Operation and maintenance instructions

editio princeps

GG 17000

Hydraulic Excavator Operation and Maintenance Instructions

Warning: Unsafe use of this machine may cause serious injury or death. Operation and maintenance personnel must read this manual before operating and maintaining this machine. This manual shall be placed near the machine for timely access and for all machine-related personnel.

Preface

Dear User,

Thank you for your trust and love for our products! Our company's product series is a small excavator mainly used for digging, lifting,and unloading , supplemented by agricultural use. Our products are compact in design, with matching power, good product stability and high-cost performance. They can meet the digging and unloading requirements under different working conditions such as plains, hills, and forests, and are also suitable for brick factories, kilns, rivers, buildings, dredging, and road construction. It can reduce the physical labor of workers, speed up the construction progress and improve the level of mechanization.

In order to enable users to correctly master the use, adjustment, maintenance, and repair knowledge of the machine and give full play to the use effect of the excavator, please read this operation and maintenance manual carefully and conscientiously implement the regulations in this operation and maintenance manual. For the use and maintenance of the matching engine, please refer to the "Engine Instructions" compiled by the matching engine factory.

Operation Section: A technical reference for the operator to use the machine, during which the operator is guided in the correct procedures for inspecting, starting, operating, and stopping the machine. The operating techniques outlined in the manual are a foundation upon which the operator can improve his or her own techniques and skills by gaining knowledge of the machine and its functions.

Maintenance section: User maintenance instructions for the entire machine. Specific maintenance measures for the machine are detailed in the "Excavator Maintenance Catalog". Users should maintain maintenance items according to requirements and different machine working hours.

Depending on the number of machines, operations can be performed in extremely harsh, dusty, or wet working conditions.

In order to more intuitively display some structural features of the machine, some demonstration pictures in this manual are set as structural perspective views, so the appearance may be different from the actual product. If the actual excavator mechanical structure and technical parameters change due to technical improvements, which are not listed in this manual, please consult our company for the latest product information of the product.

using or repairing the machine, the relevant information must be approved, and if necessary, you can contact our technical service station. When purchasing accessories, please indicate the excavator's factory date and number.

Due to the continuous innovation of the company's product technology, this manual reserves the right of interpretation and modification.
If the actual product does not match the pictures in this manual, the actual product shall prevail.
Warning! This machine must not be used for the following purposes:
- Lifting operations;
- Lifting operations (if used for lifting operations, additional protection should be installed);
- Disassembly (if used as a disassembly machine, protective devices must be installed);
- Areas subject to falling object hazards (no overhead guard or FOPS installed)
- Areas with unhealthy environments, such as polluted areas;
-Lightning weather.

Chapter 1 Safety Precautions and Safety 7
1.1 Safety Precautions 7
1.2 Safety Identification Tips 7
1.3 Safety sign location 7
1. 4 Nameplate logo 13
1. 5 Safety Information 13
Chapter 2 Preparation before Work 22
2.1 Fuel quantity check 22
2.2 Track tensioning check 22
2.3 Check hydraulic oil and oil quantity 23
2.4 Check lubrication points 24
2.5 Check the tightness of the fixing bolts of important components 24
2.6 Oil Leakage Inspection 24
2.7 Check the operating area 25
2.8 Check the strength of the bridge 25
2.9 Always keep the machine clean 26
2.10 Daily inspection and maintenance 26
2.11 Use of bucket 26
Chapter 3 Safe operation of machines 27
3.1 Starting the engine 27
3.2 Preparation before Startup 28
3.3 Operation 29
3.4 Workstation Setup 29
3.5 Check rearview mirror 30
3.6 Description of display and operating units 31
3.7 Other equipment on the driver's seat 31
3.8 Overview of joystick functions (default settings) 32
3.9 Ceiling 34

3.10 Safety precautions for rotation 35
3.11 Travel Safety precautions 35
3.12 Walking on a Slope 36
3.13 Operating on a slope 37
3.14 Prohibited Operation 38
3.15 Snow Day Operation 39
3.16 Parking 40
3.17 Transport 40
3.18 Installation and uninstallation of Machines 40
3.19 Transport machinery 41
3.20 Bucket lifting operation 41
Chapter 4 Basic Parameters of Excavators 44
4.1 Basic Parameters 44
4.2 Hinge pin of machine working device 45
4.3 Main dimensions and specifications 46
4.4 Hydraulic schematic diagram and detailed information 47
4.5 Electrical schematics and details 49
4.6 Excavator parameter Table 50
Chapter 5 Common faults and solutions 52
5.1 Common faults of excavators and their solutions 52
5.2 Clean the overflow valve (safety valve) and adjust the system pressure to 55
5. 3 Installing a single track 55
Chapter 6 Maintenance and care 57
6.1 Maintenance Precautions 57
6.2 Fuel recommendation 59
6.3 Description of machine lubrication parts 60
6.4 Maintenance Directory 61
6. 5 Change engine oil 63
6. 6 How to replace the filter element 64

Chapter 1 Safety precautions and safety signs

1.1 Safety Precautions

General precautions

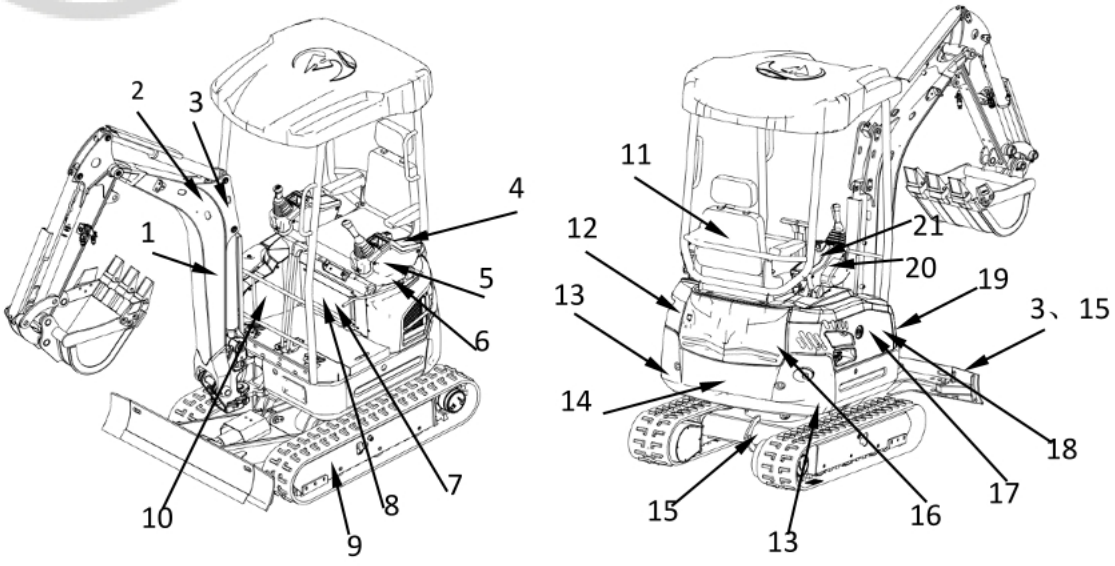
You must comply with the safety regulations and laws of the relevant departments and operate, inspect and maintain the machine in accordance with the manufacturer's requirements.

1.2 Safety Identification Tips

Use the following warning and safety signs.

1. Be sure to fully understand the correct location and content of the logo.
2. To ensure that the logo is clearly visible, please make sure that the logo is positioned correctly and keep it clean. When cleaning the logo, do not use organic solvents or gasoline, otherwise it will peel off.
3. In addition to warning and safety signs, there are other signs that are treated in the same way.
4. If the marking is damaged, missing or illegible, please replace it. Please refer to this manual or the actual marking for the specific marking part number and send the order to the factory.

1.3 Safety Sign Location



(1) Brand and model

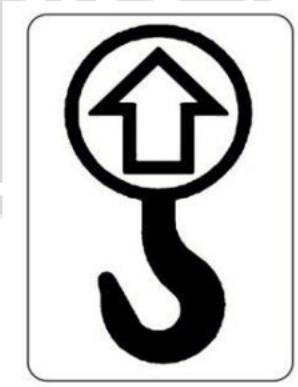
Gunter Grossmann GG 1700

(2) No one is allowed to stand under the working device.

△ It is strictly forbidden to stand in the working area of the machine.

△ Do not damage or remove the markings on the machine.

(3) Hoisting position



(4) Throttle adjustment

(5) Wear ear protection when operating an excavator

△ With ear protection warning

(6) After operating the machine, release the operating lock.

△ This mark is the operation lock mechanism. After operating the machine, lower the operation lock lever to prevent the driver from operating it by mistake.

(7) Excavator excavation parameters

Lift capacity ratings

A:Load radius	Conditions of operation
B: Load point height	940mm Big arm
C: Lift capacity ratings	1780mm ARm
Cf: Rated loads over front	weight：1711kg
Cs: Rated loads over side	Track width：230mm
(Unit: kg)	Track spacing：840mm

Load point height ((Unit: m))	Load radius A (Static-bulldozer support)								
	1.5		2		2.5		Max		
	Cf	Cs	Cf	Cs	Cf	Cs	Cf	Cs	A(mm)
1.5	565	628	407	383	388	304	330	222	3201
1	686	647	521	388	449	298	334	220	3300
0.5	804	571	635	394	454	286	339	218	3376
0 (Grade)	934	616	683	438	481	301	423	230	3317
-1	948	635	583	453	508	323	438	258	2862
-1.1	962	704	538	464	525	340	454	274	2784

(8) Maintenance Label

MAINTENANCE PRECAUTIONS

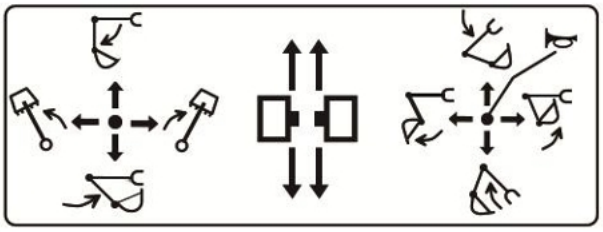
VORSICHTSMAßNAHMEN FÜR DIE WARTUNG

- Pin, buttering is recommended every 10 hours
  Stift, Buttering wird alle 10 Stunden empfohlen
- Track tensioning device, check before use, if the track becomes loose, please add butter immediately
  Kettenspannvorrichtung, vor Gebrauch prüfen, wenn sich die Kette lockert, bitte sofort Butter zugeben

Filter name	The first time das erste Mal		Normal normal/erneute	
	Time Zeit	maintenance mode Wartungsmodus	Time Zeit	maintenance mode Wartungsmodus
Air filter Luftfilter	50H	cleaning Reinigung	100H	replacement Ersatz
Diesel filter Dieselfilter	50H	replacement Ersatz	200H	replacement Ersatz
Hydraulic oil filter Hydraulikölfilter	100H	replacement Ersatz	300H	replacement Ersatz

(9) Direction

(10) Schematic diagram of excavator operation



△ Perform basic operations of the excavator according to the above diagram . Operate the excavator strictly according to the markings.

(11) Notes on operation, inspection and maintenance

△ The instructions should be read before operation, maintenance, disassembly, assembly and transportation.

△ Be careful not to damage or lose it.

(12) Inspection qualification mark

(13) It is strictly forbidden to stand within the operating range.

△ It is strictly forbidden to stand within the machine's operating range.

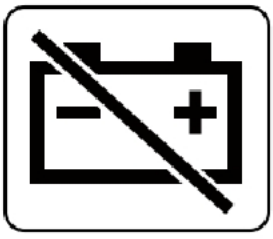
△ Note the turning radius of the machine.

(14) Brand and model (latter)

GG 1700 Gunter Grossmann

(15) Bundling transport point

(16) Power off



(17) Hydraulic oil filling port

△ When refueling, the engine should be turned off and all open flames should be kept away.

(18) Fuel filling port

△ Refuel at designated locations.

△ When refueling, the engine should be turned off and all open flames should be kept away.

(19) Note that the machine operating noise is 93dB

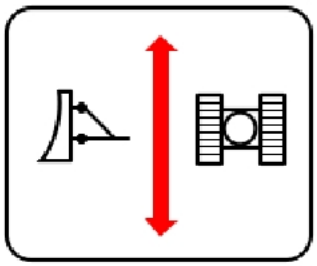
△ Warning: Under certain specific operating conditions of the machine, the actual noise value may be different from the value determined using the noise test code.

The measured A-weighted transmitted sound power is 92 dB(A).

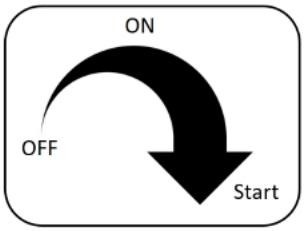
The guaranteed sound power is 93 dB(A) .

The uncertainty of the noise emission value is 3.5 dB.

(20) Bulldozer operating handle



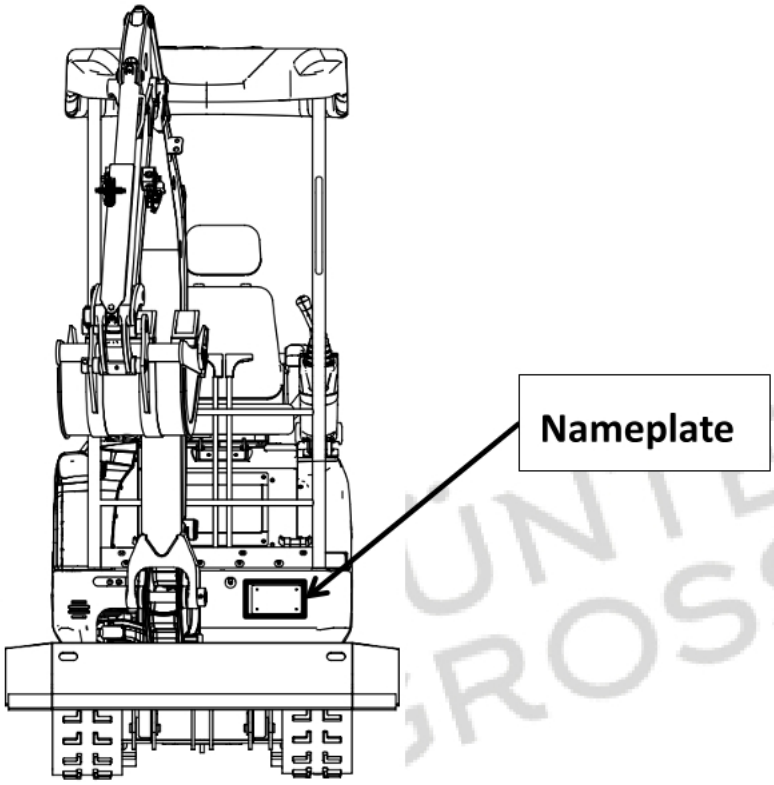
(21) Start switch identification



1. 4 Nameplate logo

Nameplate model

Nameplate location



1. 5 Safety Information

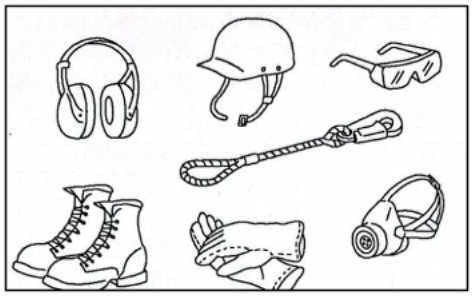
Safety Rules

Only trained and instructed personnel may operate and maintain the machine. All safety rules, precautions and instructions should be followed when operating or maintaining the machine.

Being under the influence of alcohol or drugs can severely reduce/impair the ability to safely operate or repair machinery, placing yourself and others at risk. When working with other operators or on-site traffic controllers, ensure that everyone understands all hand signals used.

Exception handling

If any abnormality is found (sound, vibration, odor, incorrect instrument display, smoke, oil leakage, etc., or abnormal alarm device or monitor display), it should be reported to the supervisor in time and necessary measures should be taken. Do not operate the machine until the fault is corrected.



Work clothes and protective equipment for operators

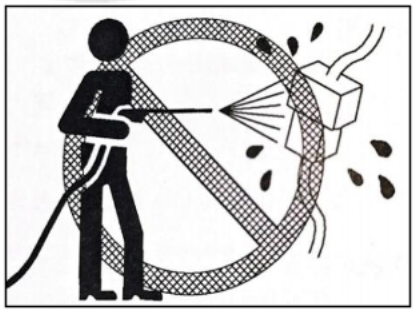
Do not wear loose clothing and accessories. Excavators have hanging joysticks or other protruding parts. If your hair is too long and sticks out of the helmet, there is a risk of it getting entangled in the machine. Tie it up and be careful not to let it hang around the machine. Wear a hard hat and safety shoes. When operating or maintaining the machine, wear safety glasses, masks, gloves, earplugs, and safety belts as necessary. Before use, check that all protective devices are functioning properly.

Safety

Make sure all shields are in place. If a shield is damaged, repair it immediately.

Understand how to use safety equipment correctly.

Do not remove any safety devices and keep them in good working condition.



Keep the machine clean

1. If water enters the electrical system, there is a risk of malfunction or failure. Do not flush the electrical system (sensors, connectors) with water or steam.

2. If the machine being inspected and maintained is contaminated with mud or oil, there is a risk of

slipping and falling or a risk of dirt getting into the eyes.

3. Always keep the machine clean. Keep the operating position clean while driving and be sure to remove mud and oil from the soles of your shoes.

4. If there is mud or oil on the soles of your shoes , your feet will slip when you operate the pedals , causing serious malfunctions.

Lock and leave the operator's seat

1. Before standing up from the operator's seat (when opening or closing the front window or roof window, or when installing, or adjusting the seat), lower the working device completely to the ground and put the operating lock in the locked position. Then turn off the engine.

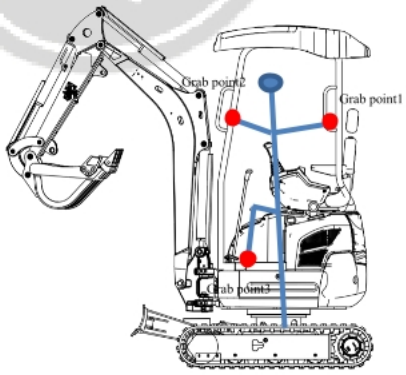
If the lock is accidentally touched, it may cause the machine to move suddenly and cause serious injury or damage to the machine.

2. When leaving the machine, be sure to lower the working device completely to the ground, pull the operating lock firmly to the locked position, and then turn off the engine. Lock all equipment with the key, remove the key, and put it in the designated place.

Handrails and ladders

To prevent personal injury from slipping or falling from the machine, follow these requirements.

1. When getting on or off the machine, use the handrails and ladders indicated in the illustration.



2. To ensure safety, face the machine and support yourself by maintaining three points (two feet, one hand, or two hands and one foot) of contact with the handrails and steps (including the track plate).

3. Do not hold the joysticks when getting on or off the machine.

4. Onto the hood or shield without anti-slip mats.

5. Check the handrails and steps (including the track plate) before getting on or off the machine. If there is oil, grease, or mud on the handrails or steps (including the track plate), wipe them off immediately. Keep these parts clean. If damaged, repair them and tighten any loose bolts.

6. Operate the machine while you are holding the tool in your hands.

Getting on and off the machine

1. Do not jump on or off the machine. Do not get on or off the machine while it is moving.

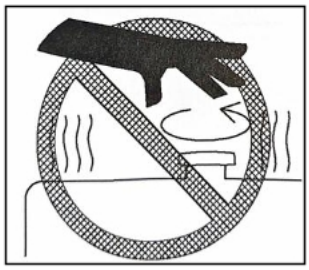
2. If the machine begins to move without an operator, do not jump on the machine and attempt to stop it.

Do not sit on the equipment

Do not allow anyone to sit on the bucket, log grab, or other attachments as there is a risk of falling or serious injury.

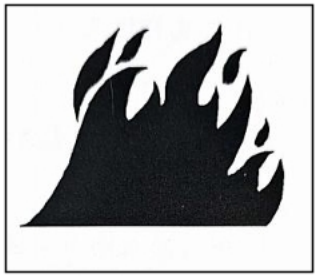
Coolant

To prevent burns from hot water or steam jets when checking or draining the coolant, wait until the water cools down to the temperature of the radiator cap that you can touch before you begin. Even if the coolant has cooled, loosen the radiator cap slowly to release the internal pressure of the radiator before removing it.



Hot oil

When checking or draining the oil, to prevent the oil from being sprayed out or causing burns due to contact with hot parts, please wait until the oil cools down before touching the cap or plug to relieve the internal pressure before removing the oil cap.



Fire and explosion-proof

Fires caused by fuel or oil

Fuel, motor oil, antifreeze, and window cleaner are extremely flammable and dangerous. To prevent fires, the following must be observed:

1. Do not smoke or use any open flame near fuel or oil.
2. Turn off the engine before refueling.
3. Do not leave the machine alone while adding fuel and oil. Keep fuel and machine oil tank caps tight.
4. Do not spill fuel on hot surfaces or components of the electrical system.
5. Refuel or store oil in a well-ventilated area.
6. Engine oil or fuel oil should be stored in designated areas and no one is allowed to enter without permission.
7. After adding fuel or oil, wipe off any spilled fuel or oil. When grinding or welding on the lower body, move flammable materials to a safe place before starting.
8. When cleaning parts with engine oil, non-flammable engine oil should be used. Diesel and

gasoline are easy to ignite, so do not use them.

9. Place oily rags or other flammable items in a safe container to ensure the safety of the scene.

10. It is strictly forbidden to weld or cut pipes containing flammable liquids.

The fire was caused by the accumulation of flammable materials

Remove dry leaves, wood chips, paper, dust, or other flammable material that has accumulated in or around the engine, exhaust pipe, muffler, battery, or hood.

A short circuit in the electrical system can cause a fire

1. Keep the wire contacts clean and securely fastened.

2. Check the wires for looseness or damage every day. Tighten loose connectors or wire clamps, and repair or replace damaged wires.

The fire was caused by hydraulic lines

Check that all hoses and clamps, guards and bumpers are securely in place.

If it is loose, it will vibrate and rub against other parts during operation, causing damage to the hose and high-pressure oil spray, creating a fire hazard or serious injury.

Explosions caused by lighting equipment

1. When checking fuel, engine oil, battery electrolyte, window cleaner, or coolant, use an explosion-proof light. Failure to use this lighting equipment may result in an explosion that could cause serious injury.

2. When the power supply of the machine is used for lighting, please follow the regulations of this manual.

Actions to take in case of fire

If a fire occurs, follow the instructions below and leave the machine quickly.

Turn the start switch to OFF to shut down the engine.

Use handrails and steps to exit the machine.

Prevent dropping, spilling, and intrusion

The unit must not be used in hazardous locations where there is a risk of falling objects unless the Falling Object Protective System (FOPS) or top guard is installed.

Accessory Installation

when installing the selected attachments or accessories, please contact our service personnel in advance. The factory is not responsible for any injuries, accidents, or product failures caused by the use of unapproved attachments or parts.

When installing and using selected accessories, please read the accessory instruction manual and the general instructions about the accessories in this manual.

Combination of accessories

Depending on the type or combination of working devices, there is a risk that the working device may hit the cab or other parts of the machine. When used by unfamiliar workers, check for the risk of impact and operate with caution.

Unauthorized modifications

Any modification not approved by the factory is dangerous. Please contact professional technical service personnel before modification.

Will not be responsible without the factory's consent.

Before commencing operation, the work area should be thoroughly inspected for unusual and hazardous conditions.

1. There is a risk of fire when operating near combustible materials such as thatched.

2. roofs, dry leaves, or hay, so operate with caution.

3. Check the topography and conditions of the ground at the job site to determine the safest operating procedures. Do not work where there is a risk of landslides or falling rocks.

4. If there are water pipes, conduits, or high-voltage wires buried beneath the work site, contact the various utilities and mark their locations, taking care not to break or damage any lines.

5. Take necessary measures to prevent any unauthorized persons from entering the work area.

6. When working on highways, signal personnel should be arranged and fences should be installed to ensure the safety of traffic and pedestrians.

7. Shallow water or soft land, check the type and condition of the rock formation and the depth and flow rate of the water before working.

Working on soft ground

1. Avoid walking or operating the machine near cliff edges, embankments, and deep canals. In these areas, the ground is soft and there is a risk of falling or tipping over if the ground gives way under the weight or vibration of the machine. Remember that these places can change after heavy rain, blasting, or earthquakes.

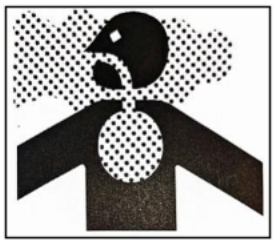
2. When working near embankments or trenches, there is a risk of loosening the soil due to the weight and vibration of the machine . Take measures to stabilize the ground to prevent the machine from tipping or falling.

Ensure good visibility

To ensure safe operation or walking, check whether there are people or obstacles around the machine and check the conditions at the work site. Follow the steps below :

1. When working in a dark place, turn on the work light and headlight mounted on the machine, and set up auxiliary lighting in the work area if necessary.

2. If visibility is poor, or if there is fog, snow, rain, or dust, stop operating.



Ventilation of enclosed areas

Engine exhaust can be deadly.

If the engine must be started in an enclosed area, or when handling fuel, cleaning oil, or paint, doors and windows should be opened to prevent gas poisoning to ensure adequate ventilation.

Signalman's signals and gestures

1. Set up signs on the embankment or soft ground. If visibility is poor, arrange signalmen if necessary. Operators should pay special attention to these signs and follow the instructions of the signalmen.
2. Can only be sent by one signalman.
3. Before starting work, make sure all workers know all signals, hand signals, and cab emergency exits.

Asbestos dust can cause lung cancer if breathed in. There is a risk of breathing in asbestos when doing demolition work or handling industrial waste in the workplace.

The following rules must be followed :

1. When cleaning, spray water to reduce dust, and do not use compressed air.
2. If there is a possibility of asbestos dust in the air, the machine must be placed in a conspicuous location and all personnel should use qualified dust masks.
3. During operation, other personnel are not allowed to approach.
4. Comply with job site regulations and environmental standards.

Chapter 2 Preparation Before Work

Before operation, you should fully understand the vehicle condition and operating area to ensure safety.

2.1 Fuel quantity check

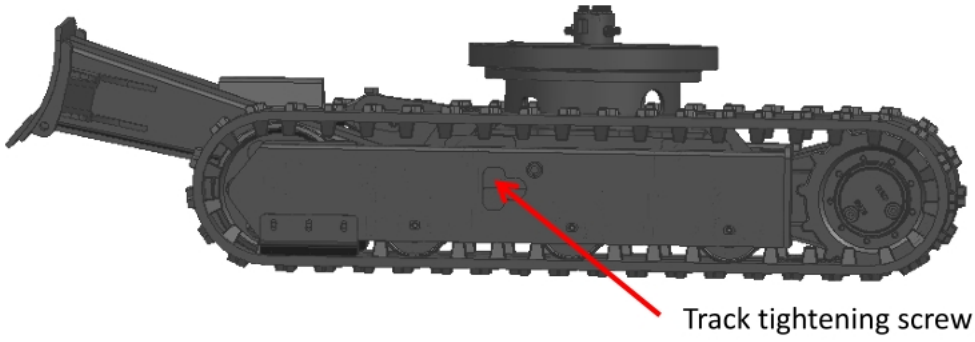
Fuel quantity inspection

Before operation, the fuel capacity of the vehicle's should be checked. When the fuel is insufficient, the fuel should be replenished in time to avoid the exhaustion of fuel and the air entering the machine, and the machine may not be able to ignite after refueling.

Due to the large differences in different climates of the machine, areas with lower winter temperatures must choose diesel suitable for the local temperature. For example, if the minimum temperature is -20 degrees, the diesel needs to be -30# diesel, otherwise the diesel will freeze, making it difficult or impossible to start the machine.

2.2 Track tension check

Before the operation, check the track tension.If the track is too loose, inject a proper amount of grease to tighten the track (as shown in the figure below). The adjustment ports of different models are slightly different in form, but the positions are roughly the same. Please refer to the actual product.



If the crawler track is too loose, it is easy to fall off when turning, turning around , or walking on one side. Once the crawler track falls off, it is difficult to install it.

2.3 Check the hydraulic oil and oil level

Before operation, check whether the hydraulic oil is level. If the oil level in the hydraulic oil tank is too low or the fuselage is tilted, the oil pump will not be able to suck oil and the vehicle will not move (the movement will be stagnant, the oil pump and hydraulic pump will be severely worn or even damaged). It is necessary to add hydraulic oil or level the vehicle body. If there is no hydraulic oil or the fuselage cannot be leveled, you can try to operate the joystick to lift the boom to the height of the vehicle body, and then start the machine. If there is any movement, first adjust the vehicle to a level level, and then add hydraulic oil.

Hydraulic oil inspection

this excavator is 46# (specific gravity 0.8/viscosity index 47) anti-wear hydraulic oil.

Different climates vary greatly. Too low or too high a temperature will affect the viscosity of the hydraulic oil, resulting in unstable system pressure.

Insufficient or abnormal oil flow may even accelerate the wear of the oil pump. Special climate areas (too cold or too hot) should be combined with local climate.

Choose hydraulic oil suitable for local temperature according to the conditions. In order to deal with the special environment, hydraulic oil may cause the excavator to lose performance.

As for safety issues, the following is a reference for selecting hydraulic oil under special ambient temperatures:

① When the working environment temperature is lower than -18°C, it is recommended to replace the low-temperature or ultra-low-temperature anti-wear hydraulic oil;

②When the working environment temperature is -5~-18°C, it is recommended to replace 32 # anti-wear hydraulic oil;

③ When the working environment temperature is higher than -5°C, customers do not need to replace the hydraulic oil separately unless there are special circumstances;

Warning: Waste hydraulic oil should be disposed of in accordance with local regulations and should not be dumped.

Note: When the machine is cold and started, bubbles are likely to appear due to the low temperature of the hydraulic oil and the viscosity of the hydraulic oil. This is a normal phenomenon. After the

vehicle is started, the bubbles will gradually dissipate as the temperature of the hydraulic system rises.

Engine oil and oil level check

Check the engine oil before the operation to see if it is sufficient (because the machine may work in various situations such as climbing, descending, and tilting, the oil should be close to the dipstick limit to prevent the pump from draining oil). If it is insufficient, refill it in time (because the engine works slowly, it is necessary to check the oil level regularly). Otherwise, it will cause excessive wear or cylinder scuffing of the engine. Cylinder scuffing, lack of oil, or other problems will not be covered by the engine manufacturer's warranty.

2.4 Check lubrication points

Before operating the excavator, check all lubrication points. Generally, add grease to each lubrication point every 4 to 8 hours of operation. The amount of grease should be sufficient, and the frequency of grease should be increased when the working conditions are poor.

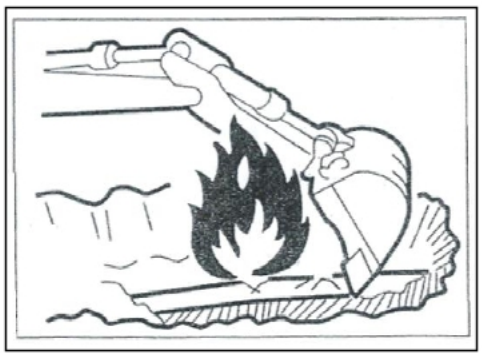
2.5 Check the tightness of the fixing bolts of important components

Important parts include the rotating bracket, rotating motor, and engine. Before the operation, check whether the bolts of these parts are loose. If the bolts are loose, they must be tightened immediately. If necessary, consult the manufacturer. Failure to check or tighten the loose bolts may cause serious problems such as interruption of the rotating bracket and rotating motor gears, engine shedding, and damage to the fan and water tank.

2.6 Oil leakage inspection

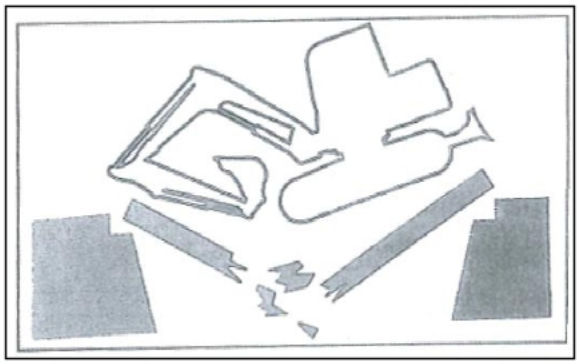
Before the operation, you should observe the surroundings of the vehicle and check whether there is oil leakage on the excavator chassis. If there is, it should be fixed or repaired in time.

2.7 Check the operating area



1. Check terrain and ground conditions in the area of operation and perform inspections indoors.
2. Check the building structure and take safety measures if necessary.
3. Avoid walking in places such as ditches, underground pipes, trees, cliffs and shelves.
4. Power lines or hazardous areas such as rock falls or landslides.
5. Check with the administrator about the location of buried gas pipes, water pipes, and power lines. If necessary, resolve through negotiation to ensure safety.
6. A full range of specific safety measures.
7. When working on roads, always consider the safety of pedestrians and vehicles, and use signalmen or signals. Isolate the operating area and prohibit access by unauthorized personnel.
8. When working in water or crossing shallow streams, check the water depth, firmness of the ground, and speed of the water flow in advance.

2.8 Check the strength of the bridge



On a bridge or building.

If the strength is insufficient, the bridge or building should be reinforced.

2.9 Always keep the machine clean

1. Wipe off oil, grease, dirt, snow, or ice to prevent slipping accidents caused by them.
2. Clear all loose objects and unnecessary equipment from the machine.
3. Remove dust, oil, or grease from engine parts to prevent them from catching fire.
4. Clean the operating valve seats and remove any unnecessary conditions in the machine.

2.10 Daily inspection and maintenance

Abnormal conditions or damage to the machine that is not identified (or repaired) will result in malfunction. Before operation, immediately carry out inspection and repair as required, if necessary. If an accident or engine failure occurs, stop the machine immediately until the failure is resolved.

2.11 Use of bucket

The bucket capacity used is 0.018 cubic meters.

WARNING: Please note the mass and volume rating of the bucket; the density of the material should be taken into account.

Chapter 3 Safe operation of the machine

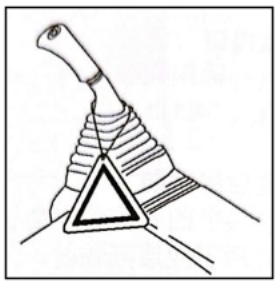
3.1 Starting the engine

If there is a warning sign on the joystick, do not start the engine or touch the joystick.

Notice

Personnel must receive necessary training, be familiar with potential hazards, and have the skills to solve problems.

Only trained and authorized personnel can operate and maintain the machine. Operators should receive training and operate and maintain the machine strictly in accordance with this manual.



3.2 Preparation before startup

Before starting the engine, turn on the main power switch, turn the start switch, press the decompression switch after the engine speed reaches a certain level, release the start button immediately after the engine ignites, and confirm whether the start button bounces back.

It is strictly forbidden to turn the key after the engine is started. This operation will damage the starter motor and the engine flywheel gear, and even destroy the starter housing and burn the starter coil. In addition, excessive rotation of the ignition key will cause the key to not rebound. After the engine is started, the starter gear cannot be separated from the engine. When the engine is running at high speed, the current in the starter will rise rapidly, causing the coil to burn.

The starting key has built-in dust removal, which can effectively prevent dust, water and other substances from entering the key. Once impurities such as water enter the key, it will cause the lock cylinder to get stuck or an internal short circuit, damaging the starter. Therefore, avoid parking the key for a long time on rainy days or in humid or dusty environments. If you need to park the key, you must take protective measures for the key.

Special attention: If the diesel engine still cannot start after 10 seconds, please wait for 15 seconds before starting it (starting the power supply continuously for a long time will cause a large amount of battery power consumption and the starter may burn out). The above phenomenon may cause damage to the starter.

Winter start method: The model has a preheating function. When the weather is too cold, the key switch must be turned in the opposite direction and stored for 8 to 10 seconds (it cannot be used for a long time, otherwise the battery will lose power), and then the engine can be started normally.
After turning on the machine, the main power switch and the 1st gear key are turned on, otherwise the battery cannot be charged.
After starting the engine, the following operations and inspections should be performed in a place

without people or obstacles. If a fault is found, the engine should be shut down and the fault should be reported according to the procedure.

1. Preheat the engine and hydraulic oil for 5-10 minutes.
2. Check whether the instruments and alarm devices are normal.
3. Check for any noise.
4. Test the engine speed.
5. Do not use ether or starting fluid on the engine. Starting fluid can cause explosions and serious injury or death.
6. Preheat the engine and hydraulic oil. If you operate the control levers without preheating, the machine will not react or move quickly or accurately, causing an accident.

3.3 Operation

Check after starting the engine

When checking, move the machine to a wide, unobstructed area and operate it slowly. No one is allowed to approach the machine.

Always wear your seat belt.

Check that the machine motion is consistent with that shown on the control mode card.

If not, use the correct control immediately.

Check the operation of instruments and equipment, and check the operation of the bucket, dipper arm, boom, traveling system, swing system, and steering system.

Check for sounds, vibrations, heating, smells or gauges for oil or fuel leaks.

3.4 Workstation Setup

Get on board

1. Entering the vehicle from the left side, the operator pulls the operating lock upwards.
2. Move the operating lock upward to the end position.
3. Place your hands on the designated handles and push down the steps to get on the cart.
4. Swivel and sit in the seat operating position.

Adjusting the driver's seat

The driver's seat should be adjusted to a fatigue-free, comfortable working position. All control elements must be able to be operated safely. Longitudinal seat adjustment (seat spacing).

Pull up the longitudinal adjustment lever of the seat, push the seat back, loosen the adjustment lever, and adjust the seat position. Note: Make sure the valve seat is fixed.

Spring preload adjustment

If an air seat is installed, the air seat weight can be adjusted by rotating the knob on the front of the seat.

1. Increase spring tension to accommodate the weight of heavy operators by turning the adjusting valve clockwise.

2. Reduce spring tension to accommodate the weight of a light operator by turning the adjusting valve counterclockwise. Adjust the seat using the method above for good suspension comfort.

Backrest adjustment

Gently move the backrest away and lift the joystick on the left side of the seat. Release the joystick by leaning forward or backward to adjust the desired sitting position. The backrest should be adjusted in such a way that the joystick can be safely operated with the operator's back fully resting on the backrest.

Note: The maximum RMS value of whole-body vibration is 0.5 m/s2. The uncertainty of whole body vibration measurement is 0.1 m/s2.

seat belt

1. Fasten your seat belt.

2. Make sure the seat belt is secure.

3. Note: It is strictly forbidden to operate the excavator without wearing a safety belt.

3.5 Check rearview mirror

Check the rearview mirror settings to see if the sight line reaches the best observation position. If not, you can adjust the rearview mirror up and down by moving the rearview mirror housing until

the best viewing position is ensured.

Clean the rearview mirror: Use a damp or dry cotton cloth or toilet paper to wipe the rearview mirror and frame from left to right and from top to bottom until the rearview mirror is clear. Clean and adjust the rearview mirror to the appropriate position.

3.6 Description of display and operating units

The switches of the display and operating unit are multifunctional and can also be used to navigate the menus in the display. Each function is described in detail in its own chapter.

1. The oil supply indicator

The fuel supply indicator shows the relative amount of fuel in the tank.

2. Charging indicator

When the charging circuit voltage is insufficient, the charging indicator light comes on.

3. Oil pressure indicator light on

When the oil pressure is lower than the set value, the oil pressure indicator light comes on.

3.7 Other equipment on the driver's seat

the cab is described below.

Command Box

The command box is located directly in front of the console.

Gauge adjustment button

If the excavator is equipped with a track gauge adjustment device, the track width of the excavator is 980mm ~ 1300mm.

Oil level indicator

can be judged by observing the pointer on the oil level indicator. Unscrew the oil level gauge, take out the oil level gauge, prevent the oil sump from coming out, and then fill it.

Battery disconnect switch

Using the battery disconnect switch, the main circuit can be disconnected.

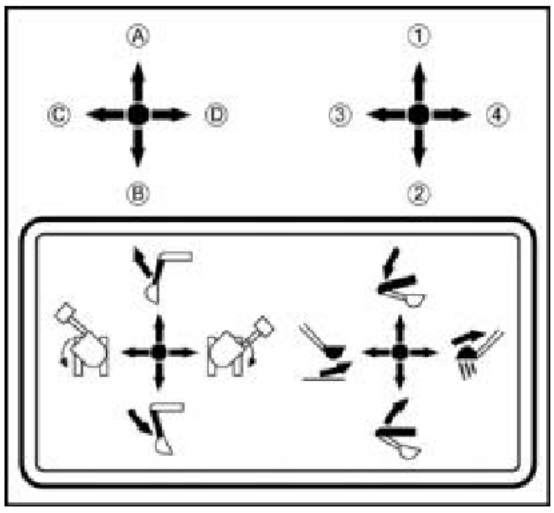
Horn switch

The horn switch is used to control the horn on and off and to sound the horn as a warning. The horn switch is located at the center button of the right operating handle.

3.8 Joystick Function Overview (Default Settings)

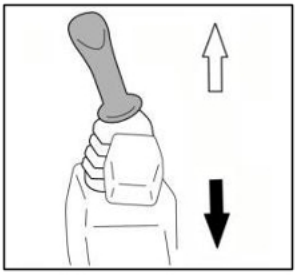
The figure and table show the functions of the left and right joysticks.

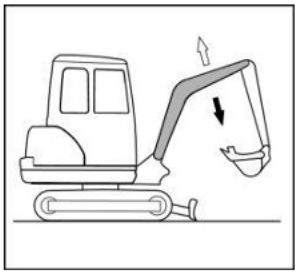
joystick		action
Right handle	1	Lower the boom
	2	Raise the boom
	3	Put away the bucket
	4	Open bucket
Left handle	A	Lower the stick
	B	Raise the arm
	C	Rotate the cab left
	D	Rotate the cab right



Boom Operation

When the excavator encounters an overload condition, always lower the boom until the load reaches the ground. To raise the boom, pull back using the right joystick. To lower the main boom, push forward using the right joystick.





Note:

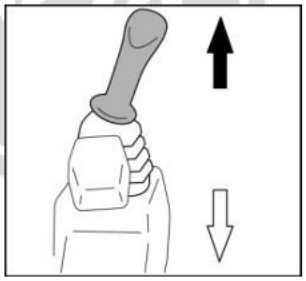
Boom vibration is 2.5 m/s2.

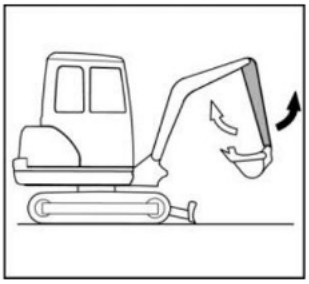
The uncertainty of boom vibration measurement is 0.5/s2.

Boom assembly while lowering to ensure that there are no personnel or cargo under the boom .

Stick Operation

To raise the stick, push the left joystick forward; to retract the stick, pull the left joystick backward. The joystick moves as shown.

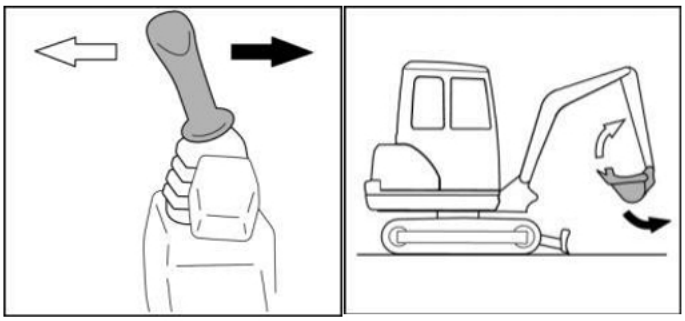




To raise the bucket, use the right joystick to pull to the left. To empty the bucket, use the right joystick to push to the right.

When loading into the bucket, make sure the bucket teeth do not hit the front plate of the dozer.

The bucket moves as shown.



3.9 Ceiling

A canopy is a specially designed and manufactured frame that is mounted (sometimes called an outer cage in this context) to the cab of a vehicle to protect the occupants from injury or death in an accident, particularly in the event of a rollover.

The ceiling is an anti-pressure device. If the device is deformed, welded, twisted, etc. during daily use, please contact our factory for replacement in time. Don't take risks with it.

Disassembly process

1. Fix the rope to the tying point on the ceiling and put the lifting equipment in the lifting state.
2. Remove the screws securing the front and rear ends of the ceiling.
3. Operate the equipment and slowly raise the roof.
4. Move the roof to the left /right and slowly lower it to complete the removal work.

Installation Steps

1. Secure the ropes to the lashing points on the roof.
2. Slowly lift the device, slowly raise the roof and move it to the installation location .
3. Use bolts to secure the mounting holes of the roof, ensuring that the roof does not tilt or wobble on the machine.
4. Loosen the lashing points of the lifting device to complete the installation.

3.10 Safety precautions for rotation

1. Before driving, position the machine so that the dozer blade is in front of the operator's seat. If the dozer blade is behind the cab, operate the machine in the opposite direction (walking inverted forward and backward, turning inverted left and right). Pay special attention when operating the machine in this situation.

2. Before walking, please check whether there is anyone around and whether there are any obstacles.

3. Before walking, honk the horn to alert people around you.

4. The machine can only be operated while sitting in a seat.

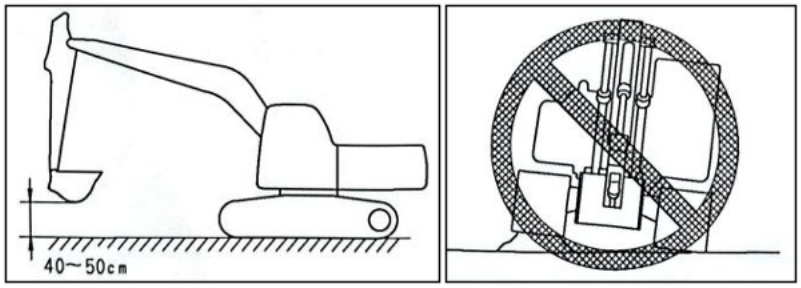
5. No one except the operator may ride this machine.

6. Check whether the walking alarm device is working properly.

7. The machine is running or rotating, be especially careful not to hit other machines or people.

8. Even if the machine is equipped with a rearview mirror, the above precautions must be followed.

3.11 Travel safety precautions



1. When walking on level ground, the working device should be 40~50cm (16~20 inches) off the ground.

2. When traveling on rough and uneven ground, travel at a low speed and do not suddenly operate

the steering to avoid the danger of the machine overturning. The working device may hit the ground, causing the machine to lose balance and damage the machine or structure.

3. When traveling on rough ground or steep slopes, if the machine is equipped with an automatic deceleration device, turn off (cancel) the automatic speed reduction switch. If the automatic speed reduction switch is turned on, the engine speed will increase and the travel speed will increase suddenly.

4. Try to avoid walking on obstacles. If the machine must walk on obstacles, make the working device close to the ground and walk at a low speed . Do not walk quickly on the road.

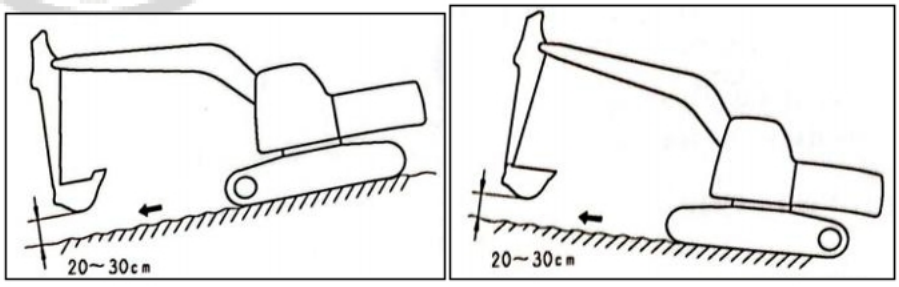
5. When walking or operating, always keep a safe distance from people, buildings or other machines and avoid contact with them.

6. When crossing a bridge or building, first check that the structure is strong enough to support the weight of the machine.

7. When traveling on the highway, first check with the relevant authorities and follow their instructions.

8. When operating in tunnels, under bridges, under power lines, or other places with limited height, operate slowly and take special care not to let the working device touch anything.

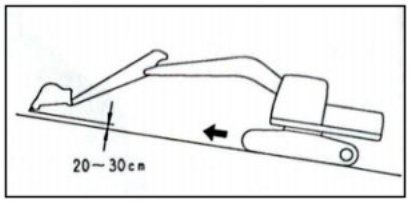
3.12 Walking on a slope



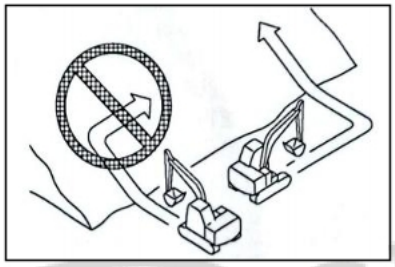
To prevent the machine from tipping over or sliding, follow the following requirements. When walking on a slope, keep the working device 20 to 30 cm (8 to 12 inches) off the ground. In an emergency, the working device can be quickly lowered to the ground to stop the machine from working.

When traveling uphill, turn the cab uphill , and when traveling downhill, turn the cab downhill .

When traveling, check the hardness of the ground in front of the machine. When climbing a steep slope, extend the working device forward to increase balance, keep the working device 20 to 30 cm (8 to 12 inches) off the ground, and travel at a low speed.



On the current slope, reduce the engine speed, move the joystick close to the "middle" position, and walk at a low speed. It is dangerous to walk up and down the slope in a straight line, turn on the slope or cross the slope.



Do not turn on or through a slope. Always go down to a flat area, change the position of the machine, and then go up the slope. Go at a low speed on grass, fallen leaves, or wet steel plates, because even on a slight slope, at 30 degrees, there is a risk of the machine slipping.
If the engine stalls while the machine is traveling on a slope, immediately move the joystick to the "neutral" position to restart the engine.

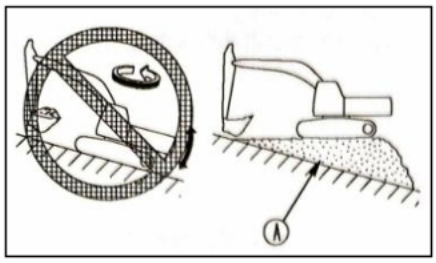
3.13 Operating on a slope

When working on a slope, the machine will lose balance and tip over when operating the rotating or working device. This may cause serious personal injury or equipment damage. Follow the following principles:

1. When performing these operations, a flat area should be provided and the operation should be carried out with caution.

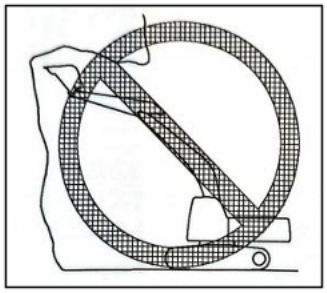
2. When the bucket is fully loaded, do not turn the working device from the uphill side back to the downhill side. This operation is dangerous and may cause the machine to overturn.

3. If the machine must be used on a slope, build up as many platforms as possible (A).

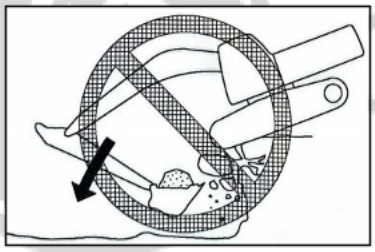


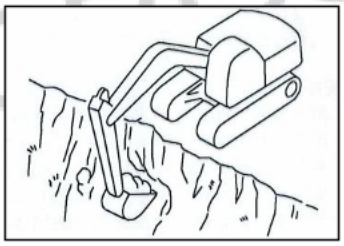
3.14 Prohibited Operations

1.Do not dig the work surface below the hanging part, as there is a risk of falling rocks or hitting the machine.



2.Do not dig too deep at the front and bottom of the machine. Otherwise, the ground under the machine may collapse and cause the machine to fall.

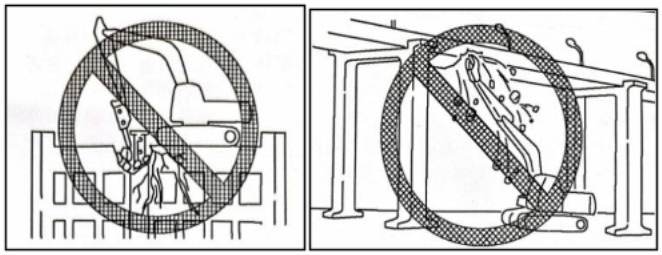




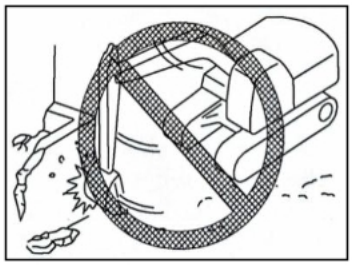
3.When digging, adjust the crawler tracks to a right angle with the shoulder or cliff. The sprocket is at the rear, making it easy to withdraw the machine in any situation.

4.Do not perform disassembly operations under the machine as this will make the machine unstable and there is a risk of it tipping over.

5.A building or other structure , check the strength of the structure, before starting work to avoid the risk of the building collapsing and causing serious injury or damage.



6.When disassembling, do not remove the pins. This creates a risk of broken parts falling or the building collapsing, causing serious injury or damage.



7.Do not use the impact force of the working device to break objects , as there is a risk of material breaking causing personal injury or damage to the working device.

8.Generally speaking, a rollover is more likely to occur when the working device is on the side than when it is at the front or rear.

9.When using a hammer or other heavy working device, there is a risk of losing balance and tipping over. When operating on flat ground and slopes: Do not suddenly drop, turn around, or stop the working device. Do not suddenly extend or retract the boom. This can easily cause the machine to tip over due to the impact force.

10.Do not pass the bucket over the heads of other workers or over the operator's seat of dump trucks and other transport equipment. The load is likely to fall and the bucket could hit the dump truck, causing serious injury or damage.

3.15 Snow Day Operation

1. Snow-covered or icy roads are slippery. When walking or operating the machine, be especially careful not to operate the joystick suddenly. Even a small slope can cause the machine to slip, so be especially careful when working on a slope.

2. For frozen ground, when the temperature rises, the ground will become soft, causing the machine to roll over.

3. If the machine enters deep snow, there is a risk of rolling over or being buried in the snow. Be careful not to leave the shoulder of the road or roll over in the snow.

4. When clearing snow, there may be objects on the road shoulder and near the road that are buried

in the snow and cannot be seen. There is a danger that the machine may hit the buried objects and overturn, so it must be operated with caution.

3.16 Parking

1. Place the machine on a firm and level surface.
At risk of rockfall or landslides, or where there is no risk of flooding.
3. Lower the working equipment to the ground.
4. When leaving the machine, pull the operating lock to the locked position and turn off the engine.
5. To prevent unauthorized persons from moving the machine, close the cab door and lock all equipment with the key. Remove the key, take it with you, and place it in the designated place.
6. If the machine must be parked on a slope, follow the instructions below.
7. Adjust the bucket to the downhill side and insert the bucket into the ground.
8. Place pads under the tracks to prevent the machine from moving.

3.17 Transportation

For easy transportation, the machine can be divided into several parts. Therefore, when transporting the machine, please contact the factory for this work.

3.18 Machine installation and uninstallation

When loading and unloading the machine, incorrect operation may cause the machine to frequently tip over or fall, so you must be especially careful. Be sure to do the following :
1. Only install and unload on hard, level ground. Keep a safe distance from roadsides or cliff edges.
2. Do not install or uninstall the machine together with working equipment. There is a risk of the machine falling or tipping over.
3. Use a springboard of sufficient strength and ensure the width, length, and thickness of the springboard to provide a safe carrying slope.
4. Make sure the ramp surface is clean and free of grease, oil, ice, and loose materials. Remove dirt from the machine tracks. Be extra careful especially on rainy days because the ramp surface is slippery.
5. Turn off the automatic deceleration switch (the automatic deceleration function is canceled).

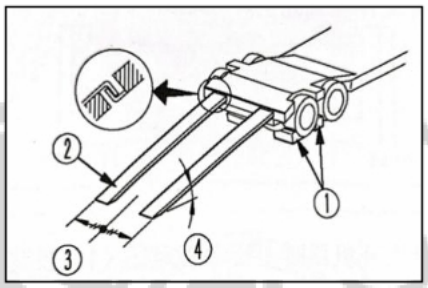
Start the engine at a low speed and drive slowly. When on the ramp, do not operate any control lever except the travel lever.

6. Do not correct the direction on the ramp. If necessary, drive off the ramp in, the correct direction, and then drive back onto the ramp. Where the ramp connects to the track or trailer, the machine's center of gravity changes suddenly, putting the machine at risk of losing balance. Move slowly across the connection.

7. When loading and unloading on the roadbed or platform, ensure that the roadbed or platform has appropriate width, strength, and slope. When rotating the trailer superstructure, the trailer is unstable, causing the working device to withdraw and rotate slowly.

8. For machines equipped with a cab, load the machine and lock the door. If you do not do this, the cab door may open unexpectedly during transportation.

3.19 Transporting machines



(1) Pad (2) Springboard (3) Centerline of trailer (4) Angle of setting springboard

When transporting the machine on a trailer, do the following.

1. The weight, transport height, and overall length of the machine will vary depending on the working attachment, so be sure to confirm the dimensions.

2. When passing a bridge or building on private land, first check whether its structure is sufficient to support the weight of the machine. When traveling on a highway, the relevant management agency should first check and follow its instructions.

Machine Recovery: If the excavator is trapped, use a crane to lift the entire excavator for recovery, following the lifting procedures and taking care to use the correct lifting points.

3.20 Bucket lifting operation

It is generally prohibited to use standard-specification machines for lifting operations.

Bucket lifting.

Lifting operations on slopes, soft ground, or other places where the machine is unstable.

Safety rules for lifting objects.

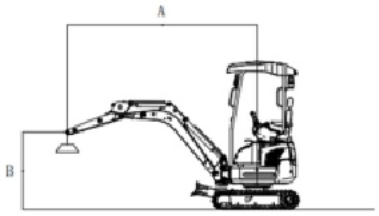
1. lifting operations on slopes, soft ground, or other places where the machine is unstable .
2. Use wire ropes that meet the standards. Do not exceed the specified lifting load.
3. This is extremely dangerous if the load hits people or buildings. Before turning the machine a quarter turn, check that the surrounding area is safe.
4. Do not start, rotate, or stop the machine suddenly, causing the added load to sway.
5. Do not pull the load to one side or toward the machine.
6. Do not raise the operator's seat when lifting a load.

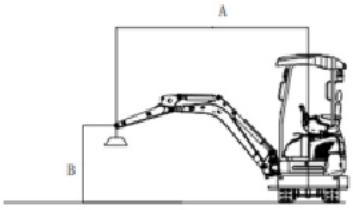
Lifting load of this machine is shown in the figure below.

Stability calculation table, with horizontal columns representing lever arm, bending moment, and bending moment, and vertical columns representing length (track bracket), vertical extension (backhoe), and horizontal bar.

The load lifting moment table is divided into two tables, the first table is for static working conditions, and the second table is for dynamic working conditions. The vertical axis is the load height, the horizontal axis is the distance of each section, CF is the bucket lowering angle, and CS is the bucket lifting angle.

Lift capacity ratings





A:Load radius	Conditions of operation
B: Load point height	940mm Big arm
C: Lift capacity ratings	1780mm ARm
Cf: Rated loads over front	weight：1711kg
Cs: Rated loads over side	Track width：230mm
(Unit: kg)	Track spacing：840mm

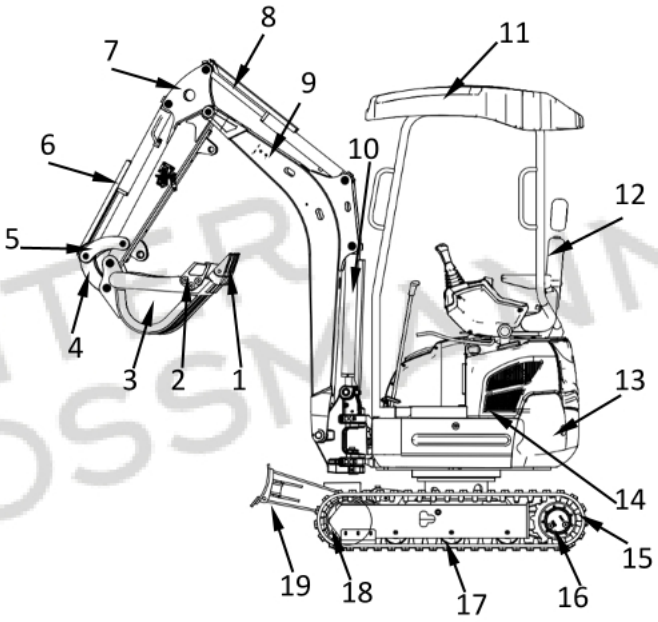
Load point height ((Unit: m))	Load radius A (Static-bulldozer support)								
	1.5		2		2.5		Max		
	Cf	Cs	Cf	Cs	Cf	Cs	Cf	Cs	A(mm)
1.5	565	628	407	383	388	304	330	222	3201
1	686	647	521	388	449	298	334	220	3300
0.5	804	571	635	394	454	286	339	218	3376
0 (Grade)	934	616	683	438	481	301	423	230	3317
-1	948	635	583	453	508	323	438	258	2862
-1.1	962	704	538	464	525	340	454	274	2784

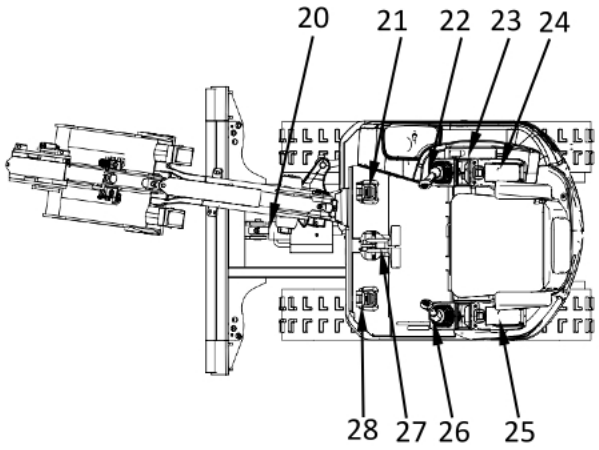
Chapter 4 Basic Parameters of Excavators

4.1 Basic parameters

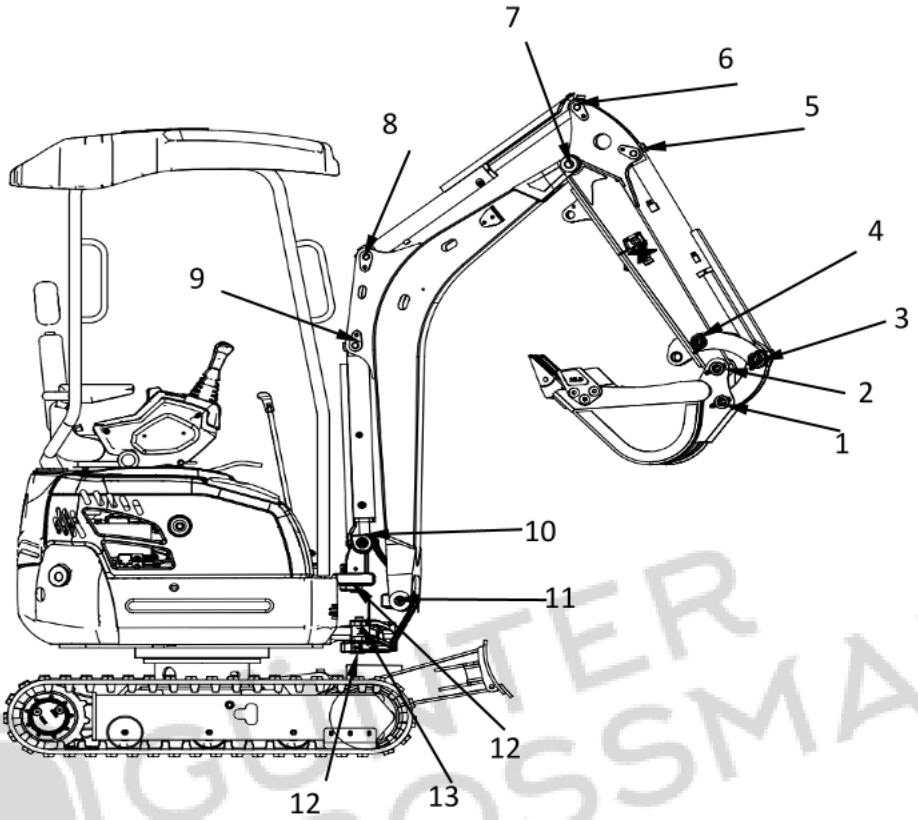
Name of main structural parts (GG1700)

Serial number	name
1	Main tooth
2	Side teeth
3	Bucket
4	link
5	Joystick
6	Bucket Cylinder
7	Stick
8	Stick Cylinder
9	Boom
10	Boom Cylinder
1 1	Four-legged ceiling
1 2	Seats
1 3	Counterweight
1 4	Shield
1 5	Rubber Tracks
1 6	Travel motor
17	Track roller
18	Drive sprocket
19	Bulldozer
20	Bulldozer Cylinder
21	Right broken pedal
22	Right pilot handle
23	Bulldozer handle
24	Right armrest box
25	Left armrest box
26	Left pilot handle
27	Travel lever
28	Left swing foot pedal





4.2 Hinge pins for machine working devices

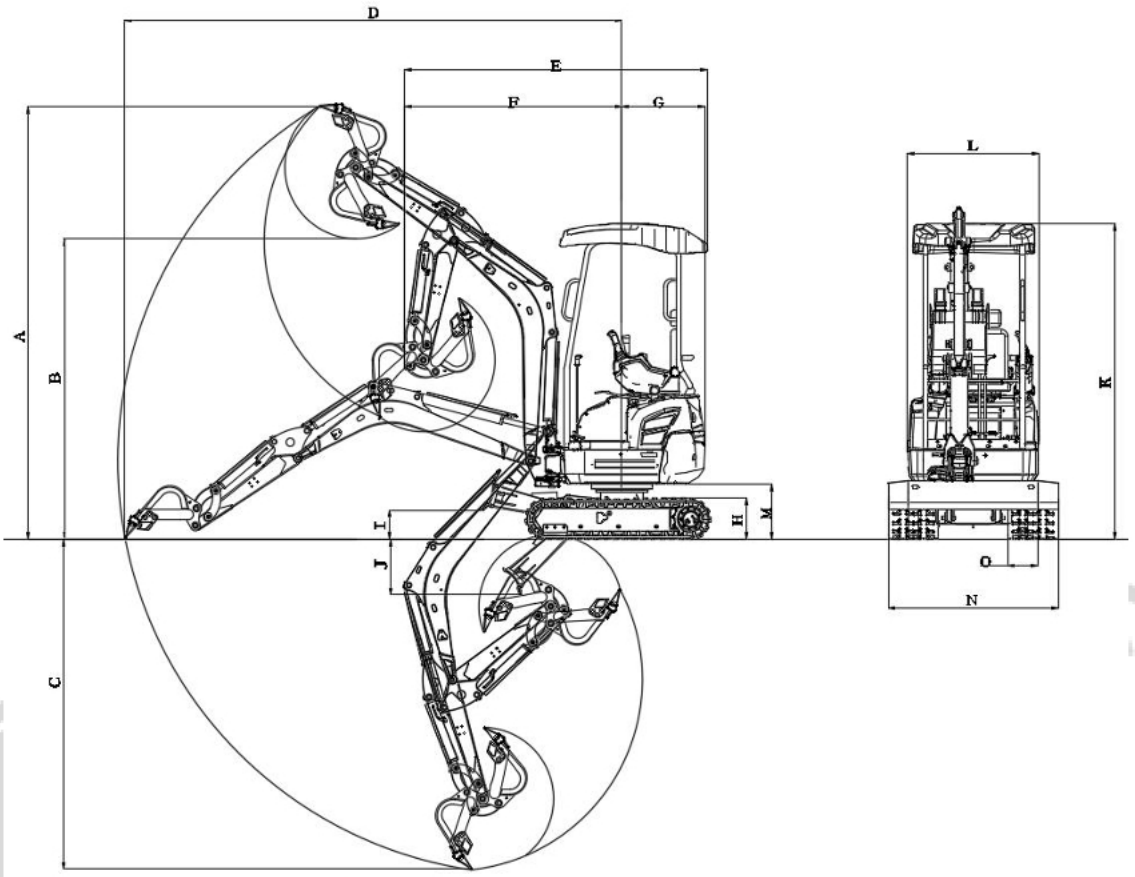


Machinist's pin position indicator (GG1700)

Serial number	Pin connection
1	Bucket and connecting rod connecting pin
2	Bucket and arm connecting pin
3	Connecting pins between rocker, connecting rod, and bucket cylinder
4	Connecting pin between rocker and arm
5	The bucket cylinder and bucket arm connecting pin
6	Connecting pin between bucket cylinder and bucket
7	Connecting pin between arm and boom
8	Connecting pin between bucket cylinder and boom
9	Connecting pin between boom cylinder and boom
10	Connecting pin between boom cylinder and boom bracket
11	Connecting pin between boom and boom bracket
1 2	Connecting pin between boom support and upper plate
1 3	Connecting pin between side swing cylinder and boom bracket

4.3 Main dimensions and specifications

Main digging range direction of an excavator (GG 1700)



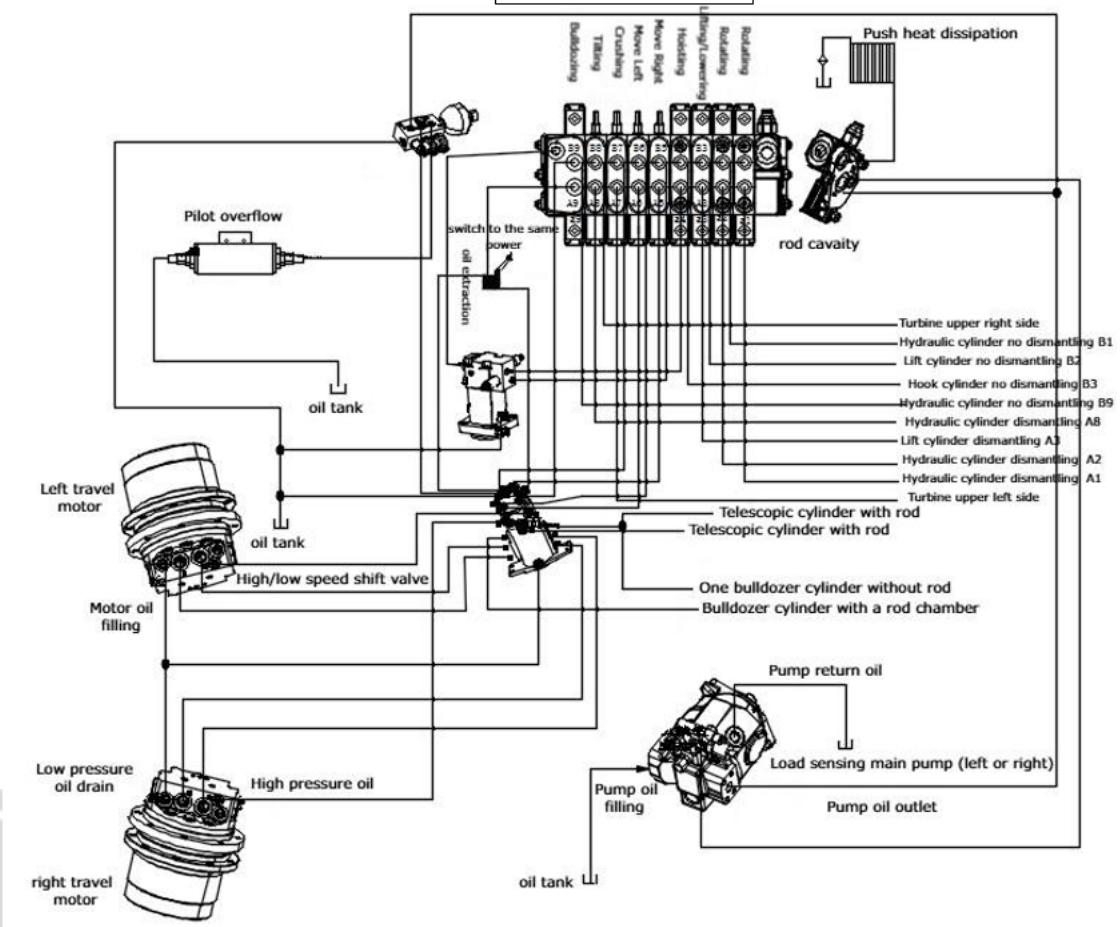
Working scope		Unit: mm
		GG 1700
A	Maximum ground excavation height	3310
B	Maximum unloading height	2300
C	Maximum mining depth	2525
D	Maximum range of ground activities	3804
E	Transport length	2321
F	Radius of gyration	1663
G	Minimum tail turning radius	635
H	Track height	311
I	Maximum lifting height	220

J	Maximum sinking height of bucket teeth	420
K	Overall height	2416
L	Overall width	1008
M	Height of vehicle body	419
N	Width of push shovel	980/1300
O	Track width	230

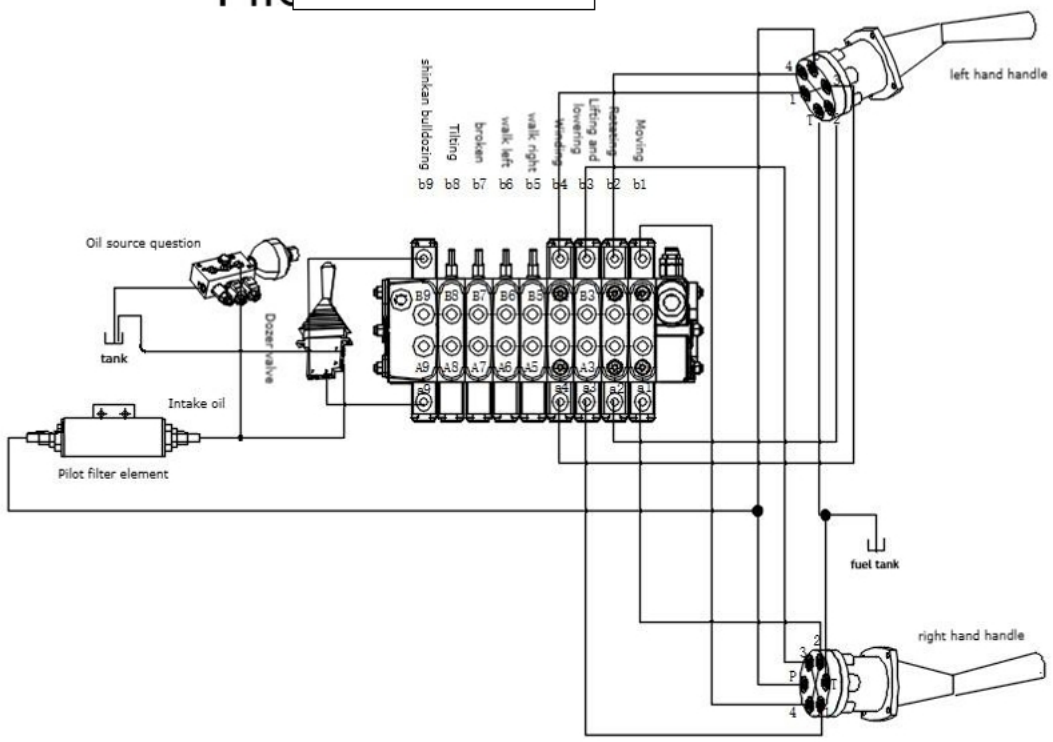
4.4 Hydraulic schematic diagram and detailed information

As an important part of hydraulic system design, the hydraulic schematic diagram clearly shows the working principle, structure and control method of the hydraulic system. According to the hydraulic circuit of the machine based on the hydraulic schematic diagram, the problem of the hydraulic pipeline can be better solved.

M Main oil circuit



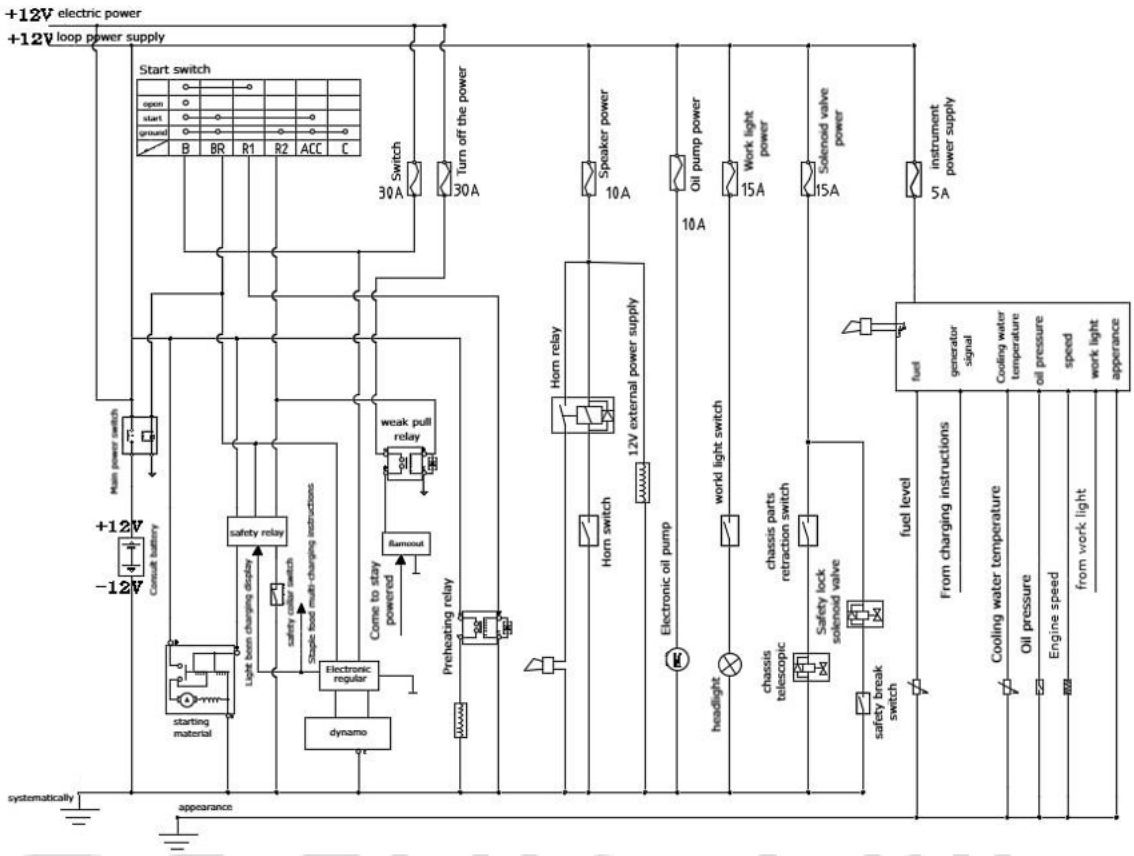
Pilo **Pilot oil circuit**



4.5 Electrical schematics and details

Electrical Schematic

As an important part of circuit design, electrical schematics are used to clearly show the working principle, structure， and control method of the circuit. Based on the electrical schematics, we can have a comprehensive understanding of the electrical layout of the machine， and can also be used to troubleshoot electrical problems.



4.6 Excavator parameter table

Model information configuration status ● Standard ○ Optional			GG 1700		
Basic performance parameters	Machine working weight (kg)	1711	**engine**	Engine Model	Kubota D902
	Bucket capacity (m^3)	0.018		Maximum horsepower(ps)	16.1
	Walking speed low/high (km/h)	0 -1.5/0-2.8		Maximum power(Kw)	11.8
	Climbing ability (%)	30 %		Maximum speed (rpm)	2300
	Ground pressure (Kpa)	31.4		Displacement (L)	0.898
	Maximum bucket digging force (kN)	10.4		Number of cylinders	3
	Maximum digging radius (mm)	3804		Cooling method	Water Cooling
	Maximum digging depth (mm)	2525		Engine oil change amount (L)	3.7

	Maximum digging height (mm)	3310
	Maximum unloading height (mm)	2300
	Maximum deflection angle (°)	120
	Track extension range (mm)	980-1300
	/	/
Configuration	Cab	○
	armrest	-
	Quick Change	○
	Hydraulic quick change	○
	Rake	○
	Wood Grabber	○
	Scarifier	○
	Breaker	○
	Counterweight	●
	Tension form	Grease tensioning
	air conditioner	○
Hydraulic system	Main pump type/model	Variable displacement piston pump / 18
	Main pump brand	Taifeng Hydraulics
	Main pump maximum flow (L/min)	41.4
	Multi-way valve	9-way hydraulic control valve
	Multi-way valve brand	Taifeng Hydraulics
	Rated setting pressure(Mpa)	17
	Maximum set pressure (Mpa)	18
	Travel hydraulic motor type	Built-in LTM02PA
	Travel motor brand	Li Kechuan
	Motor displacement	288.6/444
	Swing hydraulic motor type	Eaton SW2.5K
	Displacement	245

	Fuel form	diesel fuel
	Fuel grade	No. 0/-No. 1
	Theoretical fuel consumption (L/h)	1.3 -1.5
Body	Transport length (mm)	2321
	Transport width(mm)	1008
	Transport height (mm)	2416
	Counterweight ground clearance (mm)	419
	Bucket width (mm)	400
	Boom length (mm)	1120
	Arm length (mm)	1780
	Bulldozer blade width (mm)	1204
tank	Fuel tank(L)	20
	Hydraulic oil tank (L)	22
track	0 -Rubber (bandwidth*pitch*number of sections)	230 *72* 43
	0 -Steel (bandwidth*pitch*number of sections)	230 *72* 43
	Rubber block (piece)	74

Chapter 5 Common faults and solutions

5.1 Common faults of excavators and their solutions

Common faults	Cause	Solution
The machine has weak power and moves slowly	The overflow valve is clogged or too loose	Dismantle the cleaning device or tighten the relief valve
	Pump damage	Replace the hydraulic pump
	The oil pump intake pipe is blocked	Clean or replace the oil inlet pipe
	Engine failure	Contact the manufacturer to repair the engine
The machine does not work	Pump damage	Replace the hydraulic pump
	Connector spline damage	Replace the coupling spline
	The machine body tilts so that the hydraulic oil deflects to one side	Add hydraulic oil or adjust the machine to level
The machine cannot turn	The rotary motor gear falls off	Install the swing gear into place
	Rotating motor damage	Replacement of rotating motor
The engine emits faint blue smoke	Overfilling	Adjust the oil level according to the upper and lower limits of the oil gauge
	Engine failure	Contact the manufacturer to repair the engine
The engine emits faint black smoke	Air filter clogged	Clean or replace the air filter
	Engine failure	Contact the manufacturer to repair the engine

White smoke coming out of the engine	Mixing water and diesel	Drain the oil and rinse once with oil
The engine will not turn over	Relief valve stuck	Reinstall the relief valve or replace the accessories
	The relief valve is adjusted too tight	Adjust the loose relief valve
Engine Misfire	Battery voltage loss	Rechargeable or with an external battery
	Diesel cannot be output to the pipeline because there is air in the pipeline. Unplug the diesel engine pipe on the engine, exhaust the air, and install or press the oil pump to exhaust	Unplug the diesel engine pipe on the engine , exhaust the air , install or press the oil pump to exhaust
	Diesel Freeze	Choose the right diesel grade according to the local temperature
	Engine failure	Contact the manufacturer to repair the engine
	Nozzle clogged	Replace the nozzle
	Air filter plug	Replace the air filter
	High pressure oil pump damaged	Replace the high pressure oil pump
	Fuse Broken	Check and replace the fuse
	Electronic oil pump failure	Replace the electronic oil pump
	The high-pressure oil pump was damaged	Replace the high-pressure oil pump
	Low temperature causes engine oil to be too thick	engine oil with the appropriate brand

The engine throttle can be large or small	The diesel fuel pipe is folded, causing the fuel supply to be unsmooth	Check the diesel fuel pipe and adjust the direction to ensure smooth fuel supply
Continue to increase the throttle	Engine throttle retainer locked	Loosen the engine throttle bracket
Can't increase the throttle	The throttle valve cable loose	Tighten the throttle valve cable
The headlight does not light up, and the computer or display does not work	Line plug falls off	Check if the line plug is detached or loose.
	Damaged parts	Replacement Parts
Battery not charging	Generator disconnection	Check engine wiring and reconnect
	Fuse failure	Replace the fuse
	Regulator damage	Replace the regulator
	Battery Damage	Replacement battery
Tracks fall off	Mechanical tension relaxation	Support the machine, put the track into the tension wheel, start the machine, and use the rotation force of the drive wheel to adjust the mechanical tensioner until the track rises.
High engine temperature	Lack of antifreeze	Add antifreeze
	Cooling slot is blocked	Cleaning the cooling holes of the water tank
	Damaged thermostat	Replace the thermostat
	Impact of plateau climate	Replace the high-pressure water tank cap
	Engine failure	Contact the manufacturer to repair the engine

Oil pressure alarm	Lack of oil	come on
	Engine overheating	Check the coolant
	Sensor damage	Replace the sensor
	Line Fault	Check the wiring
The excavator cylinder cannot move	Break the lever ball shaft or base	Replace the ball shaft or seat
The operating lever cannot be returned or pushed back	The fixing screws of the return spring of the multi-way valve stem are loose or fall off	Reinstall the return spring or tighten the return spring fixing screw
	Valve core stuck	Remove the valve core, clean the surface dirt, add the appropriate amount of lubricating oil, and reinstall it.

5.2 Clean the overflow valve (safety valve) and adjust the system pressure

As one of the core components of the hydraulic system, the overflow valve plays a decisive role in the system pressure. If the overflow valve is too loose or stuck, the machine will be obviously powerless, and move slowly, and the breaker will not move when walking, turning, or climbing. After adjustment, the excavator will run very fast when working and the oil temperature will rise too quickly.

5. 3 Installing a single track

First start the machine, lift the side of the machine body where the track has fallen off, remove the rubber track, then put the track into the guide wheel (be careful not to get the track in the wrong direction), pull the other end of the track, start the machine and the joystick at the same time to slowly turn the drive wheel, and use the driving force of the machine and the assistance of the pry bar until the track is fully loaded. Then, tighten the track by adjusting the tensioning devic . Pay attention to safety during this series of operations. Improper operation can lead to serious safety

accidents (such as getting caught in the track, the crowbar swinging or flying out, etc.). In case of uncertainty, please contact the manufacturer for guidance.

5. 4 Engine won't fire when diesel runs out

Once the fuel is exhausted and the engine cannot be ignited, first add fuel, then exhaust the air from the pipeline. Use the fuel pump to inject a certain amount of fuel into the engine fuel inlet pipe. When there is oil in the pipeline and no bubbles, ignite it two or three times.

Chapter 6 Maintenance and Care

6.1 Maintenance precautions

Engine maintenance

As the main power system of the excavator, the engine needs to be maintained in accordance with the "Engine Operation Manual" carried on the vehicle. Strict maintenance in accordance with the provisions of the engine operation manual can effectively increase the service life of the engine and reduce the occurrence of failures.

The main maintenance contents include the following parts :

1. Engine running-in care.
2. Oil change cycle and refill (the oil will be slowly consumed as the machine is used, so it is necessary to check the oil level regularly, not just refill it once and wait until the next change. When the oil is low, it needs to be refilled in time, otherwise, it will cause serious consequences such as cylinder scuffing. The manufacturer will not provide a warranty for engine damage caused by insufficient oil).
3. Replacement cycle of oil filter and diesel filter.
4. Air filter replacement cycle. When inspecting or maintaining the machine, mark the "Do Not Operate" warning message to prevent unauthorized persons from starting the engine or touching the control handle. Before servicing, turn off the engine, remove the key, and take it with you. Mark the "Do Not Operate" warning message in a conspicuous location such as the start switch or control lever.

Use the Right Tools

Do not use damaged or inferior tools or tools designed for other purposes. Use the right tool for the job.

Regular replacement of safety-critical components

1. To ensure the long-term safe use of the machine, refuel and inspect and maintain it regularly. To improve safety, please regularly replace safety-critical components such as hoses and seat belts.
2. "Safety-critical parts that are replaced regularly" are parts that age, wear, and degrade after repeated use, and whose performance changes over time. These characteristics of such parts can cause serious mechanical damage or personal injury, and it is difficult to judge the remaining service life by visual inspection or operating feel alone.
3. If there is any visual appearance of damage, replace the "regularly replaced safety-critical parts" even if the specified replacement interval has not been reached.
4. Replace fuel hoses regularly. Fuel hoses wear out over time, even if there are no symptoms of wear.
5. Replace any signs of wear, regardless of the replacement schedule.
6. For safe use of the machine, please inspect and maintain the machine regularly. The following safety-critical parts must be replaced regularly to improve safety. Damage to these parts can result in serious personal injury or fire.

Safety Critical Components List

<table>
<tr><th>main body</th><th colspan="2">Safety-critical components that need to be replaced regularly</th><th>Replacement time</th></tr>
<tr><td rowspan="2">Fuel System</td><td colspan="2">Fuel pipe</td><td rowspan="2">Every two years</td></tr>
<tr><td colspan="2">Filler on fuel tank cap</td></tr>
<tr><td rowspan="8">Hydraulic system</td><td rowspan="4">Main pump</td><td>Hydraulic pipe (pump outlet)</td><td rowspan="8">Every two years</td></tr>
<tr><td>Hydraulic pipe (pump suction)</td></tr>
<tr><td>Hydraulic pipe (swing motor)</td></tr>
<tr><td>Hydraulic pipe (travel motor)</td></tr>
<tr><td rowspan="4">Working equipment</td><td>Hydraulic pipe (arm cylinder pipe)</td></tr>
<tr><td>Hydraulic pipe (rod cylinder pipe)</td></tr>
<tr><td>Hydraulic pipe (bucket cylinder pipe)</td></tr>
<tr><td>Hydraulic pipeline (yaw cylinder pipeline)</td></tr>
</table>

		Hydraulic pipe (bulldozer cylinder pipe)	
		Hydraulic pipe (pilot valve)	
		Hydraulic pipe (auxiliary pipe)	

6.2 Fuel Recommendation

Diesel fuel should meet the following standards. This table lists several fuel specifications currently used in the world.

Diesel Specifications	area	Diesel Specifications	area
GB252	China	BS2869-A1 or A2	U.K.
ASTM D975 Number: 1-D, S15	USA Canada	ISO 8217DMX	international ity
Biodiesel Biodiesel blend B5 ASTM D6751, D7467			
EN590:96	European Union	Grade JIS K2204 2	Japan
Biodiesel blends (fuel sulfur content not exceeding 10ppm)			

1. To maintain engine performance and service life, always use clean, high-quality fuel. To prevent freezing in cold weather, choose a diesel fuel that is suitable for use when the actual temperature is at least 2°C lower than the lowest expected outdoor temperature.

2. Please use diesel with a cetane number of 45 or above. When using in cold or high altitude areas, you need to use fuel with a higher cetane number.

3. Please use fuel with a sulfur content of less than 0.05~0.10 15% by volume (ultra-low sulfur fuel should be used in the United States or Canada). High-sulfur fuel may cause sulfuric acid corrosion in the engine cylinder.

4. The use of kerosene is prohibited. Do not mix kerosene, used engine oil, or residual fuel with diesel.

5. Poor quality fuel can reduce engine performance or cause engine damage. Fuel additives are not

recommended. Some fuel additives can reduce engine performance.

6. Metal content, such as zinc, sodium, silicon and aluminum, must be limited to 1 part per million by mass (1 mass ppm) or less.

7. Use compliant biodiesel, the engine manufacturer's warranty is void for non-compliant machines or spoiled biodiesel.

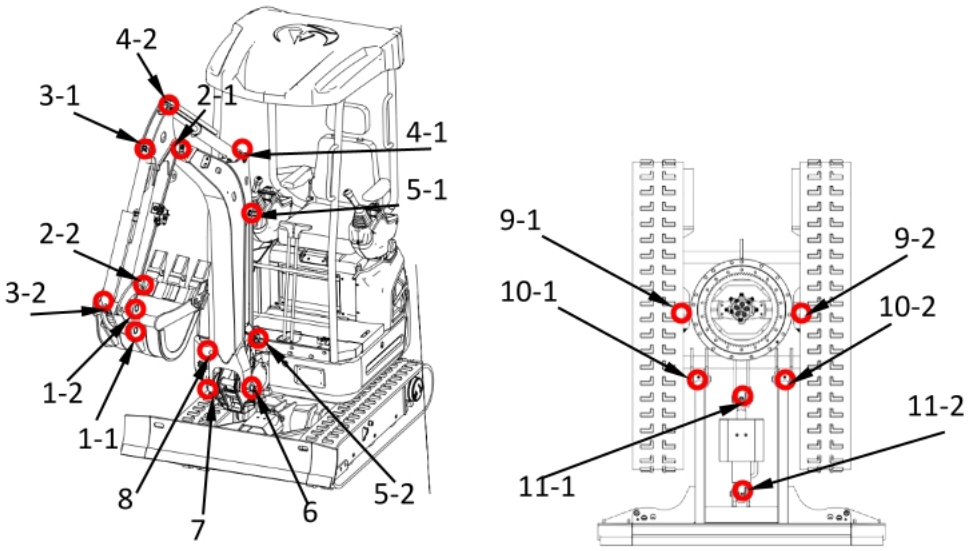
6.3 Description of machine lubrication parts

Lubrication area diagram

The details of the 21 fuel filler ports of the GG1700 model are as follows:

Grease fitting position	quantity
(1) Bucket, rocker and arm connection	2
(2) Connection between the arm, boom, and connecting rod	2
(3) Bucket cylinder and bucket arm,the connection between the bucket cylinder and connecting rod and rocker arm	2
(4) The arm cylinder is connected to the boom, and the arm cylinder is connected to the arm	2
(5) The connection between boom cylinder, boom, and boom bracket	2
(6) Boom support bracket and boom	1
(7) Sway cylinder and boom support	1
(8) Lubrication of the gears of the rotary motor, lubrication of the inner ball of the rotary support, connection between the yaw cylinder and the upper plate	3
(9) Telescopic cylinder connected to the lower plate	2
(10) The left and right legs of the bulldozer are connected to the lower plate	2
(11) between the bulldozer cylinder and lower plate, connection between the bulldozer cylinder and bulldozer blade	2

GG1700 model 21 fuel filler ports total location diagram:



The user must add sufficient grease to the above refueling point every 4 to 8 hours of work. ※

6.4 Maintaining the Directory

Excavator maintenance catalog:

Excavator Repair Catalog						
Filter Name	first		conventional		model	Remark
	cycle	Maintenance methods	cycle	Maintenance methods		
Oil filter	50 hours	replace	200 hours	replace	/	
Air Filter	50 hours	Cleaning	200 hours	replace	/	For severe working conditions, the cleaning and replacement cycle will be shortened (air blowing, no washing)
Diesel filter	50 hours	replace	200 hours	replace	/	
Air Filter	500 hours	replace	1000 hours	replace	/	
Hydraulic Suction Filter	300 hours	replace	600 hours	replace	/	
Hydraulic return filter	300 hours	replace	300 hours	replace	/	

Oil maintenance schedule:

name	first		Conventional		model	Remark
	cycle	Maintenance methods	cycle	Maintenance methods		
Engine Oil	50 hours	replace	200 hours	replace	CD 15W-40 (PC10 model)	Choose the right oil type according to the local temperature
antifreeze	every day	examine / Replenish	One year	replace	CF-4 15W-40 (other models)	Cannot be mixed with water or replaced with water (use appropriate antifreeze type according to local temperature)
diesel fuel	every day	examine / Replenish	/	/	/	Use diesel fuel from regular gas stations. Poor quality diesel can damage fuel pumps, injectors, and other components (select the appropriate diesel grade according to local temperature)
Hydraulic oil	300 hours	replace	600 hours	replace	46#Anti-wear hydraulic oil	
Travel motor gear oil	50 hours	replace	500 hours	replace	L-CKD 220	
grease	New Machines	Add to	8 hours	Add to	/	
Water tank radiator	50 hours	Cleaning	50 hours	Cleaning	/	Air-blowing or high-pressure water-washing
Hydraulic oil radiator	50 hours	Cleaning	50 hours	Cleaning	/	Air-blowing or high-pressure water-washing

Important parts inspection list

Important inspection parts	cycle	Maintenance methods	cycle	Maintenance methods	Remark
Rotate the motor fixing screw	30 hours	examine	30 hours	examine	If loose, tighten immediately
Slewing bearing fixing screw	30 hours	examine	30 hours	examine	If loose, tighten immediately
Engine fixing screws	30 hours	examine	30 hours	examine	If loose, tighten immediately
Track tensioner	Before work	examine	Before work	examine	If the track is loose, add grease immediately
Notice: 1. Please follow the maintenance cycle and perform regular maintenance. The manufacturer will not provide three warranties for equipment failures caused by untimely or no maintenance. 2. Use genuine parts when repairing. Inferior quality parts or oils may cause rapid wear or serious failure of the equipment. 3. Failure to regularly check the fixing screws of the rotary motor, slewing bearing, and the engine may cause accidents such as gear failure of the rotary motor, damage to the flange, gear failure of the slewing bearing, damage to the engine air ring and water tank leakage. The manufacturer does not provide the three guarantees.					

6. 5 Changing the engine oil

Oil change precautions

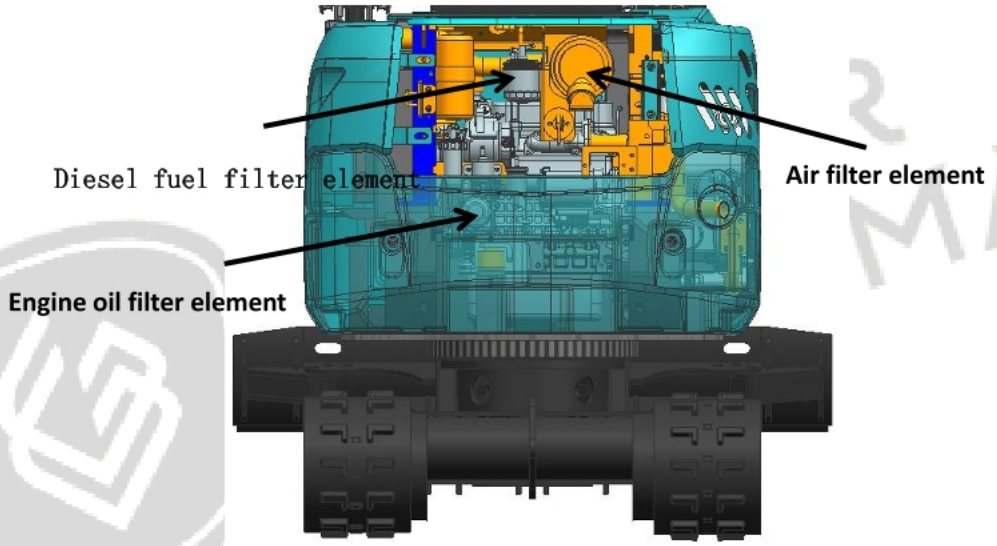
1. Oil change must be carried out when the engine is hot.
2. Do not start the engine during an oil change and before adding new oil.
3. Fill oil close to the upper limit of the dipstick but do not exceed the upper limit.
4. The oil filter must be replaced when changing the engine oil.

GG1700model oil change method:

As shown in the figure below , unscrew the oil outlet screw, drain the oil, and collect it in a container. Unscrew the oil filler cap, add new oil to the engine, and tighten the oil filler cap after adding oil.

6. 6 How to replace the filter element

below, to replace the filter element of the JBT engine, you need to open the rear cover of the excavator first, and then you can see all the filter elements. First, use a wrench to remove the protective cover on the filter element , and then remove the filter element for replacement.



The hydraulic oil tank uses a built-in filter. Before replacing the filter, please remove the tank cover. At this time, the hydraulic oil tank and pipeline are exposed outside. Use a wrench to remove the oil pipe and screws at the oil return pipeline, open the tank cover, and take out the old filter. Put the new filter back, connect the oil return pipe, check whether the pipeline is tightened, and the filter replacement is complete.