SHANMON

Skid Steer loader

Operation and Maintenance Manual

Shandong Weimeng Machinery Technology Co., Ltd

www.shanmonglobal.com

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

Dear user:

Thank you for selecting WEIMENG skid steer loader!

This *Operation Manual* briefly introduces the safety and maintenance regulations of WM308 (include WM307 and WM312) skid steer loader for the use and reference of machine operators, maintainers and technical managers.

Operation Manual is a guide for proper use and maintenance of this machine, therefore please carefully read this manual before operating this machine.

Many faults are caused as a result of operator’s lack of reading this manual carefully and other human reasons; a high level of safety awareness and good maintenance of the machine makes a safe, efficient operation, and thus brings you more benefits. Therefore, please read and understand safety instructions and strictly follow the related instructions before operating this machine. Incorrect operation, lubrication, maintenance and repair of the machine are dangerous and may cause accident of human casualties.

We will continue to strive to improve product synthesis performance by ameliorating product design to make the machine work more efficiently. We reserve the right to make changes to machine parameters and configurations, any changes of contents about this manual will not be precaution, and any technical parameters involved in this manual will not be taken as a check or test basis.

In order to better service you and improve product and service quality, if you find any problem or have a good solution for the problem during the use of this machine and *Operation Manual* , please correspond with us timely.

This manual is the third version.

Best wishes for your business!

Manual Information

Please keep the Manual book safely in the cab for consult momentarily. Read and understand the content before use the machine.
It may not include the improve and update parts of the product.
Some structures or accessories in the photos or pictures of this manual may be different from your machine.
If you have any questions about the book, please contact Weimeng China agents for lately information.

Structure

The manual include six parts, preface, safety information, machine information, machine operation, maintenance part, hoisting and transportation of skid steer loader, common faults and troubleshooting, reference tables of density of common materials.

Safety Information

Basic safety precautions and warnings are listed in this part. It also provides the contents and locations of various warning labels on the machine.

Product Information

Purposes, performance and specifications of the product are provided in this part.

Machine Operation

Instruments, switches and machine operation. Start-up and shut-down. Operation control.

Maintenance Section

The maintain periods of each part. Maintaintenance items should be maintained during the maintaintenance period.

Hoisting and transporting securing instruction of skid steer loader

Data for hoisting and transporting.

Common Faults and Troubleshooting

Common faults and troubleshooting are listed in this part.

Appendix

Reference tables of density of common materials

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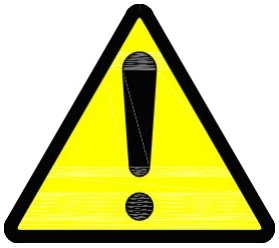
CHAPTER I SAFETY INFORMATION



Please read and understand all the precautions of above Safety mask in the manual or on the machine, and strictly observe these safety precautions during operation or repair.

1.1 SAFETY PROMPT

1.1.1 Only those who experienced special training or got equivalent qualification can operate or maintain this loader.

1.1.2 Most accidents that involve product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions.An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills and tools to perform these functions properly.

1.1.3 Improper operation, maintenance or repair on this product can be dangerous and could result in injury or death.

1.1.4 Any modification （reconfigure）of this machine without getting the permission of Weimeng may disable the function or effect the safety, and shorten the service life of the machine.

1.1.5 Safety precautions and warnings are provided in this manual and on the machine. If these hazard warnings are not heeded, bodily injury or death could occur to you or other persons, and cause economic loss.

1.1.6 The hazards are identified by the "safety Warning Symbol " and followed by a "Warning Label Word" such as "DANGEROUS","WARNING" or "CAUTION".

1.2 SAFETY LABEL

1.2.1 There are safety labels sticking to machine. This section will give a detailed description for sticking location and the hazards . Please read and understand those safety labels before operation.

1.2.2 Make sure all the safety labels always are legible and in good conditions; .

1.2.3 Clean or replace the unclear labels.

1.2.4 If the picture on the label is not identified, please replace it.

1.2.5 Clean the labels with soft cloth, water and suds. Do not use solvents, gasoline or other irritant chemical agents. These cleansers may disable the stickiness of the labels and make the labels fall off the machine.

1.2.6 Replace any damaged and lost safety labels.

1.2.7 If any part sticking safety label is need of replacement, new safety label need to stick in the changed part.

1.2.8 Various new safety labels are provided in any Weimeng after-service institution.

1.3 UNDERSTAND THE MEANING OF THE SAFETY SYMBOL

1.3.1 In the safety labels on the machine, words indicating degree or level of hazards - DANGER (危险), WARNING (警告) or CAUTION (注意) - and use with the label of being careful. The word "Danger" refers to a direct danger. If not avoid, it will result in personnel death or serious body injuries.

1.3.2 "DANGER" means that hazards are existent. If not avoid, it will cause death or body injuries.

Figure 1

1.3.3 "WARNING" means that potential hazards are existent. If not avoid, it will cause casualties.

Figure 2

1.3.4 "CAUTION" means that potential hazards are existent. If not avoid, it will cause minor injuries.

Figure 3

1.3.5 "DANGER" or "WARNING" safety labels are setted near hazardous place. For common safety protection, see "Caution" safety label.

1.3.6 Safety signal words listed above may not appear in some warning labels of the machine.

1.4 DISTRIBUTING SCHEMATIC OF SAFETY AND ADDITIVE LABELS

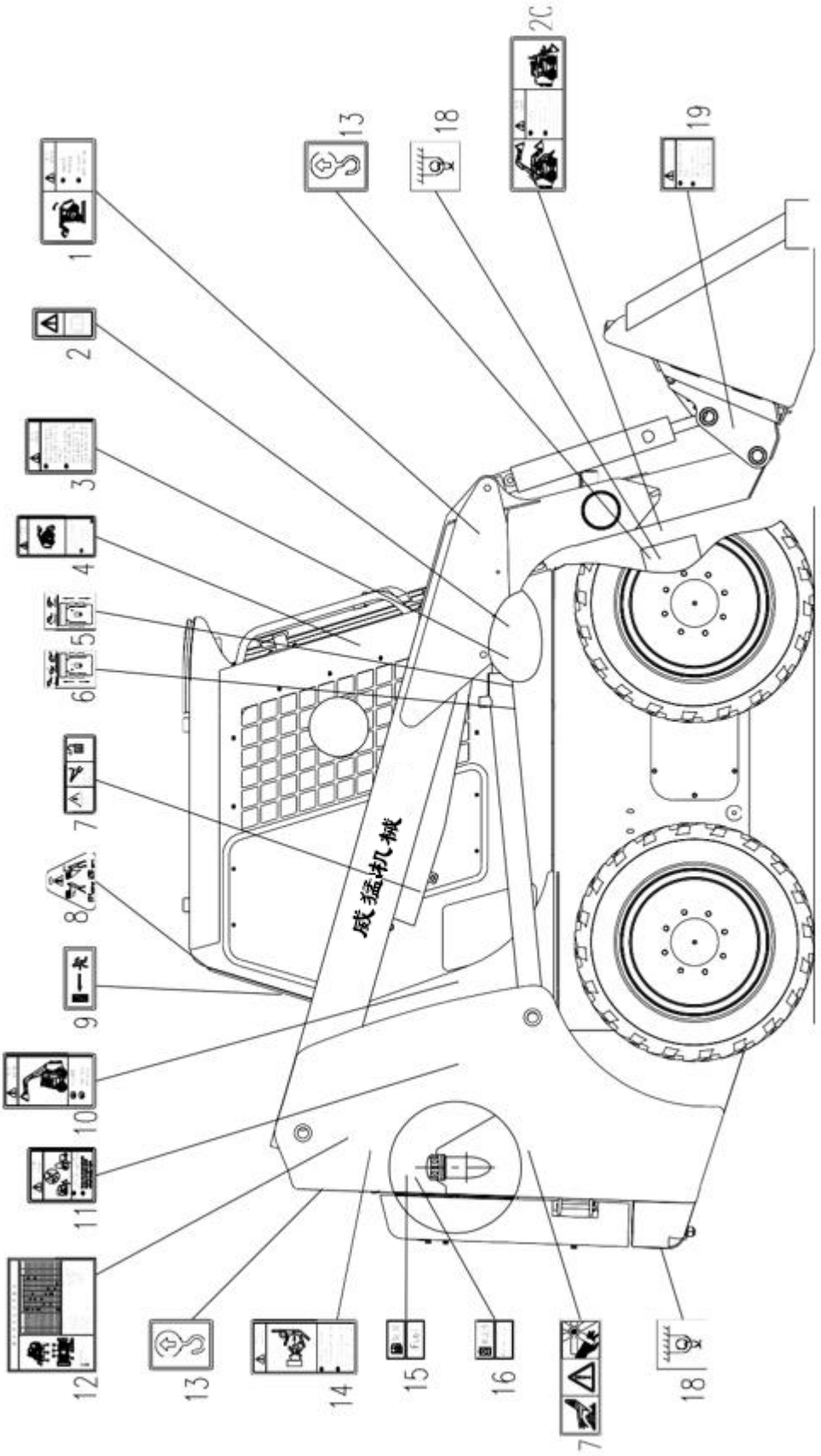


FIGURE 4 DISTRIBUTING SCHEMATIC DIAGRAM OF SAFETY LABELS AND ADDITIVE LABELS

WARNING LABEL OF TIPPING HAZARD (1)

Label location: right inside the lift arm

The loading weight must be within the range of rated load, not out of the range, otherwise the machine may overturn. It may damage the machine and cause serious casualties.

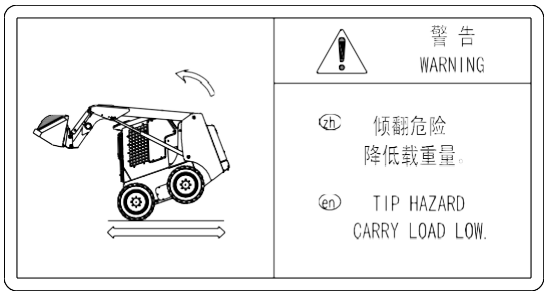


Figure 4-1

WARNING USERS LABEL (2)

Label location: inside the cab

Do not operate the loader or work on the machine before you have read and understand the instruction and warnings in the *Operation and Maintenance Manuals.* Failure to follow with the instructions and warnings could result in serious casualties. It is drivers' duty to comply with operating regulations strictly.

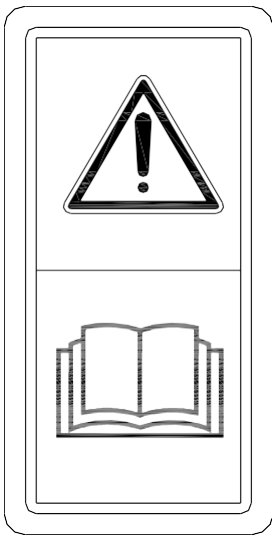


Figure 4-2

WARNING LABEL FOR OPENING LOCKED PIN (3)

Label location: inside the cab

Make sure operate the machine strictly according to the warning label, or damages of machine may occur.

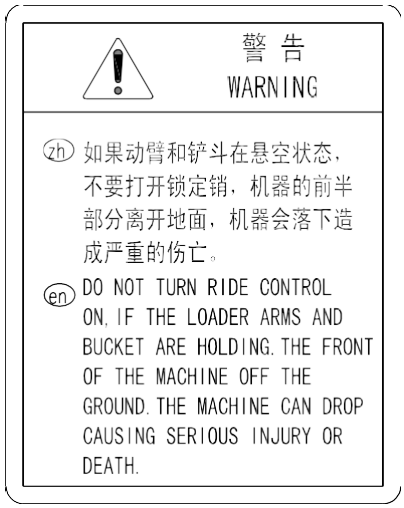


Figure 4-3

CRUSHING DANGER LABEL (4)

Label location: inside the cab

Make sure to operate the machine strictly according to the warning label, or it may cause machine damage or serious personal casualties.

Figure 4-4

RIGHT CONTROL HANDLE FUNCTION LABEL (5)

Label location: inside the right control handle hood

Inform the user that the right control handle controls the right travel of the machine, tilting back and dumping of the bucket.

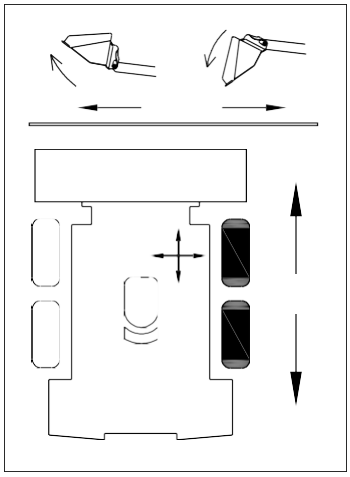


Figure 4-5

LEFT CONTROL HANDLE FUNCTION LABEL (6)

Label location: inside the right control handle hood

Inform the user that the left control handle controls left travel of the machine, lifting, droping and floating of the lift arm.

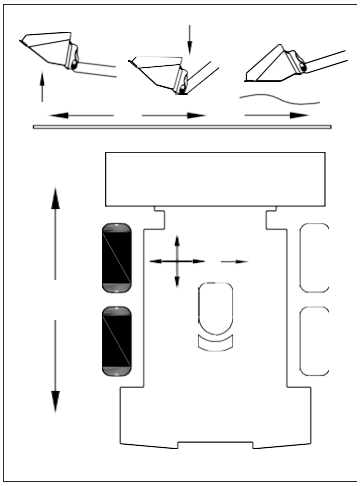


Figure 4-6

SAFETY BRACING WARNING LABEL (7)

Label location: outside of the safety bar, on the right of the lift arm

When the lift arm is lifting for checking, put down the securing bar. Otherwise, personnel casualties may happen..

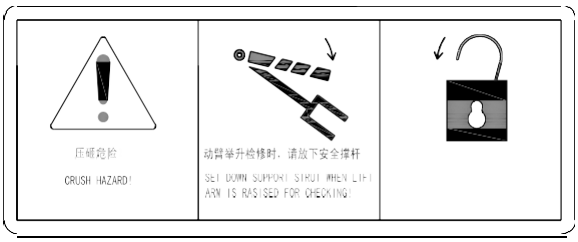


图 4-7

EMERGENCY EXIT WARNING LABEL (8)

Label location: inside the cab, in the left back of the cab.

Inform the user where emergency exit is.

Figure 4-8

SAFETY EXIT WARNING LABEL (9)

Label location: inside the cab, on the rear glass.

Inform the user where emergency exit is.

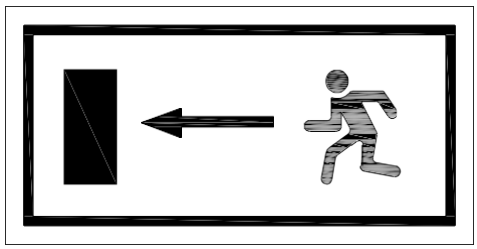


Figure 4-9

PINCHING HANDS WARNING LABEL (10)

Label location: on the right rear side of the frame when the lift arm is down.

Never put your body here to avoid crushing injuries or casualties.

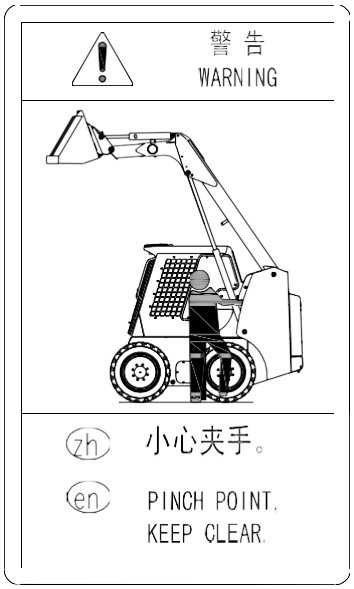


Figure 4-10

START-UP HAZARDS LABEL OF THE ENGINE (11)

Label location: where the engine starts

Make sure operate the machine strictly according to the warning label, or it may cause machine damage or serious personal casualties.

Figure 4-11

MAINTENANCE AND LUBRICATION LABEL (12)

Label location: on the left rear side of the frame

Make sure to maintain and lubricate the machine according to the label. Otherwise, the machine damage may be caused.

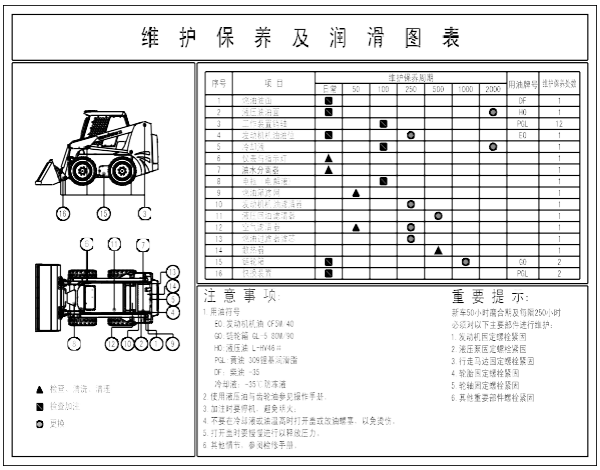


Figure 4-12

HOIST LABEL (13)

Label location: at both rear-upper sides of the frame , and both front sides of the frame.

When hitching the machine with the shackle on the carriage. Before lifting, should adjust the length of each lifting sling in order to keep the balance of the machine. Pay attention to fasten the hook. Make sure to operate with the special hoisting tools only to avoid damages of the engine hood,cab etc.

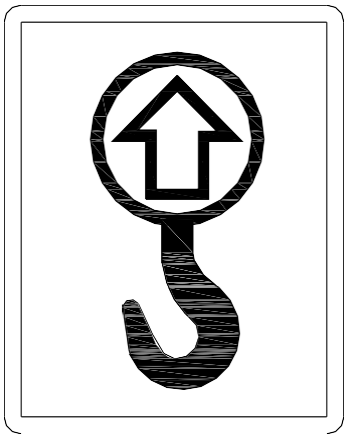


Figure 4-13

NO USE OF AETHER HAZARD (14)

Label location: at both rear-upper sides of the frame , both front sides of the frame.

Make sure to operate the machine strictly according to the warning label, or it may cause machine damage or serious personnal casualties.

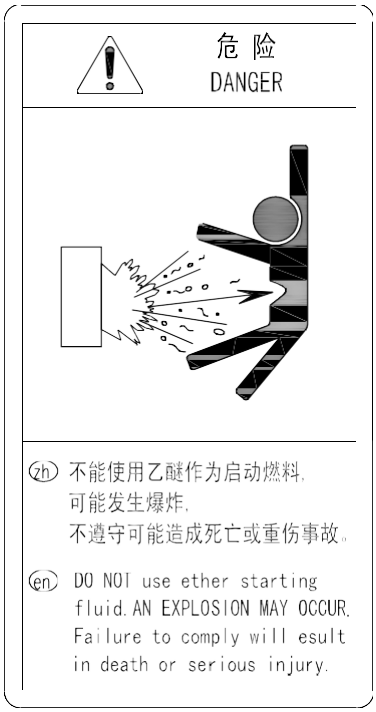


Figure 4-14

FUEL LABEL (15)

Label location: inside the fuel oil tank on the frame

Fill the tank with clean fuel in time to avoid engine stopping working. Filling wrong oil can make the machine disable and damage the machine.

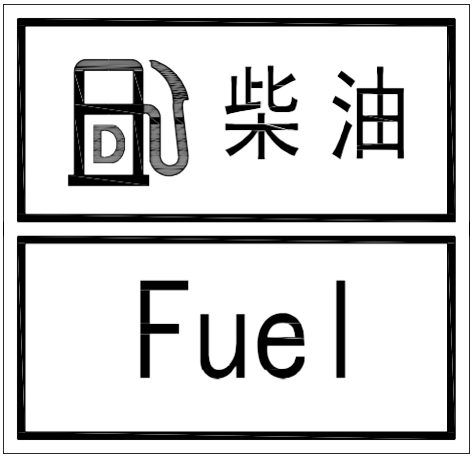


Figure 4-15

LABEL OF HYDRAULIC OIL (16)

Label location: inside the hydraulic oil tank on the frame

Fill the tank with clean hydraulic oil in time to avoid engine stopping working. Filling wrong oil may make the machine disable and damage the machine.

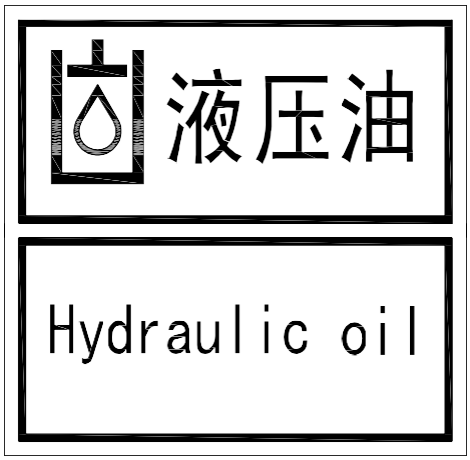


Figure 4-16

WARNING LABEL FOR THE RADIATOR AND THE FAN (17)

Label location: it is on the radiator.

In order to avoid body injuries, do not touch the radiator when the machine is warming up. Do not keep close to the fan when the fan is running. Otherwise, serious injuries or death may happen.

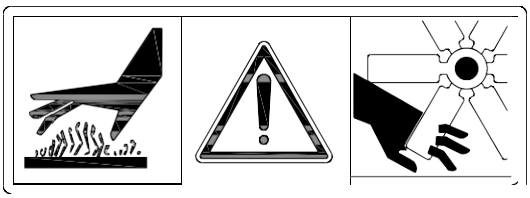


Figure 4-17

WARNING LABEL FOR BINDING POSITION (18)

Label location: it is in front of the frame, rear side of the balancing weight.

Inform users that where the binding position is in the transportation, to bind this hook in order to secure the machine in the transporting vehicle.

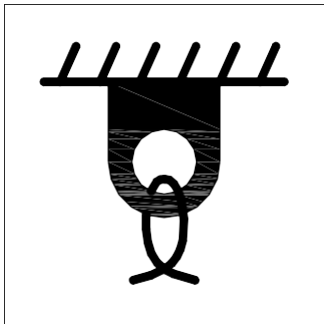


Figure 4-18

CHECKING QUICK DIS-CONNECT CONNETING LABEL (19)

Label location: it is on the beam of the bucket base.

Make sure to operate the machine strictly according to the warning label, or it may cause machine damage or serious personal casualties.

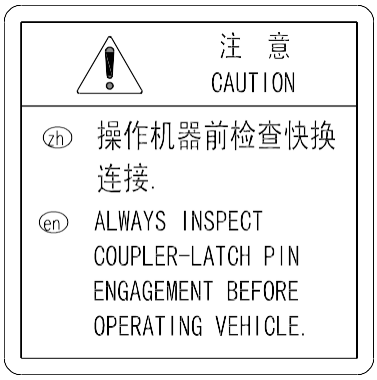


Figure 4-19

CRUSH HAZARD WARNING LABEL (20)

Label location: it is in the front of the frame.

Be not under the lift arm when it is raised, unless it is supported.

Figure 4-20

1.5 OTHER SAFETY INFORMATION

1.5.1 OBSERVE SAFETY INDICATION

1.5.1.1 Before the maintenance and repair , hanging a warning signs on the start switch or control handle, such as "No action"or other similar warning signs.

1.5.1.2 Know the working width of the machine. When the machine works in the neighbourhood of the fence or the border barriers, personnels can keep distance of the machine.

1.5.1.3 Take care of high-tension wire and cable buried underground. If the Machine touches these hazards, personal death or injuries may caused by electric shock .

1.5.2 SAFETY

1.5.2.1 When you operating the machine, do not wear loose clothing or jewelry tthat can snag on controls or on other parts of the equipment.

1.5.2.2 Make sure that all protective guards and all covers are secured in place on the equipment.

1.5.2.3 Keep the machine free from foreign material. Remove debris, oil tools and other items from the deck ,from walways, and from steps.

1.5.2.4 Keep the scattered items such as lunch boxes, tools and other items are not machine parts.

1.5.2.5 Be familiar with special hand signals on the site, only one person should send the hand signals.

1.5.2.6 Do not smoke when you repair the air conditioning,. Also, do not smoke if refrigerant gas may be present. Inhaling the fumes that are released from a frame that contacts air conditioning refrigerant can cause bodily harm or death. Inhaling gas air conditioning refrigerant through alighted cigarette can cause bodily harm and death.

1.5.2.7 Do not put maintenance oil fluids into glass containers. Discharge all liquids into the suitable container.

1.5.2.8 Do not operate the machine in the contaminative area. If not, and potential hazards may exist, should take special action to protect the operator from the danger.

1.5.2.9 If hazards exist, e.g. fragments splashes caused by operating hydraulic hammer, it is better to assemble the guards or guards that have equal protection effect such as anti-impact materials, expanded protection and so on.

1.5.2.10 The cab is an important structure to protect the operator. The operator should replace the cab if plastic deformations or cracking effects take place on the any part of the cab.

1.5.2.11 The use of cleanser should follow the requirements of manufacture. Reporting all the items need to inspect and repair.

1.5.3 CHECK THE MACHINE

1.5.3.1 Walk around the machine before starting the machine every time. Inspect the machine to

avoid the economic loss or personal injury.

1.5.3.2 Check whether all the instruments are be operated normally or not. nonshorted terminal post of start motor or battery. Short circuit makes the circuit round the normal starting system of engine. Short circuit system can also cause damage to the circuit system.

1.5.3.3 Please adjust the seat. until drivers sit close to the back position, they can step on the pedal

1.5.3.4 Check the status of seat belts and fasteners. Replace damaged or worn parts. No matter how the appearance is , please replace the safe belt after three year's service.

1.5.3.5 Make sure there is a good view around the cab, and the operator can see the scene outside the cab clearly.

1.5.3.6 Ensure that the machine's lighting system can meet various requirements of working conditions, ensure that all lights work normal.

1.5.3.7 Do not left parts and tools around the operator seat, Because walking and operations will produce vibration, they may fall down and cause damage to the lever or switch, or move the joystick to start devices, cause an accident.

1.5.3.8 Check the coolant level, diesel oil level and engine oil lubricant oil level, check whether the air filter is clogging or not.

1.5.3.9 Fire extinguishers are recommended. The operator should be clear that the storage location of fire extinguishers and familiar with how to use fire extinguisher.

1.5.4 ENTER THE CAB

1.5.4.1 Before boarding the cab, clean the shoes of the mud and sand , because these mud sand will accumulate on the pivot of throttle pedal and brake pedal , and prevent the reset of pedal, and may accelerate wear and tear of the push rod, if there is an accumulation of mud of sand in these places , clear them away at once.

1.5.5 TRAPPED PRESSURE IN THE SYSTEM

1.5.5.1 Pressure may be trapped in the hydraulic system. Releasing the trapped pressure may cause sudden machine movement or attachments movement. Use caution when you disconnect Hydraulic pipes or fittings . High-pressure oil that is released may cause hose to spay, high-pressure that is released may cause oil spray. Fluids penetration may cause serious injury and possible death.

1.5.6 OIL FLUIDS PENETRATING

1.5.6.1 pressure can be trapped in the hydraulic circuit long after the engine has been stopped. The pressure can cause hydraulic fluids or items such as pipe plugs to escape rapidly if the pressure is not released correctly

1.5.6.2 Do not disconnect disassemble any hydraulic components or parts until pressure is released or personal injury may occur.

1.5.6.3 Always use a board or cardboard when checking for a leak. Escaping fluid under pressure can penetrate body tissue and cause serious injury and possible death. Even a pinhole-sized leak may

cause serious personal injury. If the liquid injected into your skin, it must be treated immediately. Please seek treatment from a doctor that is familiar with this type of injury.

1.5.7 PRESSURIZED AIR AND FLUIDS

1.5.7.1 Compressed air or water pressure or hot water may cause debris or hot water to be blown out. This would cause person injury.

1.5.7.2 When pressurized air or water is used for cleaning, wear protective clothing, protective shoes and eye protection. Eye protection including goggles or a protective face shield.

1.5.7.3 The maximum air pressure for cleaning must be below 0.2MPa.

1.5.7.4 The maximum pressure of water for cleaning must be below 0.25MPa.

1.5.8 CRUSHING AND CUTTING PREVENTION

1.5.8.1 Support the equipment properly when you perform any work or maintenance beneath the machine. in the device below before any operation or maintenance . Do not depend on hydraulic cylinders to support the equipment. If the control handle is moved, or if the hydraulic pipe breaks, the working device may fall down.

1.5.8.2 Cab must be supported properly when you work under the cab of the machine.

1.5.8.3 Unless you are directed, otherwise, when moving the machine or engine running, never make any adjustments.

1.5.8.4 Whenever there are equipment control linkages the clearance in the linkage area will change with the movement of the equipment or the machine. Stay clear of areas that may have a sudden change in the clearance with machine movement or equipment movement.

1.5.8.5 To avoid all rotating and moving parts.

1.5.8.6 If it is necessary to remove guards in order to perform maintenance, always install the guards after the maintenance is ended.

1.5.8.7 Keeping objects away from moving fan blades.The fan blade will throw objects or cut objects.

1.5.8.8 Do not use a kinked wire cable or a frayed steel cable. Wear gloves when you handle steel cable.

1.5.8.9 when you strike a retainer pin with force, the retainer pin can fly out. the loosen retainer pin can injure personnel. Make sure that the area is clear of people when you strike aretainer pin. To avoid injury to your eyes, wear protective glasses when you strike a retainer pin.

1.5.9 FIRE ANF EXPLOSION

1.5.9.1 All fuel, most of the oil and some coolant mixture are flammable.

1.5.9.2 Flammable fluid that are leaking or spilled onto the hot surfaces or electrical components may cause a fire. A fire may cause personal injury and property loss.

1.5.9.3 Clean away all accumulations of flammable materials attached to the surface of the

machine, do not allow any flammable material to accumulate on the surface of the machine.

1.5.9.4 Do not operate the machine near any flame.

1.5.9.5 Do not weld or flame cut on tanks or lines that contain flammable fluids or flammable materials. Clean the lines and tanks with a nonflammable solvent prior to welding or flame cutting.

1.5.9.6 Check all the wires before starting the machine every day. Repair loose or frayed wires, clean and tighten all the line connectors before operation.

1.5.9.7 Inspect all lines and hoses for wear or deterioration. Replace damaged lines and hoses in time . Damage to the protective cover or insulation may provide fuel for fires. Make sure the lines and the hoses should have adequate support and secure clamps.

1.5.9.8 Be careful when you are filling fuel , lubricants and other oil to a machine. Do not smoke while you are filling fuel , lubricants and other oil to a machine. Do not fill a machine near open flames or sparks. Always stop the machine before filling oil. fill the fuel tank outdoors.

1.5.9.9 Gases from a battery can explode. Keep any open flames or sparks away from the top of a battery. Do not smoke in battery charging areas.

1.5.9.10 Do not jump a metal object to the terminals of the wires to check the battery charging condition. Do use a voltmeter or hydrometer .

1.5.9.11 Incorrect jumper cable connections can cause an explosion that may result in personal injury. Please refer to " maintenance and cautions of suitable battery for the loader " for specific instructions.

1.5.10 LINES

1.5.10.1 Do not bend high pressure lines. Do not strike high-pressure lines. Do not install any lines that are bent or damaged .

1.5.10.2 Please repair any lines that are loosen or damaged. Leaks may provide fuel for fires. Consult your Weimeng dealer for repair or for replacement parts.

1.5.10.3 Perform a double check to lines. Do not use bare hands to check for leak. Please Use board or cardboard to check for leak.

1.5.10.4 If any one of the following conditions is present , replace the parts:

1. End joint damaged or leaking
2. Outer coverings are worn or cut
3. Wires are exposed
4. outer covering are swelling or ballooning
5. flexible parts of the hoses are kinked.
6. end fittings ara displaced

1.5.10.5 Make sure that all clamps, guards, and shields are installed correctly. During machine opertion, this will help to prevent vibration,rubbing against other parts, excessive heat .

1.5.11 TIRE IFORMATION

1.5.11.1 Explosion of air inflated tires have resulted from heat-induced gas combusion inside the tires. explosion can be caused by heat that is generated by welding ,by heating rim components, by external fire.

1.5.11.2 A tire explosion is much more violent than a blowout. the explosion can propel the tire , the rim components , and the axle components as far as 500m or more from the machine. Both the force of explosion and the flying debris can cause damage to buildings, and personal injury, or death.

1.5.11.3 Do not approach a hot tire. Do not use water or calcium as a ballast for the tires. Dry nitrogen gas is recommened for inflation of tires. To avoid overinflation, special nitrogen inflation equipment and training in the usage of equpment are necessary. A tire blowout or arim failure can result from improper equipment or from misused equipment.

1.5.11.4 When you inflate a tire, stand behind the tread and use a spare chuck.

1.5.11.5 servicing tire and rims can be dangerous. only trained personnel that use proper tools and proper rocedures should perform this maintenance. if correct procedures are not used for servicing tires and rims, the assemblies could burst with explosive force. this explosive force can cause serious personal injury or death.

1.5.12 LIGHTENING INJURY PREVENTION

1.5.12.1 When the lightening is striking in the neighbourhood of the machine, the operator should never perform the following procedures:

1.5.12.2 Mount the machine.

1.5.12.3 Dismount the machine.

1.5.12.4 When the lightening is striking, if you are in the cab , do not leave the cab. If you are on the ground, stay away from the vicinity of the machine.

1.5.13 ENGINE STARTING

1.5.13.1 If a warning label is attached to the engine start switch or controls , do not start the engine or move any controls.

1.5.13.2 Before starting the engine, move all the handle joystick to NEUTRAL position.

1.5.13.3 Diesel engine exhaust contains products of combusion which are harmful to your health. Always operate the engine in a well ventilated area. if you are in an enclosed area, vent the exhaust to the outside.

1.5.14 UP AND DOWN THE MACHE SATELY

1.5.14.1 Before mounting the machine, clear the stairs and railings. Check stairs and railings. Do all necessary repairs.

1.5.14.2 Face to the machine when up and down the machine. Keep a three-point contact with steps and handrails.

Note: The three-point contact can be both hands and a foot or both feet and a hand.

1.5.14.3 Do not mount the moving machine. Prohibit getting down from the moving machine. Do not jump down from the machine. When get up and down machine, do not carry tools or objects. Use hand-pulled rope to pull the equipment to the platform. Do not use the lever as handrail, when into and out of the cab.

1.5.15 BEFORE OPERATION

1.5.15.1 Make sure that there are no personnel in the area around the machine.

1.5.15.2 Clear all obstacles on the path of the machine. Beware of hazards, such as wires, ditches and so on.

1.5.15.3 Make sure that all windows are clean. Secure the doors and the windows in the open position or in the closed position.

1.5.15.4 Adjust the rear view mirrors for the best vision of the area around the machine.

1.5.15.5 Ensure that the horn, the backup alarm, and all other warning devices are working properly.

1.5.16 OPERATION

1.5.16.1 Only operate the machine while you are sitting in a seat. the seat belt must be fastened while you operate the machine. only operate the controls while the engine is running.

1.5.16.2 When you operate the machine and work tools slowly in an open area, check for proper operation of all controls and all protective devices.

1.5.16.3 Before you move the machine, make sure that no one will be endangered.

1.5.16.4 Do not allow riders on the machine unless the machine has an additional seat with seat belt.

1.5.16.5 Note any needed repairs during machine operation. Report any needed repairs.

1.5.16.6 Do not go close to the edge of a cliff, an excavation or an overhang.

1.5.16.7 Avoid operating the machine across the slope. when possible ,operate the machine up the slopes and down the slopes.If the machine begins to sideslip on a downgrade, immediately remove the load and turnthe machine downhill.

1.5.16.8 Avoid any conditions that can lead to tipping the machine. the machine may tip when you work on banks and on slopes. also, the machine may tip when you cross ditches, ridges or other unexpected obstacles.

1.5.16.9 Maintain the control of the machine. Do not overload the machine beyond the machine capacity.

1.5.16.10 Make sure that hooks and dragging are enough. Traction device can only be connected to the traction pin or hook. Never allow other personnel to straddle a wire cables.

1.5.16.11 Before adjusting the machine, make sure that no person is between the machine and the equipments. Pave the hook of the traction device to align the traction equipment with the traction pin. Adjust the machine. Connect the machine to the towing equipment. You should know the maximum size of your machine.

1.5.17 ENGINE STOPPING

1.5.17.1 Do not stop the engne Immediately after the machine has been operated under load. This can cause overheating and accelerated wear of engine components.

1.5.17.2 After the machine is parked and the parking brake is engaged, allow the engine to run for five minutes before shutdown. This allows hot areas of engine to cool gradually.

1.5.18 PARKING

1.5.18.1 Park the machine on a level surface. If you must park the machine on a downgrade, block the tires.

1.5.18.2 Stop the engine.

1.5.18.3 Switching the electric key on the instrument panel to STOP position and remove the key.

1.5.18.4 A short circuit that may cause some parts to leak current, or human destruction may cause batteries to leak. Turn the main power switch to off (O) position to prevent the discharge of batteries .

1.5.19 SLOPE OPERATION

1.5.19.1 Different machines have different performance. machines that are operating safely in various applications depend on these criteria: the machine configuration, machine maitenance, running speed of the machine, conditions of the working sites, tire inflation pressure. The most important criteria are the skilled and judgment of the operator.

1.5.19.2 Operators should receive good skill training, operating training provides a person with the following abilities:observation of working and environmental conditions, feel for the machine operation, identification of potential hazards, etc.

1.5.19.3 When you work on side hills and when you work on slopes, consider the following important factors:

1. At higher speeds, forces of inertia tend to make the machine less stable.

2. the machine may be less stable with uneven terrain.

3. Grass, muddy road surface and gravel roads may promote the slipping of the machine

4. Keep balance of the machine;

5. Excessive loads may tip the machine ;

6. Do not operate the machine accross the slope. When possible,operate the machine up the slope and operate the machine down the slope.

7. Operating on the slope will affect the normal performance of the machine, promote the instability of the machine and increase more hazards.

1.5.20 CNETAINING FLUID SPILLAGE

1.5.20.1 Be careful so as to ensure that fluids are contained during performane of inspection, maintenance, testing , adjusting and repair of the equipment. Prepair to collect the fluid with suitable containers before opening any compartment or disassembling any component that contains fluids.

CHAPTER III PRODUCT INFORMATION

2.1 MACHINE QUALIFICATION

2.1.1 Labels are mounted on every machine to manage every machine produced by the WEIMENG Holdings Limited.

They are at the different position of the machine. Here are description about the plates below.

2.1.2 APPRAISAL MARK AND THE IDENTIFICATION NUMBER OF THE MACHINE

The appraisal mark sees the front position of the machine.

2.1.3 SERIAL NUMBER OF THE MACHINE

See the serial number on the right side of the machine.

2.1.4 APPRAISAL MARK OF THE ENGINE

Appraisal mark of the engine sees to the nameplate of the engine.

2.2 MACHINE CONGIGURATION

The machine has the following three different configurations:

1、WM308 adopts Xinchai A498BT1-75B engine

The following table lists the basic parameters of Xinchai A498BT1-75B engine

Table 1

No.	Project	Parameter
1	Cylinder number-Inner diameter（mm）×distance	4－98mm×120mm
2	Seted power（kW ）/ rotate speed（rpm）	36.7kW / 2600rpm
3	Max. Torque（N·m ）/ rotate speed（rpm）	221N·m / 1600rpm
4	Fuel consumption（g / kW·h）	275g / kW·h
5	Total displacement	3.170L

2、WM312 adopts Xinchai 498BZG engine

The following table lists the basic parameters of Xinchai 498BZG engine

Table 2

No.	Project	Parameter
1	Cylinder number-Inner diameter（mm）×distance	4－98mm×120mm
2	Seted power（kW ）/ rotate speed（rpm）	55kW / 2600rpm
3	Max. Torque（N·m ）/ rotate speed（rpm）	296N·m / 1600rpm
4	Fuel consumption（g / kW·h）	272g / kW·h
5	Total displacement	3.620L

Please see the the "user manual" of diesel engine that is suitable for the machine, you can get more details.

2.3 PURPOSE

2.3.1 WM308, WM312 Skid Steer Loader are suitable for operating in small working sites, uneven ground, the places of job changed frequently, but also for large construction machinery and auxiliary equipment. They are Widely used in road maintenance, pipeline placing, cable placing, park virescence, snow shoveling, transportation , excavating and crushing.

2.3.2 The loader can be customized to include multiple functional devices, such as sweeper, snow shoveling, spiral drill, goods fork, four - in -one bucket and milling machines.

2.4 MACHINE SPECIFICATION

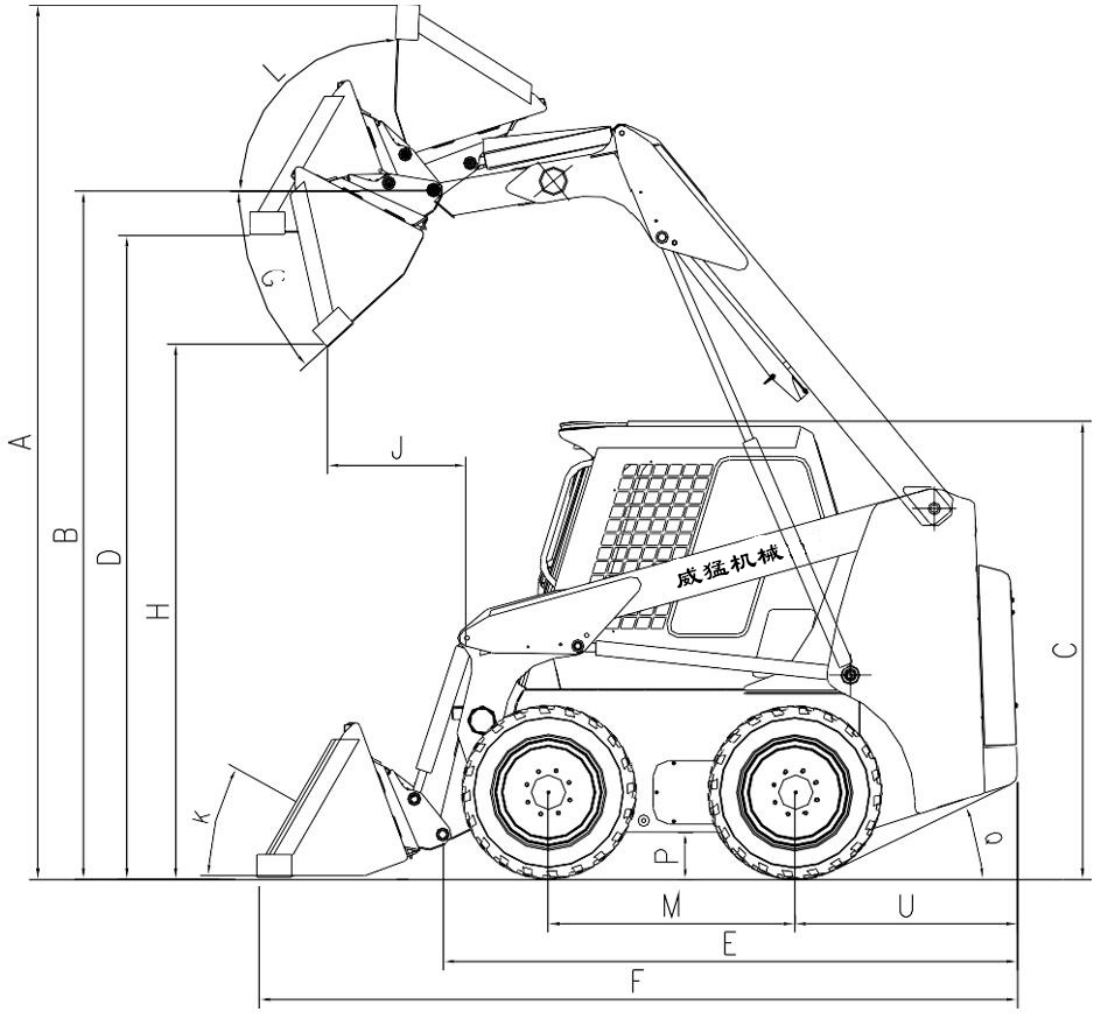


Figure 4

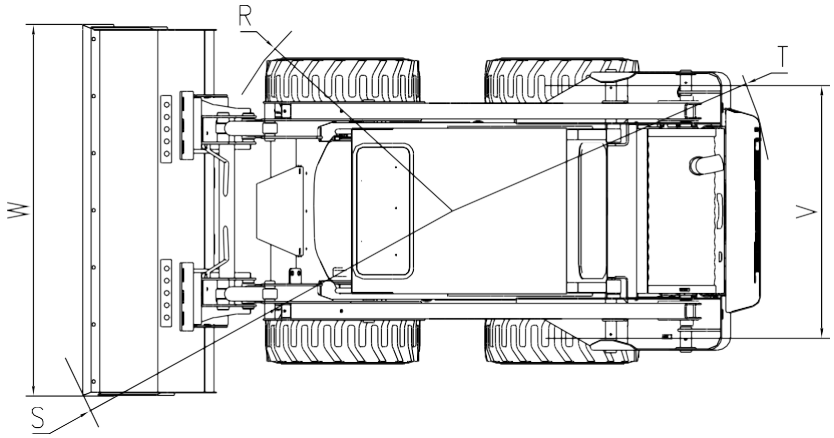


Figure 5 SCHMEMATIC OF MACHINE SPECIFICATIONS

TECHNIC SPECIFICATIONS OF WM312 WM308

Table 4

NO.	Dimension	Unit	WM308	WM312
A	Max. Operating height	mm	3850	3880
B	Bucket pin height		3050	3060
C	Cab roof height		2020	2050
D	Max. Height of horizontal bucket		2850	2870
E	Length without attachments		2530	2530
F	Length with standard bucket		3350	3350
G	Max. Height unload angle	°	40	40
H	Dumping height	mm	2360	2440
J	Reach fully raised(for max. dumping height)		610	610
K	Bucket on the ground reversal angle	°	29	29
L	Bucket on tiptop reversal angel		94	96
M	Wheelbase	mm	1080	1080
P	Ground clearance	mm	210	180
Q	Departure angle	°	27	28
R	Front turning radius without attachments	mm	1180	1180
S	Front turning radius		2050	2050
T	Rear turning radius		1580	1580
U	Tail length		980	980
V	Two wheel center distance		1280	1320
W	Bucket width		1820	1820

2.5 HYDRAULIC SYSTEM

2.5.1 IMPLEMENT HYDRAULIC SYSTEM

2.5.1.1 Implement hydraulic system is used to control the action of the bucket, including oil tanks, implement pump, the multiple way valve, the boom cylinder, the tilt cylinders, the leveling valve, oil tubes and other components.

2.5.1.2 When the working device does not work, the hydraulic oil from the implement pump flows to the implement distribution valve, then the hydraulic oil flows through chamber and flows back to the oil chamber and oil tank.

2.5.1.3 When you shovel materials, dump materials, moving the right handle, the oil from the implement pump flows through the distribution valve into the rear or front chamber of the bucket cylinder. This causes the bucket to tilt up or down. When you raise or lower the lift arm, moving the left handle, the oil from the implement pump flows through the distribution valve into the lower or upper chamber of lift boom cylinder. This causes the lift and the bucket to raise or lower.

2.5.1.4 When the external load exceeds the raising or tilting up capacity of the system, or the piston of boom cylinder reaches the end of the cylinder (the piston of the bucket cylinder reaches the front end of the cylinder). When the system pressure goes up to the set point, the pressure oil opens the escape valve to overflow and unload. The pressure oil flows through the distribution valve back to the oil tank.

2.5.1.5 When the oil pressure of the bucket cylinder front chamber is higher than the set pressure of the double-acting escape valve in the front chamber multiple reversal valve, the pressure oil opens the escape valve to overflow and unload. The pressure oil flows through the distribution valve back to the oil tank. The implement oil from the pump flows through the distribution valve into the upper and lower chamber of the boom cylinder and connects the fuel tank at the moment, the oil pressure in the upper and lower chamber of the cylinder is low. The bucket can float freely caused by its own weight and can work close to the ground.

2.5.1.6 The implement pump is gear type. The implement and traveling pumps are coaxial with the engine, but the traveling pump is piston type.

2.5.2 TRAVEL HYDRAULIC SYSTEM

Travel hydraulic system is used for controlling the travel of the machine, including the oil tank, the variable piston pump, the travel motor, unblocking solenoid valve, oil tubes and other components.

2.5.2.1 The variable piston pump

The variable piston pump is connected to the engine by the coupling. It provides driving force for the travel system.

Figure 6 HYDRAULIC SYSTEM DIAGRAM

2.5.3 THE WORKING DEVICE

2.5.3.1 The working device of the loader is mainly made up of the lift arm, the bucket base and the bucket. See the Figure 7.

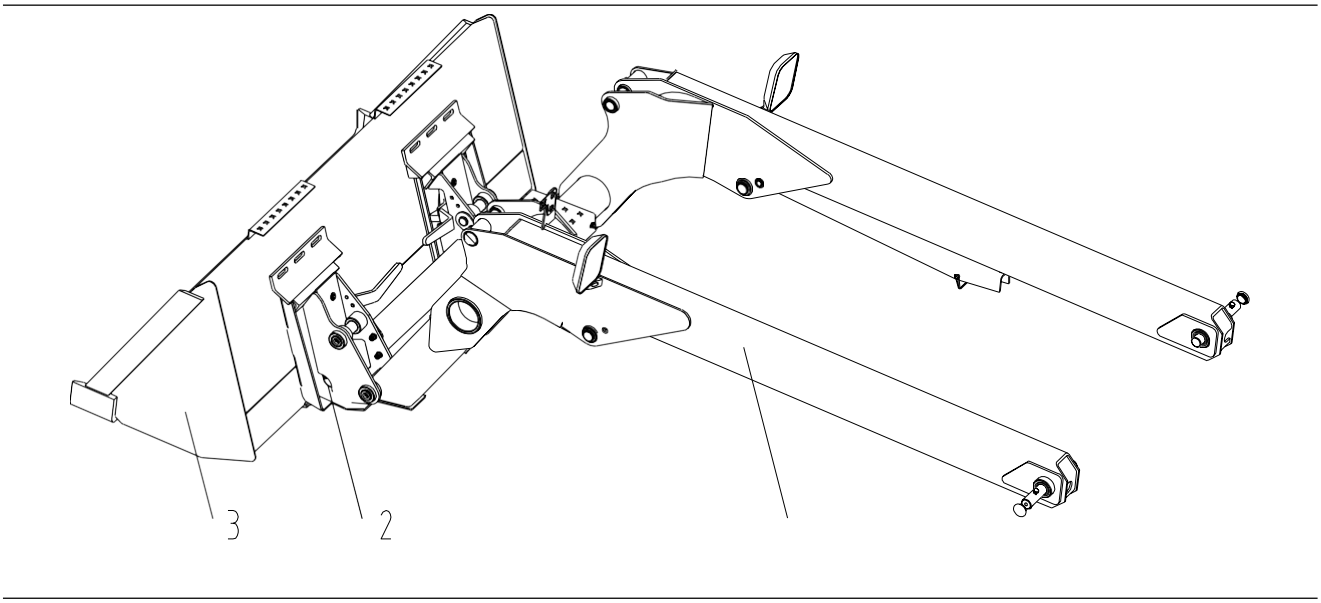


Figure7 WORKING DEVICE

1. LIFT ARM 2. BUCKET SEAT 3. BUCKET

2.5.4 THE FRAME

2.5.4.1 The frame is a installing and connecting base of all parts of the machine. The frame adopts a high strength welding technology to assures long-time work in intensive operating environment. Integration design of the fuel tank , the hydraulic oil tank and the machine body greatly improves the effective utilization ratio of the solvent and the space of the oil tank. Shown in Figure 8

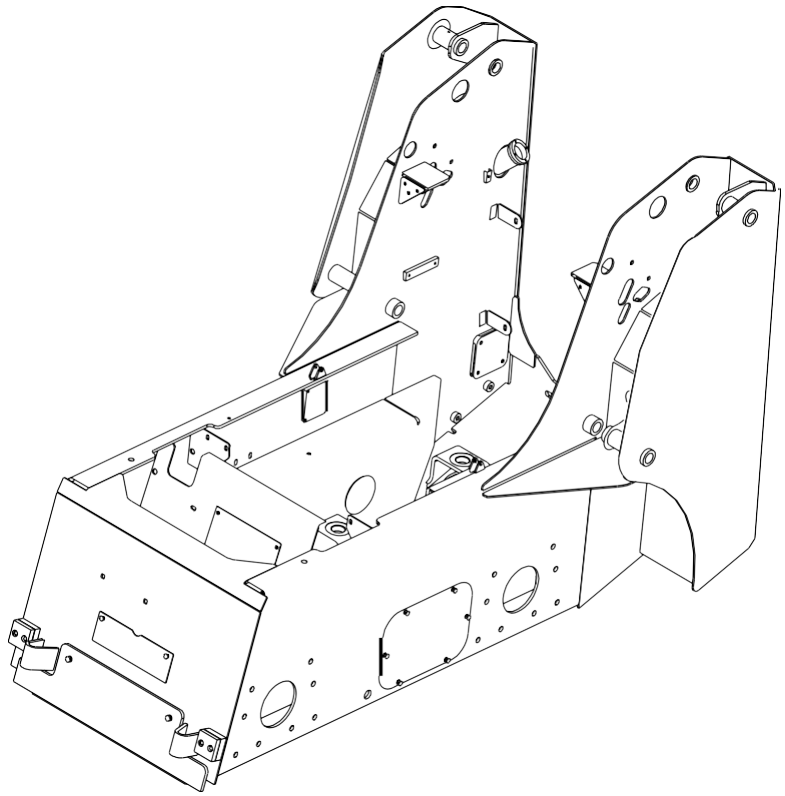


Figure 8 FEAME

2.6 ELECTRICAL SYSTEM

2.6.1 STRUCTURE OF THE ELECTRICAL SYSTEM

2.6.1.1 The electrical system is made up of the built -in rectifier generator, starter generator (both are the unit of the diesel engine.), batteries, the lighting system, oil lines pressure, oil temperature, cleanliness monitoring system, low pressure warning devices and instruments and so on.

2.6.2 POWER SUPPLY SYSTEM INFORMATION

2.6.2.1 The rated voltage of the machine system is 12V, negative earth, single-wire line , see the electrical wiring diagram (Figure 9) for more information about wire connection. Adopts maintenance-free battery (N120 120Ah), primarily as power supply of starter motor. In normal working hours, the auxiliary generator of the diesel engine charges the battery. If the charge can not be boosted or can not be charged properly for any reason, do disassemble the battery from the machine for charging.

2.6.3 BATTERT CHARGING

Do charge the battery following the regulations. Please charge once every three months or start the engine once every other time, when the machine is parked for long time. Run the machine for some time to charge the battery fully. After each operation, disconnect the power switch to prevent leakage.

2.6.4 NOTES

2.6.4.1 Electrical lock on the instrument panel should be connected before machine starting and turned off after engine stopping.

2.6.4.2 After a normal start of diesel engine, do not turn off power switch to avoid the idling voltage of the generator rising up suddenly , this may burn electrical equipment .

2.6.4.3 Turning off the electrical lock and main switch can avoid accidents under the following situations.

1. When the starting motor adhesion contacts and high current is out of control.

2. Repairing cause the circuit ground tapping.

3. Electrical devices are short circuit, ground tapping.

4. Remember to turn off the power when parking to kee personnels and the machine safe. At the end of the operation every time, disconnect the power switch to prevent leakage.

Table 5

Electrical system specifications of skid steer loader	
System voltage	12V
Battery	120Ah
Single-wire system	Negative earth
Diesel engine starting voltage	Electrical startup, 12V

Refer to the maintenance part." maintenance and precautions of Batteries on the skid steer loader " .

CHAPTER III MACHINE OPERATION

3.1 CONTROL MACHENISM AND INSTRUMENT

3.1.1 INSTRUMENT AND INDICATING LAMPS

Instrument panel is on the right of the cab, the front of the cab. The operator can easily see the instrument lamps and indicating lamps.,meanwhile the operator has a clear and wide view. See the Figure 10. Figure 11shows the key gear scheme of the electric lock.

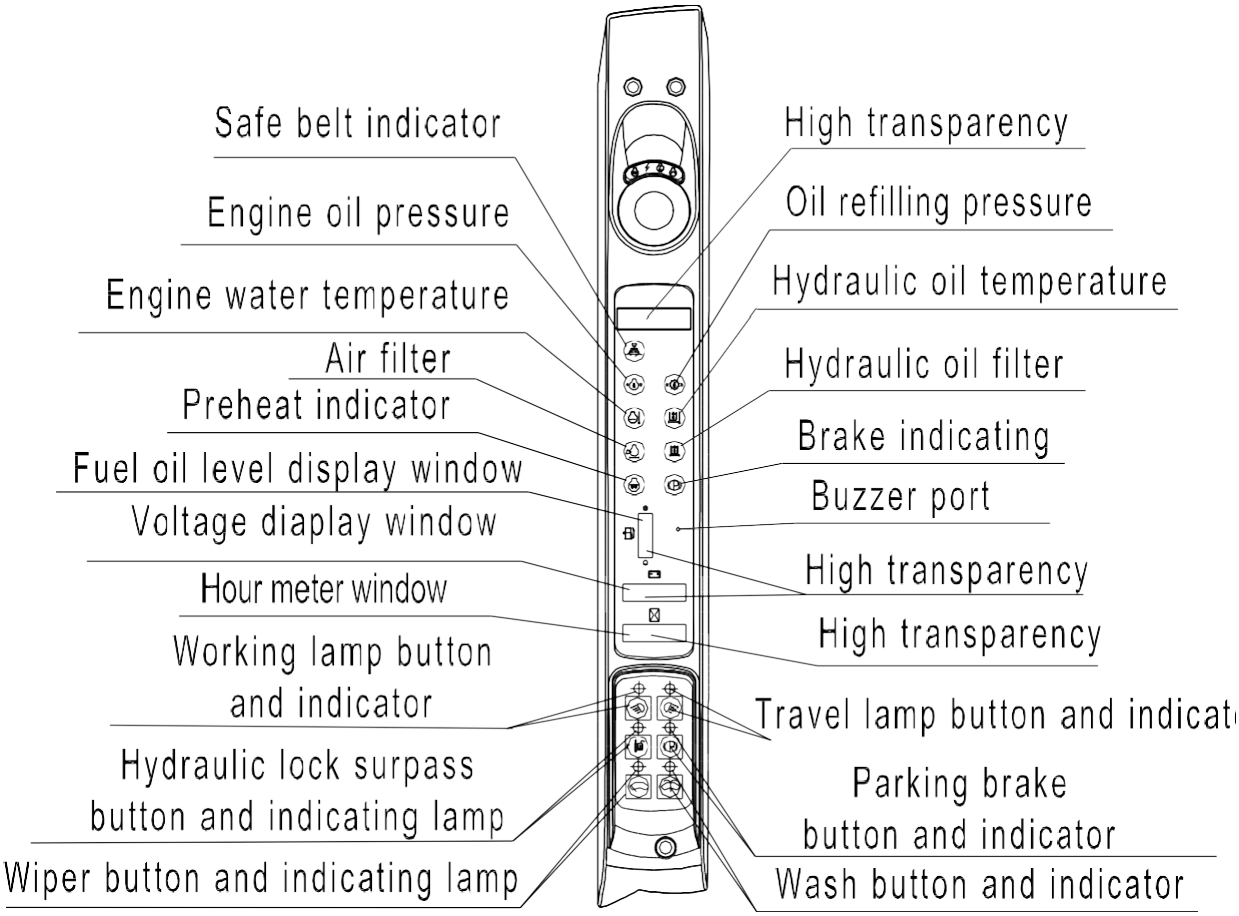


Figure 10 INSTRUMENT

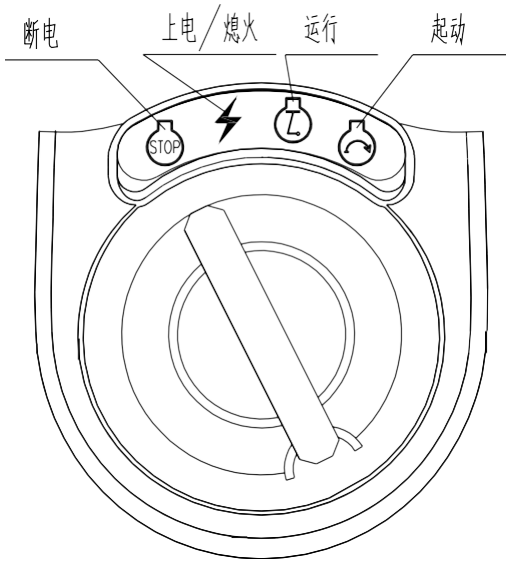


Figure 11 KEY SHIFT POSITION DIAGRAM OF ELECTRIC LOCK

3.2 OPERATION OF SKID STEER LOADER

3.2.1 PRECAUTION WHEN OPERATING

3.2.1.1 Diesel of skid steer loader should be pure and be deposited for at least 72 hours , diesel No. should meet the stated quality requirements.

3.2.1.2 A regular maintenance and lubrication foe skid steer loader should be performed following the regulation.

3.2.1.3 After starting the engine, run the engine at an idle speed. start traveling until the water temperature reaches 55 ℃ .

3.2.1.4 The temperature is generally below 10 ℃, electrically warm up the engine before the engine start-up. Turn on the start gear for 10 seconds, if the engine can't be started ,restart the engine after 30 seconds.

3.2.1.5 Full-load operation when the diesel engine water temperature higher than 55 ℃, the oil temperature is higher than 45 ℃ . The engine operation water temperature and oil temperature should not exceed 95 ℃. The overloaded operation water temperature and oil temperature exceeds the allowable value should stop the engine for cooling.

3.2.1.6 Does not allow the bucket to the highest position carrying materials, delivery of materials should keep the hinge of the boom away from ground about 400 mm, in order to ensure stable travel.

3.2.1.7 The diesel engine power is decreased with the increase of altitude, ambient temperature and relative temperature. so the user must use the loader adapt to the local environment, according to

the diesel engines maintenance instruction requested correct power adjusts its actual power, to ensure the proper use of Skid Steer Loader.

3.2.1.8 In order to improve the hot and cold regions loader operator comfort, equipped with air conditioner on request.

3.2.1.9 In cold weather, do not use heater when the engine starts, wait for the engine is running (warm), and the water temperature above 78 ℃ then turn on the heater switch so as not to affect the heating effect.

3.2.2 THE RIGHT WAY OF IN AND OUT OF LOADER

When sliding in and out of the cab do not jump up or down, may result in personal injury. To adopt the correct way in and out of the cab. Lower the boom to the ground before in and out the cab. As shown, using handrails (fixed in front of the cab) and the pedal (fixed in the lifting arm) into the cab, remember to keep the handrails and pedals clean to avoid oil, caused slipping and personal injury. If the operator leave the cab when the lift arm raised, lock the boom lock pin and stop the engine.

3.2.3 SEAT ADJUSTMENT INSTRUCTIONS

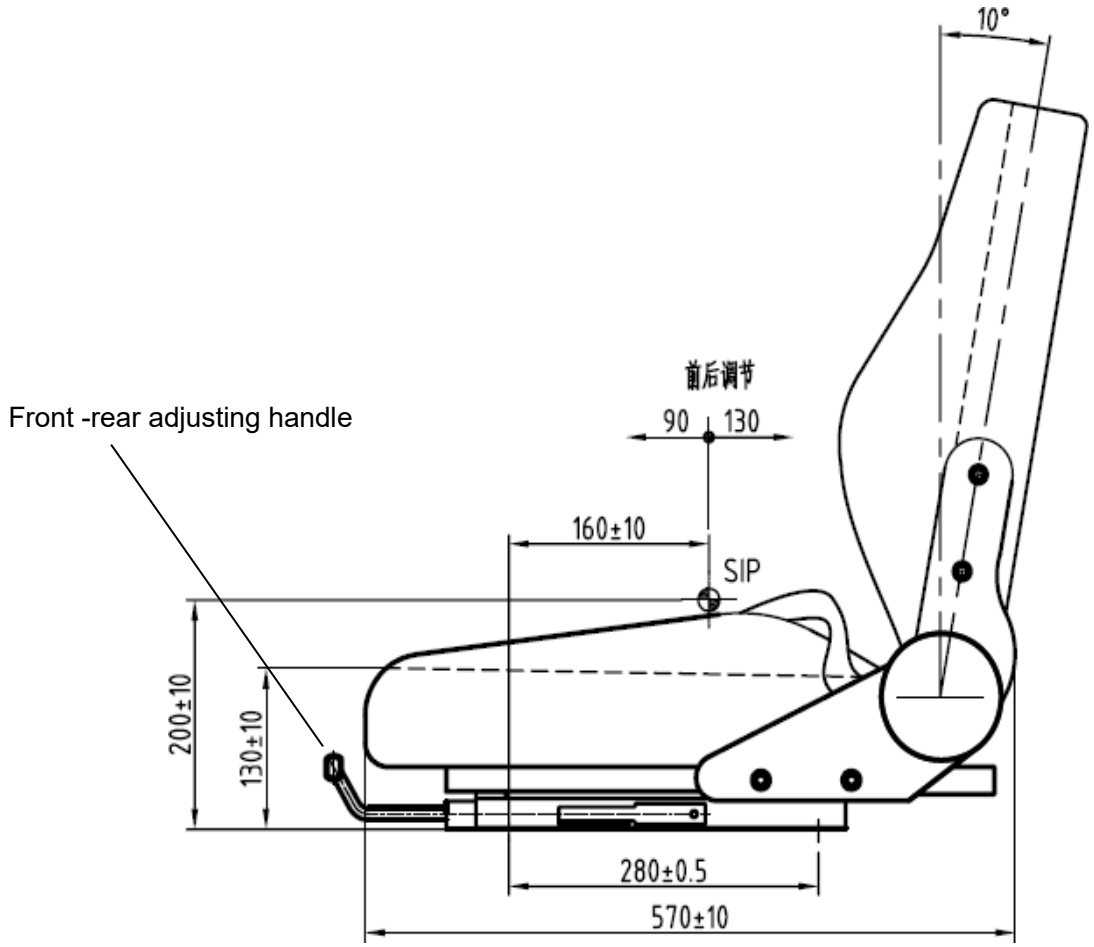


Figure13 ADJUSTMENT TO SEAT

1. Suitable weight adjustment: according to his weight, the user can turn the weight adjustment knob, turning the knob clockwise to increase the suitable weight, and turning knob counterclockwise to decrease the suitable weight. Turn the handle to reach the most suitable weight .

Note: Both front-and-rear adjustment and backrest angle adjustment should move the handle in place. Make sure that the machenism is completely out of control, and then perform the adjustment. After ending the performance, moves the handle back to the position to ensure that all parts are locked and reliable.

3.2.4 USE OF THE SAFETY BELT

1. The machine is configurated with safety belt.The driver should tie the belt when operating the machine. Before using the safety belt, the operator should inspect the wear and fastness of the safety.replace it if necessary.

2. The operator should adjust the length of the safety belt before using the safety belt.ensure the protective function and comfort of the safety belt.

3. Before using the safety belt, inspect whether the lock of the safety belt can function normally or not.

3.2.5 THE USE OF SECURITY ROD

3.2.5.1 Before engine starts, pull down the security bar, that is locked state. As shown in figure 14:

Figure 14 SECURITY ROD

3.2.5.2 Security rod: Security bar is very important for operator, when a sudden stop during the moving, it will protect the driver from the forward force and keep the driver safely on the seat. At the same time can be used as handrail.

3.2.5.3 When the safety rod lifts, the sensor of the safety rod is cut off, once the safety brake is locked, the whole hydraulic and driving system will be locked, so the bucket and booms can not work anymore. Lowered the safety lever to the horizontal position, the sensor is connected, so the braking light of the electrical meter will be turned off , and then the driving and boom hydraulic system will function again, in order to operate the machine normally. (As shown below)

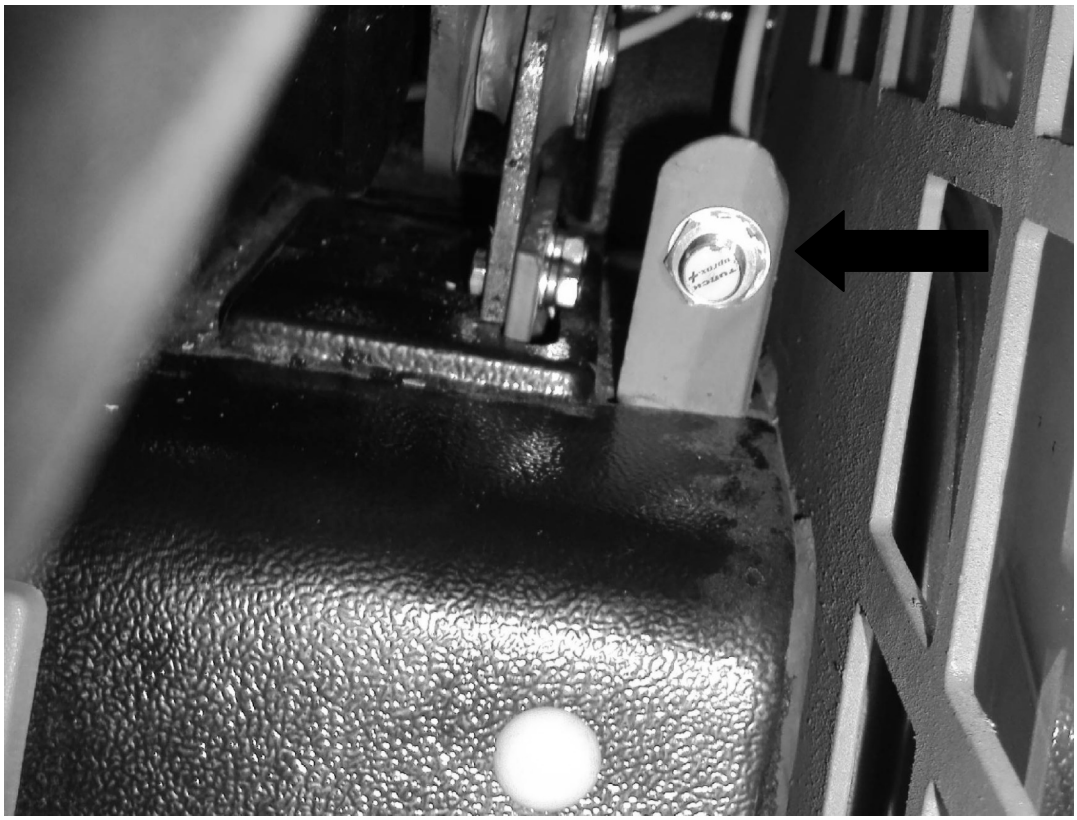


Figure 15 THE SECURITY ROD IS NEAR WITH THE SWITCH

3.2.6 MACHINE OPERATION

3.2.6.1 Left Control Handle: The left joystick controls the left driving system and the boom, its position and the corresponding functions are in the following table.

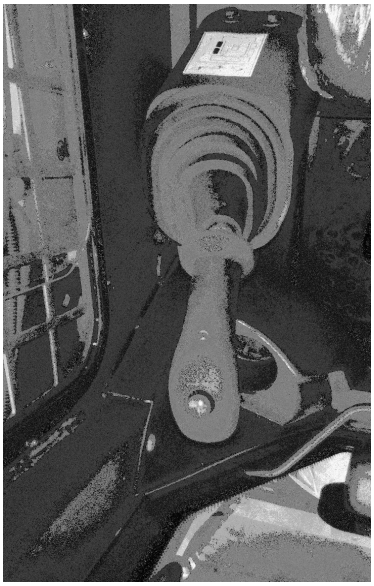


Figure 16 LEFT HANDLE OPERATION

Direction	Function
Front	Left wheel forward
Rear	Left wheel backward
Left	Boom upper
Right	Boom lower

3.2.6.2 The right control lever: the right joystick controls the right driving system and the bucket .its position and the corresponding functions are shown in the following table.

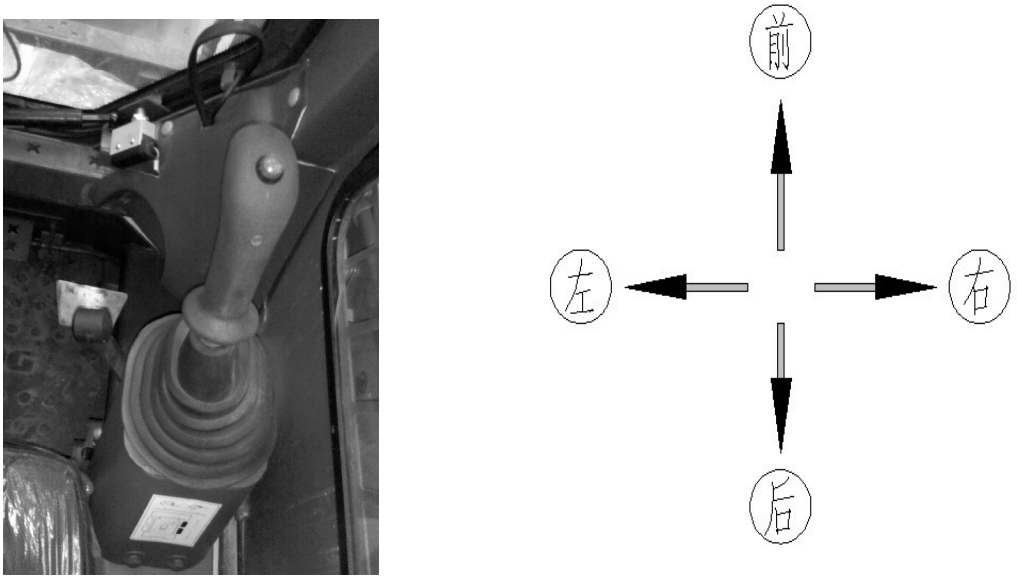


Figure 17 RIGHT HANDLE OPERATION SCHEME

Direction	Function
Front	Right wheel forward
Rear	Right wheel backward
Left	Put bucket
Right	Roll back bucket

3.2.7 REAR WINDOW

3.2.7.1 Rear Window is used as the emergency exit. Once the accident caused the routine exit blocked, the operator can open the rear window as emergency exits as follows:

1. Remove the rubber rectangle band, the end of rectangle band is near the top left corner in the rear window (as shown Figure 17);

2. Remove the glass.

Figure 18 REAR WINDOW

3.2.8 THROTTLE CONTROL

There are the handle and the foot throttle controls, as shown Figure 19

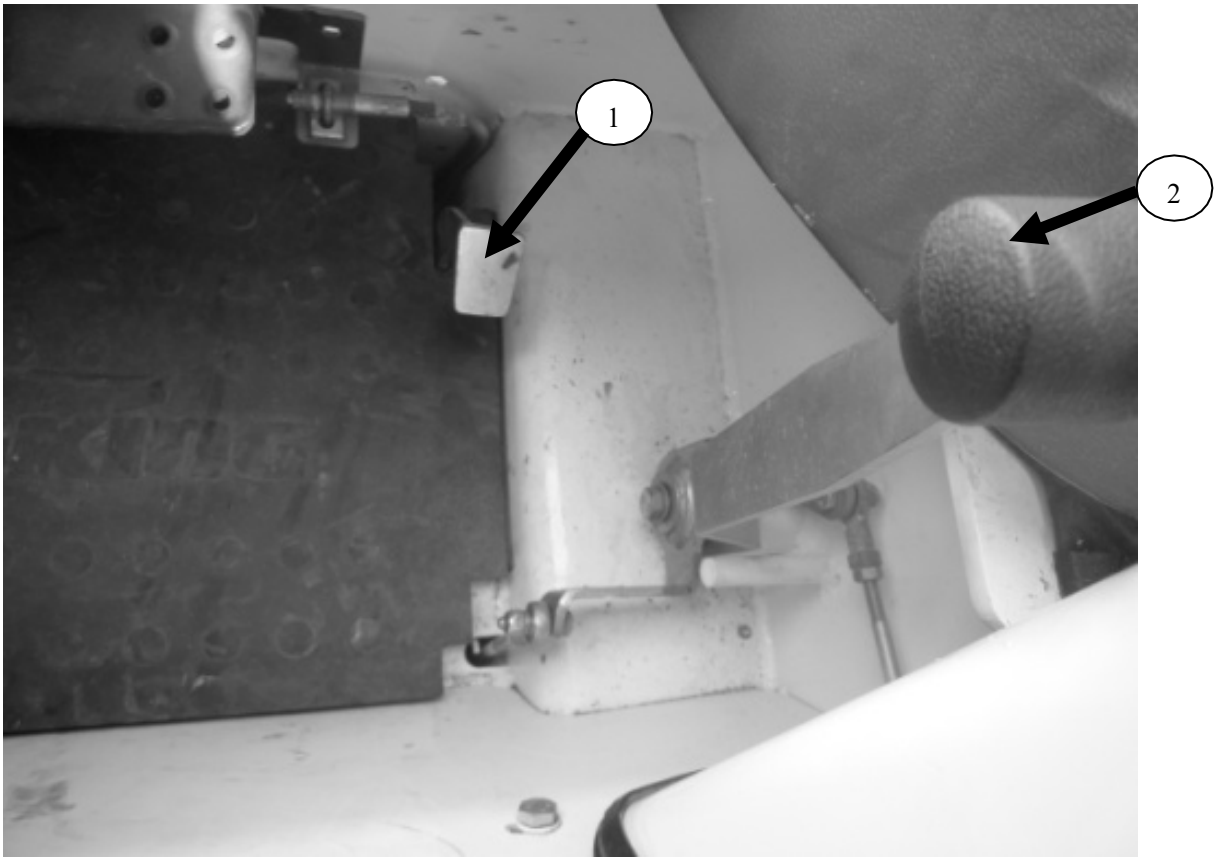


Figure 19 THROTTLE CONTROL

1. FOOT THROTTLE 2. HANDLE THROTTLE

1. Handle throttle control

Move the Handle throttle control forward to increase the engine speed, move backward to reduce the engine speed. Usually to use the handle throttle control, the throttle reaches maximum position, the hydraulic pump in front of engine can provide the maximum hydraulic flow, thereby increasing the driving, loading and reflecting speed.

2. Foot throttle control

Step on the foot throttle control to increase the engine speed, release the pedal to decrease the engine speed. Foot throttle control is used for the maximum control of the situation, such as hard conditions in the flexible controlling requirements. Meanwhile the handle throttle control should be at the position of the minimum engine speed.

3.2.9 AUXILIARY HYDRAULIC CONTROL FOR THE ATTACHMENTS AND FOOT THROTTLE DEVICE

As shown.

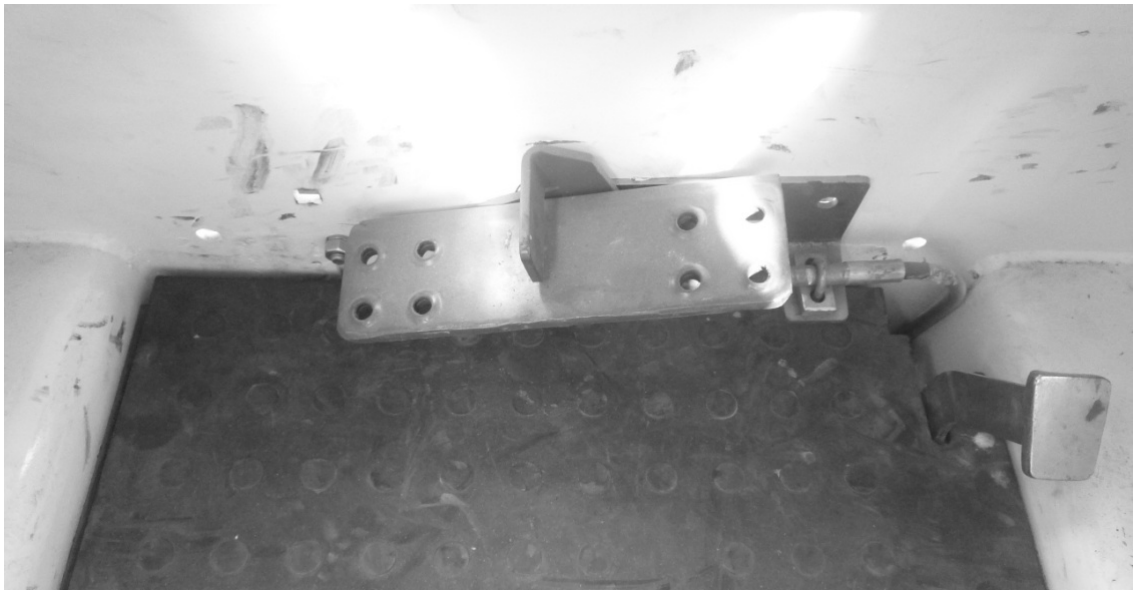


Figure 20 AUXILIARY HYDRAULIC CONTROL FOR THE ATTACHMENTS AND FOOT THROTTLE DEVICE

3.2.9.1 Auxiliary hydraulic control: the pedal controls the hydraulic flow direction for the front attatchments (hydraulic quick dis-connect joint on the left arm), step the pedal on the left or right side depending on the hydraulic flow direction required. Release the pedal, the pedal will return to the closed position.

3.2.9.2 If the accessories perform oppositely with the driver's operation, should swap two hydraulic pipes with each other.

3.2.9.3 If the accessories requires continuous hydraulic power, steping on the pedal to the required position, meanwhile moving the control valve tab in the right direction. The pedals can be fixed as two sides for the continuous power supply.

3.2.9.4 Release the system pressure before installing or removing attachments. Turn off the engine, and depress the auxiliary hydraulic pedal repeatedly until releasing the pressure.

3.3 THE MAIN TECHNIC DATA OF COMMON USE

3.3.1 ENGINE

3.3.1.1 Cooling water temperature (℃)

1. Suitable inlet water temperature 45～60
2. Suitable outlet water temperature 60～90
3. The maximum outlet water temperature 95

3.3.1.2 Oil temperature (℃)

1. The lowest temperature of sump 45
2. Optimum temperature of sump 80
3. The highest temperature of sump 95

3.3.1.3 Engine oil pressure gauge reading (Mpa)

1. Idle speed≥0.1
2. Rated engine speed: 0.35～0.55

3.3.2 VOLTMETER INDICATION

When the rated voltage of system is 12V and the voltage indicator is within the range 12V ~ 14V, that means the power supply system is normal. When the pressure is less than 12V or above 14V, please check the relative system or equipment.

3.4 FUEL,LUBRICANTS,GREASE AND THE COOLING WATER

3.4.1 FUEL AND HYDRAULIC OIL

3.4.1.1 Solemnly Tip:

Be sure to follow the instructions to select oil products of diesel engine oil, diesel, hydraulic oil. Although the price of counterfeit oil is cheap, but it will invalidate early and lose the function, induced Skid Steer Loader failed, causing inside damage of the machine, and difficult to work, leaving a huge security risk, or even result in personal injury or property Loss! (See Table 6)

TABLE 6

Category	Type	Quantum（L）（Rreference）	application	remark
Fuel	0# light diesel oil	100	Dynamic system	-10#、-35# light diesel oil used in north winter or export to cold area
Hydraulic oil	L-HM 46# Antiwear hydraulic oil	65	1. Travel system 2. Operation system	HV46#low-temperature antiwear hydraulic oil；L-HS 46#compositive low-temperature antiwear hydraulic oil used in north winter or export to cold area

3.4.1.2 Fuel: When the fuel oil level reaches the middle position of oil scale, should consider refueling. When the fuel oil level below the middle position, must refueling immediately, or may result in engine stalling and other problems.

3.4.1.3 Hydraulic oil: Refueling at least above the middle position of the oil leveler. When refueling hydraulic oil for the first time, level the bucket to the ground after one circulation of the hydraulic preformance, and the oil level should be higher than the middle position of the oil leveler.

3.4.2 COOLING WATER

1. General appropriate application of antifreeze.Commonly used in antifreeze formulations as follow:

1) Alcohol 43%, glycerol 15%, water 42% (weight ratio)

2) Glycol (DEG)50%, water 50%（volume ratio）

3) Glycerol 66.7%, water 33.3%(weight ratio)

3.4.2.1 To ensure the engine cooling system work in different working conditions, under different circumstances, recommended to use Weimeng dedicated coolant

3.5 INSECTION BEFORE OPERATION

3.5.1 ENGINE AND INSTRUMENT SENCTION

3.5.1.1 Check the tank water level.

3.5.1.2 Check the fuel tank oil level.

3.5.1.3 Check the engine sump oil capacity.

3.5.1.4 Check the oil pipe, water pipe and all parts of seal

3.5.1.5 Check the battery wiring.

3.5.2 CHASSIS SENCTION

3.5.2.1 Check the amount of hydraulic oil.

3.5.2.2 Check the hydraulic system piping and accessories of seal.

3.5.2.3 Check the flexibility of the joystick and whether on Neutral position.

3.5.2.4 Check the tire pressure is normal.

3.5.3 STARTING THE ENGINE

3.5.3.1 Check the meter indication is normal.

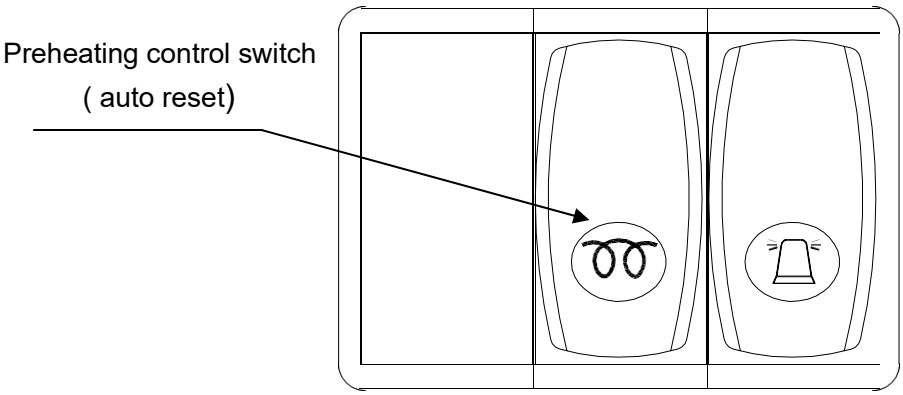
3.5.3.2 Check the condition of the lighting equipment,indicator light, horn, wiper, oil scale

3.5.3.3 Manipulate the device and check the condition.

3.5.3.4 Low-speed operation of the engine and check the condition.

3.5.3.5 Starting in the cold temperature

The operator should preheat the engine electrically in the cold temperature.



(1) Turn the electric key switch to the "system power". Press down the preheating control switch in order to supply the power to the engine preheating plug (the preheating time is 5 seconds every time, after 5 seconds preheating light in the instrument is off).

The standard preheating time under the different temperatures is shown in the following table. After preheating the engine, don't need this operation.

Table 7

Ambient temperature	Preheating time
Above 10℃（50° F）	No need
10℃（50° F）~—5℃（23° F）	About 5S
Below —5℃（23° F）	About 10S
Limit for continuous use	20S

（2） When the preheating light is off, turn the electric key to the "start" position and the engine starts up.

(If the engine can not starts after10S, shut down the engine for 5~30S. Then repeat （1）and (2) process again.)

CAUTIOU:When there is fear of temperature dropping below -15℃（5° F）detach the battery form the machine,and keep it indoors in a safe area,to be reinstalled just before the next operation.

3.5.4 INSPECTION AND MAINTENANCE AFTER OPERATION

3.5.4.1 Check the fuel capacity.

3.5.4.2 Check the oil level and clean of the engine sump,if the oil level is too high and thinning,find out the reason and excluded it.

3.5.4.3 Check the oil pipe,water pipe and the attachments without leakage.

3.5.4.4 Check the hydraulic pump fixed and sealed, and whether overheating.

3.5.4.5 Check the rim bolts and the pin is fixed.

3.5.4.6 Check the working condition of the device.

3.5.4.7 Check tire appearance and pressure are normal.

3.5.4.8 When the temperature is below 5 ℃, the cooling water should be released, if the antifreeze is already filled, do not release.

3.5.4.9 Inject every stated injection point with butter on device.

3.5.4.10 Cleaning off dirt and debris of machine and inside bucket.

3.6 STARTING AND PARKING

3.6.1 STARTING

3.6.1.1 Make sure there is no working personnel around the machine before start the machine, and alarm the horn, to remind people standing around in a safe place.

3.6.1.2 Please check the brake is valid or not before starting the machine.

3.6.1.3 Please adjust, fix and lock the seat, fasten seat belts before starting the machine.

3.6.1.4 Put down the safety lever. only when lowering the safety lever, the machine could start.

3.6.1.5 warm up the machine at an idle speed after the machine starts. Until water outlet temperature of the diesel reaches 55℃ and the engine oil temperature reaches 45℃, do not operate the machine with full load.

3.6.2 Park the machine on level ground and place a pad in front and rear tires to prevent the machine sliding. If the machine park on the lamp for a while, put a more stable wedge under the wheel in order to avoid the machine sliding.

3.6.3 parking the machine

3.6.3.1 If the machine has been operated with full load, let the engine run at an idle speed for 5 minutes with empty load in order to cool down every part of the engine.

3.6.3.2 Turn the key of the electric lock to the "system power" position (as shown in figure 11), the engine shuts down normally.

3.6.3.3 Please lower the lift arm to the ground before leaving the machine.

3.6.3.4 Remove the key, lift the safety bar to lock loading control lever, release the seat belt, use the handrails and pedals to leave the cab.

3.7 OPERATION CONTROL

3.7.1 OPERATION PREPARETION

3.7.1.1 The speed of shoveling materials loader should be reduced to less than 4km / h.

3.7.1.2 Cleaning the working sites, filling pits, cuspidal stone and other damage to the tire and obstacles impeding operation.

3.7.2 OPEARTING WAYS

3.7.2.1 general operation

Warning: Any part of your body can not leave the cab during the operation. Before you leave the cab, remember to lower the bucket to the ground, and turn off the engine. If you do not comply with these steps, may result in casualties.

Warning: The bucket should be placed as low as possible during the loading operation, so that the driver vision is more wide, and better to keep the stability of the machine. Operation on the rough ground and the bucket is full loaded should slow down the machine. If the speed is too high, may lose control or even overturn.

Warning: If the bucket is uplift and the driver is not in the cab may cause casualties. so be sure to lower the bucket to the ground before leaving the cab , or locking arm lock pins and turn off the engine.

Warning: Do not turning with arm lifting high, or may cause overturn.

1、 Lower the lift arm at the lowest and run the engine at the maximum speed, then shovel the material at the speed of 2.5km/h.(as shown in the figure 21)

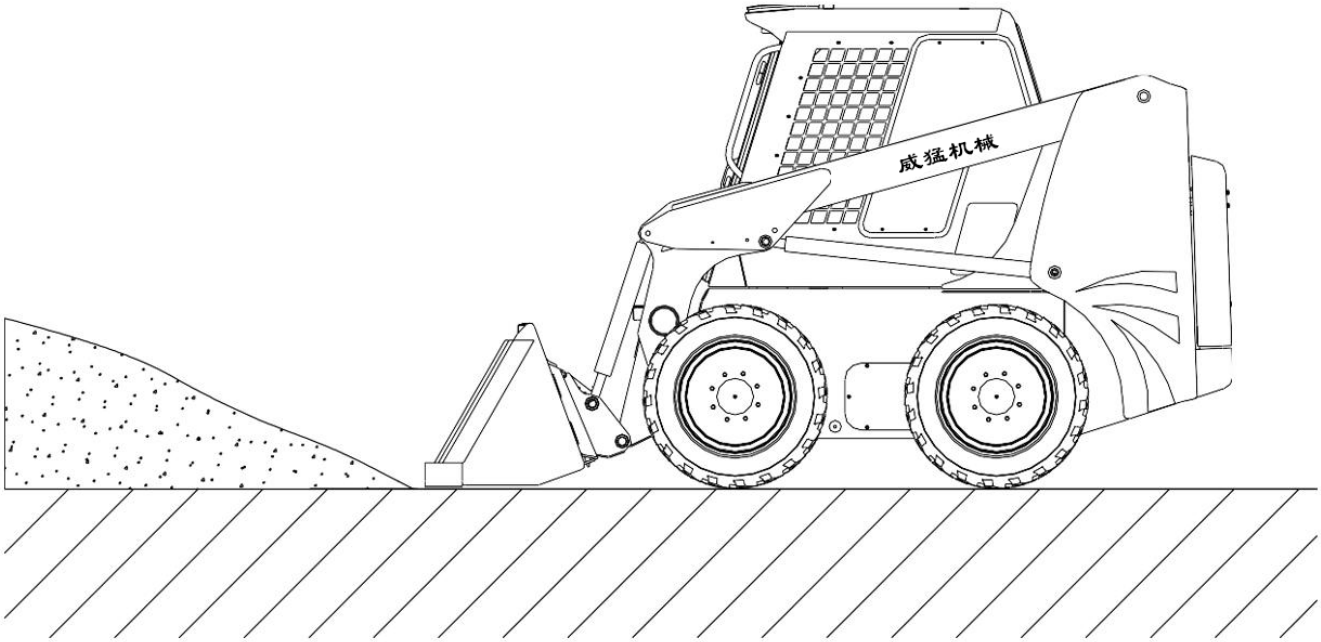


Figure 21 SHOVEL EARTH

2、 Taking back and lifting the bucket.

3、 Keep the bucket 300mm from the ground during the transportation.(as shown in the figure 22)

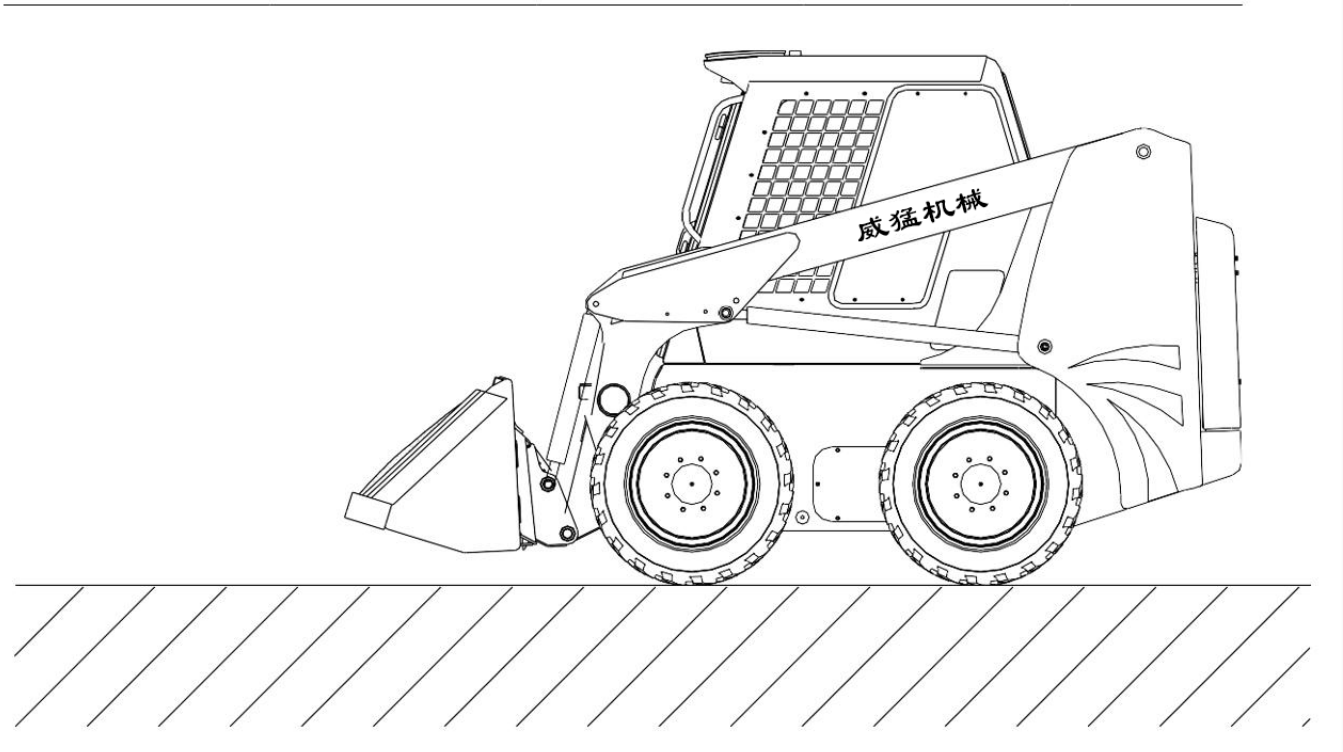


Figure 22 TRANSPORTATION

4、Arrived at the designated location, rising boom, dumping, all operations are stable.

Warning: The cutting edge and teeth of bucket may run into frozen or buried objects such as rocks while shoveling. Check and mark before the operation, keep the bucket flat with the ground, avoiding obstacles, and also not too fast.

3.7.2.2 Operating on the hillside or slope

Warning: Operating on the hillside is more dangerous, and should pay attention to the ground situation, rain, snow, ice, loose gravel or soft soil, making the situation complicated. Make accurate judgments about the safety of operation on hillside or slope.

Warning: Must be very careful while operating on the hillside, do not let the Skid Steer Loader to be close to the mountain edge, the loader may easily tip over.

3.7.2.3 When climbing up the upgrade with full load

If the bucket is full with material, should be positive upgrading the slope and reverse downgrading the slope, to avoid tiping accident.(as shown in figure 23、24)

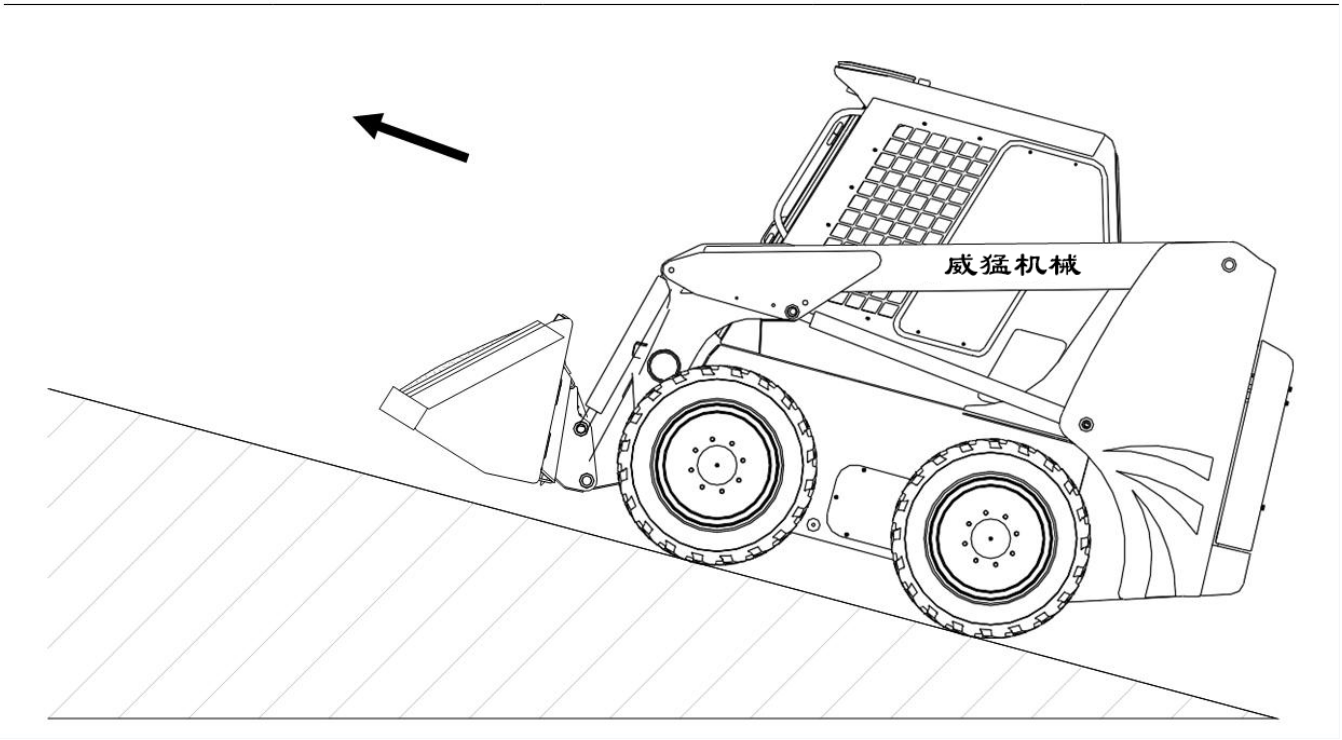


Figure 23 UPGRADE WITH FULL LOAD

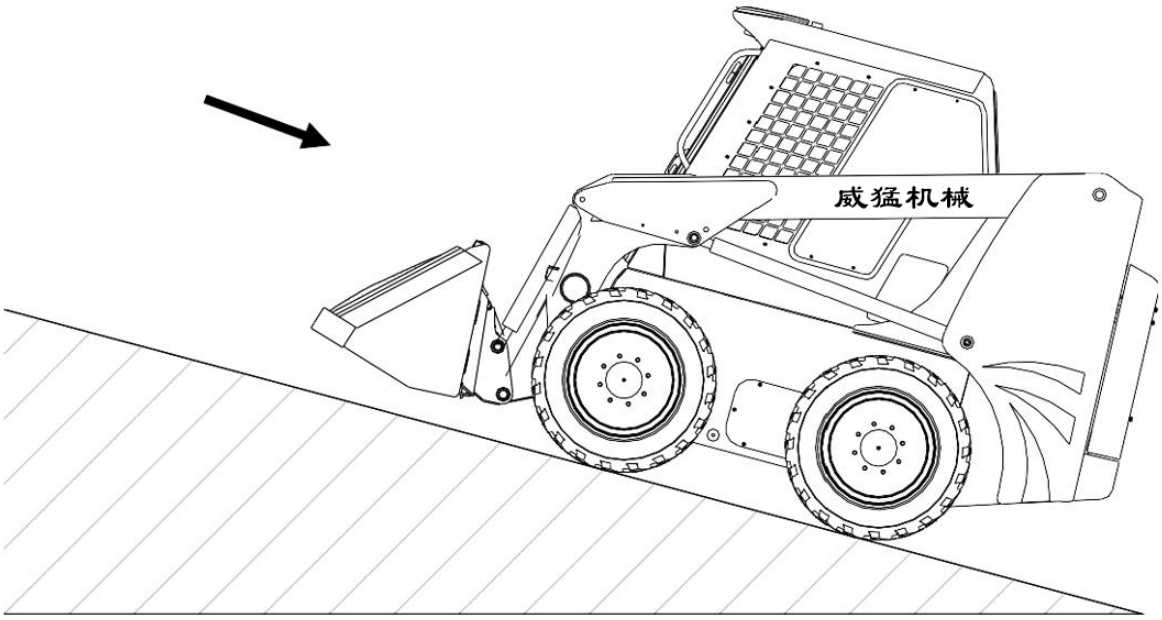


Figure 24 DOWNGRADE WITH FULL LOAD

3.7.2.4 When the bucket is empty

1. If the bucket is empty, should be positive downgrading the slope and reverse upgrading the slope.(as shown in the figure 25,26)

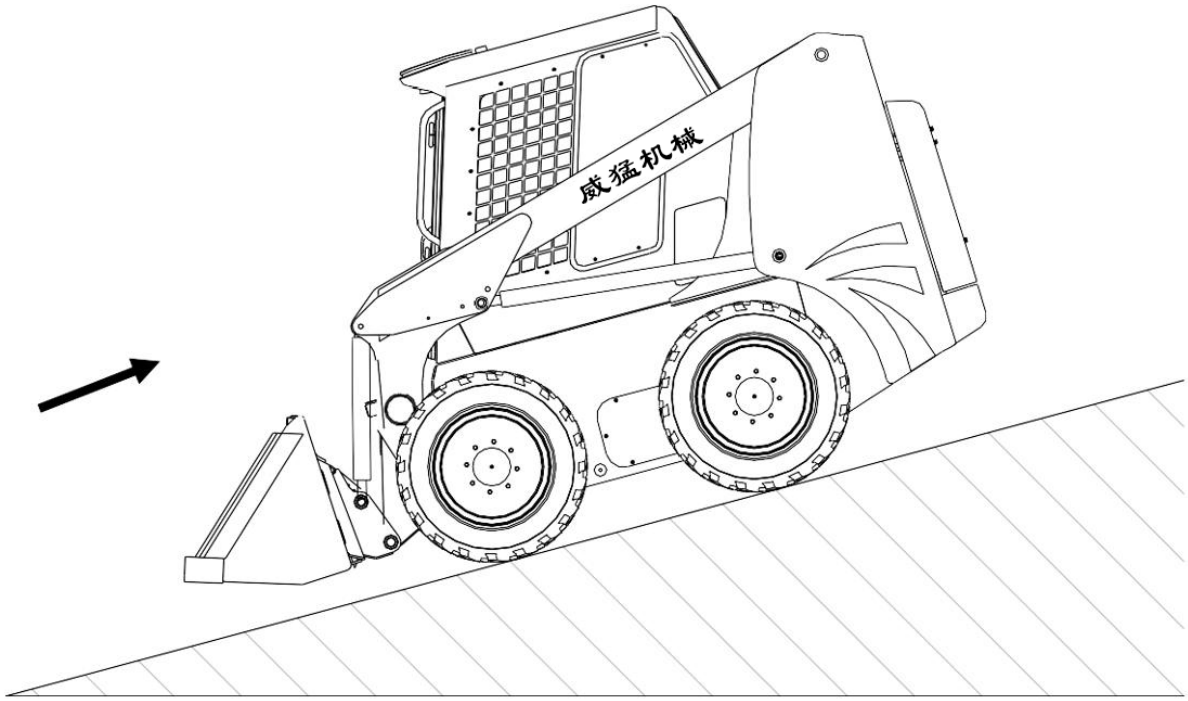


Figure 25 UPGRADE WITH BUCKET EMPTY

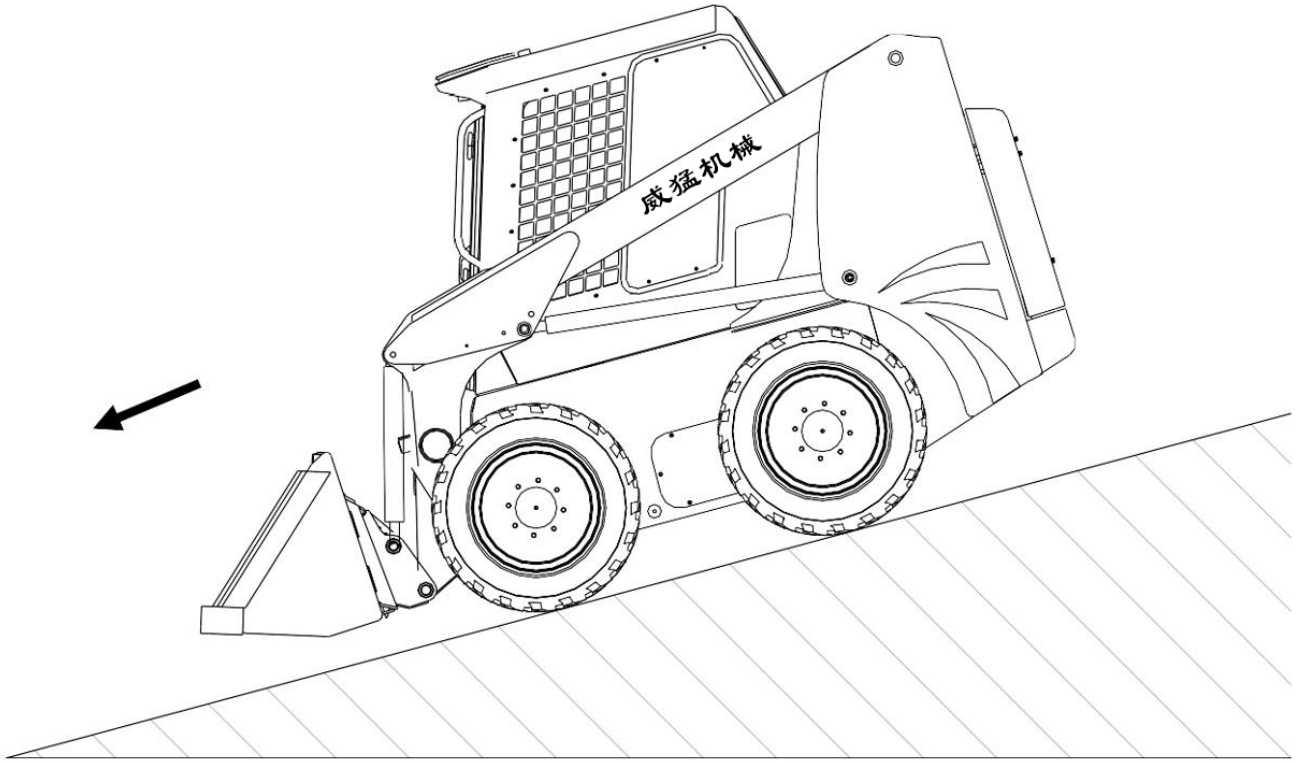


Figure 26 DOWNGRADE WITH BUCKET EMPTY

CHAPTER IV MAINTENANCE SECTION

4.1 MAINTENANCE AND PRECAUTIONS OF SKID LOADER.

4.1.1 THE USER SHALL CARRY OUT RUNNING-IN LF NEW LOADER AFTER PURCHASING THE LOADER, IN THE COURSE OF RUNNING-IN OF NEW LOADER. OPERATION AND MAINTENANCE IN ACCORDANCE WITH THE FOLLOWING REGULATION. PRECAUTIONS IN THE COURSE OF RUNNING-IN:

4.1.1.1 The running-in period for a new loader is 100 hours, the forward gear 2 and reverse gear 2 shall be arranged for running-in respectively.

4.1.1.2 During the running-in period, the load on the loader may not exceed 70% of the rated load.

4.1.1.3 Pay attention to the lubrication of the loader, and replace or add lubricating grease in accordance with the specified interval.

4.1.1.4 Pay attention to the temperature of wheel hub and wheel case, and identify and eliminate the cause if overheating is found.

4.1.1.5 Inspect whether the bolts and nuts of all parts are properly tightened up.

4.1.1.6 During the running-in period, it is advised to work with bulk materials only, and the working may not be carried out too violently.

4.1.1.7 After the cold engine is started up, make it run at idle speed for 10 minutes first.

4.1.2 OPERATIONS TO BE CARRIED OUT AFTER TWENTY HOURS OF RUNNING-IN

4.1.2.1 Inspect the tightening of all bolts and nuts, especially cylinder head bolts, exhaust pipe bolts, wheel rim nuts, jointing bolts.

4.1.2.2 Clean rough, detailed oil filter and fuel filter.

4.1.2.3 Inspect the tension of fan belt, pay attention to whether the power supply from generator to accumulator is normal or not.

4.1.2.4 Inspect the sealing property of hydraulic system and brake system.

4.1.2.5 Inspect the connection of each control handle and throttle lever.

4.1.2.6 Inspect the temperature and connection of each part of electrical systems, the power supply to engine, the conditions and lighting devices and turn lamps.

4.1.3 OPERATIONS SHOULD BE FOLLOWED AS BELOW AFTER RUNNING-IN PERIOD

4.1.3.1 Replace engine oil.

4.1.4 All the inspect should be done under the condition of stopping the machine in the wide, level and clean place! Flat the control bucket before stopping the machine. Cut off the power before inspecting (switch the power on if necessary), pull the key out and then hang nameplate "no operation" on the starting switch or operational lever! Before adding and draining oil , waiting to cool the oil temperature and then loose the seal cover slowly, release the pressure,

preventing scald before take it down! To loose and tighten the joint of pipes should be used with two spanners, making sure the weldment of pipe joint do not be splited for the torsion force.

4.1.5 IMPORTANT INFORMATION

4.1.5.1 Please select diesel engine oil, diesel oil, hydraulic oil and other oil liquid product according to the user manual.

4.1.5.2 Although the cost of counterfeit oil is low, it will expire and be disfunction early, leading to the damages of loader, thus affect its operation and hide a serious trouble, even leading to personal injury.

4.1.6 HARM OF IRREGULATION OIL LIQUID

4.1.6.1 Under the condition of high-temperature and high-pressure, irregular diesel engine oil becomes gluing,carbolic and aging losing its supporting ability and cooling lubrication effect which lead to worn of attachments and other parts, and serious faults such as spurting,abnormal sound,engine oil burning, lack power, and even pulling cylinder,shaft will happen.

4.1.6.2 The content of impurity, paraffin, water and sulfid of irregular diesel exceed its usual content, and the thermal is not enough leading to the faults such as piece of injectorting pump eroded and worn early, nozzle plugged, leading to black smoke,carbonization, lacking power.

4.1.6.3 Under the condition of high-temperature and high-pressure, the irregular hydraulic oil is glued early and aging, reducing its driving efficiency,plugging pipe circuit and valve circuit, damaging seal components, reducing and even losing its supporting ability and lubrication, rusting and damaging hydraulic cylinder, leading to operation system and working implement system do not work normally.

4.1.6.4 Please pay special attention : although oil liquid products are both regular, the congener products of different brands is forbidden to use. As a result products of different brands is still different in its compositions, otherwise chemical reaction will happen, leading to losing its efficiency. As a result, select the special or appointed oil liquid products of Weimeng.

4.1.6.5 Please ensure the purity of the oil liquid, the damage of the machine caused by the unqualified oil will not be covered by our warranty.

4.1.7 The working surroundings for skid steer loader is serious which large dust consistency, some oil circuit, circuit easy to polluted or plugged, and influence the normal working of loader. Please often inspect oil circuit,circuit to make sure the normal seal and through. Pay special attention to a few parts: the air filter and pipe system of the diesel engine, the clearance of the oil cooler ductpieces, air circuit of compressor, hydraulic oil filter, the seal parts of control flexible shaft, the damping hole of oil pressure meter , instrument panel, electrical connecting plugs and so on.

4.1.8 MAINTENANCE AND REPAIR IN TIME

4.1.8.1 Skid steer loader is the tool to create the wealth for you! Please take good care of it. Please repair and maintenance skid steer loader according to the user manual, thus faults and trouble can be eliminated and repairing efficiency which can ensure the normal working of skid steer loader and reduce the maintaining cost.

4.1.8.2 Select original parts and components

1. The same as oil liquid, the original parts and components are the guarantee of skid steer loader. it will cost much for the counterfeit.

2. You can get Weimeng special or designated oil, liquid products and original parts and components from Weimeng spare parts company or commission business in various places conveniently.

4.2 MAINTENANCE OF MAIN COMPONENTS

4.2.1 PRECAUTIONS OF DIESEL ENGINE MAINTENANCE

4.2.1.1 See to the details in 《User Manual》selected for the machine.

4.2.1.2 PRECAUTIONS :

1. In the cold weather (the surrounding temperature below freezing point temperature), when antifreeze is not added to the coolant and the truck need to transport for long distance or shut down, open the drain switch of diesel engine body, water pump, engine oil cooler, drain switch of radiator launching room to empty the water preventing freezing.

2. If there is any engine oil in the cooling fluid or any water in the oil sump, should inspect the machine, replace all of the oil and the water and refill them.

4.2.2 MAINTENANCE OF IMPLEMENT QUIPMENT AND FRAME

4.2.2.1 Regularly inspect the working equipment and whether weldment of frame parts have crack and bend or not, please repair and replace immediately if there are. For every active part with oil cup, add lubrication grease to make sure that every active parts flexible and prolong its service life.

4.3 MAINTENANCE AND PRECAUTION OF EQUIPPED ACCUMULATOR SKID STEER LOADER

Since the battery equipped on the machine, the moving time of new machine is different, the actual storing power of the battery is different, and the drain power of battery is also different, as a result, pay attention to the actual storing power of the battery, the storing power of battery is not too low, charge in time if the power is too low.

4.3.1 MAINTENANCE OF THE BATTERY IN USE

4.3.1.1 Inspect often whether the connection of battery clamp

4.3.1.2 Clean the connection parts of the top with clothes or brush without water,after mounting the battery, to protect the connection bolts covering vaseline.

4.3.1.3 In the normal working of integrated machines, if stop working in day time or at night, make sure that all electrical devices turned off normally.

4.3.1.4 During the usual working, the time of using electrical dynamo every time should not be too long(3-5s), start continually, the interval time should be 10-15s, the times is not too much, three times to start to run unsuccessfully, find the causes, remove the faults and then start again, prevent leading to

draining time of large current is too long which lead to the damage of pole plate of battery inside.

4.3.2 MAINTENANCE OF ACCUMULATOR OF MACHINE IN STOCK

4.3.2.1 Charging enough before the battery in stock for a long time, cut off cathode clamp of battery in stock to release the drain power.

4.3.2.2 Supply the battery every three months in stock, or start to run the engine every some days,and charge the accumulator enough after running for a while.

4.3.2.3 For the battery that losing power longer than half one year, if charging not enough, itwill affect its effect directly, even lead to failure of the battery.

4.3.2.4 Inspect the conditions of accumulator when the truck on sales,the accumulator that losing power (voltage is lower than 12.5V) must be charged enough (above 12.6V)and then to the users, otherwise, it will affect its usage for the users.

4.3.3 INSPECTION STANDARD OF BATTERIES

4.3.3.1 Visual inspection: Nice appearance, no damage, no leak, no injury mark.

4.3.3.2 Voltage of opened circuit: do not lower than 12.5V.

4.3.3.3 Voltage of drain power:5 times draining (or the current draining according to GB/T5008.2-2005 regulation), voltage in 5 seconds is higher than 9V.

4.3.3.4 Starting current:

N120 120Ah 850CCA

4.3.4 CHARGING WAY OF BATTERIES

4.3.4.1 Direct current charger: charge the end of battery with the current equivalent to one tenth of rated power of battery 20 hours, the voltage reach to 14.4V, and then continue to charge 2 to 3 hours.

4.3.4.2 Constant pressure charger: connect the battery losing power and the charger correctly (red is anode and black is cathode), press the charging button, charge with 14.4 V or 16V button, the max.charging current not beyond 25A. Finished charging and then the current shows 0.00 stopping automatically.

4.3.4.3 Direct current charger +constant pressure charger: battery with serious losing power (the voltage is lower than 10V) such as constant pressure charger do not identify charging: first charge for 3 to 8 hours with current equivalent to one tenth of rated power of battery 20 hours with adjustable direct current charger, and then continue to supply the power with constant pressure charger to stopping automatically.

4.3.5 CHARGE PRECAUTIONS:

4.3.5.1 No smoking if charging! Charge away from fire in the draughty surrounding, no tinder or explosive.

4.3.5.2 Stop charging if there are phenomena such as overheating of battery, peculiar smell or acid injectorting.

4.3.5.3 Gas will be produced in the process of charging, inspect whether the venthole on both sides of the top cover of battery is draughty or not. Make sure the venthole draughty to prevent the battery explode.

4.3.5.4 No charging battery whose outside case is misshapen as a result of overcharging or its electrolyte dry.

4.3.5.5 While charging the battery, the working personnel should pay attention to the safety.

4.3.6 DRAIN TEST OF POWER AFTER CHARGING

4.3.6.1 Discharging test of the large current with high-amplification discharge device for 5s, the battery which load voltage higher 9.6V is perfect.

4.3.6.2 After identifying the battery is perfect, clean it and make sure that the appearance of the battery is clean and the venthole is straightway.

4.3.7 REQUIRED EQUIPMENT TOOLS

Accumulator inspecting meter, charger.

4.3.8 THE FOLLOWING TROUBLE IS NOT BELONG TO THE SCALE OF "THREE RESPECTS"

4.3.8.1 Use it wrongly or accident leading to the invalidation of the battery.

4.3.8.2 Skid belt, overweight lift, polluting end pillar and extraordinary load lead to power loss of accumulator or serious drain for a long time.

4.3.8.3 The over low charging voltage and the accumulator with not enough charged lead to sulfuration of the pole plate.

4.3.8.4 The high current of charging voltage, over charging the battery lead to serious loss of water which make the weight lighter.

4.3.8.5 Over charging and over draining lead to the damage of battery.

4.3.8.6 When mounting, connecting anode and cathode contrarily, or damaging the end pillar, case body,short circuit to the battery involuntary and so on.

4.4 LUBRICATION

4.4.1 Lubricating correctly can reduce frication resistance and worn of parts, ensuring the normal operation of the machine and then prolong the service life.

4.4.1.1 Precautions when oil filling:

1. Clean oil filling container and parts oil filling: replace the butter nozzle if it is damaged.

2. Stop the machine to the level position when inspecting the oil.

4.4.1.2 Type and number of lubricant （see to table 7）

TABLE 8

Type	Name	Adding oil quantity(litre) (reference value)	Application parts	Note
Diesel oil	CF15W/40	≥20	Diesel	Details see to manual of the diesel engine(CF5W/40 suitable for winter in the north or exported to the cold area)
Lubricating grease	2# universal lithium lubricating grease	4kg.	Bearing and articulated parts	Low temperature and pressure lithium grease suitable for winter in the north or exported to the cold area.

4.4.1.3 Oil filling and pressure lubricating grease

1. Diesel engine mechanic oil

1) It is suitable for lubricating system of diesel engine.

2) "Static full" on the oil scale gauge of engine oil shows the oil surface before starting to run the diesel engine. "dynamic full" shows the surface of engine oil when the engine rotating;"danger" shows to refill the oil immediately. Replace the oil at the first 100 hours (Expiration of Running-in Period) and then replace the oil in every 250 hours.

2. Oil for hydraulic system

Fill the oil from the oil orifice on the engine oil tank to the above the middle position of oil leveler in the oil tank. It mainly produced pressure oil through oil pump for the system. Replace the hydraulic oil every 1000 hours.

3. Filling lubricating grease

Parts of filling grease are on the every skid bearing or rolling bearing.

1) Bearing of water pump of diesel engine and fan.

2) Bearing of control lever.

3) Pin sheath of all cylinders end.

4) Every pin sheath in the working device.

After working 50 hours, fill lubricating grease for the above-mentioned parts. Please pay attention to the working conditions and filling way.

4.4.1.4 The maintenance cycle regulated in this manual is determined by the working hours timer or calendar. The maintaining work should be ranged according to the time cycle. The maintenance cycle of the loader working under the serious surrounding should be shorten combined with the regular cycle.

4.4.1.5 Combined the inspect and maintenance before using with that after using every day.

4.4.1.6 See to 《user manual of diesel engine》for the maintenance of the diesel engine.

4.4.1.7 Regular maintenance should be done in daily , 50,100, 250, 500, 1000, 2000 hours.

TABLE 9

cycle	Inspect content
Daily	1. Inspect the level of the cooling water and the anti-freezing fluid 2. Inspect oil sump of the diesel, engine oil surface of the speed regulator(injection pump) 3. Inspect whether the leather belt is loose or not. 4. Inspect the starting possibility, colour of the exhaust and abnormal noise. 5. Inspect the braking capacity. 6. Inspect the flexibility of the direction. 7. Inspect the leakage of the oil and water in every system. 8. Inspect and monitor the working condition of the instrument. 9. Inspect the whether there is abnormal noise and overheating or not. 10. Inspect the air pressure, cracking or not, or abnormal wear 11. Inspect the working condition of the switch, the pedal, the handle and the button. 12. Inspect whether bolts and nuts in every part are loose, fallen off or not. 13. Inspect whether the wheel nuts, hub assembly bolts are loose or not. 14. Inspect the flexibility of control lever system, fill the lubricating grease. 15. Fill the lubricating grease to every articulating point and pin shaft sleeve. 16. Inspect the safety belt. 17. Inspect the separator for the water and sediments.
EVERY 50 HOURS	Besides the daily life maintenance of the machine, follow work needs to do. 1. Clean the filter of the diesel engine, replace the diesel oil paper filter core. 2. Clean the air filter core, replace it if necessary. 3. Inspect whether the binding bolt of engine support is loose or not. 4. Inspect the working device, frame and cosmetic parts. 5. Inspect the level of the hydraulic oil , fill it if necessary. 6. Clean the contaminant on the surface of the radiator and cooler.
EVERY 100 HOURS	Besides the 50 hours maintenance for the machine, follow work needs to do. 1. Replace the diesel engine oil, engine oil filter (replace at the first time). 2. Clean the terminal end of the battery. 3. Inspect the piston rod of the oil cylinder.
EVERY 250 HOURS	Besides the 100 hours maintenance for the machine, follow work needs to do. 1. Replace the anti-freezing fluid. 2. Replace the diesel engine oil, engine oil filter. 3. Inspect the tension of the chain, tight the chain if necessary.

	4. Inspect the oil level in the oil tank of the chain wheel. 5. Clean the cooler. 6. Inspect whether the fan leather belt is normal or not. 7. Inspect the tightness torque of the hydraulic motor and the nuts for the hub assembly
EVERY500 HOURS	Besides the 250 hours maintenance for the machine, follow work needs to do. 1. Replace the filter core and new oil. 2. Inspect whether tighten the mounting bolts or not.
EVERY1000 HOURS	Besides the 500 hours maintenance for the machine, follow work needs to do. 1. Replace the hydraulic oil return filter core, wash and replace the hydraulic oil tank. 2. Wash the diesel oil tank. 3. Replace the oil in the oil tank of the chain wheel.
EVERY2000 HOURS	Besides the 1000 hours maintenance for the machine, follow work needs to do. 1. Check whether weldments for every part of the working device, frame and the fixation of the bolts and nuts. 2. Check and repair the diesel according to the manual of the diesel engine.

CHAPTER V HOISTING AND TRANSPORTATION SECURING OF SKID STEER LOADER

5.1 HOISTING AND TRANSPORTATION OF SKID LOADER

5.1.1 When loader needs hoisting, the lifting hook can be used to catch the ear-plate available on the machine body. Before hoisting, adjust the length of ropes to keep the level of the machine. When hoisting, keep the lifting hook stable, better with the special tools lest steel ropes hit the machine hood and the cab. (see the figure 27)

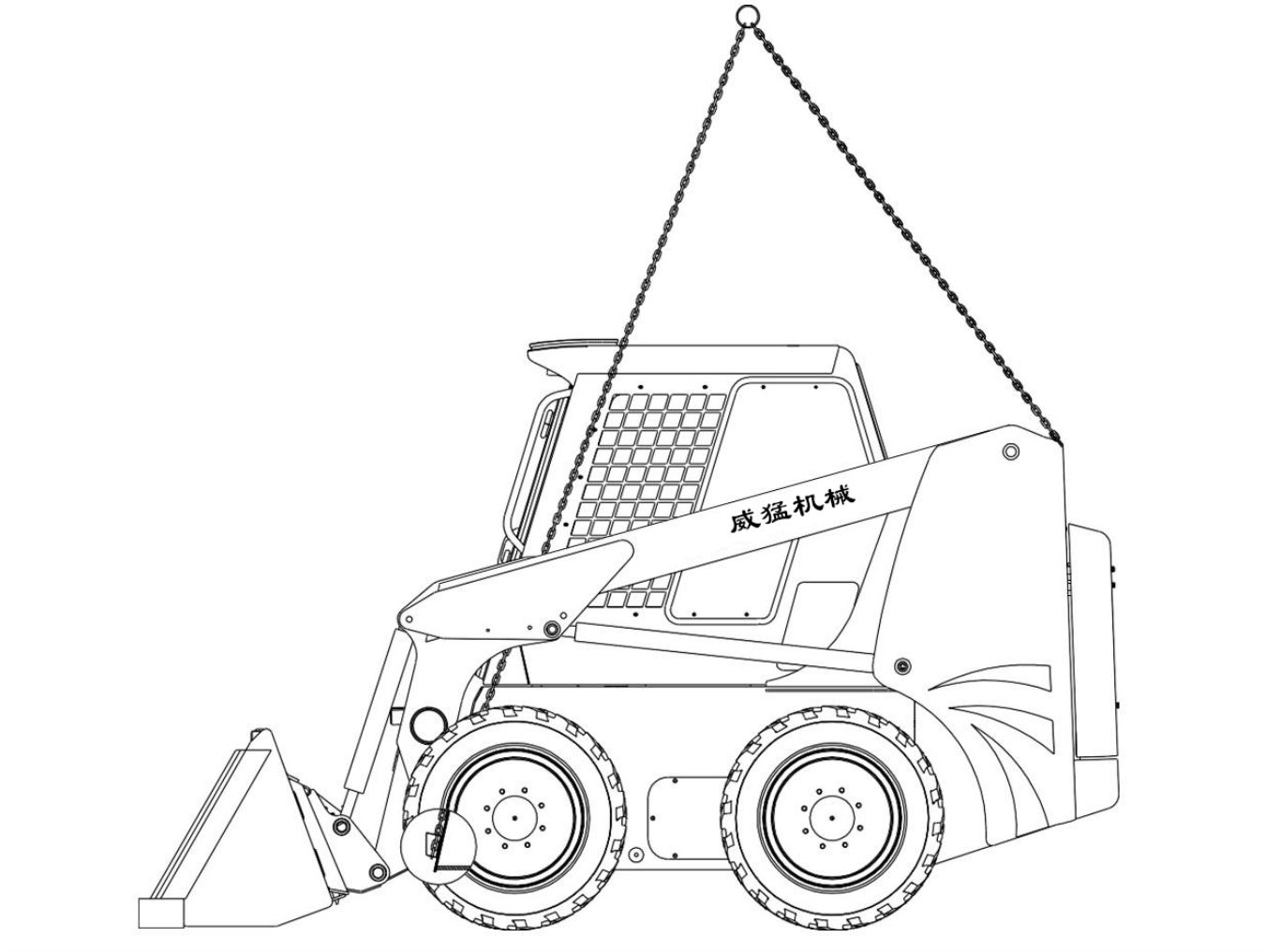


Figure 27 HOISTING SCHEMA OF THE MACHINE

5.1.2 When long-distance transporting of skid loader with flat board or similar flat board, the loader needs securing by iron chain prevent from shaking and flopping. In order to prevent the machine from moving forward and backward on the flat board, the front and the back wheels are fastened by triangle metal and then tie with steel wire tightly.

5.1.3 The transportation of integrated machine should accord with the local regulation of transportation sector, if there is no special, the loader parts and components are not dismantled in the process of transportation.

5.1.4 NOTE: It is necessary to check whether the truck or the trailer is safe enough or not before the loading . Park the trailer or the truck on the ground

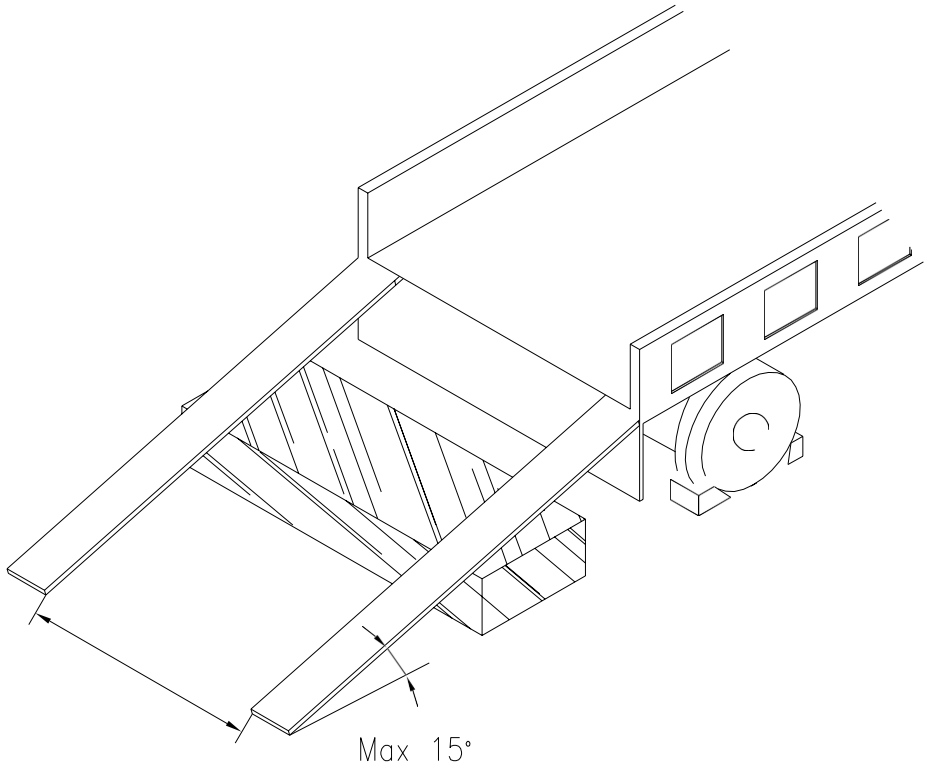
smoothly. Make sure there is enough bearing capacity for the trailer, the truck and the handling platform to support the machine. Check whether there are some oil contaminants , ice blocks on the trailer, the truck and the handling platform. Clean them in time. When drive the machine up and down slowly, do not bias from the truck to avoid overturning the machine.

5.1.5 Load the machine onto the transporting vehicle as the follow steps. See the follow figure:

1. Place some wood wedges under the wheels of the truck and the trailer;

2. Secure the ramps on the vehicle, max. angle of obliquity is 15°. Both ramps must parallel.

3. Drive the machine carefully, reverse onto the truck.



5.1.6 After driving the machine onto the transporting vehicle, to ensure the safety during the transportation,it is necessary to protect the machine as the follow steps. As shown in follow figure:

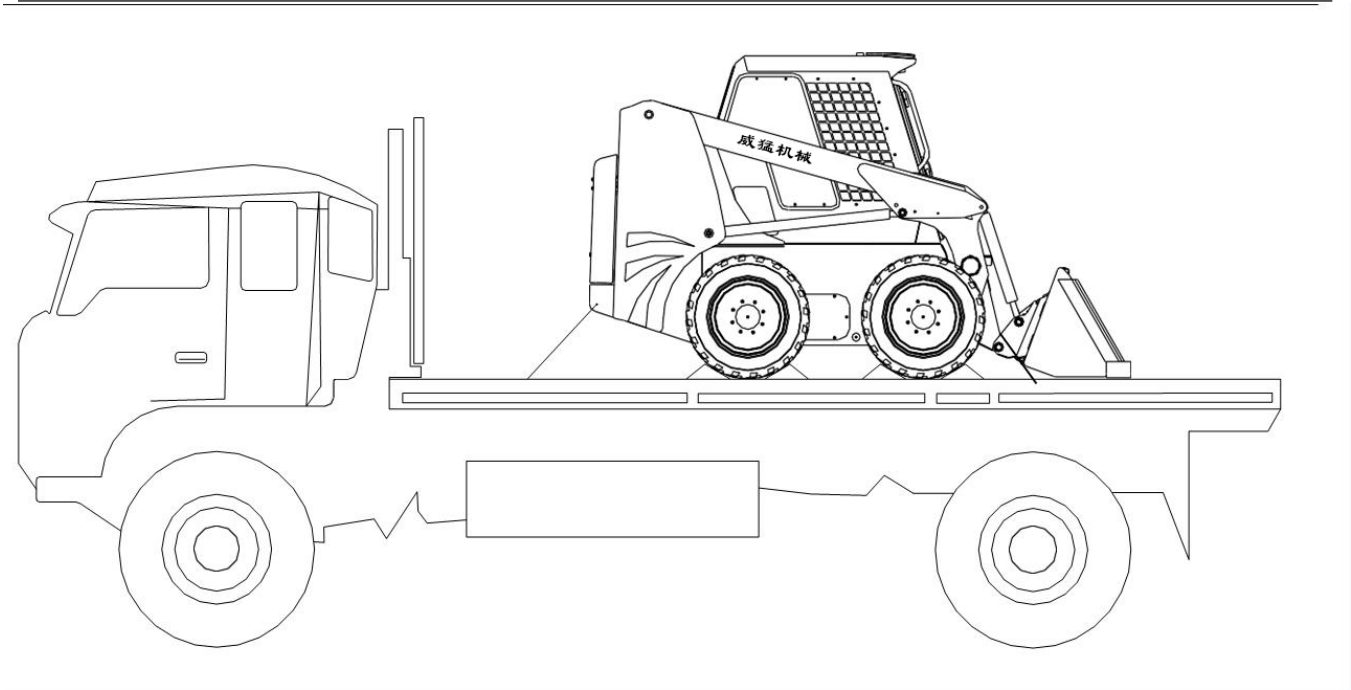
1. lower the skid steer loader onto the board of the truck. Shut down the engine and move

the key.

2. Place wood wedges under every front and rear wheel.

3. Bind the front and rear shackles of the machine with the rope.

4. Record the height of the skid steer loader and the truck/trailer. Write down and stick inside the cab of the truck, so that decide the traffic ability of the truck correctly when travelling through the tunnel or meeting the high cable.



CHAPTER VI COMMON FAULTS AND TROUBLE-SHOOTING

6.1 COMMON TROUBLE-SHOOTING

6.1.1 DURING THE OPERATION, SOME TROUBE-SHOUTING ARE AS THE FOLLOWING TABLE.(TABLE 10)

TABLE 10

Fault Characteristics	Fault causes	Trouble-shooting
Electrical System		
When the engine is running, even if at an high speed, the voltage value flashes	• Alternator fault • Circuit fault	• Replace • Inspect and repair
The sound of generator is abnormal	• Alternator fault	• Replace
It can not start when the key turn to "power on" position.	• Circuit fault • Not enough power • Main fuse fault	• Inspect and repair • Charge • Replace
The starter-gear works off and on when engine is start.	• No power	• Charge
Pressure alarm lamp of engine oil do not light when stopping the engine.	• Bulb fault • Pressure sensor fault	• Replace • Replace
Hydraulic system		
There is abnormal sound of pump.	• No oil in the oil tank • Pump fault • Hydraulic oil not suitable for surroundings temperature	• Fuel • Inspect, then repair or replace • Replace oil
The equipment run at the low speed only.	• Pump fault • The max. pressure setting of valve is not correct or due to impurity close the valve. • The air filter is jammed	• Inspect, then repair or replace • Restart or replace • Clean away the dust and Replace it.
Drive system		

Oil pressure alarm lamp light still when the engine run at the high speed.	• Oil level is too low • Oil filter plug • Oil not suitable for surroundings	• Fuel • Replace filter • Replace
There is steam from the venthole of the radiator. The water temperature indicator of the engine is always on.	• Coolant level is too low • Radiator leaks • Fan belt is loosing • There are muds and limes in the cooling system. • Vane of radiator worn out or plugged. • Temperature adjuster fault • Cover of radiator loosen or worn out. • operating at the high altitude • Thermostat fault • Instruments fault	• Fill the coolant. • Repair • Inspect belt tensility and adjust • Replace coolant and clean cooling system • Repair or clean • Replace • Tighten restructuring cover or replace components • Replace • replace
Start the engine difficultly	• No fuel • There is air in fuel system • Leakage exists in the air inlet and outlet	• Fuel • Discharge with pipe • Adjust the clearance between the air inlet and outlet
Colour of the exhaust is white or light blue.	• Oil is too much • Fuel is not suitable	• Remove some oil • Replace correct fuel oil
The exhaust inclined to black sometimes.	• Air filter fault • injector fault • Compressing fault	• Clean or replace • Replace • Adjust valve clearance
The sound of burning is similar to breathe or the burning sound is abnormal (burning or mechanical parts)	• injector fault • the fuel cetane is too little • Discharge muffle damages inside. • Valve clearance is too wide.	• Replace • Replace the correct fuel. • Replace • Adjust the valve clearance.
Travel system		
Machine move neither forward nor backward	• Oil level is too low • Suction filter plug • Coupling fault • Max.pressure of valve is not correct or valve is dirty • Hydraulic pipe is	• Fuel • Replace • Replace coupling • Clean or replace valve • remount

	obstructed • Traveling motor fault • The brake light is always on	• Repair or replace • Inspect the seat switch and safety rod switch.
Machine moves slowly(with abnormal sound)	• Oil level is too low • There is spume. • Oil suction pipe is too small • Suction filter plug • Traveling motor fault • Parking brake indicator is on.	• Fuel • Use pulsive oil • Inspect and remove leak • Assemble again • Repair or replace • Inspect the switch of the seat and the safety rod.
Traction force in both directions is not enough.	• The engine do not reach to max.speed. • Donkey fuel pump fault (gear pump) • The max.speed setting of valve is incorrect. • Setting of release valve is not corrected • Oil overheating • Traveling motor fault	• Replace diesel filter and inspect injector pump • Repair or replace • Restart • Restart • Inspect oil level and clean radiator • Repair or replace
Traction force in only one direction is not enough.	• Engine overload • The pressure setting in this direction is incorrect.	• Reducing load • Adjusting valve
Oil overheating	• Oil level is too low • Radiator is plugged or dirty. • Oil is not suitable • Oil suction pip is too small • Max.pressure of adjusting valve • Traveling motor fault • The setting of release is too much. • Traveling motor fault	• Fuel • Inspect, replace if necessary • Replace correct oil • Inspect and remove leak • Inspect mounting, repair or replace • Repair or replace • Adjusting valve • Repair or replace
The machine can not reach at the max.speed.	• Filter is pluged • The engine do not reach to the max.speed. • Travelling pump fault. • The setting of the oil relief valve is incorrect.	• Replace • Replace diesel filter and inspect the injector pump • Inspect, repair or replace • Adjust

The machine accelerate slowly.	• The power of engine is reduced. • The setting of releasing pressure is incorrect.	• Inspect whether fuel filter, injector pump and valve plug or not • Adjust to rated value
Oil leaked from engine driving shaft or pump.	• Seal ring is damaged. • The pressure of pump case is too high. • The pressure setting of distributary valve is too high.	• Replace • Discharging is plugged or pipe is damaged. • Inspect and restore
Others		
Use up fuel oil	• Use up fuel oil	• Add fuel oil and discharge before start to run the engine again.
The battery is used up completely.	• Motor fault • Use up battery when stopping the engine	• Repair or replace • Charge the battery
Machine sink into the mud	• Don't come out by itself	• Use the proper metal cable through the hook to pull the machine.

6.1.2 For the above-mentioned faults, please contact out customer service to resolve them efficiently, do not dismantle them or connect cross link.

6.2 REASONS FOR ACCUMULATOR LOSING POWER

6.2.1 Machine stopped for a long time, the large current of machine leaking power or add extraordinary electrical appliance, lead to the power of accumulator is exhausted.

6.2.2 The starting time of all machines is too long under the condition of not starting .

6.2.3 Machine started run frequently

6.2.4 Charging system of machine fault, for example:

6.2.4.1 Generator and its electrocircuit break down;

6.2.4.2 The fuse of generator is burned;

6.2.4.3 The loosing of driving belt of engine lead to charge the accumulator abnormally and the accumulator with black electrical eyes, even do not start to run the machine.

6.2.5 Battery unmounted in stock over 6 months

6.2.6 hint: as a result of the above-mentioned causes leading to battery losing power, accumulatoris returned to the normal working condition through the correct power supply

6.3 PRECATIONS BEFORE CHARGING THE ACCUMULATOR

6.3.1 The accumulator with the case broke or with acid leaking can not be supplied, find the causes and then replace it.

6.3.2 The accumulator with the end pillar broke can not be supplied, find the causes and then replace.

6.3.3 Accumulator with the white electrical eyes, make sure that whether caused by the jam of the green ball inside the electrical eye or not, if that , could shake the ball lightly. Otherwise the white electrical eyes caused by the low level of the accumulate electrolyte, or it is dry, displace the accumulate.

6.3.4 The end pillar covered with skin oxidation, before supplying, clean it and remove the skin oxidation.

6.4 BATTERY CHARGING

6.4.1 If do the incorrect operation to the accumulator in the condition of charging, otherwise leading to explode; please operate it according to the processing regulation of the accumulator and the relevant regulations in the user manual, the following precautions must be obeyed:

6.4.2 In the process of charging and testing the accumulator, the combination of oxygen and hydrogen is discharged from the venthole, when the consistency of hydrogen in the air beyond 4%, exploding will happened with fire, sparkle or high-heating; as a result, during the process of charging, it should be ventilated and no smoking preventing sparkle and fire.

6.4.3 Accumulator should be charged in the normal temperature, and please wear the safety glasses during the recharging operation.

6.4.4 Keep the accumulator on the flat ground, and the incline is less than 40°.

6.4.5 In the process of accumulator charging, connect the positive (+) of generator to the positive (+) of accumulator, and then connect the negative (-) of generator to the negative (-) of accumulator, avoid charge reversely.

6.4.6 During charging the accumulator, we should keep the temperature of electrolyte less than 45°C, in order to avoid the electrolyte spouting out caused by high temperature.

At the end of recharging, the oxygen and hydrogen produced by electrolyte leads to the loss of water, and the higher of the charge voltage is, the more loss of water. As the free-maintenance accumulator does not need to watering, so we recommend recharging with constant voltage instead of constant current.

APPENDIX: REFERENCE TABLE OF DENSITY OF COMMON MATERIALS

No.	Material name	Specific Categories	Reference to the value of Kg/m^3	Notes
1	Ordinary soil	Stick thin dry soil	1250	
		Caking dry soil	1520	
		Powder dry soil	1550	
		Wet soil	1725	
		Mud-like soil	1730	
		Tight soil	1840	
2	Clay	Wet soil	1750	
		Dry soil	1485	
3	Sand	Loose dry sand	1440	
		Wet sand	1680	
		Water-Wet Sand	1850	
4	Sandstone	Broken sandstone	1500	
		Solid sandstone	2300	
5	Gravel	Dry gravel	1485-1650	
		Wet gravel	2015	
		Gravel pit	1900	
		Dry clay mixed	1185	
		Wet clay mixed	1650	
		Dry sand mixed	1730	
		Wet Sand Mixed	2000	
6	Bauxite		1425	
7	Gravel		1600	
8	Slag	Dry	650	
9	Coal	Smokeless Coal	1190	
		Bituminous coal	950	
		Dry peat	415	
		Wet peat	1125	
10	Weathered rock	75% of the geotechnical	1955	
		50% of the geotechnical	1725	
		25% of the geotechnical	1585	
11	Gypsum	Crushing Block	1600	
		Break bulk	1810	
		A solid block	2780	

12	Limestone	Fragmentation	1550	
		A solid block	2600	
13	Slag		1760-2100	
14	Granite	Chunky	1650	
		Overall	2800	
15	Hematite		2460	
16	Magnetite		2780	