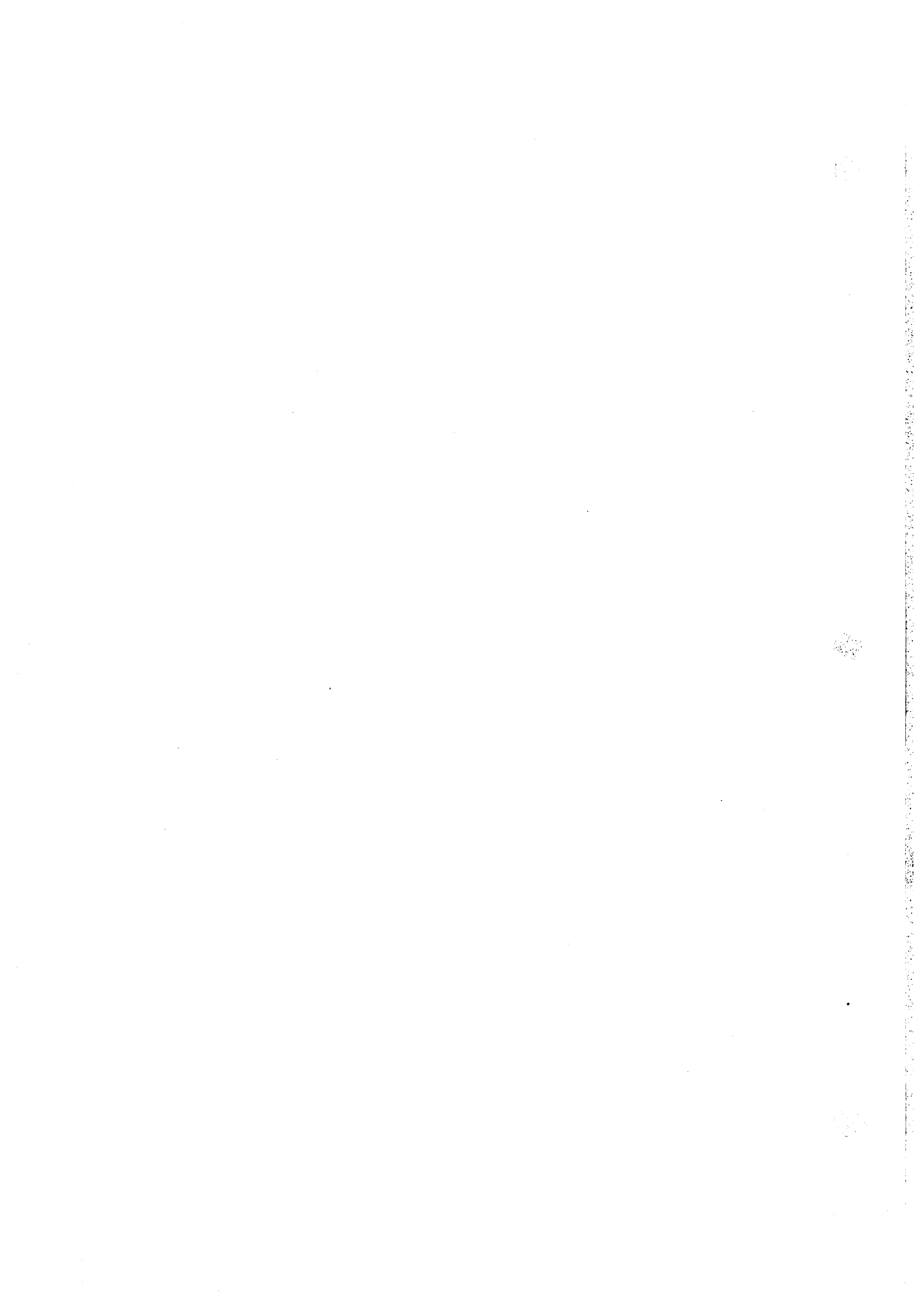


***LW321F*** 轮式装载机  
***LW321F WHEEL LOADER***

**操作与保养手册**  
***OPERATOR'S MANUAL***




## Foreword




This manual is an important part of the machine, which shows you the useful information regarding: machine components and its operation, safety, service, maintenance, troubleshooting and technical specifications. This manual can help you operate machines smoothly, safely and efficiently.

Note:

- ◆ Please read carefully and understand completely this manual content before using, maintaining and repairing the machine, especially those information about safety precautions. Please operate this machine according to this manual strictly.
- ◆ The operator of the machine must keep this manual within his reach, and the service people of this machine also must be familiar with and understand this manual content.
- ◆ If this manual gets lost or become dirty, please get a new one from XUGONG SCIENCE & TECHNOLOGY CO., LTD. or its authorized agent. If you re-sell the machine to others, please hand over this manual to the new machine user.
- ◆ This manual is altered always for the sake of continuous improvements on design and different requirements from customers, so what is stated in the manual may be different from the one in your hand, and such difference may effect the service and maintenance to the machine. Therefore, if you want to know the latest information about the machine and have any questions to this manual, please contact XUGONG SCIENCE & TECHNOLOGY CO., LTD. or its authorized agent.

### Warning Signs for Safety Precautions

	<p>This safety warning sign show you the very important information about the safety! When you see the sign in this manual, please read the item beside the sign and obey with the item strictly, and inform it to other people. Ignorance to safety warning can cause serious injuries and casualties.</p>
---	---

Warning sign for safety	Explanation
 DANGER	If you pay no attention to any danger risk, casualty or serious injury will occur.
 WARNING	If you pay no attention to any danger risk, casualty or serious injury may occur.
 CAUTION	If you pay no attention to any danger risk, injury to people or damage to equipment may occur.

## Declaration from The Manufacturer

- ◆ Only the trained and authorized people can operate and service this equipment.
- ◆ Operator and relative people must wear necessary safety protection staffs and take necessary safety measurement.
- ◆ Don't take any operation that is forbidden in this manual under any condition.
- ◆ Manufacturer can't predict all the working environment in which latent danger exists and operation that may cause danger. If you do the operation that is not mentioned in this manual, please ensure that this operation will not damage to the operator, other people and this equipment. If you can't ensure safety of such operation, please stop working and consult with XUGONG SCIENCE & TECHNOLOGY CO., LTD. or its authorized agent.
- ◆ The manufacturer will not be responsible for the casualty, injury and damage caused by using this equipment beyond this equipment purpose and regulations of operator's manual.
- ◆ The unauthorized restructuring to the machine can cause danger, and manufacturer will not be responsible for the damages caused by unauthorized restructuring.
- ◆ When you operate, drive or service this machine , please obey with local laws and regulations.
- ◆ The manufacturer will not be responsible for the injury and damage caused by force majeure.
- ◆ Manufacturer reserve the right to make changes to this manual at any time without giving prior notice.

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# Operation

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### 1.1 The Use Of The New Loader

#### 1.1.1 Notices

This machine has already been checked and adjusted completely before selling. However, if it works under the atrocious environment at the beginning the service life of the machine may be shortened obviously. So it is necessary to carry out a run-in to the machine at the first 50 operating hours and pay attention to maintaining service.

Please obey with the following regulations during the run-in period:

- After starting the loader, idle the machine for 5 minutes to get it warmed up.
- It is forbidden to accelerate the engine suddenly during pre-warming up process.
- Avoid of emergent driving, sudden turnaround and unnecessary emergent braking.
- Check and repair the machine according to regulations.

#### 1.1.2 Study The Safety Items

- Study the loader manual and concerned documents, understand them completely.
- Be familiar with all operating levers, indicating meters and alarming devices.
- Identify warning signs and safety signs, which can remind you the dangerous conditions.
- Obey with and take good care of all the safety signs that are pasted on the machine, replace the defaced one and replenish the lost one.

#### 1.1.3 Learn The Checking Method

- Many safety and protecting devices are installed on the machine, such as seat belt, lamp, protecting fence, ladder and extinguisher and so on, ensure them under the controllable condition.
- Check if tyres are wore out or damaged or not. Check if all tyre air pressures are normal or not. Don't operate the loader if some tyre air pressure are insufficient.
- If the lock bar of steering pin is installed, please keep it in ready condition. The locked machine can't be turned.

#### 1.1.4 Be Familiar With Your Machine

- Be familiar with functions of every controlling device, meter and pedal. Clear grease out from operating levers, pedals and handles to avoid of sliding.
- Clear sundries out from the cab, and keep the cab ground clear.

#### 1.1.5 Running-In Of The Machine

- Although the loader has been checked and adjusted, but if it is used in a bad operating environment at the beginning, the service life of it should be shortened. Please apply running-in operation for 50 hours at initial stage.
- After starting, idle the machine for 5 minutes.
- It is forbidden to accelerate the engine suddenly during warming up process.
- Avoid of sudden startup, sudden accelerating and steering and sudden braking, except in emergency case.
- During running in period, every gear should be engaged equally in time.
- During run-in period, it is better to load the bucket with loose materials and avoid of rude operation. The loading capacity should not exceed 70% of its rated capacity and the driving speed should not exceed 70% of the rated maximum speed.

- Pay attention to the lubricating state of the machine, and replace or inject the lubricant according to prescribed schedule.
- Pay attention to the temperature of transmission, torque converter, front and rear axle, wheel hub and brake drum. If overheating occurs, please find out the reason and resolve the problem.
- Check the tightness of every bolt and nut.
- After 10 hours of running in period, the following operations should be carried out:
  - △ Check the tightness of every bolt and nut overall, especially, the cylinder head bolt of diesel engine, fixing bolts on engine, gearbox and front & rear axle, hub nuts, and the connecting bolts of the transmission shaft etc. All the above mentioned bolts should be checked.
  - △ Clean the rough engine oil filter, fine engine oil filter and fuel filter.
  - △ Check the tightness of fan belt, generator belts and belts on air-conditioner compressor.
  - △ Check the status of the battery electrolyte and tighten the joints of the battery.
  - △ Check the oil level in the transmission system.
  - △ Check the airproof status of the hydraulic system and braking system.
  - △ Check if every control lever and accelerator lever are well connected and tightened.
  - △ Check the temperature and connection of every component in the electric system, and check the generator performance, illumination lamps and steering lamps.

## 1.2 Application Purpose Of The Machine

This loader is of a construction machinery with a single bucket, front dumping, articulated frame and wheel type. It can be widely used in construction worksites, port wharfs, stations and storage areas for loading or short-distance transporting loose materials such as mud, sand, coal and dust. Also it can be applied in towing, ground leveling, stacking and piling. All of these application make it become a high-efficient and multi-function construction machinery.

The machine is featured in the following characteristics :

- Applied with articulated frame, with the articulating center being placed in the middle of the two wheelbases, and small steering radius, so the loader is very maneuverable and suitable for narrow places.
- Applied with hydraulic mechanical transmission, so the power of the engine can be fully used, and the torque can be increased, so as to obtain a bigger drawing force. Meanwhile, the loader adopt variable infinitely speed, which can effectively protect the transmission system and the engine.
- With the full hydraulic steering and power shift and hydraulic operating system, it is flexible, steady and reliable to operate the machine.
- Having the low-pressure & wide-base tyres and the swing rear axle, the loader has a good off-road performance, so it can travel and work freely on rough terrains.

Requirements for the working environment :

- Elevation :  $\leq 3000\text{mm}$
- Ambient temperature :  $-15^{\circ}\text{C}\sim 40^{\circ}\text{C}$
- Water-wading depth :  $\leq 500\text{mm}$

Forbidden operation :

- Overloading.
- Hanging a cable on bucket teethes to lift heavy object.
- Excavating at the over-head position of the loader.

### 1.3 Component Names And Decals

#### 1.3.1 Component Name

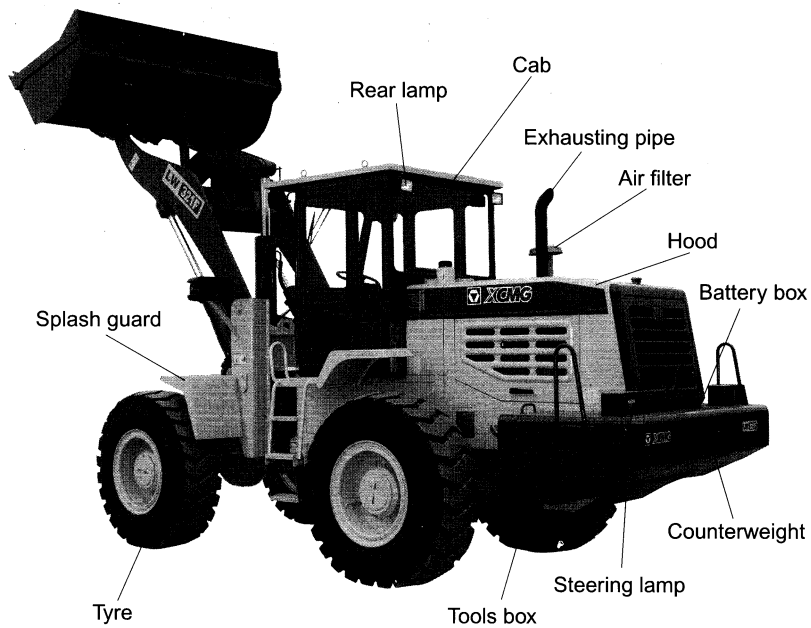
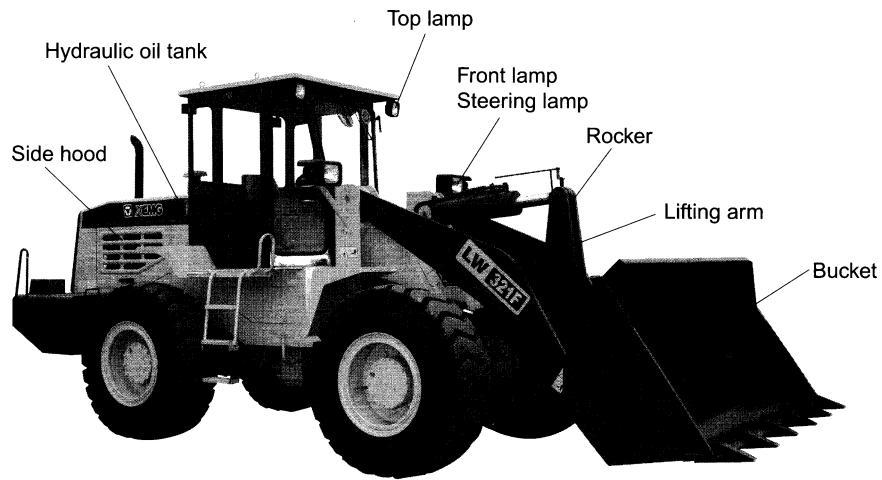


Figure1-1 Overall figure and component name

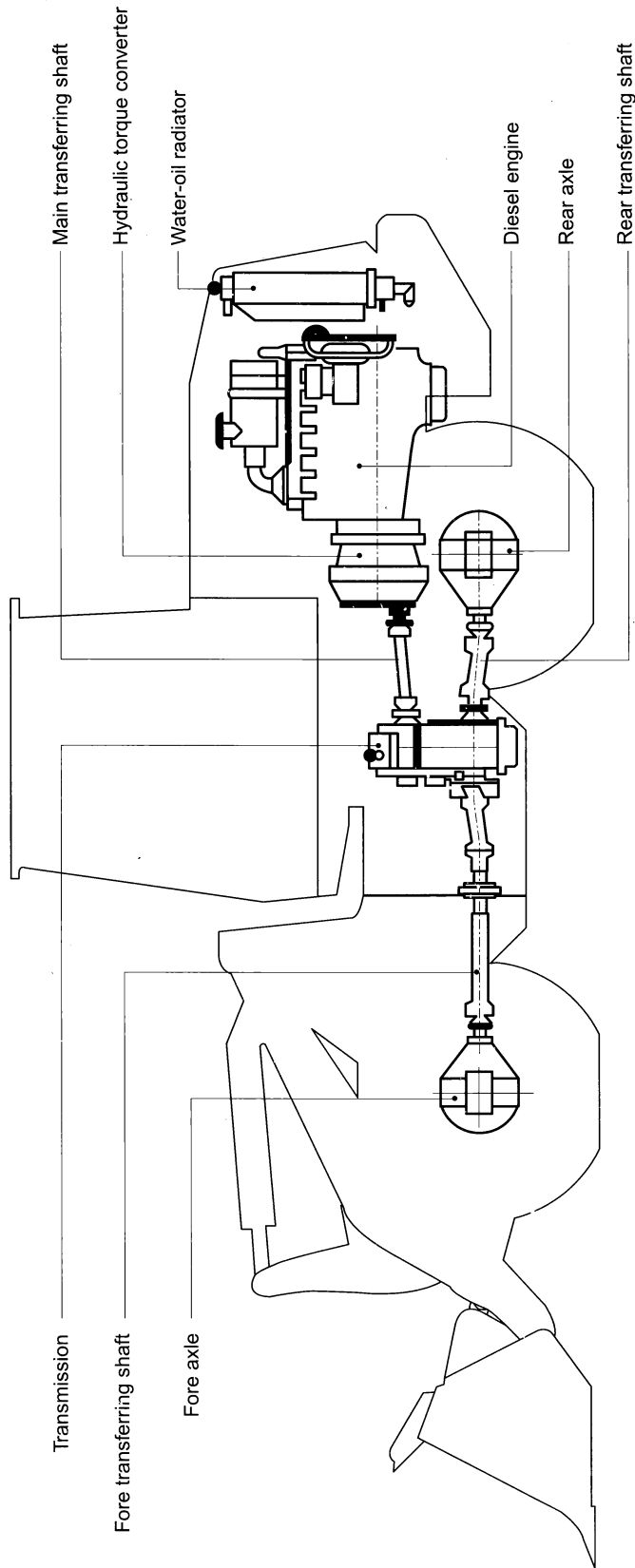


Figure1-2 Power transmission diagram

## 1.4 Safety Signs And Theirs Position



### 1.3.2 Decals And Number

#### ☆Decal of the loader (Figure 1-3)

The decal is pinned on the front frame which shows the loader type, product number, producing date and manufacturer name.

☆The signs of XCMG are located below the cab and on left side of cab.

☆Frame number is impressed on the left side of rear frame and outlined with black line.



Figure1-3 Decal of the loader

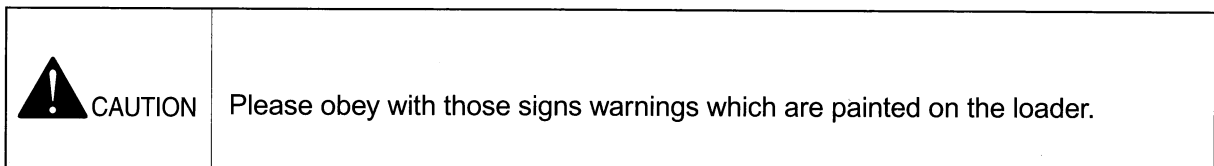
#### ☆Decal of engine (Figure 1-4)

It is pinned on the engine



Figure1-4 Decal of engine

☆Every main component also has its decal which shows the product type, number and manufacturer and so on.



☆ If these signs and decals get tore off or unreadable, please get a new one available on the machine.

## 1.4 Safety Signs And Theirs Position

There are some safety signs pasted on the loader. Please read all the safety signs and obey with them. The positions of safety signs are shown in the Figure 1-5.

Take good care of these safety signs, replace the damaged one and replenish the lost one in time. If one component of the loader with safety sign on it has to be replaced, please paste a new safety sign on the new component.

Use clothing and suds to rinse the dirty signs. It is not allowed to use and gasoline to rinse the dirty signs.

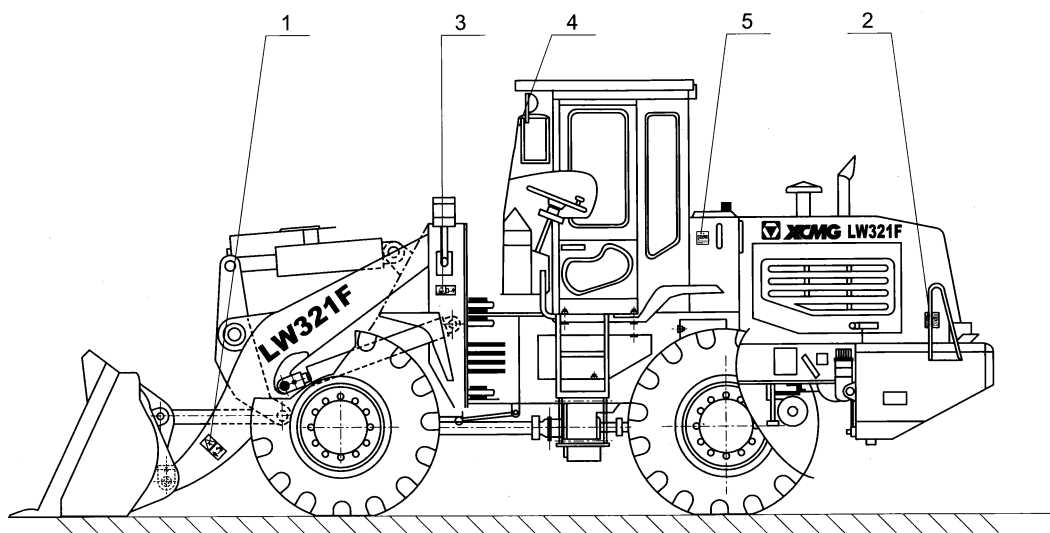


Figure1-5 Pasting positions of safety signs

1.4.1 Don't Stand Under The Raised Working Equipment. (Figure 1-6)

The signs are pasted on the two sides of lifting arms.



Figure1-6

1.4.2 Notices To Injecting The Anti-freezer. (Figure 1-7)

It is pasted on two sides of the engine hood.



Figure1-7

1.4.3 Don't Enter This Working Area. (Figure 1-8)

The sign is pasted on the articulation joint of the front and rear frame.

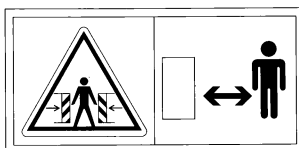


Figure1-8

1.4.4 Hand Braking. (Figure 1-9)

It is pasted on the cab window.



Figure1-9

1.4.5 Notice To Injecting The Hydraulic Oil. (Figure 1-10)

The sign is pasted on the left side of hydraulic oil tank.

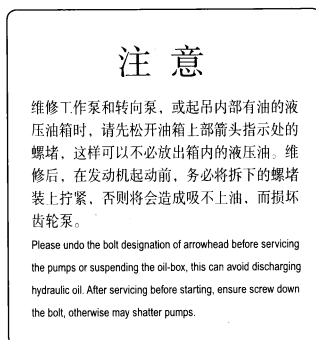


Figure1-10



### 1.5 Instruments And Controls

#### 1.5.1 Composition Of Control System

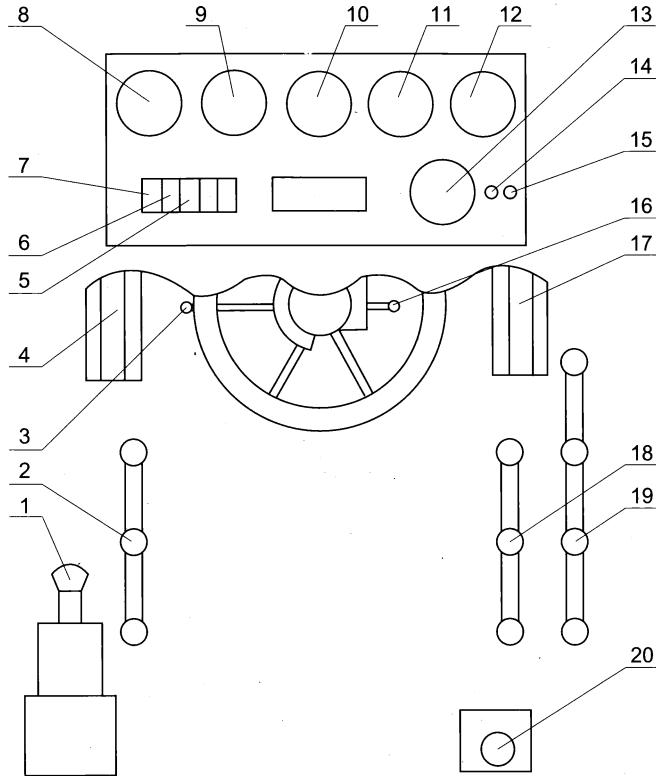


Figure1-11 Composition of instruments and controls

- |                           |                              |  |                                 |
|---------------------------|------------------------------|--|---------------------------------|
| 1. Hand Brake             | 6. Switch Of Instrument Lamp | 11.Oil Temperature Gauge Of Torque Converter | 16. Steering Lamp Switch        |
| 2. High-Low Speed Lever   | 7. Switch Of Front Lamp      | 12.Air Pressure Gauge                        | 17. Accelerator Pedal           |
| 3. Gear-Shifting Lever    | 8. Engine Oil Pressure Gauge | 13.Timer                                     | 18. Bucket Operating Lever      |
| 4. Braking Pedal          | 9. Water Temperature Gauge   | 14.Starting Switch                           | 19. Lifting Arm Operating Lever |
| 5. Switch Of Heating Wind | 10. Voltage Meter            | 15.Start Butt on                             | 20. Shut-Off Lever              |

#### 1.5.2 Function Explanations

N0.	Name	Function	Note
1	Hand brake	Pull out the handle to brake the loader, and down the handle to release the braking.	
2	High-low speed lever	Push it forward to get low speed, and pull it back to get high speed while the middle position means neutral gear.	
3	Gear-shifting lever	Push it forward to get gear I and II; push it furthermore to get gear I and II; pull it back to get reverse gear I and II; and the middle position is neutral gear.	
4	Braking pedal	Trample down the pedal to brake the loader.	
5	Switch of heating wind	It is used to control the heater.	
6	Switch of instrument lamp	It is used to control the lamp for illuminating the instrument panel.	

N0.	Name	Function	Note
7	Switch of front lamp	It is used to turn on or off the front lamp.	
8	Engine oil pressure gauge	It can display the oil pressure of engine.	
9	Water temperature gauge	It can display the temperature of engine cooling water.	
10	Voltage meter	It can display the voltage of battery.	
11	Oil temperature gauge of torque converter	It can display the oil temperature of torque converter.	
12	Air pressure gauge	It can display the air pressure of braking system.	
13	Timer	It can display the total working time of the loader.	
14	Start switch	Insert the key and turn it right to turn on the electrical system of the machine.	
15	Start button	Press down the button to start the engine.	
16	Switch of steering lamp	It is used to control the steering lamp.	
17	Accelerator pedal	It can control the oil input to engine.	
18	Operating lever of bucket	Push the knob forward to have the bucket dump, and pull it back to retract the bucket. When the knob being put in middle position, the bucket remains motionless.	
19	Operating lever of lifting arm	Pull back the lever to raise the lifting arms and push it forward to lower it down and push it furthermore to get floating position. When it being put in middle position, the lifting arm remains motionless.	
20	Shut-off lever	Pull up the lever to stop the engine.	

1.5.3 Gear-Shifting Operation (Figure 1-12 & 1-13)

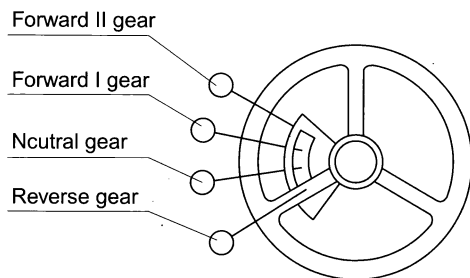


Figure1-12 Gear position

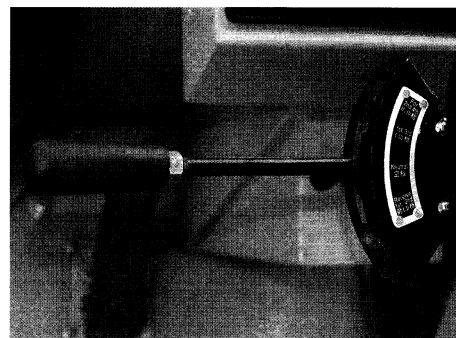


Figure1-13 Actual photo of gear-shifting handle

1.5.4 Operation Of Working Apparatus (Figure 1-14 & 1-15)

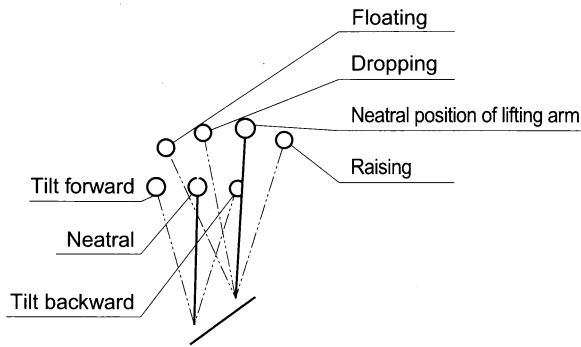


Figure1-14 Positions of control levers

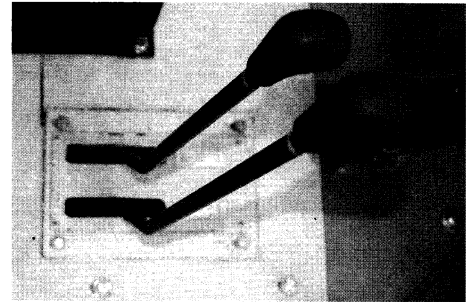


Figure1-15 Actual photo of control levers

1.5.5 Parking Brake (Emergent Braking) (Figure 1-16 & 1-17)

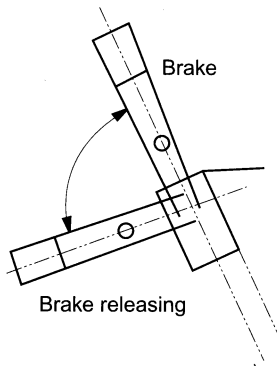


Figure1-16 Positions of control lever

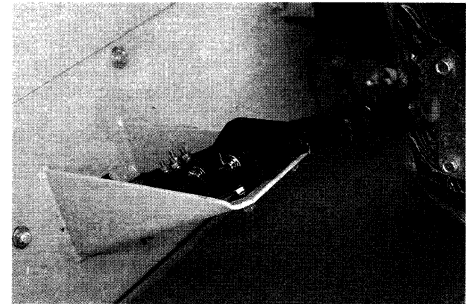


Figure1-17 Actual photo of control lever

1.5.6 Control Lever For High-Low Speed (Figure 1-18 & 1-19)

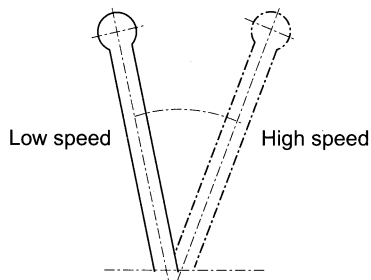


Figure1-18 Positions of control lever

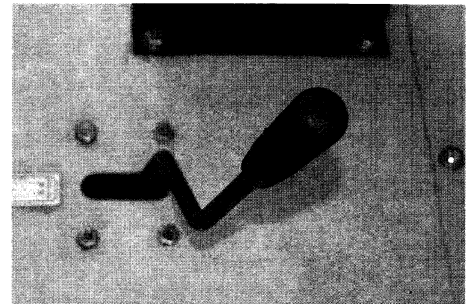


Figure1-19 Actual photo of control lever

1.5.7 Seat Adjustment ( Figure 1-20 )

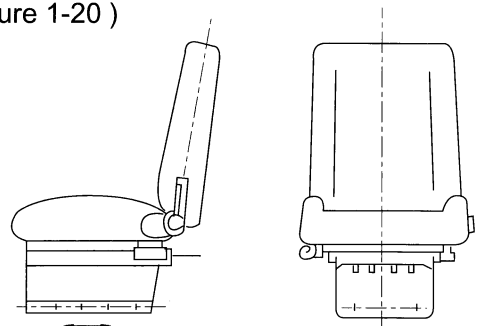


Figure1-20 Seat ( double-way, with cushion )



## 1.6 Operation Regulations

### 1.6 Operation Regulations

#### 1.6.1 Safety Rules

##### A. Safety rules

- Don't operate the loader if you feel uncomfortable or take medicines or drink alcohol. Operating the loader with bad health may injure others or yourself. (Figure 1-21)
- When you work together with other people, please make them understand the gesture language.

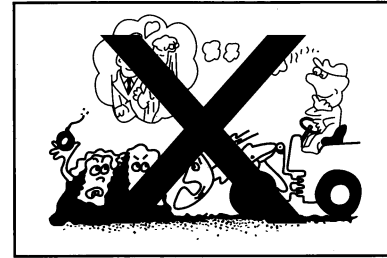


Figure1-21

##### B. Safety guard

- When operating or maintaining the loader, please take safety guards.
- When operating or maintaining the loader, please wear safety hat which is made up of hard material, safety glasses, safety shoes, glistening coat, veil, earplugs and gloves. When scattering metal scrapes or cleaning the debris from air filter by hammer or compressed air, please wear safety glasses, hard hat and thick gloves. (Figure 1-22)
- Don't wear loose clothing as loose clothing can be easily entwined in control levers or moving parts to cause casualty.
- Don't wear greasy clothing which can incur burning. (Figure 1-23)
- Compressed air can injure people. Please wear veil, protective clothing and safety shoes when using the compressed air to clean something. The maximum pressure of compressed air should not exceed 0.3 Mpa.
- Check if the safety guards are normal or not before putting them into use.

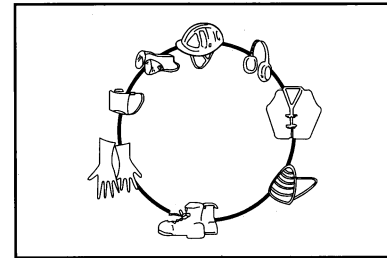


Figure1-22

Any unauthorized restructuring to this loader can result danger or casualty. Before restructuring the loader, please consult with Xugong Science & Technology Co., Ltd.(XCMG) or authorized agent. Manufacturer should not be responsible for the damages caused by unauthorized restructuring.

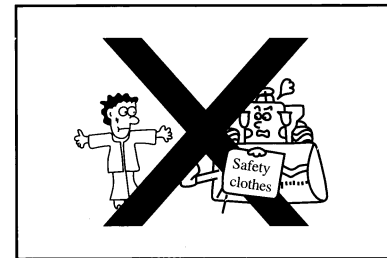


Figure1-23

#### 1.6.2 Safety Operation

##### A. Be familiar with the loader.

- Only the authorized technician can operate and maintain the loader.
- When operating or maintaining the machine, please obey with all safety regulations and notices.
- Read the Operator's Manual of the loader, study the structure, maintenance and operation of the loader, and be familiar with all buttons, handles and meters.
- Please understand all regulations about operation, get known all the signals which are used in working process. If there are some grease on the operating area, please wipe it out immediately because it can result slippery. (Figure 1-24, 1-25)

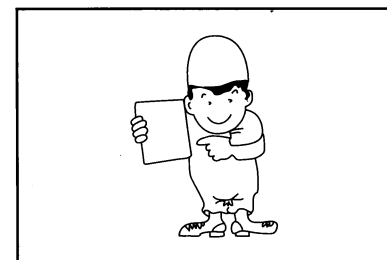


Figure1-24

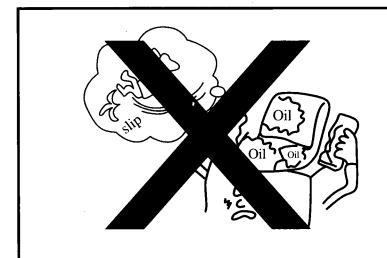


Figure1-25