe burns and injury!

Never try to lift heavy parts. Use appropriate lifting devices with sufficient load carrying capacity. When replacing or repairing parts or components, make sure they are mounted very carefully on lifting devices, to prevent any possible danger. Use only suitable and technically sound lifting devices make sure that lifting tackle, wire cables, etc. has adequate load carrying capacity.

Never position yourself, walk or work underneath suspended loads.

Never use damaged lifting devices or devices which are not sufficient to carry the load. Always wear gloves when handling wire cables.

Ask only experienced personnel to attach loads and guide and signal the crane operator. The guide must be within the visibility range of the operator and /or must be in direct voice contact with the operator.

When working overhead, use appropriate and safe ladders, scaffolding or other working platforms designated for this purpose.

When working high above ground, make sure you are fitted with ropes and appropriate safety devices which will prevent a possible fall.

Always keep handles, steps, railings, platforms and ladders free of dirt, snow and ice.

When working on the attachments, make sure the attachment is supported properly.

Never use metal on metal support.

Never work underneath the machine if it is raised or propped up with the attachment. The undercarriage must be supported with wooden blocks and supports.

If it is necessary to repair the track, block the chain with wedges and lock the upper-carriage.

Fluid escaping from a small hole can have enough force to penetrate the skin. So

never check for leaks with your bare hands, always wear gloves or make indirect check by other instruments.

If it is necessary that the machine must be repaired on a grade, block the chains with wedges and secure the upper-carriage to the undercarriage with the lock pin.

Never loosen or remove lines or fitting before the working device has been lowered to the ground and the engine has been turned off. Then turn the ignition key to contact position, move all servo controls (hand-control lever and foot pedals) in both direction to release pressures. Then release the tank pressure as outlined in this Operation and Maintenance Manual.

Always disconnect the battery cable before working on the electrical system or before any arc welding on the machine. Always disconnect the negative cable first and reconnect it last.

HYDRAULIC LINES AND HOSES

All the hoses, lines and fittings must be checked regularly. It is better to check before start, to check monthly, to check annually for leaks and any externally visible damage! Any damaged sections must be replaced immediately! Escaping oil can cause injuries and fires!

Even if hoses and lines are stored and used properly, they undergo a natural aging process. For that reason, their service life is limited.

Improper storage, mechanical damage and improper use are the most frequent causes of hose failures.

The service life of a hose may not exceed six years, including a storage period of not more than two years (always check the manufacturer's date on the hoses).

Using hoses and lines close to the limit ranges of permitted use can shorten the service life (for example at high temperatures, frequent working cycles, etc).

Hoses and lines must be replaced if any of the following points are found during an inspection:

- Damage on the external layer into the inner layer (such as chaffing, cuts and rips)
- Brittleness of the outer layer and
- Changes in shape.
- Corrosion on fittings, Crack, wear and squeeze.
- Storage or service life has been exceeded.

When replacing hoses or lines, always use the original parts of Shandong Rhinoceros Engineering Machinery Co., Ltd.

ADDITIONAL SAFETY GUIDELINE FOR CABIN

When entering into the cabin and before operating the Excavator, please read the following safety instruction carefully.

Keep ladders, footsteps, handles and handrail in clean condition and always free them from mud, oil, grease, ice, snow or any other obstacles.

To guarantee an easy opening of the cab door in all weather conditions, coat the rubber seals around the door with silicon oil or talcum every two months and more often if necessary.

Regularly grease the hinges and lock of the cab door as well the fixing device of the door in opened position.

During maintenance works, always wear safety glasses and proper protective clothes.

To climb up or down the cab, the Excavator must be parked on firm, flat and level ground.

Face the Excavator when climbing up the cabin and always hold on to the machine at three points.

As soon as you can reach the handle of the door with your free hand unlock and open the door before climbing up any more.

Keep and guide the doors all the way with your hand and lock it in its opened position, making sure it is securely fixed in this position, so it can not be slammed by the wind.

Some external influences, and especially the wind, may make the opening of the door uneasy.

Sit down on the seat, fast your seat belt and start the machine.

It is essential to have your seat belt fastened if you want to operate the machine with the cab door open. Should the belt be missing on your machine, so you must get one installed before you start working with opened cab door.

Be aware of difficult weather conditions and their possible consequences. For example, the wind could slam the cab door.

Before sitting down on the seat, you must make sure the machine is parked on a flat, firm and level ground.

SIGNS ON THE HYDRAULIC EXCAVATOR

Your hydraulic excavator has several kinds of signs.

Warning Signs: Warn accident risks with potentially serious or fatal injuries.

Notice: Indicate specific points of control, maintenance and properties of the excavator.

Identification Tags: Indicates the original and other details.

Keep these signs clean. If it is missing or damaged, paste or replace a new one.

Other signs should be treated as the same as the above mentioned.

1. **Warning Sign on hydraulic oil tank:** To avoid being scalded.

Caution

1. Turn off the Engine before open the cover.
2. Don't open the cover when the oil temperature is high.
3. Open the cover slowly to release the inner pressure.
4. Don't loose the displacement plug when the oil temperature is high.

2. **Warning Sign on fuel tank:** Warn to use the designated fuel.

Fuel

1. Release the water in the fuel tank after 50 working hours and use the designated fuel according to the Operation & Maintenance Manual.

3. **Warning Sign:** To keep space from the stick.
4. **Identification Tags:** Indicates the Model, Manufacturer, Operating Weight, Date of EXW, and the Series No.
5. **Reminding Tags:** Remind the driver to read **Operation & Maintenance Manual** and other Cautions before operating the Excavator.
6. **Warning Sign on Water tank:** To avoid being scalded.
7. **Safety Warning:** Cautions when the Engine turning on.
8. **No Entering Warning:** Entering into the swing area is strictly prohibited.

III OPERATION AND CONTROL

“OPERATION AND CONTROL” contains the following items.

1. Position of each parts
2. Cab
3. Instrument panel
4. Appliance board
5. Air conditioner system
6. Sound system
7. Adjustment of seat
8. Safe belt
9. Front glass
10. Control bar of door
11. Inside lights of the cab

▲WARNING

Warning light, buzzer or each lights on the appliance board go on or sound worn, please cut off the power, clear the faults

部件位置

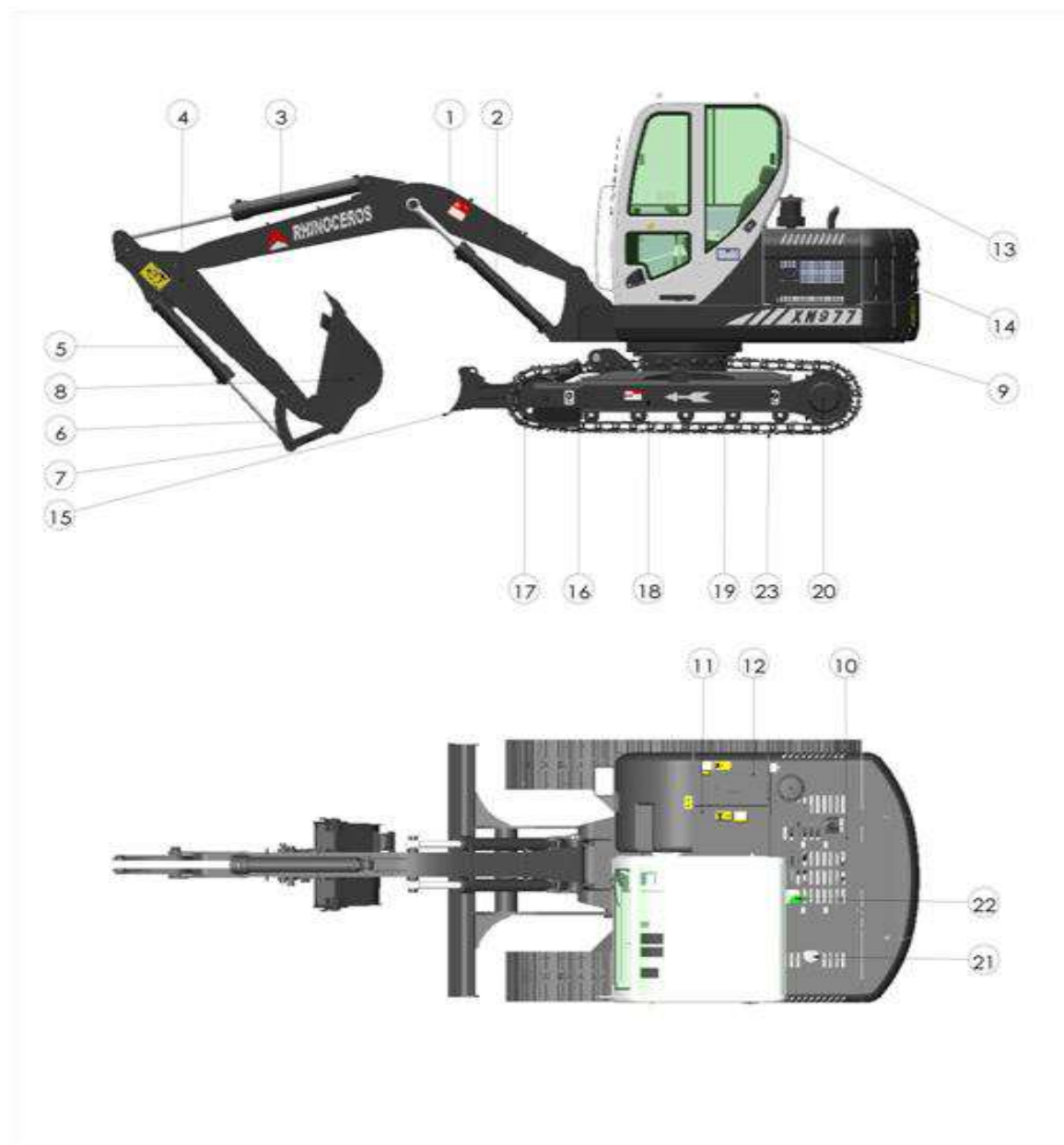
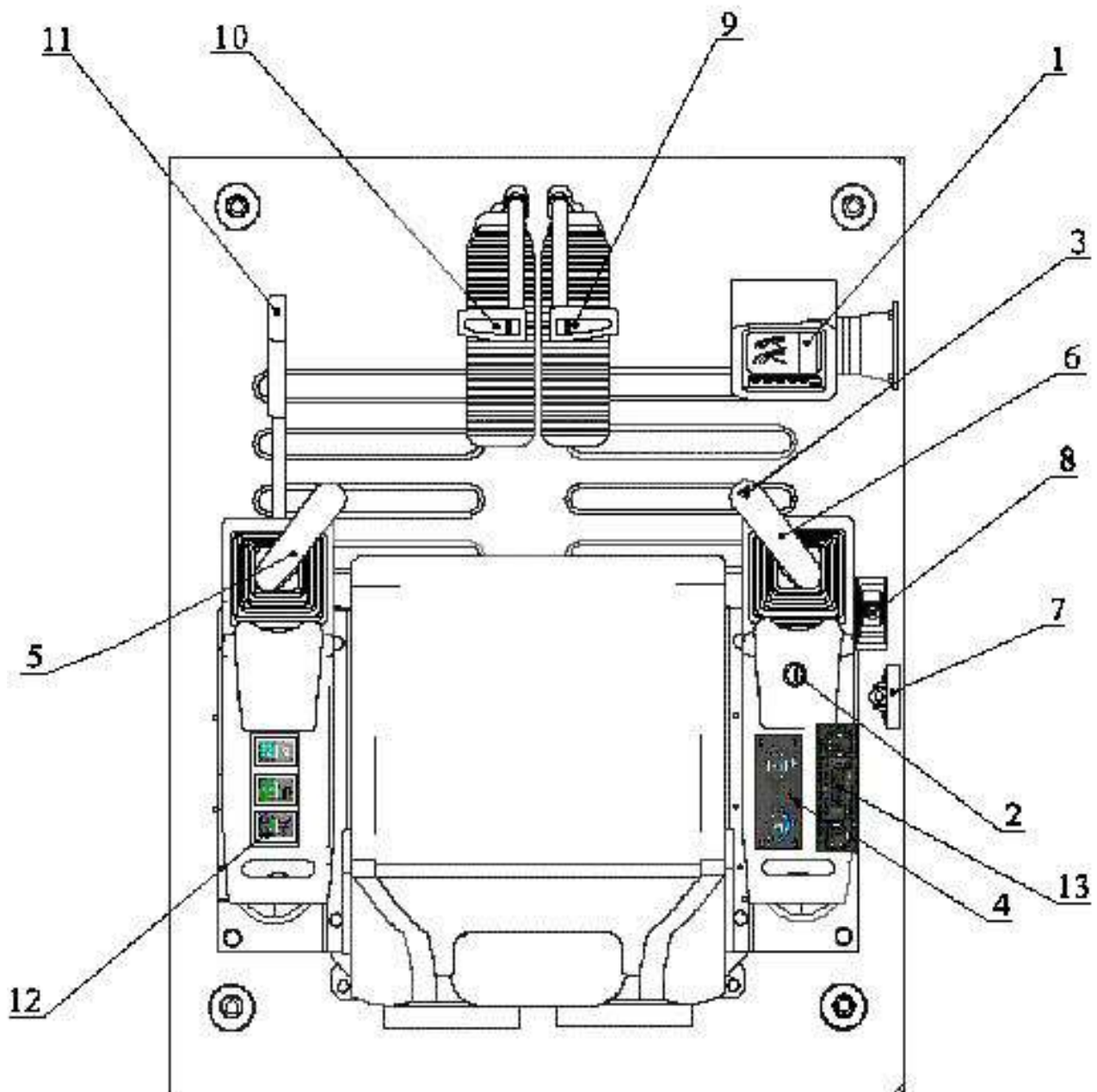


图1-1

- | | | | |
|---------|-----------|-----------|----------|
| 1. 动臂 | 7. 连杆 | 13. 驾驶室 | 19. 支重轮 |
| 2. 动臂油缸 | 8. 铲斗 | 14. 配重 | 20. 行走马达 |
| 3. 斗杆油缸 | 9. 回转平台 | 15. 推土铲 | 21. 散热器 |
| 4. 斗杆 | 10. 发动机机罩 | 16. 推土铲油缸 | 22. 发动机 |
| 5. 铲斗油缸 | 11. 燃油箱 | 17. 导向轮 | 23. 履带 |
| 6. 摇杆 | 12. 液压油箱 | 18. 涨紧弹簧 | |

- | | | | | |
|--------------------------|------------------------|-------------------------|--------------------|--------------------|
| 1. boom | 2. boom cylinder | 3. bucket arm cylinder | 4. bucket arm | 5. bucket cylinder |
| 6. connecting rod | 7. connecting rod | 8. bucket | 9. swing platform | 10. engine hook |
| 11. fuel tank | 12. hydraulic oil tank | 13. cab | 14. balance weight | 15. dozer blade |
| 16. dozer blade cylinder | 17. guide pulley | 18. idler strain spring | 19. thrust wheel | |
| 20. traveling motor | 21. radiator | 22. engine | 23. crawler belt | |



- | | | | |
|-----------------------------|-------------------------------|----------------------|-----------|
| 1. Instrument panel | 5. Left joystick | 9. Travelling bar | 13. Radio |
| 2. Starting switch | 6. Right joystick | 10. travelling bar | |
| 3. Horn switch | 7. The engine throttle handle | 11. The safety bar | |
| 4. A/C system control panel | 8. Dozer control rod | 12. Operation button | |

1. Instrument panel



Fig 2-3

2. Starting switch

Start and stop the engine

A. “start” position—turn to this position, electric appliances on, the charging and engine oil pressure lights on

B “off” position—turn to this position, the engine flameout, electric system power off

C “switch on” position— turns to this position, engine on.

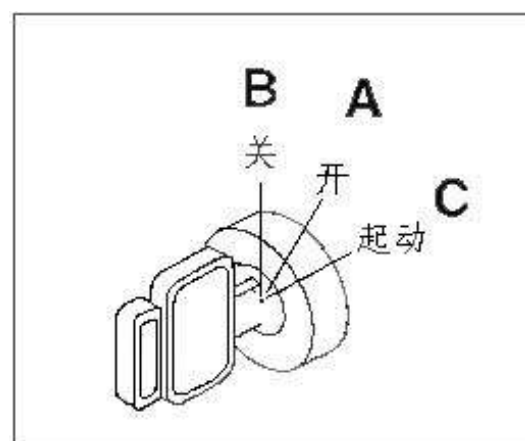


Fig 2-4

▲WARNING

Starting switch is with the function of preventing the engine restart when the machine works; the switch must be turn to “off” position when the engine is started again next time.

3. Horn switch (right joystick)

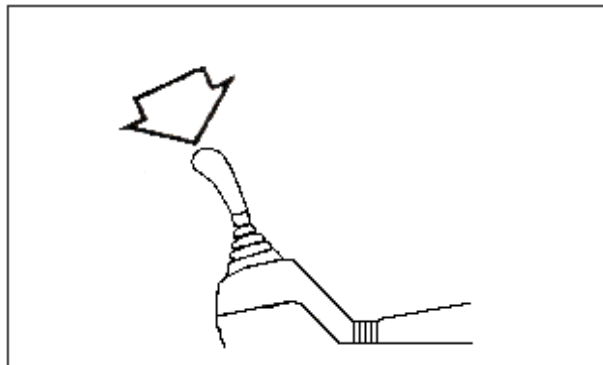


Fig 2-5

4. A/C control panel

a. AC switch (Fig, 2-6)

Clockwise rotate the AC switch when the engine is running, AC compressor works, turn back to the OFF position, the AC compressor stop.



Fig 2-6

b. blowing rate switch(Fig 2-6 left switch)

blowing rate switch is to control the blowing rate, there are three grades.

0 position, fan stop

position L: low blowing rate

position M: middle blowing rate

position H: high blowing rate

5. Left joystick (with hydraulic hammer switch)

To control the machine swing and bucket arm movement

6. Right joystick (with horn switch)

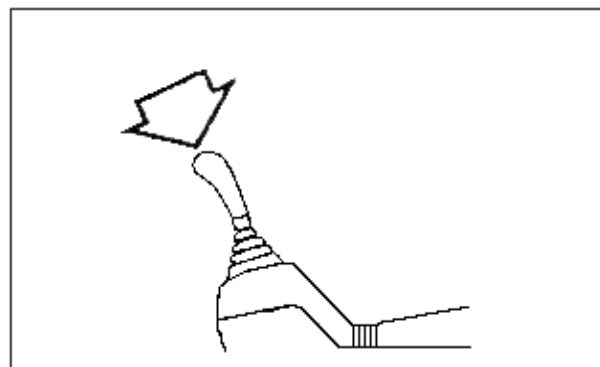


Fig 2-7

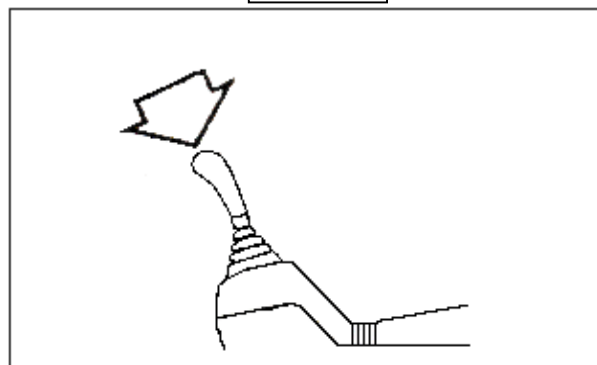


Fig 2-8

The joystick control the movement of boom and bucket, press the button on the top of the stick, the horn sound.

7. Hand throttle control

It is to control the engine speed.

A: low speed,

B: high speed



Fig 2—9

8. Joystick of dozer plate

It is on the right side of the seat

A: draw back the joystick, raise the joystick

B: push the joystick, lower the joystick.



Fig 2-10

9 and 10. Traveling joystick

These two joysticks control the forward and back of the machine.

11. Safety pole

The safety pole is to lock the joystick when the machine travel.

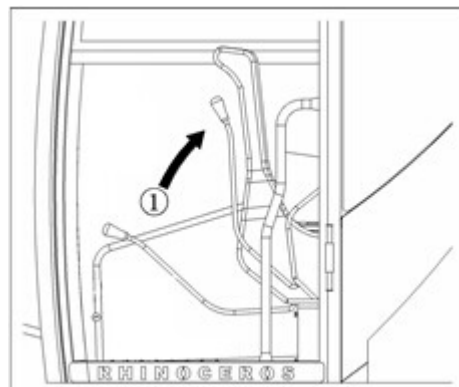
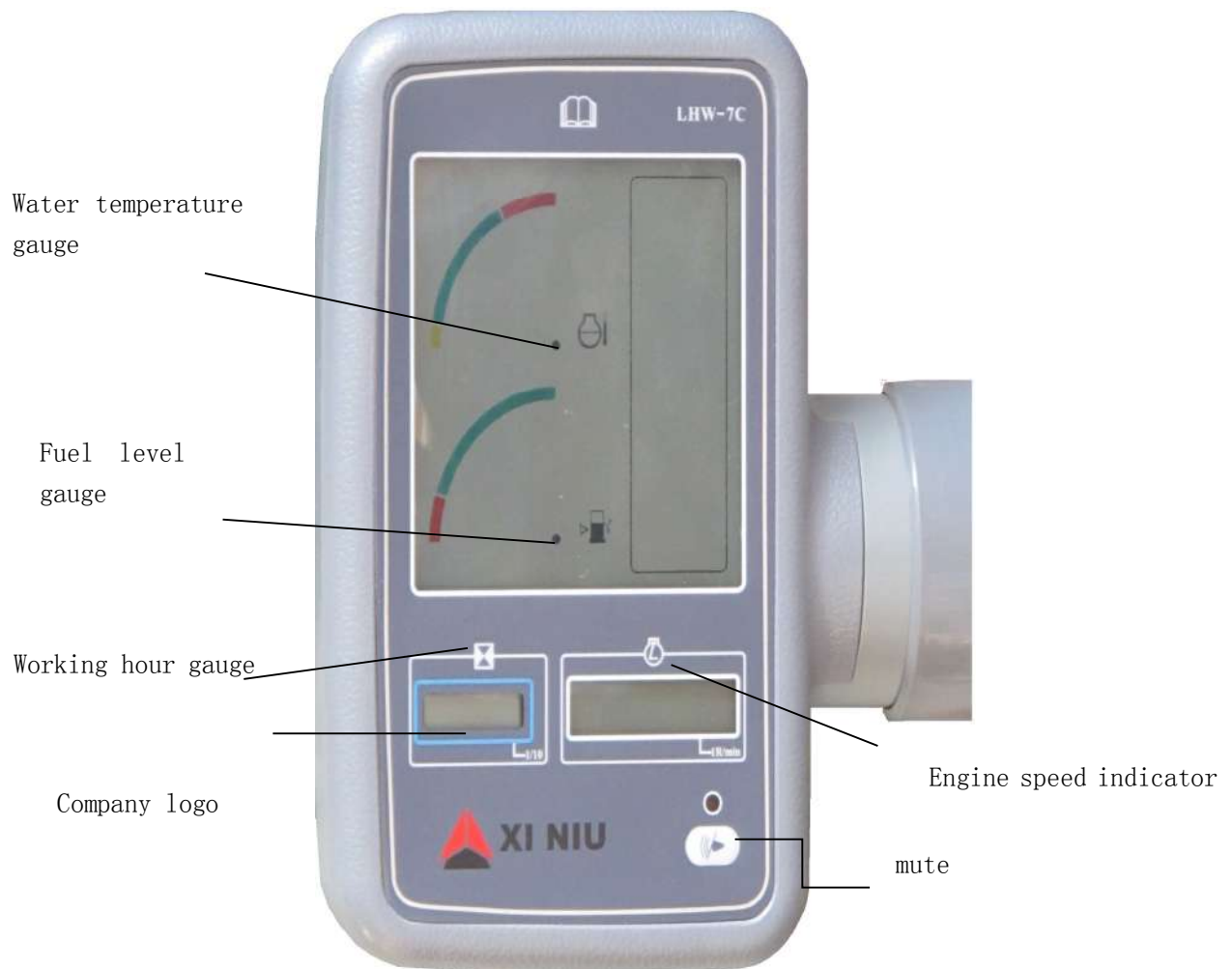


Fig 2-12


12. Radio


Refer to the sound


Instrument panel





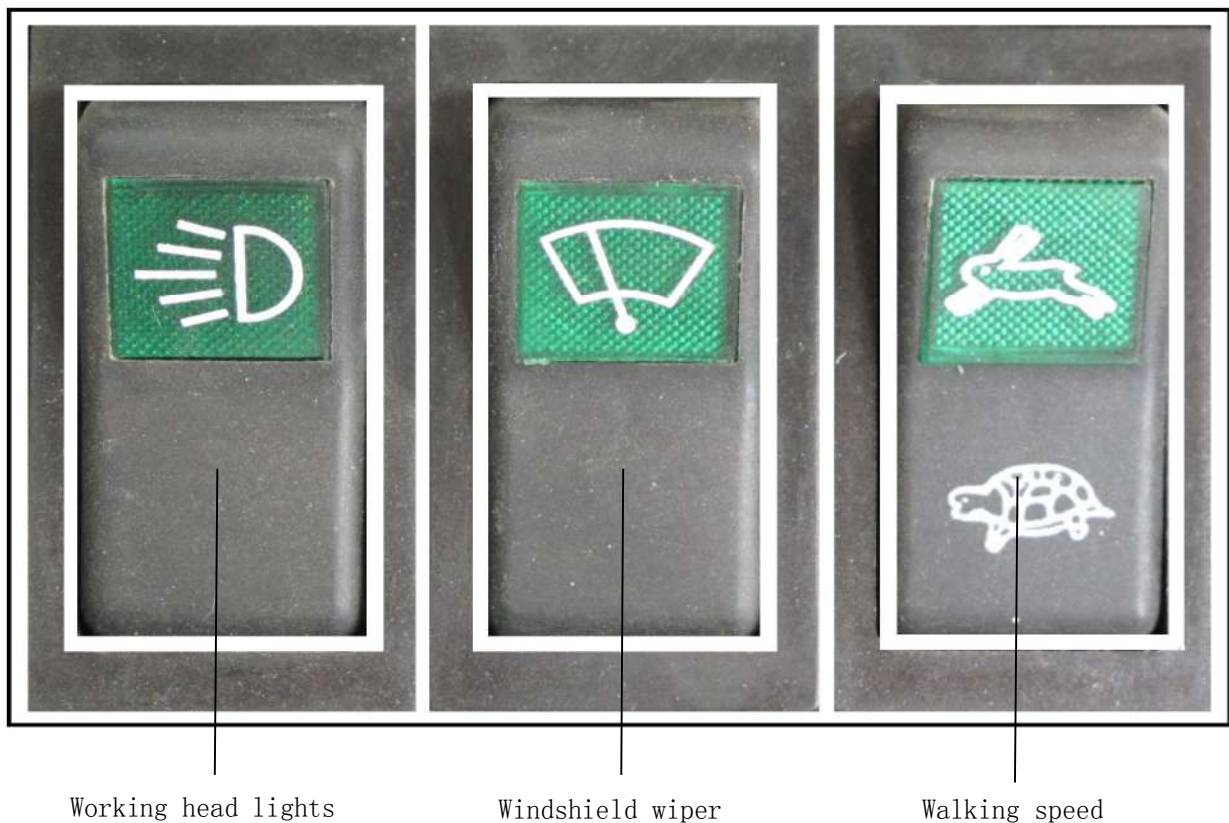
Instrument panel mainly includes water temperature gauge, fuel level gauge, working hour gauge, engine speed gauge and mute button.




1. Water temperature gauge : LCD blue part indicate, when temperature is from 40-106℃, it indicate the green area, when temperature is above 106℃, it indicate the red area and the buzzer sound, press the mute button, the buzzer stop sound,



2. Fuel level indicator  the LCD blue area indicate, when the fuel tank oil level is above 10% of the oil tank, it indicate the green area. When the fuel level is below 10% of the fuel tank, it indicate the LCD red area, and the buzzer sound, press the mute button at this time, the buzzer stop sound.

3. Working hour indicator  to show the total working hour of the engine, it ranges from 0-19999.9h, showed accurately on the LCD.

4. Mute button: when the indicators indicate there is some faults happens to the machine, the buzzer sound, when it is sound, press the button , now the mute indicator  light, buzzer stop sound.



5. Working head lights: press the button , the indicator lights  light, the head lights work now. if the indicator light  out, the head lights out too.




6. Windshield wiper: press the button , if the windshield wiper indicate the high speed, now the wiper is on high speed, press again the button , the wiper is in low speed.

▲ WARNING

If the front glass is dry, please first spray water, then use the windshield, unless it may break the glass or the wiper.

When there is some sand or dirt on the glass, please clean the glass first, then use the windshield, unless it may break the glass or the wiper.

°

10 walking speed: press the high speed button , the high speed indicator light , now the machine travels on high speed, if the indicator  lights, now the machine are traveling in low speed.

Keyset

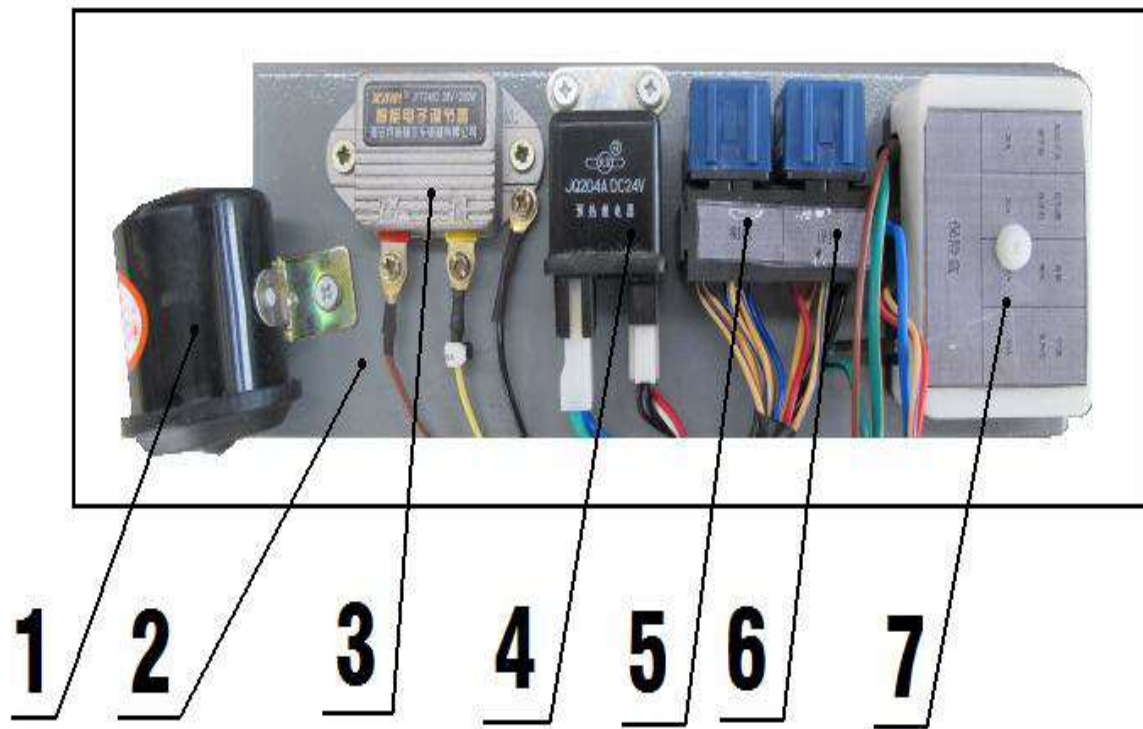


Fig 2—15

1. Alarm relay 2. Key set 3. Electronic regulator
4. Compound relay 5. electric horn relay 6. Head light relay
7. Fuse block

1. Alarm relay: when the electric switch is on, the alarm relay is connected and output control signal. When the alarm relay makes sound, the electric system has faults, now the machine should be stop and checked, and clear the faults.

2. keyset: it is used to install the relays and fuse block.

3. Electronic regulator: it controls the electronic system to make the system works well, and the machine voltage. The electronic regulator output control signal to ensure the electric system works well.

4. Starting compound relay: it is to control the starting motor on the engine, when the starting switch is on ON position, starting compound relay supply power to motor to start the motor. At the same time, it collects all the signals from generator to make sure every parts work well.

5. Horn relay

6. Head light relay: to control the on and off of the head lights.

7. Fuse block: it consists of all the fuses of this machine, all the power are outputted from this device.

AC SYSTEM

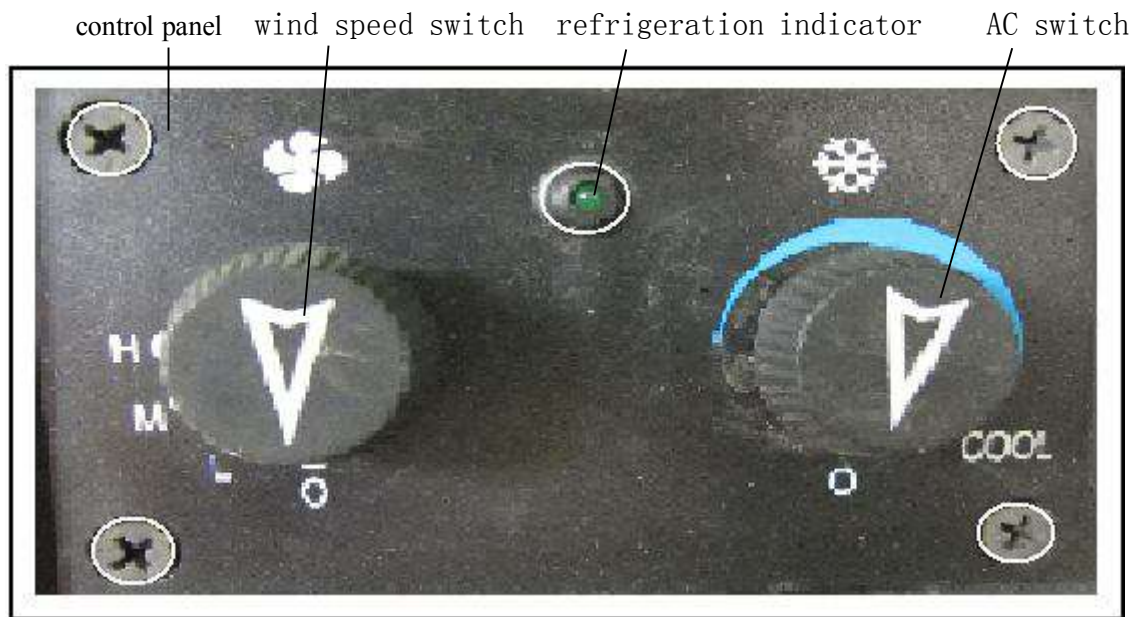


Fig 2-16

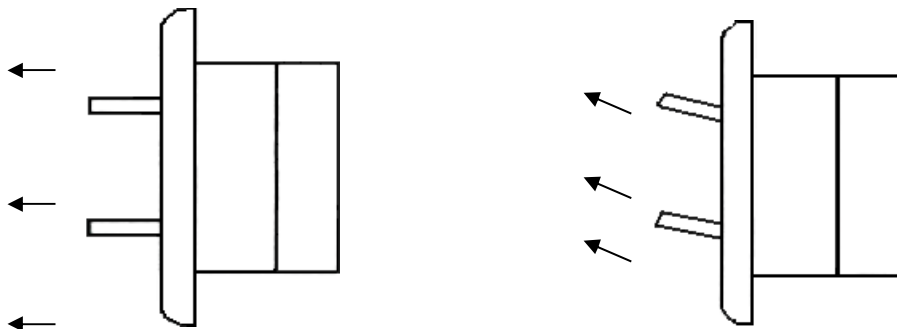


Fig 2-17

Ventilation elementary operation

Fig 2—16, turn the AC switch anticlockwise to 0 position

Fig 2—16, turn the wind speed switch clockwise accordingly to L, M, H position to get low, middle and high speed wind.

Fig 2—17, rotate the air outlet direction accordingly to get proper outlet direction.

Fig 2—16, turn the wind speed switch anticlockwise to 0 position, the AC turn off now.

Refrigeration elementary operation

Choose the proper wind speed and direction according to “ventilation elementary operation

Fig2—16, turn the AC switches clockwise to proper position (turn clockwise, Refrigeration effect stronger).

Regulate the wind speed, direction and refrigeration effect to get a comfortable environment.

Fig 2-16, turn the AC switch anticlockwise to 0 position, then turn the wind speed switch to 0 position to shut down the AC.

Heating elementary operation

In the condition of water heating valve opening, to operate according to the "ventilation basic operation".

Matters attention

1. Air condition box Assembly with dust gauze, the dust gauze must be cleaned regularly, once a month, or dust, dirt clogging the dust gauze, make cabin air cannot be smoothly through the heat exchanger, affect the air-conditioning effect.

2. When in summer use the refrigeration system, in spring and autumn use the ventilation system, should close the warm water valve at first; when in winter use the heating system, should open the warm water valve and make the air conditioning switch to the 0 position.

3. The Radiator core body is communicated with the engine, so if the radiator core body once Water Leakage will cause water shortage, make the engine overheating. In winter, to protect the Radiator core body be not cracking is important too. In order to prevent the cooling liquid icing cause the Radiator core body or water tank cracking, please use the company intended use cooling liquid. When necessary, when the cooling liquid icing, if do not use the machine for a long time, please make out the cooling liquid! Please attention: In winter, the Radiator core body be cracked, it is not in our scope of guarantee and service

4. The refrigerant is extremely easy to frostbite the skin, especially the eyes, in addition, the refrigerant when meeting fire emit toxic phosgene. So, in any time, if dismantle the refrigeration system, we must sure that the refrigerant can not be injected into the skin and eyes, then make refrigerant recovery or be drained, and then dismantle the refrigeration system. The whole process need to ensure no fire.

5. Do not use air condition long time, please run the cold system every half month, each running 5 ~ 10 minutes.

Sound system

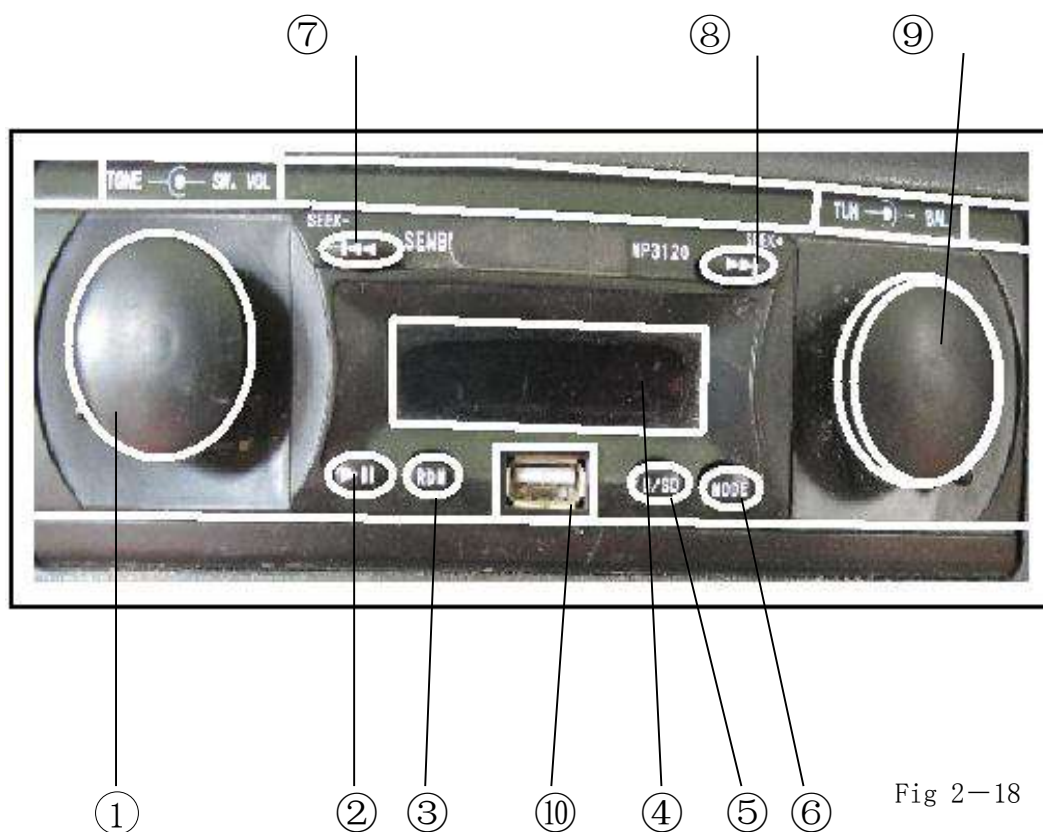


Fig 2—18

1. Controller and switch

- | | |
|-------------------|--------------|
| ① ON/OFF& volume | ②pause, play |
| ③ random | ④digital LCD |
| ⑤ function switch | ⑥ sound mode |
| ⑦ former | ⑧next |
| ⑨FM/AM | ⑩USB |

2. The radio turning method

1) Turn right the power switch

Turn the radio, the tuning frequency will shown on the digital screen ④

Turn left and right the power switch and volume control button ① to Adjust the volume;

Turn the volume control button can adjust the tone you want.

Turn right the power switch①,can adjust the balance of the volume channel by turn left and right switch①.

2) manual tuning method:

Press the FM/ Amplitude modulation switch button⑨,choose your needed channel.

Press button ④,you can manually select the radio frequency you want.

3. The radio station design method

1) Press the power switch ① to turn on the radio,Frequency will show on the digital screen.

2) Choose your wanted channel by adjust the tuning button. Press the memory button, the word “ME” will shining on the screen, press again button ⑥(the right corner of the screen will show the preset number), now, this channel will be remembered in the button.

3) While pressing the preset button ⑥, the radio will keep silence, after you finished your preset, it will play again, and show your preset frequency channel and preset number.

Once you finished the preset channel, you need just press the preset number, the radio will turning to the preset channel.

Seat adjustment

Front and back adjustment

Move the adjusting rod to adjust the proper position (left, right), adjustment range: 160mm.



Fig 2—19

Seat adjustment

Lift the adjusting rod on the left of the seat to get the ideal height.

Front window

Install and detach the front window

1. Disconnect the wiring of the front window washing motor (Fig 2-20)



Fig 2-20

3. Lifting the window and lock on the top of the cab by using these two handles.

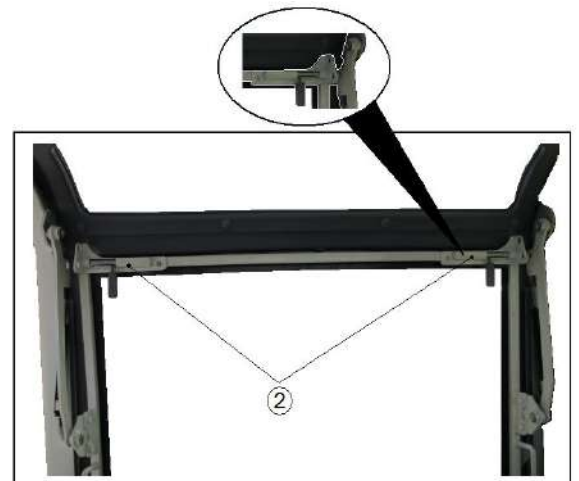


Fig 2-21

4. Screw up the two locking pins to make sure its safe. (Fig 2-24).

NOTE: reverse the procedures to install the window.

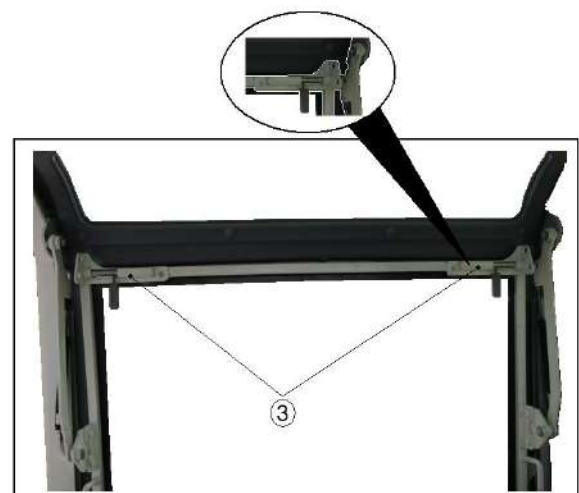


Fig 2-22

Action bar of open and close door

Push the action bar as the indicated direction to open the lock.



Fig 2-23

Interior lamp in the cab

Press the switch ①, the lamps works.



Fig 2-24

Grinding-in new machine

New machine grinding-in is to running-in the each and every part well, to ensure the backhoe loader work reliably and prolong its lift span. During the period of grinding-in, please operate and maintain the machine according to the following instructions.

1. Empty commissioning running (around 8h)

1.1 Idle running the engine 120min, first, run on low speed 30min, then gradually accelerate to 50% of maximum speed, then run for 90min.

1.2 Grinding-in of the hydraulic system of the working devices for 30min, do the following movements for at least 20 times, bucket, boom, arm movements up and down.

1.3 Drive the machine without load from low speed to high speed. Steer off the machine smoothly and brake slowly and softly.

1.4 The maximum speed of engine should not exceed the 80% of the rated speed when the machine is grinding-in.

1.5 The following inspections should be carried after the 8 hours grinding-in.

1.5.1 Check if there is some noise or over-heated of each transmission parts.

1.5.2 Check the tightness of air fan belt

1.5.3 Check the oil level of transmission box

1.5.4 Check the tightness of oil pipes of hydraulic system and braking system

1.5.5 Check the connection fixed situation of joysticks and accelerator

1.5.6 Check the connection of electric system, alternator situation, lamps and each meter.

1.5.7 Check the working situation of vehicle braking, parking brake and steering system.

2. Working running-in (around 20hours)

2.1 Operating the machine properly to gradually increase the load capacity.

2.2 The loading can not exceed 80% of rated loading capacity

3. after new machine grinding-in

3.1 Find problems, clear troubles.

3.2 Check thoroughly the situation of each parts, clean the oil filter

3.3 Overall check the tightness of each bolt, nuts.

Starting and stopping

Engine-checking before starting

▲ WARNING

If there are combustibles such as paper and leaves on the high temperature parts, such as the air intake tube, muffler, it may cause fire, the leakage on the fuel and hydraulic tank may cause first too.

Check the following items before starting the engine:

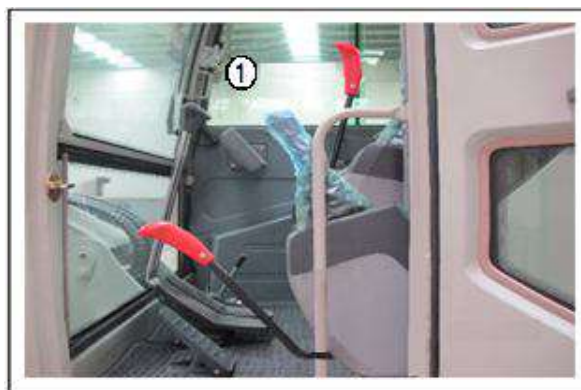
1. Electrical system-check the wires and the connectors.
2. Fuel system-drain the water and impurity from the fuel tank.
3. Hydraulic system-check the leakage of hydraulic oil tank and tubes.
4. Lubrication-carefully conduct daily and regularly maintenance according to the working hour gauge.
5. safe-check around the machine, makes sure there is no person under the machine, then starts to maintain.
6. Check all action bars and other parts.

Checking before starting

▲ WARNING

Please put the safe bar on the lock position before leave the machine.

1. safe bar ① is on the “lock” position (Fig 3-1)



2. Check if if envery situation is normal.

3. make sure the traveling action bar①,
dozer blade action bar ② in neutral position
(Fig 3—2)。

NOTE: do not touches any switch when
start the engine.



Fig 3-2

4. Turn the switch to the “start” position to check if all lights works, turn all other
lights except the followings.

engine cooling liquid temperature gauge;
charging warning light;
fuel gauge;
engine oil pressure warning light.

NOTE: if all the lights do not work when
power on, there must be somewhere wrong.
The buzzer will warn for 2 seconds.

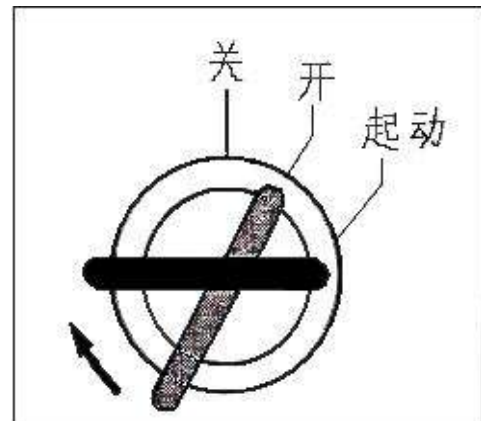


Fig 3-3

Engine starting

▲WARNING

▲Sound horn before starting; make sure there is no person or other thing in
the working area

1. Check according to the procedures of
engine before starting
2. Put the accelerator handle on the level
of a little higher than the idle speed
3. Sound horn



Fig 3-4

4. The engine should be started in 5s after turn the switch to “start” position

▲WARNING

If the engine do not started after 10s, turn the switch back to “off” position, start again after 5m.

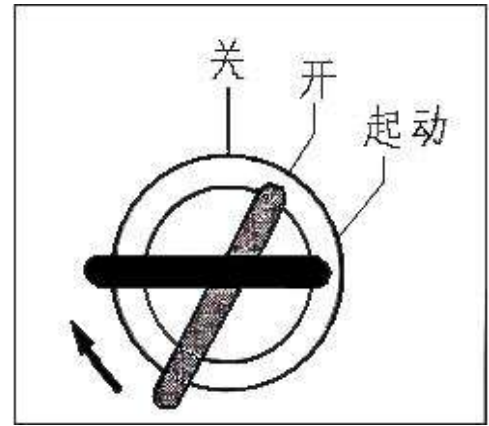


Fig 3-5

5. The key will go back to “start” position automatically after the engine is started and loosen the key.

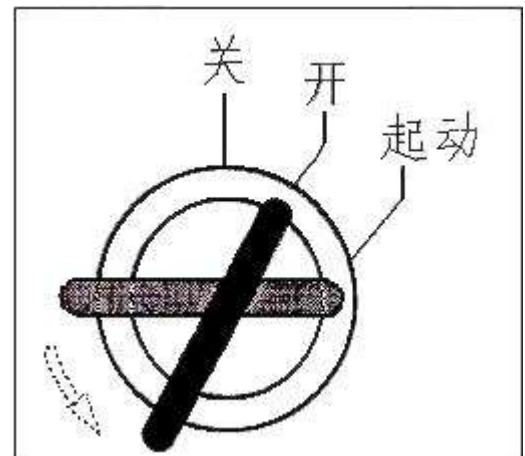


Fig 3-6

6. Heating up according to the “hydraulic system”. Ref Fig 3-7.

7. Check all the operation instructions after heating up, make sure the engine system (oil pressure and cooling liquid) work under normal situation. Stop the machine at once if any questions.



Fig 3-7

Instrument panel indicator light	Indicator display
Coolant temperature gauge	Green area
Fuel gauge	Green area
Charging indicator light	no
Engine oil pressure indicator light	no
Preheat finish indicator light	no
Hydraulic greasy dirt warning indicator light	no
Air filter warning indicator light	no

8. Purging system checking

- no color or blue-engine works well
- black-combustion insufficiency, check reason
- white or deep blue-burning engine oil, check reason

Check engine vibration and noise, if there is noise and vibration, check the reason

Starting on low temperature

▲WARNING

When using preheating system, does not use starting fluid, it may cause explosion.

1. Check according to the procedures of engine before starting.
2. Put the accelerator handle on the level of a little higher than the idle speed
3. Sound horn
4. Put the switch at “Open” plase(fig 3-8), wait 15 seconds, start atonce.

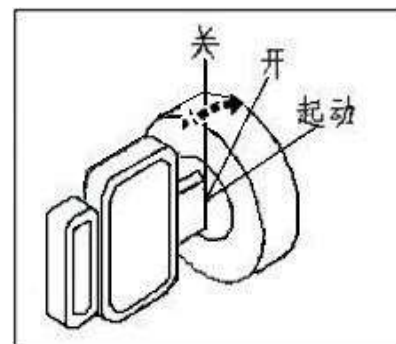


Fig 3-8

5. Put the switch at “start” position, (fig 3-9), the engine will start within 5 minutes.

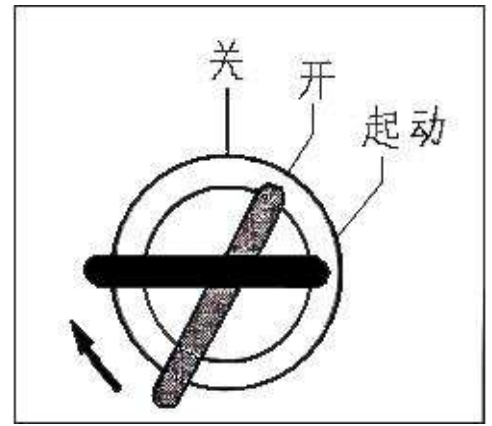


Fig 3-9

6. After start the engine, loose the key, . The key will back to the “open” position automaticly.

While the engine is working, do not turn the key to “start” , it may damage the engine

If you repeat priming procedure but could not start the engine, please check the fuel line and the butter situation.

7. After start the engine, check all the operation indicating lamp, make sure the engine system(fuel presure,cooling liquid) working in normal condition.

8. To heating up according to the “state of low temperature – hydraulic system”.

Using Auxiliary boost battery

to start the engine

▲WARNING

1. Wear safe glasses
2. Do not connect positive and negative pole directly
3. Do not connect the earth wire of the auxiliary boost battery to the engine battery directly, find a connecting position on the machine.
4. The battery may produce hydrogen when discharged, it may cause explosive.
5. Pull up the machine on a dry area or on concrete ground, and then start the engine. Do not start on steel

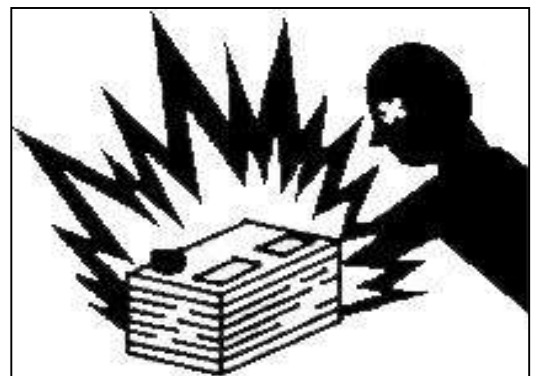


Fig 3-10

IMPORTANT

The electric system is 24V with the negative pole connecting to the ground, auxiliary starting use the same battery with 24V.

When start the engine, if the battery is discharged, using the auxiliary or boost battery start the engine

1. Using boost wire ① (Fig 3-11) connect the positive pole of the battery to the positive side of the discharged battery
2. Using boost wire ② (Fig 3-11) connect the negative side of auxiliary battery to the earth point of the upper platform, do not connect to the negative pole of the battery directly.
3. start the engine as instructed
4. After the engine is started, move the boost Wire from negative to positive pole.

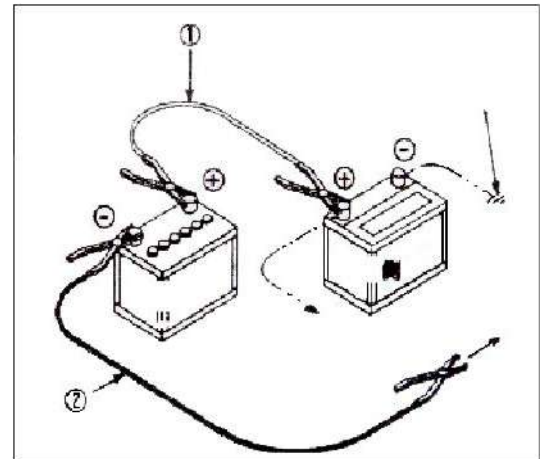


Fig 3-11

Preheating of hydraulic system

▲Warning

Stop the engine at once if there are some faults or misoperating, make sure the excavator reach normal temperature before working, especially in low temperature environment

the normal working temperature is 50—80℃ (120—170F)

1. Running the engine in middle speed without load for 5 minutes.



Fig 3-12

2. Put the safe pole①(Fig 3—13)
“unlock” position.

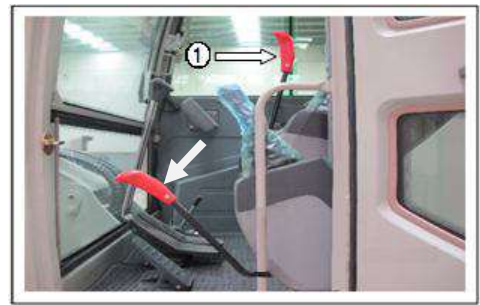


Fig 3-13

3. Slowly move cylinder of the boom,
bucket arm and bucket for 5 times
to let the hydraulic oil cycle without
load in the hydraulic system.

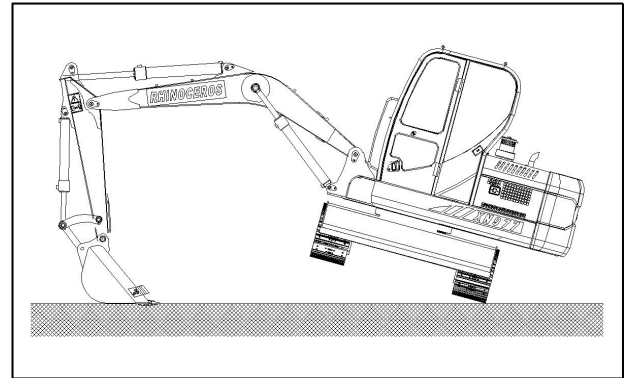


Fig 3-14

4. Check the interval of working devices
Lift working devices then turn
clockwise for 3 cycles then anticlockwise for 3 times.

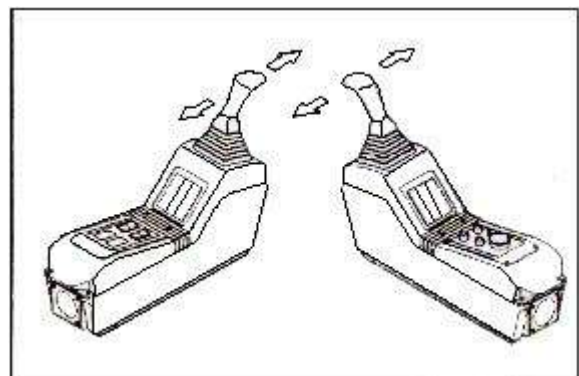
5. Put the working device on ground to let one side
of the track shoe off ground on a firm ground, the
other side track shoe on ground, control the
traveling motor forward and backward for two times
then check the other side track shoe in the same
way.



Fig 3-15

Warm up the hydraulic system in low temperature

1. Run the engine in idle speed for 5 minutes.



2. Run the engine 5 minutes at middle speed.



Fig 3-17

3. Put the safty bar at the “ unlock ” position. (switch the pilot oil source)

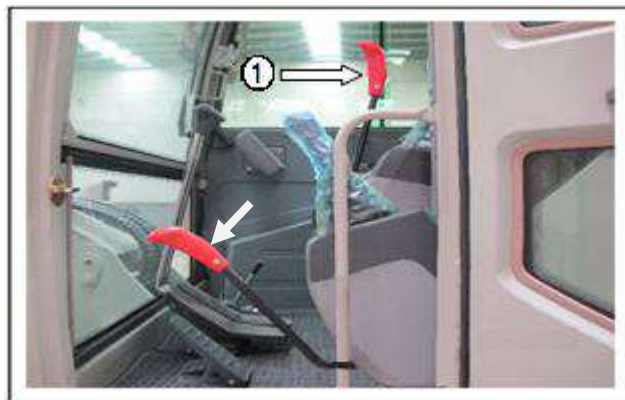
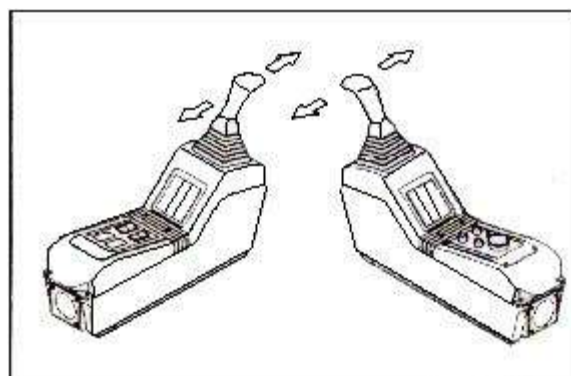


Fig 3-18

4. Slowly operate the boom, arm and bucket without load for 5 times to cycle The hydraulic oil in the hydraulic system For 5 minutes

NOTE: do not let the cylinder to reach Two dead points.



5. Put the acceleration bar on the high speed position.

Fig 3-19

6. Reat the procedures of “3” for 5 minutes Again, if the working temperature is still Low, keep operating, but be carefully.

7. Check the interval by lifting the working devices. Then slowly cycle 3times clockwise and anticlockwise

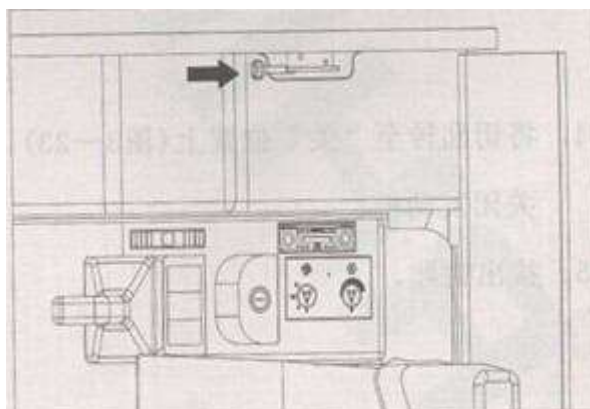
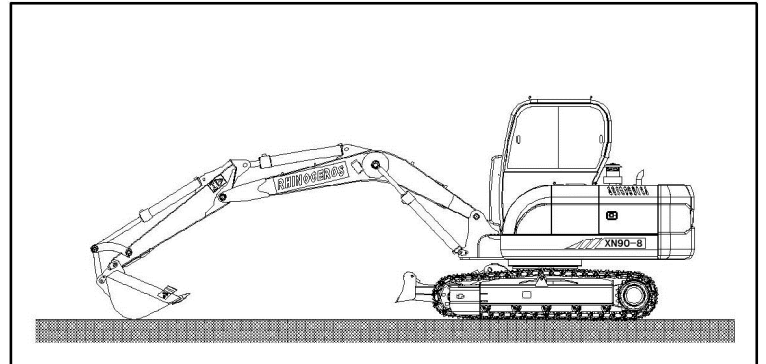


Fig 3-20

8. Put the working device on ground to let one side of the track shoe off ground on a firm ground, the other side track shoe on ground, control the traveling motor forward and backward for two times, then check the other side track shoe in the same way.

Stop the engine

NOTE: running the engine idly for 3-5 minutes before stop the engine, unless the heat may cause problem to the engine.



1. Park the excavator on level and firm ground.

Fig 3-21

2. Put the working device on ground.

3. Put the accelerator operating bar on The lowest speed position (Fig 3—22), then Running the engine for 3-5 minutes in idle position.



Fig 3-22

4. Turn the key to “off” position (Fig 3—23), stop the engine.

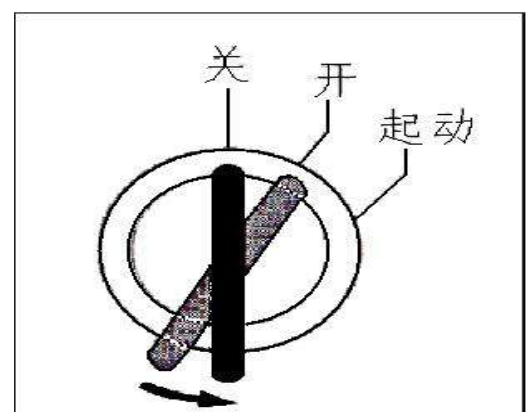


Fig 3- 23

5. Pull out the key.

6. Put the safe operating bar back to the “lock” position, check again after stop the machine.

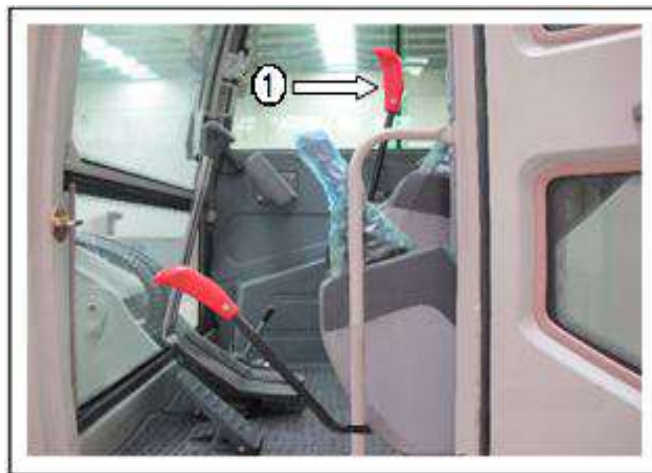


Fig 3-24

Checking after engine stop

1. If the excavator oil or coolant liquid leak, check and repair.
2. Check the working devices and under part.
3. Refilling fuel
4. Clear the combustibles around the engine, such as leaf, paper and so on.
5. Clean the sludge on the under parts and track shoe, make sure all the, paddles and cab are clear and clean.

Safety pole

▲WARNING

Be sure to lock the safety pole after stop the machine and leave the cab, unless may cause series accidents if touch the operating bar.

Before leave the seat, make sure the engine is stopped (the key at “off” position),safty pole is locked.

1. Draw back the safety pole ①(Fig 3—25), make the left operating device up to the lock position, when the safety pole (Fig 3—25) is on the lock position, all the working devices could not work.

2. Pull down the safety pole to “unlock” position before starting to work

NOTE: when the engine is not running, safety pole on “unlock” position, starting key on “ON” position, operating the handle, the machine can work. Accumulator can supply the pressure to control the valve element.

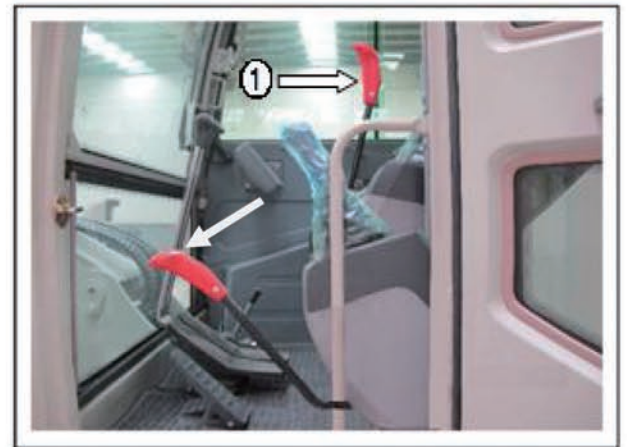


Fig 3-25

Walking

▲WARNING

1. Be sure to know the excavator parking direction before operating the walking rod. If you see the traveling motor by seating in the cab, what you see is the rear part. If you draw back the traveling bar, the machine goes forward.
2. Before walking, make sure there is no person on or around the machine, sound horn to warn that the machine is starting.
3. Operate the machine traveling rod slowly and smoothly, do not start or stop suddenly.
4. Lock the controlling system before leaving the machine, stop the engine in case of some accident

Walking overview

1. set the accelerator according to the excavator speed. (Fig 3—26)

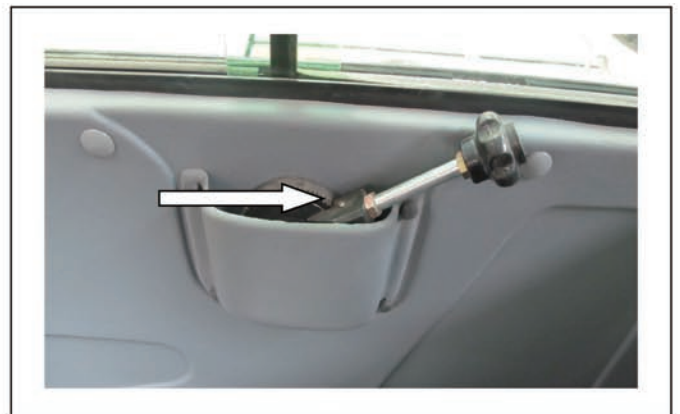


Fig 3-26

2. put safety rod ① (Fig 3-27) on “unlock” position.

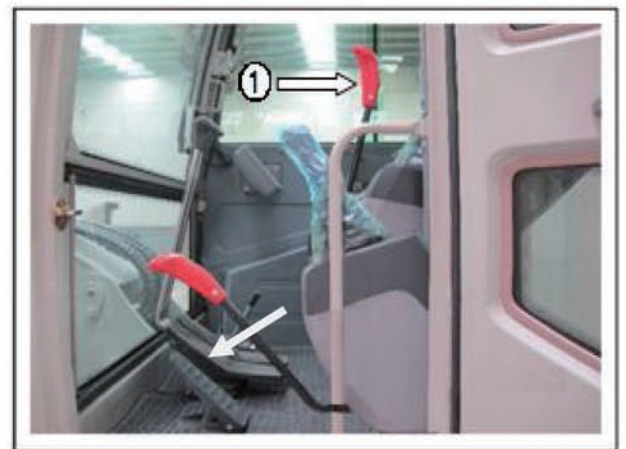


Fig 3-27

3. Draw back the working device to let it off ground. Fig 3—28.

4. make sure the bucket off ground completely.

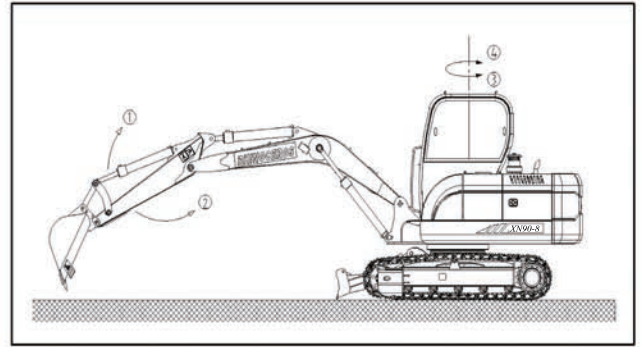


Fig 3-28

5. Try to walk on the hard ground, avoid sudden movements and small angle turning.

6. When walks on uneven ground, choose low speed(1.0—1.5km/h) to reduce the speed of the engine(Fig 3—29).

7. Walking slowly on irregular, frozen or uneven ground.

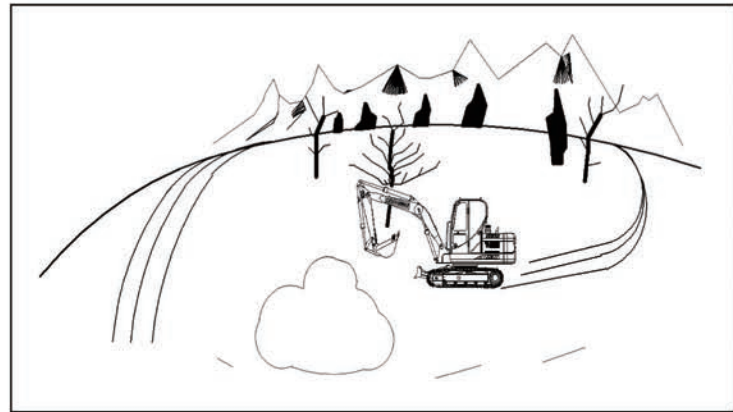


Fig 3-29

▲WARNING

- Keep the bucket ground clearance 200~300mm.
- Do not stop the machine on slope
- Choose a safe way when climbing
- Do not turn when walking on slope.
- If the excavator slides or is unstable, put the bucket into ground to brake.
- Avoiding to work on slope before make sure it is safe, the machine may turn over.
- Swing the excavator with load on slope is very dangerous.
- If it is inevitable, first fill up and make even.
- Try to make sure the machine work on level ground(fig 3-30.)
- To avoid roll over, do not walk in more than 30 degree slop.

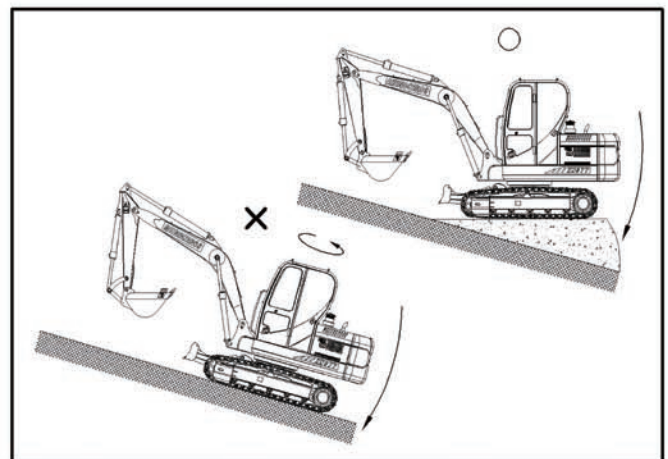


Fig 3-30

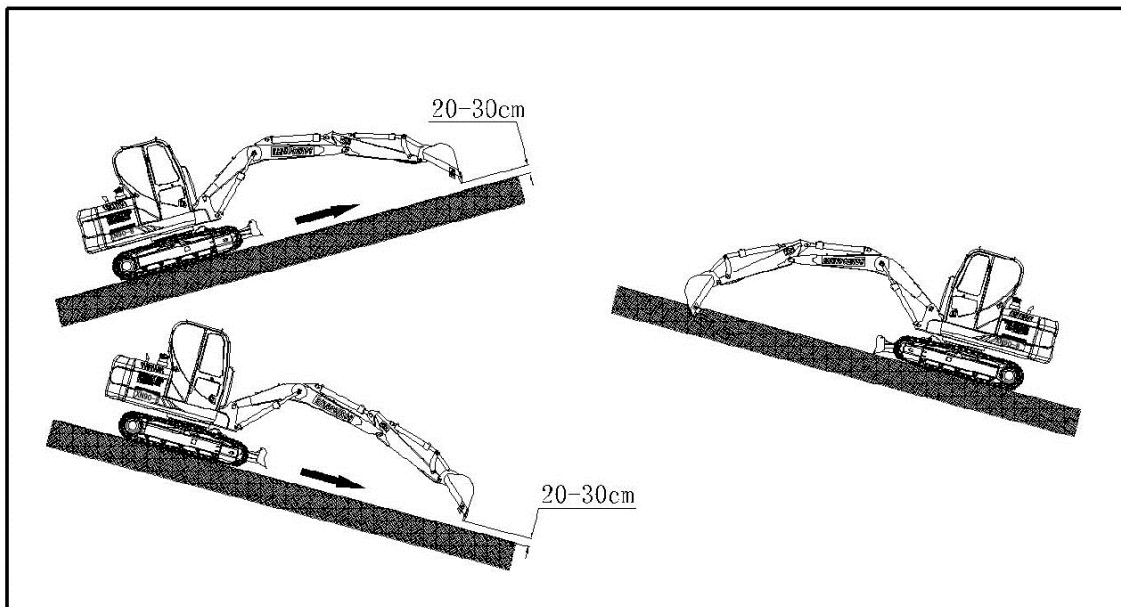


Fig 3-31

8. Walking along the slope, do not walk across the slope. (Fig 3-31), pull out of the bucket rod, lowering the boom, keep the bucket a 300mm distance from the ground, if the machine sliding or unstable, put down the bucket to keep control. If the engine stopped, low down the bucket, make sure all handle at the middle position before restart the engine.

9. If there is dust or sands on the trak shoe, lift the two track shoes and turn to clear it. Make sure the sludge is cleared. (Fig3-32 Fig 3-33)

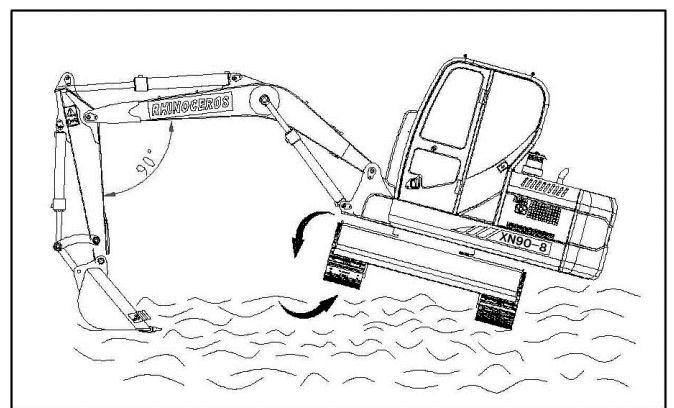


Fig 3-32

▲ WARNING

If to support any part of the excavator by boom or arm, swing the bucket to make sure the under part of the bucket touch ground, and the angle between boom and arm should be 90 degree.

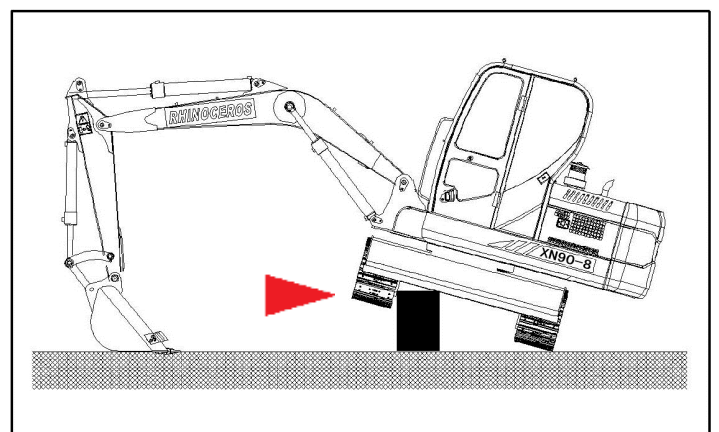


Fig 3-33

10. When going straight (fig 3-34) push forward or pull backward the operating rod/pedal. The movement of the operating rod/pedal bigger, the faster of the machine will be.

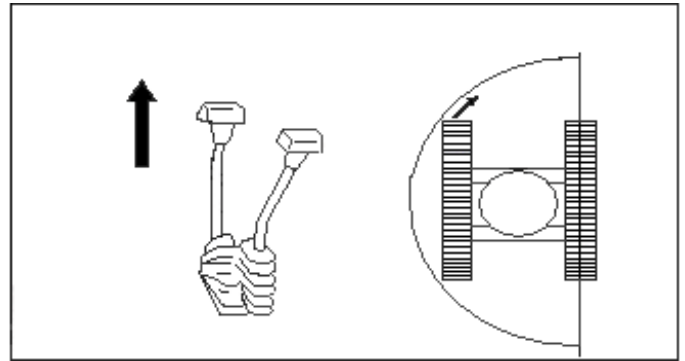


Fig 3-34

▲WARNING

There needs a trailer to transport the machine is the displacement distance is more than 2km, if in 2km, the machine should be intermittent to move, walking for 10 minutes, then rest for 5 minutes, unless it may cause series damage to the machine.

11. If only control one operating rod forward or backward, the excavator will circle around the still track shoe.

(Fig 3-35)

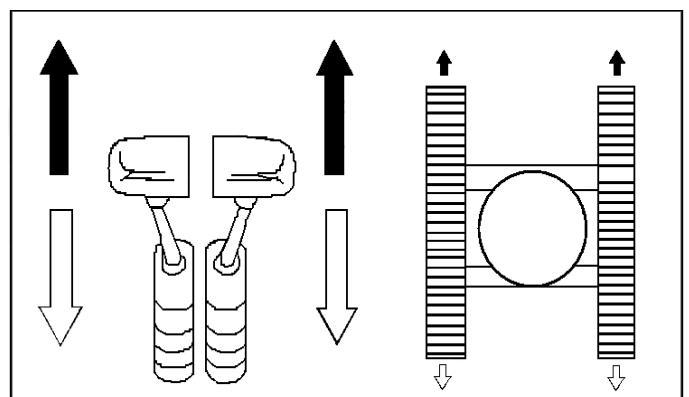


Fig 3-35

12. One track move forward, while the other track move backward, the excavator will circle around the machine center. (Fig 3- 36)

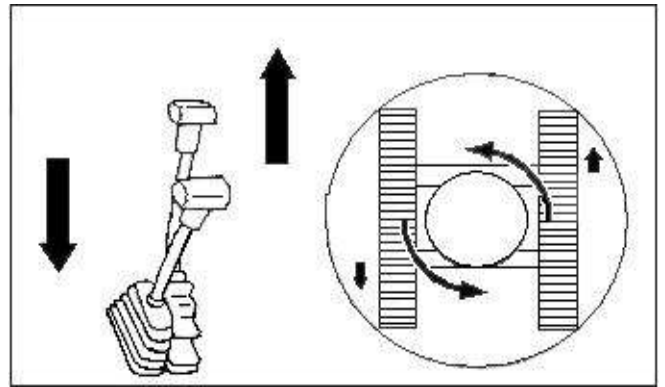


Fig 3-36

13. Stop walking (Fig 3-37) — put the operating rod in the center position, the machine will brake automatically and park.

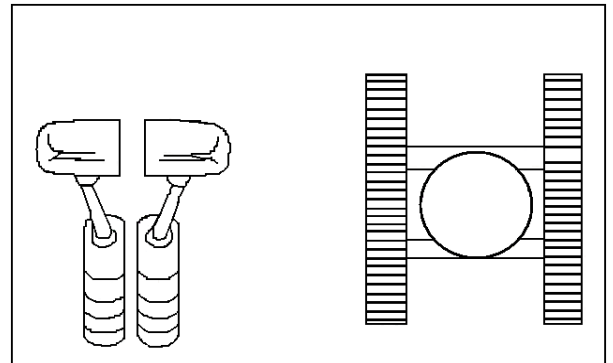


Fig 3-37

Action bar (ISO)

▲warning

Please check around the machine before rotary motion.

NOTES: When you start to work, move the handles slowly to check the rotary motion and front working assembly.

The structure of action bar on this excavator meet to the criterion of ISO, keep the standard settings, do not change the valve and pipes casually.

There is schematic diagram of operation at right side of the cab. (Fig 3-38)

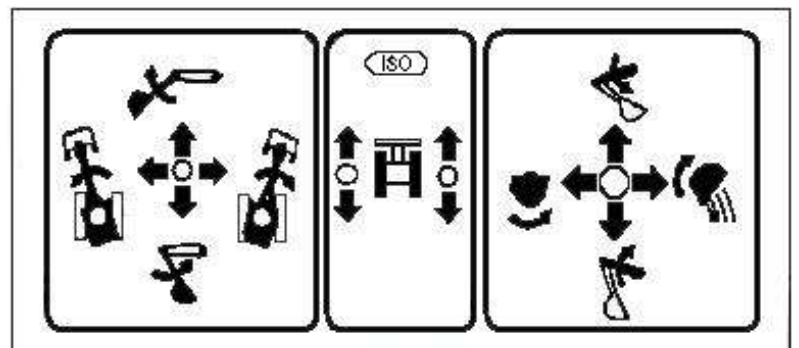


Fig 3-38

Ralations of the boom, bucket rod and bucket movement and the operating lever as following:
Left handle(Fig 3-39 & Fig3-40)

- ① Rod extension
- ② Rod back
- ③ Rotary
- ④ Rotary

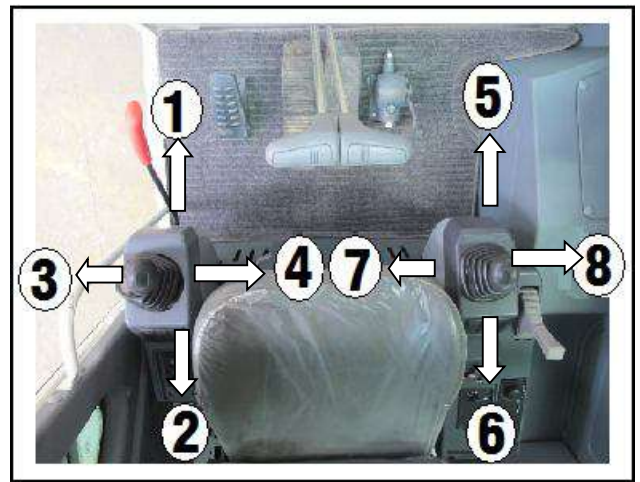


Fig 3-39

Note: Swing brake is realized by the spring and release the hydraulic pressure, when the operating rod is in the middle position of the engine is stop,the excavator will realize rotary brake.

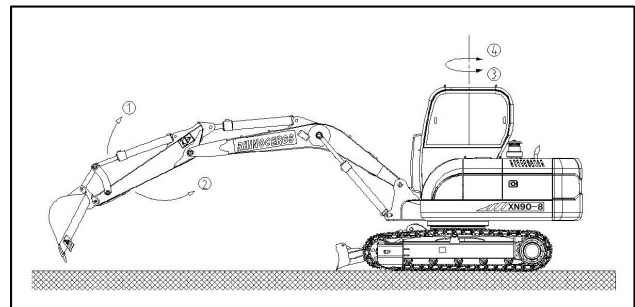


Fig 3-40

Note: The following phenomenon are normal, it is not the excavator' s problem. The bucket arm may desitate when working; when the bucket arm is working, the oil supply may not sufficient due to the fast movement of the bucket rod.

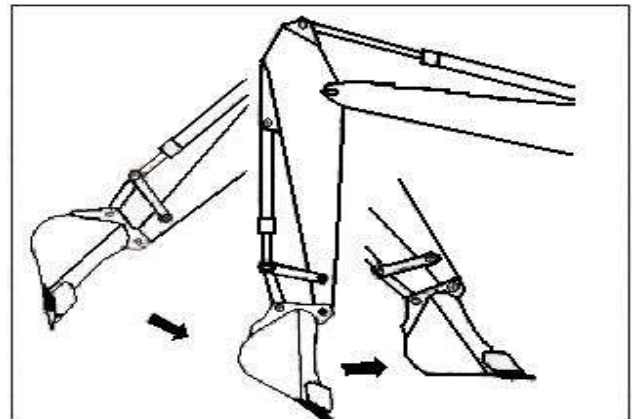


Fig 3-41

The right handle:(Fig 3-41 & Fig 3-42)

- ⑤ Boom down
- ⑥ Boom up
- ⑦ Bucket draw back
- ⑧ Bucket stretch out

Note: Even if the shutdown,the operation handle can put down the front device to the ground, put the safety bar at the “open lock” position, switch the key to the “off” position.

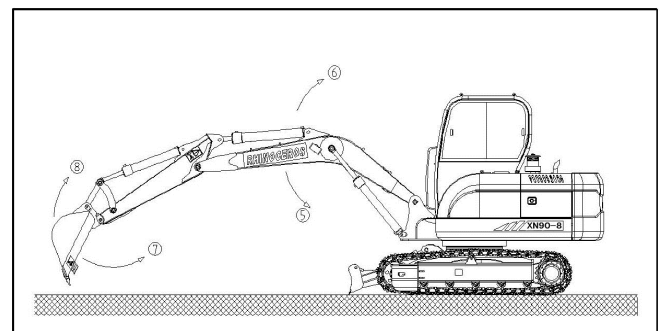


Fig 3-42

Operating instructions

▲ WARNING

When operating the machine work, do not put your feet on the walking operating rod, the machine may move suddenly.

1. First to know the terrain and the edaphic condition before working, level the earth if it is necessary.
2. Install window guard board if it is possible to be hit by drop stone or other thing

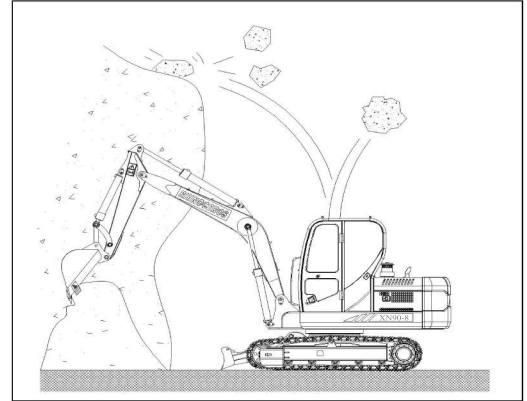


Fig 3-43

3. Check the hardness of working area. If it is not solid enough, first reinforce before working. If any doubt of the hardness, do not work in this area.

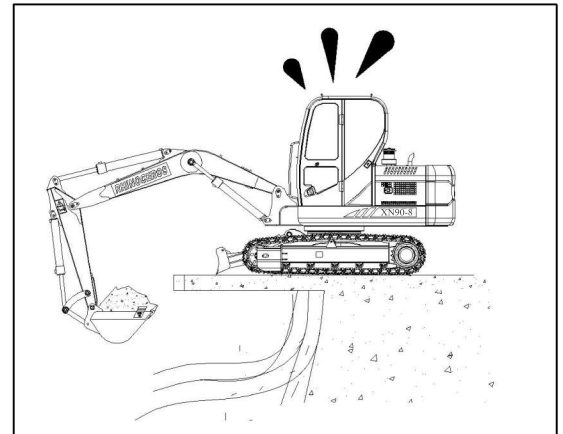


Fig 3-44

4. The boom, bucket arm or the bucket may touch the machine body in some working environment.

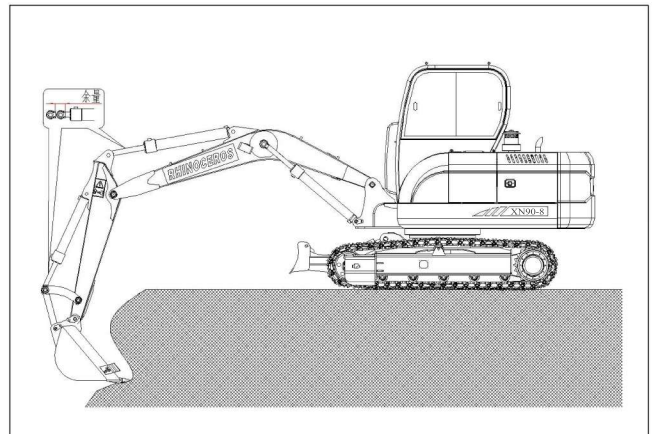


Fig 3-45

5. Do not continuously full stretch out the cylinder, it may cause problem to the machine.

6. When there is resistance when the bucket works, do not swing the machine or walks(Fig 3—46)

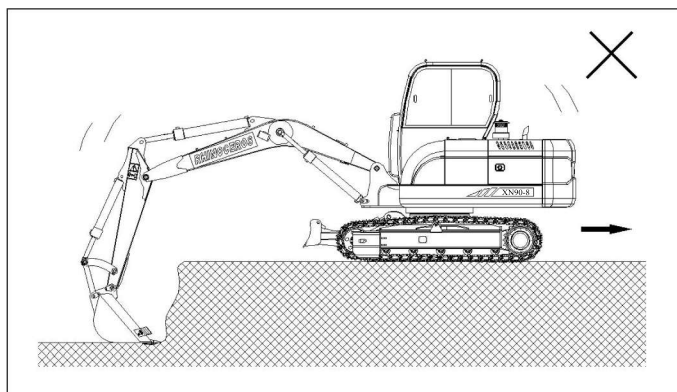


Fig 3-46

7. Do not increase the digging force by using the machine self weight(Fig 3—47)

8. When works on soft earth or muddy ground, be careful the sink of the machine.

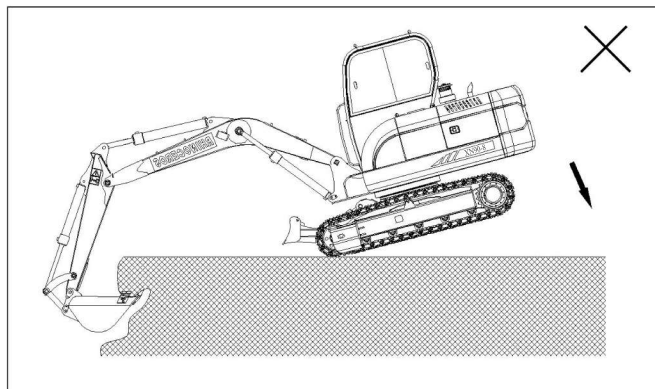


Fig 3-47

9. When works by the road or near the cliff. Keep the solid of the earth. in some case, do not work lonely, keep the traveling motor on the rear part of the machine. (Fig 3—48)

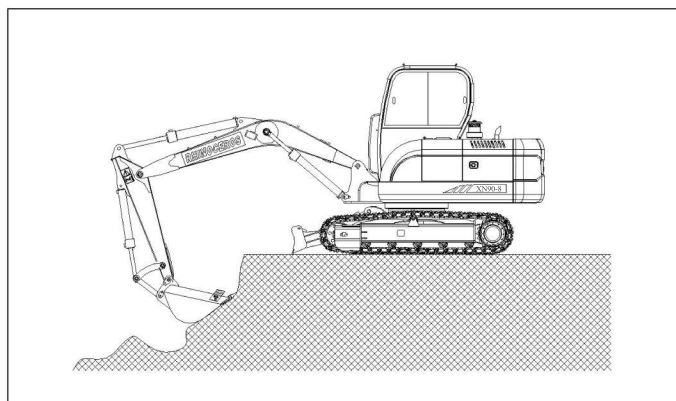


Fig 3-48

10. Do not dig the under of the machine(Fig 3—49)

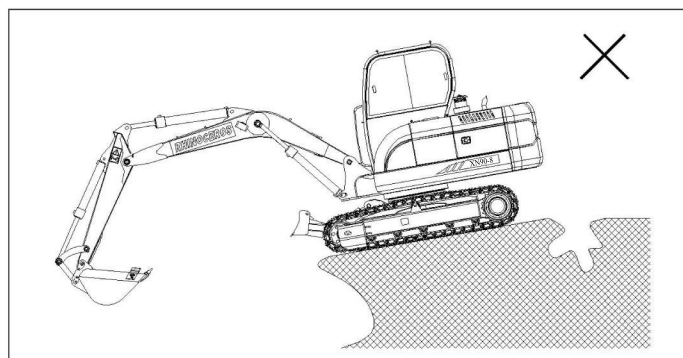


Fig 3-49

11. Keep the enough space between the machine and the wires in the air Fig 3—50.

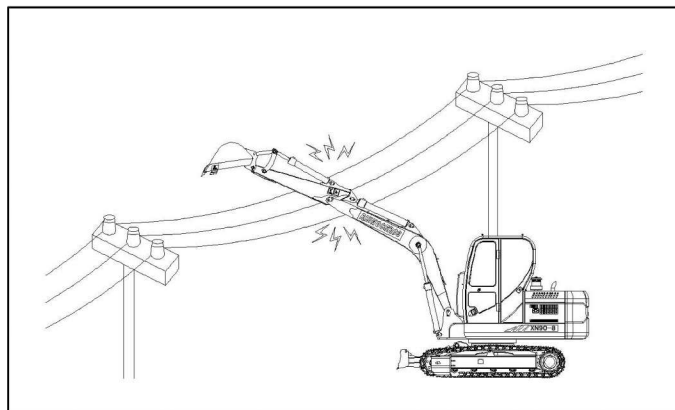


Fig 3-50

12. When works in tunnel or in building, be careful do not crash the roof and keep good ventilation. Fig 3—51.

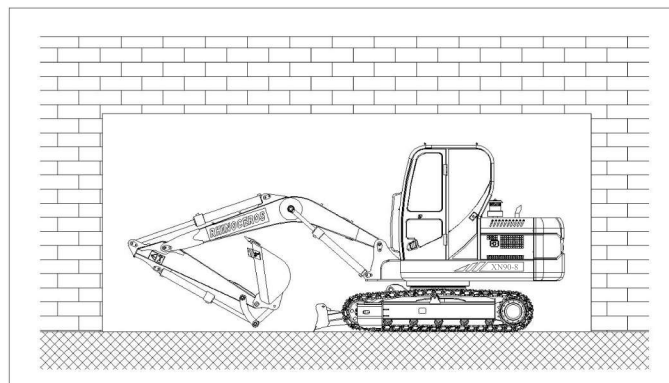


Fig 3-51

13. Do not use the bucket as a hammer or a pile driver, it is dangerous, will cause serious problem to the machine. Fig 3—52.

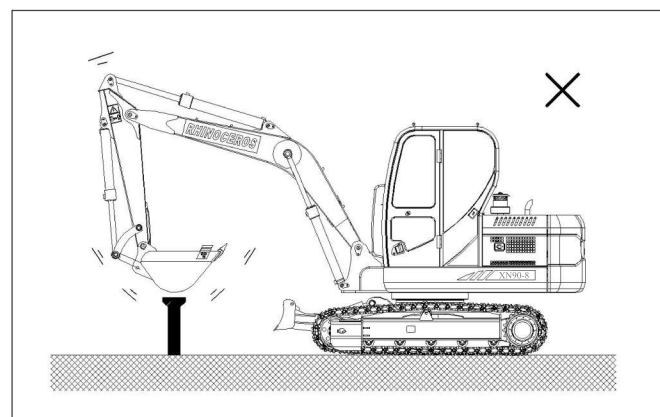


Fig 3-52

14. When the track shoes is off ground, do not digging anymore, otherwise may brake some parts of the machine

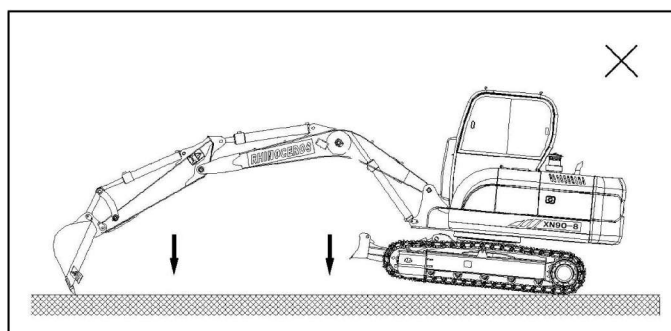


Fig 3-53

15. When traveling on high speed, do not operate the rods quickly,

- a) Avoiding start suddenly
- b) When the machine needs to move to opposite direction, it should stop first.
- c) Avoiding stop suddenly, push back the operating rod to neutral position, do not release the rod suddenly

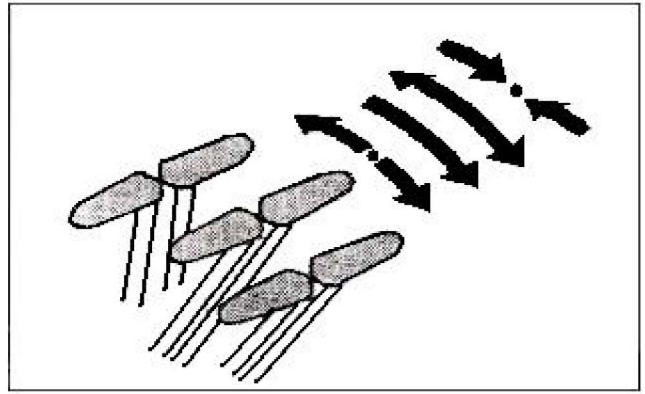


Fig 3-54

16. Please keep the machine balance when operating the excavator with long or heavy working device, the following instructions should be applied.

▲WARNING

- Do not raise the working device when go downhill
- do not traverse the slope, go straight when do uphill or downhill.
- be careful when swing the excavator on slope
- there must be enough swing cease time, long or heavy working device will cause extra momentum, which will prolong the cease time.

17. do not move soil or other things by the swing of the machine. May cause serious problem to the inner parts.

Working under water

WARNING

The gradient of the machine can not exceed 15 degree when work in water, otherwise the radiator or the fan maybe broken.

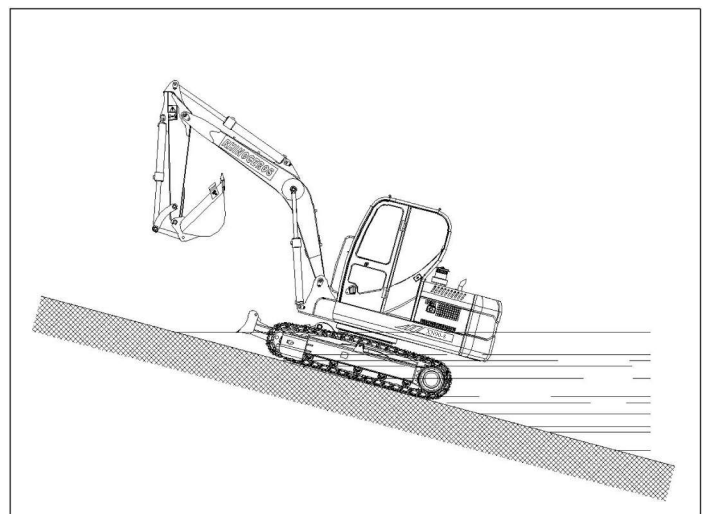


Fig 3-55

1. If the riverbed is not even or the water is swift, be careful, do not let the water cover the above side of the guide pulley, do not let water or sands to into the rotary unit or slewing bearing.

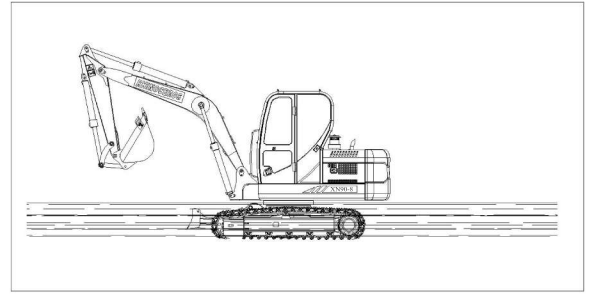


Fig 3-56

2. The machine may sink if works on soft ground.

NOTE: if the water or mud goes into the rotary unit, stop the engine, park the machine on a solid and dry area, check carefully, clear all problems then work again.

Working on poor holding capacity ground

1. Try to avoid working on poor holding capacity ground

2. Try to let the track shoes touch the ground fully, do not let the track shoes sink in the earth too depth, otherwise can not be pulled out.

3. If walking is difficult, put down the bucket to the ground, put away the front device then winch out the machine.

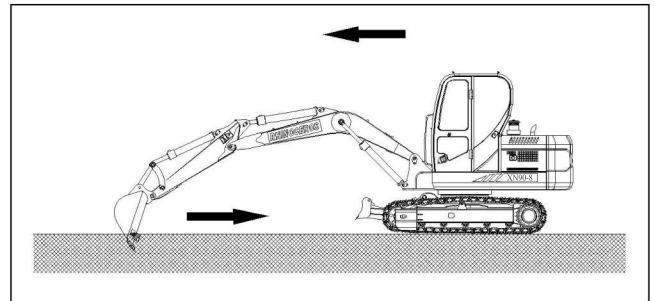


Fig 3-57

▲WARNING

Be careful when raise the machine by using the front working devices, the machine may tilt.

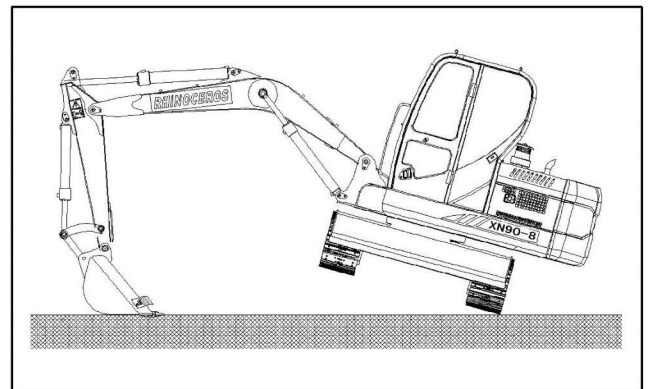


Fig 3-58

4. If the mud or sand into the track it may stop the machine, now try to support the crawler by front device, turn the crawler forward and backward to remove the impurities.

5. If the machine stop walking and the ground is good, please use the rope tractor.

Level ground

IMPORTANT

Do not overuse the bucket to level ground; otherwise some parts will break due to overload working.

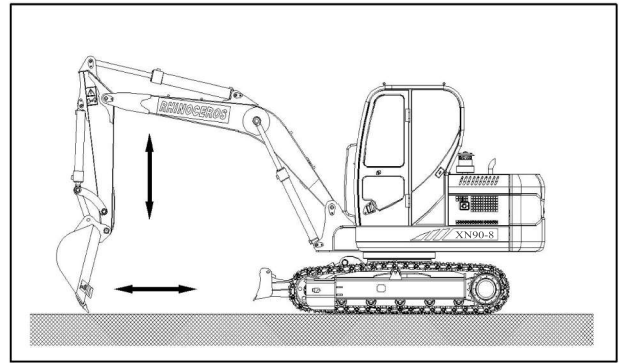


Fig 3-59

1. Using the dozer plate to level ground.
2. Using the boom, bucket arm and bucket
 - A. When level the ground from front to back, raise the boom, at the same time slowly move the bucket arm, when the bucket arm is near the machine, stably lower the boom to let the bucket move horizontally.
 - B. Do in the reverse order when level ground from back to front
 - C. While working at smooth buildings like mud wall (such as dams), to operate according to the integrated operation described at the first step.

Pay attention to the position of dozer plate

1. The dozer plate may touch the boom cylinder and the bucket when it is forward, be careful.
2. Keep the dozer plate backward when digs deeply.

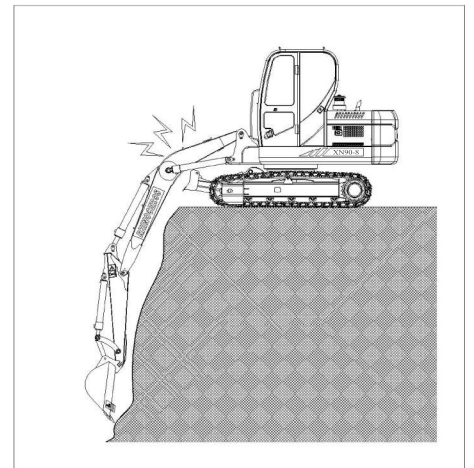


Fig 3-60

Take preventive measures while using a push shovel

1. Dozer blade can be used to only to push the soil, don't use it to excavate, otherwise it will damage the dozer blade or track system.
2. Dozer blade can't bear huge or the focus instable heavy goods, otherwise it will damage the dozer blade or track system.

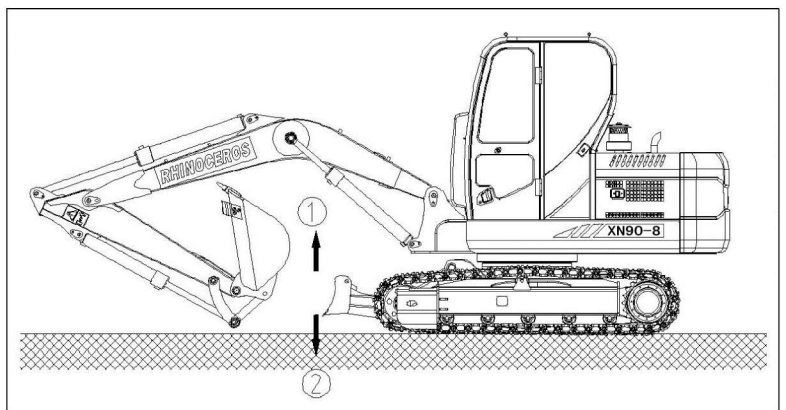


Fig 3-61

3. While walking, dozer blade can not hook any object, otherwise it will damage the dozer blade or track system.

4. Make sure at the plain ground while use the dozer blade to jack-up. Dozer blade firmly in contact with the ground.

Be careful when raising the working devices

1. Be careful when raising the front working device, do not let the bucket touch the dozer plate

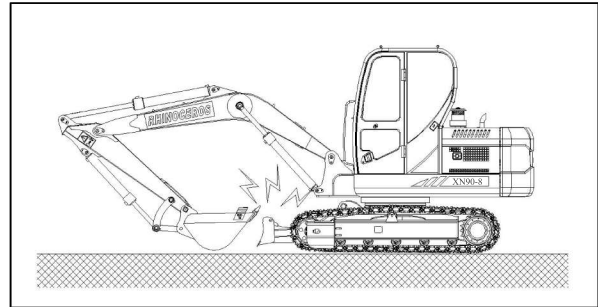


Fig 3-62

Be careful the dozer plate not to run into any obstacles

1. Do not make the dozer run into any obstacles, otherwise the dozer plate, oil cylinder or other parts may be damaged.

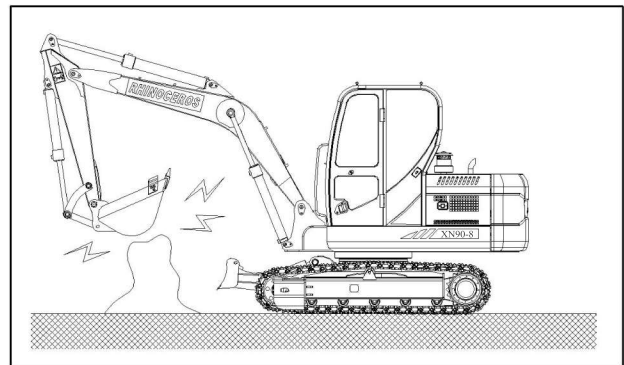


Fig 3-63

The operation of rubber track notes:

IMPORTANT!

Because the rubber crawler is relatively soft, so it's not stable as steel track, when the operating on the side of the road, be more careful.

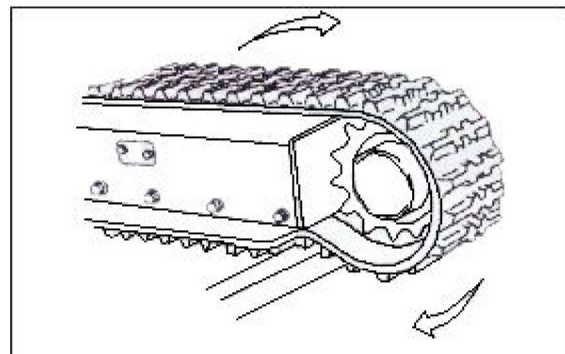


Fig 3-65

Packing of excavator

▲Warning

Park the excavator at firm level ground instead of any slope. If you have to park in the inclined plane, fixed track with stones, and insert the bucket into the ground. (Figure 3-70)

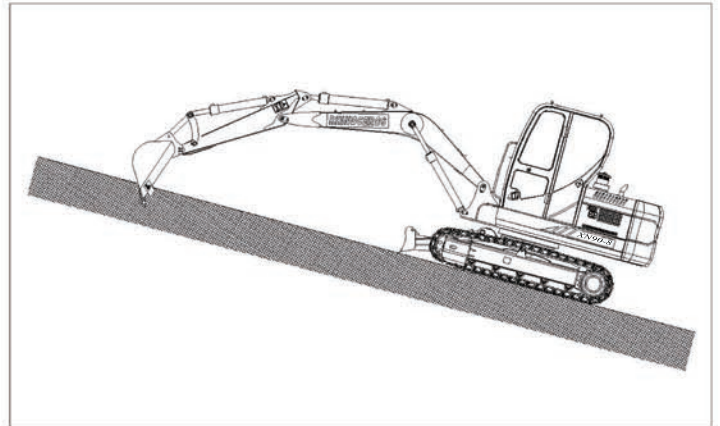


Fig 3-70

1. Park the excavator on a solid even ground, lower the bucket and dozer plate. (Fig 3-71)

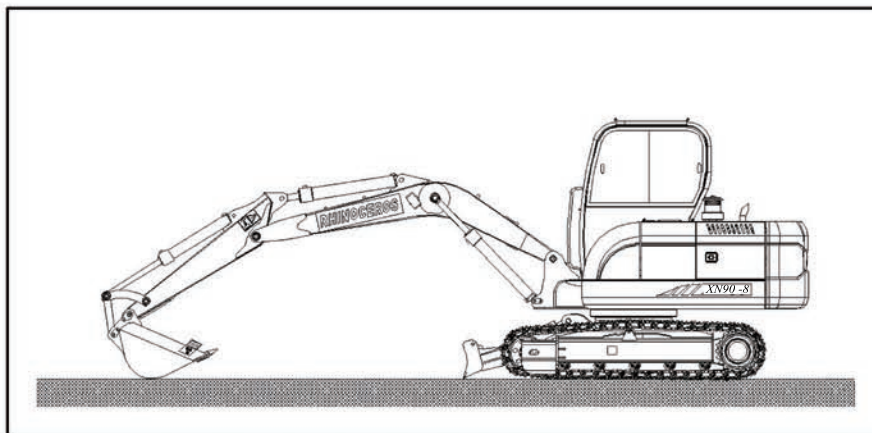


Fig 3-71

2. Put the engine manual accelerator operating rod (Fig 3-72) on the idle position, run the machine for 3-5 minutes.



Fig 3-72

3. Turn the key to “OFF” position, shut down the engine(Fig 3—73)

4. Pull out the key

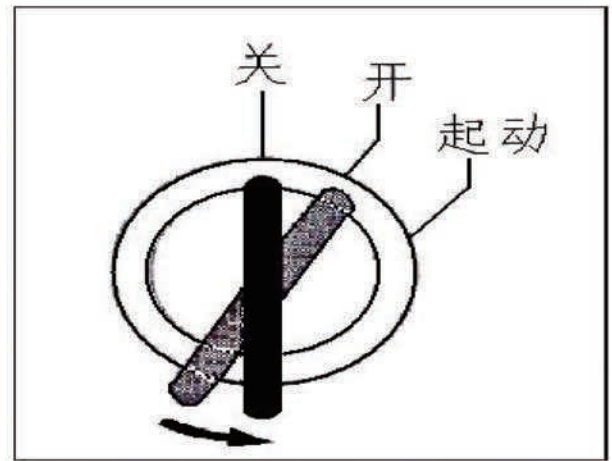


Fig 3- 73

5. Put the safety rod ①(Fig 3—74) on the lock position, and pull up.

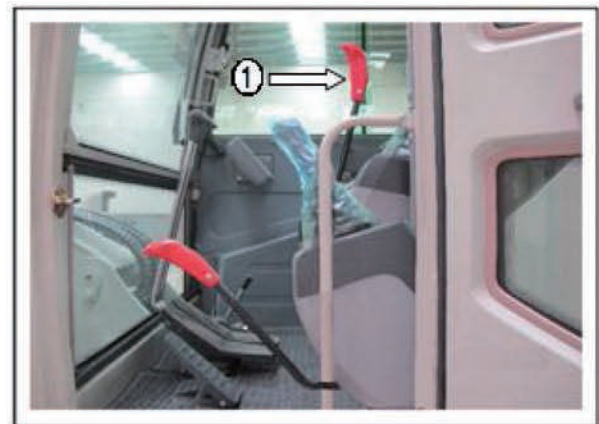


Fig 3-74

IV LUBRICATION

GENERAL SAFETY INFORMATION

It is very important that all guidelines describing lubrication, checking the oil level, replacing the oil are strictly adhered to!

This maintenance increases the life of the Excavator and improves its dependability.

It is especially important to change the oil regularly and in the intervals noted on the maintenance schedule! Only use specified lubricants and oils!

CAUTION:

When checking or replacing the oil, observe the following:

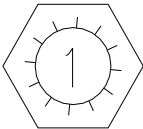
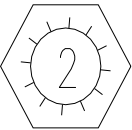
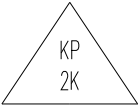
- ★ Park the Excavator on level ground, and turn the engine off.
- ★ When working in the engine area, make sure the covers and side doors are secured.
- ★ Only add fuel when the engine is turned off.
- ★ Never smoke or allow an open flame in refueling area.
- ★ Cleanliness is very important when changing engine, gear or hydraulic oil. Before removing fittings or plugs, make sure the surrounding areas are cleaned.

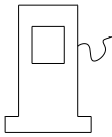
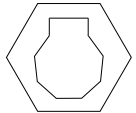
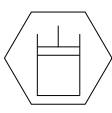
When changing the oil, clean the fill or drain plugs.

IMPORTANT!

Be sure to drain oil into a suitable container and dispose of oil and filter cartridges properly.

LUBRICANT AND FUEL CHART

COMPONENTS	SYMBOL	SPECIFICATION	QUANTITY
Swing Gear			3.4 L
Travel Gear			2 × 5.4 L
General Lubrication Points		Multi purpose grease	
Hinges, couplings, lock		Engine oil	
Rubber seal on doors and		Silicon Spray	

covers			
Refrigerating agent for air conditioner		R-134a	1.2kg
Refrigerator oil in air conditioner compressor		SP20	0.21 L
Windshield washer system		Industrial windshield washer fluid denatured alcohol	5.0 L
Fuel		Use only fuel with a sulfur content of less than 0.5% and not less than the requirement of GB252-94	115L
Diesel Engine		<p>摄氏 -40 -30 -20 -10 0 10 20 30 40 50 华氏 -40 -22 -4 14 32 50 68 86 104 122</p> <p>所有季节 SAE15W-40</p> <p>冬季 SAE10W-30</p> <p>极地气候 SAE5W-30</p> <p>摄氏 -40 -30 -20 -10 0 10 20 30 40 50 华氏 -40 -22 -4 14 32 50 68 86 104 122</p>	16.4L
Anti freeze		<p>The max. anti-freeze temperature % of antifreeze</p> <p>摄氏 -40 -30 -20 -10 0 华氏 -40 -22 -4 14 32</p> <p>极限防冻温度</p> <p>防冻液百分含量</p> <p>35% 45% 51%</p>	22.5L
Hydraulic system		<p>SAE10W SAE20W-20 SAE30</p> <p>摄氏 -40 -30 -20 -10 0 +10 +20 +30 +40 +50 华氏 -40 -22 -4 14 32 50 69 86 104 122</p> <p>SAE15W-40 SAE10W-40 SAE10W-30</p>	In hydraulic tank:120 L, In hydraulic system:240 L,

SAE: Society of Automotive Engineers
API: American Petroleum Institute

Note: (1) For further detail, please see the refilling materials chart.

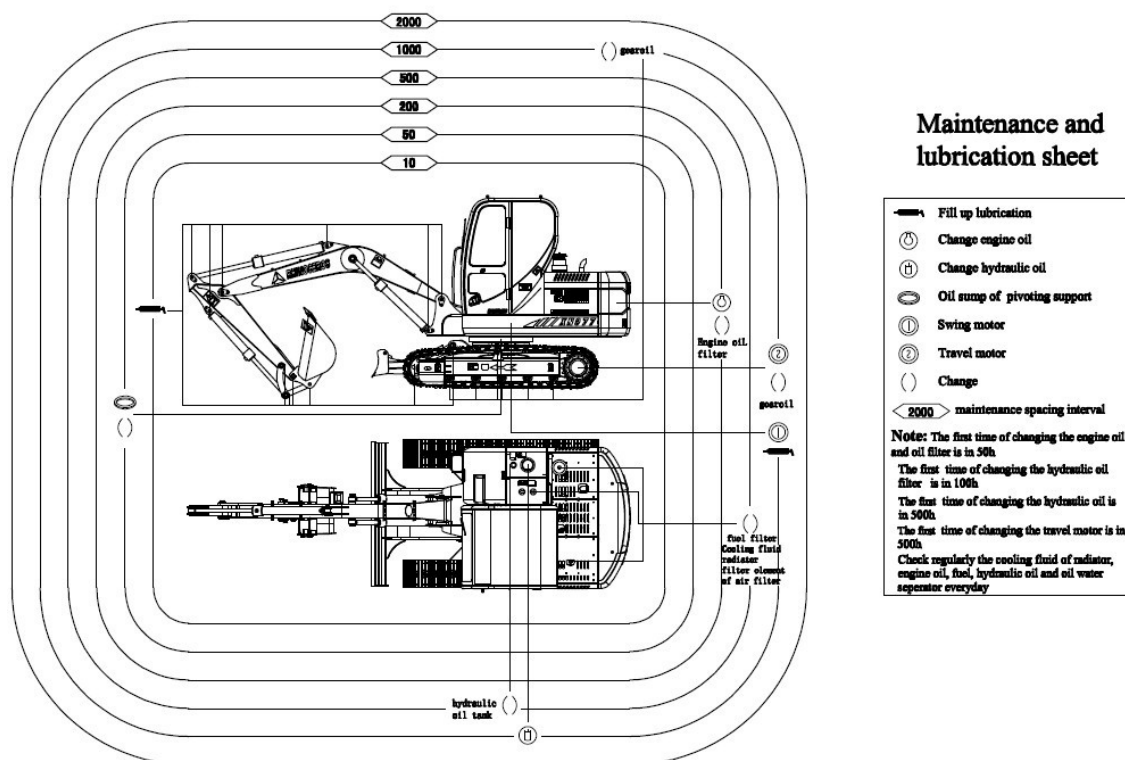
(2) The responsibility of breakdown caused by the low-grade oil should be born by the Buyer.

LUBRICATION CHART:

-----Changing the lubrication oil.

-----The components should be checked regularly after refilling.

----- Period to add oil and to lubricate.



IMPORTANT!

For the further information of Engine lubrication oil, fuel and coolant, please see the **Operation & Maintenance Manual for Engine**.

CHECKING THE COOLANT LEVEL

When the cool ant is cold, the coolant level should be no lower the “Low” line.

To check the coolant level only after the cap of expansion reservoir is cool enough to touch. Turn the cap of expansion reservoir slowly to relieve pressure.

To add the proper antifreeze mixture to the cooling system on a year round basis, not just in the cold season.

The Excavator is delivered from the factory with a cooling system protection to -35° C.

IMPORTANT!

The correct concentration of corrosion inhibitors inside the coolant must be maintained permanently. The concentration has to be checked after each important coolant make up, and at regular intervals if smaller coolant quantities are refilled frequently.

If necessary, anticorrosion additives must be added to the cooling system. To replace the water filter at regular intervals is sufficient to maintain the correct concentration of anticorrosive agent.

CHANGING THE COOLANT:

The coolant in the cooling system has to be changed at least once every two years. Preferably keep the valves for the cab heating circuit closed when changing the coolant.

TO DRAIN COOLANT:

Unscrew the drain valve and drain the coolant into an appropriate container.

IMPORTANT!

If the machine has not been used for a long period time, the coolant also has to be drained from the cooling pump.

TO ADD THE COOLANT AND VENT THE COOLING CIRCUIT:

Reinstall the cover of the drain valve, close the plug and add the coolant to the expansion tank through the filler neck.

Start the engine, run it in low idle for about 30 seconds. Turn the engine off, and add more coolant into the expansion tank up to the required marks.

IMPORTANT!

When adding coolant, make sure that the expansion tank is filled all the way between the line "LOW" and the line "FULL" (near the "FULL" line is the best). It is not possible to overfill the line "FULL".

CHANGING THE OIL IN THE TRAVEL GEAR

Before draining or adding oil, move the machine until the draining plug (near the mark HY-DASH) is at the lowest position.

TO DRAIN THE OIL

Remove the two draining plugs, drain the oil into an appropriate container.

TO ADD OIL

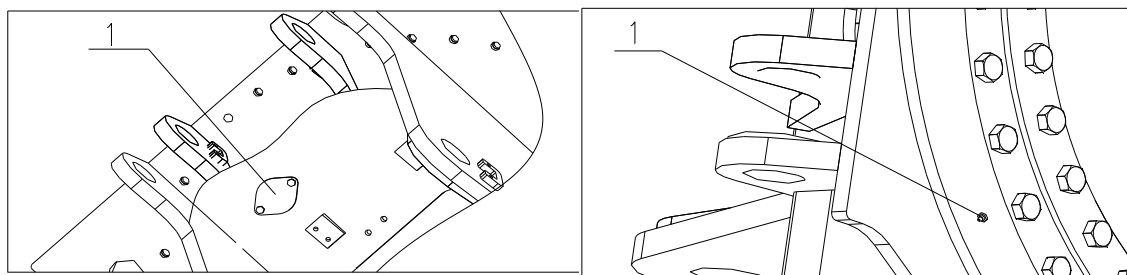
Reinstall the draining plug and add the oil through the plug 2, then reinstall the plug. See the lubrication charts for quantities and specifications, see maintenance chart for oil

change intervals.

LUBRICATION OF THE SWING RING TEETH

A housing around the pinion of the swing gear contains all the necessary lubrication reserves for the swing ring teeth lubrication.

There is a cover on the right side of the swing platform. Remove the cover, connect a grease gun to pump the grease about 20 times through this hole and then turn the upper-carriage by 360°.



Under normal working conditions, the swing ring teeth need to be lubricated per 500 working hours.

LUBRICATION OF THE BALL BEARING RACE

Under normal working conditions, the ball bearing race must be lubricated weekly.

Add approx.10 stroke of greases of grease with the grease gun into each of the grease fittings.

If the machine is used under hard conditions or in multi-shift service, lubricate more often (up to once a day).

LUBRICATION OF ATTACHMENT BEARING POINTS

The main lubrication points are as follow: Cylinders and boom, stick, bucket connection, connection between boom and upper-carriage. Every lubrication point should be added sufficient grease.

To lubricate the attachment, add grease on every grease fitting until clean grease runs out of the corresponding bearing point.

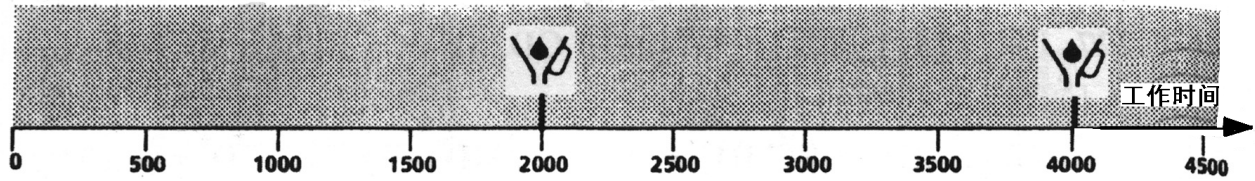
Under normal working conditions, perform a complete lubrication of attachment weekly.

If the machine is used under hard conditions or in multi-shift service, lubricate more often (up to once a working shift).

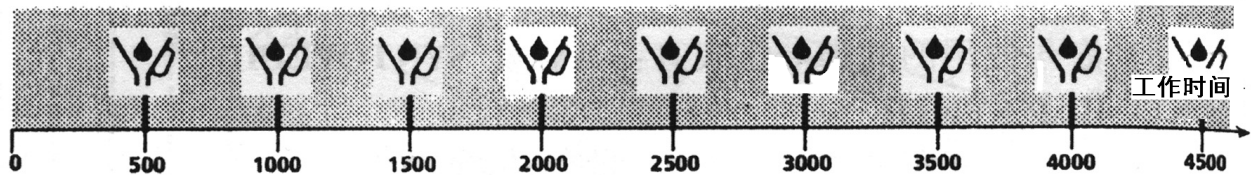
HYDRAULIC OIL CHANGE INTERVALS

Note: Oil change in present intervals is only permitted for mineral oils. When using environmentally friendly hydraulic fluids, oil sample analysis reports must be used to determine the time of the oil change.

1) In standard applications



2) In dust intensive applications



To limit the hydraulic oil contamination when working under extreme dusty conditions.

In order to avoid any premature wear and failure of hydraulic components in consequence of this contamination reduce the oil change intervals as described above and, in addition, observe following recommendations:

1. The tank return filter element must be replaced every 100 working hours.
2. The tank return filter must be fitted with lower (finer) micron filter element (10 um instead of 30 um).
3. The breather filter on the hydraulic tank must be replaced with a 3 um fine breather filter.
4. The 3 um breather filter must be replaced every time when the hydraulic oil is changed (every 500 working hours).

CHECK THE HYDRAULIC OIL LEVEL

When checking the oil level, park the machine on the level ground, put down the boom , stick and rest the bucket on the ground with stick and tilt cylinders fully extended.

In this position, the oil level must not drop below the middle level on the sight gauge or oil must be added to the tank until reaching this level.

Level “MAXI” shows the maximum oil level when all cylinders are retracted.

Level “MINI” shows the minimum oil level when all cylinders are all the way extended.

TO DRAIN AND TO ADD OIL TO THE HYDRAULIC TANK

The hydraulic system should always be refilled or drained using a filler pump.

CAUTION!

Before draining the oil or opening the hydraulic tank, you always must first unscrew the breather valve one turn to relieve the tank pressure.

TO DRAIN OIL

Unscrew the breather valve 2 one turn; remove the plug 3 to drain the oil.

TO ADD OIL

Unscrew the breather valve 2 one turn.

Add the oil via the opening of the breather valve 2 until the oil level reaches the middle level on the sight gauge. Close the breather valve 2.

Add some more oil to the tank; remove the return cover 1, until the oil level reaches the required level on the sight gauge. Close the breather valve 2, and reinstall the return cover 1.

V MAINTENANCE

MAINTENANCE PRINCIPLES OF THE EXCAVATOR

Make the excavator in a state of safety when maintenance. Stop it on the flat ground and switch off the engine without special instruction. Do not make the maintenance and repairing which you are not familiar with by yourself.

Maintenance according to the stipulated time, and use the proper tools.

Use the same parts as KADEKOR Company stipulates.

Wear proper protective clothes, hat, gloves and glasses when servicing the excavator.

After maintenance, screw the loosened bolts and device, and test these loosened bolts and devices.

Clean all the elbows and joints before maintenance.

When washing the machine, cover the electric motor, control box, plug and other parts which can not get wet. Do not make the hot liquid touch the fire extinguisher and sensors.

Notice when washing the excavator with high-pressure water or hot water:

- A. Keep a 0.5m distance between the cleaner and the washed parts.
- B. Water temperature must be limited under 60°C.
- C. Water pressure must be limited under 8mPa.
- D. Use neutral washing liquid.

Do not use corrosive liquid or high-pressure water to wash the excavator in the first two months and the following two months after painting.

Dispose of the waste fuel, lubricating oil and other chemicals properly to protect the environment.

Check the tube circuits and elbows regularly. Settle them in time if problems appear.

Replace the hydraulic tubes as stipulated, although no breakage appears.

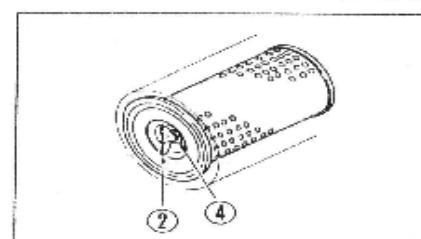
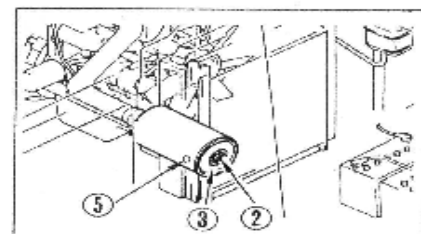
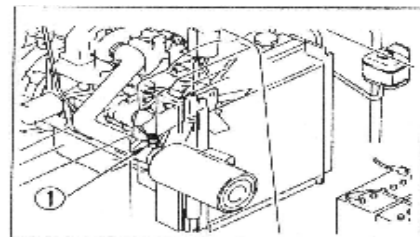
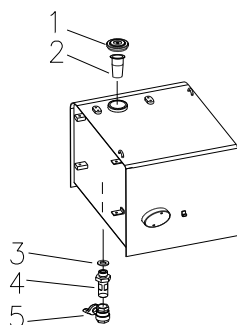
Fuel system

Drain the water and clear the tank

Switch on the VALVE 5 vertically to drain the water in the fuel tank, and then switch it off level.

When clearing the tank, open the LID 1, loosen the JOINT 4, and then drain the fuel into a proper vessel.

Check the clarity of the tank and filter core.



Air filter

Air inlet system of the engine

In order to protect the engine, check the inlet system regularly.

Dust sensor

When the monitor light lit up, it indicates that the filter is blocked, and clear it at once.

Stop the engine when cleaning and washing.

Change the filter core

1. Open the left cover, take down the NUT (2), and then take out the filter core.
2. Block the air inlet with clean clothing.
3. Get rid of the dust, and take down the cover.
4. Wash and check the core.
5. Move away the cover clothing in STEP2.
6. Mount the cleaned core.
7. Replace the core after being washed 6 times or used a year.

If the monitor light is always on once a cleaned core is mounted, replace it. Take down a seal ring each time clearing dust. In this way, clearing times can be known from the seal rings.

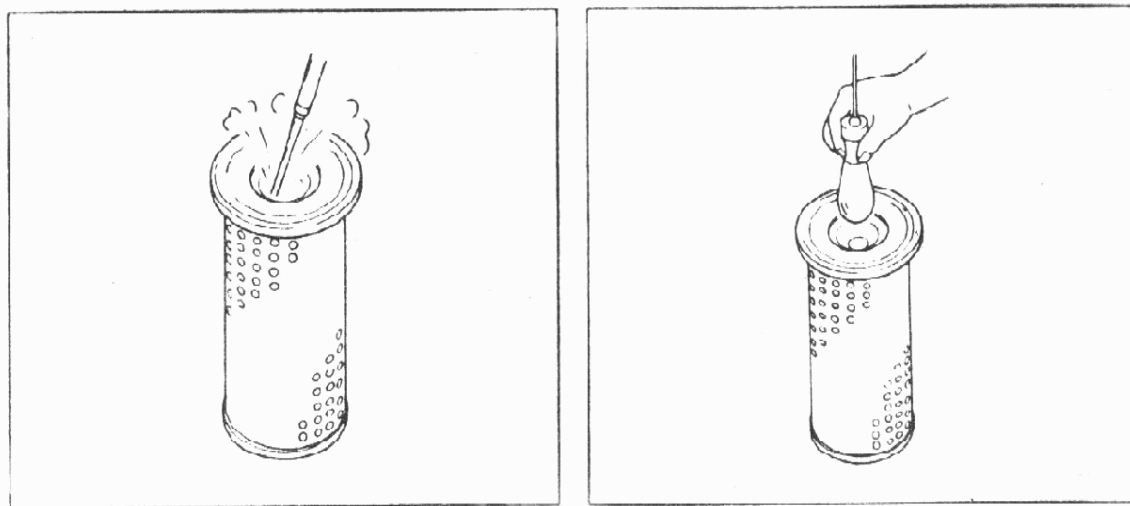
If the CUSHION (4) or NUT (2) is broken, replace them.

When checking or cleaning, take down the VALVE (5), and then clean it with compressed air.

Notice: Do not clear or replace the filter core when the engine is running.

Clear the filter core

Blow the core inward and outward with dry compressed air whose pressure is below $7\text{kg}/\text{cm}^2$, and then check it.



Warning: wear protective glasses to keep safe when using compressed air.

Check air inlet soft tubes

When clearing the air filter, check the inlet tubes. Replace them if there is breakage or leakage.

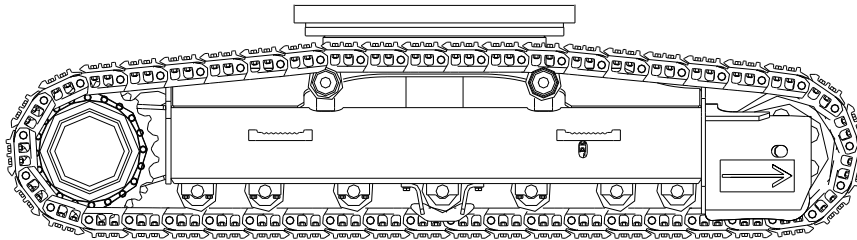
Notice: the leakage of the filter will wear away the engine greatly and shorten the

lifespan of the engine a lot.

Undercarriage

There is no need to service the track part. However, you should pay attention to the following points. Track tension is illustrated in the below picture.

Because of the abrasion, track tension should be checked regularly.



Track tension:

Connect the special joint with the grease gun, as is shown in window 1. Connect the

grease gun and cylinder, and inject the lubricant till the tension is standard.

If the tension is too high, unscrew the oil mouth to release some lubricant.

Danger: when adjusting the tension, does not approach head to the checking point, for the lubricant may spurt out because of the high pressure.

The tension is standard in below drawing.

Check the track bolts

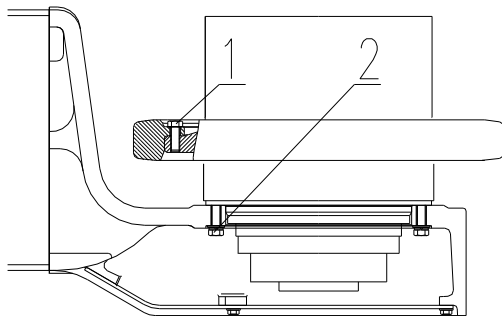
Check the track bolts once a week. If loose, screw it tight.

Force moment of the bolts: bolt M16, force moment $370\text{N} \cdot \text{M}$.

Check the bolts of the travel motor and undercarriage, and the bolts of travel motor and sprocket.

Check these bolts regularly to make sure of their tightness.

Bolts :M16 (10.9) Force moment: $280\text{--}330\text{N} \cdot \text{M}$.



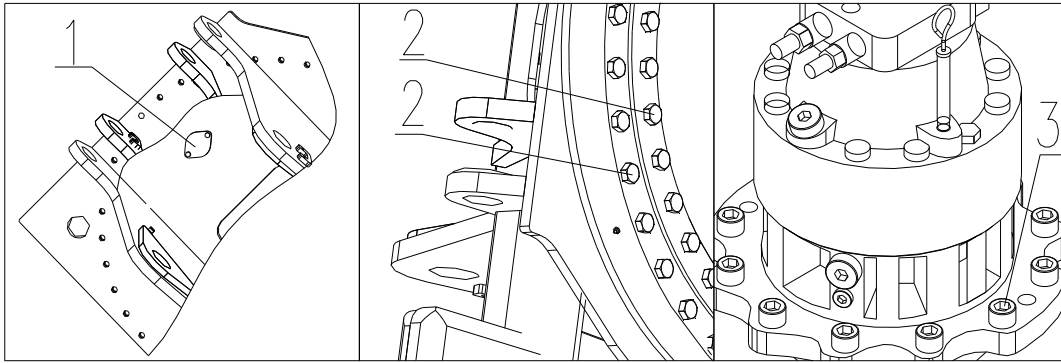
Washing tracks

Check the undercarriage after working.

Warning: do not switch on the excavator if big stones are stuffed tight between the tracks. These big stones may damage the machine. In winter, do not stop the machine outside to avoid freezing the tracks.

Danger: put a wood block under the propped machine body.

Check the screwing moment of the bolts



Check the following bolts and their moments regularly.

The bolts of balance weight

NO.1 bolt M36, moment:2000N • M

The bolts of the swing circle

NO.2 bolt M20, moment:620N • M

The bolts of the swing motor and reducer

NO.3 bolt M16, moment:310N • M

Hydraulic system

The maintenance of the hydraulic system is mainly pointing hydraulic tank.. Special maintenance is not necessary for the other elements .but the hydraulic pipeline should be checked more often.

It is very important for the inside of hydraulic system to keep clear, so should change the scavenge oil filter element regularly. Clear hydraulic radiator, change hydraulic medium as been required.

Danger: forbidding touching hydraulic medium and the components directly.

When in the maintenance, repair of the hydraulic system, first release the pressure of the oil. First go out the engine and then keep the starting key in the state of “on”, trip the two operating hand shank. Loose pressure vent valves (3-5 turns as serial 1 in the picture. So loosen the pressure in the hydraulic tank.

Hydraulic oil radiator

To get the wished cooling performance, should keep the hydraulic oil radiator clear.

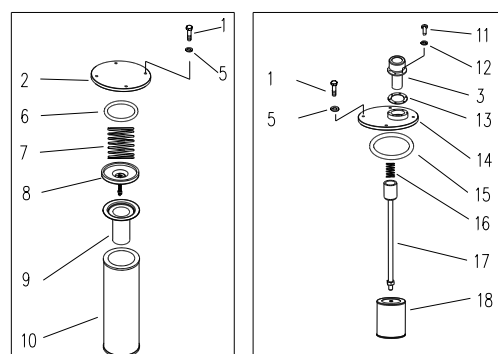
Clear the pipe by compress air or steam. if the environment is bad ,should increase the clearing times.

Scavenge oil filter element

As seen in the picture, the scavenge oil filter element should work in the scope between 50 hours and 500 hours, and been changed one time.

Lubricating oil suction pump

As seen in the picture, the lubricating oil suction pump should work in the scope between 50 hours and 500 hours. And then change the filter element after 500 hours and



repairing the hydraulic.

Note: if the excavator work in the bad environment, the changing of the filter element should accord to “lubrication: the changing of hydraulic oil.”

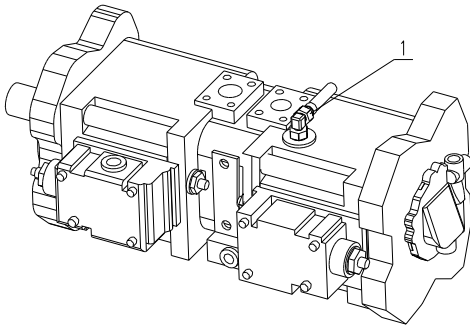
The maintenance of the hydraulic system

The maintenance should include check the hydraulic system whether leakage, loosening, pipe destroying, and clear the hydraulic radiator probably.

Danger: forbidding checking the leakage performance without wearing safety gloves. Perform the maintenance of the hydraulic pipe system until the working equipment reduce the floor and going out the engine and loosening of the compress.

Warning: once the high-pressure hose have something wrong (for example bursting, damping, surface damage and so on), should replace immediately. When replacing the high0pressure hose, no pressing, no drawing hose. no twisting and overbending the hose.

Exhausting from the hydraulic pump



When finishing the maintenance or finishing changing oil every time, should exhaust the hydraulic pump. Loose the drainage pipe 1 and make the air exhaust. Once hydraulic oil pour from pipe, should set the exhausting pipe in time.

When the first time starting or after maintenance, also pure hydraulic oil by this tip.

Hydraulic cylinder

Note: please contact with the Shandong kadekor power machine co., ltd before changing obstructing ring of the cylinder or other components.

Protecting of cylinder rod. corrosion can destroy the excavator as the abrasion and rupture.

Please abide when the excavator are not used exceeding 4 weeks or transported by ship:

- 1, place the excavator as seen in the picture. make the cylinder rod withdraw as possible.
- 2, lubricate all the joint points with the anticorrosive lubricant. Although the trip is short, the cylinders must be lubricated.

Electric system

In order to keep the excavator in a good state, check all the meters and indicating lights every day, the burnt fuse and lights should be replaced in time. To avoid the fire disaster check the wire circuits regularly.

Notice:

Cut off the battery before repairing the electric system or arc welding. Cover the electric components when washing the excavator.

Service meter

The meter indicates the working hours of the excavator. It also counts when the engine is running.

Record the working according to the figures of the meter.

Record the starting and the finishing figures.

The record tells when to service the machine.

Record the time of breakdown.

The maintenance of the Battery

Keep the battery clean.

Check the electrolyte level. Open the battery lid, the standard level is above the battery plate 10-15mm. If it is too low, add distilled water. Check the proportion of the solution with a proportion meter. The 31.5°C standard is 1.28kg/L when the battery is fully charged. If the proportion is too unbalanced, charge the battery.

Notice: cut off the ground line when opening the battery. And connect it at last.

Danger:

Do not open the battery when the engine is running, or fire disaster may be caused.

wear the protective gloves and glasses when dealing with the battery.

no fire and spark around the electrolyte solution of the battery.

do not touch the solution for there is acid in it.

Fuse box

If the fuse is eroded or loosened, check and clear the relevant circuit problems immediately. Replace the fuse if it is broken.

Notice: only the same fuse as original ones can be used.

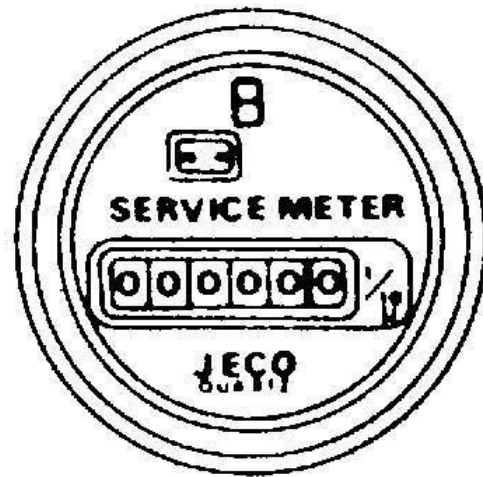
Switch off the general switch when replacing the fuse.

The equipment and circuit of the fuse

NO.	Specification	Circuit
1	10A	Radio, roof light
2	10A	Monitor, buzzer, light, rain wiper, air conditioner relay
3	15A	Electromagnetic valve, swing lock relay, travel relay
4	15A	Speaker, rain wiper, working light
5	15A	air conditioner
6	10A	Cigarette lighter
7	10A	Spare
8	15A	Spare
9	15A	spare

Swing and travel brake

The swing and travel brake are all wet brakes, which are sealed in the swing reducer and the travel reducer. They are both used to brake and free-maintenance.



of

The adjustment of the bucket space

It needs adjustment if the space between stick and bucket is too large, put the bucket according to the below drawing.

1. Unscrew the bolts 2, 3 and plate 1.

2. Take out washer 4.

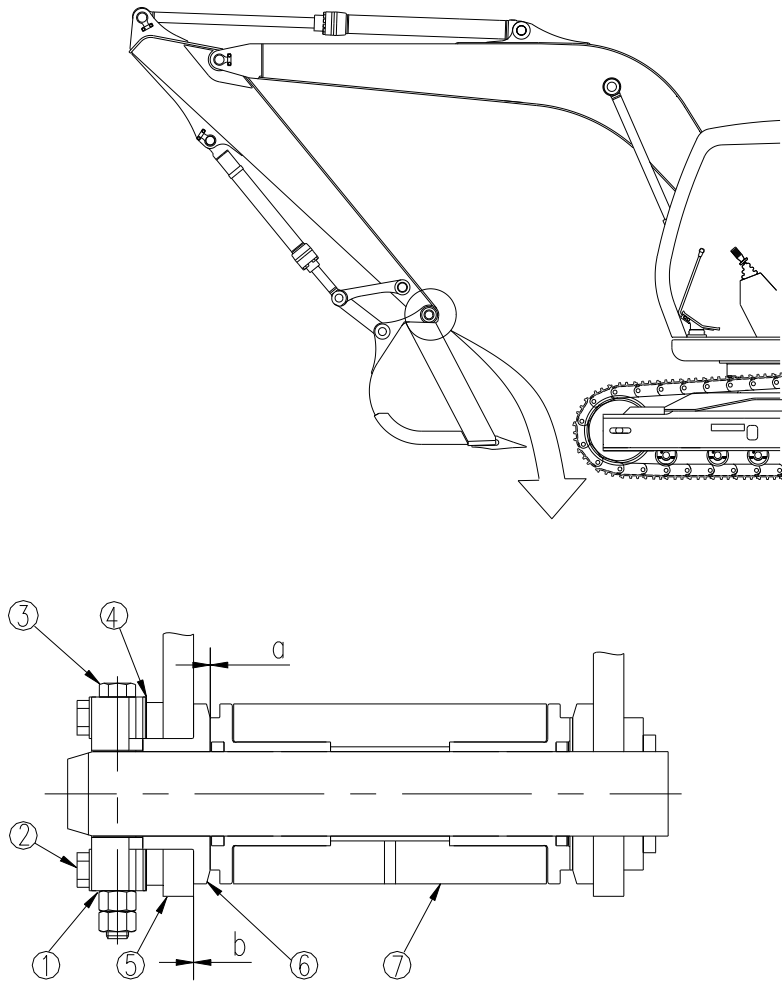
Where are two kinds of washers 0.5mm and 1 mm.

If the space is less than 0.5mm, no need to screw bolt 2 tight.

3. screw bolt 2 and 3 tight.

After the adjustment, gap b is bigger, and a disappears.

In the illustration, 5 is bucket, 7 is stick.



Replace the wearing parts

Besides the necessary maintenance, the driver and servicemen should also do some repairing work. For example, replace the bucket teeth, hydraulic hoses, seal rings and so on.

Maintenance plan

Please check and service according to the plan, and keep records. Thanks for your

collaboration.

A	A	A	B	B	B	Maintenance plan
8-10	50	250	500	1000	2000	A: for service men and drivers B: for professional repairmen
hours	hours	hours	hours	hours	hours	

★: 1st or once a week ▲: repeated cycle

Working hours

Diesel engine part
 Check the oil level
 Check the oil pressure and cooler temperature when working
 Check the cooler level
 Drain the water in the separator and tank
 Clear the air filter and air inlet connecting tubes
 Check V-strap tensity and clear radiator, soft tubes, and fan.
 Replace oil filter core (1st within 50 hours)
 Replace oil (1st within 50 hours)
 Replace fuel filter core (1st within 250 hours)
 Clear water radiator blades
 Replace water filter core, check the density of the anti-corrosion additive in cooler
 Check and adjust rotate speed control parts
 Check the fixing bolts of the diesel engine
 Check the air inlet and outlet system
 Replace the air filter core (at least once a year)
 Replace oil separator (every 2 years)
 Replace cooler (every 2 years)
 Check and adjust oil spray mouth (every 3000 hours)

Working hours

Hydraulic system
 Check the hydraulic oil level
 Replace the filter core (1st within 50 hours)
 Check the connection and fix of the hydraulic system
 Check and clear the hydraulic oil radiator

	Drain the water of the hydraulic tank Check the hydraulic system Check the spillover valve Replace hydraulic oil Replace the vent valve on the hydraulic tank
Working hours	Electric system Check the indicators and meters Check the light Start the air conditioning compressor for one minute Check the battery Check the power system
Working hours	Swivel motor and reducer Check the leakage and oil level Replace the gear lubricant (1 st within 50 hours) Check the functions and swivel brake Check the fixing of the motor and reducer
Working hours	Swing circle Lubricating the bearing of the circle Lubricating the gear of the circle Check the fixing bolts Check the space of the gears
Working hours	Travel motor Check the leakage and oil level Check the functions and travel brake Check the fixing bolts Replace the gear lubricant (1 st within 500 hours)
Working hours	Tracks Check the tensiity of the tracks Clear the tracks and sprockets (after working) Check the fixing bolts of the tracks Clear the adjust components Check the leakage of the adjust components, carry roller and frack roller
Working hours	Cab Check the water level of the rain bucket Replace the filter core of the air conditioner

Working hours	Check and lubricate the lock and hinge
	Clear the heat exchanger
	Check the leakage of the air conditioner
	Frame, undercarriage and working device
	Check the bucket teeth
	Inject lubricant
	Check the connection of all parts
	Check the balance weight
	Check the low speed running of the working device

VI BREAKDOWN ANYLASIS

Engine Breakdown

Breakdown	Repair	Note
When increasing the rotate speed of the engine, oil pressure monitor light is on.	Add oil to to the standard level Replace the oil filter core Check the leakage of tubes or joints Replace the monitor	
There is steam out of the radiator, and water level warning signal is on.	Add cooler and check leakage Adjust fan strap tensity Clear the inside of the cooling system Clear or repair the radiator blades Check the thirmostat Screw tight the lid and replace the seal Replace the monitor	
The engine doesn't work, but the motor does.	Add fuel Check whether there is air leaking into fuel system Check high-pressure pump and oil spray mouth Check the air inlet space Check the compressed pressure of the engine	
Exhausted air is white or blue	Adjust the oil to the standard level Replace the standard diesel accordingly	
Exhausted air is black	Clear or Replace the oil filter core Check oil spray mouth Check the compressed pressure of the engine Clear or replace the turbocharger	
The sound of burning is abnormal sometimes	Check oil spray mouth	
The sound of engine is abnormal	Check wether the fuel is standard Wether it is overheated Replace the Check the air inlet space	

Electrical system

Breakdown	Repair	Note
The light is not bright though the engine is	Check the wire and the connectors Asjust the strap tensity of the electric	

running up or the light twinkles when the engine is running.	motor	
The charge light is on when the engine is running up.	Check the engine Check the wires	
The sound of the electrical motor is abnormal	Check the electrical motor	
Power switch is on but the start motor doesn't work	Check and repair the relevant wires Charge the battery Check the start motor Check the safety power	
The start motor can not start the engine easily	Charge the battery Check the start motor	
Start motor doesn't work before the engine starts.	Check and repair the relevant wires Charge the battery	
Start switch is on but the engine signal is not on.	Check the monitor Check the switch of the monitor	
Start switch is on but the light of battery is not on.	Check the monitor Check and repair the relevant wires	
The key pad of the monitor doesn't work	Stop the power, and restart it 5 seconds later	

Others

Breakdown	Repair	Note
Sprocket wears down Track tensiity is not enough	Adjust the track tensiity	
The bucket ascends slowly or it can not ascend.	Add oil to the standard level	
The speed of travel, swing, boom, stick and bucket is slow	Add oil to the standard level	
The sound of pump is abnormal	Clear the filter net of the hydraulic tank	
The temperature of the hydraulic oil is too high and it climbs too quickly	Clear hydraulic oil radiator Adjust the strap tensiity Add hydraulic oil to the standard level	