

SHANMON

956G Wheel Loader *Maintenance Manual*

Shandong Weimeng Machinery Technology Co., Ltd

www.shanmonglobal.com



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Shandong Weimeng Machinery Technology Co., Ltd

Address: No. 9567, Nanhuan Road, Qingzhou City, Shandong Province, China

1. Forward

This operation manual describes in detail how to use ZL50G wheel loader safely and effectively. It should be read carefully before operating this wheel loader for the first time. It should be taken with you and read regularly. If this manual is lost or cannot be recognized due to contamination, you should buy it from the agent again.

When this machine is transferred, this manual should also be transferred.

This may include the working devices or spare devices that are not installed in the loaders that user purchase. If the user has special requirements for the above device, he can consult the agent. All pictures in the manual are sketch map and the wheel loader that user purchase is depend on the actual model.

In the process of compiling this manual, due to the short time, it is inevitable that there are some omissions or mistakes in it. In addition, the products are constantly updated and developed, and the changes are subject to no notice. Please pay attention to them. At the same time, you can consult the manufacturer or agent

Note:due to different parts and devices produced by different factories in the same model, in application and maintenance phase, except referring to this manual, user should also refer to operation and maintenance manual of parts. If this manual is inconsistent with the operation and maintenance manual of parts, such as engine and A/C, it shall be subject to the operation and maintenance manual of parts or the labels on the parts. If having any other questions, please contact with manufacturer or original parts factory as soon as possible.

Warning

- Improper operation or maintenance may cause danger and lead to casualties.
- Operator and maintenance man should read this manual carefully before operate or maintenance the loader.
- If violate the operation and maintenance methods specified in this manual, it may lead to severe accidents.
- The operation steps and precautions in this manual are only applicable to the specified use of the wheel loader. If the machine is operated out of the specified use, please ensure the safety of the driver and others.
- For instructions on operation safety, see "safety instructions" and "safety rules" below.

2. safety instructions

Many accidents happened due to violation of basic rules of operation or maintenance. In orerd to avoid accidents, reading carefully, understanding and also complying with the precautions and safety

warnings specified in the manual and pasted on the vehicle.

3. Brief Introduction

3.1 The specified use of the wheel loader

ZL50 G wheel loader usually can be used for following operations:

- Excavation operation
- Flat ground operation
- Bulldozing operation
- Loading operation

Detailed steps of operations can be seen in “11.10 wheel loader operation”

3.2 The features of the wheel loader

● The whole machine adopts computer optimization design, with advanced performance and beautiful appearance.

- Central articulated frame, small turning radius, flexible, easy to work in narrow field.
- Hydro mechanical transmission can change the speed automatically according to the external resistance. It can not only make full use of the power of the engine, but also improve the mobility of the whole machine, simplify the operation of the loader, and protect the transmission parts and the engine.
- Full hydraulic steering, power shift transmission and hydraulic control of working device make the whole machine easy to operate and reliable. 。
- Service brake system, emergency and park brake system make the brake performance safe and reliable.
- Strengthening cabin with advanced structure and perfect tightness and damping capacity. The adaptation of arc glass provide wide field of vision and it is equipped with air conditioner which could make the operator more comfortable.
- It adopts low-pressure wide base super field tire and the rear axle swings so it has good off-road and passing performance.
- Perfect protection system can prevent mud splashing on the body.

3.3 New machine running in

ZL50G wheel loader has been fully tested and inspected before leaving the factory. However, if the machine is operated under bad working environment, the service life will be obviously shortened.

New car running in should be carried out in the first 100 hours.

During the process of running-in:

I .Empty machine running in(8 hours)

1.After starting machine, it should be run in low speed and neutral shift for 5 minutes and then gradually increase to the maximum speed for 10 minutes.

2.Operating working devices, lifting and descending the boom, tipping and retracting bucket for about 15 minutes.

3.Driving the empty machine from low to high speed of each shift and at the same time left and right steering and braking should be used.

Carry out the following work after eight hours running in:

1.Fully inspect bolts and nuts of all parts especially Cylinder head bolt, exhaust pipe bolt, front and rear axle fixing bolt, wheel rim nut, transmission shaft connecting bolt, steering wheel fixing nut.

2.Cleaning oil filter and fuel filter element

3.Check fan belt.

4.Check battery , tighten the battery cable bolt, check the connection of electrical system, power supply status of generator, lighting and turn signal etc.

5.Check transmission oil capacity and when the engine run at idle speed, the oil level should be in the center of the oil mark

6.Check hydraulic system and the tightness of brake system.

7.Check the connection and fixation of all operating levers and throttle components

8.Check the air conditioner(if equipped).

II.Operation running-in(20 hours)

According to the operation mode described in "11. Operation", the loading load increases gradually from small to large.

III.When operation running-in, pay attention to the following points:

1.Check whether the bolts and nuts of all parts are tight.

2.Check whether there is abnormal sound in each rotating part.

3.Check whether the indication of instrument panels are normal.

4.Check whether there are oil, gas and water leaking in the system.

5.Check whether steering and braking are reliable and flexible.

6.Checking whether the working devices are operated normally.

7.Except emergency situations, avoid suddenly starting, steering and braking.

8.Pay attention to the lubrication of loaders and add lubrication oil or grease, according to the specified time.

9.Frequently pay attention to the temperature of transmission, torque converter, front and rear axle, wheel hub, brake and brake drum. If the temperature is too high, finding the problems quickly and solve them.

10.Avoid heavy load in high temperature.

IV.The following work should be done well when running in a new wheel loader:

1.Check the tightness of bolts of all parts.

2.Cleaning the filter screen and oil tank of hydraulic system of transmission, steering and working device, and replace with new oil.

3.Replacing new engine oil.

The precautions for operation, maintenance and safety procedures specified in this manual are only applicable to the operation for the specified purpose. If the machine is used beyond the specified use, the manufacturer is not responsible for safety.

4. Sign position

4.1 machine serial number position

The position:the side of front frame(the driver direction)

4.2 Engine serial number position

The position: on the engine body

Safety regulations

warning

Read and comply with all safety regulations in order to avoid severe accidents

These safety regulations include notes for other optional working devices

5. General safety regulations

Safety regulations

- only trained or authorized people can operate and repair wheel loader.
- when operating and repairing wheel loaders, following safety regulations, notes and instructions.
- when feeling sick, taking drowsy drugs or drinking, it is not allowed to operate loader in order to avoid accidents in the case of wrong judgment.
- When working with other staff and site traffic personnel, make sure that everyone understands the meaning of idiomatic sign language.
- Comply with related safety regulations.

Security features

- Make sure every protective covers and nets are in the correct position and they should be repaired in time after damage.

The correct position----refer to "11.1.1 patrol inspection"

- Correctly use safety devices including safety lock and seat belt.
- Forbid to dismantle any safety devices and keep them in good condition.
- The improper use of safety devices can lead to serious casualties.

The clothing and safety protection

- Avoid serious accidents from clothing, jewelry or long hair falling on the control rod or moving parts.
- Forbid to wear any inflammable clothes with oil stains.
- When operating or repairing wheel loader, please wearing safety helmet, protective glasses, safety shoes, masks and gloves. When hitting the pin shaft with a hammer or flushing the air filter element with compressed air, to avoid the damage of metal debris or other small particles, please wearing goggles, safety helmets and gloves for protection.
- Before wearing protective clothing and other items, please make sure that they are in good condition.

Unauthorized modification

Any modification of the machine without the consent of the manufacturer may cause safety problems. Therefore before make any modification, please consult the manufacturer. The manufacturer is not responsible for any damage caused by unauthorized modification.

Lock the safety locking device when leaving the driver's seat

●Before leaving the seat, put the parking brake switch on the braking position. If the control lever is touched accidentally, the working device may move suddenly and cause serious injury.

●Before leaving the wheel loader, lower the working device completely to the ground, put the parking brake switch on the braking position, stop the engine and lock all devices with key. Take the key with you.

The condition of working devices----refer to “11.13 parking”

Locking----refer to “11.17 locking”

Getting on and off wheel loader

●Forbid to jump in and off the wheel loader and also prohibit to get on or off the moving loader to avoid accidental injury.

●When getting on and off the wheel loader, keep hands and one foot, or feet and one hand holding on the escalator or pedal.

●Forbid to hold the control lever to get on and off the wheel loader.

●Before getting on and off the loader, check whether there are oil, grease or mud on the escalator or pedal or not. If finding oil, grease or mud, immediately wipe it off and also repair all damaged parts and tighten loosen bolts in time.

Fire prevention of fuel oil and lubricating oil

●Keep combustibles away from fire sources.

●When adding fuel or oil, stop the engine and forbid to smoking.

●Tighten fuel and oil tank cap.

●Adding fuel and lubricating oil in a well ventilated place.

●The fuel and lubricating oil should be placed in a well ventilated place and No admittance.

●Fuel oil, hydraulic oil, antifreeze and lubricating oil are inflammables therefore it is strictly forbidden to weld these inflammable cases without permission. If these cases are damaged,the manufacturer shall be consulted and the welding shall be carried out by a professional person. When welding, the case should be removed from the frame and moved to a well ventilated place, and ensure that the case is free of the above inflammables. The air inside and outside the case is unobstructed, and the residual gas of inflammables in the case is drained.

Precautions for operation at high temperature

●When just stopping operation, the fuel and lubricating oil are at high temperature and pressure. In this case, unscrewing the cover to drain oil, drain water or replace the filter element will cause serious burns.

●In order to prevent hot water from gushing out, stop the engine at first and after the water is cooled, slowly loosen the water tank cover to release the pressure, and then completely screw out the cover.

When checking whether the water temperature is dropping or not, put hand on the front of the radiator to test the temperature of the surrounding air. Be careful not to touch the radiator.

●In order to prevent hot oil from gushing out, stop the engine at first and after the oil is cooled, slowly loosen the oil tank cover to release the pressure, and then completely screw out the cover.

When checking whether the oil temperature is dropping or not, put hand on the front of the oil tank to test the temperature of the surrounding air. Be careful not to touch the oil tank..

Harm of asbestos powder

●It is very harmful for people to inhale asbestos powder.

Follow the rules below when handling materials containing asbestos powder:

●Forbid to use compressed air to clean.

●Wash with water and put the materials containing asbestos powder down.

●Operate in the leeward place as far as possible.

●Use protective cover when necessary.

Prevent crush or cut

●Do not put hands, arms and any part of the body between two moving parts (working device, oil cylinder or fuselage and working device, etc.), because when operating the working device, the gap between the two parts will change, which may cause serious injury or casualties.



Fire extinguisher and preferred auxiliary tools

●Make sure the fire extinguisher is ready and know how to use it.

●Prepare auxiliary tools.

●Know how to cope with fire conditions.

●Remember the telephone number of the contact person in case of emergency.

The precautions of using ROPS

If the wheel loader is equipped with ROPS, it cannot be operated when the ROPS is dismantled.

Installing ROPS is to protect operator when the wheel loader overturns. It can not only support the load, but also cushion the impact force.

●The ROPS meets the international specifications and standards. The strength of ROPS will be weakened due to the rollover accident or falling object damage, which will affect the protection function. Under this circumstance, contact authorized agent for repair.

After installing ROPS, the driver also need to fasten safe belt in order to effectively play the protective function of safety devices.

Description of additional devices

●Install and use the additional devices, read the description of additional devices in the manual.

●Use only the additional devices permitted by the authorized agent. Using unauthorized additional devices may lead to safety problems and seriously affect the normal operation and service life of wheel loaders.

●The manufacturer shall not be responsible for any damage, accidents or product damages caused by the use of unauthorized additional devices.

Ventilation of enclosed areas

●If it is necessary to start engine or handle of fuel oil, lubricants or coatings in enclosed areas or places with poor ventilation, the doors and windows must be opened to ensure good ventilation to avoid gas poisoning.

●If opening doors and windows cannot provide a well-ventilated environment, ventilation fans shall be installed.

Reflector, window and lights

●Keep the lights and window clean to ensure good sight line.

●Adjust the direction of the reflector on the side of the machine body so that the driver, sitting on the seat, can see clearly. Also keep the reflectors clean. If glass is broken, it should be replaced in time.

●Check whether the lights and working indicators can work normally or not.

6. The precautions when operating

6. 1 Before starting the engine

Site safety

● Before operating the wheel loader, completely inspect the whole working site for any abnormal conditions that can cause danger.

● Check the site topography and soil quality to determine the best operation method.

● When operating on the road, set up signalman and barriers to ensure the safety of passing vehicles and pedestrians.

● When operating in areas where water pipes, oil pipes, high voltage cables, etc. are buried, consult with local department, know the burial sites and do not to damage the above buried pipe fittings.

● When working in the water or through the sand embankment, first check the land condition, water depth and water flow speed to ensure that the water depth does not exceed the allowable depth.

Allowable water depth---refer to “11.11 Attention to operation”

Inspection before starting engine

The following inspections should be made before daily work and start engine in order to avoid serious damage.

● Completely clean the wood chips, fallen leaves, paper and other flammable substances accumulated on the engine and battery. Check whether fuel, lubricating oil and hydraulic system are leaking or not. If there is a leaking, repair it immediately. Wipe off all spilled fuel, lubricating oil and flammable substances. Put all fuel containers in place. Take all accessories and tools out of the cabin and wipe stains on the reflectors, handrail, foot pedal.

Checkpoints---refer to “11.1.1 Patrol inspection”.

● Check the level of coolant, fuel and lubricating oil. Check whether the air filter is blocked and whether the wire is damaged.

Inspection before starting---refer to “11.1.2 inspection before starting”

● Adjust the seat to the qualified operating position and check whether fasten safety belt and the safe belt is damaged or not.

Adjust seat---refer to “11.1.3 adjustments before operation”

Handle seat belts---refer to “11.1.3 adjustments before operation”

● Check whether the indicators work normally or not and whether the control lever in the parking position or not.

Ways to check indicators----refer to “11.1.4 inspections before starting engine”

- Wipe the dust on the window and lights so as to have a clear view.
- Adjust the position of reflectors to make sure that the driver can have a better view. If the reflectors are broken, replace them immediately.
- Check whether the lights and work indicators work normally or not. If there is any abnormality, it should be repaired immediately.
- Before starting the engine, check whether the safety locking lever is in the locked position.
- A fire extinguisher must be put on site and drivers should know how to use it.
- Forbid to operate machine near source of a fire.

Starting engine

- Before getting on the wheel loader, make sure that there are no person and objects block the road.
- The engine cannot be started when there is a warning signal on the control lever.
- Before starting the engine, sound the horn for warning.
- Only sitting on the seat can operate the wheel loader.
- The assistant operator should sit on the auxiliary seat in the cabin. If there is no auxiliary seat, the driver is allowed to operate alone. No one is allowed to stand on the loader after starting the engine.

Inside the cabin

- Do not put accessories inside the cabin to avoid damaging control levers or switches.
- Keep the cabin clean and ensure that the cabin ground, operating lever, pedal and armrest of the cabin are free of pollutants such as lubricating oil, grease, snow and mud.
- Check whether the safety belt and buckle are in good condition or not and whether the safety helmet is put inside or not. If there is any damage, replace or repair them in time.

6. 2 The inspection before starting the engine

After starting the engine, if not following the correct inspection steps, it may cause personal injury or damage to the machine.

The inspection of the machine should be carried out in spacious and barrier-free places and it is not allowed for other people to access the machine.

- Check the working condition of all instruments,working devices,hydraulic system,braking system,walking system and lubricating system.
- Check the sound,vibration,temperature and smell of the machine and check whether there is leakage of gas, lubricating oil and fuel.

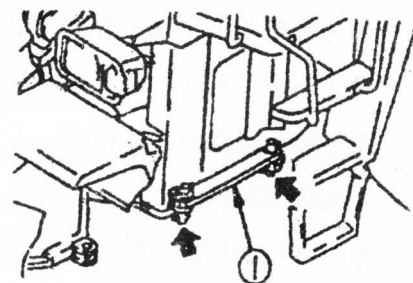
- If any abnormal phenomenon is found, it should be repaired in time.

If the wheel loader is operated in abnormal condition, it will be hugely damaged.

- Before operating and walking, check whether the safety lock lever ① is disengaging or not.

Precautions before driving

● Before driving the loader, check around the machine again. It is strictly forbidden for any individual to stand around the machine and any obstacles to block the way.



- Beep out a warning before driving.

- Only sitting on the seat can operate the wheel loader.

- Fasten safety belt.

● The assistant operator should sit on the auxiliary seat in the cabin. If there is no auxiliary seat, the driver is allowed to operate alone. No one is allowed to stand on the loader after starting the engine.

- Check whether the reversing alarm can work normally.

Inspection before changing driving direction

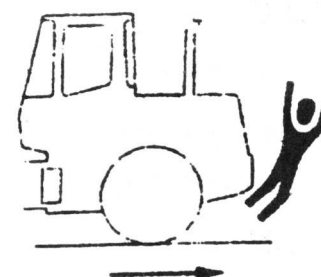
● In order to avoid injuries, observe the following operation requirements before moving the loader or working device.

- Beep out a warning

● Check if there are any people around the machine especially the rear of the machine which is not easy to see when sitting on the seat.

● If there is danger or poor visibility on the site, send someone to direct the traffic.

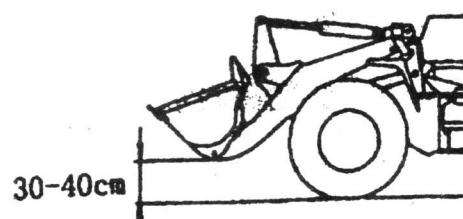
● Non-staff member cannot approach the machine when it is moving or steering.



Even the wheel loader is equipped with alarm and reflector, the above points should be followed.

Points for attention when driving

● When the loader is moving, the switch cannot be turned on or turned off. If the engine stalls while the machine is moving, the steering will be very heavy and this is very dangerous. If the engine stalls while the machine is moving, the loader should be stopped immediately.



- Focus on operation.

- It is dangerous to drive too fast, to start or stop suddenly, to turn sharp and to drive zigzag.
- During the operation of the loader, if any abnormal phenomena (noise, vibration, smell, instrument abnormality, gas and oil leakage, etc.) are found, it is necessary to stop the loader at a safe place immediately to find out the cause.
- When driving on the road, the bucket should be placed in the transportation position, 30-40cm above the ground.
- When driving, do not operate the lever of the working device. If it is necessary to operate the lever of the working device, stop the machine first and then operate it.
- Forbid to suddenly operate the steering wheel to prevent the working devices touching the ground, causing the working device to lose balance and damaging the machine or nearby facilities.
- Driving at a low speed on the rough road and it is not allowed to suddenly steering.
- Try best to avoid crossing obstacles. If have to cross obstacles, the working devices should be close to the ground as far as possible and the driver should drive the wheel loader at low speed.
- When operating the loader, keep a certain distance from other machines to prevent collision.
- Do not operate in too deep water.

The allowable water depth----refer to “11.11 Attention to operation”

- When passing bridge and building, ensure that the bridge and the building can support the weight of the wheel loader. When passing the highway, it is necessary to contact the relevant departments and observe the relevant regulations.
- When driving on the road, the driver should observe traffic rule. As its speed is lower than that of other motor vehicles, it is necessary to drive by the side of the road and make way for the middle road.
- If the wheel loader continues to run at high speed for a long time, the tire will be overheated and the pressure will rise, which will cause tire explosion. The tire explosion will produce strong destructive force, which may lead to serious accidents.
- If you have to drive continuously, please consult the agent.

Driving on a slope

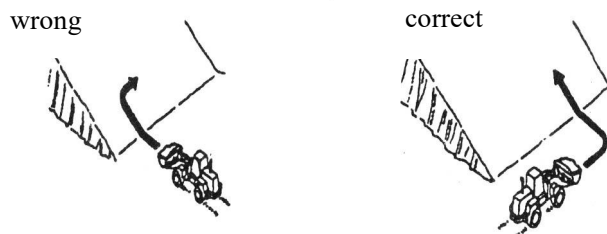
- When driving on a slope, the wheel loader is easily to tip or to slide to one side.
- When driving on a slope, the driver should make the bucket 20-30cm from the ground. If the driver encounters a danger, level the bucket to the ground immediately to help stop the machine.
- Do not turn or cross a slope, and do the above after the loader is driven to the level.
- Driving on grass, fallen leaves and wet steel plates is prohibited. Even a small slope may cause the machine to slip, so drive at a low speed and keep going straight up and down the slope.

●It is forbidden to shift gears when going downhill or put the gear lever in neutral. It is dangerous to brake without the help of the engine. Put the gear lever in low gear before going downhill.

●When going downhill, use the braking force of the engine to drive the machine at a low speed. If it is necessary, using the braking force of the engine and brake pedal to control speed. If the engine stalls on a slope, the driver should completely step down the brake pedal and put the bucket flatly on the ground. Then use the parking brake to stop the machine in its original position.

●When the machine goes uphill or downhill with a loaded bucket, the driver needs to make the bucket face uphill.(Use forward shift when uphill and reverse shift when downhill).

●If the machine is moving on a slope with a loaded bucket and the bucket faces downhill, this will be easily to cause rollover accident.



Points for attention

In order to prevent rollover or damage to the working device due to overload, ensure that the load of the machine does not exceed the rated load.

Points for attention during operation

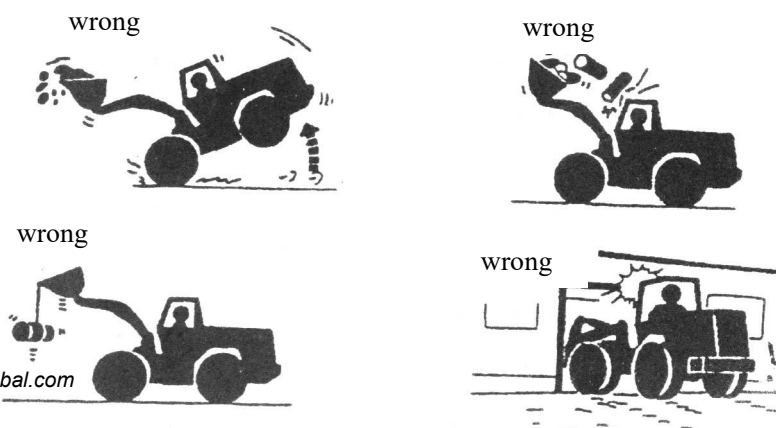
●Be careful not to get close to the edge of the cliff..

When building embankments, filling earth or unloading materials under cliffs, one pile should be unloaded first, and then the latter pile should be used to push the former pile.

●When unload the material under cliffs or the machine reaches the top of the slope, the load will be reduced, resulting in speed increase and danger, so it is necessary to slow down.

●When the bucket is loaded, do not start, turn or stop suddenly.

●When loading unstable materials, such as round, cylindrical or flaky materials, and lifting the working device, the materials may slide onto the cab, causing serious damage.



●When loading unstable materials, try to avoid lifting working devices or too large bucket angle.

●The suddenly stopping of working device may cause the machine tipping over.

In the loaded state, special attention should be paid to the operation of the working device.

●Forbid to use bucket or boom to perform lifting operations.

●Only permitted wheel loader operations can be performed, and other operations can cause serious accidents.

The permitted operations---refer to “11.10 the operation of wheel loader”

●Comply with the following to ensure good visibility.

●When working in a dark place, turn on the work indicator light and lights, and install lights on the construction site if necessary.

●It is forbidden to work in fog, snow, heavy rain and other conditions with poor visibility. The work can only be carried out when the weather is better and the visibility improves.

●Observing the following to avoid working devices hitting other objects.

●When working in tunnel, under bridge, under electric wire and other places with height limit, avoid bucket hitting other objects.

●When unloading into the truck, check if someone is near the loader and be careful not to bump the bucket into the truck cab.

●Especially when working in narrow areas, indoors and places with other machines, in order to prevent accidents caused by touching other objects, the machine should run at a safe speed.

Keep away from high voltage lines

●The machine should keep a safe distance with high voltage lines in order to avoid electric shock.

●To prevent accidents, the following operation requirements should be followed:

—When working on the construction site with the high-voltage lines, the electric power company should be consulted first to clarify the relevant laws and regulations and take relevant safety measures.

—Rubber shoes and gloves should be worn, and rubber pads should be put on the driver's seat and avoid body contact with any part of the frame.

—If the machine is very close to the cable, the signalman shall direct the machine.

—If the working device touches the cable, the driver should leave the cabin immediately.

—When operating near the high voltage lines, other people should stay away from the machine.

Before operating, check the voltage of high voltage line with power company.

	voltage		Minimum safe distance
	100.	200V	2m
Low voltage			

	6600V	2m
High voltage	22000V	3m
	66000V	4m
	154000V	5m
	187000V	6m
	275000V	7m
	500000V	11m

Keep good visibility

- When operating in places with poor light, work lights or lamps should be installed.
- It is forbidden to work in fog, snow, heavy rain and other conditions with poor visibility. The work can only be carried out when the weather is better and the visibility improves.

operate carefully on the snowy ground

- When operating on the snowy or icy road, a very small slope will make the machine slide to one side, so driver should drive at a low speed and avoid sudden start, stop or turning. Especially in the uphill and downhill, it is easier to slip.
- When the temperature is rising, the icy road will become soft which make the driving unstable. In this case, special care should be taken.
- After heavy snow, the road edge and the objects piled on the roadside are buried by snow and are not easy to be seen. Therefore, the snow should be carefully cleaned before operation.
- Tire chains should be installed when driving on snowy and icy road.
- Avoid emergency braking when driving on snowy or icy slopes. Reduce the machine speed with the help of the engine, and use foot brake intermittently (press several times intermittently). If necessary, level the bucket to the ground in order to stop the machine.
- In snowy days, the road surface is slippery, so adjust the load to prevent the machine from slipping.

Do not touch working devices

- When working in tunnels, under bridges, under wires and other places with height restrictions, be careful not to make the working device collide with other objects.

The ways to use brake

- Put foot on the brake pedal only if necessary.
- Step down the foot brake pedal repeatedly only if necessary.
- When going downhill, use the foot brake pedal. If necessary, use the engine to assist in braking.

Operation on soft ground

- It is forbidden to operate wheel loader on soft ground because it is difficult for the machine to get

out of the soft ground.

- Avoid making the machine too close to cliff and ditch because if these places collapse due to the gravity or vibration of the machine, the machine will fall or overturn, which will cause serious casualties. Remember: after heavy rain, explosion or earthquake, the soil in these areas is very easy to loosen.

- The soil near the ditch is very easy to loosen, and the collapse caused by the gravity or vibration of the machine will cause the machine to tip over.

- When operating in dangerous areas where stones or rocks may fall off, the machine should be installed FOPS.

- When operating in areas where stones or rocks may fall off or the machine may tip over, the machine should be installed FOPS and the driver should fasten safe belt.

parking

- Park the machine on a flat road without falling rock, landslide or water storage due to low terrain, and place the working device on the ground.

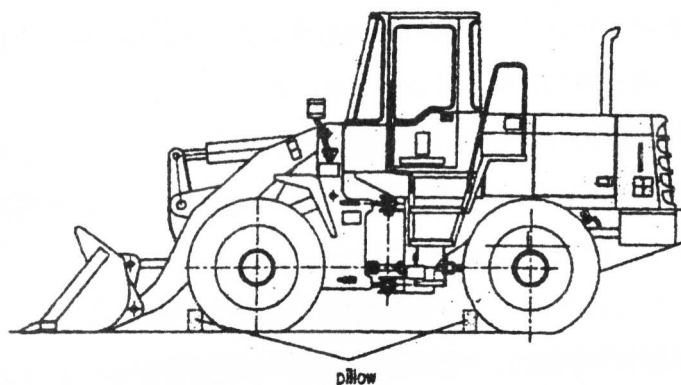
- If the machine has to be parked on a slope, put wedges under the tires to prevent the machine from moving, and shovel the working device into the ground.

- When parking on the road, put safety barriers, signs, flags or signal lights, so that passing vehicles can clearly notice the parking machine. When parking, do not make the wheel loader, safety barriers or signs block the traffic.

Parking steps---refer to "11.13 parking"

- When leaving the machine, the driver should level the bucket completely to the ground, turn the brake switch to the brake position, stop the engine and lock all working devices. Remove all the keys and take them with you.

The conditions of working device---refer to "11.13 parking"



The precautions in cold areas

- After the operation, clean water, snow, or sludge on wiring harness, connectors, switches, sensors, and cover these parts. Open the drain valve to drain the cooling water used by the machine to prevent

freezing; Treatment of cooling water with antifreeze----refer to “13.12 cooling water”.

If the cooling water is frozen, the machine will be breakdown which could cause accidents.

●If the control lever is operated before the machine is fully warmed up, the reaction of the machine is slow, which often leads to accidents.

●Use the control lever to release hydraulic pressure(the pressure rises above the set pressure of the hydraulic system to return the hydraulic oil to the tank) so as to make the oil in the hydraulic system hot. This could make the machine more easily to be operated and avoid a breakdown.

●If the electrolyte freezes, do not charge or use other energy to start the engine, otherwise there will be the risk of battery fire. Before charge or use other energy to start the engine, make sure that the electrolyte is melt and check the battery fluid for leakage.

The battery charging speed----refer to “13.13 battery”

6. 3 Transportation

Loading and unloading

●During loading and unloading, there are potential dangers so be careful.

When loading and unloading, the engine should run at a low speed and the machine should also run at a low speed.

●When loading and unloading on the solid and flat ground, keep a distance from the roadside.

●Before loading and unloading, wedge should be placed on the bottom of the tire and under the inclined ladder.

●The inclined ladder should have enough length, strength and width to ensure safe loading gradient.

●Ensure that the inclined ladder is fixed, and the surfaces of the two inclined ladders should be in the same plane.

●Make sure that the surface of inclined ladder is clean without oil,grease,ice or other loose material. Clean the stains on the surface of tires.

●It is forbidden to operate the direction on the inclined ladder. If necessary, the inclined ladder should be driven down and adjusted before going up.

●After the wheel loader is packed in a container, wedge should be put on the bottom of the tires and fix the machine with ropes.

Loading and unloading---refer to”12.Transportation”

Fixing with ropes---refer to “12. Transportation”

transportation

●When transporting the machine with a barring tractor, observe the national or local regulations on the weight, length and width of the cargo. And observe traffic rules.

●When decide the transportation route, the width,height and weight of the machine should be considered.

The height,width and weight of the machine----refer to “12.4 Attention points when transportation”

●When passing bridge or buildings on the ground, firstly check whether the bridge can support the weight of the machine or not. When driving on the road, consult related department and comply with their regulations.

●The machine can be disassembled into several parts for transportation. Therefore, during transportation, the manufacturer's authorized agent should help to complete the disassembly work.

6. 4 Battery

The safe operation of battery

The electrolyte contains sulfuric acid and the battery can produce hydrogen. Incorrect operation will lead to serious injury and fire, so pay attention to the following instructions.

●Do not put the burning cigarette and fire source close to the battery.

●Wearing protective glasses and rubber gloves when handling with battery.

●If sulfuric acid is sprinkled on clothes and skin, rinse immediately with plenty of water.

●Sulfuric acid in the eyes can cause blindness. If sulfuric acid splashes in the eyes, immediately flush with plenty of water and seek medical advice.

●If you drink battery liquid, drink plenty of water, milk, eggs or vegetable oil. And call a doctor or poison prevention center.

●When handle with battery, stop the engine and turn off the start switch.

●Prevent short circuit caused by accidental connection of metal parts such as tools between battery poles (positive and negative).

●When installing battery, connect the positive pole first and tighten nuts.

If the battery fluid in close to the lowest liquid level line, add distilled water and the level of distilled water should not exceed the maximum level line.

●When cleaning the surface of battery, wipe it with cloth instead of gasoline, diluent, organic solvent and detergent.

●Tighten battery cover.

●If the battery fluid is frozen, do not charge or use energy to start engine otherwise there will be the risk of battery fire.

Before charge or use other energy to start the engine, make sure that the battery fluid is melt and check the battery fluid for leakage.

- When charging, the battery should be removed from the frame.

Starting the machine with auxiliary battery line

If the way of connecting the auxiliary battery cable is wrong, it will lead to fire. Therefore the following should be observed.

- Start up by two people.(one people sit on driver's seat).
- When starting with another machine, the two loaders should contact each other.
- When connecting the auxiliary battery line, the start switches of the trouble free machine and the trouble free machine should be closed.
- When connecting auxiliary battery line, connect positive pole first. And remove grounding or negative cable first when removing auxiliary battery line.
- Finally, the grounding connection is the engine body of the breakdown machine grounding. This operation is easy to produce electric spark, so keep away from the battery as far as possible. When removing the auxiliary starting cable, pay attention to avoid the connection clamp of the auxiliary cable touching each other or the machine body.

Battery charging

When charging battery, if not follow correct steps, the battery is in danger of explosion. Therefore follow the instructions for handling the battery and the battery charging instructions in the battery charging operation manual, and pay attention to the following points:

- Charge in a well ventilated place and remove the battery cover, which can prevent hydrogen emission from explosion.
- The voltage of the charger should match the voltage of the charging battery, otherwise the charger will overheat and cause fire, which is easy to cause explosion.

The positive pole of the charger is connected with the positive pole of the battery, and the negative pole is connected with the negative pole and also ensure that the connection between two poles is firm.

- If the battery voltage is lower than 1 / 10 of the rated voltage and the fast charging method is adopted, a value lower than the rated voltage should be set.

- If the charging current is too large, it will lead to battery liquid leakage or evaporation, which is easy to lead to fire and explosion.



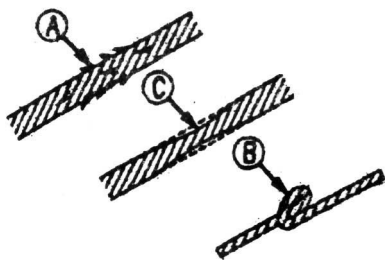
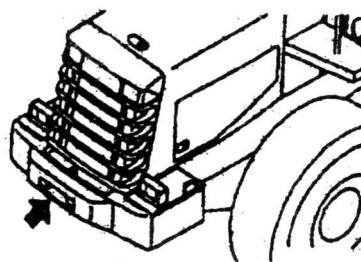
6. 5 Towing

When towing

If you choose the wrong rope or towing in the wrong way, it will lead to casualties, so you should

follow the following operation methods.

- Only can use the towing way described in the manual.
- Wearing leather gloves when handling ropes.
- When preparing the towing with others, first unify the meaning of the signal before work.
- When the engine fails to start or the brake system fails, please contact the authorized agent for repair.
- It is very dangerous to tow on the slope, so we should choose a small. If there is no small slope, we should take measures to reduce the falling gradient of a slope as much as possible.
- When use another machine to tow breakdown one, the towing rope used shall be sufficient to bear the weight of the breakdown one.
- It is forbidden to use stabbing, bending or uneven thick rope to tow.
- When connecting the towed machine, no one is allowed to enter between the towing machine and the towed machine.
- The tractor and the towed machine should be in a straight line.



7. Precautions for machine maintenance

7.1 Before maintenance

Fault prompt

If not following the manufacturer's requirements and maintenance methods on the manual, unexpected failures will happen.

Please consult authorized agent for repair.

Warning signs

- When maintaining or adding lubricating oil, if someone starts the engine or operates the control lever, it will cause serious casualties.
- Hang the warning signs on the control lever in the cabin to warn others that the machine is being maintained. If necessary, hang the warning board around the loader.

Cleaning before inspection and maintenance

- Before inspection and maintenance, clean the machine to prevent dirt from entering the machine,

so that the maintenance work can be carried out safely.

● If the machine is still very dirty during inspection and maintenance, it is not only difficult to find the fault, but also dirt and dust splashed into the eyes, causing the maintenance personnel to slip and injury.

● Follow methods when cleaning the machine.

— Wear antiskid shoes to prevent slipping on wet ground.

— When cleaning the machine with high-pressure water, wear protective clothing, which can not only prevent the impact of high-pressure water to damage the skin, but also prevent soil and dust from splashing into the eyes.

— Do not spray water on the electrical system. Water entering the electrical system will cause machine failure.

Keeping workplace clean

Do not put hammers or other tools on the workplace. Wipe off lubricating oil, grease and other substances that are easy to cause slipping.

Keep the workplace clean and dry to ensure you operate safely.

If the workplace cannot be kept clean and dry, there is a risk of falling.

The commander should be appointed when many people work together.

When repairing the machine or disassembling and installing the working device, a commander should be appointed, and his command should be observed during the operation. When many people work together, misunderstanding among workers can lead to serious accidents.

Level of water tank

● When checking the level of water tank, stop the engine and wait for the engine and water tank to cool before checking. Checking level of auxiliary water tank. Generally, do not open the water tank cover.

● If the machine does not have the auxiliary water tank, the water tank cover must be removed and the following operating instructions must be observed.

● The level of water tank can only be checked when the water temperature is lowered (Keep your hands close to the engine and water tank to check the ambient air humidity. Do not touch the engine and water tank with your hands).

● First loosen the water tank cover to release the internal pressure, and then slowly remove the water tank cover.

Engine off before inspection and maintenance

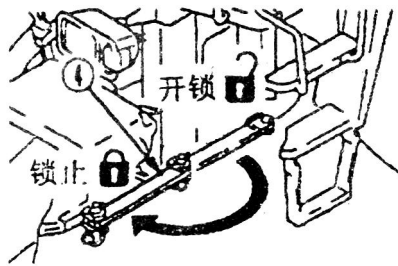
● Before inspection, park the machine on a flat road without rock falling, landslide or water storage due to low terrain, place the working device on the ground, and turn off the engine.

● After the engine stops, operate the boom control lever to the raise and lower positions several times to release the system pressure.

● Put the brake switch in the brake position and put wedges under the tire.

● Lock the front and rear frame with the safety locking lever.

● Workers should be very careful not to touch the moving parts, so as not to be stuck by the parts.



Support of working device

When lifting the bucket to inspect and maintenance, using support to prop up the boom to prevent the working device from falling.

Put the control level of working device in neutral.



Using proper tools

● Tools suitable for the task should be used, and the use of damaged, inferior or unsuitable tools can cause personal injury.

Tools----refer to “19.1 the introduction of necessary tools”

Replace important safety parts regularly

Hoses and other parts of fuel system, hydraulic system and braking system are important parts to ensure safety, so they need to be replaced regularly.

The replacement of important safety parts requires special technology, and the agent should be invited to replace them.

● Whether these parts are broken or not, they should be replaced regularly.

After a long time of use, these parts will be damaged, resulting in working device failure or oil leakage, leading to fire.

- If any part is damaged, it should be replaced even if it is not within the specified time.

The replacement of important safety parts---refer to “20.Replace key safety parts regularly”

The use of lighting

- When checking fuel, oil, battery fluid or window cleaning fluid, explosion-proof lighting should be used, otherwise there is a risk of explosion.

- It is easy to cause personal injury when working in dark area without lighting, so suitable lighting should be installed.

- Even in dark areas, lighters or torches cannot be used to replace the lighting lights, so as to avoid fire, such as the ignition of battery gas, which may cause explosion.

- When using the loader as the power supply of the lamp, follow the instructions in the operation and maintenance manual.

Fire prevention

In the process of maintenance, there will be the danger of fuel and electric gas ignition, so the following points should be paid attention to during maintenance.

- Containers for storing fuel oil, lubricating oil, grease and other flammable substances should be kept away from fire sources.

- Using nonflammable substances as the cleaning fluid for cleaning components. Avoid using diesel or gasoline to avoid fire.

- Smoking is not allowed during inspection or maintenance. Smoking should be carried out in designated places.

- When checking fuel oil, hydraulic oil and battery fluid, explosion-proof lamps should be used instead of lighters or matches.

- When grinding or welding on the frame, all flammable substances should be put in a safe place.

- Make sure there are fire extinguishers at the inspection and maintenance points.

7. 2 Maintenance process

Responsibilities of maintenance personnel

- Only authorized personnel can repair and maintain the machine. Unauthorized personnel are not allowed to enter the maintenance area.

Be careful when grinding, welding or using hammer.

Accessories

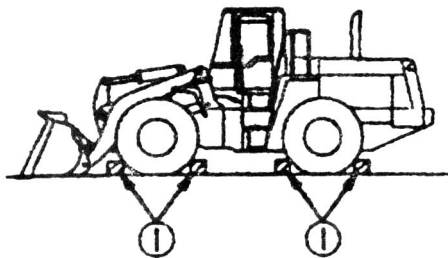
- Send a commander before removing or installing accessories.
- Expect workers, no one are able to get close to the machine or accessories.
- Put the removed accessories in a safe place to prevent the loss of accessories. Fences shall be set around the additional devices and signs of no entry shall be pasted to prevent unauthorized personnel from entering.



Working under the machine

- Before carrying out maintenance under the machine, park the machine on a hard, level ground and lower all working devices to the ground.
- Put wedges under the tire like (1).
- If the tire is lifted off the ground only by the support of the working device, it is very dangerous to carry out maintenance work under the machine.

When the support of the machine is not strong, it is forbidden to work under it.



Repair the machine after lifting the frame

- When carrying out maintenance work after lifting the working device or frame, the front and rear frames shall be locked with safety locking rods, the control rod shall be placed in neutral position, and then the safety rod shall be placed in the locking position and support the working device and frame.
- When lifting, counter the tire in the opposite direction and put wedges under the machine after lifting.

Carrying out maintenance work on the loading roof

- Prevent oil or grease from splashing.
- Do not scatter tools on the ground.
- Watch your steps as you walk.

●It is forbidden to jump on or off the machine. Pay attention to the ladder and pedal when getting on or off the machine, and keep two feet and one hand or two hands and one foot in contact with the machine.

●Use protective equipment if necessary.

Carry out maintenance work while the engine is running

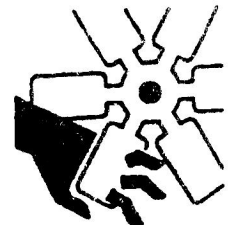
In order to prevent personal injury, it is forbidden to repair the engine when it is running. If it is necessary to carry out maintenance work while the engine is running, at least two people are required to follow the instructions below.

●A worker sits in his seat and is ready to stop the engine. All workers must keep in touch with other workers.

●When working near rotating parts, there is a risk of being caught, so be very careful.

●When cleaning the inside of the water tank, turn the parking brake switch to the brake position.

●It is forbidden to touch any control lever. If it is necessary to operate the control lever, it is necessary to show the signal to other workers so that they can hide in a safe place.



●Do not use tools or any part of the body to contact the fan blade or fan belt to avoid damage serious injury.

Do not drop tools or parts into the machine

●When opening the inspection window or fuel tank cover for inspection, be careful not to drop nuts, bolts or any other tools into the machine. If these parts fall into the machine, it will damage the machine and cause machine failure. Therefore, the parts must be taken out after falling into the machine.

●It is forbidden to put unnecessary tools or accessories in the pocket during inspection.

Points for attention when using hammer

When using hammer, wearing protective glasses, safety helmet and protective clothing. Place a copper bar between the hammer and the knocked object.

If a hammer is used to knock other hard parts such as pins or bearings, the broken pieces may splash into the eyes and cause injury.

Welding repair operation

Welding work must be carried out by a qualified welder in a place with necessary equipment. There are gas generation, fire and electric shock risks in the process of welding operation. Therefore,

unauthorized person cannot carry out welding.

A qualified welder must pay attention to the following points:

Disconnect the electrodes of the battery in case of explosion.

Remove the paint from the welding area to avoid gas generation.

If the hydraulic system or pipeline and the parts close to these things are heated, combustible gas or splash may be produced, which may cause fire, so avoid heating these parts.

If high heat is transferred to the hose or hard pipe with pressure, it will cause explosion, so it should be covered with fireproof board.

Wear protective clothing.

Remove all inflammable materials and ensure that there is fire extinguisher in workplace.

Points for attention in using battery

When repair electrical system or weld, disconnect the negative pole of battery to block current.

When abnormal situations happened.

● If any abnormality is found during the inspection, repair it immediately. In particular, the abnormal phenomenon of brake system or working device will lead to serious accidents.

● Please consult agents to repair according to the types of faults.

Adding fuel or lubricating oil

Fuel, lubricating oil, antifreeze and cleaning fluid are combustible, so the following points should be noted.

● Do not smoking.

● Immediately wipe splashed fuel, lubricating oil, antifreeze or cleaning fluid.

● Tighten the cover of the fuel tank, oil tank, antifreeze tank or glass washer tank.

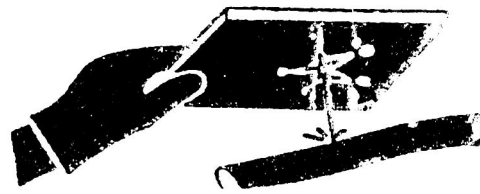
● Add fuel, engine oil, antifreeze or glass cleaning fluid in a well ventilated place.



Handling high pressure hose

● It is forbidden to bend high-pressure hose or knock oil pipe with hard iron object. It is forbidden to use bent or cracked high-pressure hose or hard pipe to avoid explosion during use.

● Repair the loose or broken oil pipe in time to avoid fire caused by oil leakage.



Points for attention about high pressure oil

- Pay attention to the oil circuit of the working device remains high pressure.
- It is forbidden to refuel, drain or check and repair before the internal pressure is completely released.
- If the high-pressure oil leaks from the small hole, the high-pressure liquid will hurt the skin or eyes. Therefore, wear protective glasses and thick gloves, and use cardboard or wooden board to check whether there is oil leakage.
- If you are injured by high pressure oil, see a doctor immediately.

Attention points of maintenance under high temperature and high pressure

- When the machine just stops working, the engine coolant and the oil in all parts are under high temperature and high pressure. In this case, if opening tank cover, draining the water, and replacing the filter screen, it will cause burns or other injuries. Wait for the oil temperature or water temperature to drop, and then carry out maintenance inspection according to the procedures specified in the maintenance manual.

Clean the inside of the system and refrigeration system, check the lubricating oil level and add oil---refer to “22.2 necessary maintenance.

Check the coolant level, engine and diesel oil level, and add oil or water---refer to “22.3 inspection before starting”.

Check oil level of hydraulic oil and add oil----refer to “22.5---100 hours maintenance”.

Change oil and replace oil filter---refer to “22.9---2000 hours maintenance”.

The maintenance of tires

The disassembly, repair or installation of tires need special equipment and technology, so you should ask the tire repair shop for repair.

The inspection after maintenance

Failure to conduct comprehensive inspection and maintenance, or failure to conduct comprehensive inspection on the function of each maintenance part will cause unexpected problems and personal injury. Therefore, the following points should be noted:

●The inspection when the engine is off.

- 1) Have all the places that should be inspected and maintained been inspected?
- 2) Have all inspection and maintenance items been completed correctly?
- 3) Did any tools fall into the machine? It is very dangerous for these tools to jam the control lever.
- 4) Have all the leaks been repaired?

●Inspection when the engine is running.

1) Please refer to "7.2 maintenance process - repair work when engine is running" for the inspection of engine running, and pay special attention to safety.

- 2) Are all the parts checked and maintained working properly?
- 3) Is there oil leakage when the engine speed increases or the hydraulic system is pressurized?

Waste disposal

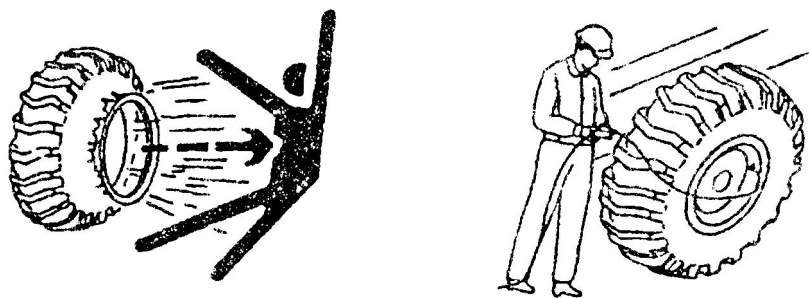
- Do not pour waste oil into sewers or rivers.
- Discharge the waste oil into the container and do not discharge it directly to the ground.
- When dealing with oil, fuel, coolant, solvent, filter element, battery and other harmful articles, relevant laws and regulations shall be observed.

7. 3 tires

Tire handling

If the tires and rims are not handled properly, the tires will explode and the rims will be broken, leading to serious casualties.

For the sake of safety, the following points should be noted.



Because the disassembly, maintenance and repair of the tires and rims need special equipment and technology, it is necessary to ask the professional maintenance personnel of the tire maintenance point to operate.

●Use the specified tires and inflate them to the specified pressure.

Proper air pressure---refer to “11.18 Tire handling”

●When inflating, the inflating pipe should have a pipe clamp which can be fixed to the valve, and

no one is allowed to enter the working area.

- During inflation, the tire pressure should be constantly checked to prevent excessive inflation pressure.

If the rim is not fixed properly, the rim may burst when the tire is inflated. To ensure safety, a protective fence should be set around the tire inflation work area. When inflating, the staff should stand on the side of the tire tread, but not on the side of the tire.

- Abnormal rate of tire pressure drop or abnormal phenomenon of rim device are the symptoms of tire rim and tires problems. In this case, ask the tire repair station professionals to repair.

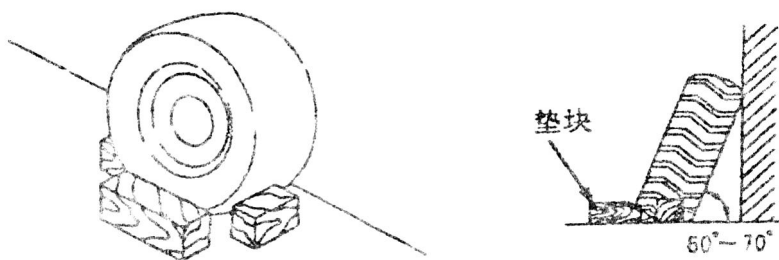
- Adjust the tire pressure after high-speed driving or heavy work.

- It is forbidden to heat or weld the rim mounted on the tire. Do not place tires near fire sources.

Tires storage

- Generally speaking, the tires should be stored in the warehouse and can not be entered by others without permission. If it must be stored outdoors, a fence should be designed around the tire and a "no entry" sign should be pasted.

- The tires should be placed vertically and blocked by wood blocks to avoid rolling or falling. Horizontal placement will flatten the tire and reduce its quality. When the tire falls, it should be avoided as soon as possible. The tires used for construction machinery are particularly heavy. If you try to hold the tire, it will often cause serious damage.



8.Safety signs

1.Attention before starting

Tips

Improper operation or maintenance can lead to serious casualties.

Operate according to the instructions or marks in the manual.

- See “operation and maintenance manual” for technical parameters and maintenance.

- Please refer to "parts category" for accessories.

- You should ask for warranty certificate to follow up the service.

- In case of difficulties, please call the hotline.

0536-3818379(Marketing Department)

0536-3818458(Technology Department)

- If you are not satisfied with the after-sales service, please call the complaint number.

0536-3818798 0536-3818139

- Do not carry people in the cabin. Do not touch the door frame and ladder when the wheel loader is running.

3.Attention when reversing

Warning

In order to avoid casualties, the following instructions should be observed when moving the loader and its working device:

- Sound the horn to warn people near the loader.

- Make sure no one is on or near the loader.

- When the field of vision is obstructed, the commander should command the traffic.

Follow the above rules even if the loader has a reversing alarm and reflector.

2.Precautions for engine starting

The instruction of engine start up: starting time shall not exceed 15 seconds, and if restart is required, it shall be conducted intermittently.

4.Instructions for the use of the parking brake

warning

When the driver leaves the machine or the foot brake fails, pull out the handle! When the air pressure is lower than 0.35Mpa, it is in automatic braking state.

5. No Entry

Danger

It is strictly forbidden to enter the turning range of the wheel loader body when working.

8.No climbing rear guardrail
(Machines with rear guardrails)

Warning

It is forbidden to climb the rear guardrail

6.Front and rear frame safety fixing rod

Warning

- Safety fixing rods must be used when transporting or being lifted.
- Safety fixing rod should be used during maintenance.

9. No one is allowed to stand under the working device

Warning

Do not approach the machine when the boom is raised or the bucket is lowered.

6.Do not open when engine is running

Warning

Do not open the cover plate when the engine is running.

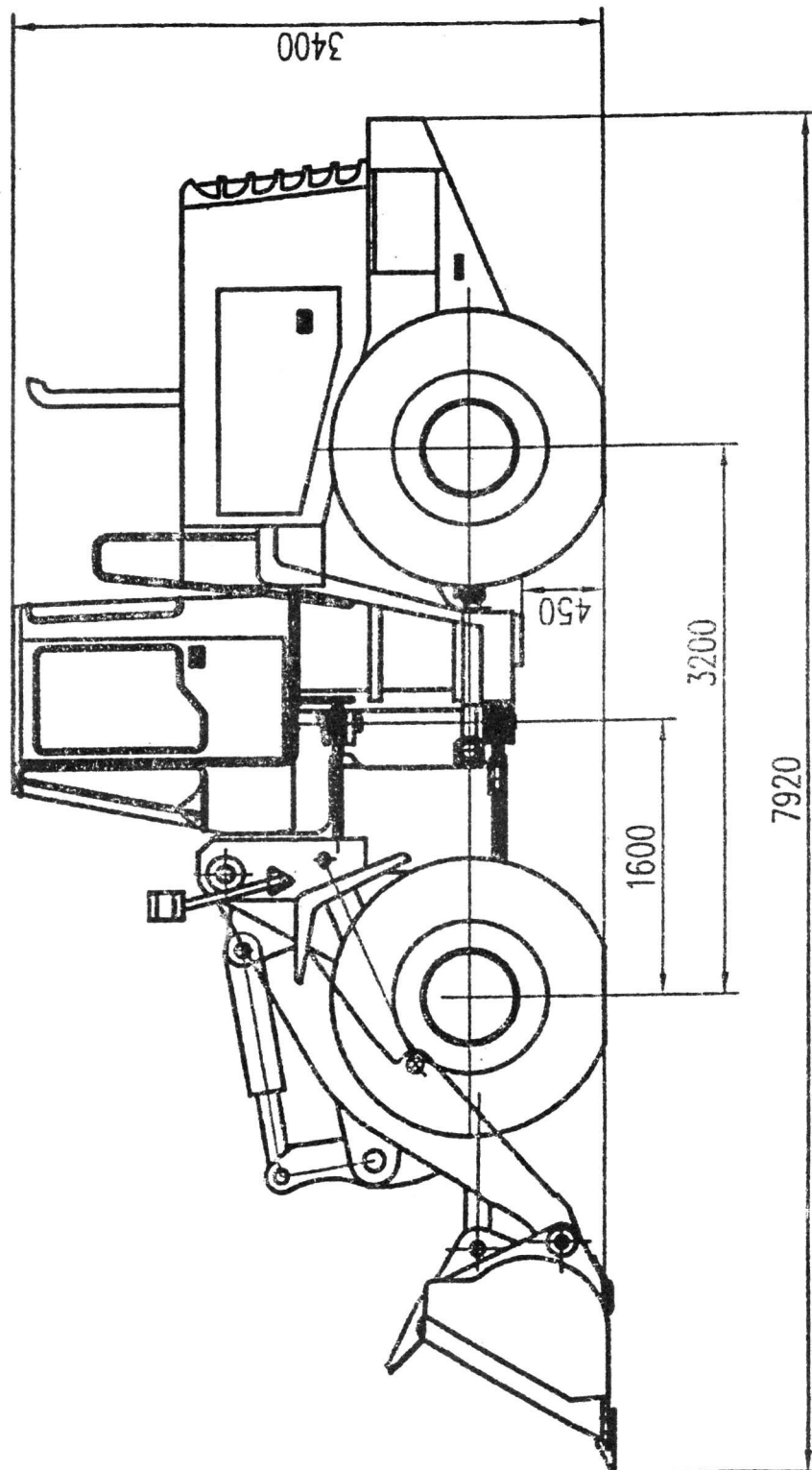
10.Keep away from the machine

Warning

Non staff should keep a certain distance from the machine.

Operation instructions

9. Outline drawing of the whole wheel loader



Outline drawing of the whole machine

10. Operating mechanism and instrument

All the joysticks and instruments of the machine are installed in the cabin, as shown in Figure 10.1. The actions and functions of each control switch, instrument, lamp and control lever are shown in table 10.2. The left and right directions are subject to the forward direction of the machine.

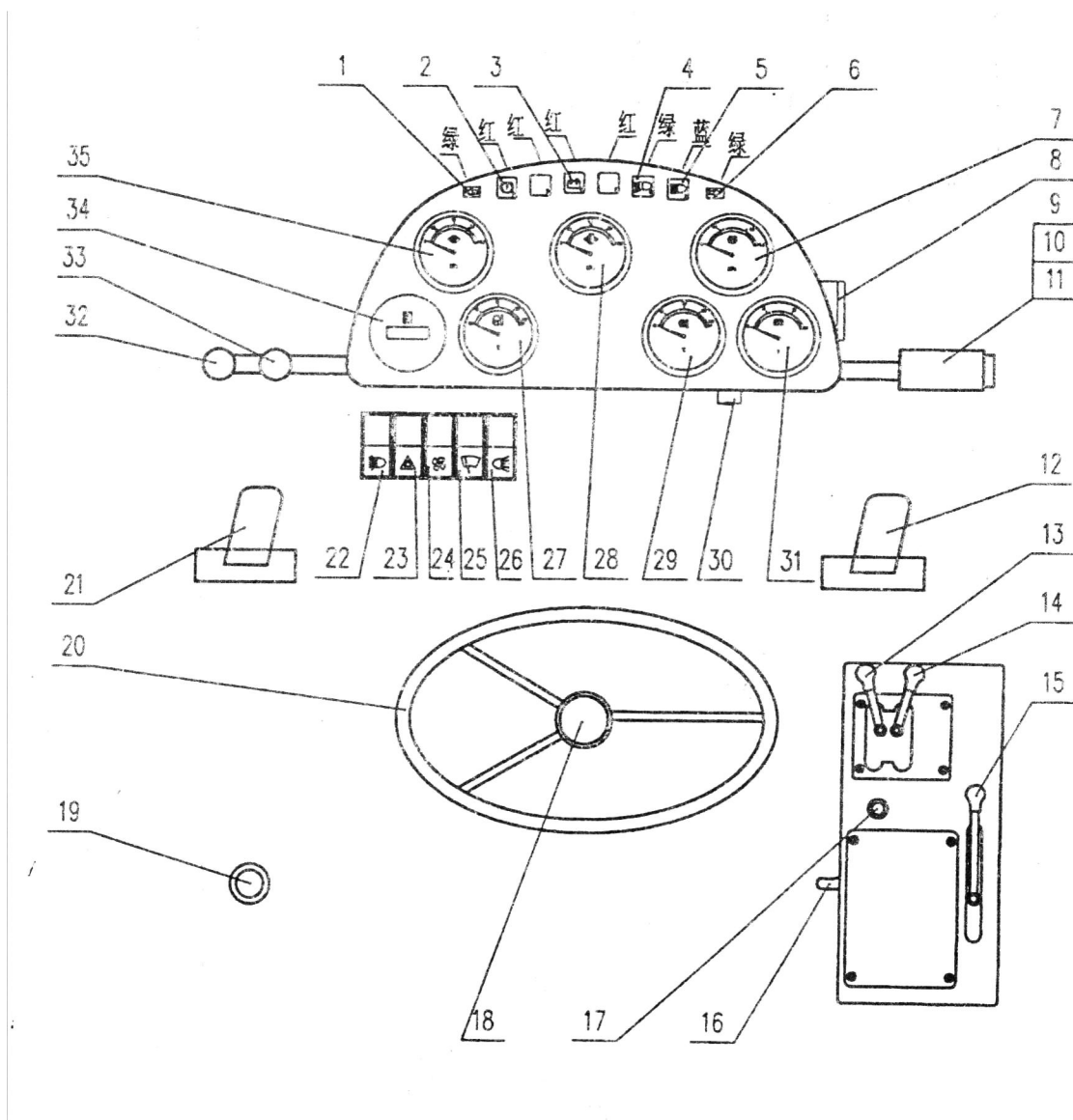


Figure 10.1

Chart 10.2 Control devices and instruments

No.	Name	Action and function	Notes
1	Left turn indicator	When the light is on, it means turning left.	If the indicator does not light up when the brake pedal is pressed or the indicator does not go out when the brake pedal is released, it indicates that the brake system is abnormal, and it should be stopped immediately for inspection.
2	Brake indicator	When the light is on, it means braking, and the brake light is on at the same time	
3	charge indicator	Indicates the state of charge of the battery.	
4	Low beam indicator	This indicator is on when the low beam is on	
5	High beam indicator	This indicator is on when the high beam is on	
6	Right turn indicator	When the light is on, it means turning right	
7	Barometer	Indicates the brake system reserve air pressure	686~784Kpa(7~8kgf/cm ²)is normal
8	12 ways fuse box	Protect electric equipment from burning circuit	If it is burned, find out the cause, and never replace it with copper wire
9	Steering switch	Control turning lights	Push forward and the front and rear left turn signals flash. Push backward and the front and rear right turn signals flash
10	Instrument and driving light switch	Control the front and rear lights to turn on the instrument and lighting switch at the same time	
11	High and low light switch	Control the high and low light of front work lights	
12	accelerator pedal	Control the oil intake of engine	The engine is at idle speed when it is released, and the engine speed increases with the

			increase of fuel supply when it is stepped down
13	Bucket control lever	Push forward and the bucket will tip over,pull back, bucket retract and push to the middle position and the bucket will not move.	
14	Boom control level	Pull back, boom up, push forward,boom down Push forward again, the boom floats, and push to the middle position for neutral position and the boom is locked.	
15	High and low speed control lever	Push forward for low speed, pull backward for high speed, the middle position is neutral	
16	On off valve		
17	hand braking valve	After pulling out the handle, the brake is in the braking state.	When the system air pressure is lower than 0.35Mpa, the handle will spring up and automatically be in the braking state.
18	Horn button	Control horn sounds	
19	Flameout control handle	After pull up the handle,the engine is off.	When flameout, pull up the handle and stay for 3-6 seconds
20	Steering wheel	Control the direction of the machine	Turn clockwise, turn right Turn counter clockwise, turn left
21	Brake pedal	Press the pedal, and the brake indicator light is on	
No.	Name	Actions and functions	Notes
22	Anti fog lamp switch	Control anti fog lamp	
23	Warning light switch	Control front and rear turn lights	In case of rain, fog and other weather and special circumstances
24	Fan switch	Control fan	When equipped with air conditioner, the switch is unused.
25	Wiper switch	Control wiper	

26	Rear headlamp switch	Control rear head; and	
27	Engine water temperature gauge	Indicates the engine water temperature. The appropriate temperature is 75 °C ~95 °C in normal operation, and it needs to stop when it is over 100 °C.	The temperature in winter is lower than 0 °C, and the heat preservation measures or cooling water in the water tank and body shall be discharged.
28	Engine oil pressure gauge	Indicates the engine oil pressure	196~394Kpa(2~4kgf/cm ²) is normal
29	Torque converter oil temperature gauge	It indicates the oil temperature of torque converter. The normal temperature for normal operation is 80 °C ~ 100 °C. If the temperature exceeds 120 °C, the wheel loader needs to be stopped	When the temperature exceeds 120 °C, the engine should be stopped and run at low speed to cool down.
30	Electric lock switch	Insert the key, turn it clockwise for one gear to connect the electrical equipment, and then turn it again to start the diesel engine.	The time of one start shall not exceed 15 seconds, and the continuous start shall be intermittent for 30-40 seconds.
31	voltmeter	Indicates the charging and discharging of the battery	When the pointer points to "positive", it means charging and points to "negative", it means discharging.
32	shift control lever	Push forward for first and second shifts, pull backward for reverse shift, middle position for neutral shift.	When the shift control lever is at low speed, pushing forward is first and second shifts, and pulled backward is first reverse shift; When shift control lever is at high speed, push forward is third and fourth shifts, and pull backward is second reverse shift.
33	Reversing lever	Push forward is the forward gear; Pull back is the reverse gear, the middle position is neutral.	
34	Time sheet	Indicates the working time of engine	
35	Variable speed oil pressure gauge	Indicates variable speed oil pressure	1470~1764Kpa (15~18kgf/cm ²) is normal

11. Operation

11.1 The inspection before engine starting

11.1.1 Inspection tour

Warning

Oil leakage or accumulation of flammable materials around high temperature parts (such as muffler or turbocharger) can easily cause fire.

Check carefully, if abnormal phenomenon is found, repair it in time or contact with agent or dealer.

Before starting the engine, check whether there is screw looseness, oil leakage or water leakage around and under the machine.

Check whether the line is loose or has clearance, and whether there is dust at high temperature.

Before starting, check the following items everyday:

1. Check the working device, oil cylinder, connecting rod and hose for damage or clearance.

Check the working device, oil cylinder, connecting rod and hose for cracks, excessive wear or clearance. If abnormal conditions are found, repair them in time.

2. Wipe the dust around and on generator, battery and radiator.

Check for dust around the engine or radiator. At the same time, check whether there are flammable materials (leaves, branches, etc.) around the battery or engine, high-temperature parts such as engine muffler or turbocharger and to remove dust or flammable materials.

3. Check for water or oil leakage around the engine.

Check the engine for oil leakage and the cooling system for water leakage. If abnormal conditions are found, repair them in time.

4. Check the transmission, axle, hydraulic oil tank, hose and connector for oil leakage.

Check for the oil leakage. If any abnormal conditions are found, repair them in time.

5. Check the brake pipes for oil and gas leakage.

Check for the oil leakage. If any abnormal conditions are found, repair them in time.

6. Check whether the tire is worn or damaged and whether the mounting bolt is loose.

Check the tire for cracks, scratches or wear and tighten nuts. If abnormal conditions are found, they should be repaired in time.

If any valve cap is lost, it should be replaced in time.

7. Check whether the ladder and pedal are damaged and whether the bolts are loose.

Check the damaged parts and tighten nuts.

8. Check whether the instruments are damaged and bolts are loosen or not.

Check whether the instruments and monitor in cabin are broken or not. If any abnormal conditions are found, replace the parts and wipe the dust.

9. Check whether the bolts of air filter are loose or not.

Check whether the bolts are loosen or not. Tighten them if necessary.

10. Check for loose battery plates

Tighten loose battery plates.

11. Check the seat belt and facilities

Warning

Even if there is no abnormal phenomenon, they should be replaced every three years.

Notes:

The production date of the safety belt is indicated by the arrow in the right figure.

Check the safety belt fixing bolts and tighten them if necessary.

If the belt is damaged or folded, or the seat belt bracket is damaged or deformed, replace the new belt.

12. Check the bolts of ROPS (if equipped)

Check whether bolts are loosen or damaged or not. If they are loosen, tighten them and if they are damaged, replace them in time.

13. Clean glass

Clean glass so as to keep good visibility.

14. The inspection of tires

Warning

When using worn-out or damaged tires, sudden burst of tires can cause personal injury and death.

For safety reasons, do not use the following tires:

Wear and tear:

- The groove on the tire is lower than 15% of the original groove depth.
- Uneven or stepped wear and tear.

Damaged:

- The damaged part has reached the fabric layer or the fabric layer is broken.
- The fabric layer is cut or pulled out.
- Surface breakaway.
- The rim is damaged.
- Inner tire leak or incorrect repair.
- Deterioration, deformation or abnormal damage.

15. The inspection of rims

Warning

Check the rim and lock ring for deformation, corrosion or cracks.

Check the outer edge, lock ring and rim.

11.1.2 The inspection before starting

Before starting the engine, check the following items:

Check the instruments

1. Insert the key and turn on the power by turning clockwise.
2. The pin of the instrument panel ammeter swings to indicate that the instrument panel is powered on. At the same time, check whether the instruments, switches and lamps are normal.
3. Press the horn button to determine whether the power is sufficient according to the sound level of the horn.

During the inspection before starting, not only the instrument panel should be inspected, but also the routine maintenance items should also be completed.

Check and add cooling liquid.

Warning

Do not open the water tank cover immediately, and check the water level after the engine cools down.

1. Open the water tank cover at the rear of the wheel loader body to check the water level. If the water level is too low, fill it up.

2. After adding water, tighten the tank cover.

3. If there is no water in the water tank, check whether there is water leakage, and then add water to the water tank.

Check the fuel level and fill in the fuel

Warning

When filling fuel, avoid overflow and prevent fire. If fuel spills, wipe it.

1. After the engine stops, open the right door of the hood and observe the oil level through the oil level indicator.

2. Fill the tank through the filler.

3. After adding fuel, tighten the fuel tank cover.

Fuel tank capacity: 108L

Check the oil level in the engine sump tank and refuel.

1. Open the side door of engine hood and determine the position of oil dipstick.

2. Take out the dipstick and wipe off the oil with a cloth.

3. Insert the oil dipstick completely into the oil filling pipe, and then take it out.

4. The oil level on the dipstick should be between the upper and lower marks.

5. If the oil level is above the upper limit mark, drain the excess oil from the drain plug. If the oil level is lower than the lower limit mark, add oil from the oil filler.

6. If the oil level is correct, tighten the oil dipstick cover.

7. Close the side door of the engine hood.

Notes:

When checking the oil level, wait for 15 minutes after the engine stops and then check.

If the machine is uneven, the machine should be leveled first.

Check the electrical circuit

Warning

● If the fuse burns out frequently or there is short circuit in the circuit, check the cause and repair it.

- The accumulation of combustibles around the battery is easy to cause fire, so combustibles should be removed.
- Keep the top surface of the battery clean and check the breathing hole on the battery cover. If there is dust blockage, remove it from the breathing hole.

Check whether there is a fuse in the circuit, or use the fuse with wrong capacitance, check whether there is a short circuit, and check whether the terminal is loose.

Check the circuit of battery, engine and alternator carefully.

During patrol inspection or before engine starting, check around the battery.

Check if there is any inflammable substance. If does, remove the inflammable.

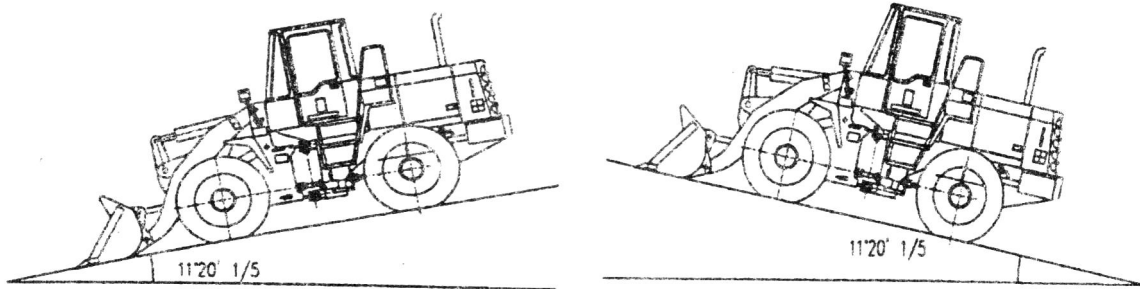
Check the braking effect of the parking brake

Measurement conditions

- Tire inflation pressure: rated pressure.
- Road surface: Dry, paved floor, $1/5$ ($11^{\circ} 20'$) gradient.
- machine: working condition.

Measurement ways:

1. Start the engine so that the body is facing forward, and then climb up the $1/5$ slope with no load.



2. Press the brake pedal, stop the engine, return the reversing lever to the center position, and then the engine stops.

3. Pull the parking brake switch out to the brake position, release the brake pedal slowly and check that whether the wheel loader is in that position or not.

Check braking effect

Drive the wheel loader on the dry cement road at the speed of 20km / h, and check whether the braking distance is less than 9m.

Check the volume of horn and reverse alarm

Check the lamp for flashing, dust or damage

Check the exhaust color and sound

Check instrument

Check the steering wheel clearance and steering operation

Check the rear-view mirror direction and steering operation

Check the direction of the rear-view mirror for dust or damage

Check the tire inflation

Before starting work, when the tire is not hot, measure the inflation pressure with the tire pressure gauge.

Check whether the tires(Tire size 23.5-25) and rims are damaged or not.

Check whether the bolts and nuts of rims are loosen or not.The inflation pressure is as follows:

Tire inflation pressure (kPa): front wheel 392, rear wheel 343.

11.1.3 Adjustment before operation

Warning

- Adjust the driver's seat, park the machine in a safe place and stop the engine.
- Before operation or change the driver, adjust seat.
- When the driver is leaning against the back of the seat, the brake pedal can be fully depressed.
- The seat back angle should not be too large to prevent the back from touching the glass.

Refer to the seat manual for specific seat adjustment.

11.1.4 The inspection before starting the engine

Warning

- If the control lever is accidentally touched, the working device will move suddenly. Therefore, it is forbidden to touch the control lever of the working device.
- Before starting the engine, use a wet cloth to wipe off the dust on the upper surface of the electric transformer, starting motor and alternator.

1. Check whether the shift control lever, shift control lever and high / low speed control lever are in the middle (neutral) or not. If it is not in the middle position, the engine will not start.

2. Check whether the control level of working device is in the middle position or not.

3. Check whether the working hydraulic oil is sufficient.

4. Insert the start key, turn the key to the open position, and check whether the indicator light is on or not.

11.2 starting the engine

Warning

Check for people or obstacles around, then sound the horn and start the engine.

Attention:

Start the engine continuously for no more than 15 seconds. If the engine cannot be started, restart it after 30-40 seconds. If it can't be started for three consecutive times, check the reason and start again. Before starting the engine, you should also read "the Diesel Engine Operation Manual" carefully.

11.3 The inspection and operation after starting the engine.

After starting the engine, do not operate immediately. The following operations and inspections should be completed at first.

Attention:

Do not suddenly increase the throttle until the engine idles for 5 to 10 minutes.

The engine shall not continuously idle or run at high speed without load for more than 20 minutes.

If necessary, idle the engine, gradually load and run the engine at medium speed.

1. Gently step down the pedal, run the engine for about 5 minutes without load at a medium speed.

2. Only in cold areas heating hydraulic temperature should be measured, the method is as follows: in the heating process, check whether the engine speed is stable or not. Continuously pull in / out the bucket retract control lever to increase the hydraulic temperature.

The release time at the bucket retract position shall not exceed 10 seconds.

During this operation, the fluid reaches a safe pressure, which will increase the temperature of the hydraulic oil faster.

3. After the preheating operation, check whether the indication of each instrument is normal.

4. Run the engine under low load until the engine water temperature and torque converter oil temperature reach the normal value.

5. Check for exhaust color, sound or vibration. If there is any abnormality, repair it immediately.

6. Whether the control handle is flexible and reliable.

7. Check whether the steering wheel is loose.

8. Check the brake is reliable or not.

9. Whether the working device is moving normally.

11. 4 Starting the wheel loader

Warning

- Before driving, check the safety around the machine, and then honk the horn before starting. No one is allowed to stand behind the machine. There is a blind spot in the rear of the machine, so you should be very careful when driving.
- When starting the vehicle on the slope, step down the brake pedal and the accelerator pedal, and gradually release the brake pedal to start the machine.

1. Confirm that the shift control lever is in the neutral position and the parking brake handle is in the brake position.

2. Insert the key into the power switch and turn it clockwise to the “on” position.

3. Press the start button, and add a little oil, you can start.

4. The continuous rotation of starting machine shall not exceed 15 seconds. If the machine cannot be started, it shall be started again after 30-40 seconds. If it can't be started for three consecutive times, check the reason and start again.

5. After starting, when the engine idles at low speed for 5 minutes, the readings of all instruments should be normal.

6. Retract the bucket and lift it to the transport position (the bucket pin is about 400mm above the ground).

7. Press the brake pedal, push the parking brake handle to release the brake (the air pressure of the barometer must be above 4kgf/cm²).

8. Switch the control level to the needed position.

9. Put the speed control lever and high and low speed control lever in the required gear, release the brake pedal, step down the accelerator pedal, and then start the vehicle, and the machine can run.

11. 5 Shift gears

Warning

- When moving at a high speed, do not shift suddenly and when shifting gears, use the brake to decelerate and then shift gears.

Follow these steps to shift gears:

Move the shift control lever to the desired position.

When excavating and loading, only use the first or second gear.

Note: when operating the high and low speed control lever, it should be carried out after the wheel loader stops.

11.6 Changing direction

Warning

- When changing direction, check whether the new driving direction is safe. There is a blind spot in the rear of the wheel loader body, so you should pay special attention when changing-over.
- When driving at a high speed, do not change direction.

When changing direction, use the brake to slow down to stop, and then change the driving direction.

11.7 Turning

Warning

- It is very dangerous to turn suddenly when driving at high speed or on steep slopes.
- If the engine is off while driving, do not turn.

It's especially dangerous to turn on the hillside, so don't turn off the engine during driving. If the engine stalls, immediately park the machine in a relatively safe place.

When driving, use the steering wheel to turn.

The front frame and the rear frame of ZL50G loader are connected by the central hinge pin, and the front and rear frames turn at this point. When turning, follow the tracks of the front wheels.

Turn the steering wheel slightly to turn the body. When turning the steering wheel, be careful not to go beyond the end of routine.

11.8 Parking

Warning

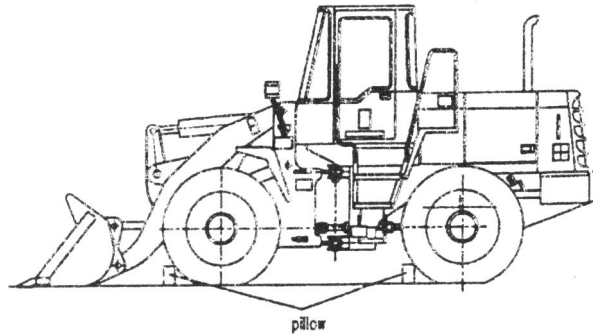
- Avoid sudden stops. When stopping, leave a proper braking distance.
- Don't park on the slope. If you have to stop on a slope, keep the vehicle facing down the slope.
Shovel the bucket into the soil and put wedges under the wheels to prevent the machine from moving. Avoid touching the lever before leaving the cabin.
- Before pulling the parking brake handle to the brake position, the brake pedal shall be pressed continuously to avoid danger.

Attention:

Do not use the parking brake handle when the machine is moving except in an emergency. Use the

handle only after parking.

1. Release the accelerator pedal and press the brake pedal to stop.
2. Move the change-over lever and shift lever to the neutral position.
3. Pull the parking brake handle to the braking position to brake.



11. 9 Operating working device

Use the boom and bucket levers to operate the boom and bucket as follows.

Boom level

Pull backward, boom up, push forward, boom down, push forward to float, middle position is neutral to lock boom.

Bucket level

Push forward, bucket tip over, pull backward, bucket retract, middle position, bucket do not move.

11. 10 Wheel loader operation

11.10.1 Loading,digging and shoveling operation

Warning

When shoveling or digging, the body of the loader should face forward. Do not put it in the steering position.

Attention

The sliding of the tire will reduce the service life of the tire, so the tire sliding should be avoided during operation.

● When loading soil or gravel, the following points should be paid attention to in order to prevent the cutting of tires caused by tire slipping:

○ Keep the working site flat and remove the falling stones.

○ When loading loose materials, operate in gear 1 or 2. When loading materials with large proportion, the first gear should be used.

1. Drive and lower the bucket, stop the bucket 30cm above the ground, and then slowly drop it.

Notes:

If the bucket hits the ground, the front wheels will be off the ground, causing the tires to slide.

2. Shift the gear before approaching the material, step down the accelerator pedal after shifting, and insert the bucket into the material.

3. If the material is loose, level the bucket; If the material is gravel, turn down the bucket slightly.

Pay attention to the debris under the bucket, so as to avoid the front wheel from the ground and slip.

Try to keep the load in the center of the bucket. If the load is on one side of the bucket, it will lose its balance.

4. When inserting the bucket into the material, lift the boom to inserted too deep.

When the boom is raised, the front wheels will produce enough traction.

5. Check whether enough material has been shoveled in, operate the control lever and retract the bucket to fill the bucket.

Notes:

When the bucket is pressed down for digging, the front wheel will slip.

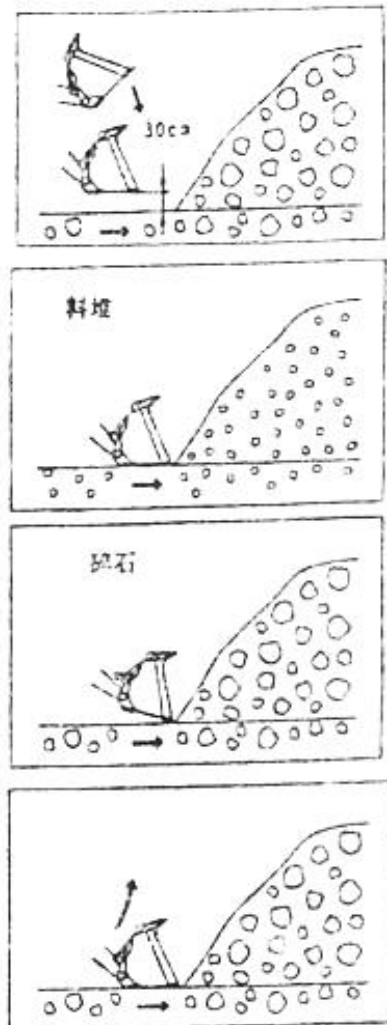
6. If too much material is loaded. Quickly retract and flip the bucket to shake off the excess load. In this way, it can avoid scattering when transporting materials.

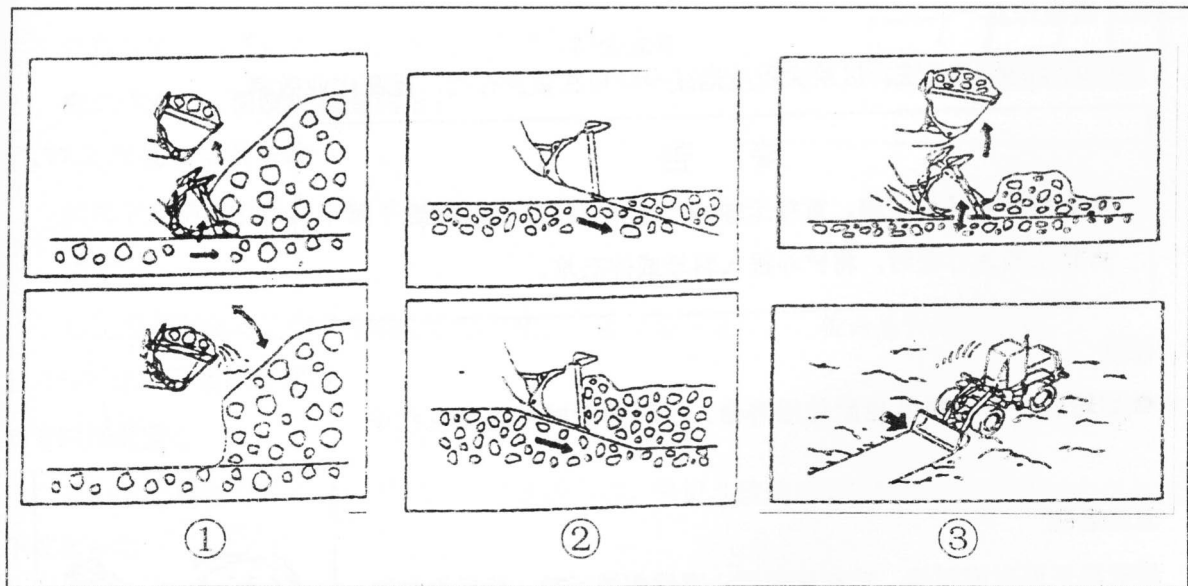
● When shoveling and loading on flat ground, make the bucket edge slightly downward (as shown in the figure) and drive the loader. Pay attention to avoid the load inclining to one side of the bucket and causing imbalance. This operation should be carried out in the first gear.

1. Put the blade slightly down.

2. Front loader, and push the front arm lever. When digging soil, cut in a thin layer at a time.

3. Operate the boom control lever up and down slightly to reduce the resistance of the wheel loader to move forward. When using bucket for digging operation, avoid the shovel digging force acting on the one side of bucket.





11.10.2 Flat ground operation

Attention:

The loader runs in reverse when working on flat ground.

If it is necessary to work on the flat ground, the half angle of the bucket should be greater than 20 degrees.

1.Shovel the soil into the bucket and drive the loader in reverse so that the soil is evenly scattered from the bucket.

2.The bucket teeth are close to the ground, and using rear traction force to spread the soil evenly.

3.The bucket shovels again and the boom floats. Place the bucket on the ground and move the loader back to level the ground.

11.10.3 Pushing operation

Attention

During pushing operation, the bucket cannot be in the unloading position.

When pushing, make the bucket bottom parallel to the ground.

11.10.4 Loading and carrying operations

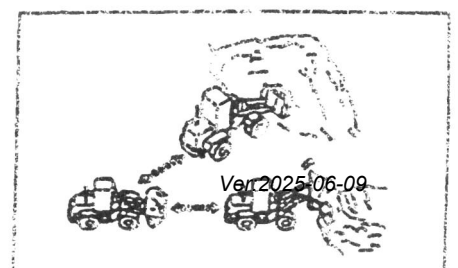
Warning

Drop the bucket to lower the center of gravity during transportation.

The loading and transportation methods of wheel loader include the following cycle processes: shovel loading, transportation and loading (pouring into dump truck, furnace mouth, etc.).

Maintain the transportation route well.

The efficiency of transporting materials between 100m is high,



and the speed should be determined according to the road condition.

During transportation, it is forbidden to lift the boom with load, especially when the site is uneven.

When loading and transportation, refer to “11.18 Tire handling”

11.10.5 Loading operation

Select the appropriate operation method to minimize the number of turns and routine, and improve the operation efficiency.

Warning

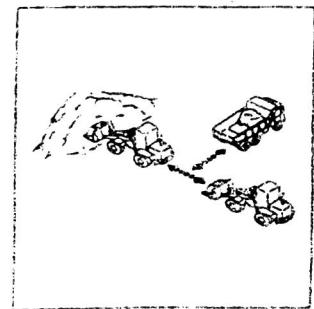
- Keep the working site flat and avoid sharp turning or emergency braking when loading heavy materials.
- It is forbidden to insert the bucket into the material pile or gravel pile when driving at high speed.

Attention

- If the tire slips, the service life of the tire will be reduced, so the tire slipping should be avoided during operation.

Right angle loading

The loader faces the material pile in the front, shovels up the materials, runs in reverse in a straight line, and then moves the loader from the front to the back. Drive the dump truck between the loader and the materials. This method requires a short loading time and effectively shortens the working cycle time.



V-loading

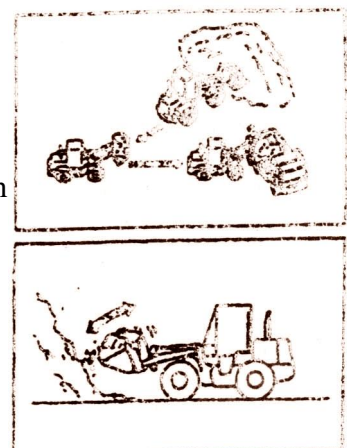
Park the dump truck in place. Make the angle between the loader and the dump truck to the material pile equal 60 degrees. After the bucket is filled, the loader runs in reverse and turns to make it face the dump truck. The loader moves forward and loads the material into the dump truck.

This loading and unloading way has small turning angle and high operation efficiency.

When the bucket is fully loaded and retracted or lifted to the maximum Height. Firstly, the bucket shall be vibrated to make the load stable.

Attention during stacking operation

During stacking operation, pay attention to avoid the rear counterweight iron contacting the ground.



11.10.6 Unloading operation

After the wheel loader approaches the unloading location, lift the bucket to the required height, push the bucket control lever forward to dump the bucket forward. If loading operation is carried out, slowly approach the truck for unloading after lifting the bucket to the unloading height at a certain distance from the truck. During unloading, attention should be paid to the slow down to reduce the impact of materials on the vehicle. When the material is stuck on the bucket, use the control lever back and forth can make the bucket shake and the material will be discharged.

11.10.7 Other operations

The machine can be directly used for bulldozing, leveling, digging, traction, etc; If the corresponding working device is replaced, a variety of operations can be carried out, such as grasping wood, pushing snow and so on.

Note: the assembly of the working device should be approved by the manufacturer or the sales office and under their guidance.

11. 11 Attention to operation

11.11.1 Allowable water depth

When working in pond or swamp, the water depth should not exceed the bottom of axle housing.

After the operation, clean and inspect the lubrication points.

11.11.2 Wheel brake failure

If the machine does not brake after pressing the brake pedal, use the parking brake to stop.

Note: if the parking brake is used after emergency braking, contact the manufacturer or office to check whether there is any fault.

11.11.3 Pay attention when going up and down the slope and lower the center of gravity when turning

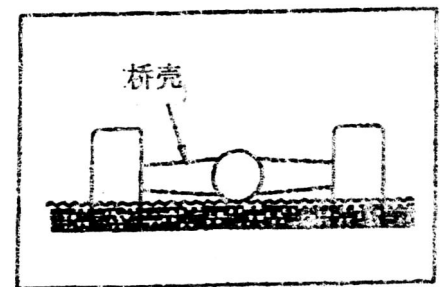
When turning on the slope, the center of gravity of the working device should be lowered first. Place the bucket in the transport position to avoid danger when turning.

Braking when going down slope

If the braking device is frequently used when driving downhill, the braking device will overheat and be easily damaged. In order to avoid this problem, when driving downhill, you should slow down and make full use of the braking force of the engine.

When braking, use brake pedal.

If the transmission control lever is not in the proper position, the torque converter oil will overheat. At this time, the gear should be lowered to reduce the oil temperature.



If the oil temperature indicator does not return to the normal range after the gear is lowered to the first gear, stop the engine, shift to neutral and run the engine at medium speed until the oil temperature indicator returns to the normal range.

Engine stall

If the engine stalls on a slope, fully depress the brake pedal. Then lower the working device to the ground and use the parking brake. Move the reversing control lever and the transmission control lever to the neutral position and restart the engine.

11.11.4 Pay attention when driving

When the machine runs at high speed for a long distance, the tire will overheat, leading to tire wear, so it should be avoided as far as possible. If the machine must be driven for a long distance, the following points should be noted:

- Observe the driving rules of the wheel loader and drive carefully.
- Carefully inspect before start engine.
- Consult the manufacturer or sales office to choose the appropriate tire pressure, driving speed and tire specifications according to the road conditions.
- The standard inflation pressure is as follows: tire inflation pressure (kPa): front wheel 392, rear wheel 343.
- Before starting the engine, check the pressure of hot tires.
- After driving for 1 hour, stop for 30 minutes to check whether the tires and other parts are damaged, and check the oil level and cooling fluid.
- Empty bucket driving.

11.12 Adjust the position of the working device

Warning

Park the wheel loader on a level road and wedge the front and rear wheels.

- Using parking brake.
- Lock the front and rear frames with safety bars.
- After the boom is lifted, no one is allowed to stand under the working device.

The indicator ruler of bucket leveling is mainly used to mark the telescopic length of the tipping cylinder, that is, to mark the tipping angle of the bucket at each position, so that the driver can distinguish the unloading angle of the bucket at the highest position and whether the bucket is leveled at

the lowest position.

11. 13 Parking

Warning

- Avoid sudden stop and leave enough braking distance.
- Avoid parking on slopes. If it is necessary to stop on the slope, make the loader face down, shovel the bucket into the soil, and put wedges under the tires to prevent sliding.
- Before pulling the parking brake handle to the braking position, continuously press the brake pedal to avoid danger.

Attention

When the wheel loader is moving, it is not allowed to use parking brake handle except in an emergency.

Use the handle only after parking.

1. Release the accelerator pedal and press the brake pedal to stop.
2. Put the reversing control lever and shift control lever in the neutral position.
3. Pull the parking brake handle to the braking position to implement the parking brake.
4. Operate the boom lever in order to lower the bucket to the ground.

11. 14 Inspection after operation

During operation, the engine water temperature should not exceed 100 °C , and the torque converter oil temperature should not exceed 120 °C . Observe engine water temperature and torque converter oil temperature through instrument and indicator light during operation. If the engine overheats, don't stop the engine suddenly. Run the engine at medium speed to cool it down and then stop the engine.

11. 15 Engine stall

Attention

Sudden stop the engine before it cooling down will seriously affect engine life. Therefore, unless in an emergency, should avoid suddenly stop the engine.

Especially when the engine is overheated, the engine should be run at a medium speed to make it cool down gradually, and then shut down.

1. Idle the engine for about 5 minutes to allow it to cool down gradually.
2. Pull up the handle to stop the engine.
3. Turn off the power switch and remove the key.

11. 16 Inspection after stopping the engine

Warning

After the operation, the water temperature and oil temperature are very high.

You should wait for the machine to cool before checking.

1. Patrol around the wheel loader, check the working device, machine body, chassis, check for oil leakage, water leakage or air leakage. If there is any abnormality, repair it in time.

2. Remove waste paper and leaves inside the hood.

3. Remove the mud from the chassis.

4. Check the fuel quantity in the fuel tank.

5. Check whether the oil level of engine oil pan is normal.

6. Check the transmission system and the rotating parts for overheating.

7. Check whether the wheel rim, transmission shaft, bolts and locating plates of pin shafts are loose.

8. Check the tire appearance and air pressure.

9. All rotating parts shall be filled with lubricating oil as required.

10. In cold season, drain the cooling water in the water tank (including the heating system) and the engine (except adding antifreeze).

11. 17 Locking

Locking the following parts:

1. Fuel tank cap

2. Hood side cover

3. Doors and windows

4. Battery box cover

11.18 Tire handling

11.18.1 Attention points when handling tires

Warning

If the tire reaches the following service limits, it may explode and cause accidents. For safety reasons, replace the tire with a new one.

●Wear limit

The groove depth on the tire is less than 15% of the original groove depth.

Uneven wear, step wear or other abnormal wear of tire, or exposure of yarn layer.

●Destruct Limit

The external damage extends to the fabric layer, or the fabric layer breaks.

The fabric layer is cut or pulled out.

Tire burst and delamination.

Rims damage.

Contact the manufacturer or sales office when changing tires. It is very dangerous to jack up the machine without preparation.

11.18.2 Tire pressure

Before starting the engine, carefully check the tire pressure.

If the tire pressure is too low, overload will occur; If the air pressure is too high, the tire will be cut or the tire will vibrate or burst. In order to prevent these problems, the inflation pressure should be adjusted according to the requirements of tire inflation pressure (kPa): front wheel 392, rear wheel 343.

$$\text{Deformation ratio} = \frac{H-h}{h} \times 100$$

The tire deformation ratio (deformation / free height) can be visually measured:

Transport normal load: about 15-25%

Shovel and dig operation: 25-35%。

When checking the tire pressure, check whether there is a scratch on the tire, because nails and metal blocks may penetrate the tire.

The service life of tires will be effectively improved by clearing the rockfall on the working site and maintaining the working road.

Attention during loading or transportation.

When continuous loading or transportation operation is needed, the tire should be selected according to the operation conditions or the operation conditions should be selected according to the tire. Otherwise, the tire will be damaged. Therefore, we should contact the manufacturer, sales office or tire distributor to select the appropriate tire.

Tire inflation method (if equipped).

Connect the inflation hose with the machine to the air port to inflate the tire.

Attention

When using the air compressor (to inflate the tires), run the engine at idle speed.

12. Transportation

12.1 Lift trucks

Warning

- The inclined panel should have enough length, width and thickness to ensure the safety of loading and unloading the wheel loader.
- When loading and unloading, park the trailer on a flat and solid road. The wheel loader is a considerable distance away from the roadside.
- Remove the mud sticking to the tire to prevent the loader from sliding to one side of the inclined panel.
- It is forbidden to change the driving direction on the inclined panel. If it is necessary to change the direction, you should leave the inclined panel and drive on the inclined panel after adjusting the direction.

When loading and unloading the wheel loaders, use inclined panel or flat plate, and operate according to the following methods.

1. The towing barring car is braked and wedges are placed under the wheels to prevent movement. The installation position of the inclined panel should be aligned with the center of the tractor and wheel loader. Make sure the two are the same. If the inclined panel sinks obviously during loading and unloading, it shall be reinforced with wedges.

2. Determine the direction of the inclined panel, and then load and unload slowly.

3. The wheel loader is correctly packed at the designated position of the barring car.

12.2 Attention when loading wheel loader

Complete the following work after loading: 12.3.1

1. Slowly lower the work device.

2. Firstly stop the engine, turn the power switch to the off position and remove the key.

3. Lock the front and rear frames with the safety locking bars.

4. The front and rear wheels are padded with wedges and fixed with chain ropes or ropes during transportation.

12.3 Lift wheel loader

Danger

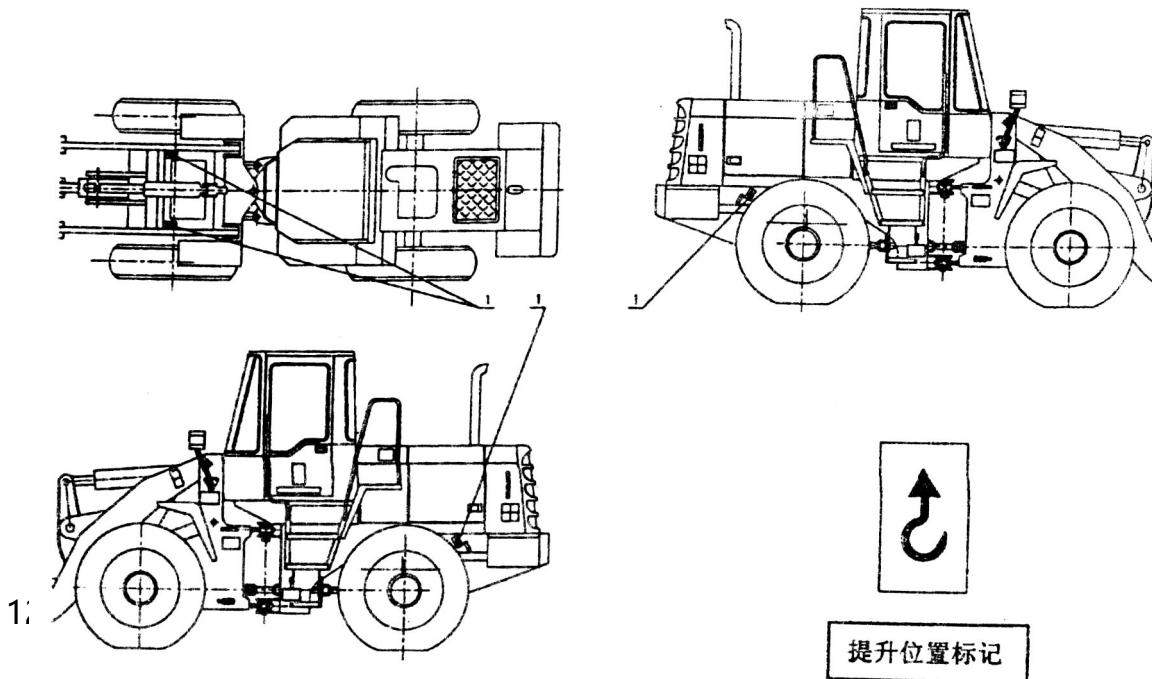
- In the process of lifting, if the rope is not fixed correctly, the wheel loader will slide down, which will cause serious accidents. Lift the loader 100-200 mm, check whether the body is level and whether the rope is loose, and then continue to lift.

- Before lifting, stop the engine, lock the brake and lock the front and rear frames with safety lock bar.

Warning

- When using the crane to lift the loader, the crane driver shall be qualified.
- When lifting, no one is allowed in the wheel loader.
- The lifting rope should have enough strength to lift the wheel loader.
- Lift the wheel loader according to the lifting position specified in the figure below.

12.3.1 The place pasted lifting position safety sign



1. Start the engine, keep the body level, and then move the work device to the transport position.
2. When the engine is off, check the safety around the cab and lock the safety lock bar to prevent the front and rear frames from turning.
3. Install the lifting device on the hooks (marked with lifting mark) at the front of the front frame and at the rear of the rear frame.
4. After the body is off the ground, stop for a while to stabilize the body and then continue to lift.

Warning

When lifting, pay attention to observe whether the hydraulic oil or other components leak or not.

12. 4 Attention during transportation

Warning

According to the height, width and weight of the machine, determine the route of the transport machine.

Observe all transport rules regarding load weight, width and length.

13. Low temperature operation

13.1 Attention at low temperature

The engine is difficult to start when the temperature is low. Antifreeze may freeze, so pay more attention to the following.

13.1.1 Fuel and lubricants

Replace the fuel and lubricating oil suitable for low temperature.

13.1.2 Coolant

Warning

Keep antifreeze away from fire.

Attention

- It is forbidden to use methanol, ethanol and propionaldehyde antifreeze.
- It is forbidden to use leak preventive (whether used alone or in combination with antifreeze).
- It is forbidden to mix different brands of antifreeze.

When replacing or using the coolant, please refer to “the Diesel Engine Operation Manual” or consult the engine manufacturer.

13.1.3 Battery

Weimeng products use maintenance-free battery.

Warning

- Please wear goggles. Explosive gas can cause blindness or injury.
- Keep away from sparks and no fireworks.
- Sulfuric acid in batteries can cause blindness or severe burns.
- If you touch sulfuric acid by mistake, please rinse with water and see a doctor as soon as possible.

13. 2 Protection after operation

In order to prevent the muddy water on the chassis from freezing, it is difficult to start the next morning. Pay attention to the following protective measures:

●Clean up the mud water from the body. To prevent mud water or dirt from entering the seal from freezing and causing damage to the seal.

●Park the machine on solid, dry ground. If there is no such ground, the machine should be stopped on the board, so as to prevent the wheels from freezing on the mud, and it is difficult to start in the second days.

●If there is no antifreeze in the coolant, open the drain valve to drain the water in the cooling system to prevent freezing.

●At low temperature, the starting ability of the battery is obviously reduced, so the battery should be covered or removed and re installed the next day.

●In cold areas, it is better not to park the wheel loader in the open air.

13.3 When the weather is warm

When the weather is warm after cold weather, follow the following instructions:

●According to the different requirements of each component for oil viscosity, change the oil of each component.

●If permanent antifreeze is not required and seasonal (winter) antifreeze is used or no antifreeze is required, drain the water in the cooling system (including the heating system) and completely clean the interior, then add fresh water.

14. Long term storage

14.1 Before storage

When storing the machine for a long time, follow the instructions below:

●After the parts are cleaned and dried, put the machine in a dry room instead of open storage. If it must be stored in the open air, it should be parked on a well drained cement floor and covered with canvas.

●Top up the fuel and lubricating oil, and change the oil before storage.

●The metal surface of the piston rod is coated with a thin layer of grease.

●Disconnect the battery negative wiring, cover or remove the battery from the machine and store it separately.

●Lock and use the parking brake.

14.2 In storage

Warning

If indoor storage is selected, anti rust operation is very important. Doors and windows should be opened to improve ventilation and prevent gas poisoning.

Start the engine once a month and drive the machine for a short distance to cover the surface of moving parts with a thin oil film. At the same time, the battery charges.

Before operation, wipe the grease on the piston rod.

If the air conditioner is installed, operate the compressor for 3-5 minutes every month to lubricate all parts of the compressor. At this time, the engine should run at idle speed, and the refrigerant level should be checked twice a year.

14.3 After storage

Attention

If the machine is not rust-proof after storage, please consult the dealer.

If the machine is stored for a long time, the following operations should be carried out before reuse.

- Wipe out the grease on the piston rod.

- Add oil or grease to all parts.

15. Common malfunction and troubleshooting

15.1 The engine system

Please refer to the attached engine manual for the common causes and troubleshooting of engine faults.

15.2 Transmission system

15.2.1 Low transmission pressure in all gears

Faults features	The solutions
1.The transmission oil level is too low	1.Fill oil to the specified oil level
2.Oil leakage of main oil tank	2.Check and repair
3.The transmission suction screen is blocked.	3.Clean or replace the filter screen
4.The transmission oil pump is damaged	4.Repair or replace oil pump
5.Improper adjustment of pressure valve	5.Readjustment according to regulations

15.2.2 Low transmission pressure in one gear

Faults features	The solutions
1.The piston sealing ring of this gear is damaged.	1.Replace sealing ring
2.The sealing ring in the oil circuit is damaged.	2.Replace sealing ring
	3.Check and eliminate

3.Oil leakage in oil passage of this gear	
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15.2.3 Torque converter oil temperature too high

Faults features	The solutions
1.The transmission oil level is too low 2.The transmission oil level is too high 3.Oil radiator is blocked. 4.Clutch slips 5.Long time of continuous high load operation	1.Fill oil to the specified oil level 2.Drain oil to the specified oil level 3.Clean or replace radiator 4.Maintain and correct the transmission pressure 5.Shutdown cooling

15.2.4 The machine cannot run when it is started

Faults features	The solutions
1.Not engage a gear 2.The transmission valve cannot return to its original position when it is cut off. 3.Low torque converter pressure 4.Low transmission pressure	1.Push to gear or high / low speed shift control lever in place. 2.Remove and inspect the transmission valve and find the fault. 3.Torque converter relief valve 4.Refer to 15.2.1 、 15.2.2

15.2.5 Insufficient driving force

Faults features	The solutions
1.Low transmission pressure 2.Torque converter oil temperature too high 3.The impeller of torque converter is damaged 4.Insufficient engine output 5.The service or parking brakes are not released.	1.Refer to 15.2.1、 15.2.2 2.Refer to 15.2.3 3.Remove the torque converter and replace the impeller 4.Inspect the engine 5.Overhaul the brake system

15.3 The brake system

15.3.1 Insufficient service braking force

Faults features	The solutions
1.Oil leakage of brake cylinder 2.Insufficient air pressure in air system 3.There is oil on the friction plate. 4.The friction plate is worn to the limit.	1.Replace the seal 2.Check the tightness of air compressor, air reservoir and pipeline. 3.Check the cause and remove it 4.Replace new plates.

15.3.2 Unable to shift after braking

Faults features	The solutions
1.Brake valve does not respond. 2.The air valve stem of transmission valve is stuck. 3.Insufficient air pressure in the chamber after cutting off the valve stem.	1.Overhaul, clean and repair. 2.Overhaul, clean and repair. 3.Maintenance of pipeline system.

15.2.3 Brake hub does not release normally

Faults features	The solutions
1.The push rod of the brake valve is not in place, the piston rod is stuck and the return spring is invalid. 2.Brake shoe is not in good position. 3.The clearance between brake shoe and brake hub is too small.	1.Check and adjust or replace damaged parts. 2.Check and eliminate. 3.Recheck and adjustment

15.3.4 The pressure of the air reservoir drops rapidly after stopping

Faults features	The solutions
1.Brake valve intake valve stuck or damaged. 2.Loose pipe joint or broken pipe. 3.The unloading valve is not sealed	1.Brake continuously for several times, blow off dirt or replace valve 2.Tighten the connector or replace the pipe. 3.Check the cause and replace if necessary.

15.3.5 The pressure rises slowly after startup

Faults features	The solutions
1.The air compressor is not working properly.	1.Check the working condition of air compressor.
2.Loose pipe joint	2.Tighten the joint
3.The brake valve or unloading valve is not sealed.	3.Maintenance or replacement

15.3.6 Deviation when braking

Faults features	The solutions
1.The braking torque of left and right wheels is not equal.	1.Maintenance of pipeline and brake
2.The air pressure of left and right wheels is not equal.	2.Inflate at specified pressure

15.3.6 Deviation when braking

Faults features	The solutions
1.Excessive clearance between brake shoe and brake hub	1.Readjust as required
2.There is oil on the brake hub	2.Clean up

15.4 Working devices and hydraulic system

15.4.1 Slow or no movement of lifting arm and rotating bucket

Faults features	The solutions
1.The oil seal of oil cylinder is damaged	1.Change oil seals
2.Oil leakage of pipeline system.	2.Inspect and repair
3.Serious internal leakage of working oil pump	3.Repair and replace the pump.
4.Improper adjustment of safety valve and low system pressure.	4.Adjust the system working pressure to the specified value
5.The suction pipe of the working oil pump is inlet or the oil filter is blocked.	5.Clean the oil filter or replace the oil suction pipe.
	6.Maintenance or replacement.

6.Excessive clearance of work distribution valve.	
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15.4.2 Oil pump suction or oil foaming

Faults features	The solutions
1.Oil level is too low. 2.Oil filter is clogged 3.Oil pump is damaged. 4.The oil suction pipe leaks or the oil seal of the oil pump is damaged. 5.Poor use of oil or deterioration of oil	1. Add oil to the specified oil level 2. Clean the oil filter 3. Repair or replace the new pump 4. Repair or replace the damaged parts 5. Change new oil as required

15.4.3 The oil temperature is too high

Faults features	The solutions
1. Too long working time at full load 2. The system pressure is adjusted too high 3. Insufficient oil level 4. The oil pump is damaged 5. The pipeline is blocked 6. The radiator ventilation duct is blocked by dirt 7. The engine fan belt is too loose and slipping	1. Shutdown for cooling 2. Adjust the pressure according to the specification 3. Refuel according to regulations 4. Repair or replace the new pump 5. Maintenance, cleaning or replacement 6. Check and clean up 7. Adjust and fasten properly

15.5 Steering system

15.5.1 Steering still after steering wheel stops

Faults features	The solutions
1. The valve sleeve of steering equipment is stuck 2. The spring plate of steering equipment is broken	1. Remove foreign matter and repair 2. Replace the spring plate

15.5.2 Hard steering

Faults features	The solutions
1. Insufficient steering oil pressure 2. The steering gear and oil cylinder are worn and have serious internal leakage 3. Pipeline leakage 4. The filter screen or pipeline is blocked	1. Check whether the steering pump works normally 2. Replacement and repair 3. Tighten the pipe joint or replace it 4. Clean the filter screen and check the oil circuit

15.6 Electrical system

15.6.1 The generator does not generate electricity or the voltage is low

Faults features	The solutions
1. Drive belt slipping 2. The commutator is greasy or worn 3. Poor contact between brush and commutator 4. The field coil is open circuit 5. The residual magnetism disappears	1. Adjust the drive belt 2. Wipe with clean cloth and gas oil or smooth with fine sandpaper 3. Check and repair 4. Check external magnetic field wiring and excitation circuit with light bulb 5. Magnetize or replace the generator

15.6.2 The battery is not charged or the current is low

Faults features	The solutions
1. The voltage regulator is damaged 2. Poor contact or open circuit of wire	1. Maintenance or replacement 2. Check the circuit between generator and battery

15.6.3 There is a big spark between generator brush and commutator

Faults features	The solutions
The commutator is seriously worn.	Clean the commutator and remove the impurities between the rectifiers

15.6.4 Generator overheating

Faults features	The solutions
1. The regulating voltage of the regulator is too high 2. Bearing wear or lack of lubricating oil	1. Adjust the voltage of the regulator. 2. Replace bearing or add lubricating oil.

3. Short circuit in commutator or armature coil	3.Overhaul, repair or replace
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15.6.5 The engine is difficult to start

Faults features	The solutions
1. The voltage is insufficient or the battery is damaged 2. The start switch is damaged 3. Poor contact or open circuit 4. There is air in the engine oil	1.Charge or replace new battery. 2.Overhaul or replace new start switch. 3.Check and repair. 4.Exhaust the air in the pipeline.

15. 7 Air conditioning system

15.7.1 Insufficient or no air flow

Faults features	The solutions
1. Abnormal operation of fan 2. The air inlet is blocked 3. Evaporator frosting	1. Check the fan and circuit 2. Remove the blockage 3. Remove frosting

15.7.2 The air flow is normal and the low pressure is too low

Faults features	The solutions
1. Insufficient refrigerant 2. The expansion valve is blocked 3. Evaporator frosting 4. Low pressure pipeline is blocked	1. Add enough refrigerant as required 2. Maintenance or replacement 3. Remove frosting 4. Maintenance or replacement

15.7.3 The air flow is normal and the low pressure is too high

Faults features	The solutions
1. The opening of expansion valve is too large 2. Too much refrigerant 3. The compressor cylinder or output valve is damaged 4. The compressor suction valve is blocked	1. Adjustment or replacement 2. Discharge proper amount of refrigerant from the low pressure side 3. Replace the damaged parts 4. Maintenance or replacement

15.7.4 The air flow is normal and the high pressure is too high

Faults features	The solutions
1. The condenser fan does not work 2. Too much refrigerant 3. The ambient temperature is too high	1. Maintenance of fans and electrical appliances 2. Remove excess refrigerant 3. Shutdown cooling

15.7.5 The air flow is normal and the high pressure is too low

Faults features	The solutions
The refrigerant is insufficient	Add refrigerant as required

15.7.5 The air flow is normal but the heating effect is poor

Faults features	The solutions
1. The hot water valve is damaged 2. Circulating water pipe freezing 3. The circulating water pipe is folded, blocked or leaking	1. Repair or replace the hot water valve 2. Thawing 3. Replace the pipe with a new one

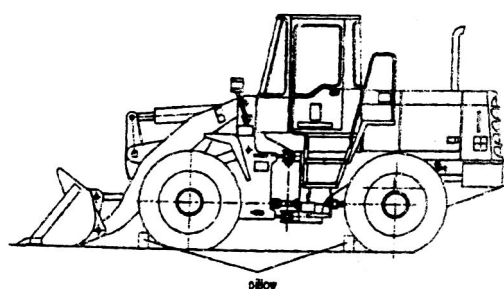
Maintenance

16. Maintenance guide

When testing and maintaining the machine in accordance with the provisions of this manual, it is necessary to carry out in a solid and level site.

Unless otherwise specified, keep the machine in the following conditions before maintenance.

- Lower the working device to the ground as shown in the right figure.
- All levers are in neutral.
- Pull out the parking brake handle.
- put wedges under the front and rear tires.
- Lock the front and rear frames with safety lock bars.



Use accessories from original manufacturer

Use the original parts listed in the parts atlas as replacement parts.

Always use clean hydraulic oil and grease

Use clean hydraulic oil and grease, and keep the container clean without impurities.

Keep machine clean

Always keep machine clean so as to find fault positions easily especially keep the respirator clean to prevent foreign matters from entering.

Be careful of hot water and oil

It is easy to cause personal injury to drain water or remove the filter immediately after shutdown, which should be carried out after the machine is cooled. If the oil needs to be drained at low temperature, it should be heated to an appropriate temperature (about 20-40 °C).

Check whether there are impurities in the oil or filter screen

When change oil or filter screen, check whether there are metal particles and impurities in the oil or filter screen or not. If a huge number of metal particles and impurities are found, the manufacturer or distributor should be informed immediately.

Fuel filter screen

If the machine is equipped with a fuel filter, do not remove it when refueling.

Change oil

When checking and changing the hydraulic oil, the place with less dust should be selected to prevent impurities from mixing in.

Warning signs

During maintenance, hang warning signs at the position of start button or control lever to prevent

others from starting the machine.

Observe safety instructions

Follow the instructions on the safety signs of the machine.

Attention during welding

- Turn off the engine power switch.
- The voltage should not exceed 200V continuously.
- The grounding point is more than 1m away from the welding position.
- Do not weld the oil filled pipe.

Fire prevention

Use a non flammable cloth or light oil and keep it away from fire sources or burning cigarettes.

Sealing surface

When removing O-rings and pads, clean the sealing surface and replace the O-rings and pad again.

Do not forget to assemble O-rings and pads during assembling.

Items in pockets

Don't put loose items in your pocket to avoid slipping out and falling into the machine parts, especially when you need to bend down to work on the machine.

Check the frame

When working in rocky areas, check the chassis for damage, such as whether bolts and nuts, are loose, crack, wear or damaged or not.

Precautions when cleaning the machine

- Do not let the water flow directly the heat sink.
- Do not splash water on any electrical parts.

Inspection before and after operation

Check the tightness of plug and valve before working in mud, rain and snow or beach, and clean immediately after work to prevent rust of parts. The lubrication times shall be increased than usual. If the machine is immersed in water, the pin shaft shall be lubricated every day.

Dusty workplace

The following points should be paid attention to when working on the dusty site:

- Check whether the air filter is blocked, and shorten the cleaning interval of the air filter.
- Clean the inner core of water tank frequently to prevent blockage.
- Clean and replace the fuel filter element frequently.
- Remove dust from electrical components, especially starter and engine.

Prevent oil mixture

It is forbidden to mix different brands of oil. If the brand of oil is different from that of the oil in the machine, it cannot be directly added into the oil tank. Refuel the oil after all the oil in the machine is discharged.

16. Maintenance overview

- Use original accessories.
- When refueling or changing oil, do not mix different brands of oil.
- The oil and coolant used are as follows:

17. 1 Hydraulic oil, fuel, coolant

Oil site	ambient temperature	Lubricating oil specification	Mobil products	Domestic products	Notes
Engine	-40℃	API CH-4, CG-4, CF-4/SJ, SAE5W-40	Mobil Delvac1	5W-40CD diesel engine oil	Recommended oil: Please contact the local office and Shanmeng agent to use the special oil designated by Shanmeng.
	-15℃~50	API CH-4, CG-4, CF-4/SJ, SAE5W-40	Mobil Melvac Super 15W-40	15W-40CD diesel engine oil	
	-20℃~40℃	API CH-4, CG-4, SAE10W-30	Mobil Melvac Super 15W-30	15W-40CD diesel engine oil	
	-15℃~40℃	API CH-4, CG-4, SAE15W-30	Mobil Melvac Super	15W-40CD diesel engine oil	
Transmission	-5℃~40℃	ISOVG46,L-HM46	Mobil DTE25 anti-wear hydraulic oil	YB-N46 anti-wear hydraulic oil	
	-26℃~40℃	ISOVG46,L-HM46	Mobil DTE15Manti-wear hydraulic oil	YC-4N46 Low-pour-point anti wear hydraulic oil	
	-40℃	SAE5W-40	Mobil Delvac1	Mobil Delvac1	
Driving axle	-40℃	SAE75W-90M,API GL-5	Mobil SHC 1 Synthetic Lubricant	85W/90 GL-5	
	-20℃~-40℃	SAE85W-90M,API GL-5 or SAE80W-90M,API GL-5	Mobil Synthetic Lubricant HD80W-90		
Hydraulic system	-5℃~40℃	ISOVG46,L-HM46	Mobil DTE25 anti-wear hydraulic oil	YB-N46 anti-wear hydraulic oil	
	-26℃~40℃	ISOVG46,L-HM46	Mobil DTE15M	YC-4N46	

			anti-wear hydraulic oil	Low-pour-point anti wear hydraulic oil	
	-40°C	SAE5W-40	Mobil Delvac1	Mobil Delvac1	
Air booster pump		DOT4 or DOT3 brake oil conforming to SAEJ703 standard	Mobil Universal Brake Fluid	719 Brake Fluid	
			Mobil Super Heavy Duty Brake Fluid		
Universal grease	Summer	NGL12	MobilgreaseXHP222	Molybdenum Disulfide Lithium Base Grease	
	Winter				
Anti-frost fluid	Below 0°C		Mobil Antifreeze	-35#	
Fuel tank	Above -5°C			0# light diesel oil	
	Below -5°C			-10# or -35# light diesel oil	

17.1.1 Hydraulic oil

●It can be used in engine and working hydraulic system under harsh working conditions (high temperature and high pressure), and it will deteriorate after a period of time.

Use proper hydraulic oil according to the oil grade and temperature range specified in the operation and maintenance manual. Even if the oil is not dirty, change the oil after the specified time.

●Oil is like blood in the human body, so you should be very careful when storing and refueling. Do not let impurities (water, metal particles, dirty things) enter, so as not to cause machine failure.

●Do not mix oils of different brands.

● Add oil according to the specified quantity, too much or too little oil will affect the normal operation of the machine.

● If the oil in the working device is not clear, it may be water and air mixed in, then consult the manufacturer or dealer.

●The oil filter should be replaced when changing oil.

●We suggest that the oil should be analyzed regularly to check the condition of the machine. If you need this kind of service, please consult the manufacturer or dealer.

17.1.2 Fuel

●The fuel pump is a precision part. If water contained or unclean fuel is used, the normal operation

of the fuel pump will be affected.

- Pay special attention not to mix impurities during storage or refueling.
- Only use the fuel specified in the operation and maintenance manual.

With the change of temperature, the fuel may solidify (especially at - 15 °C), so the appropriate fuel must be selected according to the temperature.

● In order to prevent the water vapor in the air from condensing in the oil to form water droplets, the oil tank should be filled after one day's work.

● Drain the water and sediment from the oil tank before starting the machine or 10 minutes after adding oil.

- When the engine runs out of fuel or changes the filter, be sure to exhaust the air in the oil circuit.

17.1.3 Coolant

● There are a lot of calcium and other impurities in the river water, so there will be scale accumulated in the engine and water tank after use, which causes poor heat dissipation and overheating.

Do not use undrinkable water as coolant.

● When using antifreeze, please refer to the instructions in “The Diesel Engine Operation and Maintenance Manual”.

- Antifreeze is flammable, so keep away from sparks or fire sources.

● The proportion of antifreeze and water varies with the temperature. For the detailed mixing proportion, please refer to the instructions in “The Diesel Engine Operation and Maintenance Manual”.

- When the engine overheats, it should be cooled before adding coolant.

● If the coolant liquid is too low, it will lead to overheating and failure due to air corrosion of the coolant.

17.1.4 Grease

- Grease is used to prevent twisting and noise at the joint.

- After a long time of use, the parts that become stiff should also be greased and lubricated.

● When adding lubricating grease, wipe out the extruded old grease, especially the grease mixed with sediment, so as to prevent the wear of rotating parts.

17.1.5 Hydraulic oil and fuel storage

- Store indoors to prevent water, dust or other impurities from mixing in.

● When storing oil in the oil tank for a long time, put the oil tank on the side so that the oil inside is on the side (to prevent air inhalation from entering). If it must be stored outdoors, it should be covered with waterproof material or other protective measures.

- To prevent the oil stored for a long time from deteriorating, the oil oil should be used at first.

17.1.6 Filter

●Filter is an important safety part to prevent impurities in oil or gas path from entering into other important parts to cause failure.

Replace all filter elements periodically. See “Operation and Maintenance Manual” for details.

In bad working conditions, the replacement cycle should be shortened according to the oil used.

●It is forbidden to use the cleaned filter element. Replace it with a new one.

●When replacing the filter, check whether the filter has metal particles. If found, please consult the manufacturer or dealer.

●Only when the filter element is replaced can the package be opened.

●Always use original filter elements.

17.2 Electrical system

●If the wire is wet or the insulation layer is damaged, this will cause the electric leakage of the circuit system, which will lead to extremely serious faults, and the maintenance items related to the electrical system are very important.

I.Check the tension of generator belt.

II.Check the generator belt for damage or wear,

III.When repairing electrical system or welding, disconnect the negative pole of battery and generator to block current.

●Do not disassemble any electrical parts of the machine.

●Except for the regulations of the manufacturer, it is forbidden to add any electrical parts.

●Do not splash water on the electrical system in rainy days or when cleaning the machine.

●When working on the beach, keep the electrical system clean to prevent corrosion.

●The additional power source shall not be connected with fuse, starting switch and relay.

18. Attached spare parts list

Wearing parts such as oil filter element, air filter element, bucket teeth and movable cutting edge should be replaced during regular maintenance or before reaching the wear limit.

It should be replaced correctly to ensure the economy of use.

Original accessories from the manufacturer shall be used for replacement.

When ordering spare parts, please refer to the part number in the parts catalogue.

Note: relevant O-rings and washers need to be replaced at the same time.

For the list of wearing parts, please refer to “the Attached Spare Parts List of ZL50G Wheel Loader” in “the Attached Technical Documents”.

19. Tightening torque of random tools and bolts

19.1 The introduction of necessary tools

For the list of attached tools, please refer to “the Attached Spare Parts List of ZL50G Wheel Loader” in “the Attached Technical Documents”.If the attached tools are damaged, please go to the manufacturer or dealer to order.

19. 2 Firmness moment

According to the grade diameter of different bolts and nuts, refer to the torque table specified in “the Mechanical Design Manual” to strengthen the bolts and nuts.

If need to replace bolts and nuts,use original accessories.

Note:When tightening the plastic stuff for fixation on the instrument panel or other parts, be careful not to use too much force to avoid damaging the plastic parts.

20. Replace key safety parts regularly

In order to ensure the safety of the machine in all aspects, the user must carry out regular maintenance. In addition, in order to further improve the safety, users must replace some parts regularly according to the table below, so as to ensure the safety of parts and prevent fire.

With the passage of time, the materials of these parts will be bent, easy to wear and deterioration. However, their condition can be determined by simple regular maintenance, so they must be replaced regularly to ensure good condition.

If abnormal parts are found before regular replacement, they should be replaced immediately.

If it is found that the hose clamp is deformed or cracked, the clamp and hose shall be replaced at the same time.

When replacing hose,the O-rings and pads or other related parts should also be replaced.

Ask the dealer to help replace the safety parts.

Key safety parts

No.	Key safety parts	Quantity	Replacement cycle
1	Filter element of hydraulic oil tank	1	Each year or 2000 hours,whatever occurs first
2	Fan belt	1	
3	Hose (Fuel tank -- injection pump)	1	
4	Oil return pipe(injection pump--fuel tank)	1	Every 2 years or 4000 working hours, whatever occurs first
5	Hose (injection pump--fuel filter)	1	
6	Hose (fuel filter--injection pump)	5	
7	Oil overflow pipe (between nozzles)	1	
8	Fuel overflow pipe cover	4	
9	Steering hose (steering gear--steering cylinder)	2	
10	Steering hose(Steering gear--single-channel stable shunt valve)	1	
11	Steering hose(single-channel stable shunt valve--fuel tank tie-in)	1	
12	Steering hose(steering gear--pump)	1	
13	Braking hose(air reservoir--air brake valve)	1	
14	Braking hose(air reservoir--hand braking valve)	1	
15	Braking hose(front and rear axle tee joint--booster)	1	
16	Braking hose(booster--air brake valve)	1	
17	Braking hose(air brake valve--pneumatic stop valve)	1	

18	Braking hose(hand brake valve--pneumatic stop valve tee joint)	1	
19	Braking hose(hand stop valve tee joint - barometer)	1	
20	Braking hose(pneumatic stop valve--transmission)	1	
21	Braking hose(pneumatic stop valve--parking brake chamber)	1	
22	Air reservoir	1	Every 3 years or 6000 hours,whatever occurs first.

21. Maintenance schedule

21.1 Maintenance schedule

Service Items
First 250 working hours
Change engine oil and oil filter
Clean the oil return filter element of the hydraulic oil tank
Maintain if necessary
Check, clean and replace the air filter element
Clean the inside of the cooling system
Check and refuel the transmission oil
Check and refuel driving axle oil
Check the drive axle respirator
Clean the radiator
Replace bucket teeth
Check A/C (if equipped)
Check air conditioning compressor (if equipped)
Lubricate working device control valve connectors
Replace the damaged fuse
Check tires
Necessary inspection before each operation
Check warning instrument
Check the coolant level and add water if necessary
Check the fuel level and remove the water and impurities from the primary fuel filter on the engine.
Check the engine oil pan level and add oil.
Check the electrical circuit
Drain water from the air reservoir
Check the parking brake
Check brake
Check the honk and reversing lights

Check the brightness, dirt or damage of the lamp
Check the tire pressure
Add grease to the transmission shaft according to the lubrication and maintenance diagram of the whole machine.
Maintenance every 50 working hours or every week
Check transmission oil level
Check the oil level of brake booster
For the first 50 working hours, check the clearance between the brake shoe and the brake hub of the parking brake, and adjust it if necessary. Check them every 250 working hours.
Check the transmission control system and adjust it if it is not suitable.
According to the instructions of the lubrication and maintenance diagram of the whole machine, grease the hinge points of the front and rear frames, the front, middle and rear transmission shafts, the swing frame, the transmission shaft support and other lubrication points.
Check and tighten the steering wheel nuts
Lubricate throttle control
Tighten all bolts of transmission shaft
Drain water and sediment from fuel tank
Maintenance every 100 working hours or two weeks
Check oil level of hydraulic tank
Clean the engine cylinder head
Check the battery and apply a thin layer of Vaseline to the connector
Clean water radiator and oil cooler
Clean refueling filter screen of oil tank
Clean refueling filter screen of fuel tank
Maintenance every 250 working hours or one month
Change the engine oil and oil filter element in the first 250 working hours, and then change the engine oil and oil filter element every 500 working hours.
Check the oil level of front and rear driving axles
Clean the oil return filter element of the hydraulic system every 250 working hours, and then replace the oil return filter element of the hydraulic system every 1000 hours
Check the intake system of engine
Visually check the air filter service indicator. If the yellow piston of the indicator rises to the red area, clean or replace the air cleaner element.
Check and tighten rims and bolts
Check whether the weld of working device, front and rear frame, swing frame of each stress are

crack, and the fixed bolts are loose or not.
Check the tightness of fan belt and engine belt and adjust them.
Check and adjust air conditioning compressor belt (if equipped)
Lubricate pin shaft, fan shaft and transmission shaft of working device
Maintenance every 500 working hours or three months
Replace fuel filter element
In the first 500 working hours, clean the transmission oil bottom filter element, transmission oil filter element, and clean the transmission oil bottom. Change the oil in the transmission, torque converter and radiator. After that, change the oil and the filter element of the transmission system every 1000 working hours.
Tighten the connecting bolts between the front and rear axle and the frame.
Check whether the fixing bolts of the hinge pin of the frame are loose or not.
Clean oil filling and oil absorption filter element.
Clean the gauze in the respirator of air booster pump.
Maintenance every 1000 working hours or six months
The return oil element (element on the oil tank) must be replaced
The transmission oil must be replaced, the transmission oil filter element must be replaced, and the transmission oil bottom oil suction element must be cleaned. Clean the transmission and torque converter respirator.
Clean the filter element of pilot hydraulic system
Replace or clean the oil tank filler cap and oil tank air filter
Lubricate all drive shafts and drive shaft center supports
Check the firmness of engine intake and exhaust pipes
Check the engine valve clearance
Clean fuel tank
Tighten fixed bolts of all batteries and clean the top of the battery
Maintenance every 2000 working hours or one year
Change hydraulic and filter element and check oil suction pipe
Replace the oil tank respirator
Change the axle oil
Check the wear of brake disc.
Check the working condition of the service brake system and parking brake system, and remove and check the wear of friction plate if necessary
Clean and check the seal and spring of the brake booster, change the brake oil and check the brake

sensitivity
Check the sealing of distribution valve and cylinder by measuring the natural settlement of the cylinder
Check the generator and start the motor
Clean and check the turbocharger
Check engine shock absorber
Check the flexibility of the steering system
Maintenance every 2400 working hours
Check the water pump and other parts
Check cooling system

22. Maintenance procedures

22. 1 The maintenance of the first 250 hours

After using the machine for 250 hours, the following maintenance should be carried out.

- Engine oil and oil filter
- Clean oil return filter of hydraulic tank

For details of replacement and maintenance methods, see "maintenance 500 hours" and "maintenance every 2000 hours".

22. 2 Maintenance if necessary

22.2.1 Inspect, clean or replace air filter

Warning

- When the engine is running, do not clean or replace air filter.
- When cleaning this part with compressed air, wear glasses or goggles to protect your eyes.

Inspection

When the air filter is blocked, clean the air filter.

Clean or replace outer air filter

1. Remove the nut (2) and cover (3) and take out the outer core
2. Clean the inside of air filter
3. Dry compressed air ($< 0.6\text{MPa}$) is used to directly blow the filter element along the groove from the inside (outside), then from the outside (inside) groove, and finally

from the inside to the outside.

○When cleaning the outer filter element, remove a sealing ring from the outer filter element.

○The outer core should be replaced after repeated washing for 6 times or using for 2 months, and the inner core should be replaced at the same time.

○If the cleaning requirements are not met after cleaning, the inner and outer cores should be replaced (even if the outer core is cleaned less than 6 times).

○Check the inner core assembly bolts for looseness and tighten them if necessary.

○If the sealing pads or butterfly nut is damaged, it should be replaced in time.

Note:

After cleaning and drying, use the electronic sensor plug to detect the filter element. If small holes or thinned parts are found, replace the filter element.

Avoid collision when cleaning the filter element.

Do not use a filter element with damaged grooves, gasket or sealing ring.

Replace the inner core

1. First take out the outer core, then take out the inner core.
2. To prevent dust from entering, cover the air connector (outside) with clean cloth or adhesive tape.
3. Clean the inner side of the air filter body, and then remove the tape covering the air connector.
4. Install the new inner core on the joint and fasten it with nuts.
5. Install the outer core.

When using the next way to cleaning, accessories are needed.

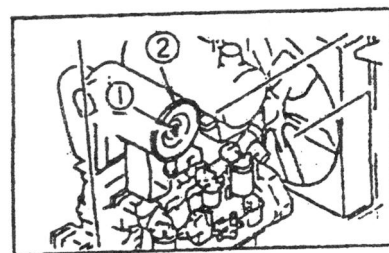
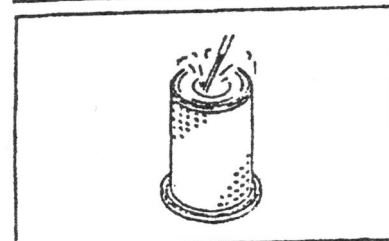
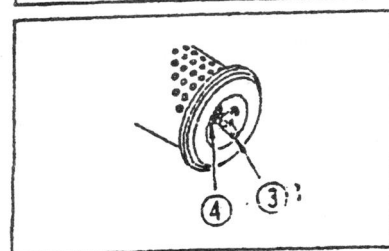
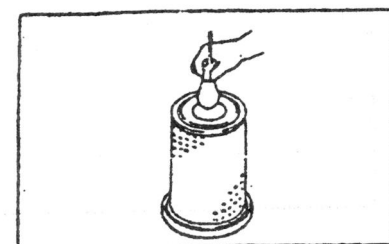
Water

Use tap water ($< 0.29\text{mpa}$) to wash along the groove from the inside to the outside, then from the outside to the inside, and finally from the inside to the inside. After drying, check.

Use cleaning agent

Clean the oil and dirt on the filter element with a mild solution of neutral detergent, then rinse it in clean water and dry it in the air.

Dry compressed air can also be used to accelerate drying from inside to outside ($< 0.69\text{mpa}$).



Do not heat the filter element.

Warm water (about 40 degrees) is more effective than soapy water.

22.2.2 Cleaning the inside of cooling system

Warning

- When the engine just stalled, the water temperature is very high. After cooling, drain the water.
- Because the cleaning is carried out when the engine is running, because the machine may move suddenly, it is very dangerous to get under the machine. When the engine is running, it is strictly forbidden to get under the machine.
- It is forbidden to remove the radiator cap under the working temperature of the engine. Under the working temperature, the coolant pressure is very high, and the boiling water and steam splashed from the radiator will cause casualties. After the engine cools down, slowly loosen the water tank cover to release the pressure.

- When cleaning or replacing the coolant, park the machine on a flat road surface.
- Use permanent antifreeze.
- If permanent antifreeze cannot be used in some seasons, antifreeze containing ethylene glycol should be used.

Clean the inside of the cooling system and change the coolant according to the following requirements.

Type of coolant	Clean the inside of the cooling system and change the coolant
Permanent antifreeze(all seasons)	Every year (Autumn) or every 2000 hours, new wheel loader
Non permanent antifreeze (including ethylene glycol) (winter, one season)	Every 6 months (spring, autumn) (antifreeze is released in spring and added in autumn)
When antifreeze is not used	Every 6 hours or 1000 hours, new machine

- The proportion and use of antifreeze refer to the engine operation and maintenance manual or consult the engine manufacturer.

Warning

Antifreeze is flammable and should be kept away from fire source.

● Tap water is used as cooling water.

(If it is necessary to use river water, well water or other water sources, please consult the agent.)

● It is recommended to use antifreeze densimeter to control the mixing proportion.

1.Engine off

2.After the engine cools down,slowly loose the radiator cover to release pressure and slowly remove it.

3.Prepare the container of cold water, then open the drain valve (lower side of radiator) and drain plug (side of cylinder block) to drain the cooling water.

4.After drain the cooling water,close valve and plug screw and then add tap water.

5.After the radiator is filled with running water, start the engine and run at idle speed. Find the open water valve and plug, idle the engine and let the cooling water flow in the system for 10 minutes. At the same time, adjust the speed of water inlet and discharge to make the radiator filled with water all the time.

6.When the cooling water run in the system,observe carefully and note that the water inlet hose does not need to be connected to the water inlet of the radiator.

7.After cleaning,open the drain valve and plug to drain all cooling water. Close the drain valve and plug, and add clean water slowly.

8.When the water level is close to the water inlet, open the drain valve and plug, and run the engine at idle speed to make the cooling water continue to flow thoroughly in the system until the colorless clean water flows out.

At the same time,adjust the speed of water in and out to make sure that the radiator is full of water all the time.

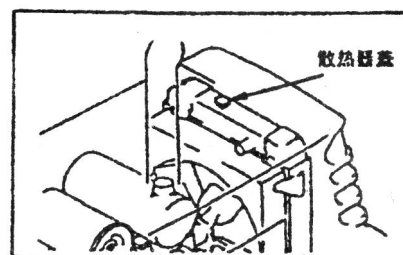
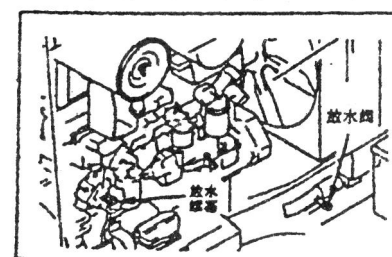
9.After the water is completely clean,stop the engine and close drain valve and plug.

10.Adding cooling water until overflow from water inlet.

11.In order to release the air in the cooling water, the engine runs at idle speed for 5 minutes, then runs at high speed without load for 5 minutes, and opens the radiator cap at the same time.

12.Drain the coolant from the water tank, clean the inside of the water tank, and then fill in the coolant until the coolant level reaches between the upper limit and the lower limit.

13.Stop the engine, wait for about 3 minutes, add cooling water to make the water level close to the water inlet, and then tighten the tank cover.



Note: As the engines of the same type of wheel loaders are different, it is necessary to refer to the engine operation and maintenance manual or consult the engine manufacturer when using, maintaining and repairing.

22.2.3 Check transmission oil level and add oil

Warning

- When checking the oil level, apply the parking brake. The front and rear frames are locked with safety bars and pins.
- After the operation, the oil temperature is very high. Before check the oil level, wait for cool down.

If there is oil on the transmission case, complete the following checks:

1. Starting the engine and run it at least 5 minutes.
2. Observe the oil dipstick to make the oil level between the upper and lower limits of the oil dipstick.
3. If the oil level is lower than the lower limit, add oil through the oil filler.
4. The oil level is higher than the upper limit. Drain the excess oil through the drain plug and check the oil level again.

22.2.4 Check axle oil and add oil

Warning

- When checking the oil level, use the parking brake. The front and rear frames are locked with safety bars and pins.
- After the operation of wheel loader, the oil temperature is very high. Before checking the oil level, wait for the cooling down.

If there is oil on the transmission case, complete the following checks:

Check on the flat ground.

(If the road has a slope, the oil level cannot be checked correctly)

1. Stop the engine and check for oil leakage.
2. After confirming the oil leakage, add oil to the original oil level or consult the axle manufacturer.

22.2.5 Clean the axle housing respirator

Warning

- When checking the oil level, use the parking brake. The front and rear frames are locked with safety bars and pins.

Brush off the soil around the respirator.

Clean the respirator at the front and rear positions.

22.2.6 Cleaning radiator

If there is dirt on the radiator, clean it with the following methods.

1.Remove the bolts and remove the rear guard from the rear of the machine body. Also remove the rear work light connector.

2.Use compressed air to clean the soil and leaves on the radiator, or use steam or water instead of compressed air.

3.Check the rubber hose at the same time. If there is crack or age hardening on the hose, replace it with a new one. In addition, the loose pipe clamp should be tightened.

22.2.7 Replace bucket teeth

Warning

When adjusting or replacing the bucket teeth, if the working device moves, it will be very dangerous. So the working device should be set at a certain position and the engine should be stopped.

22.2.8 The inspection of A/C system(if equipped)

Check the refrigerant level(gas state)

Check twice every year(spring and autumn)

Warning

If the liquid refrigerant splashes into the eyes or hands, it may cause blindness or frostbite, so it is strictly forbidden to loosen the parts on the refrigerant pipeline.

In reverse season, for lubricating all parts of the compressor, it should be run for 3-5 minutes every month, and the engine idles.

It is forbidden to clean the condenser with a steam cleaner, otherwise the condenser will be heated and cracked.

If the air conditioner condenser is stained with soil and dust, clean it with water.

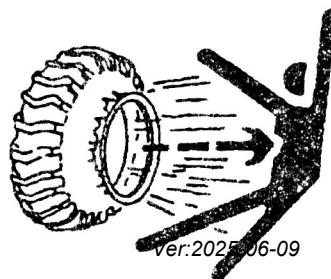
If the water pressure is too high, the radiator may be deformed. When cleaning with a high-pressure cleaning machine, it is necessary to keep a proper distance away from the water flow.

For other maintenance, cleaning and precautions of the air conditioning system, refer to the operation and maintenance manual of the air conditioner equipped with the wheel loader.

22.2.9 Choose and check tires

Warning

If the treatment of the tire or rim is not correct, the tire will burst or



damage, and the rim will burst and collapse, causing serious casualties.

- The maintenance, disassembly, repair and assembly of tires and rims need special tools and techniques.

- It is forbidden to heat or weld the rim with tire, and keep away from fire source.

Choose tires

Warning

Choose the tire according to the working conditions and the selected accessories. Use only the specified tires and observe the air pressure regulations.

Choose the tire according to the working conditions and accessories.

Tire size also affects machine speed. Consult the manufacturer or sales office to select tires.

Choose the air pressure of tires and inflate

- When the tire is inflated, ensure that no one enters the working area. The chuck with pipe clamp is used to fix it on the valve. During inflation, check the inflation pressure to prevent the pressure from rising too high. If the tire is not assembled properly, it may break and burst when inflated. In order to ensure safety, the safety net should be installed around the tire, and people should not face the rim, but face on the side of the tire pattern when inflating tires.

- Abnormal drop of inflation pressure and abnormal assembly of rim may cause accidents. Please repair by professionals.

- Observe the specified inflation pressure.

Observe

Before work, when the tire is not hot, use the tire pressure gauge to measure the air pressure.

Tires inflation

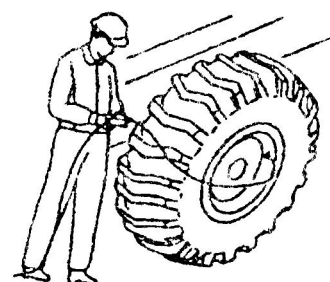
When adjusting the inflation pressure, use the chuck which can be installed on the valve. It is forbidden to face the rim, and it should work on the side of the tire pattern.

The following is the correct inflation pressure.

Inflation pressure of standard tires (front and rear wheels)

Tire size: 23.5-25

Tire inflation pressure(Kpa):front wheel:392 rear wheel:343



22. 3 Inspection before starting

Refer to “12.12 inspection before starting”

22. 4 50 Working hours maintenance

22.4.1 Check transmission oil level

Warning

- When checking oil level, use park brake and the front and rear frames are locked with safety bars and pins.
- After operation, the oil temperature is very high. Before checking the oil level, wait for the cooling down at first.

If there is oil stain on the transmission case, complete the following checks:

1. Starting engine and the engine should idle at least 5 minutes.
2. Observe the oil level to make the oil level in the middle.
3. If the oil level is lower than the lower limit, add oil through the filler.
4. If the oil level is higher than the upper limit, drain the excess oil through the drain plug and recheck the oil level.

22.4.2 Check oil level height of brake booster

Warning

- When check oil level, use parking brake.

Park the whole machine on the flat ground, put the shift lever in the middle position, and implement the parking brake. When the engine is off, check the brake fluid in the reservoir of adder in the front frame.

22.4.3 For the first 50 working hours, check the gap between the brake hubs of the parking brake and adjust if necessary. Then check every 250 working hours.

Warning

- During the inspection, stop the engine and put the bucket on the ground. The front and rear frames are locked with safety bars and pins.

22.4.4 Check the transmission control system and adjust it if it is not suitable

Warning

- During the inspection, stop the engine and put the bucket on the ground. The front and rear frames are locked with safety bars and pins.

22.4.5 According to the lubrication and maintenance diagram of the whole machine, grease the hinge points of the whole front and rear frame, the front, middle and rear transmission shafts, the swing frame, the transmission bearing support and other lubrication points.

22.4.6 Check and tighten the nuts of steering wheel

Warning

- During the inspection, stop the engine and put the bucket on the ground. The front and rear frames are locked with safety bars and pins.

22.4.7 Lubricate throttle control

Remove one end of the throttle flexible shaft and add proper amount of grease to the inside.

22.4.8 Tighten all bolts of transmission shafts

Warning

- During the inspection, stop the engine and put the bucket on the ground. The front and rear frames are locked with safety bars and pins.

22.4.9 Drain water and impurities from the fuel tank

Loosen the oil drain bolt at the bottom of the oil tank to make the water and impurities flow out together with the fuel.

22. 5 Maintenance of 100 working hours

At the same time complete maintenance of 50 working hours.

22.5.1 Check hydraulic oil level and add oil

Warning

- When the oil cap is removed, the oil may spill. Therefore, when the engine stops and the oil temperature cools down, slowly turn the oil tank cap to release the internal pressure before removing the oil cap.
- Ensure that the oil level is higher than the upper limit mark, shut down the engine, and drain the excess oil through the drain plug after the oil cooling down.

1. Lower the bucket to put it flatly on the ground. After the engine is off, after 5 minutes, observe the oil level through the observation hole (g), and determine that the oil level is between the upper and

lower limit.

Note

1.The oil level should not be higher than the upper limit mark, otherwise, the hydraulic device will be damaged and the oil will splash out.

2.If the oil is lower than the lower limit, open the observation cover on the ladder and add oil through the oil filler.

22.5.2 Clean the engine cylinder head

Warning

After operation,the temperature of the machine is very high and clean it after cooling down.

22.5.3 Check the battery and apply a thin layer of Vaseline to the joint

Warning

- In order to avoid gas explosion,keep a distance from fire source or sparks.
- If the electrolyte is dangerous, such as splashing on eyes or skin, wash it with plenty of water and consult a doctor.

22.5.4 Clean water radiator and oil cooler

If there is dirt on the radiator, clean it with the following methods:

1.Remove the bolts,the rear guard net from the rear of the car body and the rear work light connector .

2.Use compressed air to clean the soil and leaves on the radiator, or use steam or water instead of compressed air.

3.Check the rubber hose. If there is crack or aging hardening on the hose, replace it with a new one. In addition, tighten the loose pipe clamp.

22.5.5 Clean the refueling filter screens of oil tank and diesel tank.

Remove the refueling filter screens of oil tank and diesel tank respectively, and clean them with clean diesel oil.

22. 6 Maintenance of 250 working hours

Complete the maintenance of 50 working hours and 100 working hours.

22.6.1 Change engine oil and oil filter element

Warning

After operation, the temperature is very high and change oil after cooling down.

Preparation:

- Oil receiving container: minimum 19L capacity.
- Oil filter wrench

Replace the oil in the oil pan and the filter cartridge. For details, refer to the engine operation and maintenance manual of the loader. If the metal particles or impurities are too high, consult the manufacturer or sales office. After replacing the filter cartridge, add oil through the oil filler until the oil level mark on the oil dipstick is between the upper limit and the lower limit. The engine idles for a short time, and then stop the engine. Check whether the oil level mark on the oil dipstick is between the upper limit and the lower limit.

For details, refer to "23.3 inspection before starting"

After the wheel loader has been working for 6 months, even if the working hours are less than 250 hours, the filter element should be replaced

Likewise, after the wheel loader has been working for 250 hours, even if it is less than 6 months, the filter element should be replaced.

22.6.2 Check the oil level of front and rear driving axle

Warning

- When checking the oil level, apply the parking brake. The front and rear frames are locked with safety bars and pins. After the operation, the oil temperature is very high. Before checking the oil level, you should first wait for the cooling down.

If there is oil stain on the axle housing, complete the following inspection work:

1. Check on level road surface.

(if there is a slope on the road, the oil level cannot be checked correctly)

2. Stop the engine and check for oil leakage.

3. After confirming the oil leakage, add oil to the original oil level or consult the bridge manufacturer.

22.6.3 Clean the oil return filter element of hydraulic system

Warning

After operation, the oil temperature is very high. Change the oil after it cools down. Turn the oil cap slowly to release the internal pressure and

then remove the oil cap.

1.Raise the boom and keep the bucket in the retract position, and counter the boom with a bracket to prevent the working device from falling. Put the work unit control in neutral. Use parking brake and stop engine.

2.Screw out the assembly bolts on the two oil filter covers on the side of the oil tank and remove the cover. The cover may spring up due to the action of the spring. When removing the bolts, hold the cover down.

3.Take off the spring and then the filter.

4.Clean the filter element with clean diesel oil.

5.Install the cleaned filter element, spring and cover.

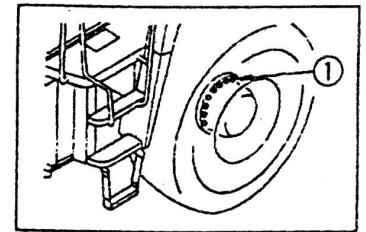
6.When assemble and cover bolts, press and hold the cover, and tighten the bolts evenly.

7.Check the oil level and add oil to the specified oil level, refer to “22.5 maintenance 100 working hours”

8.Check the oil filter cover assembly for oil leakage.

22.6.4 Check the intake system of the engine

Visually check the engine air intake system, whether the connection parts are loose.



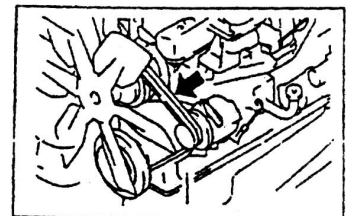
22.6.5 Visually check the air filter service indicator. If the Yellow piston of the indicator rises to the red area, clean or replace the air cleaner element.

22.6.6 Check whether the hub nut is loose, and tighten the loose nut

If the hub nut (1) is loose, it will increase the tire wear and may cause accidents.

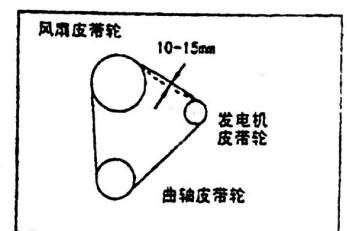
1. Check whether the nut is loose, firm if necessary, and if it is loose, Screw the nut in the tightening direction for inspection.

2. If there is a broken stud bolt, replace all stud bolts of the wheel.



22.6.7 Check whether the welding seams of working device, front and rear frame and swing frame are cracked, and whether the fixing bolts are loose

22.6.8 Check the tightness of fan and generator belts and adjust them



At the midpoint of the belt between the fan pulley and the alternator pulley, when the belt is pressed with a force of about 39n, the belt deformation should be about 10-15mm.

Adjustment

1.Release nuts and bolts.

2.Move the alternator with a bent bar so that when the belt is pressed with a force of about 39n, the belt deformation is about 10-15mm.

3.Tighten the bolts and nuts to hold the alternator in place.

4. Check the pulley for damage, groove wear, and belt wear. Make sure that the belt does not touch the bottom of the groove.

5. If the belt is over stretched, there is no room for adjustment, or the belt is cut or cracked, replace the belt.

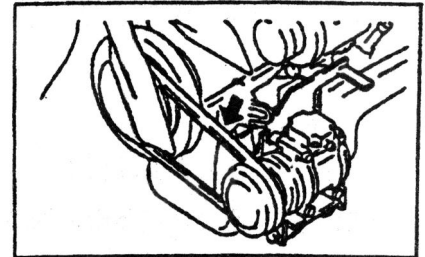
6. After the V-belt is replaced, adjust the tension of the belt after working for 1 hour.

7. Or adjust according to the operation and maintenance manual of the engine.

22.6.9 Check and adjust the tension of the belt of air conditioning compressor (if equipped)

Release the bolts and move compressor to adjust the tension of belt.

Check whether the pulley is damaged, the V-groove is worn, and the V-belt is worn or not to ensure that the V-belt does not contact the bottom of the V-groove.



When the V-belt is over stretched and there is no room for adjustment, or the belt is cut or cracked, replace the belt.

When adjusting the V-belt, it is forbidden to push the compressor directly with a bent rod. Use a wrench.

Note: refer to the operation and maintenance manual of air conditioner when checking and adjusting.

22.6.10 Lubricate the pin shaft, fan shaft and transport shaft of the working device

Warning

- Use parking brake and lock the front and rear frame.
- Set the working device to a stable position, and stop the engine.

Use a grease gun to add grease to the lubrication points of the loader. Refer to the maintenance chart (on the front frame) for the specific location of the lubrication points.

22.7 Maintenance 500 hours

Complete the maintenance 50 hours, 100 hours and 250 hours.

22.7.1 Replace fuel filter

Warning

- After operation, the engine temperature is very high and replace it until the engine cools down.
- Keep fuel from fire source or sparks.

1. Open the hood side cover.
2. The oil receiving container is placed under the oil filter.
3. Using the oil filter wrench, turn the oil filter counterclockwise and remove it.
4. Clean the support, add clean fuel into the new oil filter, apply oil on the sealing surface, and install the oil filter on the support.
5. During assembly, after the upper sealing surface of the oil filter contacts the oil cover of the support, continue to tighten about 2 / 3 turn. If the oil filter is screwed too tightly, the oil seal will be damaged, causing oil leakage. If the screw is too loose, the oil seal will leak. So it should be tightened properly.
6. After replacing the oil filter, loosen the vent plug.
7. Release the oil inlet pump and move the pump up and down until the air release plug stops venting.
8. After venting, tighten the air-bleed plug and the oil inlet pump knob.
9. After replacing the oil filter, turn the key to the power position, press the start switch, start the engine, exhaust the air in a few seconds, and start the engine. After the engine is started, check the oil cover of the oil filter for oil leakage. If there is oil leakage, check and tighten the filter cartridge. If the oil leaks after fastening, remove the filter cartridge according to steps 2 and 3, check the sealing surface, if the oil seal is damaged or the surface is dusty, replace the oil seal and reassemble.

Warning

When starting engine, make sure that the surroundings are safe.

22.7.2 Clean the oil absorption filter element in the transmission oil bottom and fuel filter element of transmission system, and clean the transmission oil bottom. Change the oil in the transmission, torque converter and radiator.

Prepare the oil receiving container

1. Put the oil receiving container under the oil filter.
2. Remove the oil drain plug at the bottom of the oil filter housing and drain the oil. Tighten after oil drain.
3. Hold the housing, loosen the bolts and remove the housing.
4. Take out the screen and clean the inside of the housing.
5. Change the pads of oil filter.
6. Install the new screen into the housing and install the bolts.
7. Run the engine at idle speed for a short time and check the oil level.

22.7.3 Tighten the connecting bolts between the front and rear axle and the frame

Warning

- Use parking brake and lock the front and rear frame.
- Put the working device to the safety position and stop the engine.

Check the front and rear axle fixing bolts for looseness and tighten them.

22.7.4 Check whether the fixing bolts of the hinge pin of the frame are loose

Warning

- Use parking brake and lock the front and rear frame.
- Put the working device to the safety position and stop the engine.

Check whether the fixing bolts of the main hinge pin are loose. Repeatedly operate up and down to make the whole machine longitudinal bumpy, and observe whether the main hinge clearance is abnormal.

22.7.5 Clean the diesel oil filling and oil absorption filter elements

- The engine temperature is too high after operation, and the elements should be replaced after the engine cooling down.
- Keep fuel away from fire and sparks.

Prepare the oil receiving container

- 1.Put the oil receiving container under the fuel tank.
- 2.Remove the oil drain plug at the bottom of the diesel tank and drain the oil. Tighten after oil drain.
- 3.Remove oil filling filter screen and oil absorption filter elements.
- 4.Clean with diesel oil.
- 5.Restorative installation
- 6.Fill oil, check oil level, run engine at idle for a short time to check the sealing of oil absorption filter screen.

22.7.6 Cleaning the gauze in the respirator of air booster pump

Take down the gauze in the respirator of the air booster pump, clean it with water, and carry out restorative installation.

22. 8 Maintenance 1000 working hours

Complete maintenance 50 hours,100 hours,250 hours and 500 hours.

22.8.1 Replace the return oil filter element of hydraulic oil tank

Warning

After operation, the oil temperature is very high. Change the oil after it cools down. Turn the oil cap slowly to release the internal pressure and then remove the oil cap.

1.Raise the boom and keep the bucket in the retracted position at the same time. Support the boom to prevent the working device from falling. Put the work device control lever in neutral. Apply the parking brake and stop the engine.

2.Screw out the assembly bolts on the two oil filter covers on the side of the oil tank and remove the cover. The cover may fly up due to the action of the spring. When removing the bolts, hold the cover down.

3.Take off the spring and then the filter element.

4.Install new filter element, spring and cover.

5.When assembling the bolts on the cover, press and hold down the cover and tighten the bolts evenly.

6.Check the oil level and add oil to the specified oil level, refer to “23.5 maintenance 100 hours”.

7.Check whether there is oil leakage at the assembly of oil filter cover.

22.8.2 Replace the hydraulic tank respirator

Warning

After operation, the oil temperature is very high. Change the oil after it cools down. Turn the oil cap slowly to release the internal pressure and then remove the oil cap.

1.Screw out the respirator.

2.Install new respirator.

Note:

When install respirator, be careful not to over tighten.

22.8.3 Replace the filter element of pilot hydraulic system

Warning

After operation, the oil temperature is very high. replace the filter element after the oil cooling down.

The oil filter of pilot hydraulic system is at the accumulator, and the filter element of oil filter is removed and cleaned with diesel oil and installed. Run the machine for 5 minutes to check the tightness.

22.8.4 Replace transmission oil and clean filter screen

Warning

After operation, the oil temperature is very high. Replace the filter element after the oil cooling down.

- The oil receiving container capacity: minimum capacity of 45L

- Recharging capacity: 45L

1. The oil receiving container is placed under the drain plug, the plug is removed and the oil is drained. To prevent the same sudden outflow, loosen the plug and gradually remove the plug.

2. After drain oil, install the screw plug and tighten it.

3. Put the oil receiving container under the transmission oil filter.

4. Remove the oil drain plug of the transmission oil filter and tighten the plug after oil drain.

5. Remove the bolt and cover, and take out the filter screen.

6. Remove the dirt stuck on the filter screen, and then clean it with diesel oil or flush oil. If the filter screen is damaged, replace it.

7. Reinstall the screen.

8. Add a certain amount of engine oil through oil filler.

9. When adding oil, check oil level.

10. Check transmission and oil filter for oil leakage.



22.8.5 Clean the transmission and torque converter respirator

Remove the dust around the respirator and remove the respirator. Put it into the cleaning solution and clean the respirator. When removing the respirator, pay attention to prevent dust from entering the oil port.

22.8.6 Lubrication

Warning

- Use the parking brake and lock the front and rear frames.

- Set the working device to a safe position and stop engine

1. Grease the lubricating points with grease gun. Refer to the maintenance chart (front frame) for the specific location of each lubricating point.

2. After adding butter, wipe off the extruded waste oil.

Special attention should be paid to the following lubrication parts:

1. Main drive shaft (2 places)

2. Front drive shaft (2 places)

3. Intermediate support of drive shaft (1 place)

4. Intermediate drive shaft (2 places)

5. Rear drive shaft (2 places)

6. Engine fan (1 place)

7. In addition, the lubrication parts include the pin shafts of the working device, the hinge pin shafts of the front and rear frames, and the pin shafts of the swing frame.

8. In case of centralized lubrication, check the integrity of the centralized lubrication system. If there is little grease in the grease cylinder, add grease.

22.8.7 Check the tightening of engine intake and exhaust pipe and valve clearance

Contact the manufacturer or sales office to check the fastening parts. Special tools are needed for disassembly and adjustment. Please ask the agent for help.

22.8.8 Clean fuel tank

Warning

- After operation, the engine temperature is very high so replace it after engine cools down.
- Keep fuel away from fire or sparks.

When the fuel in the fuel tank is very little, it is a good time to clean fuel tank. Drain the fuel in the fuel tank, remove the drain flange, check whether there are foreign matters in the fuel tank, and clean the inside of the fuel tank.

22.8.9 Tighten all battery fixing bolts and clean the top of the battery

Warning

- To avoid gas explosion, keep the power source away from fire or spark.
- The electrolyte is dangerous goods, if splashing on eyes or skin, wash it with plenty of water and consult a doctor.

22. 9 Maintenance 2000 hours

Complete maintenance 50, 100, 250, 500 and 1000 hours.

22.9.1 Replace hydraulic oil and filter element

Warning

After operation, the oil temperature is very high. Change the oil after it cools down. Turn the oil cap slowly to release the internal pressure and then remove the oil cap.

Preparation

- The oil receiving container: minimum 300L
- Refueling capacity: 300L

1. Lower the bucket, lay it on the ground horizontally, use the parking brake and stop the engine.

2.Screw out bolts

3.Remove filler cap

4.Put container under oil drain plug.

5.Remove oil drain plug.

6.Slowly open the oil drain valve and drain oil.

7.After drain oil,close oil drain valve and tighten oil drain plug.

8.Screw out the assembly bolts on the two oil filter covers on the side of the oil tank and remove the cover. The cover may fly up due to the action of the spring. When removing the bolts, hold the cover down.

9.Take off spring and then the filter elements.

10.Before cleaning,check whether there are foreign matters in the fuel tank or not.

11.Install new filter element, spring and cover.

12.When assembling the bolts, press and hold the cover and tighten the bolts evenly.

13.Add oil through filler cap to specified oil level and put on the cover.

14.Check whether the hydraulic oil is at the specified oil level or not,refer to “23.5 maintenance 100 hours”.

15.Idling the engine, steering telescopic, tipping bucket and boom cylinder 4-5 times, careful to avoid the cylinder to reach the end of its stroke (stop 100 mm before the top of the stroke).

If the engine runs at a high speed immediately, or when the cylinder retracts to the top of the stroke, the air in the cylinder will damage the seal.

16.Then operate the steering, tipping bucket and boom cylinder to the end of stroke for 3-4 times, and loosen the air-bleed plug to release the air in the hydraulic tank. Then tighten the plug. When bleeding air, run the engine at idle speed.

17.Check the throttle and add oil to the specified oil level, refer to "23.5 maintenance 100 hours".

18.Increase the engine speed and repeat step 16 to bleed air. Repeat until no air is discharged.

19.After releasing air,tighten bolts.

20.Check whether the oil level in the oil tank is standard, see "23.5 maintenance 100 hours"

21.Check whether there is oil leakage at the assembly of oil filter cover.

22.9.2 Replace the hydraulic tank respirator

Warning

After operation, the oil temperature is very high. Change the oil after it cools down. Turn the oil cap slowly to release the internal pressure and then remove the oil cap.

- 1.Screw out respirator.
- 2.Install new respirator.

Note:

When installing respirator,be careful not to over tighten.

22.9.3 Replace driving axles oil

Warning

After operation,the oil temperature is very high.Wait until the oil cools down and then replace oil.

Preparation for oil change:

- Use a container with a volume of more than 80L to hold the discharged oil.
 - Refill the front axle and rear axle with 40L oil respectively.
- 1.Place the container under the oil drain plug to hold the drained oil.
 - 2.Remove the front and rear oil filling plugs, and then remove the oil drain plug to drain the oil.
 - 3.After the oil is drained, clean the oil drain plug, and then tighten it.
 - 4.Refill the driving axle oil.

For the recommended oil, refer to "23.1 oil brand" for the selection of fuel oil, hydraulic oil and lubricating oil under different ambient temperatures.

- 5.After adding oil, check whether the oil level is in the specified position.

22.9.4 Check the wear of brake disc

Please find agents to check and repair brake disc.

22.9.5 Check the working condition of service brake system and parking brake system, and remove to check the wear condition of friction plate if necessary.

Please find agents to check and repair brake disc.

22.9.6 Clean and check the seal and spring of the brake booster, change the brake oil and check the brake sensitivity.

Ask agents to check and repair.

22.9.7 By measuring the natural settlement of the oil cylinder, check the sealing of the distribution valve and the oil cylinder.

The whole machine is placed on the flat road, the bucket is lifted to the highest position without load, the working valve is placed in the middle position, the engine is stopped, and the settlement of lifting cylinder is reduced.

22.9.8 Check the regulator and starting motor

The brush may be worn or the bearing may have less oil. Ask the agent to help check and repair.

22.9.9 Clean and check the turbocharging valve

If there is carbon deposit and oil sludge on the impeller, which reduces the performance of supercharger and causes damage, please ask the agent to help check and repair.

22.9.10 Check the damping pad

Check the rubber surface for cracking and peeling.

If there are cracks and peeling, ask the agent to help replace.

22.9.11 Check the flexibility of the steering system

22.10 Maintenance 2400 hours

22.10.1 Check water pump

Check the belt pulley for clearance and the oil drain hole for oil leakage, water leakage or blockage. If there is any abnormal phenomenon, please ask the agent to help repair or replace it.

22.10.2 The engine shall be maintained according to the operation manual

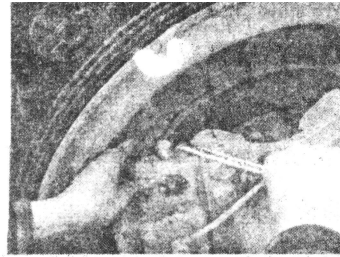
22. 11 Disassembly guide for friction plate of drive axle brake caliper

The three longitudinal grooves on the brake caliper friction plate are the marks of grinding amount. When the friction plate groove is ground, it is necessary to replace the new plate.

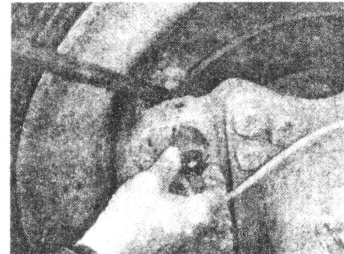
It is most convenient to replace a new friction plate according to the following steps.

Replacement guide of external friction plate of brake caliper of driving axle:

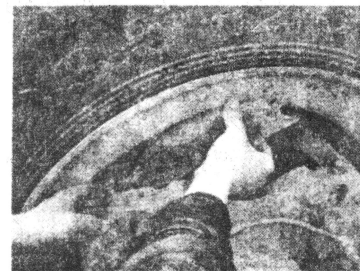
Step one: Unscrew the set screws of the brake caliper pin shaft.



Step two: Take out the fixed pin of friction plate



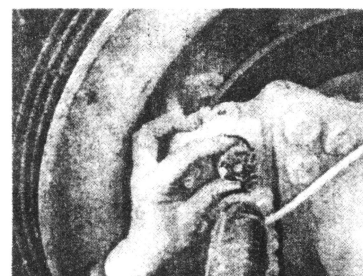
Step three: Gently remove the friction plate



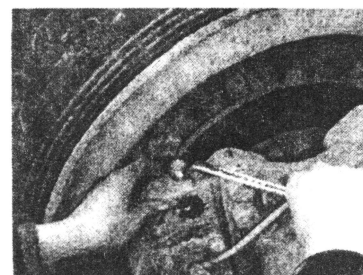
Step four: Replace new friction plate



Step five: Gently put the fixed pin in

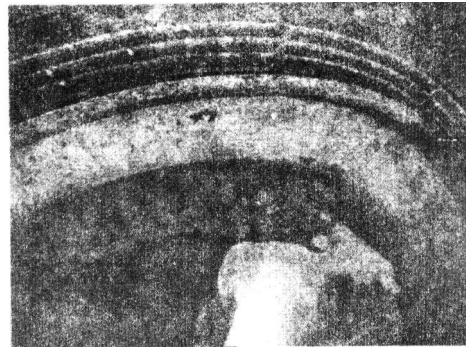


Step six: Tighten the set screw of the pin shaft

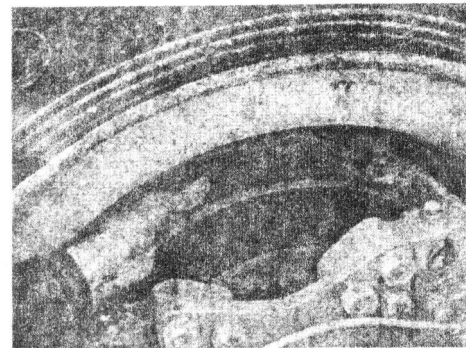


Replacement guide for inner friction plate of brake caliper of driving axle:

Step one:Screw the set screw of the axle



Steps two:After withdrawing the pin, take out the friction plate slowly



Step three:Replace the friction plate with a new one as replacing external friction plate



Step four:Gently put the pin shaft in and tighten the set screw of the pin shaft



Finally, the disassembled parts were inspected comprehensively. After confirmation, test run.

23. Oil consumption and reference

23.1 Oil brand

Oil site	ambient temperature	Lubricating oil specification	Mobil products	Domestic products	Notes
Engine	-40℃	API CH-4, CG-4, CF-4/SJ, SAE5W-40	Mobil Delvac1	5W-40CD diesel engine oil	Recommended oil: Please contact the local office and Shanmeng agent to use the special oil designated by Shanmeng.
	-15℃~50	API CH-4, CG-4, CF-4/SJ, SAE5W-40	Mobil Melvac Super 15W-40	15W-40CD diesel engine oil	
	-20℃~40℃	API CH-4, CG-4, SAE10W-30	Mobil Melvac Super 15W-30	15W-40CD diesel engine oil	
	-15℃~40℃	API CH-4, CG-4, SAE15W-30	Mobil Melvac Super	15W-40CD diesel engine oil	
Transmission	-5℃~40℃	ISOVG46,L-HM46	Mobil DTE25 anti-wear hydraulic oil	YB-N46 anti-wear hydraulic oil	
	-26℃~40℃	ISOVG46,L-HM46	Mobil DTE15Manti-wear hydraulic oil	YC-4N46 Low-pour-point anti wear hydraulic oil	
	-40℃	SAE5W-40	Mobil Delvac1	Mobil Delvac1	
Driving axle	-40℃	SAE75W-90M,API GL-5	Mobil SHC 1 Synthetic Lubricant	85W/90 GL-5	
	-20℃~-40℃	SAE85W-90M,API GL-5 or SAE80W-90M,API GL-5	Mobil Synthetic Lubricant HD80W-90		
Hydraulic system	-5℃~40℃	ISOVG46,L-HM46	Mobil DTE25 anti-wear hydraulic oil	YB-N46 anti-wear hydraulic oil	
	-26℃~40℃	ISOVG46,L-HM46	Mobil DTE15M anti-wear hydraulic oil	YC-4N46 Low-pour-point anti wear hydraulic oil	
	-40℃	SAE5W-40	Mobil Delvac1	Mobil Delvac1	
Air booster pump		DOT4 or DOT3 brake oil conforming to SAEJ703	Mobil Universal Brake Fluid	719 Brake Fluid	

		standard	Mobil Super Heavy Duty Brake Fluid		
Universal grease	Summer	NGL12	MobilgreaseXHP222	Molybdenum Disulfide Lithium Base Grease	
	Winter				
Anti-frost fluid	Below 0℃		Mobil Antifreeze	-35#	
Fuel tank	Above -5℃			0# light diesel oil	
	Below -5℃			-10# or -35# light diesel oil	

23.2 Specification

The specification of ZL50G

No.	Specification		Parameter value
1	The length		7920±30
2	The width		2870±10
3	The bucket width		3050±5
4	The height		3400±10
5	wheel base		3200±15
6	Wheel track		2250±5
7	Minimum ground clearance		450±5
8	Rated weight(kg)		5000
9	Rated bucket capacity(m ³)		3
10	Weight (kg)		17100
11	Shift speed(Km/h)	First gear	8±0.5
		Second gear	15±1
		Third gear	23±1
		Fourth gear	38±1
12	Maximum tractive force(KN)		152±5
13	Maximum Climb Capability		30°
14	Maximum dumping height		3156±20
15	Maximum dumping height(with bucket tooth)		3018±20
16	Discharge angle at any position		≥45°±1°
17	Angle of bucket turning up	Highest position	54°±1°

		Lowest position	45°±1°
		Transportation position	50°±1°
18	Automatic leveling function of bucket		Yes
19	Maximum breakout force (KN)		175±0.5
20	Digging depth		220±10
21	Boom lifting time(S)		5.95±0.2
22	Boom down time(S)		3.5±0.3
23	The dumping time(S)		1.50.1
24	Minimum turning radius		6640±50
25	Turning angles		38°±1°
26	Swing angle of rear axle		±12°
27	Engine model		WD615G.220
28	Torque converter model		YJ375
29	Transmission type		Power shift
30	driving axle	Main drive type	Bevel gear grade 1 reverse shift
		Final drive reduction type	First stage planetary deceleration
31	Tire model		23.5-25