

# MINI CRAWLER EXCAVATOR

## OPERATION & MAINTENANCE MANUAL



## **Preface**

**Thank for your order on our Mini excavator .Please operate based on the following requirements; For the other operation, please checking on the operational manual.**

**For the fuel:**

**Diesel model: Diesel oil 0#**

**Gasoline model: Gasoline oil 92# 95#**

**Hydraulic oil 46#**

**Engine oil SAE15W-40,**

- 1. Always keep the hydraulic oil above the middle liquid level to ensure that the gear pump has enough oil adsorption, and more oil also helps to cool the hydraulic oil.**
- 2. The Koop engine oil no more than 2L,needs to be changed every 20 hours for the first time, every 50 hours for the second time, and every 150 hours thereafter.**
- 3. Kubota changes the engine oil for 50 hours for the first time, and every 100 hours thereafter.**
- 4. Before starting the Kubota engine, warm up the engine for 5 to 10 seconds.**
- 5. if the machine will not work in a long time, try to retract the cylinder block into the cylinder.**
- 6. When parked for a long time, it is necessary to recharge the battery for a month to prevent it from being parked for a long time and difficult to start.**
- 7.the hydraulic oil is about 18L,should change after work about 1000hours,or change when oil color change.**

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## **Section I General Notes**

It is the customers' responsibility to comply with the safety regulations and laws of the relevant authorities and to operate, inspect and maintain the machines as required by the manufacturer.

In fact, all accidents are caused by failure to comply with basic safety regulations and precautions.

Please read and understand all safety information that describes how to prevent accidents. Do not operate a machine until you are sure that you know how to operate, inspect, and maintain it properly.

### **Please comply with all safety regulations**

The machine must be operated, inspected and maintained by trained and qualified worker.

All rules, regulations, precautions and safety measures must be understood and adhered to when performing machine operation, inspection and maintenance.

Do not operate, inspect or maintain the machine under the influence of alcohol, drugs, medicine, fatigue or lack of sleep.

If any abnormalities (such as noise, vibration, odor, oil leakage, false alarm, etc ) are found during the operation , inspection and maintenance of the machine, the sales or service agent shall be notified immediately and appropriate measures shall be taken. Do not operate the machine until the exception has been ruled out.

### **Operating temperature range**

In order to maintain the performance of the machine and avoid premature wear, please observe the following operating rules:

Do not operate the machine when the outdoor temperature exceeds +450C or is below -150C

If operating at an outdoor temperature above +450C, the engine may overheat and

degrade engine performance. The temperature of the hydraulic oil can also be very high, causing damage to hydraulic equipment

Rubber parts such as gaskets may harden and cause premature wear or damage to the machine if operated outdoors below -150C.

If you need to operate the machine outside the above outdoor temperature range, please consult the sales or agent.

### **Wear appropriate clothing and protective equipment**

Do not wear loose-fitting clothing or accessories that may hook on levers or moving parts.

Do not wear clothes with grease or oil stains that may easily catch fire.

Wear safety shoes, safety helmet, safety glasses, filter mask, thick gloves, ear protection and other protective equipment as required by the working environment.

Wear appropriate protective gear, such as safety glasses and filter masks, when using grinders, hydraulic hammers or compressed air. Avoid serious injury caused by metal debris or other flying objects.

Please use the hearing protection when operating the machine. Exposure to high noise for a long time can cause hearing loss.

Precautions when standing up or leaving the driver's seat

When the driver gets up from the seat, lower the working device to the ground and stop the engine. Accidental touching of any control handle can cause the machine to move and may result in serious injury or death.

Please do not touch the bulldozer, dynamic hip pendulum and auxiliary hydraulic control.

Before leaving the driver's seat, lower the working device to the ground and shut off the engine. Be sure to unplug the key , keep it with you, and put in the designated place. Avoid fire and explosion.

Maintain fuel oil, lubricating oil, grease and antifreeze principle flame.The fuel is

extremely flammable and very dangerous.

When handling combustibles, stay away from lit cigarettes, matches, lighters, and other flames or sources of ignition.

Avoid smoking or open fires when handling fuel or operating fuel systems.

Do not leave the site while refueling or lubricating oil

When the engine is running or has not cooled down, do not remove the oil cap for refueling. Please avoid splashing fuel onto the surface of the machine or electronic system components.

Immediately clean up spilled fuel or lubricating oil.

Check for leaks of fuel and lubricating oil. Please eliminate the possibility of leakage and clean the machine before operation.

A short circuit in the electronic system may cause a fire. Please check every day for loose or damaged wiring connections. Retighten the loose connector and cable card. Repair or replace damaged electrical wiring.

## **Section II Precautions at Start-up**

Support your weight in a three-point safe position when getting on/off the machine.

Do not attempt to jump on or off the machine. Do not try to get on or off the machine that is moving.

Climb up/down the footrest facing the machine and hold on to the back of the chair to support your weight in a three-point safe posture (hands and feet).

Do not use the control lever as a handle.

Before starting the machine, ask any unauthorized personnel to leave the area.

Make sure it is safe to start the machine by checking the following items before you start it.

Walk around the machine to warn the person servicing the machine and the person walking near the machine. Make sure that no one is around the machine before starting it.

Get in the driver's seat and start the engine.







Adjust the seat to firmly lock.

Check whether the parking device is turned on and whether all control levers and pedals are in the neutral position. Make sure no one is near the machine.

The machine can only be started and operated from the driver's seat.

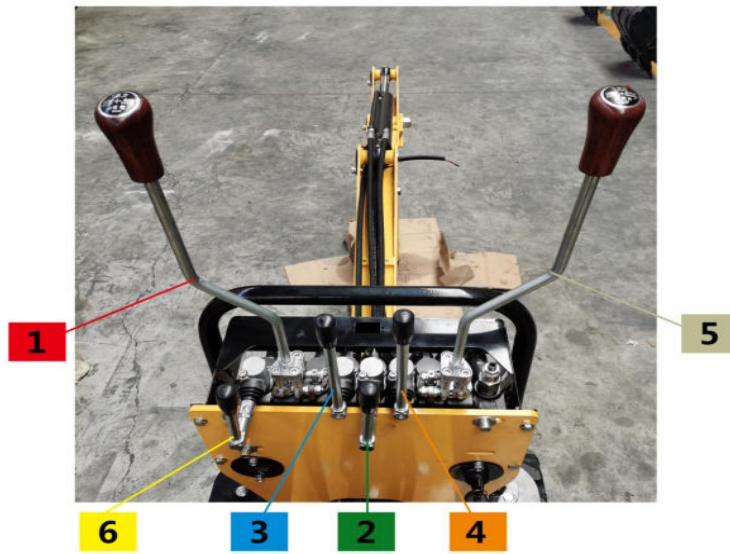
Do not attempt to start the engine by shorting the starter terminal.

### Section III Safety signs

	<p>Read the user manual carefully and make sure you understand it before you start using the machine.</p>		<p>No one is allowed to stand within the area of operation.</p>
	<p>No open flame</p>		<p>Fragmentation risk</p>
	<p>It is forbidden for anyone to enter the turning radius and path of the machine.</p>		<p>Fasten seat belts before working to prevent rolling off.</p>

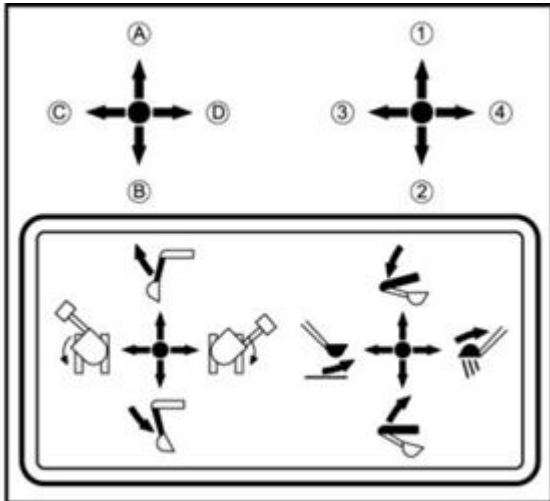
### Section IV Precautions during operation

Work unit operation instructions (this sign is located on the inside front of the cab)



Joysticks	No.	Functions
Left operation joysticks (1)	A	Forearm extension
	B	Forearm retraction
	C	leftward rotation
	D	rightward rotation
Right operation joysticks (5)	①	Boom down
	②	Boom up
	③	Bucket excavation
	④	Bucket dumping

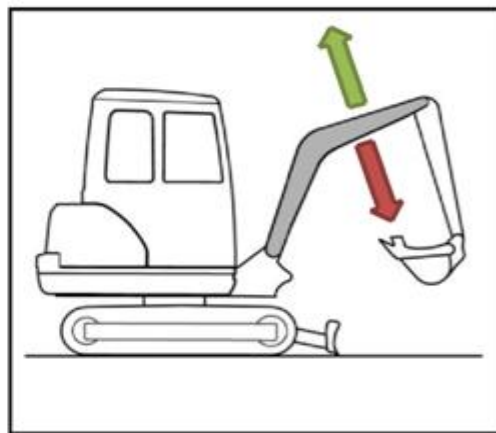




Right operation joysticks (5)

1. Pull the joysticks down , lift the boom up.
2. Push the joysticks up, put the boom down.

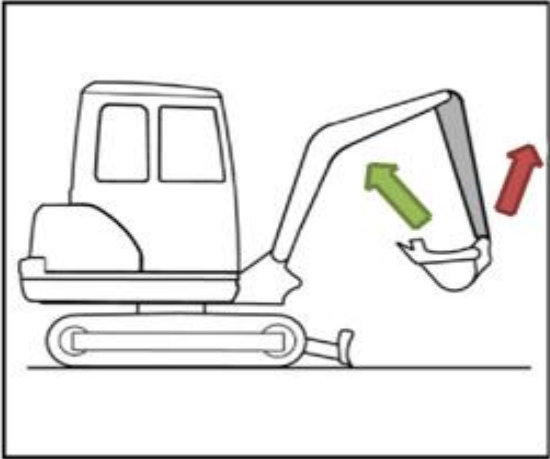
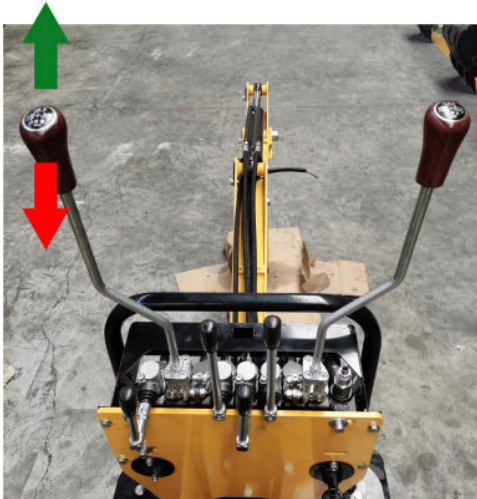
Please refer to the detailed illustration





Left operation joysticks (1)

1. Pull down on the joysticks, retract the forearm
2. Push up on the joysticks, extend the forearm

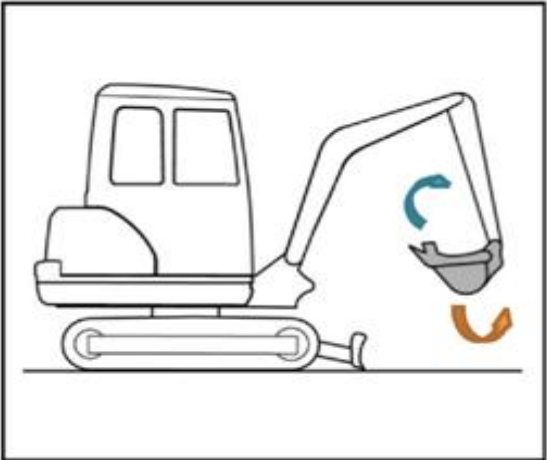
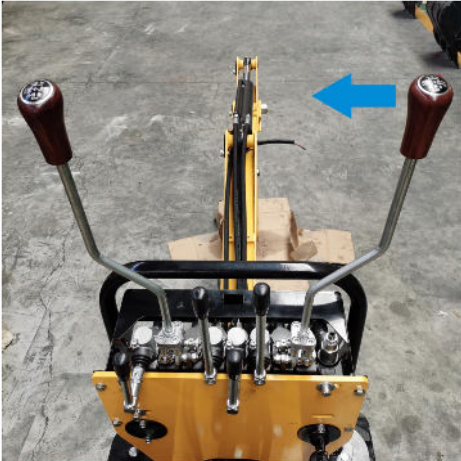
Please refer to the detailed illustration



Please refer to the detailed illustration

- 1. joysticks left.  bucket excavates;
- 2. joysticks right  bucket dumps

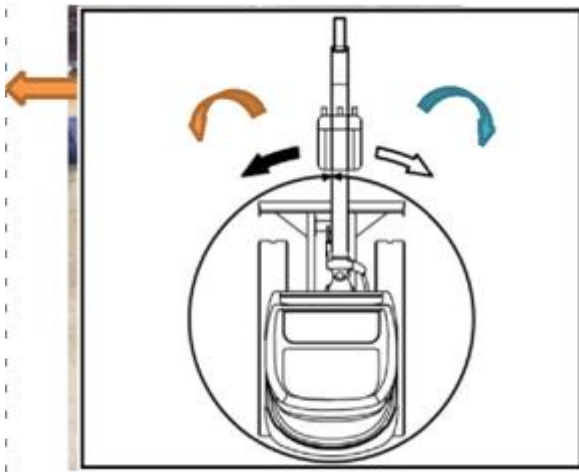
Please refer to the detailed illustration



Left operation handle (1)

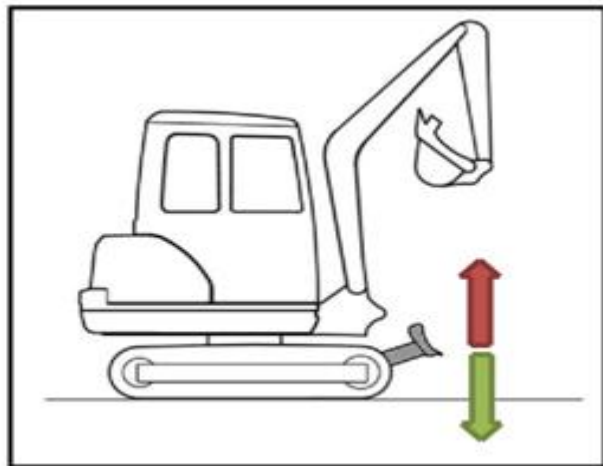
- 1. Pull the joysticks to the left, and the upper body rotates to the left;
- 2. Pull the joysticks to the right, and the upper body rotates to the right.

Please refer to the detailed illustration



Dozer blade joystick

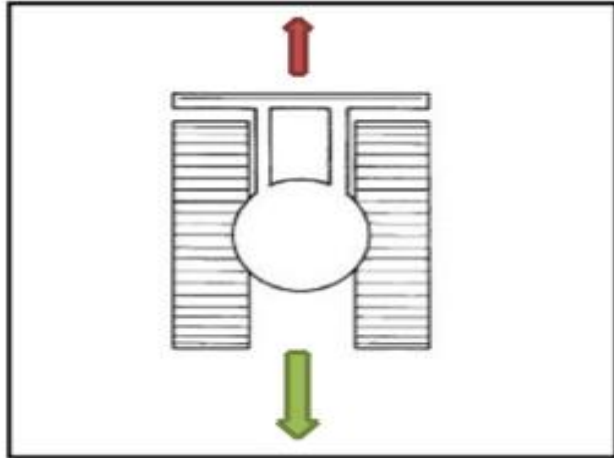
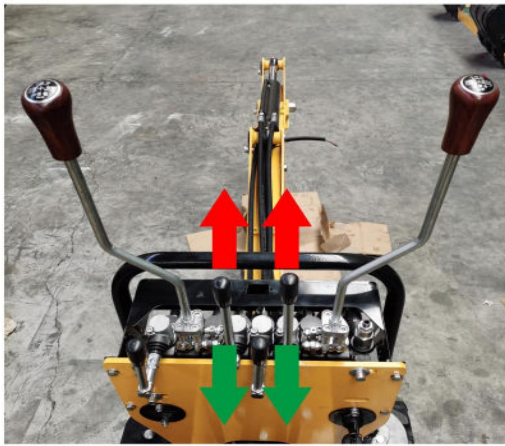
Please refer to the detailed illustration



Pull the joystick down, lower the dozer blade.

Forward and reverse joystick

Please refer to the detailed illustration

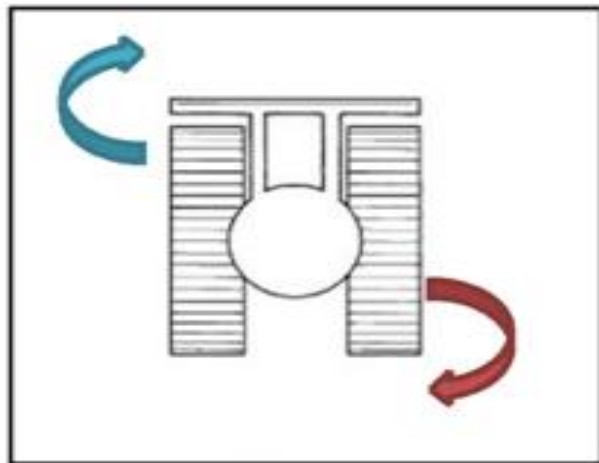


1. Push the joystick 3 and 4 forward at the same time, machine moves forward;
2. Pull down the joystick 3 and 4 at the same time, the machine moves backward.

Left and right rotation joystick 3 and 4

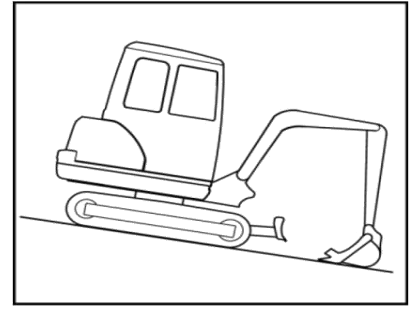
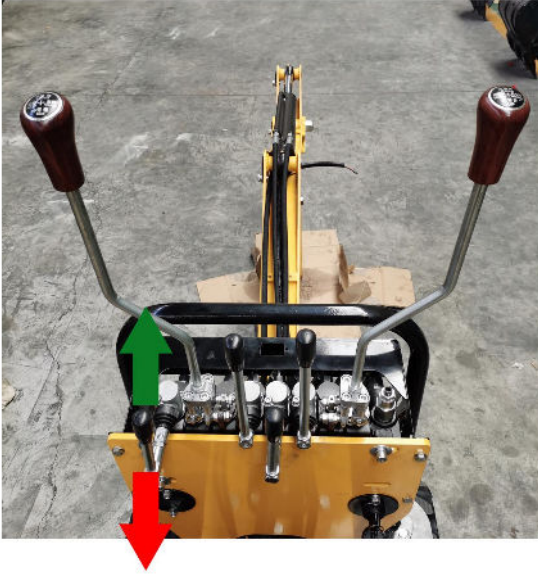
**Please refer to the detailed illustration**

1. Push joystick 3 up and the machine turns right. Or operate joysticks at the same time, with 3 pushing up and 4 pulling down, the machine turns right as well.



Conversely, push joystick 3 down and the machine turns left. Or operate joysticks at the same time, with 3 pulling down and 4 pushing up, the machine turns left as well.

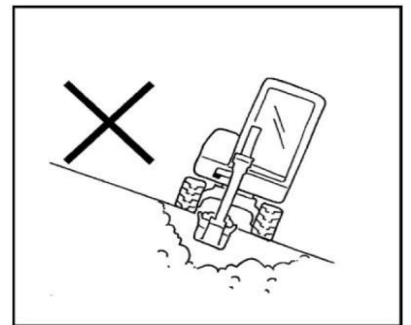
**Please refer to the detailed illustration**



Joystick 6 breaker function



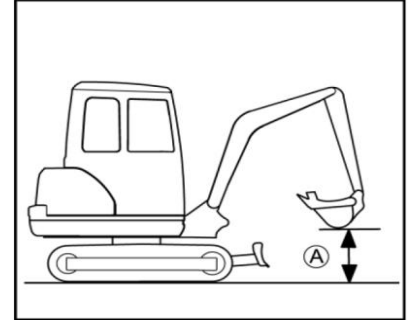
**Section V Note for walking**



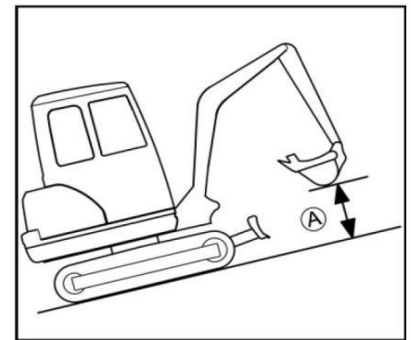
1. It is forbidden to operate the machine laterally on the slope;
2. When walking on a slope or ramp, be careful not to overturn or slide the machine;

3. Do not walk on a steep slope where the machine cannot maintain its stability (Maximum slope 300, lateral inclination <100);
4. It is dangerous to operate on a slope, the machine may be unstable and overturned when turning or operating the working device during operation. It's better to avoid operating on slopes.

5. When walking, the bulldozer shovel is raised, and the bucket operating device is retracted as shown in the figure on the right. And raise the bucket to 30-40 cm above the ground.
6. Do not swing the boom when walking.

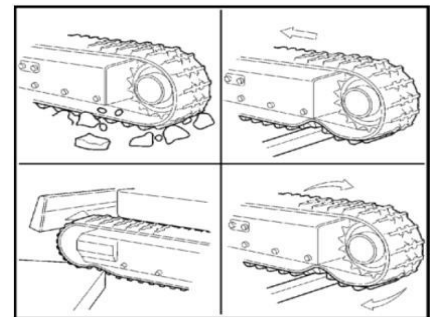


7. When walking on a slope, lower the bucket to 20-40 cm above the ground;
8. When walking on slopes, drive slowly and cautiously.



9. If you must park or tilt the machine on a slope, park the machine firmly. And to prevent the machine from moving, the bucket should be dug into the soil or supported by the bucket.

10. Do not walk or operate the machine in the following places: Walking and turning on gravel, extremely rough and hard rocks, steel beams, scrap iron. Or close to the edge of the steel plate will damage the track.



### Section VI Precautions during transportation

During loading and unloading, the machine may tip over or fall. Please take the following safety measures:

Choose a solid and level ground and keep a sufficient distance from the road shoulder.

Fix a slope of sufficient strength and size to the truck bed. The slope of the slope should not exceed 150. If the slope is bent too much downwards, please use

pillars or pads for support.

### **Safe transport of machines**

When transporting the machine, understand and follow the applicable safety regulations, vehicle codes, and traffic rules.

The length, width, height and weight of the transport truck after loading the machine should be considered to select the best transport route.

Do not start, stop or drive at high speed suddenly during transportation. Otherwise, the loaded machine will move or lose its balance.

## **Chapter 2 08 Excavator maintenance technology**

### **Section I Precautions during maintenance**

When inspecting or maintaining the machine, if an unauthorized person starts the engine or touches the control, it may cause serious injury.

Before performing maintenance, turn off the engine, remove the key and carry it with you.

#### **Regular replacement of safety-critical components**

To ensure that the machine can be used safely for a longer period of time, regular refueling, inspection and maintenance should be carried out.

Safety-critical components that are regularly replaced refer to components that are aged, worn and functionally degraded after repeated use, and the performance of such components will change over time. These characteristics of such components can cause serious mechanical damage or personal injury, and it is difficult to judge the remaining service life based on visual inspection or operating feel.

### **Section II Safety critical parts list**

Body		Safety-critical parts that are regularly replaced	Replacement time
Fuel system		Fuel pipe	Every 2 years
		Packing on the fuel tank cap	
Hydraulic system	Host	Hydraulic hose (pump outlet)	
		Hydraulic hose (pump suction port)	
		Hydraulic hose (swing motor)	
		Hydraulic hose (walking motor)	
	Working device	Hydraulic hose (moving boom cylinder pipeline)	
		Hydraulic hose (stick cylinder pipeline)	
		Hydraulic hose (bucket cylinder pipeline)	
		Hydraulic hose (swing cylinder)	
		Hydraulic hose (bulldozer cylinder)	
		Hydraulic hose (valve)	
		Hydraulic hose (auxiliary pipeline)	

**Section III Refueling matters needing attention**

No smoking or open flames are allowed when refueling or near the refueling point.

Do not remove the fuel tank cap or refuel when the engine is being transported or has not yet cooled down. Do not spill fuel on the hot surface of the machine.

Fill the fuel tank in a well-ventilated area.

Do not fill up the fuel tank. There should be room for oil expansion.

Spilled fuel should be wiped clean immediately.

**Diesel fuel tank**

To maintain the performance and service life of the engine, always use clean, high-quality fuel.

In order to prevent freezing in cold weather, please choose diesel that is still applicable when the actual temperature is at least 12OC lower than the estimated minimum outdoor temperature.

Please use diesel fuel with a cetane number of 45 or above. When used in high



cold or high altitude areas, fuel with a higher cetane number is required. Use fuel with a sulfur content of less than 0.05-0.0015% by volume. (In the United States or Canada, ultra-low sulfur fuel should be used) The use of fuel with high sulfur content may cause sulfuric acid corrosion in the engine cylinder. The use of kerosene is prohibited. Never mix kerosene, used engine lubricating oil or residual fuel oil with diesel. Poor quality fuel will reduce engine performance or cause engine damage. It is not recommended to use fuel additives. Certain fuel additives can cause engine performance to decline. Metal content, such as zinc, sodium, magnesium, silicon, and aluminum, must be limited to 1 mass ppm or less. Safety measures when using biodiesel, the engine manufacturer's warranty provisions are invalid for machines that use biodiesel that does not meet the standards or has deteriorated.

#### **Hydraulic tank**

Summer YB-N46 anti-wear hydraulic oil

Winter YC-N46 low temperature hydraulic oil

The hydraulic oil change interval depends on the type of hydraulic oil being used.

When using ordinary anti-wear hydraulic oil, the hydraulic oil should be changed every 2000 hours.

## Section I Main technical specifications (standard technical parameters)

Specification	
Bucket capacity	0.025m <sup>3</sup>
Bucket digging force	7.5KN
Gradeability	30°
Engine type	Air-cooled single cylinder diesel engine
Max. Output power	7.6KW/8.2KW
Walking speed	1.8km/hr
Dimensions	
Overall size	2430*720*1300mm (Not include driving awning)
Weight	648KG
Track length	1140mm
Track width	150mm
Min. ground clearance	80mm
Working Range	
Max. digging height	2350mm
Max. unloading height	1600mm
Max. digging depth	1300mm

<b>Max. digging radius</b>	<b>2450mm</b>
<b>Min. Swing radius</b>	<b>1100mm</b>
<b>Max. clearance of the bulldozer</b>	<b>120mm</b>
<b>Max. supporting depth of the shovel</b>	<b>200mm</b>

