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Fig. 2 Read **Operation and Maintenance Manual for LG936L Wheel Loader** before operating the machine

drive the machine.

- Before starting the engine, make sure there is adequate ventilation. The machine is equipped with diesel engine and the emission gas is harmful to your health. Therefore, do ensure adequate ventilation. If ventilation is insufficient, please avoid running the engine unless it is absolutely necessary.
- Before operation or maintenance on the machine, please read all signs and instructions as well as the contents in **Operation and Maintenance Manual for LG936L Wheel Loader**. Each sign contains information about safety, treatment and maintenance.
- Use the seat belt during operation.
- Always sit on the operator seat when starting the engine.
- Before the machine is used, make sure a ready for use, all functions should be intact and effective, and all the faults that may cause an accident should be ruled out.

Seat belt

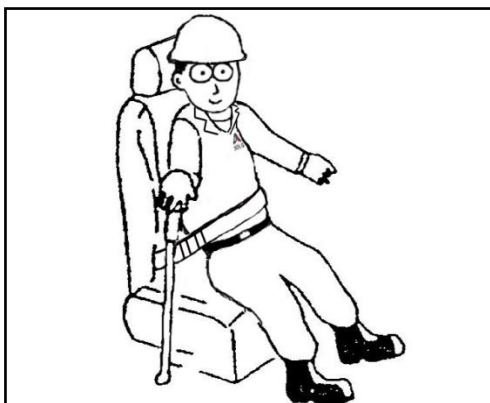


Fig. 3 Use the seat belt during operation

- If the seat belt is worn, or the seat belt has been subjected to force when the machine has an accident, then this seat belt should be replaced immediately.
- Modifications on seat belt and mounting parts are absolutely prohibited.
- Seat belt is designed for only one adult, and it cannot be used for a couple of people.
- When the belt is not in use, it should always be in rolled-up state.

Maintenance Position 1

Stop the machine on a level and hard surface, as shown in the following figure:

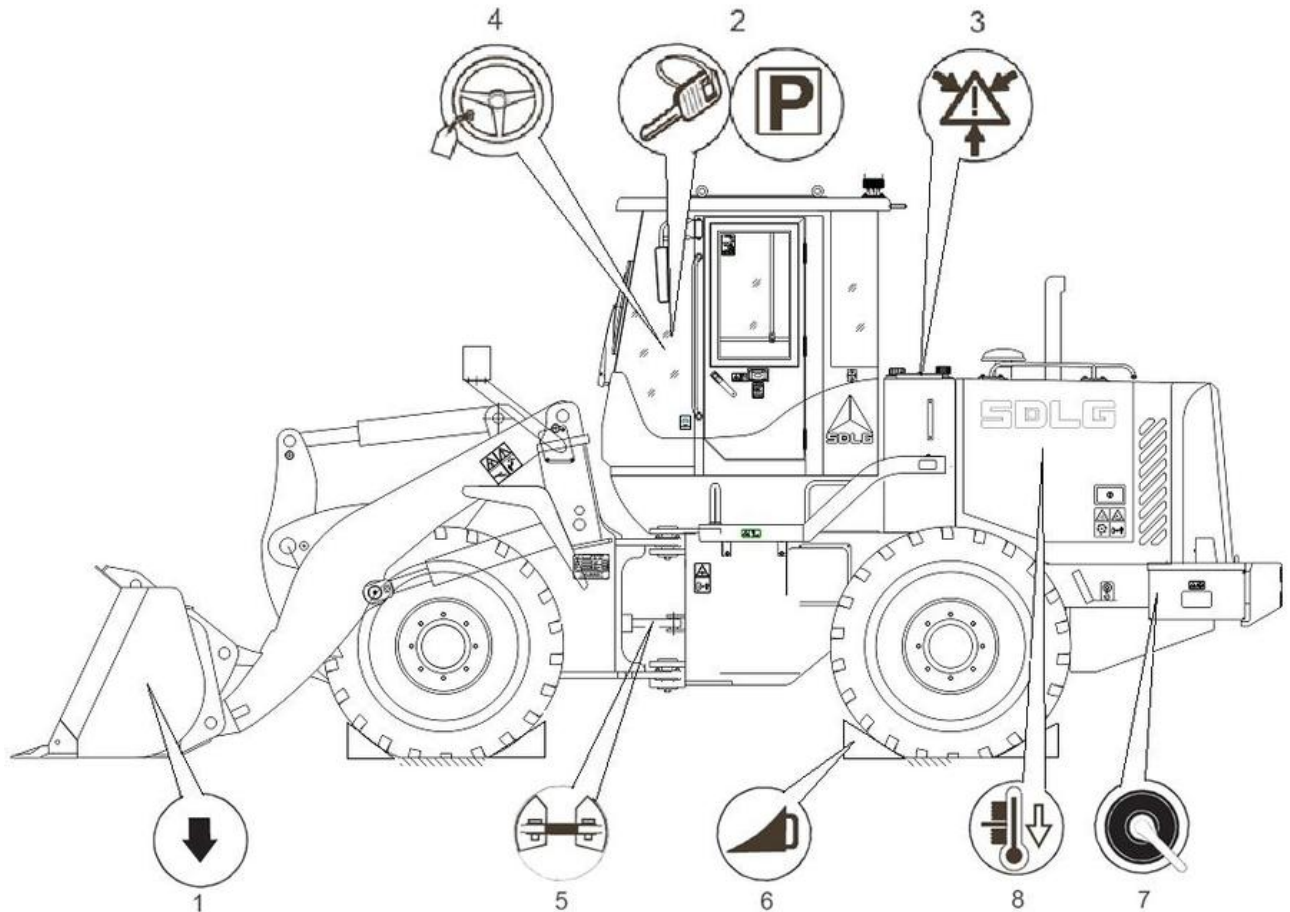


Fig.6 Maintenance position 1

1. Put attachments on the ground.
2. Turn off the engine and take down the ignition key.
3. Release the pressure in pressurized pipe and oil tank to prevent accidents.

WARNING

If the system pressure is not reduced before opening, oil will spray under high pressure, and may cause serious personal injury accidents.

4. The steering wheel should be connected with yellow black warning flag (a red warning flag may be used in the United States).
5. Make sure the frame lock lever is connected.
6. Press the parking brake button, so that the vehicle is in the parking brake status and wedge the loader.
7. Battery cut-off switch is off.

immediately, and try to find fresh air and move affected persons out of the danger zone. A small amount of refrigerant R134a vapor will have a certain impact, particularly on the nervous system. When the amount of the gas is large, the gas will have anesthetic effect. In serious cases, seek for immediate medical attention.

Skin contact

If frostbite occurs, rinse with warm water. If unprotected skin contacts with large amounts of liquid refrigerant, keep the damage zone warm with warm cloth or warm water. If the symptoms persist, seek for immediate medical.

Splashing into the eyes

Rinse the damaged zone with warm water until stimulation feeling disappears. Seek for medical help immediately.

Safety When Operating Accumulator (If installed)

Only qualified service personnel are allowed to operate.

WARNING

If the pressure is not reduced before open it, oil will spray under high pressure and cause serious injury.

Before removing the accumulator from the machine, the system should be depressurized.

Even some accumulators are removed from the machine, they still contain pressure, that is so-called pre-charge pressure. Therefore, be very careful in dealing with accumulator and operating on the accumulator.

0 General

01 Product Introduction

011 Machine Appearance and Its Components Name



Fig. 0-1

1 Bucket

2 Link mechanism

3 Front tire

4 Rear frame

5 Cab

6 Rear tire

7 Engine hood

8 Counterweight

114 Selection of Oil

Please use the oil specified by Shandong Lingong Corp. and chose the oil according to the oil grades as follows:

Table 1-1

Type	Recommended types and application standards	Qty. (L)	Oiling location
Engine oil	CH-4 15W-40 diesel engine oil GB11122	17.5	Dalian DEUTZ engine
	Ambient temperature -15°C~+40°C CD 15W-40 diesel engine oil GB 11122 Ambient temperature -20°C~+30°C CD 10W-30 diesel engine oil GB 11122	18	Weichai Engine
Hydrodynamic drive oil	CALTEX Delo gold multigrade engine oil 15W-40	25	Torque converter, transmission box
Gear oil	Heavy duty vehicle gear oil (GL-5) 85W/90 GB13895	13+2×2.5	Main drive of axle and wheel reducers
Hydraulic oil	Ambient temperature -10°C ~+40°C L-HM46 antiwear hydraulic oil GB11118.1 Ambient temperature -30°C ~+40°C L-HM46 low-temperature hydraulic oil GB11118.1 Ambient temperature 0°C ~+50°C L-HM68 antiwear hydraulic oil GB11118.1	128	Hydraulic oil tank
Fuel	Min. ambient temperature ≥4°C 0# common diesel GB252 Min. ambient temperature ≥-5°C -10# common diesel GB252 Min. ambient temperature ≥-14°C -20# common diesel GB252 Min. ambient temperature ≥-29°C -35# common diesel GB252	160	Fuel tank
Brake fluid	L-HM46 low-temperature hydraulic oil GB11118.1	2×2	Brake oil cup
Grease	No.2 or 3 multipurpose lithium-base grease GB7324	—	Pin in the each joint point of the working device
Antifreeze	Ethylene glycol-based engine coolant NB/SH/T0521	34±2	Radiator

7. Replace transmission oil filter.
8. Replace the transmission oil. Replace it at least once a year.
9. In addition, do the extra maintenance in the first 500 hours as follows:
 - Check if there is leakage in the hydraulic system. (Do this maintenance every 1000 working hours thereafter)
 - Check and clean the air vent of hydraulic tank. (Do this maintenance every 1000 working hours thereafter)
 - Replace the oil-return filter element of hydraulic tank and pilot filter element. (Do this maintenance every 1000 working hours thereafter)
 - Check the quantity and cleanness of hydraulic oil. Filter the oil if possible. Add them if insufficient and replace them if necessary.
 - Check if there is leakage in the brake system. (Do this maintenance every 1000 working hours thereafter)
 - Clean strainer of booster pump oil storage cup, clean the air vent. (Do this maintenance every 1000 working hours thereafter)
 - Replace brake fluid. (Do this maintenance every 1000 working hours thereafter)

Every 1000 Hours (Biannually) Maintenance

1. Carry out the periodic maintenance of every 10, 50, 250 and 500 hours with this maintenance operation at the same time.
2. Replace the gear oil in the front and rear axles. Do this replacement at least once a year.

and quickly. When the pressure generated from self-combustion forces the piston to move downwards, the power stroke begins, which will be ended as the piston gets close to BDC. Following this, the exhaust stroke starts as the piston moves upwards by the force of inertia, and when it approaches TDC, all remaining waste gas resulted from mixture combustion is discharged, marking the end of exhaust stroke.

That's the whole working circle of the diesel engine.

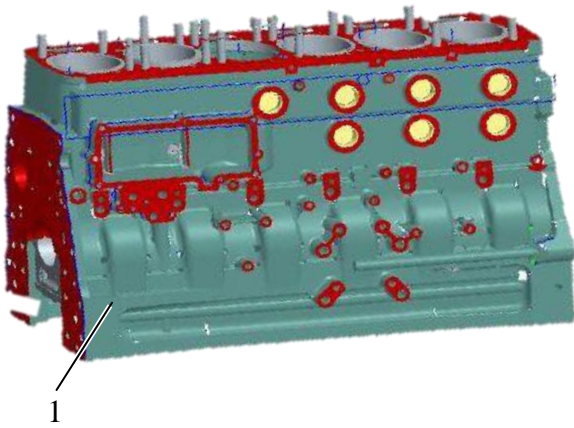
216 Engine Block

1. Engine assembly

Engine assembly mainly consists of engine block, cylinder sleeve, gear room, rear oil sealing cover, flywheel housing and oil sump tank, etc.

The engine adopts high gantry type block:

- Crankcase sealing surface is lower than crankshaft axis.
- Enhanced the stiffness of the bottom half engine block.



1
Fig. 2-3
1 Engine block assembly

Wet-type cylinder sleeve

- The cylinder sleeve outside surface contacts with the coolant directly;
- Excellent cooling performance, can avoid cavitation effectively;

Advantages: Make the layout of the whole

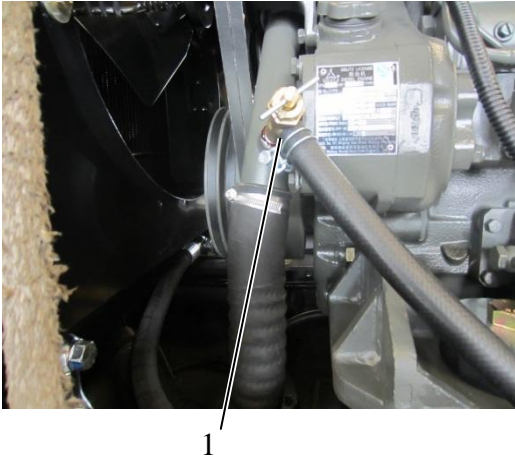


Fig. 2-22
1 Return pipe of fan heater

13. Disconnect water return pipe of fan heater.

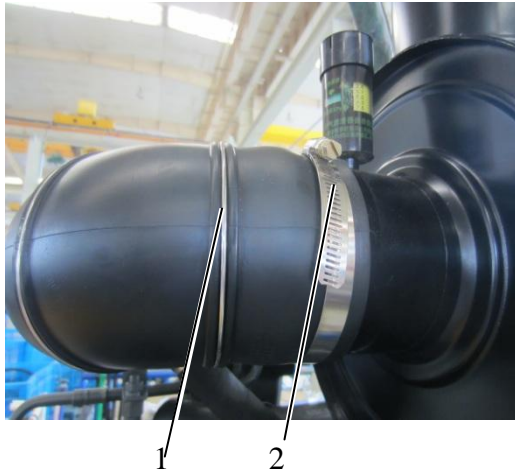


Fig. 2-23
1 Intake hose 2 Clamp

14. Disconnect air filter.

Refer to this chapter for disassembly of engine accessories.

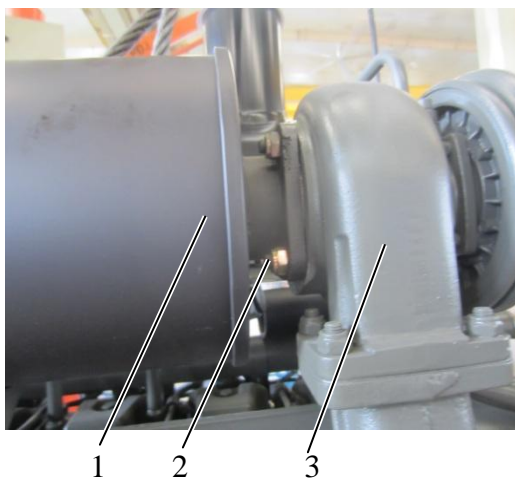


Fig. 2-24
1 Silencer 2 Nut 3 Turbocharger

15. Disconnect the connection between silencer and turbocharger.

27 Disassembly and Assembly of Fuel Tank

271 Disassembly of Fuel Tank

1. Start the machine and park it on level capacious ground. Lower the bucket and flat it on ground. Pull up the parking brake and wedge the front and rear tires with wood blocks, turn off main power switch 5min later.

★ **ATTENTION:** Do the disassembly after the loader is cooled.

2. Loosen the screw plug on the bottom of tank and drain the oil. Contain the oil with clean vessel and covers it to avoid falling sundries.

★ **ATTENTION:** Fuel oil is inflammable. In the processes of maintaining, the fire is forbidden and the place should be far away from fire. At the same time, prevent the generation of fire, for example: Bumping brings spark.

3. Remove oil level sensor wiring harness of fuel tank.



Fig. 2-73

1 Tire

2 Wood block

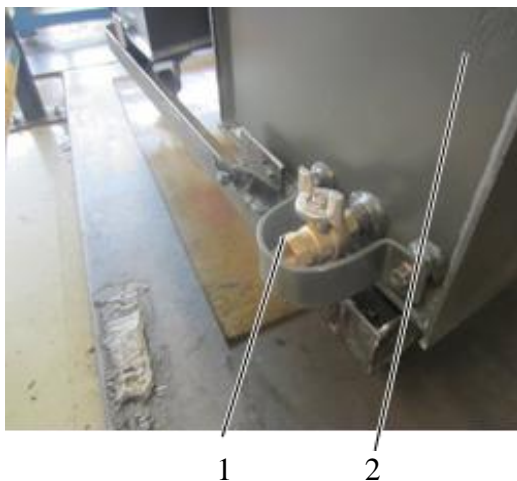


Fig. 2-74

1 Ball valve

2 Fuel Tank

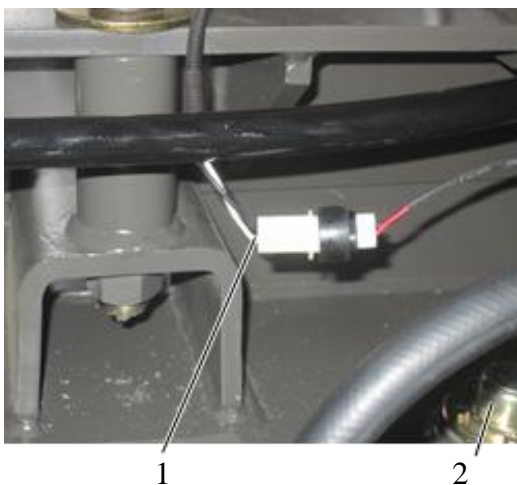


Fig. 2-75

1 Oil level sensor connector

2 Oil level sensor

1. The high-temperature and high-pressure oil or water can result in personal injury! To replace the sensor, shut down the engine first, and wait until the engine and transmission housings are sufficiently cooled down.

Electrical component

The electrical component is sensitive and can be easily damaged by the electromagnetism or the static electricity from the tool or human body. Therefore, while doing the relevant electrical component operation, the following instructions should be observed:

1. When a certain electrical component is electrified, the connection to this component should not be disconnected. Otherwise, the electrical component can be damaged.
2. Before maintaining the electrical system, use a tool to contact a metal mechanical part connected to the frame to discharge the static electricity from the tool.
3. Do not touch the plug pin on the electrical component.
4. While maintaining the electrical system, do not touch the circuit board. If necessary, only hold the circuit board edge.
5. Do not touch any individual electrical component.
6. While replacing the element, make sure that the ground wire is safely connected.

Welding

1. Disconnect the terminals of battery to prevent explosion of battery.
2. After the repair is completed, be sure to install the wire connectors of the computer control panel, otherwise the machine will not start and move.
3. For welding, sparks may fall directly on rubber hoses, wires or pressure pipe, and these pipes may suddenly rupture, wire insulation may be damaged, so these pipes should be covered.

★ ATTENTION

Any complete circuit should consist of power supply, fuse, switch, control device, electrical device and conductor, etc. Keep the integrity of the circuit when conducting relevant electrical operation.

312 Electrical System Description

Electrical system includes battery, starter motor, AC generator, gauges, switches, lamps, air conditioning circuits and other electrical equipment.

Machine system voltage is DC 24V, containing two batteries 12V in series. Negative pole is grounded, and the line applies single system. As to the relationship and working principle between electrical equipment, please carefully read the electrical system circuit diagram.

Name	Function description	Signal source
Engine tachometer	Range: 0~3000, red area: 2500~3000; Unit: n/min.	Generator terminal W
Working timer	Range: 99999.9; When engine speed ≥ 400 n/min, timing. Flashing every 6 minutes, the memory storage data every 1 minute.	
Engine water temperature gauge	Range: 40~120°C, red area: 103~120°C, alarm set point: 105°C	Sensor
Torque converter oil temperature gauge	Range: 40~140°C, red area: 120~140°C	Sensor
Fuel level gauge	Range: 0~1/8-1/4~3/8~1/2~5/8~3/4~7/8~1; Red area: 0-1/8	Sensor
Brake air pressure gauge	Range: 0~1MPa, red area: 0~0.4MPa, 0.9~1MPa	Sensor

Alarm and indicator lamps

Name	Function description	Color	Signal source
Low engine oil pressure alarm indicator lamp	<ol style="list-style-type: none"> Before starting, turn on the switch and this indicator is normally on; turn off the switch and this indicator is normally off; After starting, if engine oil pressure is low and the switch is on, this indicator will flash and buzzer will ring, turn off the switch, this indicator will be off; At the moment of starting up or flaming out, this indicator will not be lightened. 	Red	Grounding
Low brake pressure alarm indicator lamp	Turn ignition key to ON, this indicator will flash and buzzer will ring if the pressure is low and the switch is turned on.	Red	Grounding
Low gear shifting oil pressure	<ol style="list-style-type: none"> Before starting, this indicator is normally off no matter the switch is on or off; After starting, if oil pressure is low and the switch is on (delay 10s to determine whether the signal is true), this indicator will flash and buzzer will ring, turn off the switch, this indicator will be off; 	Red	Grounding
High coolant temperature alarm indicator lamp	If water temperature $\geq 105^\circ\text{C}$, this indicator will flash and buzzer will ring.	Red	Sensor
Charging indicator lamp	Turn ignition key to ON, this indicator is normally on; if the engine speed ≥ 400 n/min, this indicator will be off.	Red	Terminal W

4 Power Transmission

Transmission system is composed of transmission box, transmission shaft, front and rear drive axles and wheels. The principle diagram of transmission system is shown in Fig. 4-1.

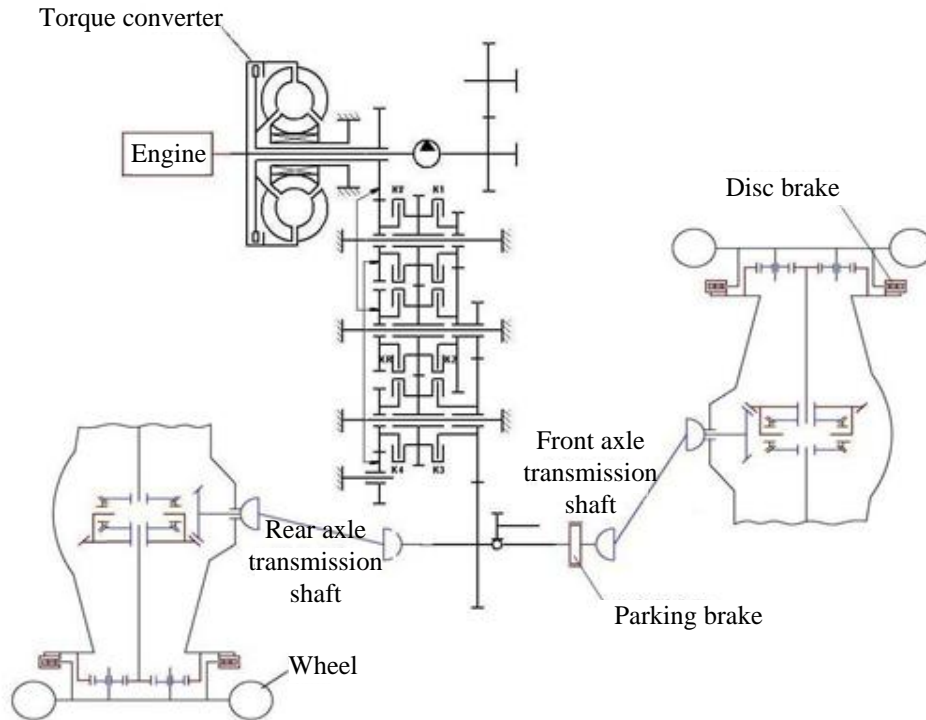


Fig. 4-1 Principle diagram of transmission system

41 Transmission Box System

411 General

YD13 power shift transmission box (with 4 forward gears, max. transmitted power 130KW) is composed of hydraulic torque converter and rear fixed axis type transmission box with a multi-disc friction clutch. The transmission box the loader used is forward-4-reverse-3 type. Due to full four-wheel drive is adopted, and also provides large center distance between input and output shaft, YD13 transmission box has been widely used in domestic manufacturing industries, such as wheel loaders, bulldozers, graders, scrapers, etc.