

# Operation & Maintenance Manual

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SEAM20NC00

# PC10-3


HYDRAULIC EXCAVATOR

SERIAL NUMBERS PC10-10001 and up

**KOMATSU**

# FOREWORD

This manual describes procedures for operation, handling, lubrication, maintenance, checking, and adjustment. It will help the operator or anyone realize peak performance through effective, economical and safe machine operation and maintenance.

- Please read this manual carefully BEFORE operating the machine.
- Please continue studying this manual until proper operation is completely reinforced into personal habit.
- This manual describes the basic techniques. Skill is performed as the operator or anyone get the correct knowledge and performance of the machine.
- Operation, inspection, and maintenance should be carefully carried out, and the safety must be given the first priority. Safety precautions are indicated with  marks and technical precautions with ★ marks in this manual. The safety information contained in this manual is intended only to supplement safety cords, insurance requirements, local laws, rules and regulations.
- Some photographs and illustration pictures are different from your machine as technical improvement is continuously reflected on it. Revision to up-to-date manual's content is performed in later editions.


## BREAKING IN YOUR NEW MACHINE

Each machine is carefully adjusted and tested before shipment. However, a new machine requires careful operation during the first 100 hours to break in the various parts.

If a machine is subjected to unreasonably hard use at the initial operation stage, the potential of performance will prematurely deteriorate and the service life will be reduced. A new machine **must** be operated with care, particularly with regard to the following items.

- After starting, let the engine idle for 5 minutes to allow proper engine warm-up prior to actual operation.
- Avoid operation with heavy loads or at high speeds.
- Sudden starting or acceleration, unnecessarily abrupt braking and sharp turning should be avoided.
- At the first 50 hours of operation, the machine should be maintained in the following manner in addition to usual 50 hours service:
  - 1) Replacement of hydraulic oil filter element.
  - 2) Cleaning of hydraulic tank strainer.
  - 3) Changing of engine oil pan oil.
  - 4) Checking and adjustment of fan belt tension.
- At the first 250 hours of operation, the machine should be maintained in the following manner in addition to usual 250 hours service:
  - 1) Checking and adjustment of engine valve clearance.
  - 2) Changing of final drive case oil.
- ★ When replacing oil filter elements (cartridges), check their interiors for dirt and dust. If heavily collected, check for possible cause before starting operation.
- ★ Hours of operation are indicated by the service meter.

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## SAFETY HINTS · · · ⚠

### OPERATION GENERAL

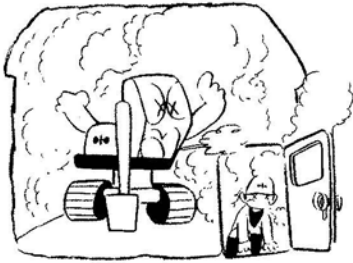


- Wear well-fitting helmet, safety shoes and working clothes. If the nature of the work requires safety, wear protective goggles or mask, thick gloves, ear plugs or other protection.

- Accidents or injuries are liable to occur when the operator is careless or slack. It is most important to bear safe operation in mind at all times.
- Take care of your health. Do not operate when tired, or after drinking.
- Learn the prohibitions, cautions and rules about work procedures in the work site.  
When there is a leader, fix standard signals and always follow these signals when operating.



- If there should be an accident or fire or any other such unexpected mishap, deal with it quickly, using the nearest apparatus.  
Learn beforehand the locations of the first aid boxes and fire extinguishers and how to use them. It is also important to know the emergency contact system.
- Learn about the safety devices on your own machine and about how to use them. Confirm that they are correctly attached in the prescribed position. Such safety devices include:
  - ★ Protective-Devices
  - ★ Seat Belts



- Exhaust gas is dangerous. When running the engine for long periods in a poorly ventilated area, there is a danger of gas poisoning, so open the windows or doors to ensure a good supply of fresh air.
- Read the Operation and Maintenance Manual carefully. Learn how to use the control devices, gauges and warning devices. Be sure you understand the meaning of the caution plates. Remember the check points and checking method for engine oil, fuel, cooling water and hydraulic oil levels.
- When operating inside a building always be sure of the clearance of the ceiling, entrances, aisles, etc. and the load limit of the floor.
- Never allow other person than the operator to ride on the machine during operation.

## BEFORE STARTING OPERATION



- Examine the lay of the land and the kind of soil at the work site to determine the dangerous points and the best method of operation. Proceed with the work only after making safety arrangements about the dangerous points.
- Inspect leakages from the fuel, lubricating and hydraulic systems. Check that the shoe bolts are not loose, and that no other parts are damaged or missing. Machines having such failures should not be operated.

SAFETY HINTS . . . ⚠



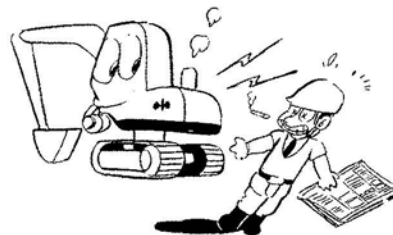
- When getting on or off the machine, use the handrail provided. Do not jump up or down from the machine.



- Do not leave parts or tools lying around in the vicinity of or on the floor of the operator's cab. Keep everything in its proper place.
- Wipe off thoroughly any grease, oil or mud on the handrail, floor or control levers. Failure to do this may cause you to slip.
- Check the level of the fuel, lubricants and cooling water. Extinguish cigarettes before checking or replenishing. Check that the radiator cap and each oil filler caps or plugs are firmly tightened.



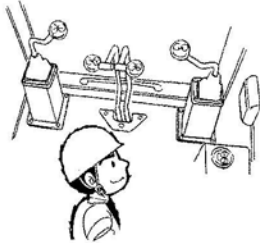
- Adjust the operator's seat until it is in the most comfortable position for operating. Always sit in the seat while operating. Do not operate the machine from any other position.



- To ensure the safety of workers near the machine, always sound the horn to warn them before starting the engine and moving the machine. Be particularly careful to check that the rear is clear before backing the machine.



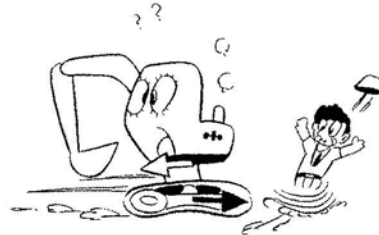
- Inspect the inside of the engine room and remove any dead leaves or papers. Dead leaves or papers are highly inflammable and can cause fires.



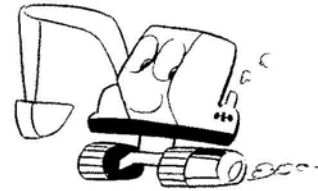
- Before starting the engine, confirm that all control levers are in **NEUTRAL**.

## AFTER STARTING THE ENGINE

- Confirm that all gauges and warning devices are functioning correctly, and that the gauge readings are within the prescribed range.
- Check the play and travel of each lever.
- Operate the working equipment to confirm that they are functioning normally.



- Before operating the traveling and steering levers, check whether the track frame is forward or backwards. If the track frame is facing backwards, operate the traveling and steering levers in the reverse manner to that when the track frame is facing forward.

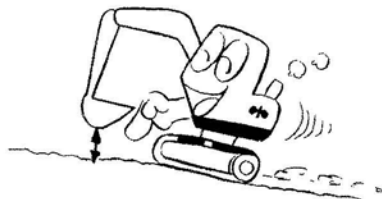


- Choosing a safe place, turn the machine to the left and right to confirm that the traveling and steering levers are functioning normally.
- If these tests reveal anything wrong, however slight it may be, contact the man in charge of the machine and operate the machine only after obtaining his permission.



SAFETY HINTS · · · ⚠

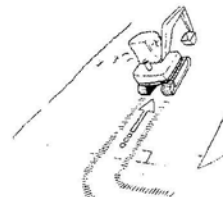
**DURING OPERATION**



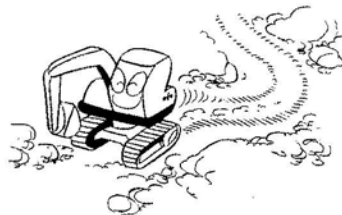
- Maintain the bucket at a height of 40 to 50cm above the ground so that it can be quickly lowered to the ground and the machine stopped in an emergency.
- As far as possible, operate the machine so that it does not tilt. (Do not tilt it by more than 35° in either the forward, rear, left or right directions, even under static conditions.)



- Always operate slowly in crowded places. On haul roads or in narrow places, give way to loaded vehicles.
- Do not allow unauthorized persons into the work area.
- Before reversing or turning, ensure that there is nobody in the vicinity. Also, be careful of obstacles.



- When operating on slopes, as far as possible, avoid turning the machine on a slope. It may cause the machine to roll over or slip sideways.



- When operating the machine along a road, retract the working equipment to improve machine stability. As far as possible proceed along a flat road.



- The machine should always be operated at a speed where it can be correctly controlled. Never do the following:
  - 1) Speeding
  - 2) Sudden starting, sudden braking, sudden turning.
  - 3) Snaking
  - 4) Coasting
- When operating on uneven ground or in places where there are obstacles, remember the following points:
  - ★ Operate at as low a speed as possible and avoid sudden changes in direction.



- ★ Wherever possible, avoid traveling over large rocks, fallen trees, tree stumps and other such obstacles. Either use the working equipment to remove them, or travel round them. When it is impossible to avoid traveling over them, reduce speed and mount over the obstacle. Just before the front of the machine tips down, reduce speed even more to make the shock of hitting ground as small as possible.
- ★ Never mount over an obstacle at an angle; never disengage one traveling and steering lever to travel over an obstacle.

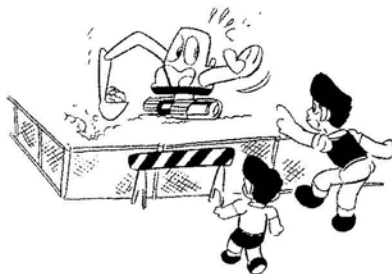


- The machine condition can be judged from many factors. Changes in the gauges, sound, vibration, exhaust gas color or response of the control levers can indicate the occurrence of some disorder. If any disorder occurs, park the machine immediately in a safe place and take appropriate action. Be especially careful in the case of a fuel leak as there is danger of fire.

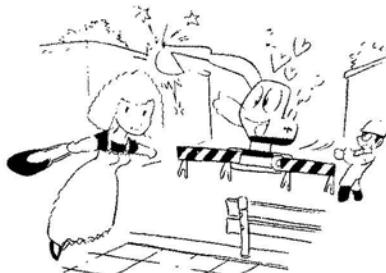
SAFETY HINTS . . . ⚠



- The work area should be made as flat as possible. If the work area is flat, operation is made much easier and this reduces operator fatigue.
- Always concentrate. It is extremely dangerous to allow yourself to be distracted or to think of other things when operating a machine. In dangerous places, or where there is restricted visibility, it is important to get down from the machine and confirm whether it is safe before continuing work.



- Be careful of those around you, and always confirm that there is no person or obstacle in the way before moving or turning the machine.



- When using the working equipment, be sure to keep your eyes on it all the time. Failure to do this may result in an accident.



- When passing through a narrow space, be careful of the side and overhead clearances. Take special care not to touch any obstacles on either side or overhead. If necessary, have someone outside the machine call out instructions.
- Be careful not to operate the machine into a bog. In the event that the machine goes into a bog, extract it in the following manner:
  - 1) If only one track of the machine is in the bog, push the bucket down against the ground on the side of the machine which is stuck so as to float the track. Then place logs or timber underneath the track and free the machine.



- ★ When raising the undercarriage by means of the boom or arm, push the bottom of the bucket against the ground (on no account use the teeth) until the angle between the boom and the arm is  $90^{\circ}$  to  $110^{\circ}$ .
- 2) If both tracks of the machine are in the bog and slip, preventing the machine from getting in, place logs or timber under the tracks in the manner described in 1), then thrust the bucket into the soil in front of the machine and drag it out by bending the arm in the same manner as when excavating and putting the traveling and steering lever into the forward position.

- After earthquakes, confirm that the ground is still firm; after blasting, confirm that there are no unexploded charges remaining.



- When working on river embankments or other places made of piled soil, there is the danger that the weight or vibration of the machine may cause the machine to sink into the piled soil, so be extremely careful when operating in such places.

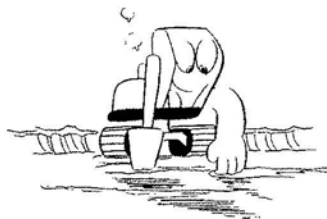


- When continuing operations after rain, remember that conditions will have changed from those before the rain started, so proceed with caution. Be particularly careful when approaching the shoulder of the road or cliffs, as they may have been loosened by the rain.

SAFETY HINTS . . . ⚠



- Check the load limits of bridges before crossing.



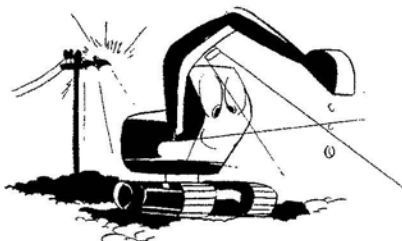
- When operating in water or when crossing shallows, first check the bed soil condition and the depth and flow speed of water, then proceed, taking care not to go beyond the permitted depth.



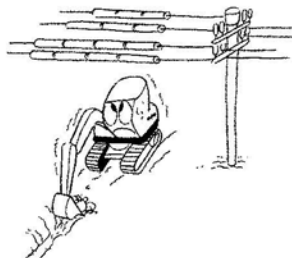
- When working in water or marshy ground, be careful of the following:
  - ★ When working on soft ground, place thick boards on the ground to prevent the machine sinking. Place the boards horizontally and arrange them as neatly as possible.



- When operating in fog, mist or smoke, where visibility is bad, be especially careful to confirm first whether operation is safe. When visibility drops below safety level, stop work and wait for the visibility to improve.



- When operating at night, remember the following points:
  - ★ Be sure to arrange an adequate lighting system.
  - ★ At night it is very easy to make mistakes in assuming the distance and height of objects and land.



- Be very careful not to touch electric wires, always bearing in mind that there is a possibility of receiving an electric shock.
- ★ Wear rubber or leather soled shoes.
- ★ Position a full-time watcher at the site to ensure that operator is not exposed to the risk of electric shock.

- ★ Depending upon the supply voltage it is conceivable that an electric shock may be received by merely coming into the vicinity of an electric feeder wire. Accordingly, observe the minimum distances given in the table below, taking into account the inertia of the boom when in motion.

Supply voltage (number of insulators)	Minimum safe separation
6.6 kv (distribution line)	3m
33.0 (1 to 3 insulators)	4m
66.0 (5 to 8 insulators)	5m
154.0 (10 to 18 insulators)	8m
275.0 (16 to 30 insulators)	10m

- ★ Become familiar with the necessary measures to be taken in the event that a operator receives an electric shock.

SAFETY HINTS · · · ⚠



- Do not perform excavation at the bottom of a precipice as it is dangerous practice.
- If it is unavoidably necessary to operate the working equipment lever when traveling the machine in the vicinity of a precipice, road shoulders, on sloping ground or through a confined space, stop the machine momentarily before operating the working equipment lever in order to minimize danger.



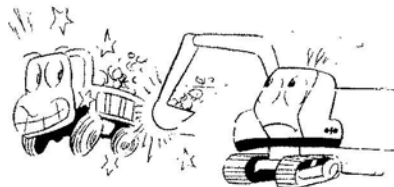
- When working on loose, crumbly soil, do not dig deeply and back the machine off smartly. If the ground crumbles, preventing the machine from getting away in time, do not panic and raise the work equipment. It is often better in the interests of stability to leave it down.
- Do not undercut the machine, unless absolutely necessary. If necessary, always take care to prevent the machine falling.



- When operating at the edge of a cliff or on the shoulder of a road, remember the following points:
  - ★ When operating in a place where there is danger of the machine falling over the side, be doubly careful. Do not approach the edge of the cliff or road shoulder by mistake.



- If you suspect that there are buried facilities (water or gas pipes, etc.) at the work site, check with the companies responsible for looking after such facilities and also try a different method of excavation. Then, after confirming the existence and location of such facilities, carefully carry out excavation work.

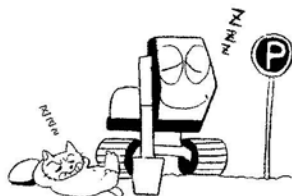


- Take care not to swing the bucket against the sides of trenches or dump trucks. Load the truck from the rear.



SAFETY HINTS · · · ⚠

**PARKING**



- When parking the machine, park it in a safe place outside the working area, or in the specified place. The following factors should be considered when choosing a parking place: it should be on flat, firm ground where there is no danger of rockfalls, landslides or floods. If the machine has to be parked on a slope, it should be parked facing directly up or down the slope, and chocks should be placed under the tracks. When the machine is facing downhill, lower the bucket so that it cuts slightly into the ground to further increase the safety.

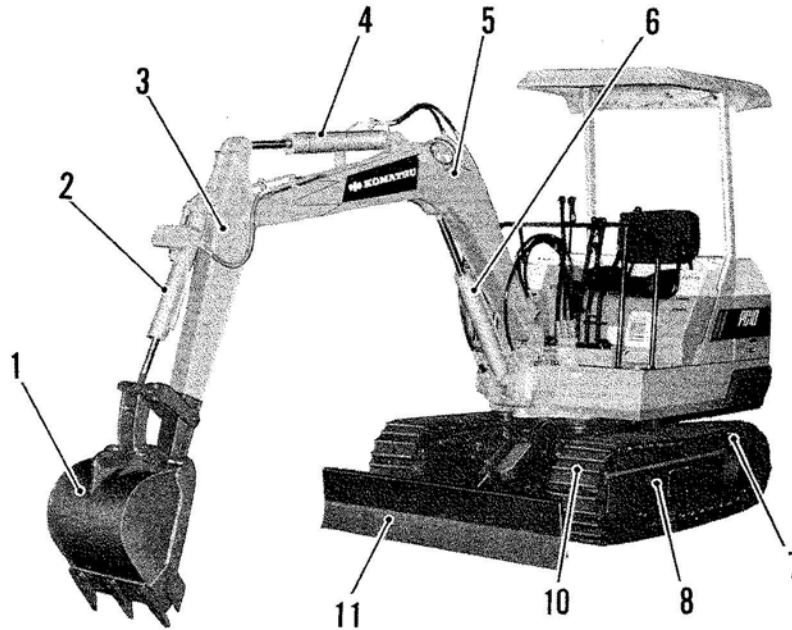
- When parking the machine, return the working equipment levers to NEUTRAL, apply the brake lock, lower the bucket to the ground, and put all safety levers in the LOCK position. Switch off the engine and remove the key.



- Before leaving the machine, carry out the following:
  - ★ Apply the swing lock.
  - ★ Lower the bucket to the ground.
  - ★ Put the working equipment lever in neutral and lock it.
  - ★ Stop the engine and remove the key to prevent other people using the machine.
  - ★ Lock the cab.

GENERAL LOCATIONS

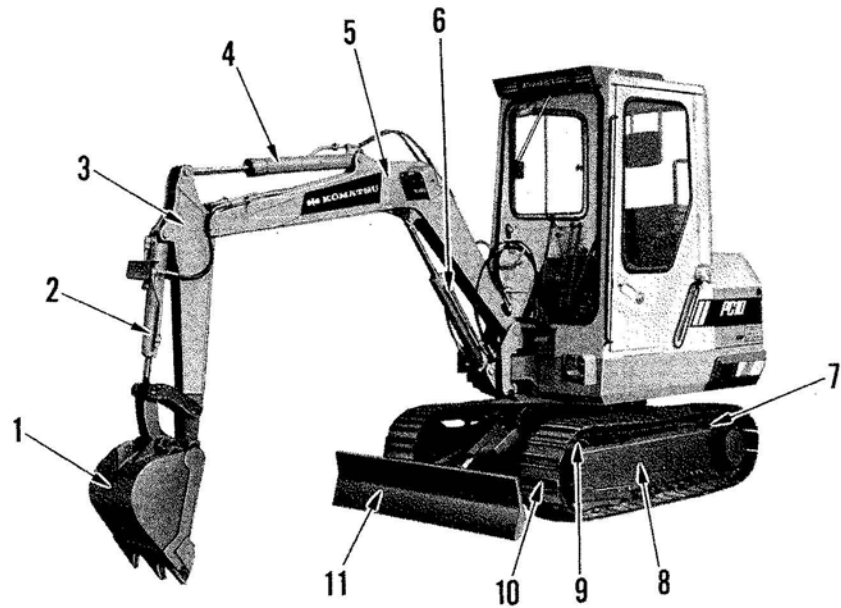
# GENERAL LOCATIONS



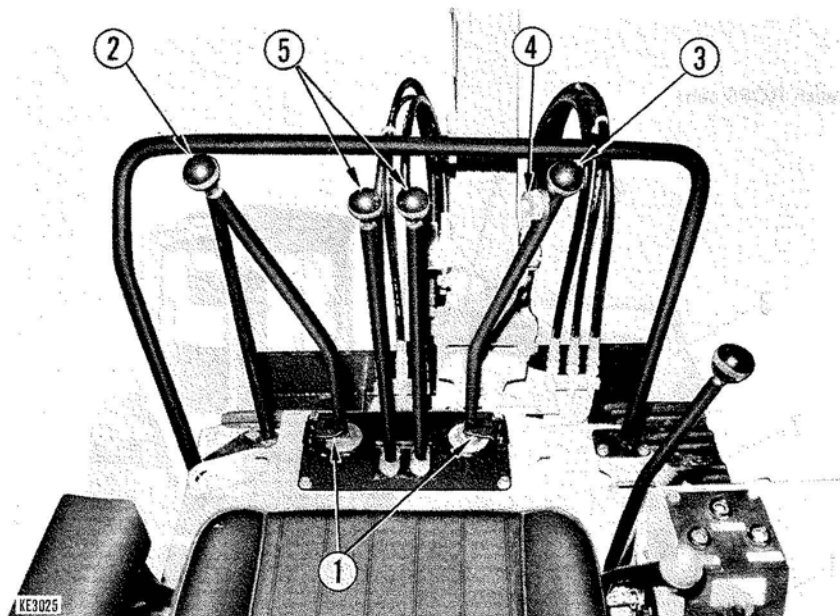
1. Bucket
2. Bucket cylinder
3. Arm
4. Arm cylinder
5. Boom
6. Boom cylinder
7. Sprocket
8. Track frame
9. Idler
10. Track shoe
11. Front blade

GENERAL LOCATIONS

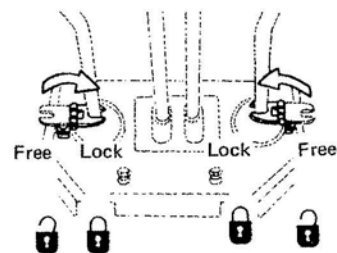
(with ROPS cab)




## INSTRUMENTS AND CONTROLS



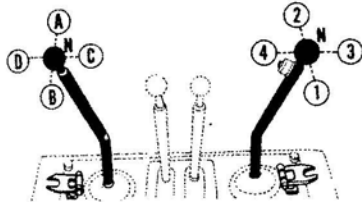
### 1. SAFETY LOCKS (for working equipment levers)



The safety locks are used to lock the working equipment levers.

 When stopping the machine or leaving the machine, be sure to lower the bucket to the ground, then operate the locks to lock the left and right working equipment levers.

**2. LEFT WORKING EQUIPMENT LEVER  
(arm/swing control lever)**



**N: Neutral:**

When the lever in this position, the upper works and the arm will be retained in the position in which they stop.

**Arm extending operation**

- A. Arm moves out.
- B. Arm moves in.

**Swing operation**

- C. Upper works swings to the right.
- D. Upper works swings to the left.

**3. RIGHT WORKING EQUIPMENT LEVER  
(boom/bucket control lever)**



**N: Neutral:**

When the lever in this position, the boom and the bucket will be retained in the position in which they stop.

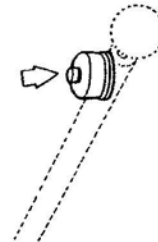
**Boom raising operation**

- 1. Boom raises
- 2. Boom lowers

**Bucket dumping operation**

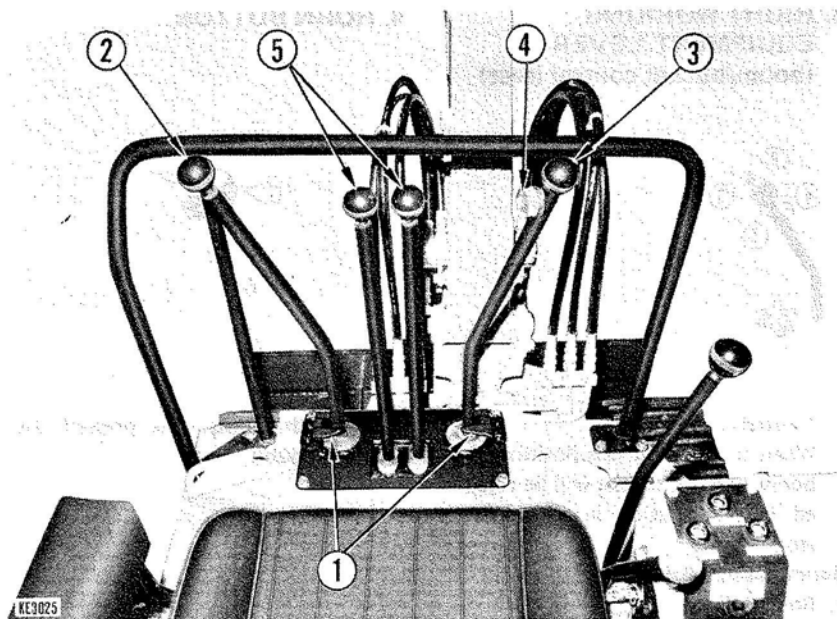
- 3. Bucket dumps
- 4. Bucket curls

**4. HORN BUTTON**

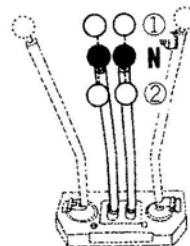


When this button is pressed the horn will sound.

## INSTRUMENTS AND CONTROLS



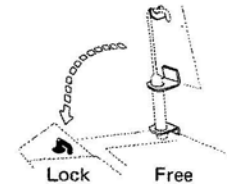
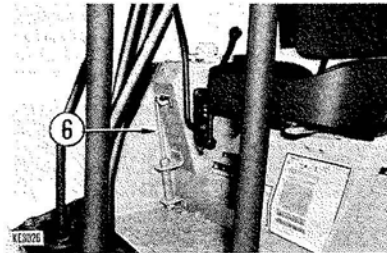
### 5. TRAVELING AND STEERING LEVERS



The traveling and steering levers are used to operate the left and right travel motors.

- ① FORWARD:  
Push the levers forward.
- ② REVERSE:  
Pull the levers backward.
- Ⓝ NEUTRAL:  
Parking brake is applied and the machine stops.

## 6. SWING LOCK LEVER





When this lever is placed to the LOCK position, the upper works is locked.

★ This lever must be in the LOCK position after the upper works is parallel with the track frame. Swing lock lever must be in LOCK position during traveling of machine.



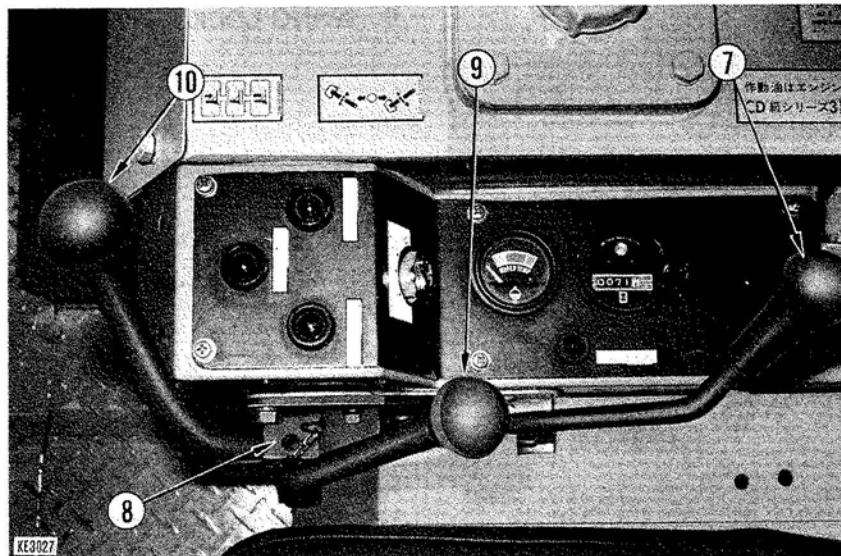
**Do not attempt to rotate the upper works when the swing lock lever is in the LOCK position.**

 If the track frame is facing backwards, operate the traveling and steering levers in the reverse manner to that when the track frame is facing forward.

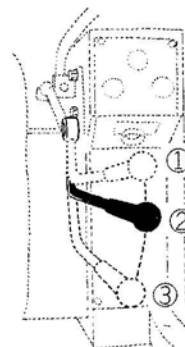
 Before operating the traveling and steering levers, check whether the track frame is facing forward or backwards.

Assuming the machine is in a position to advance by means of being the sprocket at the rear.

## INSTRUMENTS AND CONTROLS



## 7. FUEL CONTROL LEVER

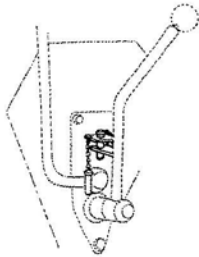


This lever is used to control the engine speed and output.

- ① Engine stop position:  
Push the lever fully.
- ② Low idling position:  
Release the lever from engine stop position ①, and the lever will return automatically to the low idling position.
- ③ Full speed position:  
Pull the lever from low idling position ② fully.



**8. SAFETY LOCK  
(for boom swing lever)**

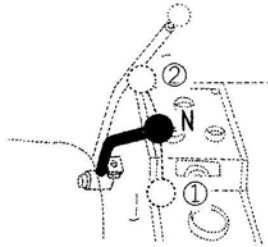


This device is used to lock the boom swing lever.



**Be sure to lock the boom swing lever except in case of swinging the boom.**

**9. BOOM SWING LEVER**



Swing the boom when carrying out side-ditching.

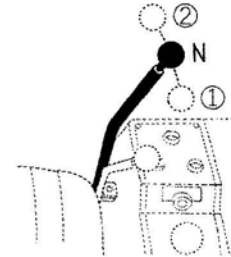
①: Boom swings to the left.

N: Neutral

Boom is stopped and held in this position.

②: Boom swings to the right.

**10. BLADE CONTROL LEVER**



Lever position

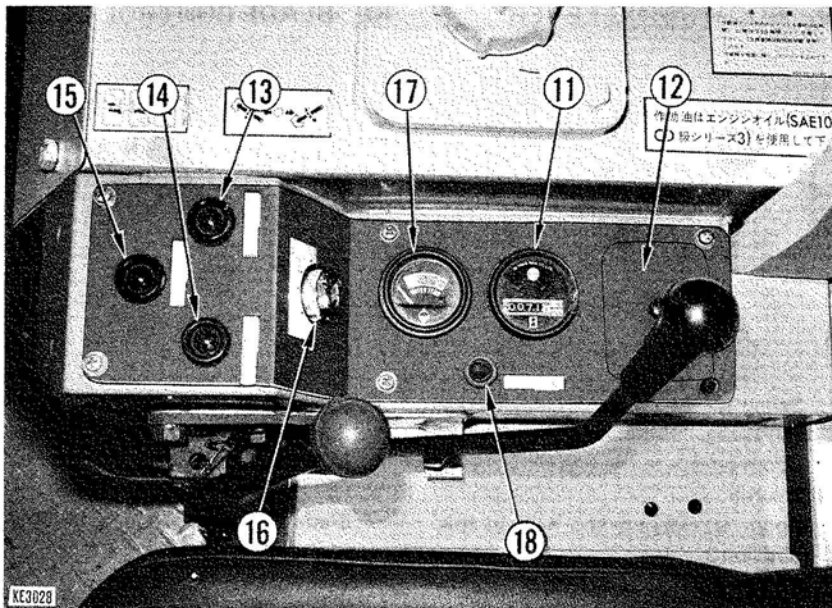
①. RAISE

②. LOWER

N. NEUTRAL

Blade is stopped and held in this position.

## INSTRUMENTS AND CONTROLS



**11. SERVICE METER**

**12. FUSE BOX**

### **13. CHARGING LAMP**

Normally this lamp comes on when the starting switch is turned to the ON position and gradually go out as the engine speed increases.

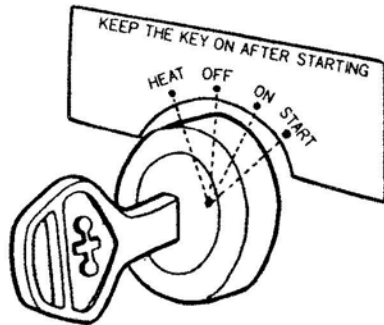
### **14. ENGINE OIL PRESSURE CAUTION LAMP**

Normally this lamp is out during operation. If it comes on during operation, the oil pressure has dropped. In such a case, immediately stop the engine and check the cause of the trouble.

### **15. THERMOSTART SIGNAL LAMP**

When the starting switch is turned to HEAT, thermostart signal lamp will come on, thus indicating thermostart is heated. The lamp will go off in approx. 18 seconds.

## 16. STARTING SWITCH



### OFF

Key insertion-withdrawal position.

### ON

Charging and lamp circuits activate. Keep key at ON after starting.

### START

At this key position, the starting motor will crank the engine. Release key immediately after starting.

### HEAT

Use this position when starting the engine at low ambient temperatures.

At this position, the current will flow to the thermostart. After heating, immediately turn the key clockwise to START position.

★ Be sure to use the starting key to start the engine.

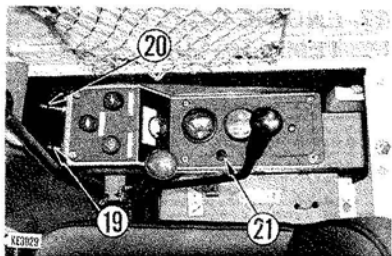
## 17. ENGINE WATER TEMPERATURE GAUGE

- When indicator is in the green range during operation, water temperature is normal.
- After engine start-up, warm up the engine until indicator moves into green range.
- If indicator moves from green into red range during operation, run the engine at low idling speed until temperature goes down.

## 18. LAMP SWITCH

When this switch is pulled to the ON position, the front lamps will light.

## INSTRUMENTS AND CONTROLS



### 19. LAMP SWITCH (OPTION)

Pulling the lamp switch one step will cause the lamp (1 piece) on the work equipment side to light. Pulling it to the second step will cause the lamp on the work equipment side and lamps (2 pieces) on the frame side to light.

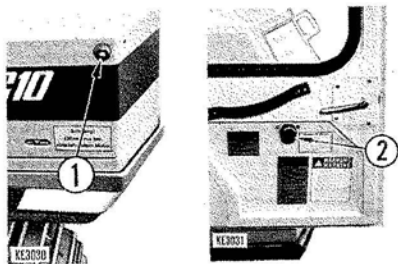
### 20. WIPER SWITCH (OPTION)

When this switch is pulled to the ON position, wiper operates on the front glass. When this switch is turned clockwise solvent will be sprayed on the glass.

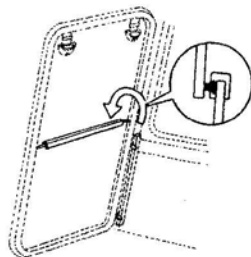
### 21. OVERLOAD PROTECTION DETECTIVE SWITCH (OPTION)



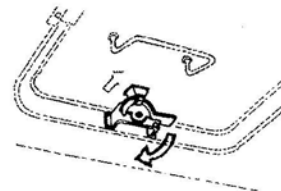
In the case of lifting operation, put the overload protection detective switch to "ON" position. When overloaded, the horn blows.

**DOOR LOCK (OPTION)**

To hold an open door stably, use a door lock. The door will be held positively when pushed against the catch (1). In order to release the door, depress the black button (2).

**FRONT WINDOW (OPTION)**

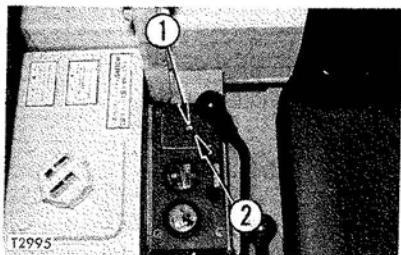
The upper part of the front window can be opened and closed. To fully close the front window (when washing the machine or during rainfall), close the upper part and insert the center sash between the upper and lower parts.

**CEILING WINDOW (OPTION)**

Ceiling window is opened by releasing the lock in the direction of the arrow and pushing the ceiling window.

## INSTRUMENTS AND CONTROLS

### FUSE BOX



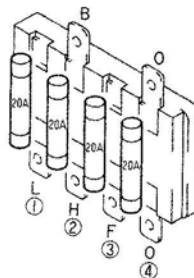
Loosen bolt (1) and remove cover (2).

★ Replace a fuse with another of the same capacity.

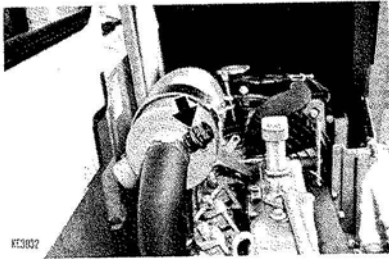


Before replacing a fuse, be sure to turn off the starting switch.

### Fuse arrangement and circuit



No.	Terminal mark	Fuse capacity	Circuit	Remark
①	L	20A	Head lamp	—
②	H	20A	Horn	—
③	F	20A	Engine water temperature gauge Engine oil pressure caution lamp	—
④	O	20A	—	—

**DUST INDICATOR**

This device indicates clogging of the air cleaner element. When the red piston appears in the transparent part of this indicator, the element is clogged. Immediately clean element. After cleaning, push indicator button to return red piston to original position.

**OPERATOR'S SEAT**

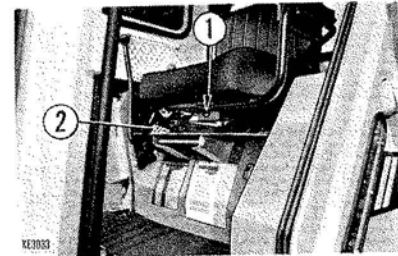
Set operator's seat as follows for maximum comfort.

**Seat position adjustment in the front and rear direction**

Extract the snap pin and remove pin (1). Move the seat until hole positions are aligned and insert pin (1) to set the position. The amount of front and rear adjustment is 18 mm.

**Changing direction of seat**

Pulling lever (2) and pushing the backrest forward will reverse the direction of seating.

**OPERATOR'S SEAT (OPTION)****Adjustment of seat suspension**

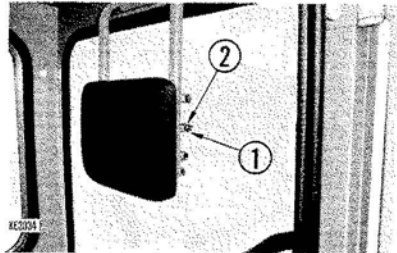
Turn bolt (1) to adjust the hardness of the suspension.

**Changing direction of seat**

Pulling lever (2) and pushing the backrest forward will reverse the direction of seating.

## INSTRUMENTS AND CONTROLS

### HEAD RESTRAINT (OPTION)

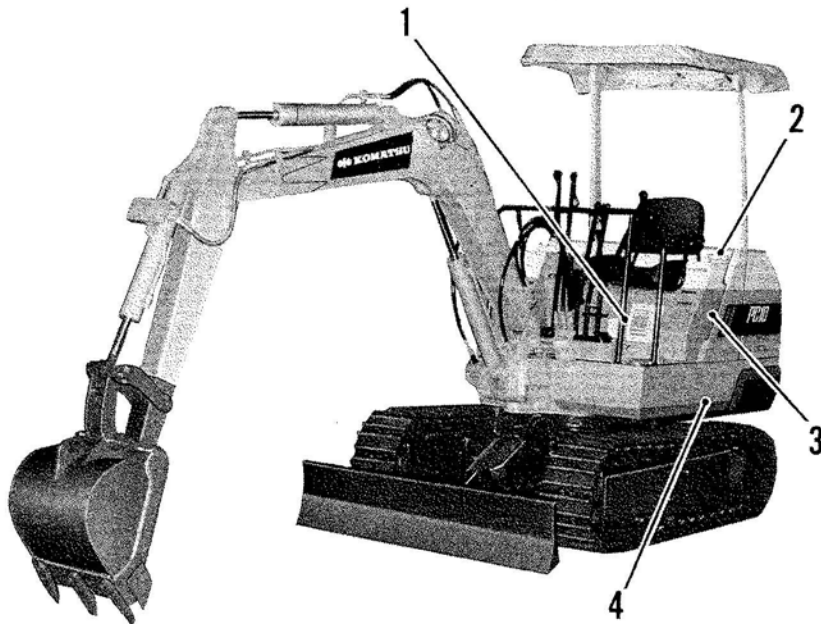


Set the head restraint in the desired position by moving snap pin (1) and (2).

The height of the head restraint can be adjusted in 50 mm steps.



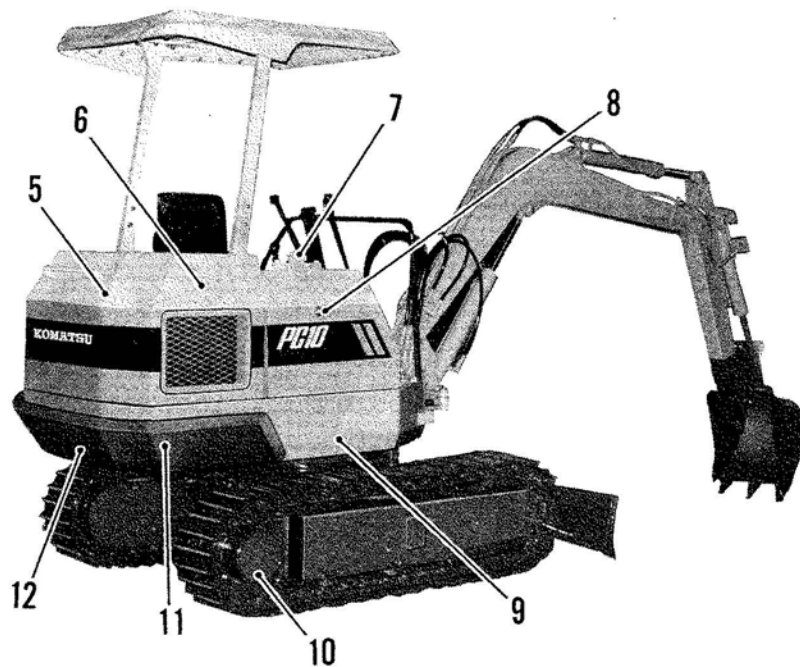
## OIL FILLER AND LEVEL GAUGE POSITIONS



1. Swing machinery level gauge
2. Fuel tank oil filler
3. Fuel tank level gauge
4. Fuel tank drain plug

## OIL FILLER AND LEVEL GAUGE POSITION

5. Engine oil pan oil filler
6. Cooling water inlet
7. hydraulic tank oil filler
8. Hydraulic tank level gauge
9. Hydraulic tank drain plug
10. Final drive case drain plug
11. Cooling water drain plug
12. Engine oil pan drain plug

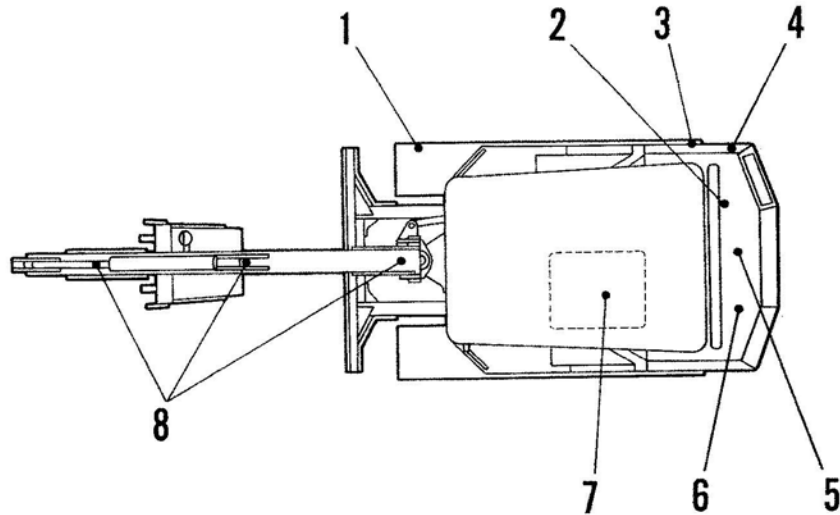


## CHECK BEFORE STARTING

Pre-operation checks forestall machine trouble. Never neglect them.

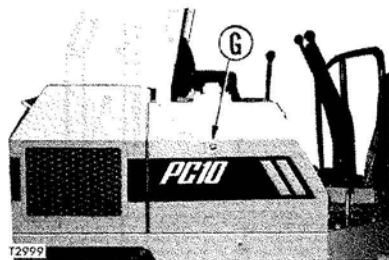
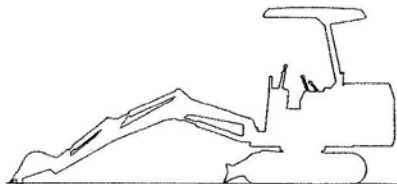
### a. VISUAL CHECK

1. Check tightness of idler mounting bolt
2. Check final drive case for oil leaks
3. Check tightness of sprocket mounting bolt
4. Check radiator for water leak
5. Check tightness of air cleaner mounting bolt
6. Check around the engine for water and oil leaks
7. Check tightness of battery terminal
8. Check for oil leak at high pressure hose, high pressure hose joints and hydraulic cylinder floating seal



## CHECK BEFORE STARTING

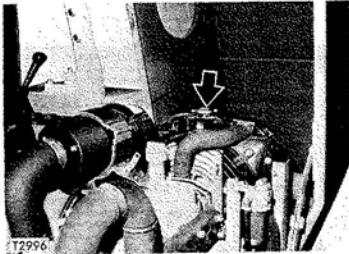
### b. CHECK AND REFILL OF OIL IN HYDRAULIC TANK




1. Run the engine at low speed, retract the arm and bucket cylinder, lower the boom until the tip of the bucket tooth touch the ground and then stop the engine.
  2. Check the oil level in the hydraulic system.  
The oil level should be near the red circle in sight gauge (G).
- ★ Use CLASS-CD SAE10W engine oil for all seasons.

- ★ The oil level will vary depending upon the oil temperature. Accordingly, use the following as a guide:
- i) When the oil temperature is close to the ambient temperature (10 to 30°C), the level will be close to the bottom line on the sight gauge.
  - ii) When the oil temperature is the normal operating temperature (50 to 80°C), the level will be close to the top line on the sight gauge.

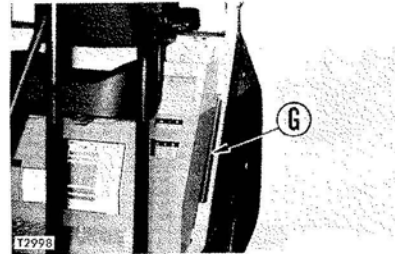
c. CHECK AND REFILL COOLANT



Check the cooling water level. The cooling water should be near to the water inlet.

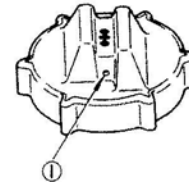
 **When removing the cap, release radiator pressure little by little by loosening cap slowly; then remove cap.**

d. CHECK FUEL LEVEL



Check the fuel level using sight gauge (G) on the side of the tank.

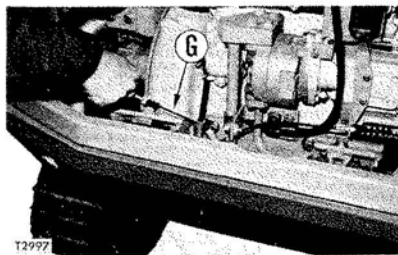
Upon completion of work, pour in addition fuel from filler until the fuel tank is full.



★ If the breather hole (1) in the cap is blocked up, fuel flow to the engine may stop. Accordingly, clean it from time to time.

## CHECK BEFORE STARTING

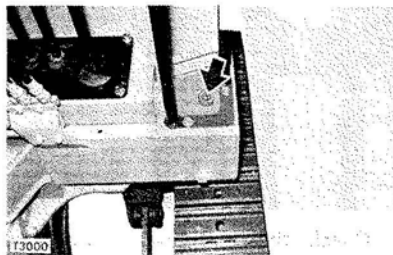
### e. CHECK OIL LEVEL IN ENGINE OIL PAN



Check the engine oil level. The oil level should be between H and L of gauge (G).

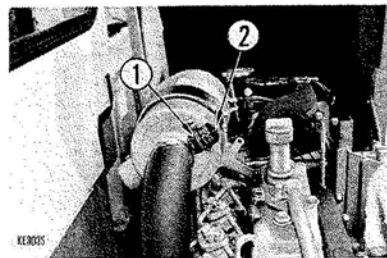
- ★ Stop the engine when checking the oil level.
- ★ Check the oil level before starting or after keeping the engine stop more than 5 minutes.

### f. REPLENISH GREASE IN SWING CIRCLE PINION



Rotate the upper works slowly, replenish the grease into the fitting shown by the arrow under the operator's seat.

### g. CHECK DUST INDICATOR



When air cleaner element is clogged, the red piston of dust indicator (1) reaches service level and gets locked.

In that case, clean element referring to the section "WHEN REQUIRED".

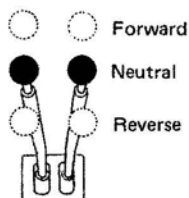
After cleaning element, push button (2) to return red piston.

## OPERATING YOUR MACHINE

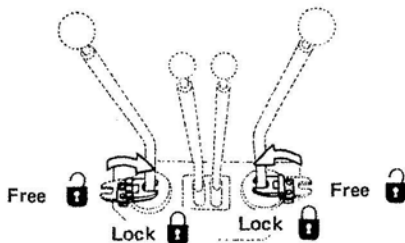
# OPERATING YOUR MACHINE

### BEFORE STARTING THE ENGINE

1. Put the traveling and steering levers in the N (neutral) position.

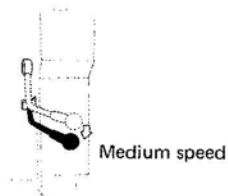


2. Put the left and right working equipment levers in neutral and check that they are locked.



### TO START THE ENGINE

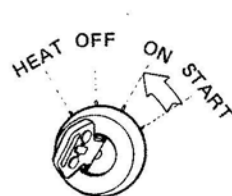
1. Put the fuel control lever in the half-open position.



2. Turn the key switch to the START position.



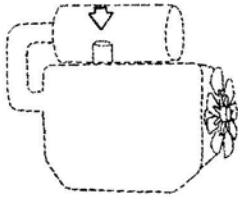
3. When the engine starts, turn the key to the ON position.



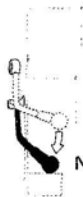
- ★ Do not hold the key in the START position for more than 20 seconds.
- ★ If the engine does not start, wait two minutes, then repeat steps 2 and 3.

## STARTING AT LOW TEMPERATURE

1. Check the oil level in the thermo-start fuel tank.

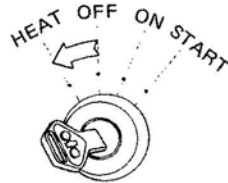


2. Fully open fuel control lever.

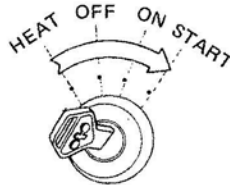


Normal operation

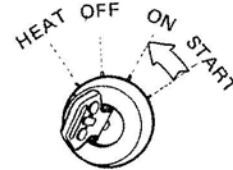
3. Move the key to HEAT position, and thermostart signal lamp will come on. The preheating will be completed in approx. 18 seconds, and the lamp will go off at the same time.



4. Then turn the key in the START position and start up the engine.



5. Once the engine is running, return the key to the ON position.



6. Put the fuel control lever in the low idling position.



Low idling

- ★ If the engine does not start up under the above procedure, repeat steps 3 and 4 after waiting for about 2 minutes.



## OPERATING YOUR MACHINE

### WARM-UP RUN

After starting the cold engine, this warm-up run should be continued as the followings.

1. Run the engine at low idling speed, and check that the engine oil pressure caution lamp has gone out.

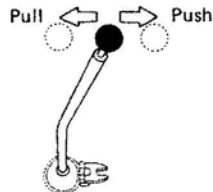


2. Pull the fuel control lever and run the engine at medium speed.



Medium speed

3. Leaving the bucket control lever in either pushing or pulling side, run the engine for about five minutes to warm up the hydraulic oil.



- ★ Avoid abruptly accelerating the engine until the completion of warm-up.
- ★ When warming up the engine for at least 20 minutes, load it from time to time, or if this is not possible run the engine at medium speed.

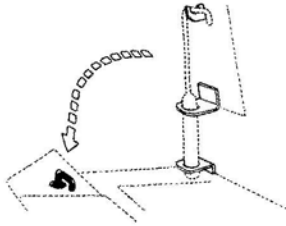
### CHECKS AFTER STARTING

After starting, make the following checks.

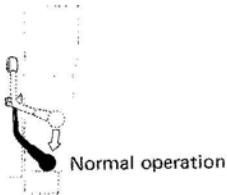
1. Pull the fuel control lever and run the engine at medium speed for about 5 minutes.
2. After completing warm-up, check all gauges and warning indicator for proper operation.
3. Check if the exhaust color is normal or whether there is any abnormal noise or vibration.

### TO MOVE THE MACHINE OFF

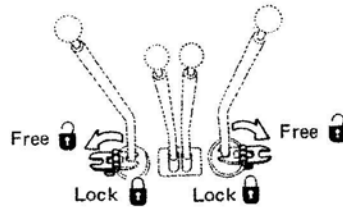
1. Put the swing lock lever into the lock position by pushing the lever down.



2. Pull the fuel control lever and raise the engine speed.



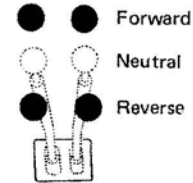
3. Free safety locks of left and right working equipment levers, move the work equipment in and raise it to a height of about 40 to 50 cm.





4. Pull the blade control lever and raise the blade.



5. Slowly incline left and right traveling and steering levers in the forward (forward moving off) or reverse (reverse moving off) direction, and move off.



-  Check whether the track frame is facing forward or backward before operating the traveling and steering levers.

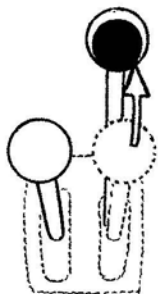
-  Avoid abruptly operating the traveling and steering lever with the fuel control lever fully open, as this will cause the machine to move off suddenly.

## OPERATING YOUR MACHINE

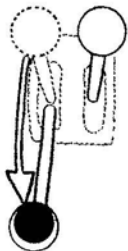
### TURNING

Operate the two traveling and steering levers in the following manner.

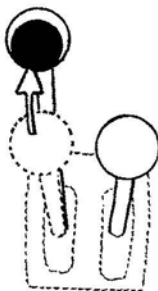
#### Left pivot turn (forward)



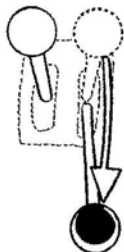
#### Left pivot turn (reverse)



#### Right pivot turn (forward)



#### Right pivot turn (reverse)



- **When changing the direction of a stationary machine**

When making a left turn, incline the right traveling and steering lever forward to cause the machine to turn left in the forward direction, or pull it back to make the machine turn left in the reverse direction.

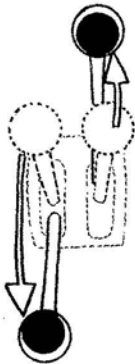
In the case of a right turn, operate the left traveling and steering lever in a similar manner to the above.

- **When changing the direction of a running machine (when left and right traveling and steering levers are inclined in the same direction)**

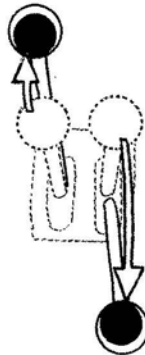
When making a left turn, return the left traveling and steering lever to the neutral position. This will cause the machine to make a pivot turn to the left.

In the case of a right turn, operate the right traveling and steering lever in a similar manner to the above.

Counterrotation turn (left)



Counterrotation turn (right)



- **When performing counterrotation**

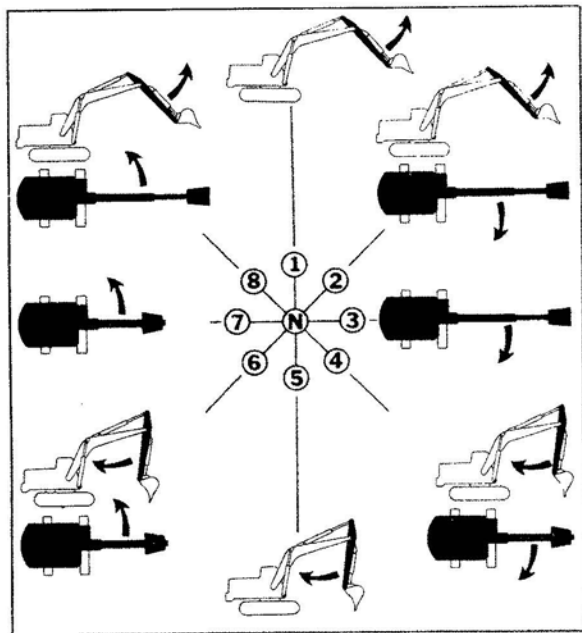
To counterrotate the machine to the left, pull back the left traveling and steering lever and push forward the right traveling and steering lever.

★ The above applies to the running operation of the lower mechanism. When the upper works is facing backwards as opposed to the track frame, the various traveling and steering operation methods will be reversed. It is therefore necessary to always keep in mind the direction of the track frame when operating the machine.

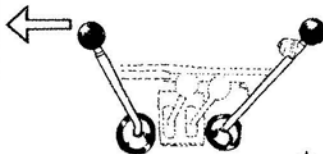
★ Avoid abruptly changing the direction of the machine as far as possible. In particular, before counterrotating the machine, first bring it to a halt.

## OPERATING YOUR MACHINE

### OPERATION OF THE WORKING EQUIPMENT



- N. Neutral
- 1. Arm out
- 2. Arm out and swing right
- 3. Swing right
- 4. Arm in and swing right
- 5. Arm in
- 6. Arm in and swing left
- 7. Swing left
- 8. Arm out and swing left

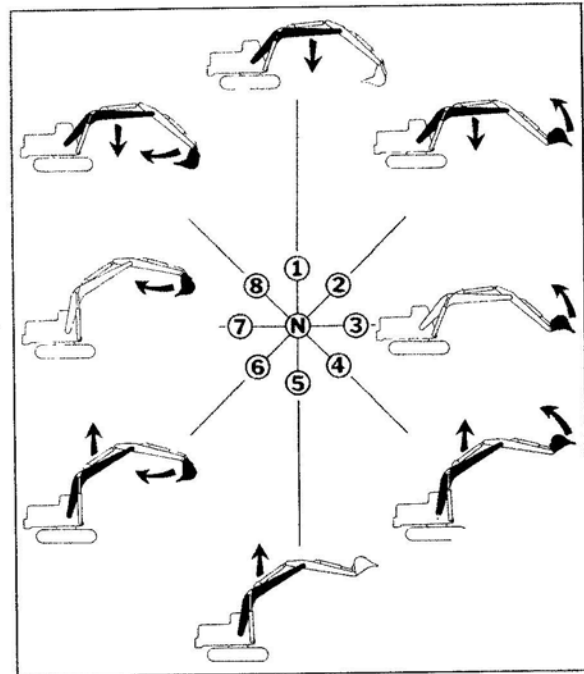
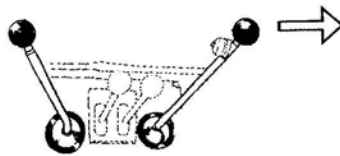


The working equipment is operated by means of the left and right working equipment levers. The left lever is used to operate the arm and swing the machine, and the right lever is used to operate the boom and the bucket.

The motion of the lever and working equipment is as shown in the diagrams.

- ★ Before swinging the upper works, make sure that the swing lock lever has been in FREE.

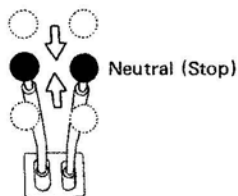
- N. Neutral
- 1. Boom lower
- 2. Boom lower and bucket dump
- 3. Bucket dump
- 4. Boom raise and bucket dump
- 5. Boom raise
- 6. Boom raise and bucket curl
- 7. Bucket curl
- 8. Boom lower and bucket curl



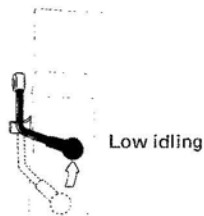
## OPERATING YOUR MACHINE

### TO STOP THE MACHINE

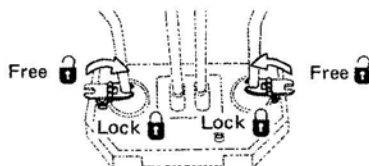
1. Put the left and right traveling and steering levers in the neutral position.




2. Lower the engine speed using the fuel control lever.



3. Lower the bucket horizontally until its underside touches the ground.
4. Lock the working equipment levers.

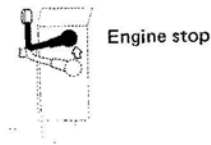


5. Lower the blade to ground.

 **When stopping the machine, select flat hard ground and avoid dangerous places. If it is unavoidably necessary to park the machine on a slope, insert blocks underneath the track shoes. As an additional safety measure, thrust the bucket into the ground.**

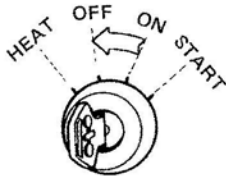
### TO STOP THE ENGINE

1. Run the engine at low idling speed for about five minutes to allow it to gradually cool down.
2. Put the fuel control lever in the engine stop position and stop the engine.



- ★ If the engine is abruptly stopped before it has cooled down, engine life may be greatly shortened. Consequently, do not abruptly stop the engine apart from an emergency.
- ★ In particular, if the engine has overheated, do not abruptly stop it but run it at medium speed to allow it to cool gradually, then stop it.

3. Return the key to the OFF position and remove the key.





## OPERATING YOUR MACHINE

### PRECAUTIONS FOR OPERATION



- Be careful not to compact the soil or damage earth mounds as a result of the swinging force.



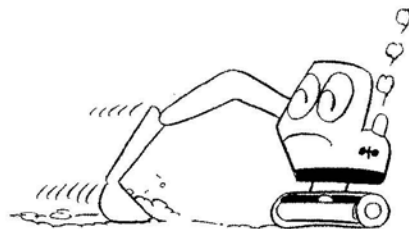
- When swinging, do not dig the bucket teeth into the soil.
- Do not move off and excavate with the bucket leaving dug into the ground.



- When working with the machine, do not move the cylinder to the end of its stroke but leave a small safety margin.



- Do not carry out excavation using the dropping force of the machine or use the bucket as a mattock.



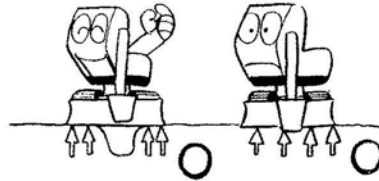
- When scooping with the bucket, the load on the machine will be lightened by making a long shallow pass rather than by scooping deeply.
- Note that if the working equipment lever is operated while the machine is moving in order to avoid trees or other obstacles, the machine may sometimes turn or stop.



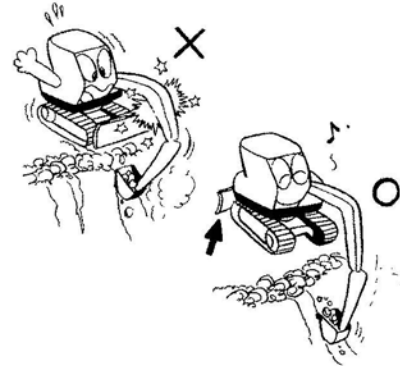
- Never allow the blade to butt against, or give strong impact. To do such work will damage the blade and the hydraulic cylinder.



- Never hit the blade by the bucket because they interfere in lowering and retracting for moving and transportation.



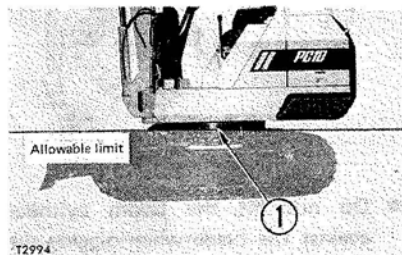
- Do not support the machine on one end of the blade to use it as an outrigger.



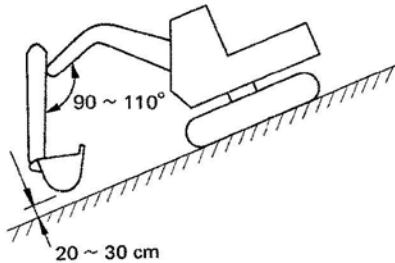
- Do not hit the boom cylinder against the blade when digging the deep ditch in front of the blade. Back hoe work should be carried out after keeping the blade to the opposite position of the bucket.

## OPERATING YOUR MACHINE

- It is better to excavate hard rocky ground after breaking it up by some other means. This will not only reduce damage to the machine but make for better economy.



- Do not immerse the machine in water by more than the permissible depth (under the swing circle (1)). In addition, properly grease parts which have been immersed in water for a long time, until the old grease comes out from the bearings (vicinity of bucket pins, swing circle system, etc.).
- To brake the machine during downhill runs, put the traveling and steering lever in the neutral position. This will cause the brake to be automatically applied.
- When climbing a hill, if the shoes slip or the travel motor relieves, preventing the machine from climbing by means of the tracks alone, it is possible to use the force of the arm as an aid.
- When the engine stops on a slope, move the traveling and steering levers to neutral position and lower the bucket. Thereafter, turn starting key to START.
- Note that the following phenomena are not faults:
  - 1) When the arm is pulled back, it will sometimes stop when becomes more or less vertical.
  - 2) The arm may sometimes stop when the bucket teeth become more or less horizontal.
  - 3) At the beginning and end of a swinging, a noise may sometimes be emitted from the brake valve.
  - 4) When descending a steep slope at low speed, a noise may sometimes be emitted from the travel motor.



- When descending a steep slope, adjust the speed by means of the traveling and steering levers and the fuel control lever.

If the grade exceeds  $15^\circ$ , set the machine in the posture shown in the diagram above, and reduce the engine speed.

**⚠ Do not travel on slopes of over  $30^\circ$  as there is danger that the machine may overturn.**

### HOW TO ESCAPE FROM MUD

- Always operate carefully to avoid getting stuck in mud. If the machine does get stuck in mud, use the following procedures to get the machine out.
- When one side is stuck.



When only one side is stuck in mud, use the bucket to raise the track, then lay boards or logs and drive the machine out. If necessary, put a board under the bucket also.

- ★ When using the boom or arm to raise the machine, always have the bottom of the bucket in contact with the ground. (Never

push with the teeth.) The angle between the boom and arm should be  $90^\circ$  to  $110^\circ$ .

The same applies when using the inverting bucket.

- When both sides are stuck

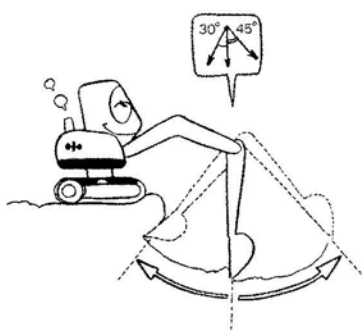


When the tracks on both sides are stuck in mud and the machine will not move, lay boards as explained on the left, and dig the bucket into the ground in front. Then pull in the arm as in normal digging operations and put the travel levers in the FORWARD position to pull the machine out.

## EXCAVATOR'S WORK

In addition to the following, it is possible to further increase the range of applications by using various attachments.

### BACK HOE WORK



A back hoe is suitable for excavation at a position lower than the machine. It is possible to effectively move the arm through  $30^\circ$  in the direction towards the machine and  $45^\circ$  in the direction away from the machine, making for efficient work.

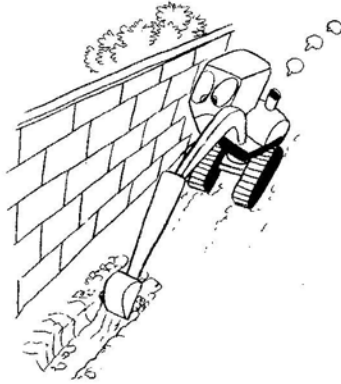
### LOADING WORK



About half of the time spent during excavating and loading work is taken up swinging. Maximum work efficiency can be attained by carrying out work in such a way that the swinging angle is kept as small as possible in accordance with the terrain.

When loading, it is better to fit the machine in the longitudinal direction of the dump truck and to load from the front of the dump truck body. This both facilitates loading and also enables a greater amount of material to be loaded as compared with loading from the side of the truck.

**SIDE DITCHING WORK**



Side ditching work can be done after swinging the boom. It is better to digging the ditch located near the fence or any obstacles.

**RECLAMATION WORK**

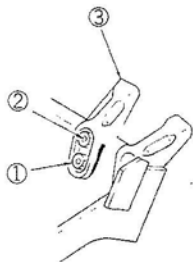


Reclamation work can be done by operating the blade upward and downward.

REPLACEMENT OF BUCKET TEETH  
REPLACEMENT OF BUCKET

## REPLACEMENT OF BUCKET TEETH

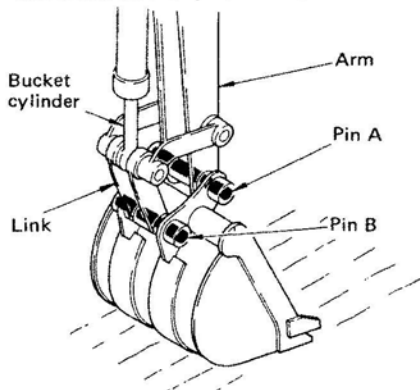
Replace the teeth before they wear down.



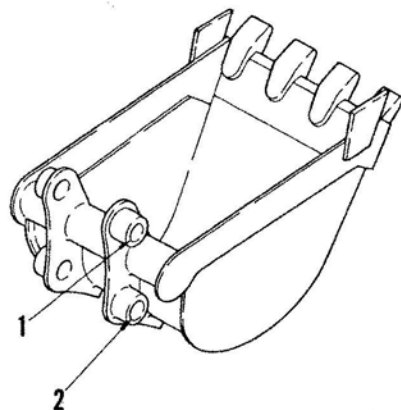
1. Raise the bucket, insert the block beneath the bucket.
  2. Loosen the bolts and nuts (1) and (2), remove the teeth (3) and then make clean.
  3. Install the new teeth with the bucket and tighten bolts and nuts.
- ★ Tightening torque is 23 to 30 kgm.
  - ★ Retighten the bolt after several hours operation.

## REPLACEMENT OF BUCKET

Stop the machine on a firm, flat surface. When performing the joint work, make clear signals to each other and work carefully for safety sake.



1. Select a flat surface and stabilize the bucket. Extract pins A and B. After removing the pins, make sure that they do not become contaminated with sand or mud. Take care not to make the dust seal at the side of bushing damaged.



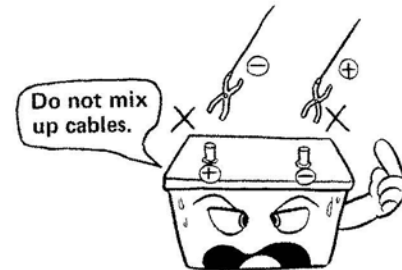
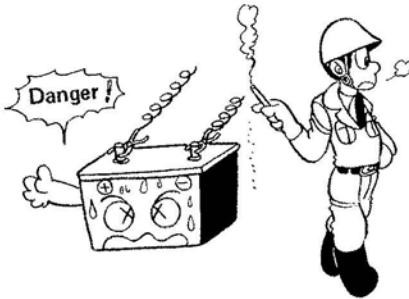
2. Couple the arm to hole 1, then connect the link to hole 2.
3. Grease the pins after tightening the bolt and the nut of each pin.

## HANDLING OF BATTERY

### PRECAUTIONS FOR CHARGING BATTERY

1. Before charging, disconnect the cable from the negative (-) terminal of the battery. Otherwise, an unusually high voltage will damage the alternator.
2. While charging the battery, remove all battery plugs for satisfactory ventilation.  
To avoid gas explosions, do not bring fire or sparks near the battery.
3. If the electrolyte temperature exceeds  $45^{\circ}\text{C}$ , stop charging for a while.
4. Turn off the charger as soon as the battery is charged.  
Overcharging the battery may cause followings:
  - 1) Overheating the battery
  - 2) Decreasing the quantity of electrolyte.
5. If the electrolyte gets on your skin or clothes, immediately wash with plenty of clean water.

6. Do not mix up cables (positive (+) to negative (-) or negative (-) to positive (+)), as it will damage the alternator.
7. When inspecting or servicing a battery, be sure to stop the engine and turn the starting switch key to "OFF" position.
8. When performing any service to battery besides checking the electrolyte level or measuring the specific gravity, disconnect cables from the battery.

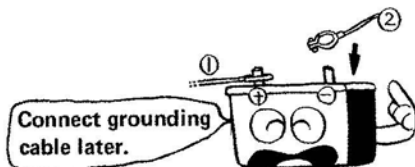
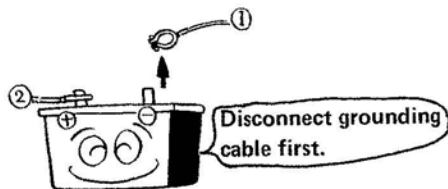




## HANDLING OF BATTERY

### REMOVAL AND INSTALLATION OF BATTERY

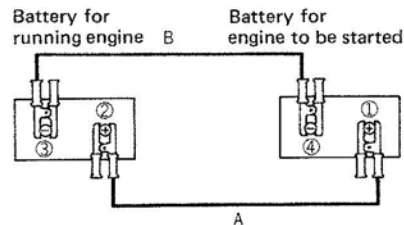
- When removing battery, first disconnect the cable from the ground (normally, from the negative (-) terminal). If a tool touches a cable connecting the positive terminal and the chassis, there is danger of sparks being emitted.
- When installing battery, the ground cable should be connected to the ground terminal as the last step.



### STARTING ENGINE WITH A BOOSTER CABLE

When starting up the engine with a booster cable, do as follows:

1. Before connecting the booster cable
  - 1) Size of booster cable and clip should be suitable for the battery size.
  - 2) Check cables and clips for breaks, corroded surfaces, etc.
  - 3) Make sure cables and clips are firmly secured.
  - 4) Keep the starting switch key in OFF position.
  - 5) The battery of the running engine must be the same capacity as that of engine to be started.
2. Connect the booster cables in the following manner.
  - 1) Connect one clip of booster cable A to the positive (+) terminal of the engine to be started. Connect the other clip to the positive (+) terminal to the engine which is running.
  - 2) Connect one clip of booster cable B to the negative (-) terminal of the engine which is running. Connect the other clip to the negative (-) terminal of the engine to be started.
  - 3) Make sure the clips are firmly connected to battery terminals. Then, start the engine.



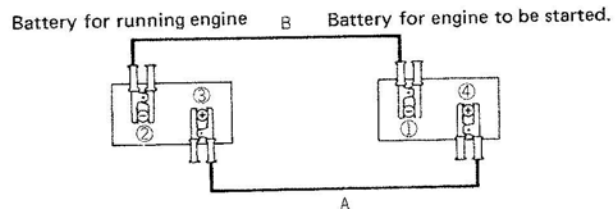
### 3. Starting the engine

- 1) Turn the starting switch key to START position and start up the engine.
- 2) If the engine doesn't start at first, try again after 2 minutes or so.

After the engine has started, the booster cables should be disconnected in the reverse order in which they were connected.

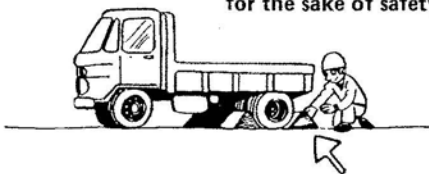
#### 1. Disconnecting the booster cables

- 1) Disconnect the clip of booster cable B from the negative (-) terminal on the engine which was started and disconnect the other clip from the negative (-) terminal of the running engine.
- 2) Disconnect the clip of booster cable A from the positive (+) terminal of the running engine and disconnect the other clip from the positive (+) terminal of the engine which was started.



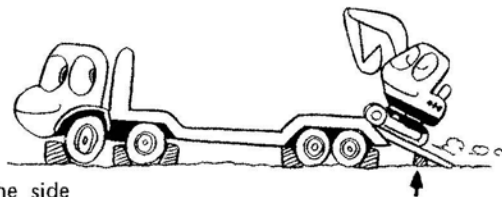
## TRANSPORTATION

When transporting the machine, observe the various road rules, road transportation vehicle laws and vehicle limit ordinances, etc. It is a good idea to obtain a special platform for loading and unloading the machine. When it is unavoidably necessary to use a gangplank, however, at the very least observe the following for the sake of safety.

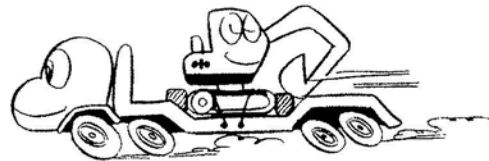
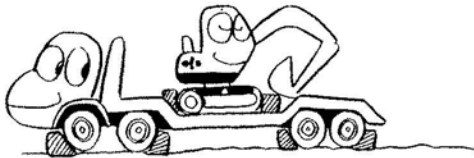


1. Properly apply the brakes on the trailer and insert blocks beneath the tires to ensure that it does not move.
2. Then fix the gangplank in line with the centers of the trailer and the machine.

- ★ Use the gangplanks with the side way stopper and fix it to the trailer bed with the hook.  
Take care not to have the height difference between both gangplanks and to keep the fixing angle within 15 degrees.
- ★ Make sure the gangplank has sufficient width, length and thickness to enable the machine to be safely loaded and unloaded.  
If the gangplank sags appreciably, reinforce it with blocks, etc.
- ★ Lock the upper works using the swing lock lever.



3. Determine the direction of the gangplank, then slowly load or unload the machine.
  - ★ Do not on any account change the direction of the machine while it is on the gangplank. To change the direction of the machine, first take it down from the gangplank.



4. Correctly load the machine onto the specified part of the trailer. After loading the machine, fully extend the bucket and arm cylinders, then slowly lower the boom.
- ★ When transporting the machine, place rectangular timber under one end of the bucket cylinder to prevent it touching the ground, thereby saving it from possible damage.

5. When transporting the machine, place rectangular timber underneath the front and rear track shoes to prevent the machine from moving about. Also, hold it down with chains or rope. Be particularly careful to ensure that the machine does not slip sideways.

6. Lock the swing lock lever and apply the lock to the working equipment lever.

- ★ Determine the route for transporting the machine by taking into account the width, height and weight of the machine.



When loading the machine, park the trailer on a flat firm roadbed. Keep a fairly long distance between the road shoulder and the machine.

## COLD WEATHER OPERATION

### PREPARATION FOR LOW TEMPERATURE

- Change lubrication oil by that with prescribed viscosity.
- Fuel of low pour point shall be used. ASTM D975 No. 1 diesel fuel should be used at atmospheric temperature lower than  $-10^{\circ}\text{C}$ .
- Add antifreeze in the cooling water  
When the atmospheric temperature drops lower than  $0^{\circ}\text{C}$  while the machine is stopped, prevent freezing by adding antifreeze to the cooling water. The mixing rate of antifreeze is determined according to the expected minimum temperature. The following table shall be used.

Mixing rate of water and antifreeze

Min. atmospheric temperature ( $^{\circ}\text{C}$ )	-5	-10	-15	-20
Amount of antifreeze ( $\ell$ )	1.0	1.2	1.5	1.7
Amount of water ( $\ell$ )	3.2	3.0	2.7	2.5

★ Coolant capacity: 4.2 $\ell$

#### ★ Cautions for using antifreeze

- 1) Permanent type antifreeze shall be used.
- 2) Soft water (ex: city water) shall be used as mixing water.
- 3) Cooling systems must be thoroughly flushed before filling with antifreeze mixture.
- 4) When the climate becomes warmer so that antifreeze is not needed, replace by clean water (i.e., tap water) after perfectly cleaning the cooling system.



Take care for fire as antifreeze is inflammable.

- Battery  
As ambient temperature drops, battery capacity will drop, and electrolyte may sometimes freeze if battery charge is low. Maintain battery at a charge level of approx. 100% and insulate it against cold temperature so that machine can be readily started the next morning.
- ★ Measure specific gravity of fluid and obtain rate of charge from the following conversion table:

Temp. of fluid Rate of charge	20° C	0° C	-10° C	-20° C
100%	1.28	1.29	1.30	1.31
90%	1.26	1.27	1.28	1.29
80%	1.24	1.25	1.26	1.27
75%	1.23	1.24	1.25	1.26

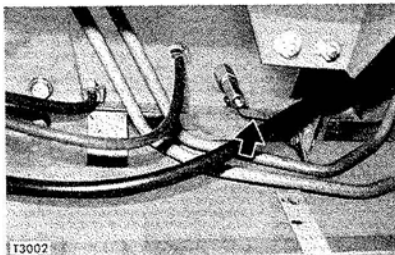
- ★ When electrolyte level is low, add distilled water in the morning before work instead of after the day's work. This is to prevent fluid from freezing at night.

- ★ When temperature rises, change lubricating oil in each unit to that of recommended viscosity. Completely drain antifreeze from cooling system and fill with soft water (for example, city water) after thorough flushing.

## COLD WEATHER OPERATION

### CAUTIONS AFTER COMPLETION OF WORK

1. Mud and water on the machine body should be completely removed. Park the machine on concrete or hard ground. If this is impossible, park the machine on wooden boards. This will prevent the accessories from freezing or the track and undercarriage from freezing to the ground thereby preventing vehicle movement the next morning. Particular attention should be given to water drops collected on the surface of the hydraulic cylinder piston rods. Such droplets must be fully wiped off because if water is frozen to the rod when the cylinder is utilized, the cylinder oil seals may be damaged.



2. Drain water collected in fuel tank to prevent its freezing during the night and restricting the flow of fuel the following day.

## PERIODIC MAINTENANCE

Proper lubrication and maintenance assure trouble-free operation and long machine life. Time and money spent for scheduled periodic maintenance will be amply compensated by prolonged machine operation and reduced operating cost.

All hourly figures given in the following descriptions are based on service meter readings. In practice, however, it is recommended to rearrange all of them into units of days, weeks and months to make the maintenance schedule more convenient. Under rough job site or operating conditions, it is necessary to somewhat shorten the maintenance intervals stated in this manual.



## PERIODIC MAINTENANCE

# PRECAUTIONS FOR MAINTENANCE

## SAFETY . . . . . ⚠

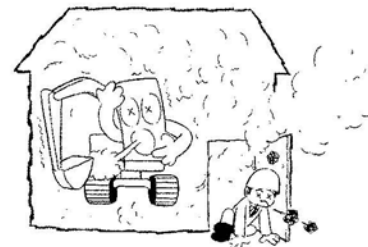


- Wear well-fitting helmet, safety shoes and working clothes. When drilling, grinding or hammering, always wear protective goggles.

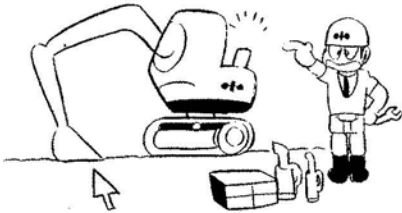


- Fuel or oil are dangerous substances. Never handle fuel, oil, grease or oily clothes in places where there is any fire or flame. As preparation in case of fire, always know the location and directions for use of fire extinguishers and other fire-fighting equipment.

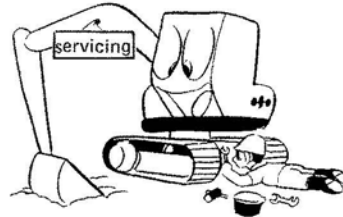
- Do not handle electrical equipment while wearing wet gloves, or in wet places, as this can cause electric shock.
- During maintenance do not allow any unauthorized person to stand near the machine.



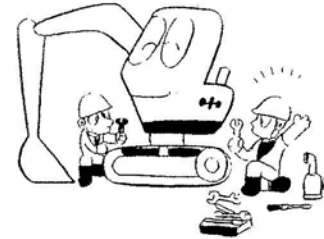
- Exhaust gas is dangerous. When working inside, be particularly careful to have good ventilation.



- Unless you have special instructions to the contrary, maintenance should always be carried out with the engine stopped. Lock the swing lock lever and also all of the safety levers. If maintenance is carried out with the engine running, there must be two men present: one sitting in the operator's seat and the other one performing the maintenance. In such a case, never touch any moving part.



- When working underneath the machine, place a sign to that effect on the operator's seat and, if necessary, put a similar signs in the vicinity as well.
- Do not go underneath the machine after raising it up using the boom and the arm.



- When working with others, choose a group leader and work according to his instructions. Do not perform any maintenance beyond the agreed work.
- When maintenance has to be carried out with the working equipment raised, they must be securely supported by blocks.

## PERIODIC MAINTENANCE



- Always remember that the hydraulic oil circuit is under pressure. When feeding or draining the oil or carrying out inspection and maintenance, release the pressure first.

### Method of relieving pressure

- 1) Lower the working equipment to the ground and stop the engine after idling it for two or three minutes. Then operate the various operation levers. (working equipment, traveling and steering lever through their full stroke in each direction.

When removing air instruments or pipings, open the drain valve under the air reservoir to relieve air pressure.

- 2) Gradually unscrew the cap of the hydraulic oil tank and leave it for a few minutes.



- Flames should never be used instead of lamps. Never use a naked flame to check leaks or the level of oil, fuel, anti-freeze or electrolyte.
- Immediately remove any oil or grease on the floor of the operator's cab, or on the handrail.  
It is very dangerous if someone slips while on the machine.
- Be particularly careful when removing the radiator cap. If this is done immediately after using the machine, there is a danger that boiling water may spurt out.



- Do not check the fan belt tension while the engine is running. Be sure to turn off the engine before inspecting other rotating parts and the vicinity thereof.

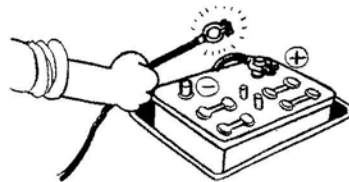


- Do not allow anybody other than the necessary workers to go near the machine while it is being inspected or maintained. Also, be careful of people in the vicinity. It is necessary to exercise particular care when performing grinding or welding, or when swinging a large hammer.



- Use the tool which is suitable for the maintenance work.

- When the tracks are removed, never put your fingers between the shoes.
- When carrying out other difficult maintenance works, carrying them out carelessly can cause unexpected accidents. If you consider the maintenance is too difficult, always request Komatsu distributor to carry out it.



- Remove the minus terminal from the battery in maintaining the electrical system.

## PERIODIC MAINTENANCE

### MISCELLANEOUS

- Thoroughly wash the machine, particularly the oiling and greasing parts and the vicinity, thereof, in order to prevent the ingress of dust.
- Use genuine Komatsu replacement parts specified in the parts list.
- Use Komatsu specified oil and grease. Use oil and grease having the recommended viscosity for the particular ambient temperature.
- Use clean oil and grease and keep them in clean containers to avoid the ingress of dust.
- Inspect or replace oil in a dust-free location to prevent the ingress of dirt.
- Drain off used oil after heating it to a suitable temperature (about 30 to 40°C).
- After replacing oil, filter element or strainer, bleed the air from the circuit.
- When the strainer is located in the oil filler, the strainer must not be removed while adding oil.
- When adding oil or checking the oil level, check that the oil is at the correct level.
- After greasing up, always wipe off the old grease that was forced out.
- When changing the oil or filter, check the drained oil and filter for any signs of excessive metal particles or other foreign materials.
- When removing parts containing O-rings, gaskets or seals, clean the mounting surface and replace with new sealing parts.
- When washing the machine, ensure that water does not get onto the alternator.
- Special measuring apparatus is needed for testing hydraulic pressure.
- Thoroughly wash the machine. In particular, be careful to clean the filler caps, grease fittings and the area around the dipsticks. Be careful not to let any dirt or dust into the system.
- When check an open cover there is a risk of dropping things in. Before removing the covers to inspect cover, empty everything from your pockets. Be particularly careful to remove wrenches and nuts.

# MAINTENANCE TABLE

No.	ITEM	SERVICE	PAGE
<b>CHECK BEFORE STARTING</b>			
a	Visual check		35
b	Hydraulic tank	Check oil level and supply	36
c	Coolant	Check water level and supply	37
d	Fuel tank	Check fuel level and supply	37
e	Engine oil pan	Check oil level and supply	38
f	Swing circle pinion	Lubricate with grease	38
g	Dust indicator	Check	38
<b>INITIAL 50 HOURS SERVICE</b>			
a	Engine oil pan	Change oil	76
b	Hydraulic oil filter	Replace cartridge	76
c	Hydraulic tank strainer	Clean	76
d	Fan belt	Check tension	76

MAINTENANCE TABLE

No.	ITEM	SERVICE	PAGE
<b>EVERY 50 HOURS SERVICE</b>			
a	Swing machinery case	Check oil level and supply	76
b	Fuel tank	Drain water and sediment	77
c	Dust cup	Clean	77
d	Swing circle	Lubricate 3 points	77
e	Water separator	Drain water and sediment	78
<b>EVERY 100 HOURS SERVICE</b>			
a	Lubricating grease fitting		79
-1	Boom-swing cylinder foot pin	Lubricate 1 point	79
-2	Boom cylinder foot pin	Lubricate 1 point	79
-3	Boom-swing cylinder rod end	Lubricate 1 point	79
-4	Boom foot pin	Lubricate 1 point	79
-5	Boom-swing bracket pin	Lubricate 2 points	79
-6	Boom cylinder rod end	Lubricate 1 point	79

MAINTENANCE TABLE

No.	ITEM	SERVICE	PAGE
-7	Arm cylinder foot pin	Lubricate 1 point	79
-8	Arm cylinder rod end	Lubricate 1 point	79
-9	Boom arm coupling pin	Lubricate 1 point	79
-10	Bucket cylinder foot pin	Lubricate 1 point	79
-11	Bucket cylinder rod end	Lubricate 1 point	79
-12	Link coupling pin	Lubricate 1 point	79
-13	Bucket-link coupling pin	Lubricate 1 point	79
-14	Arm-bucket coupling pin	Lubricate 1 point	79
-15	Arm-link coupling pin	Lubricate 1 point	79
-16	Blade cylinder rod end	Lubricate 1 point	79
-17	Blade cylinder foot pin	Lubricate 1 point	79
-18	Blade foot pin	Lubricate 2 points	79
b	Air cleaner element (without dust indicator)	Check and clean	80



MAINTENANCE TABLE

No.	ITEM	SERVICE	PAGE
<b>INITIAL 250 HOURS SERVICE</b>			
a	Final drive case	Change oil	82
b	Engine valve clearance	Check and adjust	82
<b>EVERY 250 HOURS SERVICE</b>			
a	Fuel filter and water separator	Clean	82
b	Engine oil pan and filter	Change oil and replace cartridge	84
c	Battery electrolyte	Check fluid level	85
d	Final drive case	Check oil level and supply	85
e	Hydraulic tank strainer	Clean	86
f	Hydraulic oil filter	Replace cartridge	86
g	Fan belt	Check tension	87

MAINTENANCE TABLE

No.	ITEM	SERVICE	PAGE
<b>EVERY 500 HOURS SERVICE</b>			
a	Fuel filter	Replace element	88
b	Radiator fins	Clean	88
c	Air cleaner element (without dust indicator)	Replace element	89
d	Alternator and starting motor	Check	90
e	Engine valve clearance	Check and adjust	90
<b>EVERY 2000 HOURS SERVICE</b>			
a	Hydraulic tank	Change oil	91
b	Final drive case	Change oil	92
c	Swing machinery case	Change oil	92
<b>WHEN REQUIRED</b>			
a	Coolant	Change twice a year or every 1000 hours	93
b	Air cleaner element (with dust indicator)	Clean and replace	95
c	Track	Check and adjust tension	97

INITIAL 50 HOURS SERVICE  
EVERY 50 HOURS SERVICE

## CHECK BEFORE STARTING

See the section on CHECK BEFORE STARTING aforementioned.

## INITIAL 50 HOURS SERVICE

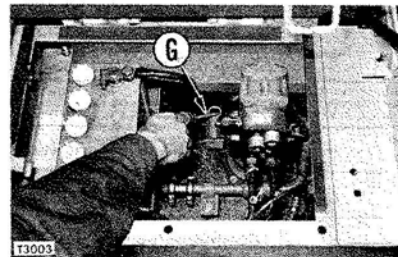
Perform the following maintenance after running the machine for the first 50 hours.

- a. ENGINE OIL PAN
- b. HYDRAULIC OIL FILTER
- c. HYDRAULIC TANK STRAINER
- d. FAN BELT

For details of the method of replacing or maintaining, see the section on EVERY 250 HOURS SERVICE.

## EVERY 50 HOURS SERVICE

### a. SWING MACHINERY CASE

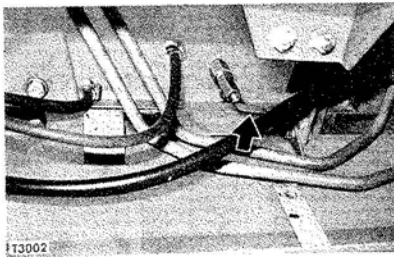


Turn the operator's seat toward the front and check the oil level in the swing machinery case.

The oil level should be between H and L of gauge (G).

- ★ Use CLASS-CD SAE30 engine oil for all seasons.
- ★ Check that the dipstick (G) is completely inserted in.

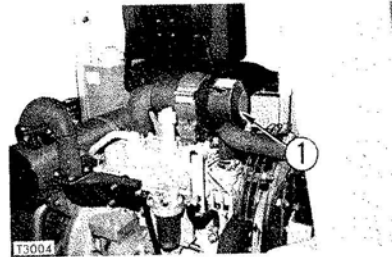
**b. FUEL TANK**



Loosen the valve on the bottom of the tank so that the precipitation and mixed water will be drained in accompaniment with fuel.

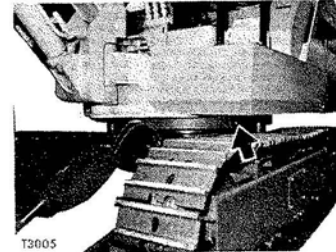
- ★ Swing the upper frame to prevent oil from splashing on the track.

**c. AIR CLEANER DUST CUP**



1. Remove the dust cup (1), dispose the dust in it.
2. Clean inside of the cup.

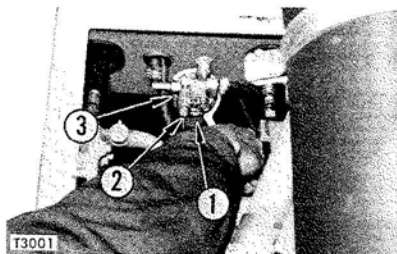
**d. SWING CIRCLE (3 points)**



Apply grease to the grease fittings shown by an arrow.

## CHECK BEFORE STARTING

### e. WATER SEPARATOR



When water which has accumulated in cup (1) causes the float (red ball) to rise near the strainer, close valve (2) of the water separator and loosen ring (3) with a filter wrench to discharge the water and sediments.

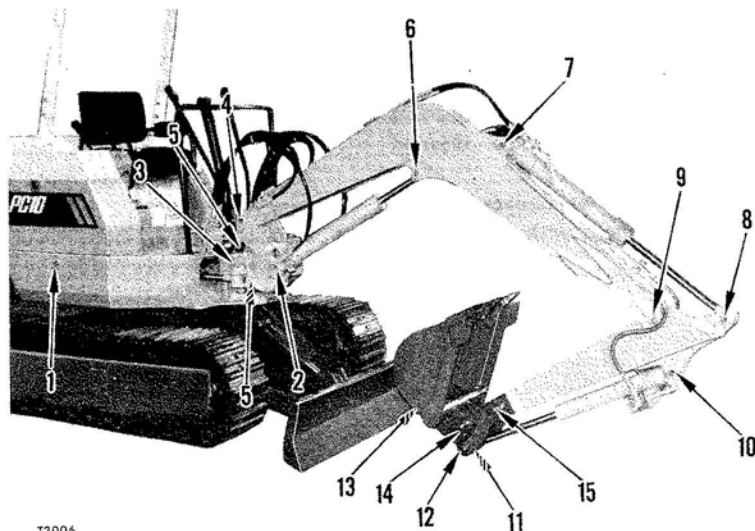
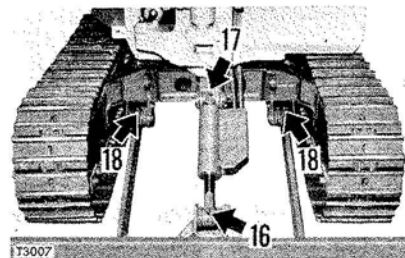
- ★ See Every 250 Hours Service for the methods of cleaning and bleeding air.

EVERY 100 HOURS SERVICE

**EVERY 100 HOURS SERVICE**

**a. GREASING**

Apply grease to the grease fittings shown by arrows.

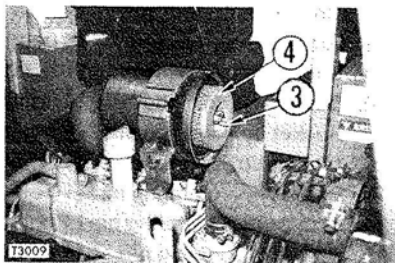
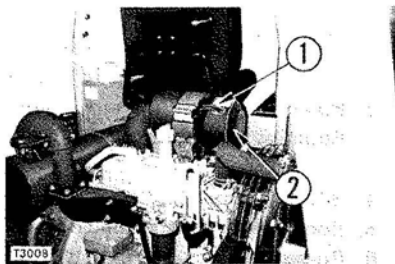


★ Maintenance for every 50 hours should be carried out at the same time.


1. Boom-swing cylinder foot pin (1 point)
2. Boom cylinder foot pin (1 point)
3. Boom-swing cylinder rod end (1 point)
4. Boom foot pin (1 point)
5. Boom-swing bracket pin (2 points)
6. Boom cylinder rod end (1 point)
7. Arm cylinder foot pin (1 point)
8. Arm cylinder rod end (1 point)
9. Boom-arm coupling pin (1 point)
10. Bucket cylinder foot pin (1 point)
11. Bucket cylinder rod end (1 point)
12. Link coupling pin (1 point)
13. Bucket-link coupling pin (1 point)
14. Arm-bucket coupling pin (1 point)
15. Arm-link coupling pin (1 point)
16. Blade cylinder rod end (1 point)
17. Blade cylinder foot pin (1 point)
18. Blade foot pin (2 points)

## EVERY 100 HOURS SERVICE

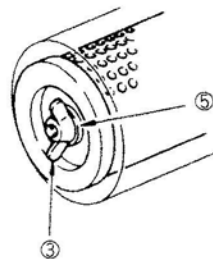
### b. CHECK AND CLEAN AIR CLEANER ELEMENT (without dust indicator)

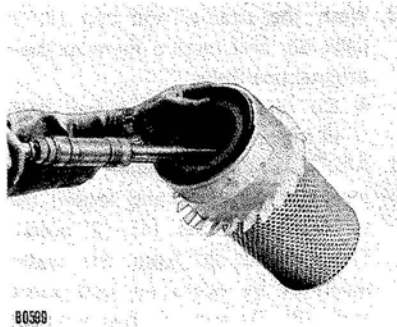


1. Loosen the fastener (1), remove dust cup (2), wing nut (3) and the element (4).
2. Clean the air cleaner body interior and the dust cup.
3. Clean and inspect the element. (See the next page for cleaning procedure.) Install the cleaned element.

 **Do not clean or replace the air cleaner element with the engine running.**

- ★ Cover the air inlet port when removing element.
- ★ Be sure to assemble seal washer (5) when mounting element.
- ★ Install the dust cup holding it's arrow mark upward.
- ★ Replace the element which has been cleaned 6 times repeatedly or has been used for more than a year.
- ★ Replace seal washer (5) or wing nut (3) if they are broken.



**Cleaning element****With compressed air**

Direct dry compressed air (less than  $7\text{ kg/cm}^2$ ) to the element from inside along its folds, then direct it from outside along its folds and again from inside, and check the element.

**⚠** When using compressed air, wear safety glasses and other things required to maintain safety.

The following methods require spare-parts to wait the element dries.

**With water**

Dash city water (less than  $3\text{ kg/cm}^2$ ) on the element from inside along folds, then from outside and again from inside. Dry and check it.

**With cleaning agent**

For removing oils and fats as well as carbon etc. attached on the element, the element may be cleaned in lukewarm solution of mild detergent, then rinsed in clean water and left to drip dry.

- ★ Drying can be speeded up by blowing dried compressed air (less than  $7\text{ kg/cm}^2$ ) from the inside to the outside of the element.  
Never attempt to heat the element.
- ★ Using warm water (about  $40^\circ\text{C}$ ) instead of soapy water may also be effective.



- ★ If small holes or thinner parts are found on element when it is checked with an electric bulb after cleaning and drying, replace the element.
- ★ If the element is usable, wrap it and store it in dry place.
- ★ Do not use the element whose folds or gasket or seal are damaged.
- ★ When cleaning the element, do not hit it or beat it against something.



INITIAL 250 HOURS SERVICE  
EVERY 250 HOURS SERVICE

## INITIAL 250 HOURS SERVICE

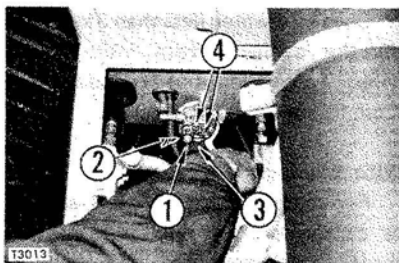
Perform the following maintenance after running the machine for the first 250 hours.

- a. FINAL DRIVE CASE
- b. ENGINE VALVE CLEARANCE

For details of the method of replacing or maintaining, see the section on EVERY 500 HOURS AND 2000 HOURS SERVICE.

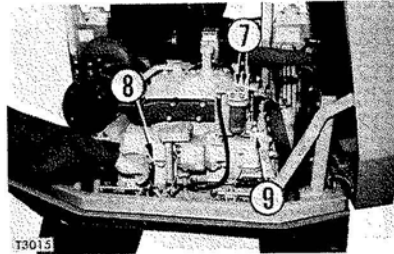
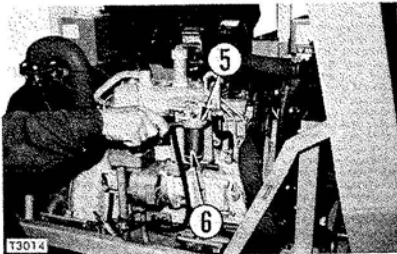
## EVERY 250 HOURS SERVICE

- a. FUEL FILTER ELEMENT AND WATER SEPARATOR STRAINER



★ Maintenance for 50 hours should be carried out at the same time.

1. Close water separator valve (1).
2. Loosen ring (2) and take the strainer out of the separator, using the service tools furnished.
3. Wash the strainer and cup (3) in light oil, and restore them to their original positions.
  - ★ Do not lose a float (red ball) in the cup.
4. After washing the strainer, open the separator valve (1) and loosen the air bleeding bolts (4) (2 bolts). Then, bleed air from the water separator by operating feed pump lever (8). As soon as fuel without air bubbles begins to show, tighten the air bleeding bolts (4).



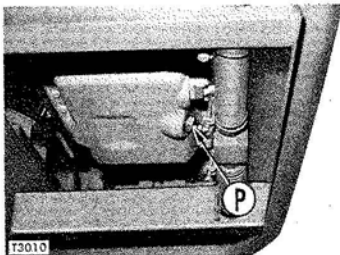
5. Close water separator valve (1).
  6. Loosen ring (5) and take the element out of the filter, using the service tools furnished with the machine.
  7. Wash element cup (6) in light oil and apply compressed air (2 to 3 kg/cm<sup>2</sup>) to the element to remove dust. Replace a badly clogged or damaged element with a new one.
- ★ When replacing a fuel filter element, replace the filter O-ring at the same time.

8. After cleaning and inspecting the element, open the separator valve and loosen the fuel filter air bleeding bolts (7) (2 bolts). Then, bleed air from the fuel filter by operating feed pump lever (8). As soon as fuel without air bubbles begins to show, tighten the air bleeding bolts (7).

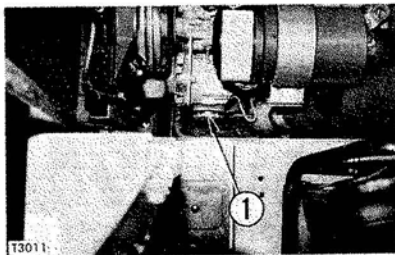
9. Loosen air bleeding bolt (9) at the fuel pump inlet tube joint bolt and bleed air from inside the piping by operating feed pump lever (8). As soon as the fuel without air bubbles begins to show, tighten air bleeding bolt (9).
- ★ Bleed the air when the engine stops due to fuel shortage or when starting the engine after a long rest.

## EVERY 250 HOURS SERVICE

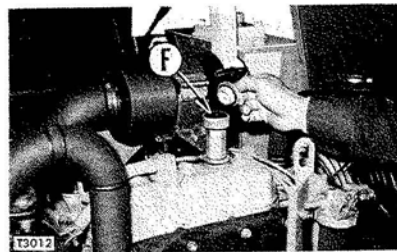
### b. ENGINE OIL PAN AND FILTER



1. Remove the drain plug (P) to drain oil. After draining, tightening the drain plug.
2. Open the cover at the rear of machine. Using a filter wrench, remove cartridge (1) of the engine oil filter by turning it counter-clockwise.
3. Apply a dab of oil to the gasket of the new cartridge, and after the gasket contacts the seal face, tighten it up 1/2 to 3/4 turn by hand.



4. After replacing the cartridge, pour in the specified quantity of engine oil from oil filler (F).
5. After pouring in oil, run the engine for several minutes and stop the engine, then once again check the oil level and ensure that it is correct.



- ★ Refill capacity: 4.2 ℓ
- ★ Replace cartridge element every 6 months irrespective of number of operating hours.
- ★ When fitting the cartridge, be careful not to tighten it up excessively.
- ★ Above 0°C: Use engine oil  
CLASS-CD SAE 30.
- Below 10°C: Use engine oil  
CLASS-CD SAE10W.
- ★ Be sure to fit a genuine Komatsu cartridge.


## c. BATTERY ELECTROLYTE




If the electrolyte level is lower than the prescribed level (10 to 12mm above the plate), supply distilled water. Should any of the acid be spilt, have it replenished by the nearest battery shop with acid of the correct specific gravity.

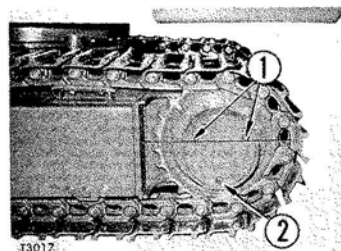
When inspecting electrolyte level, clean the air hole of the battery cap.

★ Never use metal funnel for electrolyte supply.

 To avoid gas explosions, do not bring fire or sparks near the battery.

 If the electrolyte gets on your skin or clothes, immediately wash with plenty of clean water.

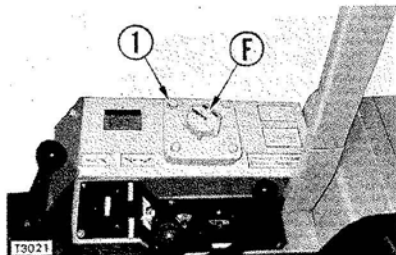
## d. FINAL DRIVE CASE



1. Set plugs (1) (2 places) parallel to the ground with plug (2) at the bottom.
  2. Remove one of plugs (1). If the oil is not filled up to near the bottom line of the plug hole.
- ★ Use CLASS-CD SAE30 engine oil for all seasons.

EVERY 250 HOURS SERVICE

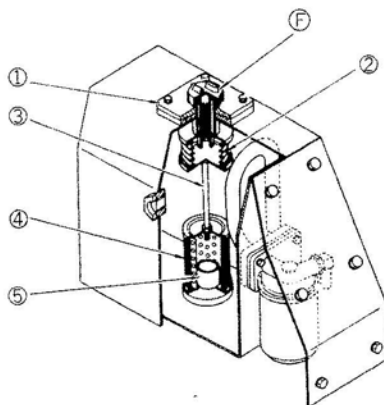
e. HYDRAULIC TANK STRAINER




1. Gradually loosen cap (F) of the oil filler and leave it for several minutes to sufficiently relieve the air pressure in the tank.
2. Remove the bolts (1) and the cover, then pull up the top of rod (3) and extract spring (2) and strainer (4). Refit the strainer after washing in the fuel.

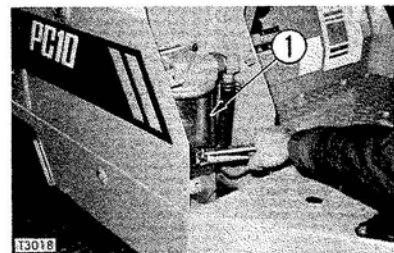
If the strainer is damaged, replace it with a new one.

- ★ Refit the strainer (4) by inserting it into tank projecting part (5).



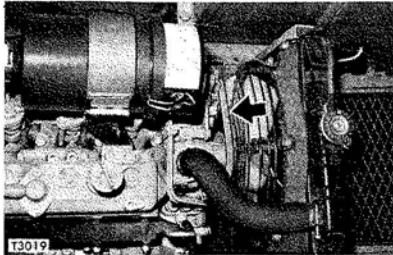
 **When removing the cover, undo the bolts (4 bolts) gradually to prevent the cover flying off under the force of the spring.**

f. HYDRAULIC OIL FILTER

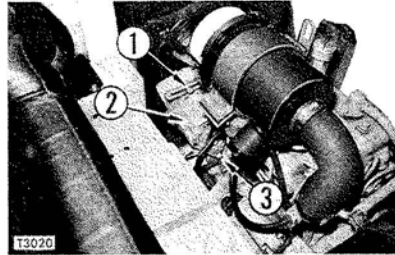
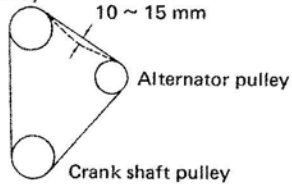


1. Gradually loosen cap (F) of the oil filler.
  2. Use a filter wrench and remove filter cartridge (1) by turning it counterclockwise.
  3. Clean the filter base. Install a new filter cartridge after coating engine oil on the packing surface.
- ★ To prevent overtightening at the time of installation, manually rotate the filter cartridge 1/2 to 3/4 turn after the packing surface comes into contact with the seal surface of the filter base.

## g. FAN BELT



Fan pulley



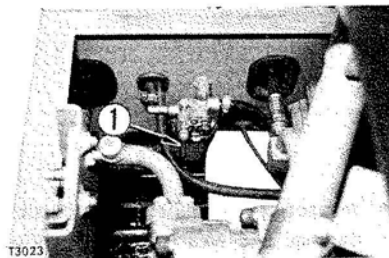
The fan belt tension should normally deflect by about 10 to 15mm when pressed with the finger at a point midway between the alternator and the fan pulley (approx. 10kg). To adjust the belt tension, loosen bolt (1) and nut (3) and shift the alternator (2) slightly.

- ★ Inspect each pulley for possible damage and wear of the V-groove, and also check the belt for wear. In particular, check to see if the V-belt is touching the bottom of the groove.
- ★ If the belt stretches to such an extent that adjustment is no longer possible or if the belt is slashed or cracked, replace both belts together.
- ★ When adjusting the V-belt tension, do not push the stator core of the alternator directly with a bar, etc. Place a piece of wood between the alternator and the bar.

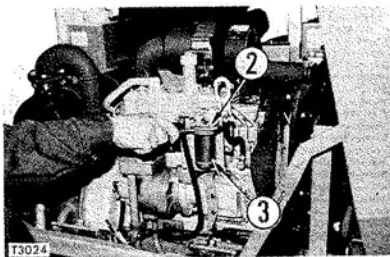
EVERY 500 HOURS SERVICE

## EVERY 500 HOURS SERVICE

### a. FUEL FILTER ELEMENT



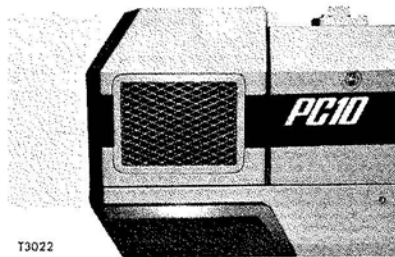
1. Close the water separator valve (1).
2. Loosen ring (2) and take the element out of the filter, using the service tools furnished with the machine.
3. Wash element cup (3) in light oil or in a cleaning oil and install a new element in the filter.
  - ★ When replacing the filter element, replace the filter O-ring at the same time.



4. After replacing the element, bleed the air. See "Cleaning and Inspecting the Fuel Filter Element" in the Every 250 Hours Service section.

- ★ Maintenance for every 50, 100 and 250 hours should be carried out at the same time.

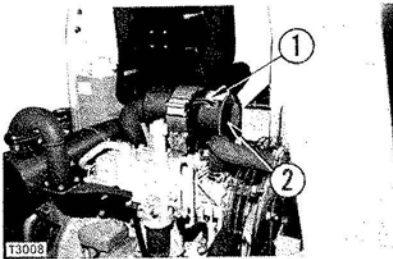
### b. RADIATOR FINS




Clean the radiator fins clogged with mud, dust and leaves with compressed air. Steam or water may be used instead of compressed air.

- ★ The rubber hose should be checked at the same time. If the hose is found to have cracks or to be hardened by ageing, such hose should be replaced by new one. Further, loosened hose clamp should also be checked.

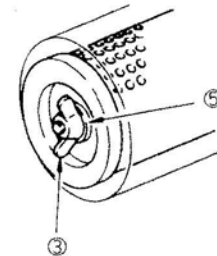
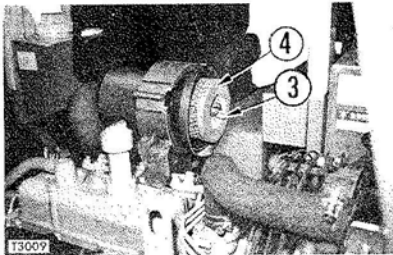
**c. REPLACE AIR CLEANER ELEMENT  
(without dust indicator)**



1. Loosen the fastener (1), remove dust cup (2), wing nut (3) and the element (4).
2. Clean the air cleaner body interior and the dust cup.
3. Install the new element.

 **Do not replace the air cleaner element with the engine running.**

- ★ Cover the air inlet port when removing element.
- ★ Be sure to assemble seal washer (5) when mounting element.
- ★ Install the dust cup holding it's arrow mark upward.
- ★ Replace seal washer (5) or wing nut (3) if they are broken.





## EVERY 500 HOURS SERVICE

### **d. ALTERNATOR AND STARTING MOTOR**

Brushes should be worn by this time. Request Komatsu distributor to repair. An attempt to disassemble starting motor by unskilled hands may impair its drip-proof function. Leave its repair to a service shop specialist.

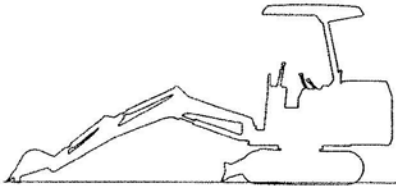
- ★ Have a service shop inspect alternator and starting motor every 1000 hours if work operations require frequent use of lights.

### **e. ENGINE VALVE CLEARANCE**

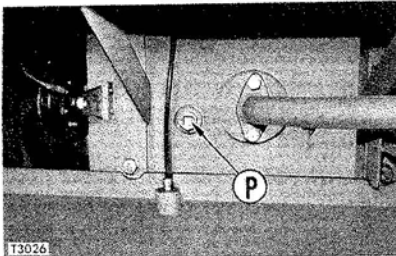
Ask Komatsu distributor to check engine valve clearance because special tools should be used.

## EVERY 2000 HOURS SERVICE

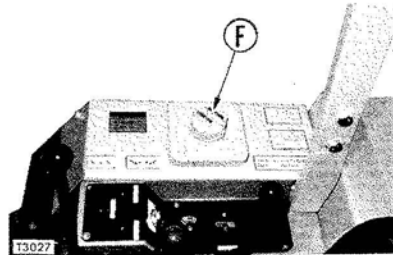
### a. HYDRAULIC TANK



1. Retract the arm and bucket cylinder, then lower the boom and put the tip of the bucket tooth in contact with the ground.



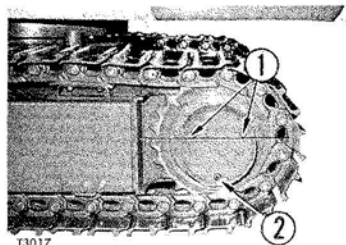
2. Loosen drain plug (P) to drain off the oil. After draining off the oil, tighten up drain plug (P).



3. Pour in the specified amount of engine oil from oil filler (F).
  4. After adding the engine oil, check the oil level according to the explanation in the Check Before Starting section.
- ★ Run the engine at low idling speed several minutes after holding working equipment levers in NEUTRAL.
  - ★ Refill capacity: 29ℓ

## EVERY 2000 HOURS SERVICE

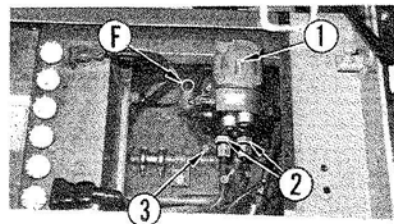
### b. FINAL DRIVE CASE



1. Set plugs (1) (2 places) parallel to the ground with plug (2) at the bottom.
2. Remove plug (2) to drain the oil. After draining, tighten the plug.
3. Add the specified amount of oil through the hole for plug (1). Check the oil level according to the explanation in EVERY 250 HOURS SERVICE.

- ★ Use CLASS-CD SAE30 engine oil for all seasons.
- ★ Refill capacity: 0.8ℓ (each side)

### c. SWING MACHINERY CASE



T3025

1. Remove 2 sleeve nuts (2) of the tube connected to swing motor (1).
  2. Remove 4 cage bolts (3) under the swing motor. Lift the swing motor about 150 mm, and the oil will flow out.
  3. After draining the oil, tighten bolts (3) and sleeve nuts (2). Add the specified amount of oil through oil filler (F).  
After adding the oil, check the level according to the explanation in the EVERY 50 HOURS SERVICE.
- ★ Use CLASS-CD SAE30 engine oil for all seasons.
  - ★ Refill capacity: 0.3ℓ

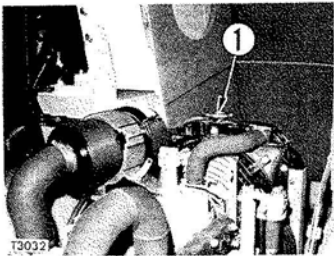
## WHEN REQUIRED

### a. CHANGE COOLING WATER

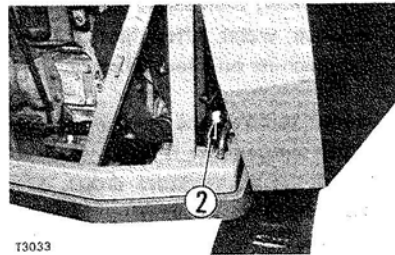
Change cooling water twice a year in spring and autumn, or every 1000 hours when antifreeze is not used.

#### Replacement

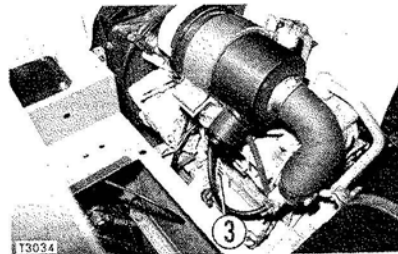
#### Water filler



#### Drain valve (radiator)




#### Drain valve (cylinder block)



1. Stop the engine, turn the cap (1) slowly until it comes off. Open the drain valves (2) and (3) at the bottom of the radiator and the side of the cylinder block and drain off the cooling water.
2. After draining off the cooling water, wash out the cooling system using commercially available detergent. Follow the instructions on the detergent container.
3. After washing the cooling system, drain off all the water, then close up the drain valves and pour in clean water (e.g., city water) up to the vicinity of the water filler.
4. When the water reaches the vicinity of the water filler, put the engine at low idling, open the drain valves then pass water through the cooling system until clean water comes out from the drain valves.

## WHEN REQUIRED

5. When the water becomes completely clean, stop the engine, close the drain valves and pour in water up to the vicinity of the water filler.
  6. After filling the cooling system with water, run the engine for 5 minutes at low idling and then for another 5 minutes at high idling to eliminate air trapped in the cooling system (leave the water filler cap off during this operation).
  7. Stop the engine, and after letting it stand for about 3 minutes pour in water up to the vicinity of the water filler, then screw up the cap.
    - ★ Replace water after first parking the machine on a level surface.
-  **Never remove the cap when the water temperature is high. When the temperature drops, turn cap slowly to allow pressure to be relieved.**

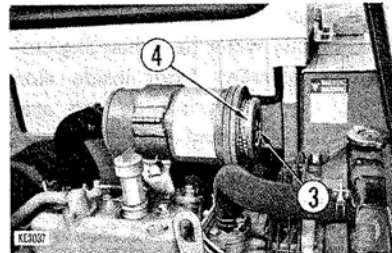
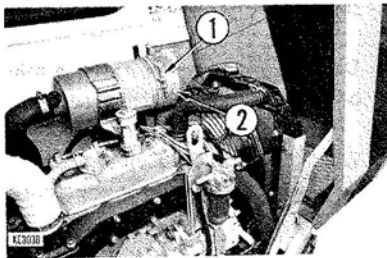
## b. CHECK, CLEAN AND REPLACE AIR CLEANER ELEMENT (with dust indicator)

### Checking



Whenever the red piston in the dust indicator appears, clean the air cleaner outer element. Stop the engine when cleaning the element.

### Cleaning or replacing element

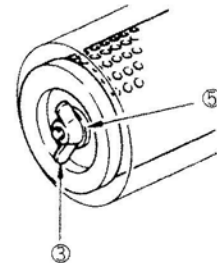


1. Loosen the bolt (1) and remove the dust cup (2), wing nut (3) and the element (4).
2. Clean the air cleaner body interior and the dust cup.
3. Clean and inspect the element. (See the next page for cleaning procedure.) Install the cleaned element.



**Do not clean or replace the air cleaner element with the engine running.**

- ★ Cover the air inlet port when removing element.
- ★ Be sure to assemble seal washer (5) when mounting element.
- ★ Install the dust cup holding it's arrow mark upward.
- ★ Replace the element which has been cleaned 6 times repeatedly or has been used for more than a year.
- ★ Replace seal washer (5) or wing nut (3) if they are broken.




## WHEN REQUIRED

### Cleaning element

#### With compressed air



Direct dry compressed air (less than  $7\text{kg/cm}^2$ ) to the element from inside along its folds, then direct it from outside along its folds and again from inside, and check the element.

 **When using compressed air, wear safety glasses and other things required to maintain safety.**

The following methods require spare-parts to wait the element dries.

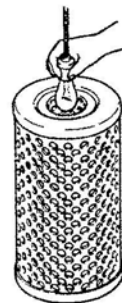
#### With water

Dash city water (less than  $3\text{kg/cm}^2$ ) on the element from inside along folds, then from outside and again from inside. Dry and check it.

#### With cleaning agent

For removing oils and fats as well as carbon etc. attached on the element, the element may be cleaned in lukewarm solution of mild detergent, then rinsed in clean water and left to drip dry.

- ★ Drying can be speeded up by blowing dried compressed air (less than  $7\text{kg/cm}^2$ ) from the inside to the outside of the element. Never attempt to heat the element.
- ★ Using warm water (about  $40^\circ\text{C}$ ) instead of soapy water may also be effective.



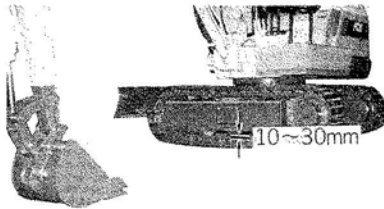
- ★ If small holes or thinner parts are found on element when it is checked with an electric bulb after cleaning and drying, replace the element.
- ★ If the element is usable, wrap it and store it in dry place.
- ★ Do not use the element whose folds or gasket or seal are damaged.
- ★ When cleaning the element, do not hit it or beat it against something.

### c. CHECK TRACK TENSION

The wear of pins and bushings on the undercarriage will vary with the working conditions and soil properties. It is thus necessary to continually inspect the track tension so as to maintain the standard tension on it.

If the track tension is not at the standard value, adjust it in the following manner:

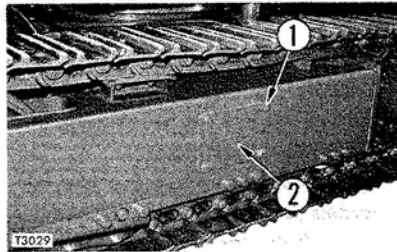
#### Inspection



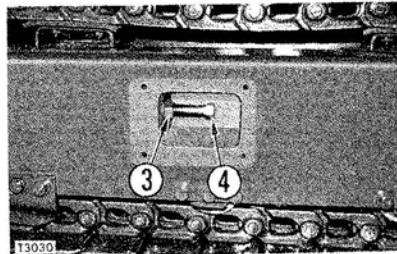
T3028

Raise the machine by means of the boom and arm, and measure the clearance between the tread of the 2nd track roller from the sprocket and the roller contact face of the track link. If the clearance is between 10 and 30mm, the track tension is normal.

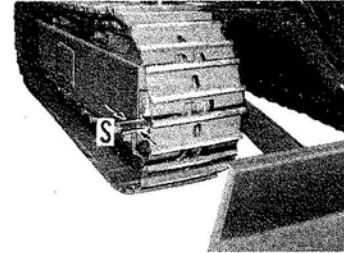
#### Adjustment



T3029



T3030



T3031

1. Loosen 4 bolts (1) and remove cover (2).
2. Loosen lock nut (3) and make adjustment by turning adjustment bolt (4).
3. The track tension will be adjusted until S becomes 0mm.

If, despite doing this, the track tension is still low, the pin and bushing have become excessively worn and must either be inverted or replaced.

Have this work done by Komatsu distributor.



## STORAGE

### BEFORE STORAGE

To place the machine in storage for an extended period of time, the following measures must be taken to insure that it can be returned to operation with minimum of service.

- After every part is washed and dried, the machine shall be housed in a dry building. Never leave it outdoors.

In case it is indispensable to leave it outdoors, lay wood plates on the ground, and park the machine on the wood plates and cover it with canvas etc.

- Completely fill fuel tank, lubricate and change oil before storage.

- Apply a thin coat of grease to metal surface (hydraulic piston rods and front idler adjusting rods).
- As to batteries, remove the terminals and cover them, or remove them from the machine and store separately.

- When the atmospheric temperature is anticipated to drop below  $0^{\circ}\text{C}$ , always add antifreeze in the cooling water.
- The fuel control lever shall be set to engine stop position. The various control levers shall be set to neutral position.



**DURING STORAGE**

- Operate the engine and move the machine for a short distance once a month so that new oil film will be coated over movable parts and component surfaces.
- Before operating the working equipment, wipe off the grease on the hydraulic piston rod.



**If it is unavoidably necessary to carry out rust-preventive operation while the machine is indoors, open up doors and windows to improve ventilation and prevent the gas poisoning.**

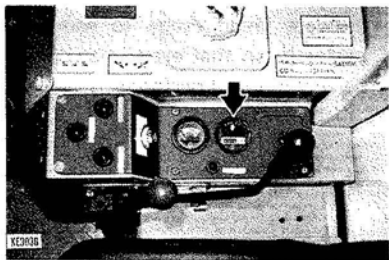
**AFTER STORAGE**

After storage (when it is kept without cover or the rust-preventive operation once a month is not made), you shall apply the following treatment before operation.

- Loosen the drain plugs on oil pan and other cases and drain mixed water.
- Remove the rocker housing cover and lubricate sufficiently valves and rocker arms. And inspect the valve operation.
- After the engine is started, operate machine until engine oil pressure gauge and water temperature gauge indicate green range to warm up perfectly so that every section will be acclimatized perfectly.

## SERVICE METER

**This meter indicates the integrated work hours. So, use it according to the following instructions.**



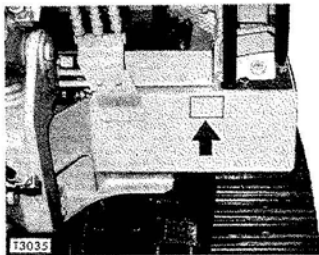
## SERVICE METER

- Record the readings at the start and the end of work, this is the work record of the machine.
- This record will indicate, when periodical maintenance is due.
- It also indicates the integrated working hours when machine problems are encountered.
- ★ **How the meter progresses**  
The service meter progresses by 1 when the engine is operated for one hour, regardless of the engine speed.  
Consequently, if the engine is running, the service meter will advance even if the machine does not move.

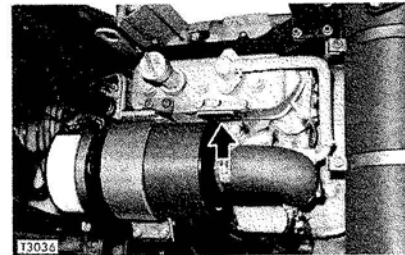
## MACHINE AND ENGINE SERIAL NUMBERS

When calling for a service of mechanic or when making replacement-parts order, be sure to give Komatsu distributor the machine and engine serial numbers as well as the service meter reading before mentioned. These numbers are found on the plates shown in the photos below.

- The machine serial number plate is on the front left of the frame.
- The machine serial number plate is under the operator's seat.
- The engine serial number plate is on the upper right of the cylinder block.



with ROPS cab



## SPECIFICATIONS

# SPECIFICATIONS

### Performance

- Bucket capacity (standard bucket) 0.05 m<sup>3</sup>
- Travel speed 1.7 km/h
- Swing speed 11 rpm

### Track Shoe

- Double grouser shoe (standard) 250 mm width

### Operating Weight

- With canopy 1980 kg
- With ROPS cab 2120 kg

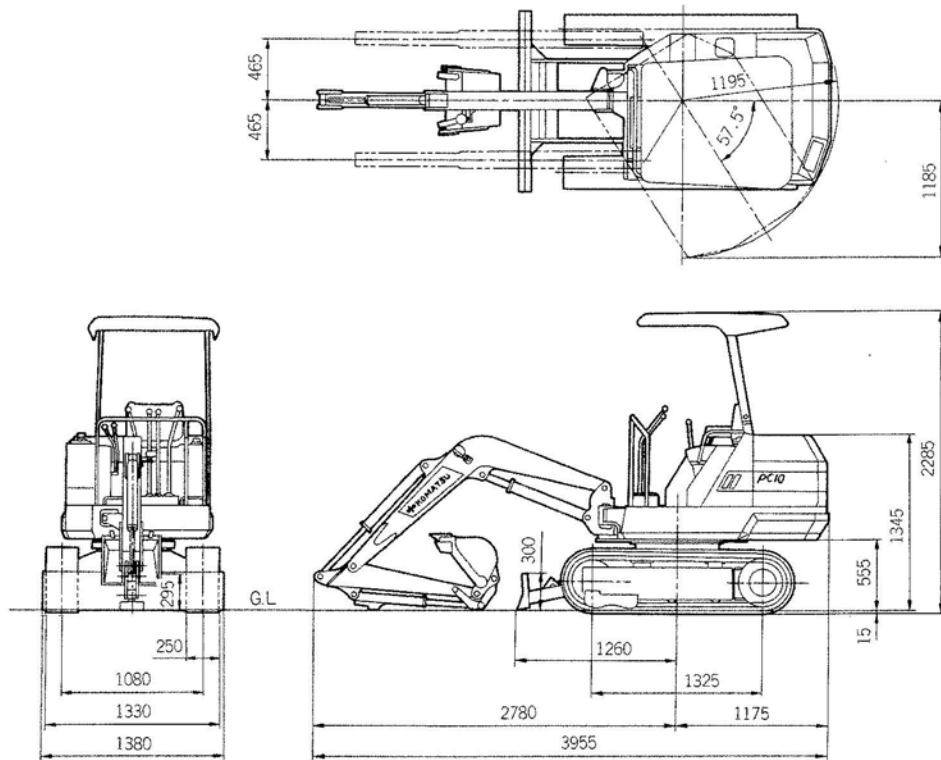
### Engine

- Model 3D75-1 Diesel Engine
- Rated rpm 2200 rpm
- Rated horsepower 17.5 HP
- Start system Starting motor 12V 2.1 kW

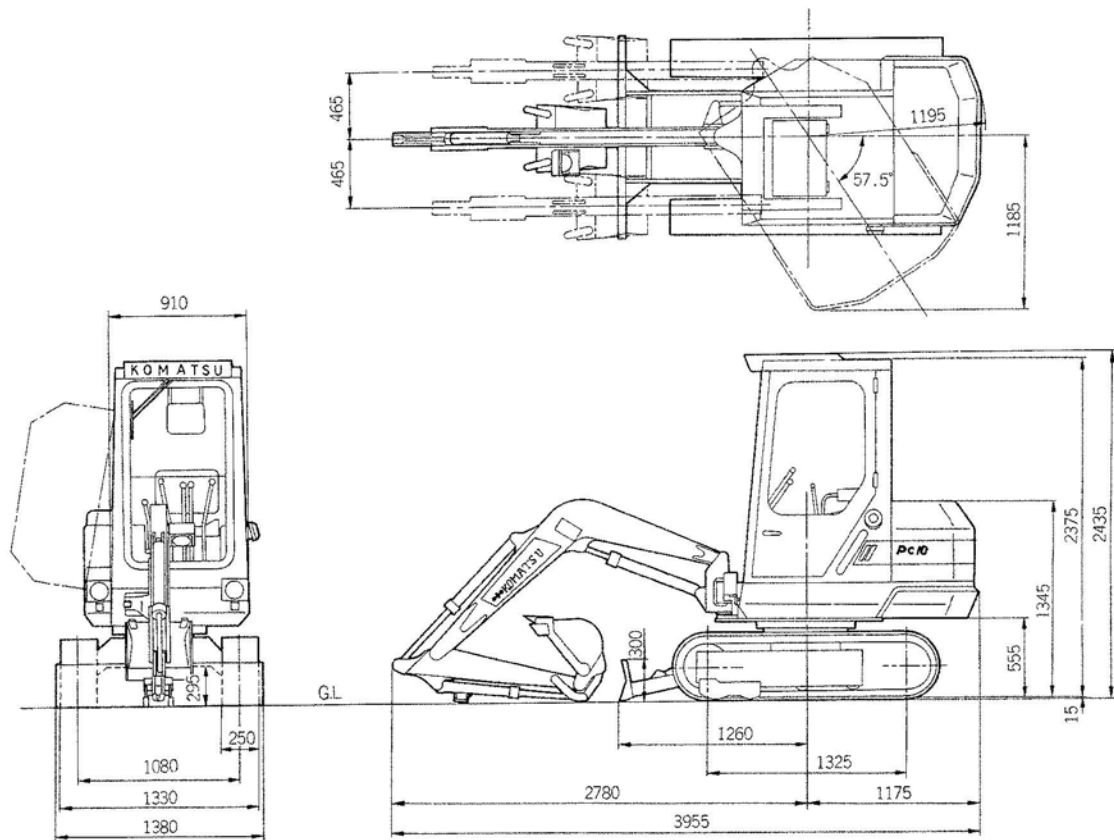
### Battery

12V 70 Ah x 1

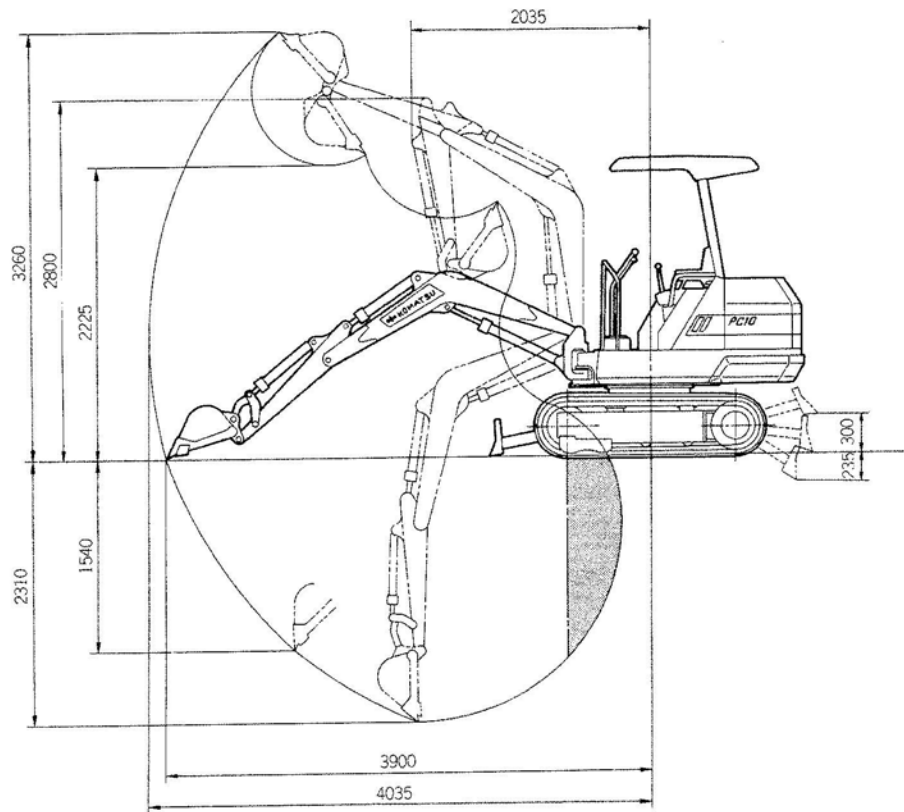
SPECIFICATIONS



# SPECIFICATIONS



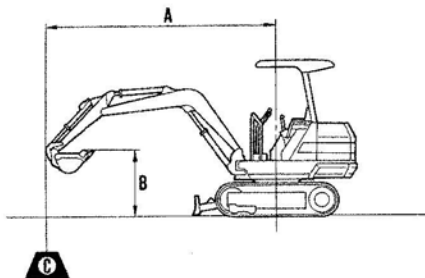
SPECIFICATIONS












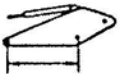
SPECIFICATION

PC10-3 Lifting Capacity (with blade on ground)



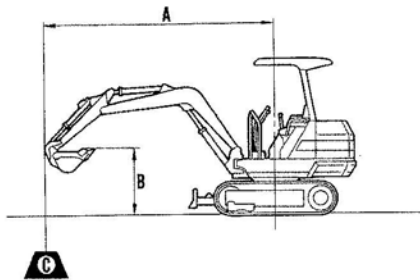
A: Reach from swing center line  
 B: Bucket hook height  
 C: Lifting capacity

-  : Rating over front
-  : Rating over side or 180 degrees
-  : Rating at maximum reach




	B		4 m (13'3") 	3 m (9'10") 	2 m (6'7") 
1000 mm (3'3") arm with 450 mm (17.7") bucket  1000 mm (3'3") Unit: kg (lb)	3 m (9'10")				
	2 m (6'7")	240 (529) 390*(860)			
	1 m (3'3")	200 (441) 410*(904)		250 (551) 460*(1605)	480 (1058) 780*(1720)
	0 m	210 (463) 460*(1014)		250 (551) 500*(1102)	460 (1014) 900*(1984)
	-1 m (3'3")	320 (705) 500 (1102)			480 (1058) 800*(1764)






\* Load is limited by hydraulic capacity rather than tipping.  
 Rating are based on SAE Standard No. J1097. Rated loads do not exceed 87% of hydraulic lift capacity or 75% of tipping load.

PC10-3 Lifting Capacity (with blade above ground)



A: Reach from swing center line  
 B: Bucket hook height  
 C: Lifting capacity

-  : Rating over front
-  : Rating over side or 180 degrees
-  : Rating at maximum reach

	B		4 m (13'3")	3 m (9'10")	2 m (6'7")
					
1000 mm (3'3") arm with 450 mm (17.7") bucket	3 m (9'10")				
 1000 mm (3'3")	2 m (6'7")	240 (529) 320 (705)			
	1 m (3'3")	200 (441) 270 (595)		250 (551) 330 (728)	480 (1058) 650 (1433)
	0 m	210 (463) 290 (634)		250 (551) 330 (728)	460 (1014) 620 (1367)
Unit: kg (lb)	-1 m (3'3")	320 (705) 420 (926)			480 (1058) 620 (1367)

\* Load is limited by hydraulic capacity rather than tipping.  
 Rating are based on SAE Standard No. J1097. Rated loads do not exceed 87% of hydraulic lift capacity or 75% of tipping load.

## ATTACHMENT

# ATTACHMENT

- **250 mm Bucket**

Capacity	0.023 m <sup>3</sup>
Outside width	250 mm

- **350 mm Bucket**

Capacity	0.035 m <sup>3</sup>
Outside width	350 mm

- **Wide bucket**

Capacity:	0.08 m <sup>3</sup>
Outside width	550 mm

- **Track shoe**

Flat shoe	250 mm (width)
Wide shoe	300 mm (width)
Swamp shoe	300 mm (width)

- **Cabin**

In additional to the above attachments, optional parts are also provided. Contact Komatsu distributor.

# FUEL AND LUBRICANTS

## PROPER SELECTION OF FUEL AND LUBRICANTS

RESERVOIR	KIND OF FLUID	AMBIENT TEMPERATURE					CAPACITY (ℓ)	
		14 - 10	32 0	50 10	68 20	86° F 30° C	Specified	Refill
Engine oil pan	Engine oil	SAE 30					4.2	4.2
		SAE 10W						
Swing machinery case Final drive case (each)	Engine oil	SAE 30					0.3	0.3
							0.8	0.8
Hydraulic system		SAE 10W					46	29
Fuel tank	Diesel fuel	※					25	-
		ASTM D975 No.2						
Cooling system	Water	Add antifreeze					4.2	-

※ ASTM D975 No. 1

**NOTE:**

- (1) When fuel sulphur content is less than 0.5%, change oil in the oil pan every periodic maintenance hours described in this manual.

Change oil according to the following table if fuel sulphur content is above 0.5%.

Fuel sulphur content	Change interval of oil in engine oil pan
0.5 to 1.0%	1/2 of regular interval
Above 1.0%	1/4 of regular interval

- (2) When starting the engine in an atmospheric temperature of lower than 0°C, be sure to use engine oil of SAE10W, even though an atmospheric temperature goes up to 10°C more or less in the day time.
- (3) Use API classification CD as engine oil and if API classification CC, reduce the engine oil change interval to half.

FUEL AND LUBRICANTS

SPEC. & GRADE  NAME OF SUPPLIER	ENGINE OIL		GREASE
	Class CD		NLGI 2
	SAE 30	SAE 10W	
CALTEX	RPM DELO 300 RPM DELO 400		Marfak All Purpose Marfak Multi-Purpose 2
CHEVRON	RPM DELO Super 3		RPM Multi-Motive Grease 2 RPM Automotive Grease Medium
TEXACO	Ursa Oil S-3 Ursa Oil LA-3		Marfak All Purpose Marfak Multi-Purpose 2
ESSO WORLD-WIDE ESSO AFFILIATES	Essolube D-3		Esso Multi-Purpose Grease Nebula EP
SHELL	Shell Rimula CT		Shell Alvania Grease EP 2
MOBIL	Mobil Delvac 1330 Mobil Delvac 1310		Mobilplex 47 (Mobilplex 48)
PENNZOIL	Zoildeez S-3		Pennz Lube 310 Cha-Z-Lube 315 M.P. Lube 705
CASTROL	CRD 10, 30		
BP	BP Vanellus C-3		BP Energrease L2 BP Energrease LS-EP2
GULF (for sever cold districts)	Gulf Dieselube Super S-3 Motor Oil 10W		