GÜNTER GROSSMANN

Model GG1100

Crawler Excavator

Operation and maintenance manual

Dear users:

Thank you for your trust and choosing our products. The GG1100 mini excavator model manufactured for our company by Günter Grossmann is a small excavator designed for mining, lifting, loading, and unloading operations. It features a compact design,
appropriate control of output power, good stability and high
cost-effective. Meets mining, loading and unloading requirements in various operating conditions, on flat terrain,
mountainousand forestry. They can be used in brick and tile factories, drying plants, riverbeds, construction, dredging, and road construction. It is the ideal excavator
constructionfor operations on agricultural fields and for small engineering projects.

To have a good knowledge of the use, adjustment and proper maintenance of the machine in order to obtain its highest
performance.
performance, please read the maintenance instructions carefullyand strictly adhere to the instructions in the operation and maintenance manual. Operation and maintenance of the engine suitable for the excavator are described in the engine service manual.
prepared by the manufacturer engine.

The operating section is a technical reference for the machine operator. Graphical and text instructions are provided to guide the operator through appropriate inspection procedures.
starting, operating and shutting down the machine. The operating techniques specified in the manual constitute the basis. After familiarizing yourself with
with the machine and its functions, the operator can develop his skills.

The maintenance section guides the user through how to maintain the entire machine. Demonstrative drawings are provided.
sorted by timemaintenance cycle, from short to long. Specific maintenance procedures for machines and tools are
described in detail in the Lubrication and Maintenance Interval Table. The user should maintain individual components in accordance with the requirements of the Lubrication and Maintenance Interval Table, depending on the operating hours of the machines.

In poor conditions, dust or high humidity, the number of lubrications should be increased depending on the condition of the machine.
To present some of the machine's design features more intuitively, some of the demonstration drawings in this manual are presented from a construction perspective, so they may differ in appearance from the actual product. If the mechanical design and technical specifications of the machine change due to technical improvements and are not reflected in this manual, please contact the company for the latest product information.
Before using or maintaining the machine, please confirm the relevant information. If necessary, contact our technical service center. When purchasing parts, please provide the factory date and excavator code.
Due to the constant innovations in our product technology, we reserve the right to interpret and change this manual. In the event of a discrepancy between the actual product and the drawing in this manual, this material should be used as the criterion.

Security

General precautions

The safety rules and regulations of the relevant departments must be adhered to, andalso operate, inspect and maintain machines in accordance with the manufacturer's requirements.

Basically, all accidents are sometimes caused by failure to follow basic safety rules and precautions.

Most accidents can be avoided by identifying the potential source of danger in advance.

Please read and understand all accident prevention information. Only operate the machine after learning how to properly operate, inspect, and maintain it.

Compliance with all safety rules

Only trained and qualified personnel should operate, inspect, and maintain the excavator. Understand and adhere to all safety rules, regulations, and precautions when operating, inspecting, and maintaining the machine.

Do not operate, inspect or maintain machinery under the influence of alcohol, drugs, fatigue or insufficient sleep.

In case of unusual operation of the machine

If the machine exhibits abnormal behavior (noise, vibration, odor, oil leakage, error signal, etc.) during operation, inspection, or maintenance, appropriate measures must be taken immediately. Do not operate the machine until the abnormality has been corrected.

Operating temperature range

To maintain the performance of the machine and avoid premature wear, the following operating conditions must be observed.

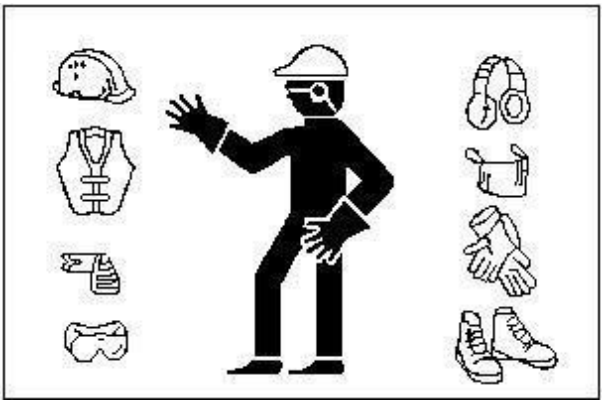
Do not start the machine if the outside temperature is higher than +45℃ or lower than -15℃.

If the outside temperature exceeds +45℃, the engine may overheat, which can reduce the efficiency of the engine oil. Furthermore, the hydraulic oil can become very hot, damaging hydraulic equipment.

If the outside temperature is below -15℃, rubber parts such as seals may harden, causing premature wear or destruction of the machine.

If the machine must be operated at temperatures outside the above range, please consult your sales or service agent.

Appropriate clothing and protective equipment

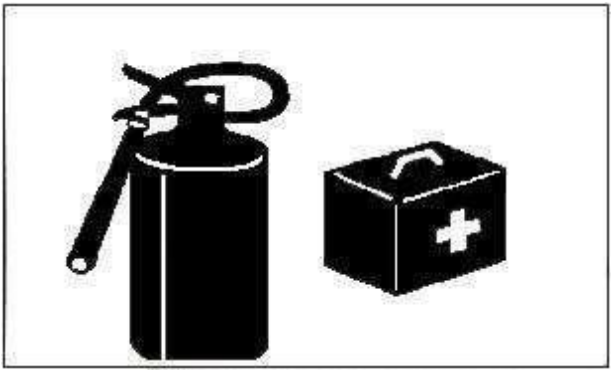


Do not wear loose clothing or accessories that could get caught on control rods or moving parts. Do not wear clothing contaminated with oil or fuel, which could easily catch fire.

As appropriate for the work environment, wear safety shoes, a hard hat, safety glasses, a respirator, heavy gloves, ear protection, and other protective equipment. When operating a crusher, crushing hammer, or compressed air, wear appropriate protective equipment such as safety glasses and a respirator, as metal fragments or other objects may fly off and cause serious injury.

Hearing protection should be worn when operating the machine. Prolonged exposure to noise can cause hearing loss.

Installation of fire extinguishers and first aid kits



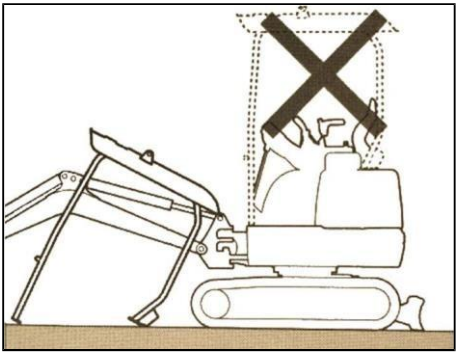
Prepare carefully for the risk of fire and accidents. Install fire extinguishers and first aid kits and learn how to use them. Learn how to extinguish a fire and what to do in the event of an accident.

Learn how to contact emergency services and make a contact list in case of an emergency.

Do not remove security

Make sure that all safety barriers are securely attached.

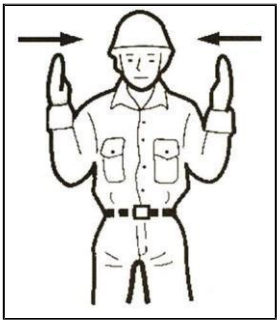
Before operating the machine, please repair or replace any damaged parts.



No safeguards may be removed except for maintenance purposes.

All safeguards must be used to ensure good working conditions.

Signalling equipment and signalmen



The gestures required for specific operations should be learned and individuals responsible for performing these gestures should be designated.

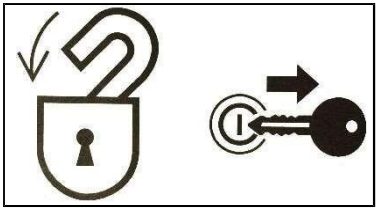
Everyone must fully understand all gestures.

The operator must respond to gestures made by the designated person, but must always comply with the "stop" gesture.

The signaller must stand in a visible position when giving the signal.

Important considerations when starting the machine or leaving the operator's seat

When rising from the operator's seat, lower the work tool to the ground and shut off the engine. Careless contact with the control handle could cause the machine to move, which could result in serious injury or death.



Be careful with dozer, boom, and auxiliary hydraulic controls. Do not touch these controls.

Before leaving the operator's seat, lower the work tool to the ground and turn off the engine. At the same time, remove the key, take it with you, and return it to the designated place.

Avoiding the risk of fire and explosion

Keep fuel, lubricating oil, grease, and antifreeze away from sources of ignition. Fuel is flammable and extremely dangerous.

When working with these flammable substances, avoid burning cigarettes, matches, lighters,

as well as other sources of flame or fire.

Smoking or open flames are prohibited when working with fuel

or the fuel system. Do not leave your work station while

refueling or adding lubricating oil.

Do not remove the fuel or gas tank cap while the engine is running or warm. Also, do not splash fuel onto hot surfaces or electronic parts of the machine.

Spilled oil should be cleaned up immediately.

Check the fuel and lubricating oil for leaks. Please repair any leaks and clean the machine before operating it.

When polishing or welding, place all flammable items in a safe place.

Do not cut or weld inside pipes, including those containing flammable liquids. Before cutting or welding, clean them thoroughly with a non-flammable solvent.

Remove all debris and debris from the machine. Make sure there are no greasy rags or other flammable materials on the machine.

All types of solvents or extinguishing powders (foam extinguisher) should be disposed of in accordance with the procedure described on the factory container, in a well

ventilated place.

Do not use fuel for cleaning. Always use non-flammable solvents.

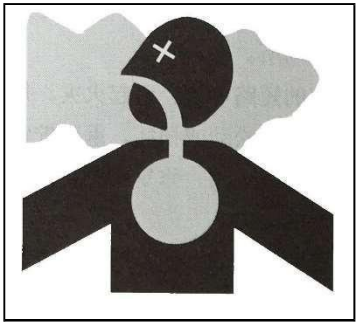
Store all flammable liquids and materials in a safe and well-ventilated place.

A short circuit in the electronics can cause a fire. Check cable connections daily for loose or damaged connections. Tighten loose connectors and cable clamps, and repair or replace damaged cables.

Fire caused by pipe:

Ensure that hose and pipe clamps, protective devices, and soft pads are securely fastened. Loose hoses and pipes may become damaged due to vibration or contact with other parts during operation. This could cause high-pressure oil to spray out, resulting in fire or injury.

Engine exhaust fumes are poisonous



Do not run the engine in an enclosed space with poor ventilation.

If natural ventilation is not possible, a fan, extended exhaust pipe or other ventilation devices should be installed.**Handling asbestos dust**

Inhaling asbestos dust can cause lung cancer. Do not

use compressed air for cleaning.

Avoid polishing or grinding parts containing asbestos.

For cleaning, use vacuum cleaners with a highly efficient air filter that captures solid particles.

If dust cannot be controlled otherwise, wear a properly approved respirator. When working indoors, please install a ventilation system with a polymer filter.

Only authorized personnel may enter the work area during construction.

Please strictly adhere to the environmental rules and standards applicable in the work area.

Avoiding bruises

Do not insert hands, feet or other body parts between the cab and the lower track, between the upper structure and the work tool, between the cylinder and the oil cylinder, and between moving parts. When the machine is in motion, these clearances can change, which could result in serious injury or death.

Using an optional product

Before installing the product, please consult Günter Grossmann Polska. Depending on the type or combination of attachments, the attachments may come into contact with other parts of the operator's cab or machine. Before using the selected attachments, ensure they do not come into contact with other parts.

Do not use any additional equipment not approved by Günter Grossmann Polska.

Doing so may constitute a safety hazard or adversely affect the operation or life of the machine.

Güunter Grossmann Polska Sp. z o. o. is not liable for injuries, accidents or product damage caused by the use of unapproved accessories.

The machine must not be rebuilt.

Unauthorized modifications to the machine may result in injury or death. Do not modify any part of the machine without permission.

To ensure the safety of operators and workers in the operating area, the following safety labels (signs) must be placed on certain parts of the machine. Walk around the machine with this manual to verify the content and location of these signs. Review the signs and instructions in this manual with the machine operator.

Safety signs should be clean, visible, and understandable. If any one of the labels is missing, damaged and difficult to read, it should be replaced with a new label.

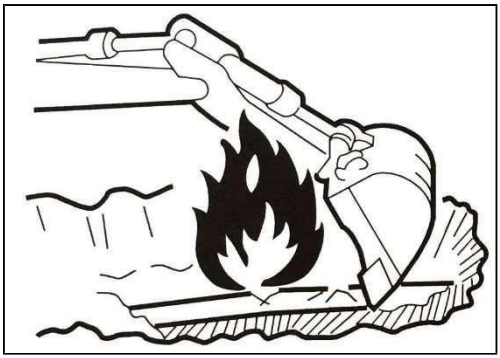
If parts and bodies with safety signs are replaced, new signs must be affixed to the new parts/machines.

Precautions during preparation Analysis work area

Before starting any activity, familiarize yourself with the work area to ensure safety.

Examine the terrain and ground in the work area, check the building structure during interior work and apply safety measures if necessary.

Avoid hazards and obstacles such as ditches, pipelines runningunderground, trees, cliffs, overhead lines or areas at risk of landslides.



The location of underground gas pipelines, water lines, and power cables should be verified with the administrator. If necessary, consult with them to determine the specific safety measures that must be implemented.

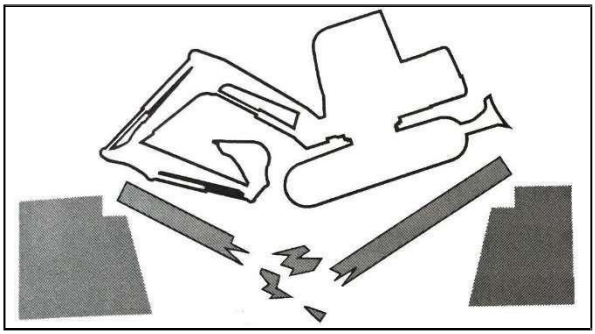
When working on the road, the safety of pedestrians and machines must be taken into account.

Use signage and/or signals. Only authorized personnel may enter the designated work area.

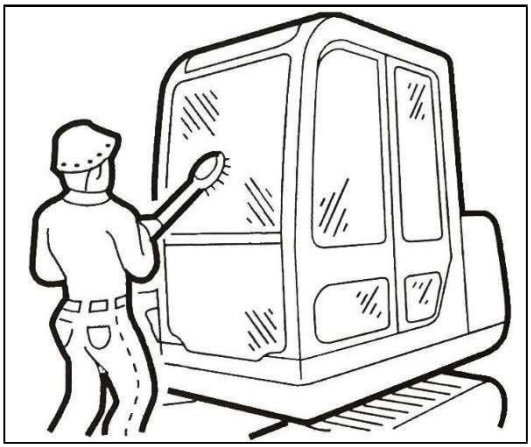
When working in shallow water, check the water depth, substrate hardness and water flow rate.

Checking the strength of the bridge

When walking on a bridge or structure, check the load capacity. If the strength is insufficient, the bridge or structure must be reinforced.



The machine must always be kept clean

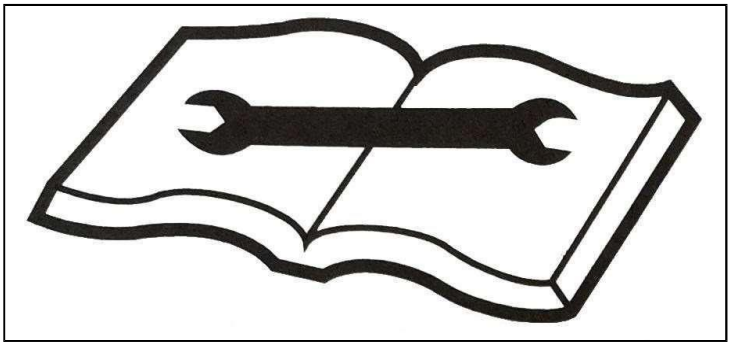


Lubricating oil, grease, dirt, snow and ice must be wiped off to prevent slipping accidents.

Remove all loose objects and unnecessary equipment from the machine. Remove dust, lubricating oil, and grease from engine components to prevent fires.

Clean the operator's seat and remove all unnecessary items from the machine.

Daily inspection and maintenance



Failure to correct or overlook a machine fault could result in an accident.

Before operating, perform the required inspections and, if necessary, make immediate repairs.

In the event of an accident or engine failure, immediately shut down the machine according to the shutdown procedure and park it in a stable location until the problem is corrected. Safety precautions in the operator's cab

Before entering the operator's compartment, remove any dirt or grease from the soles. If dirt or grease adheres to the soles, operating the pedals could result in an accident caused by the foot slipping.

Do not place parts or tools around the operator's seat.

Do not place plastic bottles or suction cups in the operator's compartment. They can act as lenses and cause a fire.

Precautions when starting

When getting on or off the machine, support your weight by assuming a three-point safety position.

Do not jump on or adjust the machine. Do not climb on or off a machine while it is in motion.

If both the upper and lower cabins are open, first open the doors to the locked position and make sure they cannot move.

When using steps and handrails to get on or off the machine, support your weight in a three-point (hands and feet) safe position.

Do not use the control stick as a handle.

Unauthorized personnel should leave the area before starting the machine.

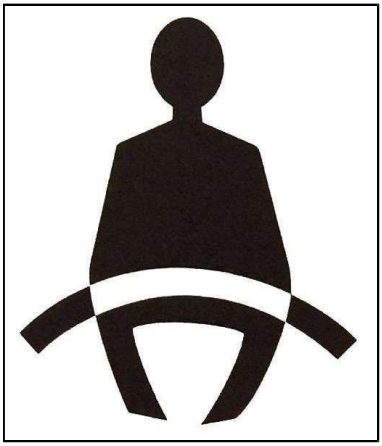
By checking the following items you can ensure that the machine can be started safely.

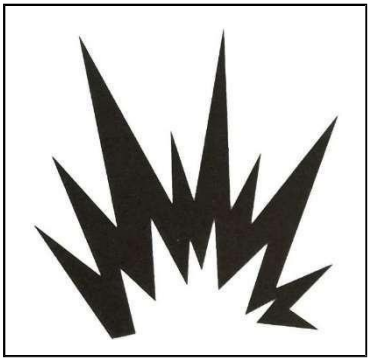
Check the operator's cab, auxiliary switch, or starter switch for a "Caution" or similar sign. If one is present, do not start the engine or touch any controls.

Sound the alarm and warn anyone around the machine.

Sit in the operator's seat and start the engine.

Place the seat in the locked position.





Fasten your seat belt.

Check that the parking system is open and that all control rods and pedals are in the center position.

Make sure no one is near the machine. The machine may only be started and operated from the operator's seat. Do not attempt to start the engine using the jump-start method.

Crossover cable startup

Jump starting should only be performed as recommended. Improper use of the jumper cable may result in battery explosion or unpredictable machine operation.

Starting the engine

After starting the engine, perform the following operation and inspection in an area free of persons and obstacles. If a fault is found, shut down the machine according to the procedure and report the fault.

Preheat the engine and hydraulic oil.

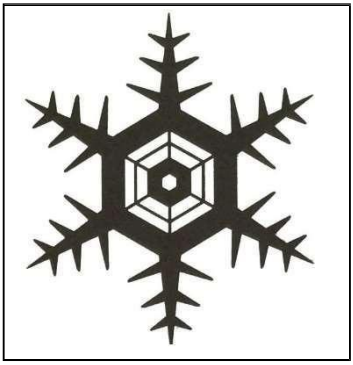
Check that alarm devices and equipment are functioning properly.

Check for any noise.

Test engine speed control.

Use the control device to check that it is working properly.

In case of cold climate



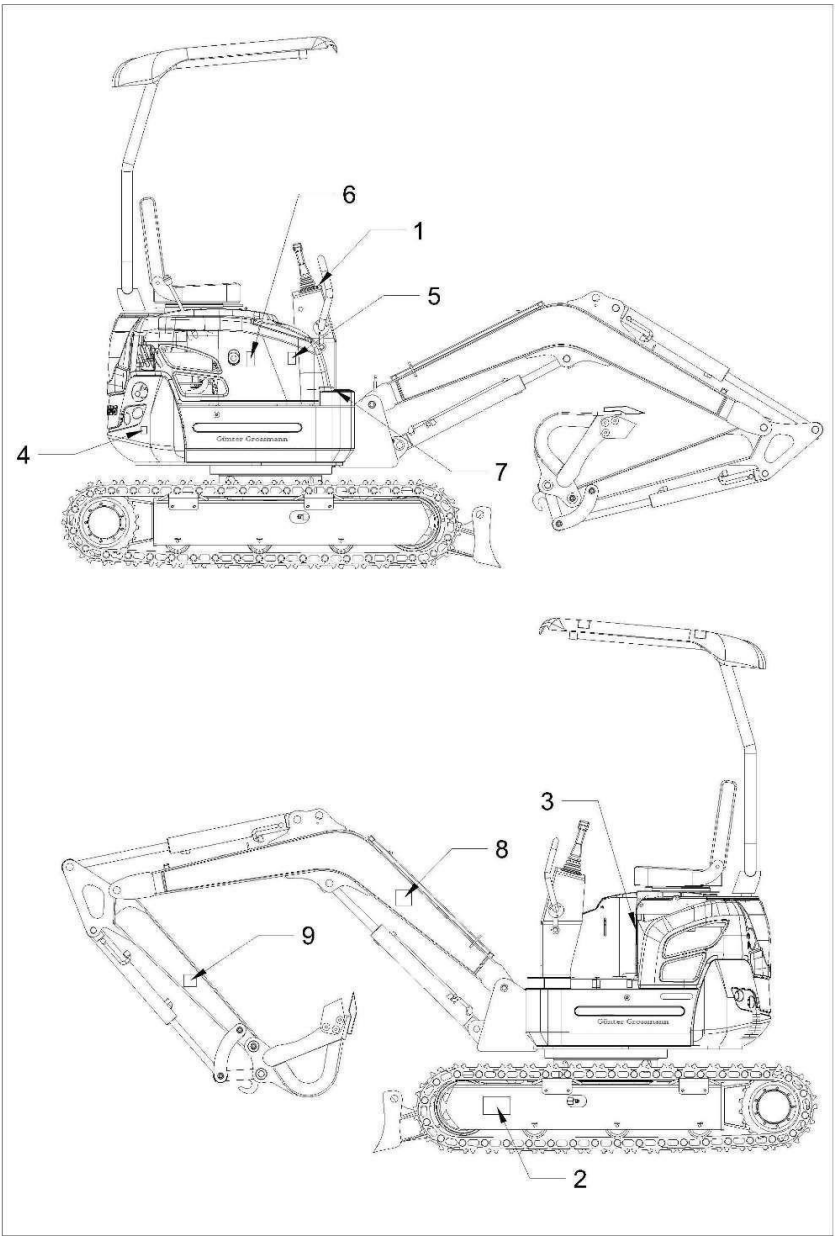
Be careful of the frozen ground, pedal, and handle. They are slippery.

Do not touch metal parts of the machine with bare hands in extremely cold temperatures. Skin will freeze to the metal, causing serious injury.

Do not use ether or starting fluid in the engine. Starting fluid can cause an explosion, serious injury, or death.

Preheat the engine and hydraulic oil. If the control lever is not preheated, the machine will not respond or move quickly or correctly, which could lead to an accident.

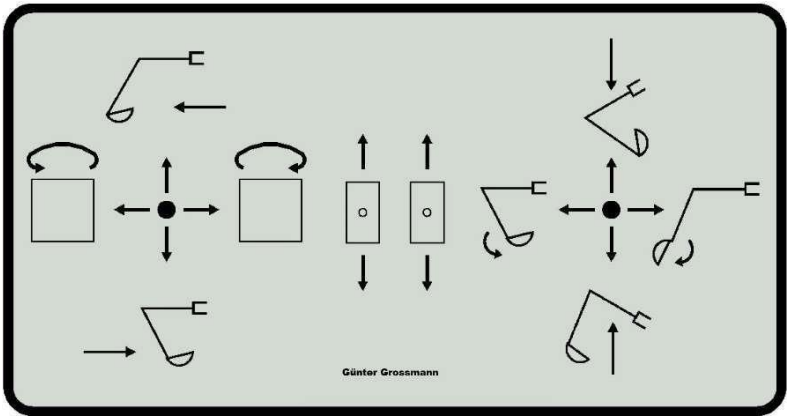
Marking



1. Operating the control device
This sign is placed at the front of
the cabin

▲Also check whether the label matches the machine's control mode. If they are different, change the label to match the machine's control mode before changing the machine.

▲"Failure to comply with this operation may result in losses.



2. Precautions when adjusting track tension

This sign is placed on both sides of the track girder

Attention

The pressure in the hydraulic cylinder of the track tensioner is very high. It should be adjusted or removed according to the operator's instructions. Malfunction may cause bodily harm

3. Operation, Loading, Moving and Operating Equipment Warnings, Windshield Warning, High Beam Warning tension, instructionstext,lock oil, height warning and other warning signs.

This sign is placed on the right underside of the cabin

Attention

To prevent injury or death due to malfunction, confirm the machine's operating status and mode when operating the machine. When confirming the machine's start-up status, be careful with peripheral parts and proceed slowly.

To safely carry out the loading and unloading operation from a transport machine, the following points must be strictly adhered to.

The transporter brakes must be activated and blocks must be added to the tires.

Loading platforms must be very long, wide and durable steel plates with a smooth surface.

In order for the transport machine to fit into the machine center, the loading platform must be well secured.

Place padding or support under the loading platform. The

loading platform angle is less than 15 degrees.

Carry out loading and unloading operations on a flat, hard surface. Loading

platform

To prevent serious injury or death caused by moving or operating the machine, please follow these points:

Sound the alarm and warn those around you

Make sure that no one is on top of the machine, around it and in the area where the machine rotates.

To maintain good forward visibility, rotate the top if necessary. Where visibility

is poor, appoint a watchman.

To do this, follow road signs and install mirrors.

Before opening or closing the front window or removing it, turn the safety lever to the locked position before leaving the operator's seat.

If the operating lever is touched carelessly, the machine may react violently, which could result in serious bodily injury.

4. Do not approach the turning area

This graphic symbol is placed on the rear weight

▲Staying in the rotating area is strictly prohibited.

▲"Do not damage or remove the sign from the machine.

5. Fuel labeling

This graphic symbol is placed on the fuel tank

▲"Shut off the engine when refueling, keep the fuel filler neck away from fire.

6. Oil fuel warning

Be careful

Fuel
tank

Smoking is prohibited when adding fuel to the machine or adding fuel to the fuel system. Fuel must not be near a flame or sparking area, and must be turned off before adding fuel.
Turn off the engine. Refuel outdoors.

7. Battery warning

DANGER

The battery produces explosive gas and should be kept away from sparks and open flames.

When using the battery, ensure good ventilation.

Do not store metal objects, such as tools or flammable items, with the battery. Dispose of the used battery in accordance with local environmental regulations. Battery electrolyte is highly corrosive and can corrode skin and clothing. If splashed into the eye, sulfuric acid will cause contact with the body.

1. **rinse the skin with water.**
2. **neutralize acidity with soda or lime.**

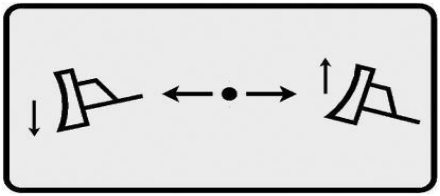
	3. rinse eyes for 10-15 minutes and seek medical help immediately.

8. Strictly prohibited in working area

9. Stay out of digging range

10. Adjust the track tension

11. Shovel work



12. Battery Maintenance Warning Signs

Attention
The pressure in the hydraulic cylinder of the track tensioner is very high. It must be adjusted or disassembled according to the operator's instructions. Improper operation may result in personal injury.

13. Engine belt mark

▲"Do not open the hood when the engine is running.

▲"Do not touch the exhaust pipe to prevent burns.

14. Hydraulic oil marking

15. Hydraulic oil tank sign

DANGER

Hydraulic oil tank

Before opening the cover, turn off the engine.

fuel tank can be slowly released to relieve pressure in the hydraulic tank and prevent scalding from hot oil.

16. Precautions when boarding and disembarking

Attenti

To prevent injuries, please strictly follow the points below when getting in and out of the vehicle.

When getting in and out, you must face the vehicle.

Use the step and handrail

Use more than three points of support (steps and handrails) for hands and feet.

Do not grab the lever when getting out.

Do not get in or out of the vehicle while it is in

motion. Do not jump on the vehicle.

19. Electric shock warning

DANGER

The machine should be kept away from high-voltage lines. If it is near them, the machine and the ground could be electrocuted, which could result in personal injury.

20. Skid warning signs

This sign is placed on the front of the hood

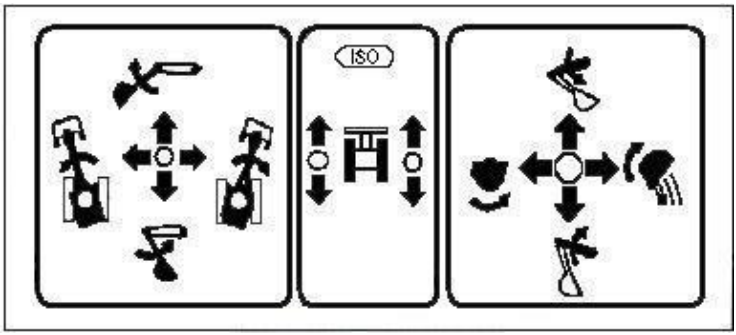
21. Stay away from the danger area

Control stick (ISO) operation description

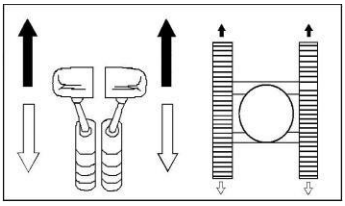
▲Note
Check before turning.

Note: When starting work, slowly move the handle and check the rocking movement and operation of the front working tool.

The handle design of this equipment conforms to the ISO standard and the valve and hose parts should not be changed to maintain the standard settings.

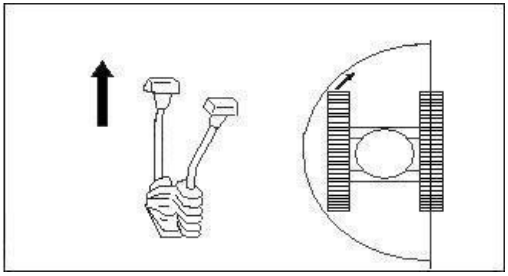


Move the stick/pedal forward or backward while driving straight.

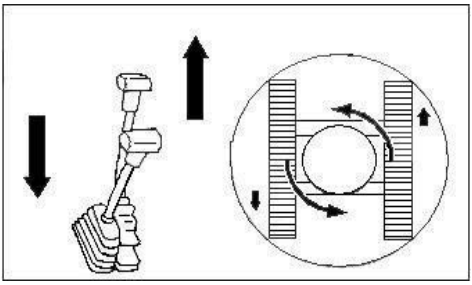


Note: If the distance exceeds 2km, the trailer should be towed. When traveling within 2km, take breaks: walk for 10 minutes and rest for 5 minutes; otherwise, you could seriously damage the digging parts.

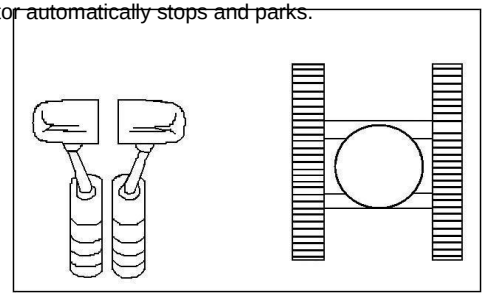
When maneuvering a tracked machine forward or backward, the machine turns using the stationary track as its axis of rotation.



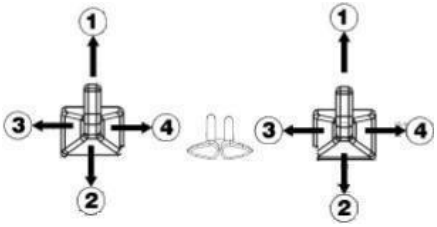
If one track moves forward and the other backward, the machine will rotate around the center point.



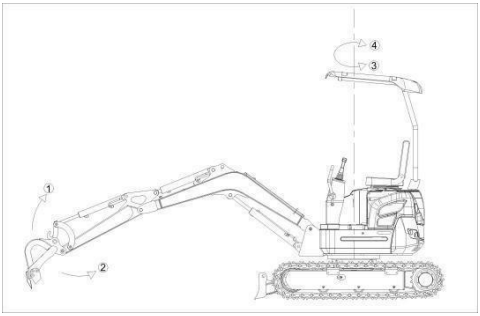
Walking Stop – When the joystick returns to the center position, the excavator automatically stops and parks.



The relationship between the boom, bucket movement and the rod movement direction is as follows:



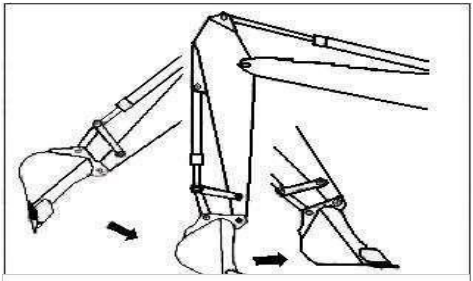
Note: The slewing brake operates by spring and hydraulic pressure release. When the handle is in the center position or the engine stops, the excavator can slew the brake.



Note: The following phenomenon is not a mechanical fault but normal excavator behavior.

The spoon may stop working.

Due to its own weight, the bucket movement may accelerate, which may result in insufficient oil supply.



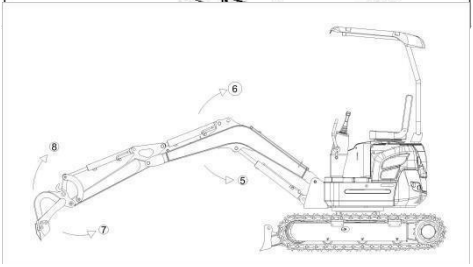
Right stick:

⑤Shoulder drop

⑥Arm up

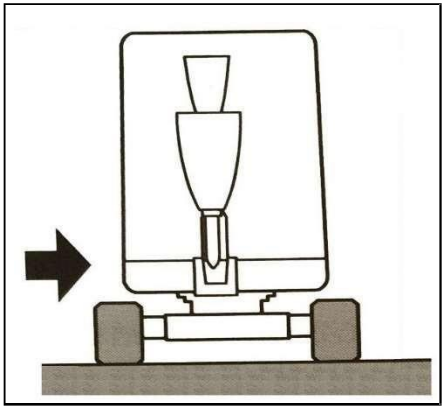
⑦Digging with a spoon

⑧Bucket Drop



Note: Even if the machine is turned off, the control lever can still lower the front attachment to the ground, please set the safety bar to the "unlocked" and turn the key switch to the "off" position.

Precautions during operation Ensure good visibility



When working in dark areas, turn on the machine's work lights and headlights and install additional lighting if necessary.

Because bad weather (fog, snow or rain) makes visibility difficult, stop operating the machine until visibility improves.

It is not allowed to transport people on the machine.

While the machine is walking or operating, you must not ride on any part of it at any tim

Before starting work, check that the work area is safe and reliable

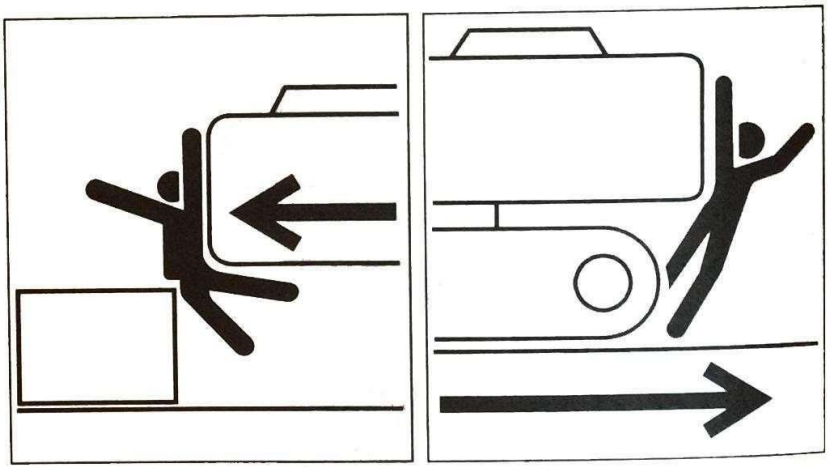
Determine the scope of operation of the machine.

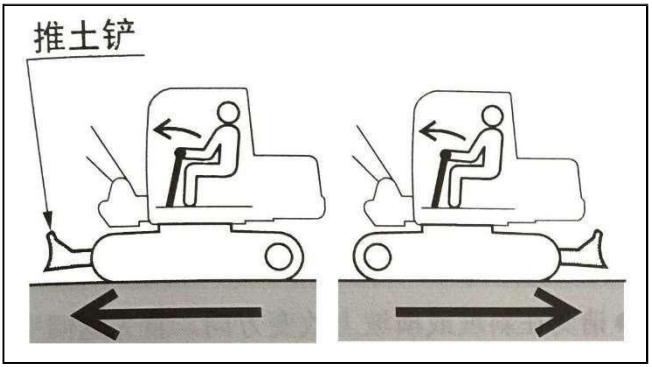
Use signals on the roadside, in narrow areas, or where your view is obstructed. No one should be within the turning radius or in the machine's path.

An audible signal indicates the intention to move.

There is a blind spot at the rear of the machine. Before reversing, check the rear safety and make sure no one is there.

Before starting to walk, check the position of the hull (track)

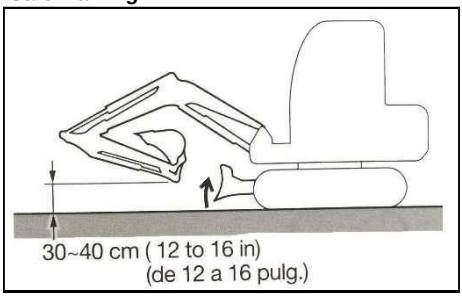



推土铲

Shovel

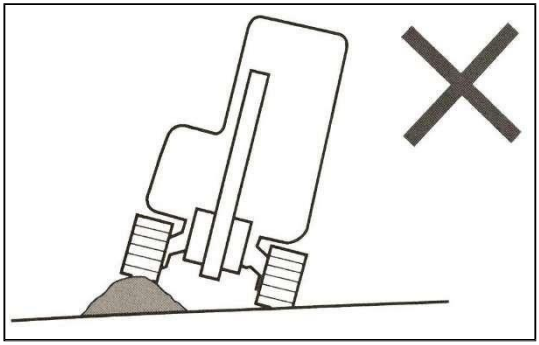
Before operating the foot pedal/stick, ensure the blade is in front of the operator's seat. Note that if the blade is behind the operator's seat, the pedal/stick must be operated in the opposite direction than when the blade is in front.

Safe walking



When walking, the dozer lifts and the bucket control device is raised as shown in the figure above. The bucket is raised to 30-40 cm above the ground.

Rotation is not permitted while walking. If the bucket control device must be operated while walking, the speed must be slow enough to maintain full control at all times.



Avoid driving over obstacles. If driving over obstacles is unavoidable, keep the bucket control device close to the ground and proceed slowly. Do not drive over obstacles that could cause the machine to tilt at an angle of 10 degrees or more.

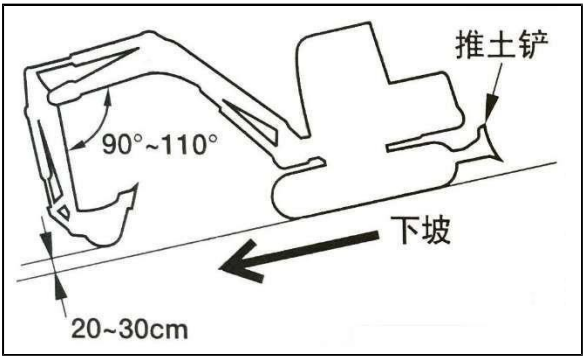
On uneven surfaces, proceed at a slow speed and avoid sudden starts, stops, or changes in direction. Otherwise, the working tool may come into contact with the ground, causing loss of balance and damage to the machine or surrounding structures.

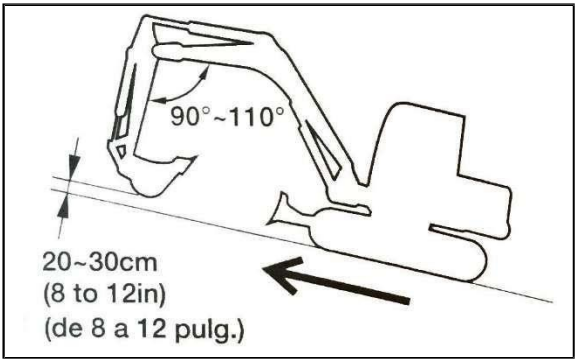
Precautions when walking on slopes

When walking on slopes or ramps, be careful not to fall or slip.

Do not walk on a steep slope on which the machine cannot maintain stability (maximum slope is 30 degrees, side slope is 10 degrees).

Please note that depending on operating conditions, the actual machine stability may be lower than the values stated above.



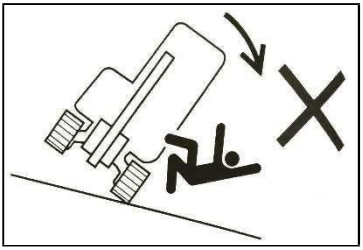


When climbing a slope, the operator's seat should face the slope. When descending a slope, the operator's seat should face down the slope. In both cases, pay attention to the ground in front of the machine when walking.

When walking on a slope, lower the bucket to a height of 20-30 cm above the ground. When climbing a steep incline, pull the bucket control forward. In an emergency, lower the bucket to the ground and turn off the machine.

Maintain a low speed when driving on slopes or ramps.
Lower the ramp, reduce the engine speed.

Do not reverse down the slope.



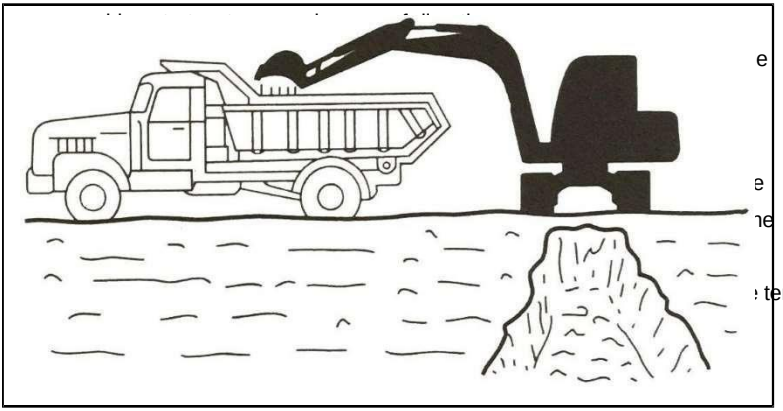
Do not change direction on sloping ground or cross-slope.
First you need to get back to a flat surface and then choose another route.

When walking on gently sloping ground covered with grass or leaves, wet metal plates, or frozen ground, the machine may slip sideways. Make sure the machine does not come to a stop on the slope.

If the machine stalls on a slope, set the controls to the middle position and restart the engine.

Be careful when operating the machine on snow or ice.

When walking on snow-covered or icy ground, move slowly to avoid



e

e

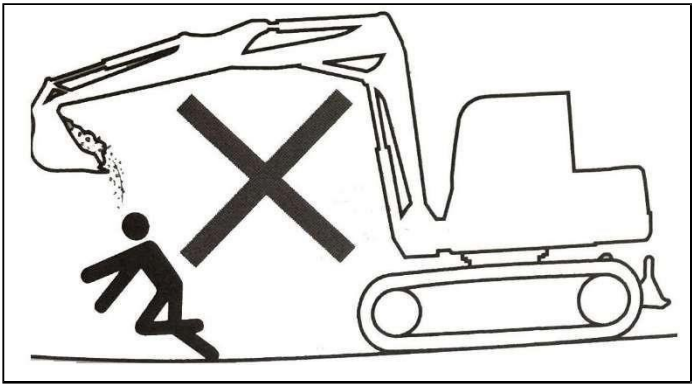
ne

temperature

increases, which could cause the machine to tip over and trap the operator inside.

When parking on an unstable surface, lower the dozer.

Do not lift the spoon above your head



If the bucket is raised above the heads of workers, there is a risk of the load being scattered or the bucket suddenly dropping.

During loading, the operator's safety must be ensured.

Only start loading when the operator is in a safe place.

Do not swing the bucket or hold it over workers or the cab. Load from the rear of the truck.

Keep a safe distance from overhead high-voltage lines

Do not allow any part of the machine or load to come near high-voltage cables unless all safety precautions required by local and national authorities have been taken. If workers are near a spark discharge or if the machine is adjacent to or in contact with an energy source, there is a risk of electrocution and death.

Always maintain a safe distance between the machine and high-voltage cables.

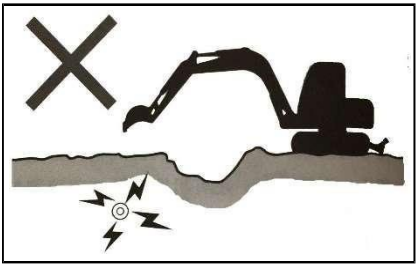
Before starting work, verify the safety procedures with your local power company.

All cables should be treated as high voltage cables. Even if it is known or believed that the power has been cut off and the cables are obviously grounded, they are treated as live cables.

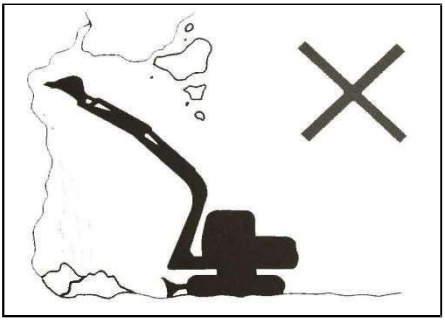
If a machine is too close to a high-voltage line, a signalman should issue a warning.

Personnel in the work area must not be close to the machine or the materials being loaded.

Pay particular attention to high-pressure lines located underground.



Be especially careful when working in hazardous environments.

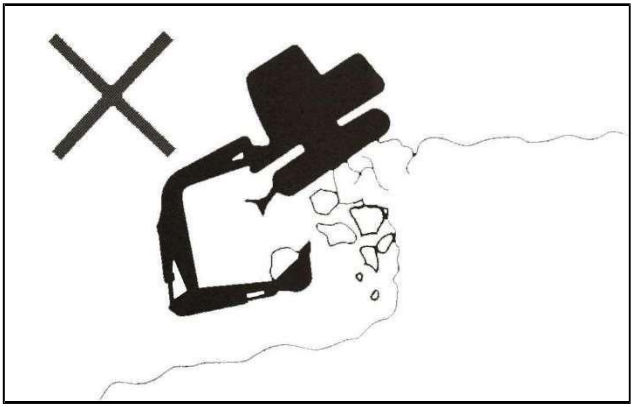


conditions

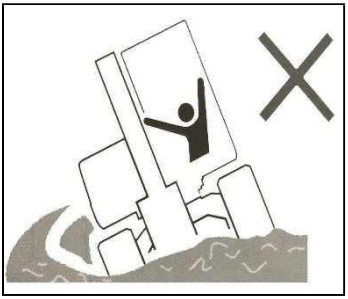
Do not dig at the base of a high slope. This is dangerous as it may cause a landslide.

Do not work in areas at risk of falling rocks.

Maintain a safe distance between the machine and the edge of the excavation area. Do not dig up the ground in front of the machine.

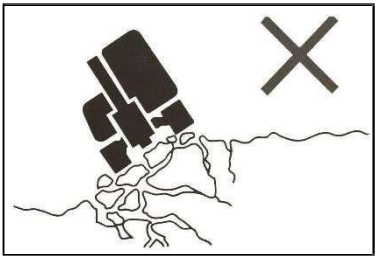


When working near a cliff or on the side of a road, it's easier to escape if problems arise. During operation, the crawler is positioned at a right angle to the cliff or roadside, with the shovel positioned forward.

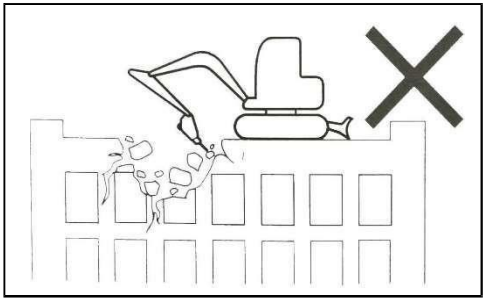


Do not enter areas with soft ground. This could cause the machine to tip due to its weight, tip over, or fall to the ground.

Do not approach unstable ground (cliffs, roadsides, deep ditches). If the ground gives way under the weight or vibration of the machine, there may be a risk of the machine tipping or sliding.

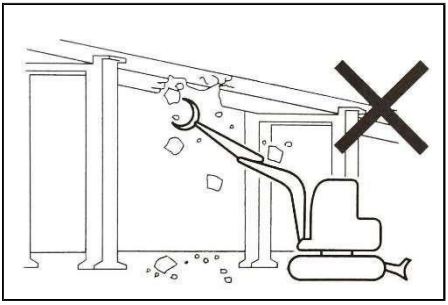


Please note that after heavy rain or blasting work the ground is not solid. The ground is not solid at the top of the slope and around the ditch.

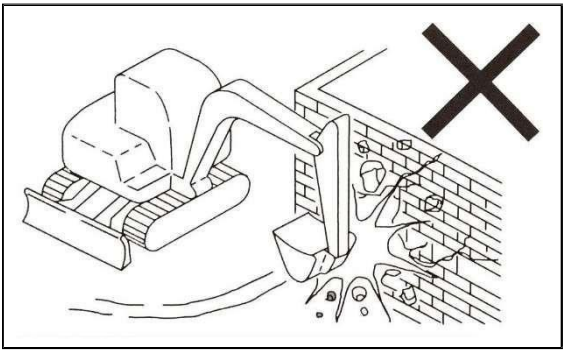


Do not perform demolition work under the machine. It may tip over due to ground instability.

Before starting work on the top of buildings or other structures, it is important to check their strength and structure. If the building collapses, it will cause serious injury or destruction.



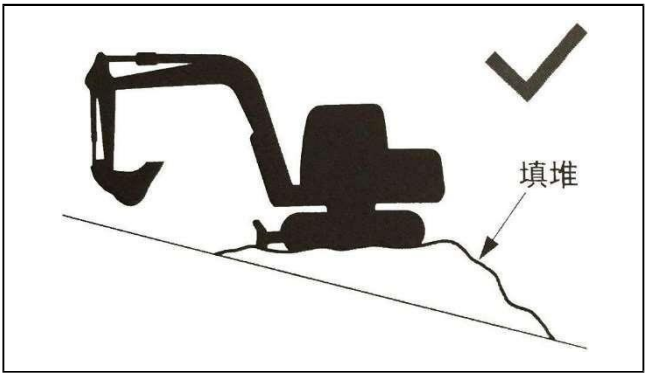
Do not demolish directly overhead. There is a risk of building collapse, breaking, and falling components, which could cause serious injury or damage.



Do not use the impact force of the bucket to break the material. There is a risk of serious injury from flying debris and damage to the bucket control device.

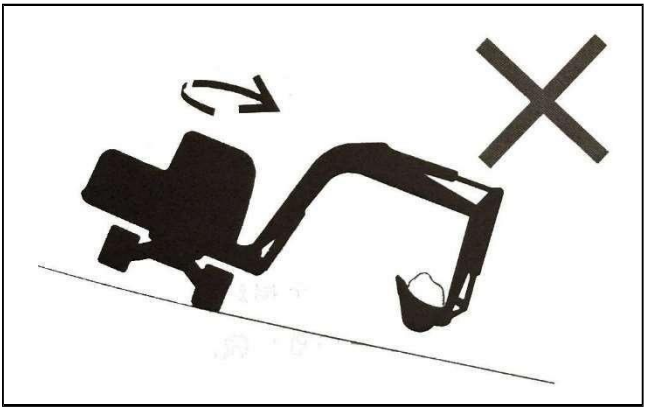
Working on sloping terrain is dangerous.

When operating on slopes or ramps, rotating or steering devices can cause the machine to lose stability and tip over. Avoid operating on slopes whenever possible.



area.

Leveling the work area.



When the bucket is filled with material, avoid turning down the slope.

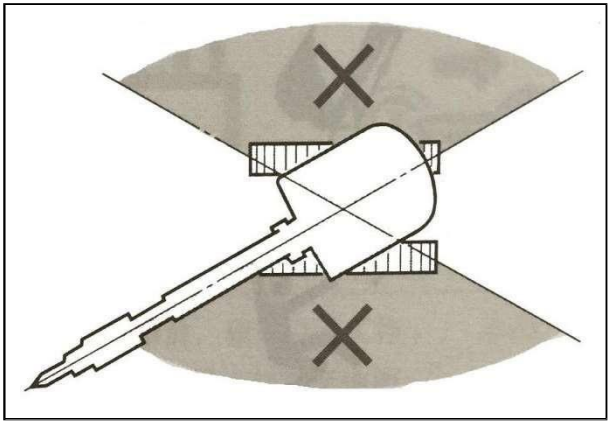
This may reduce the stability of the machine and cause it to tip over.

Do not rotate from side to side (rock) when the bucket is heavily loaded.

It is easier to tip the machine transversely than longitudinally.

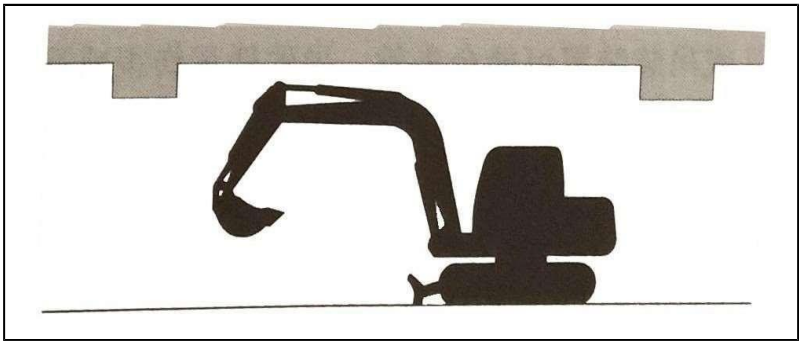
Do not rotate when the bucket control device is heavily loaded at the end.

Especially do not turn from side to side on sloping terrain.



When the machine is equipped with a crusher, breaker, or long shaft, the attachment tip is heavier than a standard bucket. Do not allow the bucket shaft (boom) to point downward or sideways when the excavator is operating.

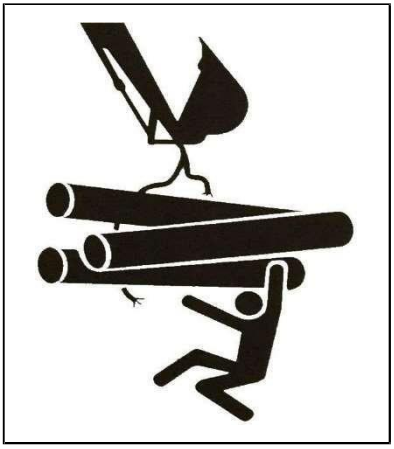
Be careful of objects above



When working under a bridge, in a tunnel, under cables or indoors, be careful not to let the boom or bucket hit overhead objects.

The excavator is not designed for lifting

The machine is designed specifically for excavation and therefore does not have crane protection. If excavators are used for lifting work, special care must be taken.



Do not overload the machine when lifting. This could cause the machine to tip over, resulting in serious injury or death.

The rated lifting capacity is based on a machine standing on firm, level ground. To ensure safe lifting, users should make appropriate allowances for specific operating conditions. These include loose or uneven ground, off-level positioning, side loading, dynamic or sudden conditions, hazardous environments, and employee experience. Operators and other personnel should familiarize themselves with the operator's manual before operating the machine. They must strictly adhere to safe operating procedures at all times.

If the chain or lifting device is not properly connected, the bucket or lifting device rod may break, leading to injury or death.

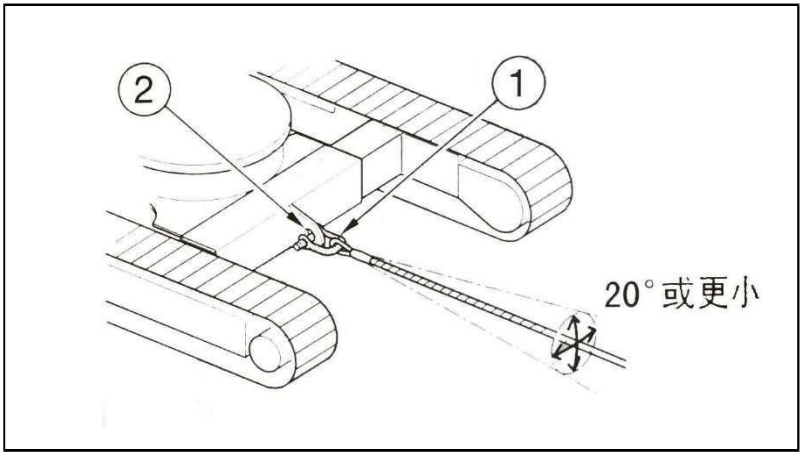
If the machine is used as a crane, it is not permitted to pull stumps from the ground. In such a situation, the safe load capacity of the machine cannot be determined.

No one may stand on, under, or near the work area while the object is being lifted.

Beware of flying objects

This machine is not equipped with safeguards to protect the operator from flying objects. Do not use the machine in any situation where the operator may be struck by a flying object.

Precautions when removing



When using a hoist, improper operation, inadequate rope, or improper control can result in serious injury or death.

A broken or detached rope is dangerous. Use a wire rope suitable for the pulling force.

Do not use damaged, twisted, or knotted rope. Do not suddenly increase the load on the rope.

Wear protective gloves when working with the rope. Make sure there is an operator on both the pulling machine and the machine being pulled. Do not use the winch on sloping terrain. Do not approach the rope during the operation. pulling.

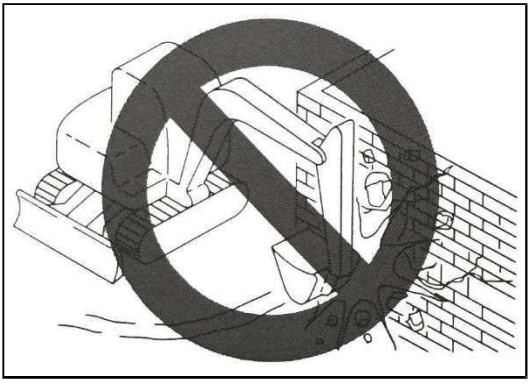
Operational Procedure

Prohibited Operations

Do not work on rocky ground (hard or soft).

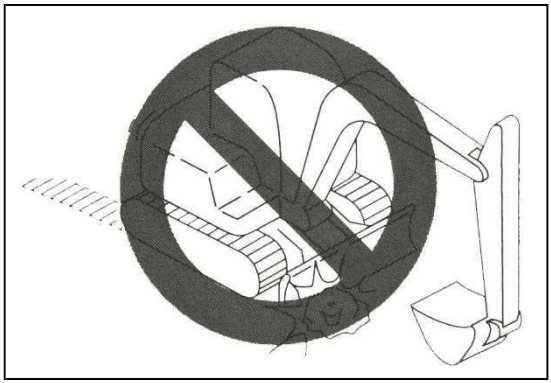
Rotation is not permitted while walking. If the bucket control device must be operated while walking, the speed must be slow enough to maintain full control of the machine at all times.

Do not use rotational force for demolition or leveling.



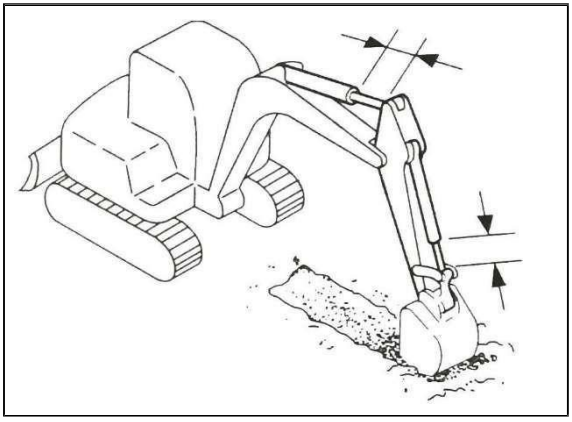
Do not use rotational force to demolish walls or level ground. Furthermore, do not allow the bucket teeth to become embedded in the ground. This could damage the bucket control device.

Don't kick while walking



Do not drive the bucket into the ground or use walking force to dig.

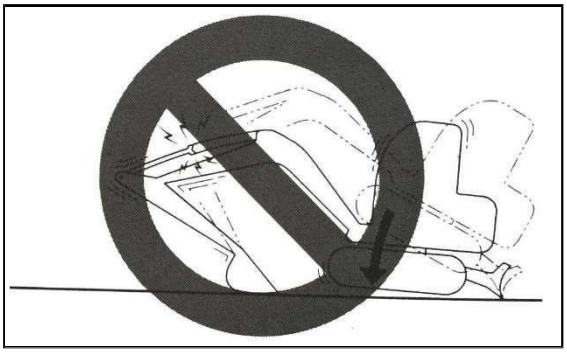
Hydraulic cylinders should be used slowly.



Do not pull the hydraulic cylinder to its end position. During operation,

maintain some freedom of movement.

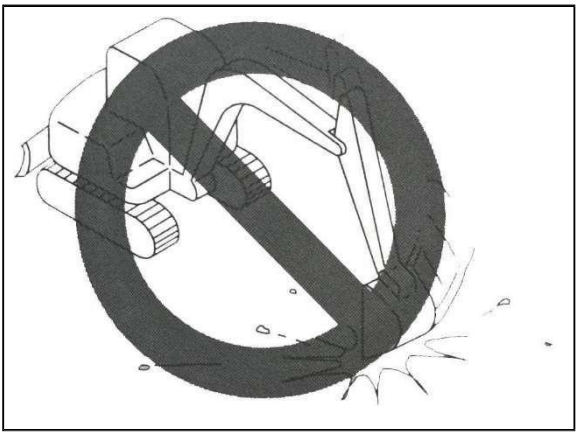
When the hull is lowered and the bucket cylinder is fully extended, do not



use the bucket control device to support the body. This action will concentrate the load on the bucket cylinder and consequently damage it.

Do not use the bucket for pushing or digging.

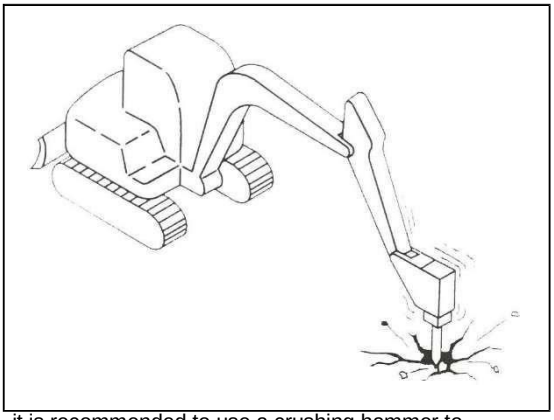
This can shorten the life of the bucket control device. Use fluid pressure for digging.



Do not use the machine's falling force to carry out work.

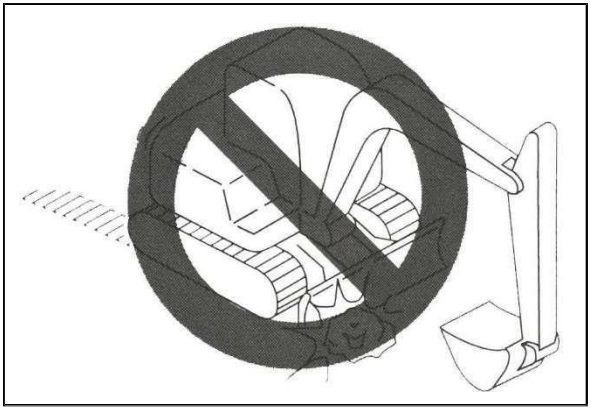
Applying additional tensile force to the machine will shorten its service life. During digging, the hydraulic pressure in the oil cylinder should be low and the stroke should be large.

Digging the bedrock



In hard rock conditions, it is recommended to use a crushing hammer to break the rocks into small pieces before digging.
This way you can prevent damage to the machine, which is more economical.

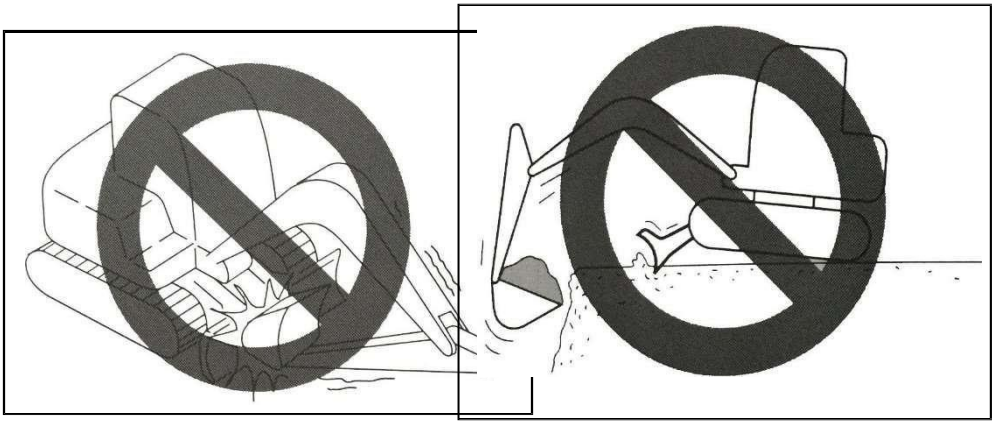
Beware of shovel blows



Using a shovel to move rocks can damage the dozer and the shovel's oil cylinder.

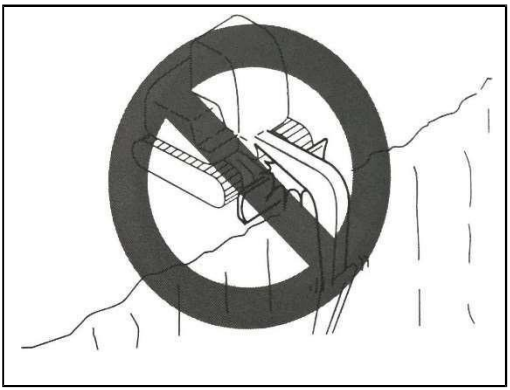
Take care of the device that operates the spoon.

When lifting the bucket control device, be careful not to let the bucket hit the dozer blade.



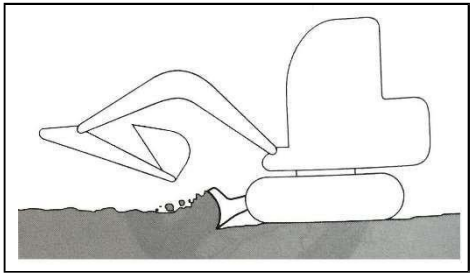
Do not use a shovel for support

Be careful with the shovel when digging



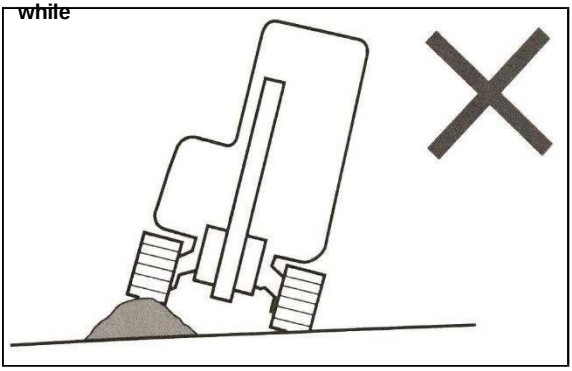
When digging deep with the dozer blade forward, be careful not to let the boom and bucket hit the dozer blade.

When working, try to hold the shovel at the back. Use an earth shovel carefully to dig deep.



The shovel is designed for simple excavation work. Do not use the shovel for deep excavation. This can damage the shovel and the bottom of the hull.

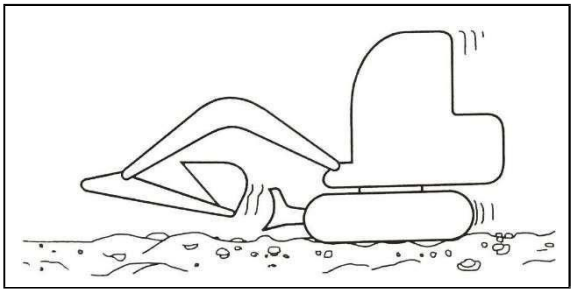
Precautions during operation while



Precautions

Stepping over obstacles (rocks, stumps, etc.) can place a heavy load on the hull and cause damage, so try to avoid stepping over obstacles. If this is unavoidable, lower the bucket control device to the ground and step slowly to allow the center of the track to pass over the obstacle.

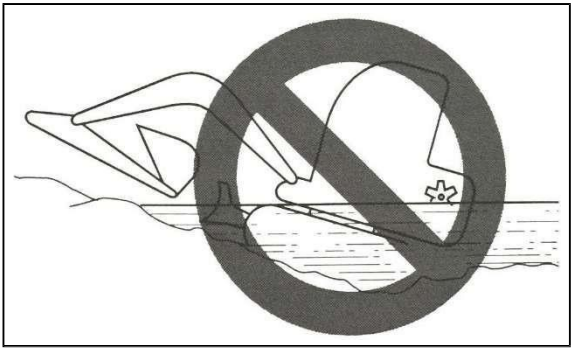
Precautions when walking at high speed



On uneven roads, you should walk slowly and avoid sudden starts, stops or changes of direction.

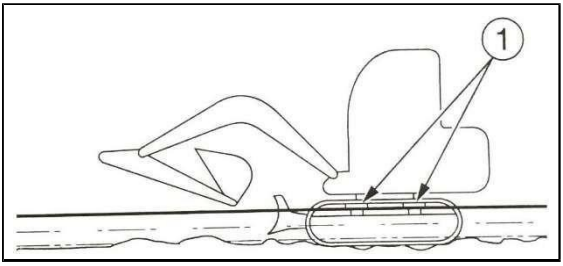
When moving at high speed, keep the shovel in front of you.

Precautions when using the machine in water



If the rear of the machine, as shown above, is submerged in water, the cooling fan will spin in the water, which will damage it. The rear of the machine must not be submerged in water.

Permitted water depth



The machine may only be used in water if the water level does not exceed the track belt.

Parts that are used in water for a long time should be lubricated with enough oil to squeeze out the old oil.

Do not immerse the swivel bearing or housing in water or sand. If this happens, please contact your Gunter Grossmann service agent for an inspection.

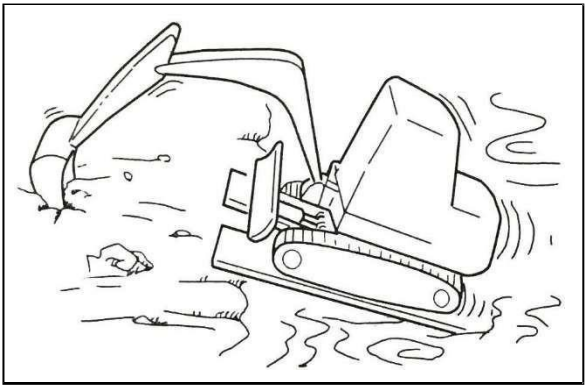
Getting out of the mud

If your machine is stuck in mud, take the following steps.

If one caterpillar gets stuck in the mud

1. Move the shovel to the side of the track in the mud.
2. Set the bucket and boom at an angle of 90 to 110°.
3. Press the bottom of the spoon (not the spoon teeth) into the ground.
4. Place a piece of wood or similar object under the raised track.
5. Raise the bucket and slowly move the machine out of the mud.

If two caterpillars get stuck in the mud

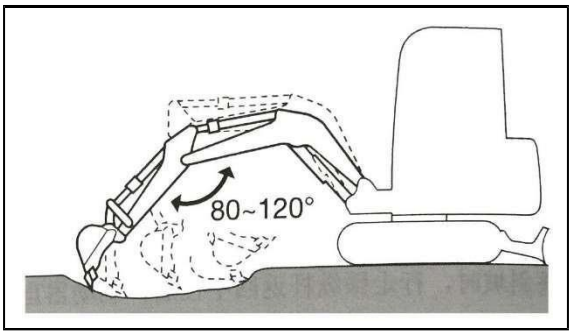


1. Perform steps 1 through 4 above on both tracks.

2. Drive the shovel into the ground at the front of the machine.

3. Stepping forward, pull the rod and slowly pull the machine out.

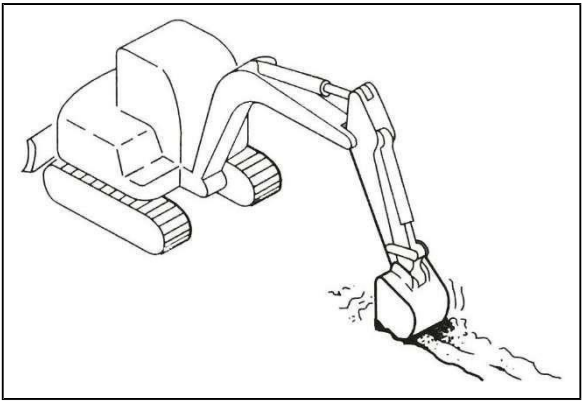
Digging



1. Place the earth shovel on the opposite side of the digging area.

2. When digging with a bucket, make shallow, long movements. The digging force is greatest when the angle between the boom and the rod is between 80 and 120 degrees. At this angle, digging can be performed effectively. Digging trenches

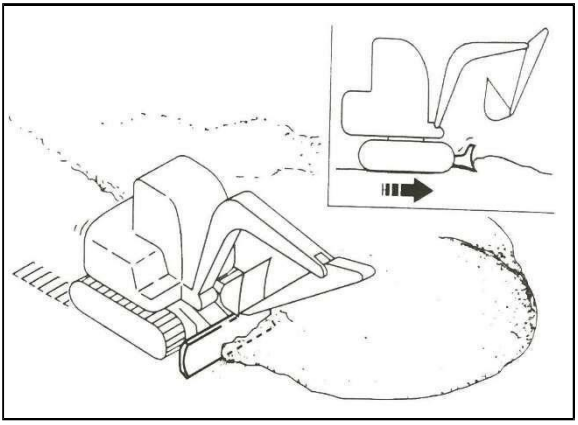
To increase efficiency, a bucket suitable for digging is installed



trenches, and the tracks should be positioned parallel to the trench being dug.

When digging wide trenches, dig the sides first, then the center.

Leveling



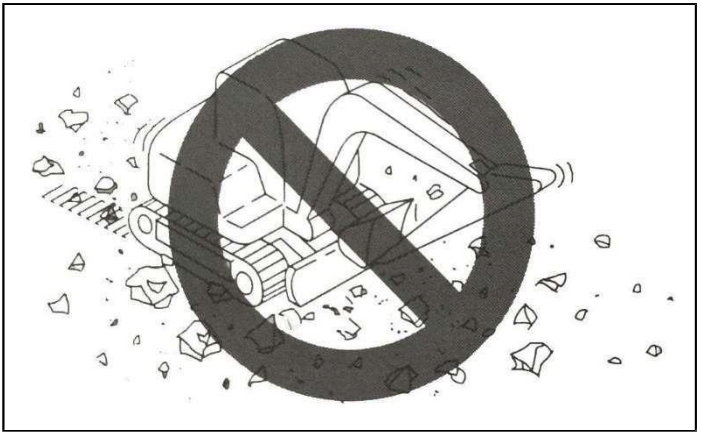
1. Bring the bucket working device closer to the assembly.
2. Slowly rake the soil away from the side of the pile.
3. When the pile is low, clear the top of the soil. If the load is too heavy for the body, adjust the dozer blade by lowering or raising it. Rubber tracks

Due to the use of rubber, this type of track has an inherent weakness: a lack of strength. To prevent damage or detachment of the track, adhere to the following prohibitions and precautions.

Prohibitions

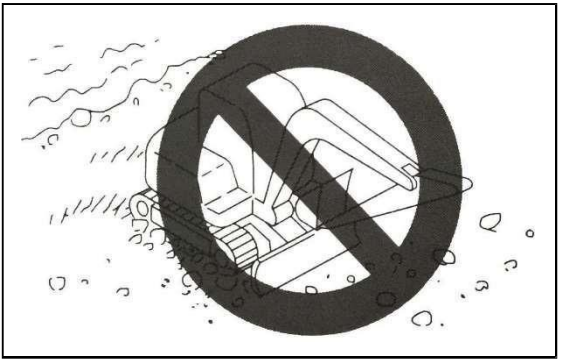
Do not walk or operate the machine in the following places:

Walking and turning on rubble, very uneven and hard rock, steel beams, scrap iron or close to the edge of a steel plate may damage the rubber track.

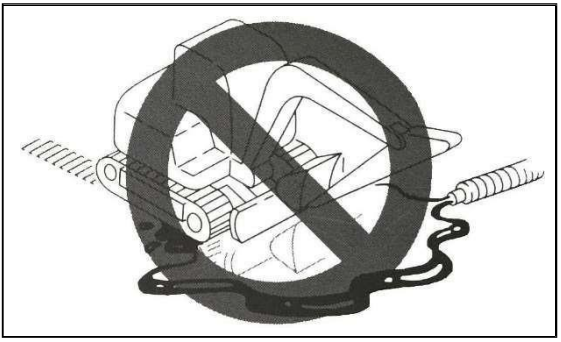


Walking on the riverbed or ground withA large amount of coarse gravel can cause stones to get stuck in the track, destroy it or cause it to fall off.

Do not use the machine near the seashore. Salt can cause corrosion.



steel core.



Be careful not to allow fuel, lubricating oil, salt, or chemical solvents to adhere to the track. These substances can corrode the steel welds in the track core, causing rust or spalling. If such substances adhere to the track, remove them immediately.

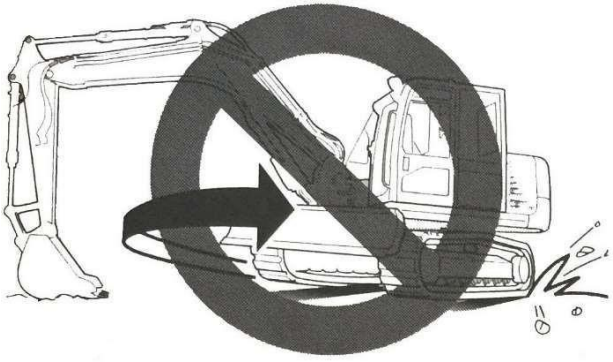
If the machine is walked on an irregular surface, such as a freshly laid asphalt surface, is exposed to fire, or is walked on a hot iron plate in the sun, this may cause unusual wear or damage to the handle.

Do not move on surfaces where the rubber tracks may slip. This can accelerate wear of the

handle. Issues requiring

attention

Please follow the points below when working with the machine.



Do not use the bucket control device to lower the base of the hull if it is lifting at the front of the hull. This could cause the track to twist.
at one point when the load is concentrated on the tracks, resulting in rapid track damage.
Always avoid changing direction or turning on a concrete surface if possible.

This may result in wear or damage to the rubber track.

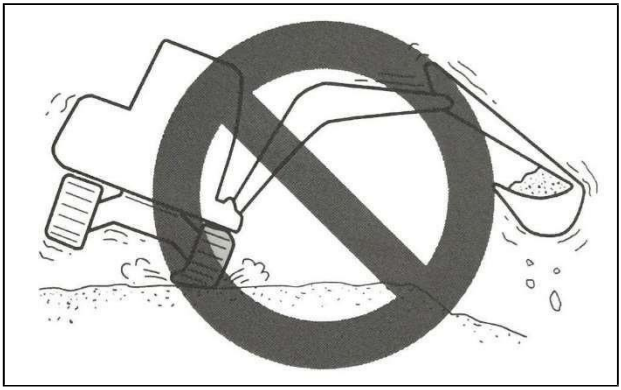
Avoid tipping over, which may result in a strong impact on the rubber tracks.

Salt, potassium chloride, ammonium sulfate, potassium sulfate, and lime superphosphate all cause damage to the caterpillar. If any of these substances adhere to the caterpillar, it should be washed off immediately.

Do not rub the sides of the rubber track against concrete or walls. Do not allow the bucket to strike the rubber track, causing damage.

In winter, be especially careful on surfaces covered with snow or ice, as the caterpillar can easily slip in such conditions.

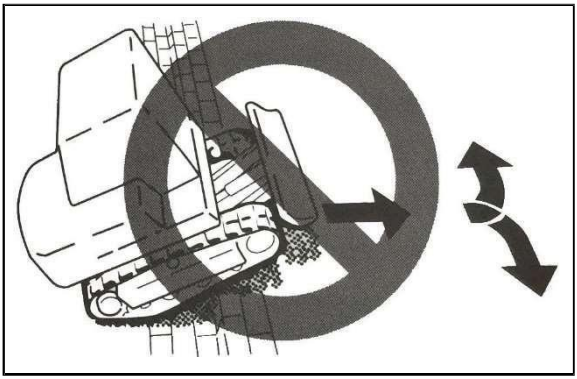
The rubber track should be used at temperatures between -25℃ and +55℃.When storing a rubber track for a long time (three months or more), it should be stored indoors without exposure to direct light



sunny or rainy.

Because the entire handle is made of rubber, the rubber track isn't as stable as a steel track. Be careful when turning and rocking horizontally.

Preventing rubber track from falling off



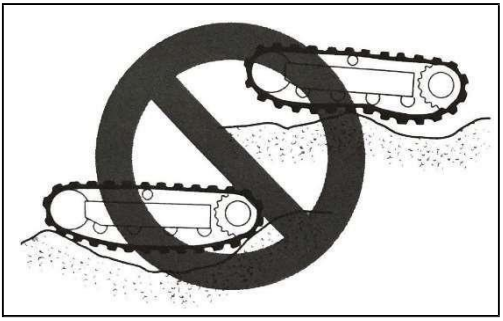
To prevent track detachment, take the following precautions.

Always maintain proper track tension.

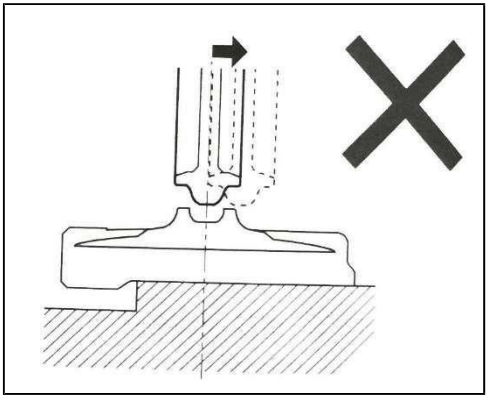
When a machine must cross a large step, such as a paving stone or rock (20 cm or higher), climb at an appropriate angle and do not change direction on the steps.

When climbing backwards, do not change direction at the base of the slope.

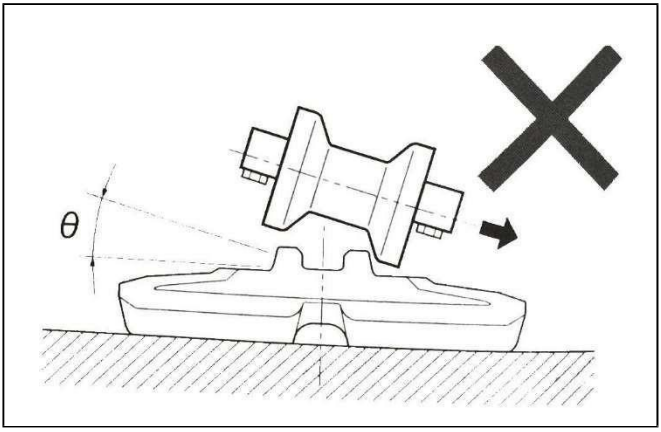
Avoid placing one track on a slope or overhang while the other is on a flat surface (machine tilted at an angle of 10 degrees or more). Always walk with both tracks on a flat surface.



Do not change direction when the track is loose as shown in the illustration.



In such a situation, if the machine moves backward, the rubber track will fall.



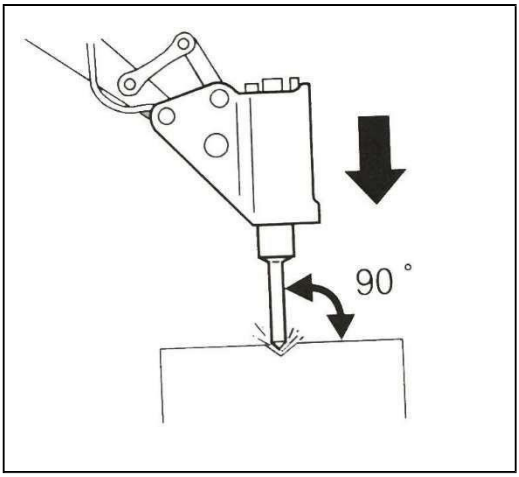
In such a situation, if the machine starts to rotate, the rubber track will fall.

Hydraulic crushing hammer

The use of the hammer is described separately in the manual for the hydraulic crushing hammer.

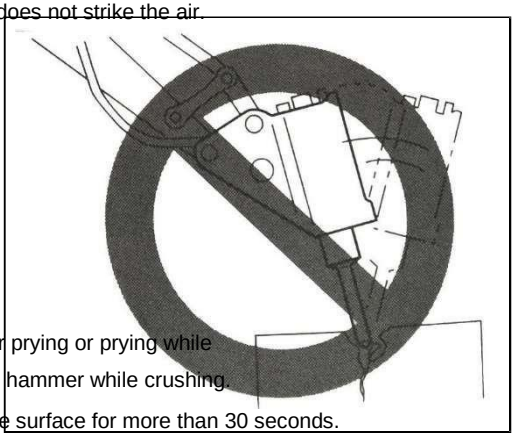
When installing options such as a crushing hammer, tipping bucket or bucket, ensure they are suitable for the machine model being used.

Please contact your sales or service agent to select additional equipment.



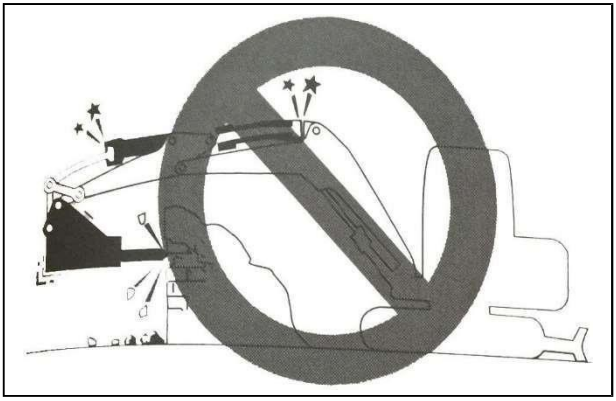
The crushing operation is carried out with the hammer positioned vertically in relation to the working face.

When crushing, the hammer should be directed towards the object being crushed so that it does not strike the air.

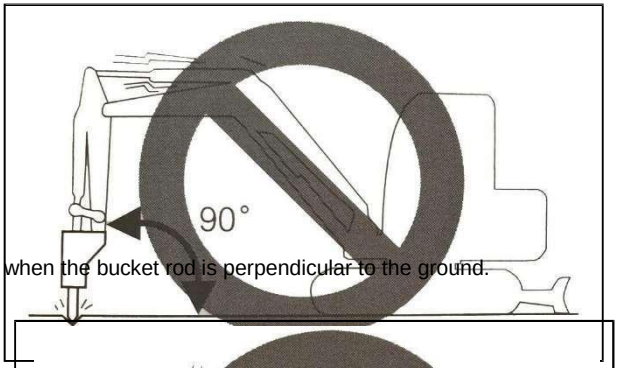


Do not use the hammer for prying or prying while crushing. Do not move the hammer while crushing.

Do not hit the same surface for more than 30 seconds.



Do not crush with the cylinder fully extended or retracted (end of travel position). Maintain a clearance of at least 50mm.



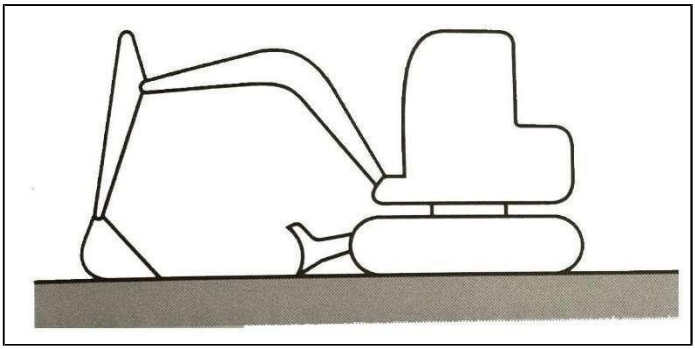
Do not crush when the bucket rod is perpendicular to the ground.

Do not crush using the self-falling hammer.

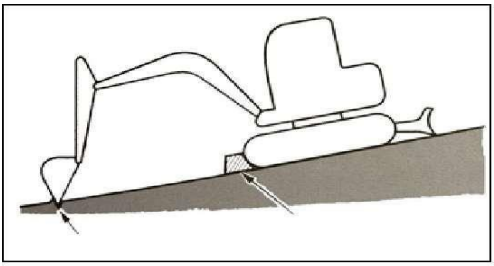
Do not use the crushing hammer to move objects or blocks that are to be crushed. Turn the machine occasionally to allow the motor to cool.

If the hydraulic pipe vibrates abnormally, it may be due to a nitrogen leak in the accumulator. This should be checked as soon as possible.

Attention by stopping m yselfSafe parking



Park the machine on a flat, firm, and secure surface. Adjust the system.



weaning.

If you need to park or lean on a ramp, stop the machine and secure it from moving.

When parking on the street, use barriers, warning signs and lights to make the machine visible even at night and avoid collisions with other machines.

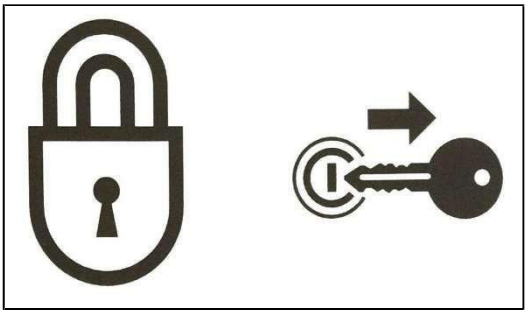
Before leaving the machine, do the following:

Lower the shovel to the ground.

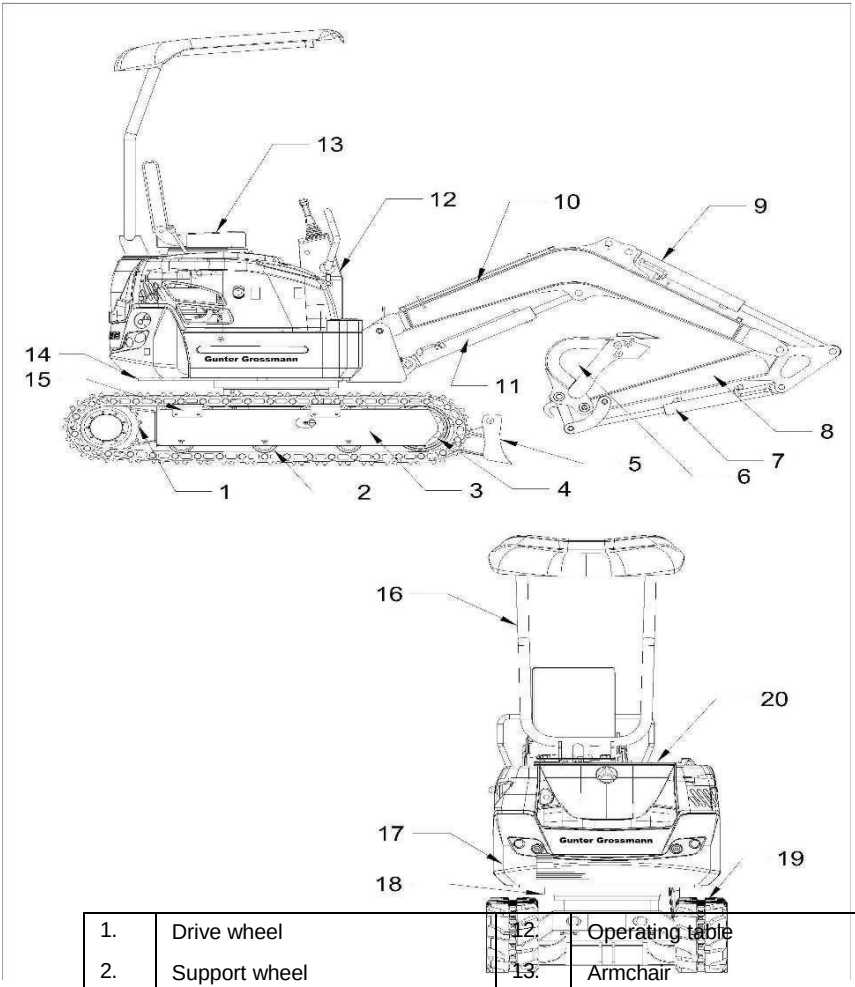
Turn off the engine and remove

the key.

Close the cabin and cover, take the keys.



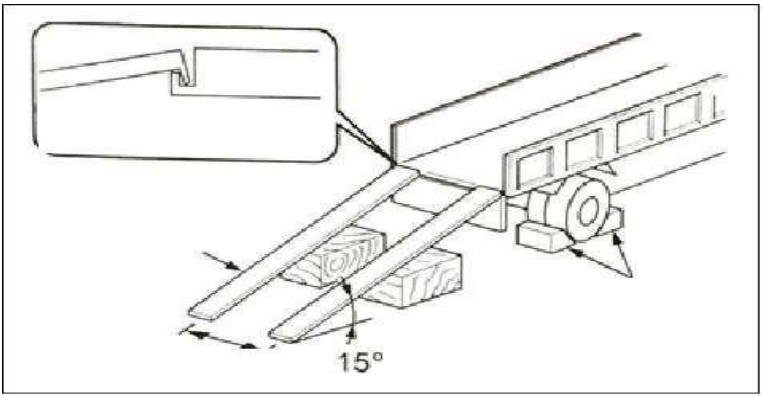
The main structural parts of the machine



1.	Drive wheel	12.	Operating table
2.	Support wheel	13.	Armchair
3.	Lower frame	14.	Upper frame
4.	Guide wheel	15.	Roller
5.	Front shovel	16.	Roof support
6.	Spoon	17.	Counterweight
7.	Arm cylinder	18.	Swivel bearing

8.	Spoon handle	19.	Bearing
9.	Arm cylinder	20.	Caterpillar
10.	Boom		
11.	Boom cylinder		

Important transport issues Safe loading / unloading the machine



Suspension mount Ramp

Distance from the ramp 15' or less

Blockade

The machine may tip or fall during loading and unloading. The following safety precautions must be observed:

Choose a solid and smooth surface and keep sufficient distance from the roadside.

A ramp of appropriate strength and size is attached to the truck bed. The inclination must not exceed 15 degrees. If the ramp is bent down too much, it should be supported with a support leg.

Do not use the working device to load or unload the machine. This may cause it to tip over or fall.

Keep the truck bed and loading area clean and free of oil, sand, ice, snow, and other foreign objects to prevent slipping. Clean the tracks.

Place chocks under the wheels to prevent movement.

When loading and unloading the machine, follow the signals given by the signalman and proceed at a slow speed.

Do not change direction on sloping terrain.

Do not perform rocking movements on slopes. The machine may tip over.

When rotating or rocking the truck compartment, the base may not be stable enough, the movement should be slow.

If possible, close the door and lid after loading is complete. Otherwise they may open during transport.

The chock is used to stabilize the track. Then, tie the machine to the truck bed with ropes or chains.

Lifting the machine safely

Master and use the correct lifting gesture.

Check lifting equipment daily for damaged or missing parts and replace if necessary.

When lifting, use a rope that can support the weight of the machine.

Lift the machine according to the following procedure. Do not proceed otherwise, as the machine may become unbalanced.

Do not lift the machine while the operator is on it. Lifting should be done slowly to avoid tipping the machine.

Personnel should stay away from the operating area when lifting. Do not lift the machine above the heads of workers.

Safe transport of the machine

When transporting machinery, we should understand and comply with applicable safety regulations, machine codes and road traffic regulations.

When choosing the best route for transportation, you should take into account the length,width, height and weight of the truck after loading the machine.

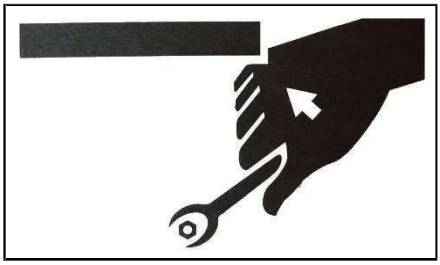
During transport, avoid sudden starts, stops, or high speeds. This could cause the machine to shift or cause a loss of balance.

Precautions during maintenance

Post a "do not operate" warning.

During inspection or maintenance of the machine, starting the engine or touching the controls by an unauthorized person may result in serious injury.

Before starting maintenance, turn off the engine and take the key with you.



Post a "do not start" warning in visible places such as ignition switches or control levers.

Using the right tools

Do not use damaged or inefficient tools, or tools designed for other purposes. Use tools that are appropriate for the job.

Regular replacement of safety components

To ensure safe use of the machine over a longer period of time, it must be serviced regularly.

refuel, carry out inspections andmaintenance. To improve safety, important parts such as the hose and seat belt should be replaced regularly.

"Replaceable safety components" are parts that, with repeated use, age, wear, and deteriorate, and their performance changes over time. These characteristics can cause serious mechanical or personal injury, and it is difficult to assess remaining service life by visual inspection or feel during operation.

If damage is found during a visual inspection, safety components should be replaced regularly, even if the specified replacement date has not yet been reached.

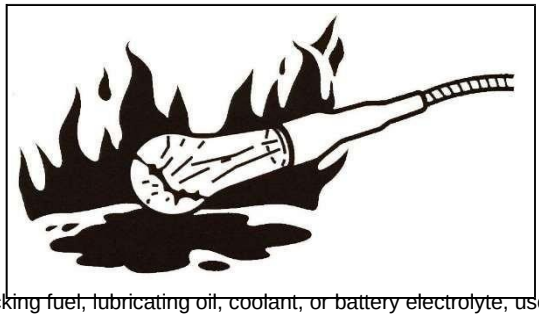
Hull		Regularly replacing important safety components	Exchange date y
Fuel system		Fuel line	Every 2 years
		Filling on the fuel tank cover	
System hydraulic ny	Main part	Hydraulic line (pump outlet)	
		Hydraulic hose (pump suction connection)	
		Hydraulic hose (rotary motor)	
		Hydraulic hose (walking motor)	
	Furnishingand no work That	Hydraulic hose (moving arm cylinder)	
		Hydraulic hose (pipe cylinder and ndra spoons)	
		Hydraulic hose (bucket oil cylinder)	
		Hydraulic line (rocking cylinder)	
		Hydraulic hose (earth shovel cylinder)	

Fuel lines should be replaced regularly. They wear out over time, even if they show no signs of wear.

Once you find any signs of wear, the first thing you should do is replace it, regardless of your replacement schedule.

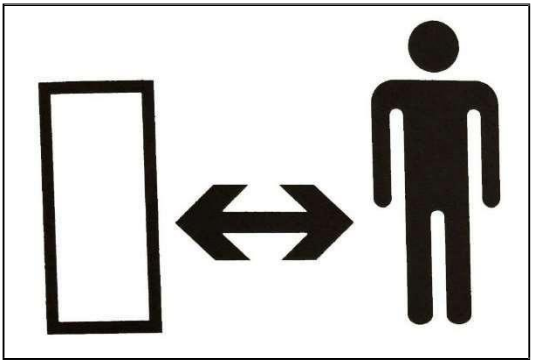
To ensure safe use of the machine, regular inspections and maintenance are necessary. To increase safety, the following important safety components should be replaced regularly. Failure to do so could result in serious injury or fire.

List of important safety elements Explosion-proof lighting



When checking fuel, lubricating oil, coolant, or battery electrolyte, use an explosion-proof lamp to prevent fire or explosion. Otherwise, an explosion could result in personal injury.

Only authorized personnel are allowed entry



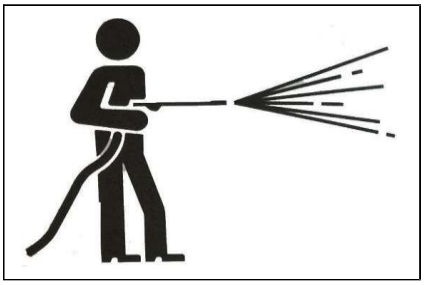
Do not allow unauthorized personnel into the work area during operation. Exercise caution when breaking, welding, or using hammers. Debris flying from the machine may cause injury.

Preparing the area of operations

Select a stable and smooth work area. Provide adequate lighting. When working indoors, ensure ventilation.

Remove obstacles and dangerous objects. Eliminate the risk of slipping.

Always keep the machine clean



Before carrying out maintenance, the machine must be cleaned.

Before cleaning the machine, turn off the engine. Cover electrical components to prevent water from entering them. Splashing electrical components with water may cause a short circuit or malfunction. Do not clean the battery, electronic control components, sensors, switches, or the cabin with water or steam.

Before carrying out maintenance, turn off the engine.

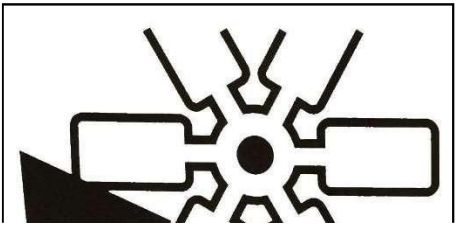
When the machine is running, or when it is not running but has the engine running, lubrication and mechanical adjustments should be avoided.

If maintenance must be carried out with the engine running, two people should be designated to work as a team and communicate with each other.

One person must be seated in the operator's seat to immediately shut off the engine if necessary. This person must be particularly careful not to touch the control lever and pedal unnecessarily.

The second person performing maintenance must ensure that his or her body and clothing are kept away from moving parts of the machine.

Away from moving parts



Keep away from all rotating and moving parts. Getting your hand or tool caught in rotating or moving parts can result in serious injury or even death.

If tools or other objects are dropped or inserted into the fan or fan belt, they may be blown away or sheared. Do not drop or insert anything into the fan or fan belt.

The machine and any parts that could fall must be secured.

Before starting maintenance or repairs, all moving equipment must be lowered to the ground or to the lowest position.

Track attachment

If you must work under a raised machine or equipment, always use a wooden block, a hoist, or another sturdy and stable support for the machine. Do not climb under the machine or equipment until it is securely supported. This procedure is especially important when working with a hydraulic cylinder.

Stable working device

When repairing or replacing bucket teeth or side teeth, the working equipment should be well secured to prevent accidental movement of the machinery.

The engine hood must be opened to maintain stability.

The hood or cover must be attached before operating the machine. If there is a strong wind or the machine is on a slope, the hood and cover must be closed.

be closed.

Place the weights in a stable position

During disassembly or installation, heavy objects or equipment are temporarily placed on the ground. Unauthorized personnel are not allowed to enter the area where such items are stored.

Precautions when refueling

Smoking and open flames are prohibited near the refueling area.

Do not remove the fuel or gas tank cap while the engine is running or warm. Do not spray fuel onto hot machine surfaces.

Fill the fuel tank in a well-ventilated area. Do not fill the tank completely. Leave room for oil expansion. Clean up any spilled fuel immediately.

Tighten the fuel tank securely. If the tank cap is missing, only the original tank cap can be used. Using an unauthorized fuel tank cap with poor ventilation can cause internal pressure to build up in the tank.

Dust protection

Installation and removal of parts should be carried out in dust-free areas, and the workshop and parts should be cleaned to prevent dust from entering them.

Surface cleaning

When installing or removing parts, ensure that their contact surfaces are clean. If the sealing groove on the contact surface is damaged, contact your sales or service agent for maintenance or repair.

Seal ring and pin

The removed sealing ring and pin must be replaced with new parts. Be careful not to damage or deform the sealing ring during installation.

sealing ring

If the pin is wrapped with sealing tape, remove the old tape from the thread and clean the thread.

Wrap the sealing ring around the thread, leaving 1 or 2 turns at the end of the pin.

Do not use fuel for cleaning

Use fuel and lubricants appropriate for the season.

The table below helps you choose the right fuel, lubricating oil, and grease based on temperature. Regardless of the scheduled change interval, if the oil is excessively contaminated or has deteriorated, it should be changed.

When refueling, do not mix different brands of oil. If you want to change brands, you must replace the entire fuel/lubricating oil.

Fuel and diesel fuel should meet the following specifications.

The table shows the current diesel fuel specifications worldwide.

Diesel fuel specifications	Place	Diesel fuel specifications	Place
GB252	China	BS2869-A1 or A2	Great Britain
ASTM D975 No.：1-D, S15	USA Canada	ISO 8217DMX	International
Biodiesel			

Biodiesel blended to B5 ASTM D6751, D7467			

EN590：96	EU	JIS K2204 second level	Japan
Biodiesel Biodiesel blended into B5 ENI4214, EN590			

Diesel fuel tank

To maintain engine performance and service life, always use clean, high-quality fuel. To prevent freezing in cold weather, use diesel fuel that can be used at actual temperatures at least 12℃ lower than the expected minimum outside temperature.

Diesel fuel with a cetane rating of 45 or higher should be used. When operating in mountainous or high-altitude areas, a higher cetane fuel is required.

Use fuel with sulfur content below 0.05~0.0015%. (Universal low sulfur fuel is used in the USA and Canada.)

High-sulfur fuel can cause sulfuric acid to corrode the engine cylinder.

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

Low-quality fuel will reduce engine performance or cause damage. Using fuel additives is not recommended. Some additives can impair engine performance.

The content of metals such as zinc, sodium, magnesium, silicon and aluminum must be limited to one millionth by weight (1 ppm by weight) or less.

When using biodiesel, the safety measures and warranty provisions of the engine manufacturers do not apply to machines that do not meet the standard or use biodiesel of lower quality.

Lubricating oil

API standard: American Petroleum Institute; ACEA standard: European Automobile Manufacturers Association.

SAE standard: American Academy of Automotive Engineers

*: If the ratio of the walking time to the total operation time is relatively large, the gear oil should be changed before the specified period expires.

**: Soft water should be used as water. Do not use well water or

river. When the outside temperature drops below 0℃, coolant (antifreeze) should be added.

The quantitative ratio is determined in accordance with the coolant manufacturer's instructions.

***: The hydraulic oil change interval depends on the type of oil used. If regular hydraulic oil is used, it should be changed every 2,000 hours.

Maintenance cycle

Daily maintenance 10 hours

• Place the arm and dipper arm and front attachment in grease	• Check structural parts for cracks or welds • Check all switches

• Check engine oil level • Check the oil level in the hydraulic oil tank • Check the hydraulic system for leaks • Check fuel oil level • Check oil-water separator • Check the fuel system for leaks Check the cooling system and top up coolant if necessary • Check the glass cleaning fluid level Check the wear of the bucket teeth and side teeth Check that the engine fan belt is not cracked or worn and that the tension is correct Weekly maintenance 50 hours	control • Check all exterior lights, speakers, control indicators and indicator lamps • Start the engine, check the engine operation after starting, check the color of the exhaust gases at start-up and during normal operation, check for noise • Check all control switches • Check bolts and nuts to prevent loosening and loss • Check the tension of the track parts and whether they are loose, broken or making noise (rail joints, track shoes, carrier teeth and steering wheels) • Clean the engine air filter cover
• Carry out review What10 hours/daily • Injecting grease into the shaft seat • Pour grease into the pivot bearing check the fuel tank drain valve	• Exchange oil engine andfilter insert • To check tank water, radiator oil and core air conditioner capacitor • To check liquid and chargingbattery • Clean the fuel tank filler filter

Maintenance 100 hours

• Perform 10-hour/daily maintenance and 50-hour inspection • Clean the air intake filter	• Hydraulic oil change • Replacing the hydraulic oil filler filter

Maintenance 200 hours

• Carry out all inspections every 10 hours/daily, every 50 hours/weekly and every 100 hours	• Change engine oil and filter element

Monthly maintenance 250 hours

• Carry out all inspections every 10 hours/daily and every 50 hours/weekly. Control Remove any dirt from the hydraulic tank	• Check the wear of the pin and sleeve front toolsworking Check the clamp fuel system hose

500-hour maintenance per three months

• Carry out all inspections every 10 hours/daily, every 50 hours/weekly, every 100 hours, every 250 hours • Replacing the fuel filler filter (• Replacing the water tank coolant	• Replacing the hydraulic oil filler filter • Replacing the air filter element Check the oil level on both sides of the reduction device

1000 hour maintenance per six months

•Perform all 10-hour/daily, 50-hour/weekly, 100-250-500-hour inspections • Hydraulic oil change and cleaning the oil filter	•Exchange oil devicesreduction (both sides) • Check and tighten the purge valve Check the screw for looseness •

Maintenance 1200 hrs

• Perform all 10- and 50-100-hour inspections

Annual maintenance 2000 hours

• Carry out all inspections daily, every 50, 150, 250, 500 and 1000 hours • Check generator and starting motor • To check all rubber blankets resistant on shocks	• Test each cycle and record the results • Inspect welded parts for cracks or damage to open welds or other structural parts
• important elements – periodic replacement	

Maintenance 4000 hours and two years

Maintenance

every 10

hours/daily

Bolt,bucket

and front joint

shaft

1. every 10 hours, the front connector is filled with grease.

As shown below, with the work tool on the ground and the engine off, press the grease nozzle and grease gun to lubricate the selected point.

2. After filling, clean the used oil.

1. Fuel injection port	9. Arm and bucket connecting pin
2. Front blade cylinder connecting pin and front blade	10. Bucket and oil cylinder connecting pin
3. Lower and front blade oil cylinder connecting pin	11. Bucket and rod connecting
4. Upper cylinder and arm connecting pin	12.Connecting pin

5. Arm and upper frame connecting pin 6. Arm cylinder and pin connecting pin 7. Connecting pin of the movable arm and the bucket shaft oil cylinder 8. Bucket rod and bucket rod oil cylinder connecting pin	13.Connecting pin of the pendulum 14. Pusher and bucket connecting pin 15. Lower frame and front frame connecting 16.Rotary auxiliary port

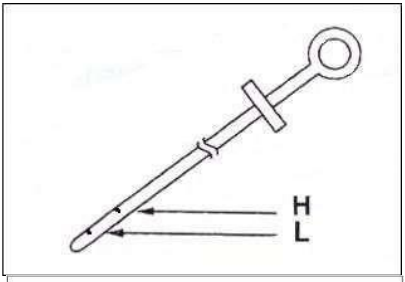
Checking the engine oil level

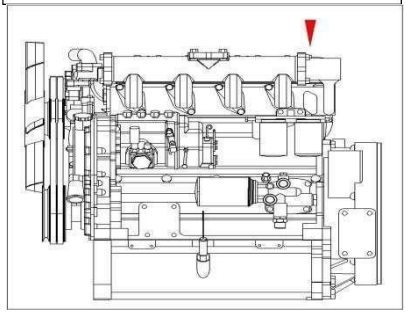
1. Stop the engine and check it after 15 minutes. This allows all the oil to drain back to the oil pan.

2. Check the engine oil level using the oil level gauge.

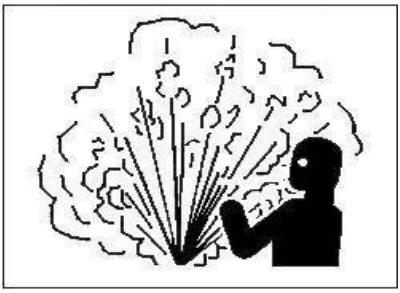
3. The engine oil level on the dipstick should be between H and L.

4. Oil can be refilled through the oil cover.





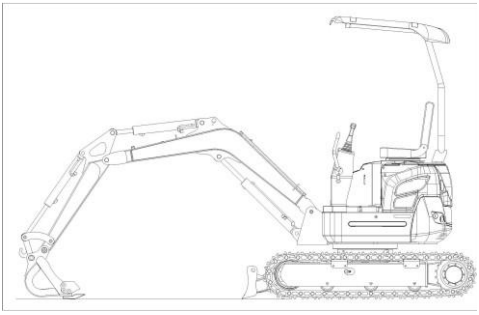
Verification oil level in the tank hydraulic oil



Warning
When hydraulic oil operates normally, its temperature rises. Before servicing hydraulic parts, first lower the oil temperature. The gas in the hydraulic tank is under pressure. First, slowly release the cap from the hydraulic oil tank and release the air from the tank. and then remove the infusion

1. The machine should be on level, solid ground, as shown in the illustration. The small arm should be extended and the bucket lowered to the ground.

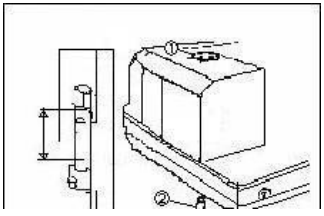
2. Turn off the engine.



3.

After turning the engine off, turn the ignition switch to the "open" position and move all the rods (including the stepper rod) several times to the limit position to release any residual hydraulic pressure, then remove the key.

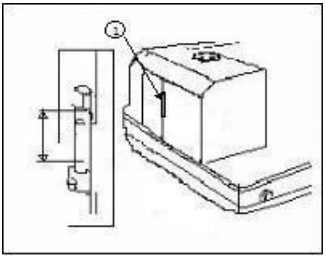
4. Check the oil level, the oil level line is between the required marks, if the lower limit is below, check the oil level.



Important

The oil level should not exceed the "H" mark. Overinjection can cause equipment damage and oil leakage. Excess oil should be drained from the bottom of the tank.

Check the hydraulic system for leaks. Daily after work, inspect hoses, hard pipes, connectors, cylinders, and motors for signs of leaks. If present, check for leaks and repair.



Check the fuel oil level

Warning

When adding oil, special safety precautions should be taken to avoid prevent explosion and fire.

1. Before refueling, ensure the fuel hose is attached to the excavator. Monitor the fuel level to check the volume of fuel poured in. Pour fuel into the tank through the pipe; the tank capacity should be is 55 liters.
2. Do not pour in too much fuel.
3. Finally, press down the fuel change cover.

Note: If the fan opening is blocked, a vacuum will form in the fuel tank. Fuel cannot be fully delivered to the engine. Therefore, keep the fan opening clean.

4. Before starting normal operation, check the fuel gauge in the operator's cab.

Note: Of course, when the oil drops to 3 liters or less, the low fuel warning light comes on.

Note: You can refill the fuel tank after the operation is complete. The tank capacity is 55 liters.

Oil-water separator inspection

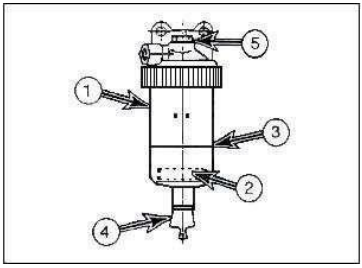
1. Open the hood, check the oil-water separator tank, water and red fluid.

2. Drain water when close to warning line.

3. Open the drain valve at the bottom of the tank.

4. Close the valve carefully after draining.

5. The cap on the top of the oil-water separator cannot be reused. If it is loose, it must be replaced and tightened.



Check the fuel system for leaks

Inspect all engine parts to ensure there are no fuel leaks. If oil is leaking, investigate the cause and repair it.

Check the cooling system and add coolant if necessary.

▲Warning

Before liftingengine cover leave the engine to cool down so that the cover can be slowly loosened without leaving residual pressure.

When the engine is running, clean the water tank. Stand next to the engine or use caution when operating. Make sure parts are securely fastened.

Do not open the water tank cover quickly, observe the coolant level in the reserve tank.

1. Once the engine has cooled, lift the water reservoir cover and check the coolant level. If necessary, add coolant to the water reservoir according to the table below. Adding coolant can protect the reservoir.

Ambient temperature	Cooling water	Antifrieze
-10℃（15°F）	80%	20%
-15℃（5°F）	73%	27%
-20℃（-5°F）	67%	33%
-25℃（-15°F）	60%	40%
-30℃（-20°F）	56%	44%
-40℃（-30°F）	50%	50%

Check the cleanliness of the operating table

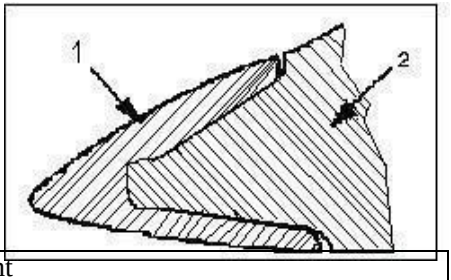
1. Check the cleanliness of the workbench. The view should not be obstructed.
2. The operating table is clean. The operator can drive the machine without any problems.

Note: When cleaning the workbench, do not rinse the wiring harness to prevent unnecessary problems in the electrical system. After cleaning, take care
for environmental protection.

Check the wear of the bucket teeth and side teeth

1. Check the wear of one bucket tooth daily.

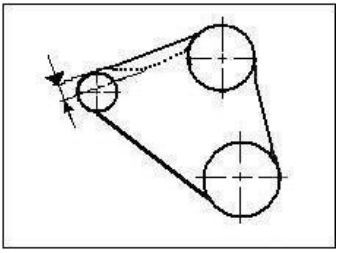
2. Replace severely worn bucket teeth in good time, otherwise the second row of teeth will be exposed.



Check engine V-belt wear or tighten

Important

If the V-belt is too loose, the engine will overheat and it will not run well. function and will cause wear. Too tight will damage the bearings and belts of pumps and generators.



1. check every 10

2. Turn off the engine, align the V-belt with the center tie rod to check the strength. The pressure is 98 Newtons (10 kg), and the belt sags 8-12 millimeters. As shown in Fig. 4-18. Adjust the belt if necessary.

3. Check the engine belt for wear or breakage, and for damage to the connector. If so, install a new belt.

Adjust the belt tension

Note: If the belt is skewed, it needs to be adjusted.

1. Release the adjusting screw and the adjusting plate adjusting screw.

2. Tilt the generator to adjust the belt lifting force.

3. Adjust and tighten the screws.

4. Let the engine idle for 5 minutes, readjust the belt tension.

Inspection for cracks on structural parts and welds

During daily inspections and lubrication, the machine should be inspected for damage. Repair or replace it before operation.

Check the operation of all exterior lights, speakers and control indicators.

1. Set the switch to the “open” position and observe the control indicators.

2. Repair all light bulbs.

3. Press the horn, if there are any problems, repair or replace.

4. Open and check all exterior lights, replacing burned-out bulbs and cracked lenses.

Start the engine, check its cranking, observe the color of the exhaust gases during starting and running, and check for any unusual noises.

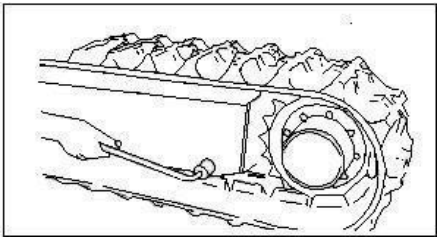
Check the operation of all control devices

Important
The hydraulic oil must be fully warmed up before starting work in low temperature.

For more information on the heating stages, refer to the Operations section of this manual. Hydraulic oil circulates through all components (including all cylinders, stepping motors and rotary motors). Cold hydraulic fluid in pipes and components must be warmed up before normal operation begins. Otherwise, damage to the hydraulic cylinder will occur.

1. Check the control device at constant speed.
2. Start the cold hydraulic system to begin warming up.
3. Be alert for any slow or unusual movements. Determine the cause and correct it before starting work.

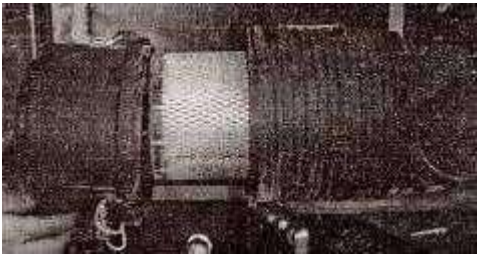
Check that the bolts and nuts are not loose or have not fallen off "Check bolts and nuts"



Check that parts (track links, track shoes, support wheels, steering wheels, drive wheels) are not too tight, too loose, worn or damaged.

1. Inspect all track parts daily for wear, damage, or wear. "Track Durability"
2. Completely refill two tracks and perform two speed tests. Clean the engine intake filter.

1. Remove the outer cover of the latch spring.
2. Clean the inside of the air filter.



Maintenance every 50 hours/weekly

Carry out maintenance checks every

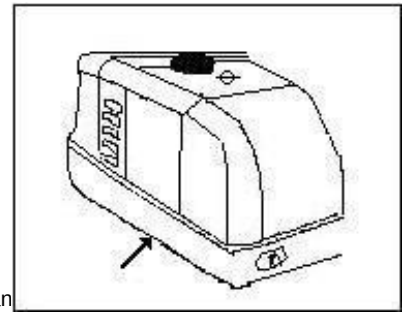
10 hours/daily

Lubrication of the pivot support

1. Apply two or three parts grease to the nozzle.

2. Raise the bucket 20 centimeters, rotate the platform twice, each time 90 degrees, lubricate the swivel bearing.

Fuel Tank Oil Drain Valve Open the valve at the bottom of the tank to drain water and other objects.



Oil change and fuel filler filter

After the initial 50 hours of operation, chan

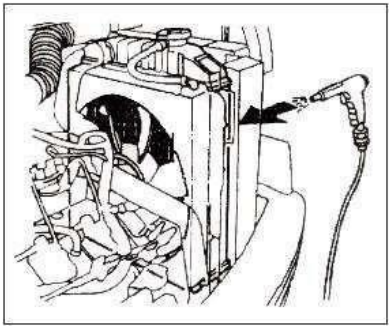
hours. Cleaning the oil cooler, water tank, and air conditioner condenser core

▲Warning
Clean the radiator using pressurized water or steam and ensure that workers are at appropriate work stations. High pressure can damage the radiator and oil cooler.

1. During the cleaning process, employees must wear appropriate protective equipment (safety footwear, etc.).

2. Clean the radiator with water or pressurized steam and drain the water from the radiator and reservoir. Clean the exterior of the engine, then remove dust and debris from the interior.

Note: Cover the air filter assembly intake to prevent water and other objects from entering the engine.



Check the battery level and condition

Check the battery condition, "battery".

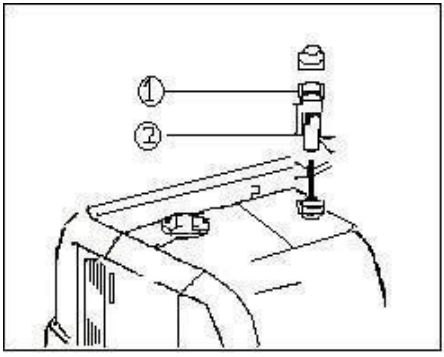
Battery Separator Vent
Cover Water Scale Line
Battery
Positive plate
Negative
plate
Shell

	Partition Battery compartment Water hole Positive terminal Negative connection

Clean the fuel tank inlet

Open the fuel tank cover and remove any dirt from the filter.

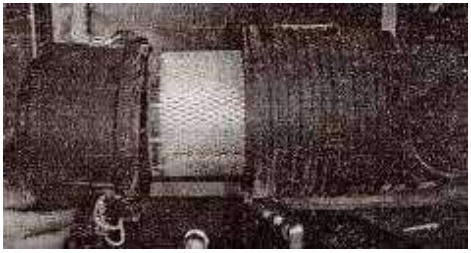
▲Warning
Be careful when refueling or repairing fuel tanks to prevent fire or explosion. Clean up spilled oil immediately.



Maintenance 100 hours

Carry out all checks every 10 hours/day and every 50 hours/week. Clean the fuel filler filter and air filter.

▲Warning
Do not clean or move the air filters while the engine is running. If compressed air is used to clean parts, please use means eye protection.



1. Install all filter parts, insert the cover and components into the air purifier.

Note: If the indicator panel displays "open", you need to

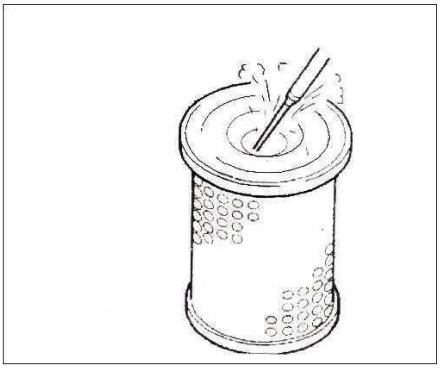
open the air purifier

Note: The filter element must be replaced every 500 hours / three months.

2. The filter element is cleaned internally and externally with compressed air. The pressure should not exceed 205 kPa (0.2 MPa).

3. Clean the air filter housing and side cover.

4. Install the air filter and side cover correctly. Tighten the wing nut by hand without using tools.



Hydraulic oil change

For a new machine, the first hydraulic oil change is after 100 hours and then every 1000 hours.

Replacing the hydraulic filler filter

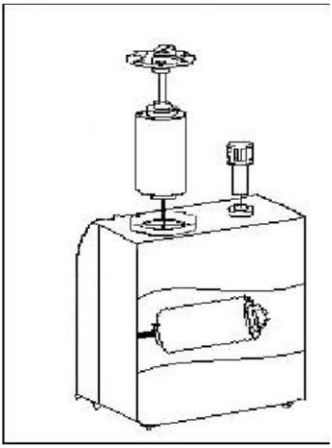
Warning
After operating the machine, the hydraulic oil is very hot. Before servicing hydraulic parts, allow the oil to cool sufficiently. The air in the hydraulic reservoir is under pressure. Slowly loosen the hydraulic reservoir screw plug to relieve the pressure; then you can safely remove the cover or cap and dispose of the

water from the tank.

Important

Water and dirt should be cleaned from the top of the hydraulic tank, especially around the filler necks and filter element installation ports.

Note: The hydraulic oil filter element should be replaced after the first 100 hours of operation and then every 500 hours. For more information, refer to the replacement program under "Replacing the Hydraulic Filler Filter."



Maintenance 200 hours

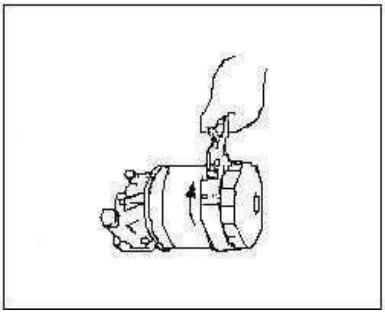
Carry out all checks every 10 hours/daily, every 50 hours/weekly and every 100 hours. Change oil and filler filter.

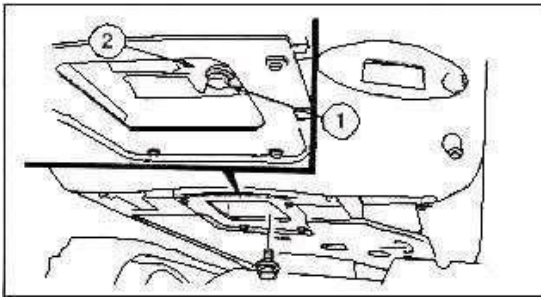
Note: The first replacement occurs after 50 hours, then every 200 hours.

▲Warning

Do not change the engine oil when the engine is hot. Allow the engine to cool before changing the oil or filter element.

1. Remove the oil drain plug under the oil pan, drain the oil into the reservoir, install and tighten the oil plug.





2. Replace the oil filter element. It is installed by tightening and is replaceable.

3. Install the new filter element, apply a small amount of oil around the oil filter ring, rotate the filter element until the top contacts the washer, then tighten 3/4 turns.

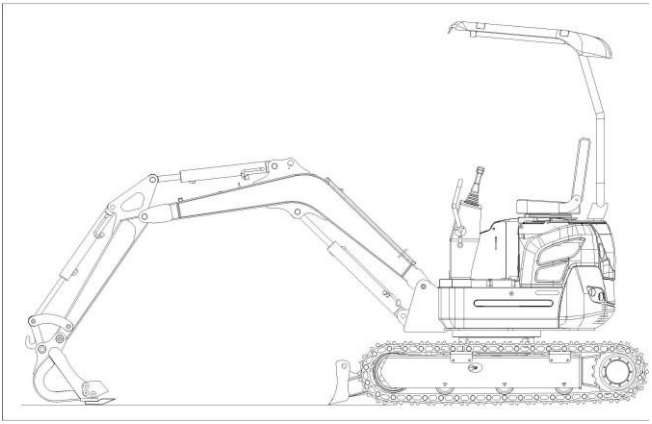
4. The correct type of oil can be selected according to the list of recommended lubricants.

5. Start the engine, check the oil pressure.
6. Turn off the engine and check the oil filter element for leaks. Maintenance 250 hours/month

Carry out all checks every 10 hours/day and every 50 hours/week, drain water and remove debris from the hydraulic tank.

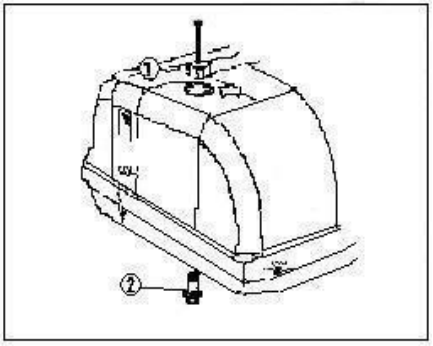
1. Place the machine on a horizontal surface and place the bucket on the ground.

2. Turn off the engine



3. Once the oil temperature has dropped, loosen the hydraulic oil tank filler cap and drain the oil tank.

4. Slowly release the drain plug at the bottom of the reservoir. 2. Drain any water and debris. Then install and tighten the oil plug.



Check the wear of the connecting pin and Check the mounting of the cable to the system Maintenance 500 hrs / three months

Carry out all checks every 10 hours/daily, every 50 hours/weekly, every 100 hours and every 250 hours.

Replacing the filler filter

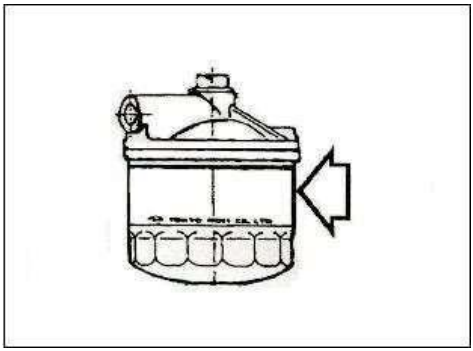
▲Warning
Once the engine has cooled, you can replace the fuel filter. Be careful around fire; no smoking is allowed.

1. To exchangeen gine filler filter.

2. Place a small container at the bottom of the fuel filter.

3. Fuel from the filter settles under the rotating filter cover, remove it fuel filter.

4. After cleaning the top of the filter, install the new fuel filter, then rotate it until the washer contacts the top; rotate 1/2 turn again.



Note: Pour fuel onto the fuel filter pad.

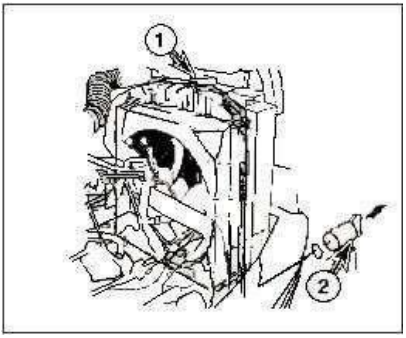
Note: Fill the fuel filter housing with clean fuel, which may purge air from the fuel system.

5. Run the engine for 1-2 minutes, then shut it off and check for leaks.
Replacing the coolant in the radiator

▲Warning
First, allow the engine to cool, then slowly loosen the cover to relieve internal pressure. Clean the radiator with the engine running. Be careful when working with the engine running. Make sure the emergency stop rod is in closed position and post signs reminding that the excavator is being repaired.

If it is not necessary to remove the radiator cap, observe the coolant level in the reservoir tank.

1. Slowly open the radiator top to release the pressure.
2. Place a container under the radiator and unscrew the drain valve.
3. After draining the coolant, close the discharge valve.
4. Pour cleaning fluid into the cooling system.
5. Idle the engine until the coolant temperature displays in the green area. Let the engine run for another 10 minutes.
6. The engine is cooled down.
7. Drain the cleaning fluid and fill the system with water.
8. Turn the engine back on to allow the water to fully circulate.



9. Drain all water; refill the system with antifreeze appropriate for the ambient temperature. Refer to the coolant configuration table for more information.
10. Leave the radiator cap off, start the engine to purge the air, fill the radiator to 50mm from the top.
11. Drain the coolant into the reserve tank, drain the fluid from the evaporation tank, and then refill it with new fluid.

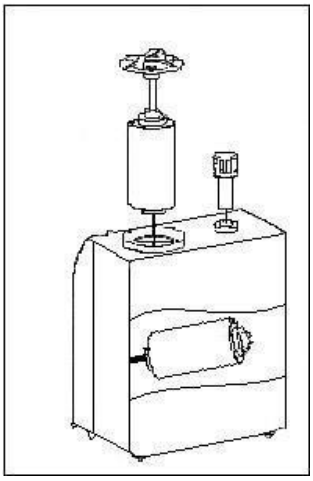
Replacing the hydraulic oil filler filter

Important

Remove any moisture and dirt from the top of the hydraulic tank, paying particular attention to the filler necks and filter element installation ports.

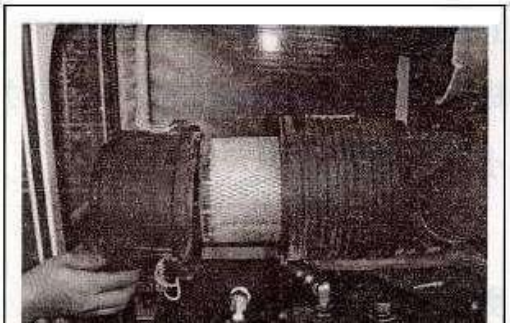
Note: After 100 hours of operation, the hydraulic oil filter element should be replaced, then every 500 hours.

1. Slowly loosen the cap, then loosen the filter;
2. Unscrew the screw, remove the top cover and sealing washer, loosen the nut and remove the dirty filter element.
3. Remove the original filler filter.
4. Install the new filter element and O-ring, attach the valve, spring and top cover.
5. Check the oil level in the hydraulic tank, add hydraulic oil if necessary.



Replacing the air filter element

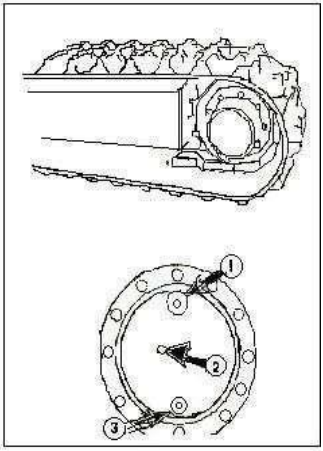
Replace after every 500 hours of operation / three months



Check the oil level of the walking gear reducer on both sides of the walking gear

▲Warning
After operating the machine, the lubricating oil is very hot. The entire operating system should be turned off to allow it to cool. Before removing the cap, thread on the coating, unscrew the screw and reduce the pressure.

Note: After the first 500 hours of operation, drain the old oil. Change the oil every 1000 hours.



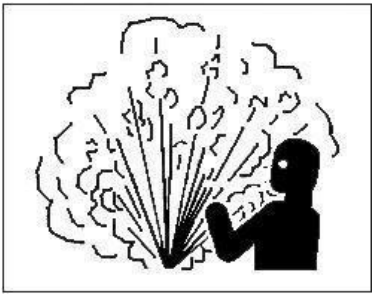
1. Make sure the machine is operating on a stable surface. Remove the old oil from the decelerator.
2. Rotate the track until the oil port is at the end of the plate.
3. Remove the plug, top up the oil to the level of the oil port, replace the plug.
4. Repeat these steps on the next walking motor.

1000 hr/six month maintenance

Carry out all checks every 10 hours/daily, every 50 hours/weekly, every 100 hours, 250 hours and 500 hours.

Hydraulic oil change

▲Warning
After normal operation, hydraulic oil is very hot, so it must cool before hydraulic components can be repaired. The hydraulic reservoir is pressurized. To release the pressure, slowly remove the cap on top of the reservoir. Only after the pressure has been released can the oil reservoir cap or top cover be safely removed.

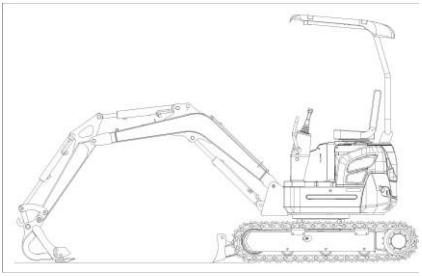


Important
Make sure that dirt and moisture are removed from the hydraulic reservoir, especially around the filler hole and filter opening.

Note: Depending on the type of excavator and special equipment mounted on the front of the excavator, such as a crusher, the hydraulic oil change interval may be shorter.

Note: Change the hydraulic oil after the first 100 hours of operation, then change it every 1000 hours.

1. Place the machine on a solid surface. Rest the bucket on the ground as shown.



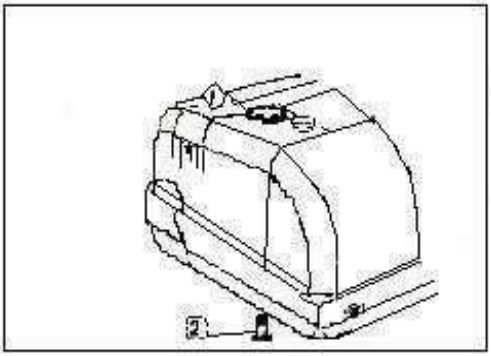
2. Turn off the starter key and turn off the machine.

3. Slowly open the reservoir cap and release the pressure. Remove the plug and drain the old oil into a 120-liter container.

4. Then insert and tighten the cap

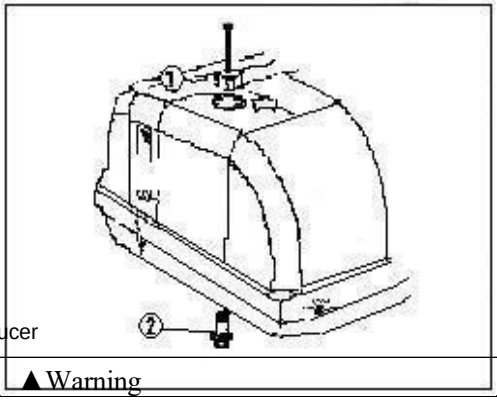
Important
Be careful not to splash oil when the oil plug is removed.

5. Open the top cover ①.



6. Fill the tank and check the pi o c de of the tank

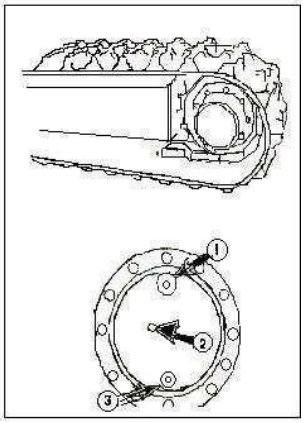
7.Put on the top



Change the oil in the stroke reducer

▲Warning
After working with the equipment, the lubricating oil is very hot, so you need to turn off the operating system to let it cool down. Before removing the engine cover

thread in the hole, slowly loosen the plug to relieve the pressure.



Note: After the first 500 hours of operation, drain the old oil and repeat this every 1000 hours.

It should be noted that the gearbox capacity is 0.6 liters and the oil cannot be mixed.

1. Park the machine on solid ground.

2. Turn the track untilthe plug ① will contact ③ as shown in the figure.

3. Place a container under the plug, remove the plug (① and ③) and drain the oil.

4. Insert the screw plug ③, then remove the plug from the lower hole and pour new oil through the hole ① until the oil level reaches the hole ②, insert the plug (① and ②).

5. Repeat the above steps for the next walking motor. 11.77- 12.5Nm ／1.27- 1.30Kg.m.

Note: knob torque 46 - 51Nm / 4.7-5.2Kg.m, intermediate plug 11.77-

12.5Nm / 1.27-1.30Kg.m

Check and adjust purge

valve.

Check the screw torque.

* * by Gunter Grossmann agents assigned to heavy equipment.

Maintenance 1200 hrs

Carry out all checks every 10 hours/daily, every 50 hours/weekly and every 100

time.

Maintenance 2000 hours per year

Carry out all routine inspections 50150250500 and 1000 hrs. Check generator and starter motor (performed by Gunter Heavy Industry Agent).

Check all rubber shock-absorbing devices. Carry out periodic inspections and record the results.

Check that welded structures are free from cracks, welds or damage.

Maintenance 4000 hours / two years Periodic replacement of important components

To ensure safe operation and operation, periodic inspections should be carried out and the following parts should be replaced, which are easily subject to wear, heat or material fatigue and should be replaced at a specified time, even if they appear good.

Replace related parts, such as washers and O-rings, frequently. Use only clean products.

<table>
<tr><th colspan="2">Main elemen t</th><th>Parts replaced periodically</th><th>Exchange date</th></tr>
<tr><td colspan="2" rowspan="3">Engine</td><td>Fuel line (oil tank to filter)</td><td rowspan="7">Every 2 years or 4000 hours</td></tr>
<tr><td>Fuel line (fuel tank to fuel injection pump)</td></tr>
<tr><td>Heating cable (heating element connected to the engine)</td></tr>
<tr><td rowspan="4">System hydra streets of Zny</td><td rowspan="3">Main part</td><td>Vacuum hose for pump oil</td></tr>
<tr><td>Oil pump hose</td></tr>
<tr><td>Swivel cable</td></tr>
<tr><td rowspan="2">Furnishin enie working</td><td>Arm cylinder cable</td></tr>
<tr><td>Bucket cylinder hose</td></tr>
</table>

Note: Dismantling of cables and electrical components is strictly prohibited, please discuss this with Gunter Grossmann Heavy Industry Agents.

Battery

▲Warning

Before performing any maintenance on the battery, make sure the engine is turned off and the starter switch is in the “OFF” position.

The battery can produce hydrogen gas. An uncharged battery poses a particular risk of explosion. Ensure the battery is free from flames, flammable materials, and sparks. The electrolyte is diluted sulfuric acid. The battery should be stored carefully, as the electrolyte may ignite. If the electrolyte comes into contact with clothing or skin, immediately rinse with plenty of water. If it gets into your eyes, immediately flush thoroughly with water and seek medical attention immediately.

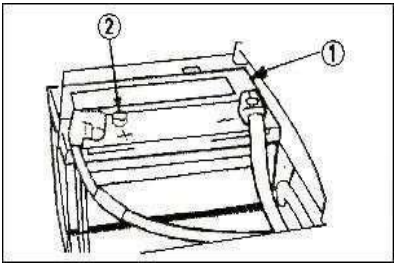
When installing the battery, wear safety glasses. When removing the battery, the "ground" terminal or grounding clamp should be removed first to avoid causing a spark or electric arc and explosion. When installing the battery, connect the "+" terminal to "pole" to ensure a solid clamp connection.

1. During cold winters, when the engine is started and pre-warmed, battery consumption is high and its lifespan decreases as the temperature drops.

2. During particularly low outdoor temperatures, the battery can be removed overnight and placed in a warm place, which helps improve its lifespan.

3. Check the battery level.

Note: The battery installed in the original factory is maintenance-free and the battery fluid only maintains the proper level u



4. The battery charge status can be checked on the indicator mounted inside by observing its brightness.

- Green: normal
- Black: insufficient charge, check generator.
- Transparent: too little electrolyte, insert a new battery.

Note: Colors displayed may vary depending on the manufacturer.

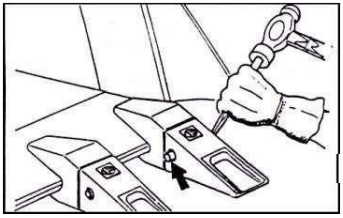
Please refer to the appropriate battery manual.

Replacing bucket teeth

▲Warning
Due to the risk of flying objects, wear a helmet, gloves, and safety glasses when replacing bucket teeth. Raise the bucket and place its surface firmly on the ground behind the bend. Shut off the engine, lock the control handle, and replace the bucket tooth.

1. Establish a reference point, frequently check for wear or crack progression, prevent bucket teeth from severely wearing resulting in external cracks as shown in the picture.

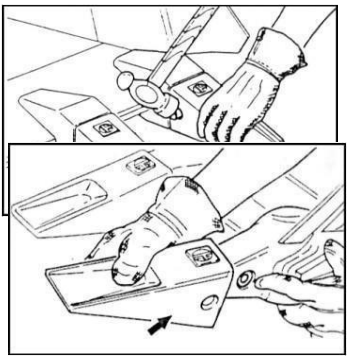
2. Replace the blade teeth, using a hammer and a punch to remove the washer protective

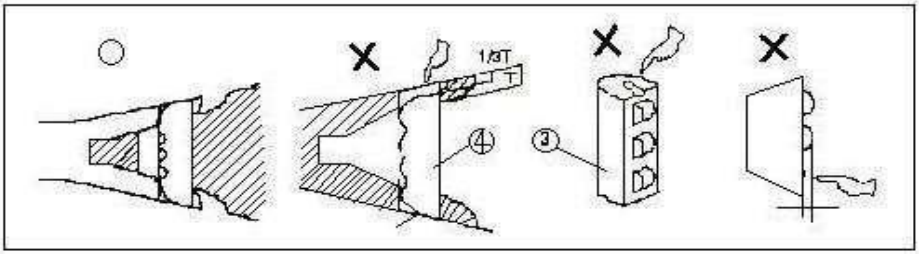


3. After removing the spoon teeth, scrape the spoon socket as far as possible with a knife.

4. Insert new bucket teeth and attach the
locking pin.

5. The bucket teeth and locking pin are replaced at the same time



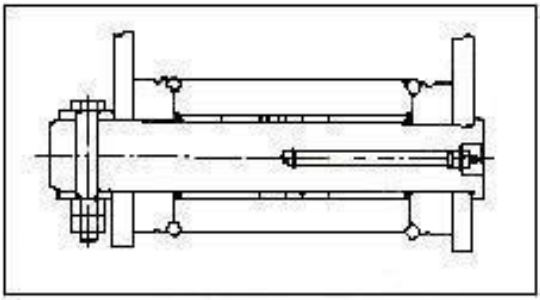


Check the locking pin. Replace it if any of the following conditions occur.

1. When the two surfaces are straight, the pin is too short.

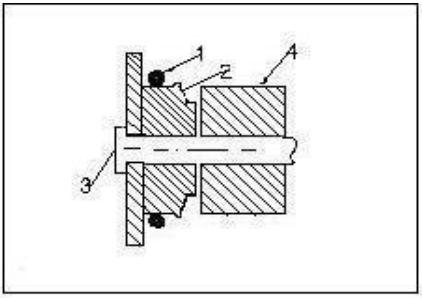
2. The rubber track has a side crack and the ball slips easily.
Replacing the bucket O-ring

1. Replace the bucket O-ring. If worn, replace as needed.



needs.

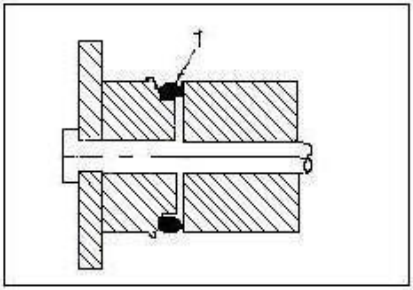
2. Slide ring 1 into sleeve 2, then remove bucket pin 3 and pull out the bucket rod or bucket link pin.

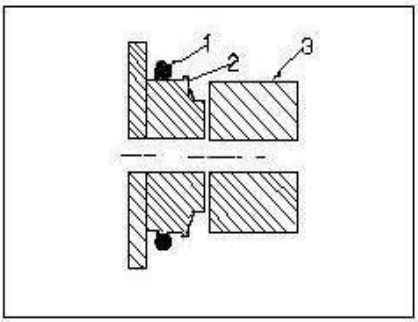


3. Remove the old ring, attach the new ring 1 to the sleeve 2, make sure that the round groove and the bucket sleeve on the adapter are aligned.

4. Direct the bucket linkage into the pin hole and install the bucket pin.

5. Roll ring 1 into the round window.





Check the locking pin. Replace it if the following occurs.

1. When the two surfaces are straight, the pin is too short.

2. The rubber track has a side crack and the ball slips easily.

Replacing the bucket O-ring

▲ Warning
Due to the risk of metal splashing, gloves, safety glasses and helmets should be worn when replacing pins.

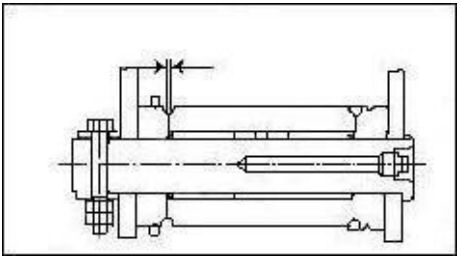
MethodAdjust
ments and
data
Installing a
new bucket

1. To install a new bucket, measure the size of the inner bucket ear and the width of the bucket sleeve.

2. These two dimensions are reduced by the seal size on both sides.

▲ Warning
When checking the bucket connection for play, the bucket should hang freely. Otherwise, lower it to the ground or secure it with a support leg. the engine should be turned off, the control mechanism locked, hanging out warning and bucket movement should be prevented.

How to add seal when installing and replacing a bucket.



1. When the bucket is connected, it is lifted and the bucket rod extends outward. Lower the movable arm and set the bucket teeth to a height of 50~100mm from the ground. In this position, the measurement can be conveniently performed.

2. After installing the O-ring, lay the bucket on its side and check the gap between the other side of the bucket and the bucket sleeve. The total gap between the inner ear and the bucket sleeve should be 0.2 0.7mm. If the gap is too large, wear will be increased, the equipment will produce excessive noise, and operation will be imprecise.

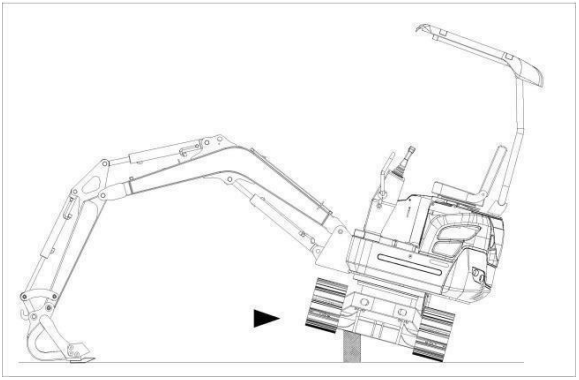
3. Place the spoon on the other side and check the gap again.

4. When adjusting, remove the screws and pins, remove or raise the seals as needed, and use the same number of seals on both sides. Track tensioning

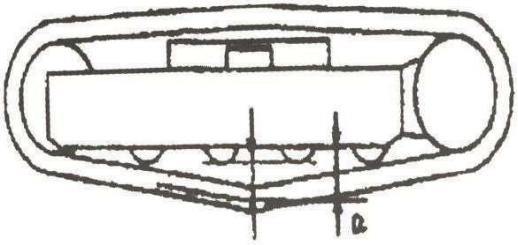
▲Warning
Safely measuring the track tension requires 2 people, one of whom drives the excavator so that one caterpillar does not touch the ground and the other person does Measure the size, taking into account the movement of the machine. Place the excavator on flat ground, using a support block if necessary. The pressure in the track adjustment cylinder is very high, so it must not be release suddenly. Do not loosen the entire wheel at once; reduce the pressure slowly. At the same time, the body must be away from the valve housing.

The track chain insert and connecting pin wear during normal operation, so track tension decreases. Periodic adjustment is necessary during normal operation.

1. Check the tension on the side of the track.

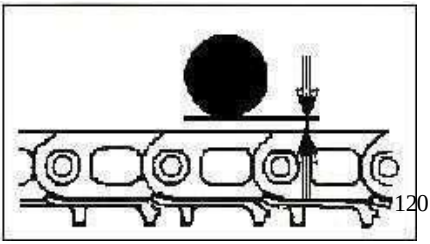


2. Measure the gap between the outermost wheel rim and the lowest point of the track. The recommended value is 10 to 20 mm (equal to 180 to 190 mm). Note: If there is excessive dirt, dust, or other substances on the chassis, the measurement will not be taken. Therefore, clean the chassis before taking the measurement.

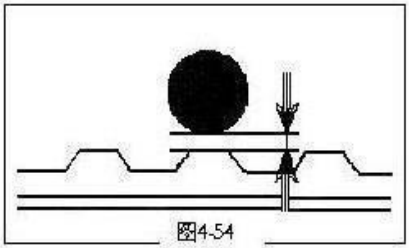


Note: Inspection and adjustment are the same for both track and rubber belt machines.

3. The measured gap between the middle support wheel and the top link of the rail joint should be 20~35mm.

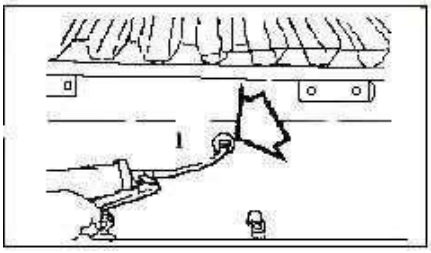


4. The distance between the rubber tracks is 1520mm.

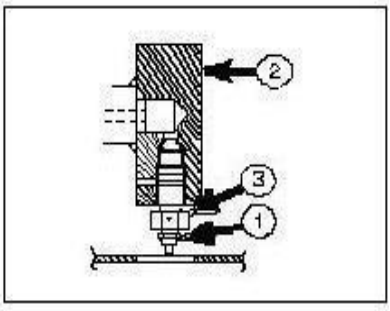


▲Warning
The pressure in the track adjustment cylinder is very high, so it must not be release suddenly. Do not loosen the entire wheel at once; reduce the pressure slowly. At the same time, the body must be away from the valve housing.

5. The track tension is adjusted by installing 1 in the middle of the chassis side frame.



6. If the track has too little play, it means it is too tight.



Note: Set the valve torque to 59 - 88N.m/6 - 9Kg/m. Maintenance in special conditions

Conditions	Maintenance requirements
Working in the mud, water or rain	1. Check that the connector is not loose. 2. After work, clean the machine of mud, stones and gravel, check welds for damage and parts for looseness. 3. Perform daily lubrication and maintenance. 4. When working in acid rain or with corrosive substances, rinse affected parts with clean water.
Working in a particularly dusty environment or hot	1. Clean the suction filter more often. 2. Wash the oil cooler and water tank and remove any accumulated dust and sediment. 3. Clean air and other filter elements more often. 4. Check and clean the engine and generator as necessary.
Working in a rocky environment	1. Inspect the undercarriage and track for damage or excessive wear. 2. Check that connectors and screws are not loose or damaged. 3. Loosen the track. 4. Check the bucket or crusher more frequently for damage or excessive wear. 5. If necessary, replace the top and front frames to avoid damage from falling objects.
Working in a particularly cold place	1. Use fuel, hydraulic and lubricating oils appropriate for the ambient temperature. 2. Check the antifreeze with a hydrometer to ensure it has adequate performance. 3. Make sure you know the temperature around the battery, especially

When it is cold, remove the battery and store it in a warm place overnight.

4. Quickly remove mud from the body to prevent damage to the equipment.

Checking bolts and nuts

All fasteners are inspected after 50 hours of operation and 250 hours after initial operation. If loose or missing, tighten components or add new components using torque wrenches.

Clean the connector before crimping.

If counterweight pins are loose, consult your Gunter Grossmann heavy industry agent.

Note: During installation, remove rust, sand, dust, and mud. Lubricate to reduce wear.

Long-term storage

Conditions	Maintenance requirements
Cleaning	1. Clean the undercarriage and track assembly with a high-pressure washer.
Lubrication	1. Perform normal lubrication procedure. 2. Apply rust-preventing oil to the surfaces of exposed metal parts such as hydraulic cylinder piston rods, etc. 3. Apply oil to all joints and steering cylinders.
Battery	1. After charging the battery, remove the battery or battery cable and store it.
Cooling system	1. Check that the fluid level in the coolant reservoir is within normal limits. 2. Check the antifreeze or coolant level every 90 days or 750 hours.

Hydraulic system

1. Familiarize yourself with the method of heating the system
2. hydraulic system described in this manual,
3. start the engine once a month.

Handling the flexible hose

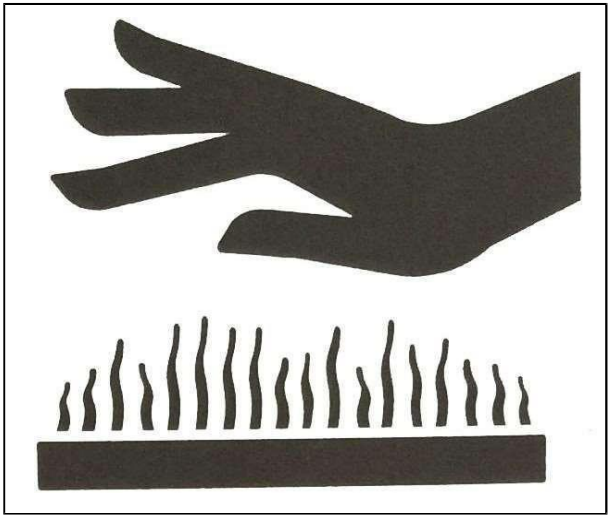
Leaking oil or fuel may cause a fire.

The flexible hose must not be twisted, bent or crushed.

Do not use twisted, bent or cracked pipes, metal tubes or hoses, otherwise they may burst.

Tighten the loose connection.

Use caution when handling parts in high temperature and high pressure environments.



Before carrying out further maintenance, turn off the engine and wait for the machine to cool down.

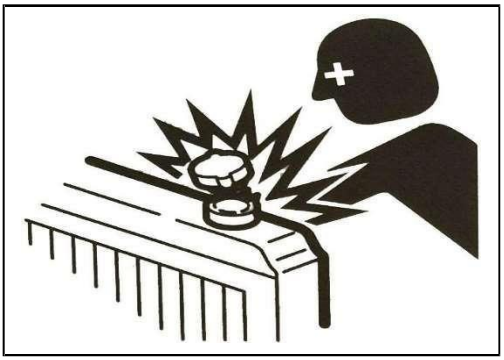
Engines, exhaust pipes, radiators, water lines, sliding parts, and various other machine parts are very hot immediately after the engine is turned off. Touching these parts can cause burns.

Engine coolant, hydraulic oil and other oils are also subjected to high temperatures and high pressures.

Do not touch the hydraulic oil when removing the cover or

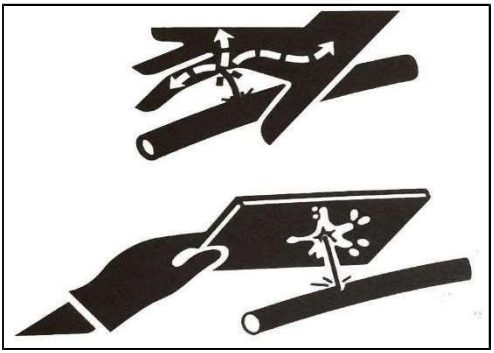
loosening the plug. If the machine is running at this time, hot oil splashes may cause burns or other injuries.

Handle the hot cooling system with care.



Do not remove the radiator cap or drain plug while the cooling water is hot. Turn off the engine and allow the cooling water and engine to cool. Then slowly loosen the radiator cap, release internal pressure, and remove the cap.

Be careful of internal oil pressure



Pressure in the hydraulic oil line remains for a long time after the engine is turned off.

Before carrying out maintenance, internal pressure must be completely released.

High pressure hydraulic oil can cause skin or eye puncture, serious injury, blindness, or even death. Please note that leaking hydraulic oil

The small hole makes the hydraulic oil almost invisible. When checking for leaks, wear safety glasses and thick gloves, and use cardboard or glue.

The plywood protects the skin from injury caused by hydraulic oil spurts.

If hydraulic oil penetrates the skin, it should be removed within a few hours by doctors familiar with such injuries.

Before starting the hydraulic system, the pressure must be reduced.

Before the pressure in the hydraulic system is released, oil may spray out if the cover, filter or pipe is incorrectly connected.

Remove the outlet cap slowly to relieve pressure in the tank.

When removing a plug, screw, or disconnecting a hose, stand to the side and proceed slowly to gradually release the internal pressure.
Then remove the item.

Oil or oil cap may explode due to pressure in the engine fuel tank. Remove the oil cap slowly to relieve internal pressure.

When using a hammer, be careful of flying debris.

When using a hammer, pins or metal fragments may fly around. This can cause serious injury.

When using a hammer to drive in hard metal parts such as pins, bucket teeth, side teeth, or bearings, wear protective equipment such as safety glasses and gloves. Make sure no one is nearby when striking the pin or bucket teeth.

Be careful with high pressure oil

In the track tensioning device, the grease is under high pressure. When adjusting the tensioning force, if the procedure is not specified, the grease relief valve may fly out, causing injury.

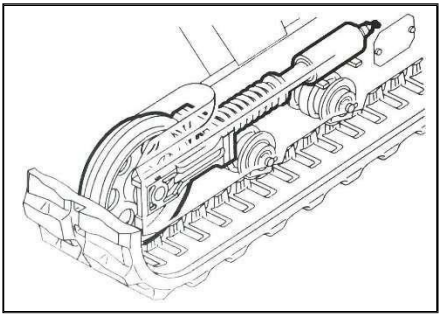
Do not loosen the grease line.

Slowly release the grease relief valve. Do not turn it out a full turn.

Keep your face, arms, legs, and torso away from the grease relief valve.

If the grease relief valve is released and grease does not flow, The valve is broken. Please contact your Gunter service agent for maintenance.

Do not disassemble the track tensioning assembly.



The track tensioner is equipped with a powerful spring. If it breaks, the spring can fly out, causing serious injury. Do not disassemble the track tensioner.

Disconnect the battery cable

Before working on the electronics or welding, disconnect the battery cable. First, disconnect the negative (-) cable. When reconnecting, connect the negative electrode cable.

Handle the battery with care

The battery contains sulfuric acid. If handled carelessly, it may cause injury to eyes or skin.

If it gets into your eyes, rinse them immediately and seek medical attention.

If swallowed, drink plenty of water or milk and seek medical attention immediately.

If sulfuric acid comes into contact with skin or clothing, rinse immediately with plenty of water.

Wear safety glasses and gloves when working with the battery. The battery can produce flammable hydrogen gas, which can cause an explosion. Keep away from sources of ignition such as open flames, sparks or lighted cigarettes.

Use a flashlight when checking the electrolyte level.

Before checking or servicing the battery, make sure the starter switch is closed so that the engine cannot be started.

Do not allow metal tools or other metal objects to come into contact with the electrodes and cause a short circuit.

If the electrode is loose, it will generate an electrical spark. Tighten it.

Make sure the battery cover is tightly closed.

If the battery is frozen, do not charge or start the engine, as it may cause an explosion. A frozen battery should be warmed to 15℃ before use.

Do not use the battery when the fluid level is below the lower limit. This can accelerate battery aging and shorten its lifespan. It may also cause the battery to crack (explode).

Do not fill the battery with distilled water to the upper limit, as electrolyte may leak out. Contact with the liquid can damage skin and corrode machine parts.

Clean the area around the electrolyte level line with a damp cloth to check the fluid level. Do not clean with a dry cloth, as this may cause a buildup of static electricity and lead to ignition or explosion.

Using the Battery Charging Cable to Start the Engine When starting the engine using the battery charging cable, connect the cable according to the steps below. Incorrect connecting the cable may cause the battery to discharge and explode.

Do not allow the "machine" to come into contact with the "rescue machine."

Do not allow the positive (+) and negative (-) battery charging cables to touch or come into contact with the wire clamp.

When connecting, first connect the positive portion of the battery charging cable to the positive (+) terminal. When disconnecting, first disconnect the negative cable from the negative terminal.

Connect the cable clamp tightly.

Connect the last clamp of the battery charging cable to a location as far away from the battery as possible.

When using the battery charging cable to start the engine, always wear safety glasses and gloves.

The size of the battery charging cable and clamp corresponds to the battery capacity. Do not use a corroded cable or clamp.

Make sure the rescue machine's battery is the same as the battery of the machine with the problem.

For welding operations, please contact your Gunter Grossmann service agent.

If welding is necessary, it can be performed by a qualified person.

personnel in a well-equipped work area. To avoid damage to machine parts caused by excessive electrical current or electrical sparks, proceed as follows.

Before electric welding, disconnect the battery cables. Do not apply a continuous voltage of 200V or more.

The grounding point should be 1 meter away from the part being welded. Do not connect the grounding terminal to an electrical control device/instrument or switch.

Make sure there is no bearing or sealing ring between the welded area and the ground terminal.

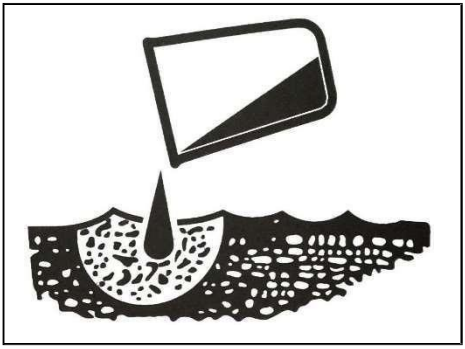
Do not connect the ground terminal to the pin or hydraulic cylinder of the working equipment.

Before welding to the body, the connector of the electrical control device must be disconnected.

Vibrations to which the operator is subjected

Vibration tests carried out on the machine operator have shown that the upper limb tolerates vibrations lower than 2.5 m/s, and the body in the operator's seat tolerates vibrations lower than 0.5 m/s.

Waste disposal



Please ensure that used oil from the machine is collected in a container. Improper disposal of used oil can harm the environment.

Observe applicable laws and regulations when handling harmful substances such as lubricating oil, fuel oil, coolant, solvent, filter or battery.

Handling hazardous chemicals

Direct contact with hazardous chemicals can cause serious injury. Hazardous chemicals used in this machine include lubricant, battery electrolyte, coolant, paint, and adhesive.

Hazardous chemicals must be handled carefully and appropriately.

Common faults and elimination methods

Any problems found during maintenance should be resolved quickly, allowing for adjustments to the hydraulic or electrical system. Contact designated Gunter Grossmann heavy equipment suppliers in your area.

Cause of the fault	Solutions
No machine power	• Check and clean the multivalve relief valve • Check the gear pump for leaks and replace the pump. • Check that there is no lack of hydraulic oil or that the hydraulic oil filler filter is not blocked.

Automatic e shoulder drop	• Check that the arm cylinder is not damaged
No electricitythrou ghout the machine	• Check if the fuse is broken or loose • Check if the battery cable is loose • Check the battery relays
Inabilityć spoons for slow movement	• Check that the bucket cylinder oil seal is not damaged. • Check that there is no foreign body or scratch on the multi-way valve stem. • Check that the pipe is not blocked
One-sidednot weaker stepping	• Check the multivalve housing outlet • Walking motor wear • Internal leak or oil seal failure, cylinder head backsliding
How to attach a track	• Use the shovel and excavator arm to support the machine so it is off the ground. • Place the tracks on the steering wheel and place the second head on the driving wheel to compress • Start the excavator by slowly stepping backwards and pressing the side of the handle.
The engine won't start	• Check if there is oil or air in the diesel pump • Diesel pump inspection • There is water or a blockage in the diesel fuel filler filter.
High temperatur e and the engine	• Clean the radiator to check for any missing antifreeze. • Check that the thermostat is not open • Check the V-belt
Treadingwith out high speed	• Check that the high and low speed control switch is not loose. • Check that the solenoid valve, trimmer head, line and spool are not jammed. • Check the pressure in the high-speed pipe
No shove l work	• Check bucket oil cylinder and oil seal • Check that the multi-channel valve stem is not clogged

Lack walking possibilities	• Check relief valve • Walking motor wear • Oil seal head back travel

Turnover good with one side, weak on the other pages	• Check the rotary engine relief valve • Replace the main rotary engine oil line • Bleed the multivalve housing