CEAM002901

# Operation and Maintenance Manual

avance

# PC400LC-6LK
# PC400HD-6LK

## HYDRAULIC EXCAVATOR

SERIAL NUMBERS **PC400LC-6LK A83001**
**PC400HD-6LK A83001**
and UP



It is our policy to improve our products whenever it is possible and practical to do so. We reserve the right to make changes or add improvements at any time without incurring any obligation to install such changes on products sold previously.

Due to this continuous program of research and development, periodic revisions may be made to this publication. It is recommended that customers contact their distributor for information on the latest revision.

October 2001

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## INTRODUCTION



## SAFETY

1. Leaving operator's seat ..... 203-00-61270

   To avoid hitting unlocked operation levers, lower equipment to ground and move SAFETY LOCK LEVER (located near seat) to LOCK position before standing up from operator's seat.

   Sudden and unwanted machine movement can cause serious injury or death.

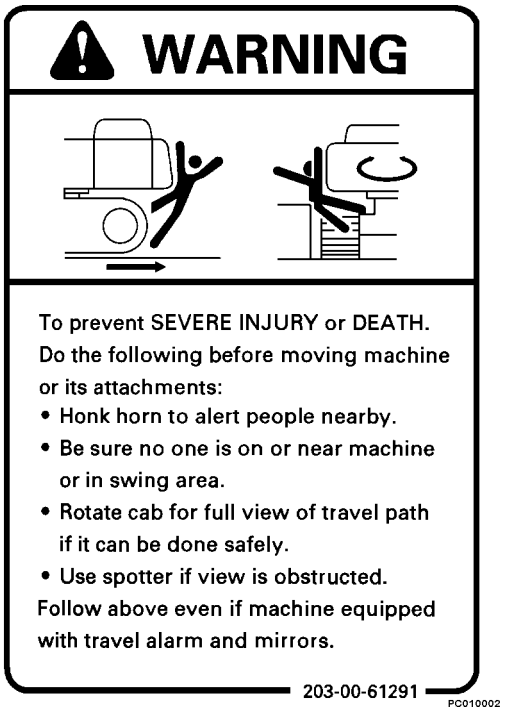

2. Before operating machine ..... 203-00-61291

   To prevent SEVERE INJURY or DEATH.

   Do the following before moving machine or its attachments:

   - Honk horn to alert people nearby.
   - Be sure no one is on or near machine or in swing area.
   - Rotate cab for full view of travel path if it can be done safely.
   - Use spotter if view is obstructed.

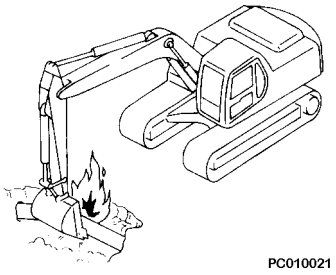
   Follow above even if machine equipped with travel alarm and mirrors.



# PRECAUTIONS DURING OPERATION

## BEFORE STARTING ENGINE

### SAFETY AT WORK SITE


PC010021

- Before entering the operator's compartment, walk completely around the machine and clear the area of personnel and obstructions.
- Before starting the engine, thoroughly check the area for any unusual conditions that could be dangerous. Before starting the engine, examine the terrain and soil conditions of the work site. Determine the best and safest method of operation.
- Make a sloped machine position as horizontal as possible before continuing operations.
- If you need to operate on a street, protect pedestrians and cars by designating a person for work site traffic duty or by installing barriers around the work site,
- If water lines, gas lines, telephone lines, and high voltage electrical lines may be buried under the work site, contact each utility and identify their locations. Be careful not to sever or cut any of these lines.
- Check the depth and flow of water before operating in water or crossing a river. Never be in water which is in excess of the permissible water depth.

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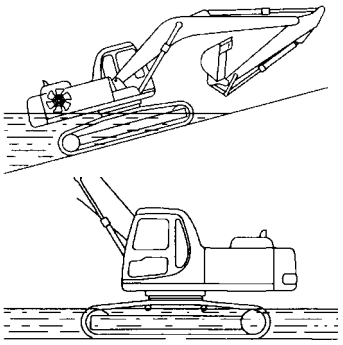


**Permissible water depth, ➜ see "PERMISSIBLE WATER DEPTH" on page 2-78.**

### FIRE PREVENTION

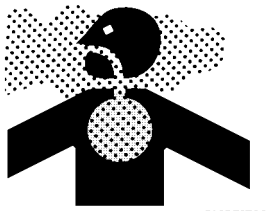

PFIREPREV

- Thoroughly remove wood chips, leaves, paper and other flammable debris that has accumulated in or around the engine compartment. They could cause a fire.
- Check fuel, lubrication, and hydraulic systems for leaks. Have any leaks repaired. Wipe up any excess oil, fuel, or other flammable fluids.

**Check point, ➜ see "WALK AROUND CHECK" on page 2-48.**

- Be sure a fire extinguisher is present and working.

### VENTILATION FOR ENCLOSED AREAS

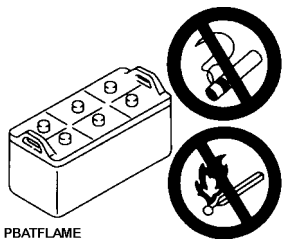

PASBESTOS

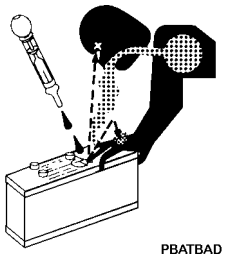
- If it is necessary to start the engine within an enclosed area, provide adequate ventilation. Exhaust fumes from the engine can kill.

# BATTERY

## BATTERY HAZARD PREVENTION

- Battery electrolyte contains dilute sulfuric acid and batteries generate hydrogen gas. Hydrogen gas is highly explosive, and mistakes in handling can cause serious injury or fire. To prevent problems, always do as follows.
- Do not smoke or bring any flame near the battery.
- When working with batteries, always wear safety glasses and rubber gloves.
- If you spill battery electrolyte on yourself or your clothes, immediately flush the area with water.
- If battery electrolyte gets into your eyes, flush them immediately with large quantities of water and see a doctor at once.
- If you accidentally drink battery electrolyte, drink a large quantity of water or milk, raw egg or vegetable oil. Call a doctor or poison prevention center immediately.
- When cleaning the top surface of the battery, wipe it with a clean, damp cloth. Never use gasoline, thinner, or any other organic solvent or detergent. Tighten the battery caps securely.
- If the battery electrolyte is frozen, do not charge the battery or start the engine with power from another source. There is danger that the battery may catch fire. When charging the battery or starting with power from another source, let the battery electrolyte melt and check that there is no leakage of battery electrolyte before starting the operation.
- Always remove the battery from the machine before charging.

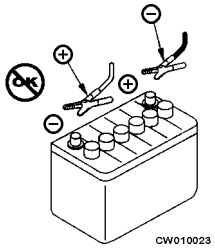

PBATFLAME


PBATBAD


PFLASH

## STARTING WITH BOOSTER CABLES

- If any mistake is made in the method of connecting the booster cables, it may cause fire. Always do as follows.
  - Use two workers for the starting operation: one of these sits in the operator's seat. When using another machine to start a problem machine, be careful not to let the normal machine and problem machine touch each other. When connecting the booster cables, turn the starting switch off on both the normal machine and the problem machine.
  - Be sure to connect the positive ⊕ cable first when installing the booster cables. Disconnect the ground or negative ⊖ cable first when removing them. Finally, when connecting the ground cable to the frame of the upper structure, sparks will be caused, so be sure to connect it as far as possible from the battery.



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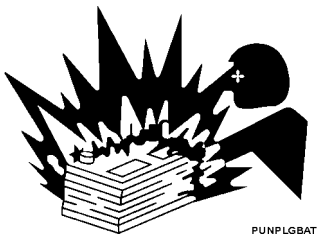
**Starting with booster cables, ➜ see "STARTING ENGINE WITH BOOSTER CABLE" on page 2-105.**

- When removing the booster cable, be careful not to let the booster cable clips contact each other or let the clip contact the machine.

### WELDING REPAIRS

- When carrying out welding repairs, carry out the welding in a properly equipped place. The welding should be performed by a qualified worker. During welding operations, there is the danger of generation of gas, fire, or electric shock, so never let an unqualified worker do welding. The qualified welder must do as follows.
  - To prevent explosion of the battery, remove the battery terminals.
  - To prevent generation of gas, remove the paint from the location of the weld.
  - If hydraulic equipment or piping or places close to them are heated, a flammable gas or mist will be generated and there is danger of it catching fire. To avoid this, never subject these places to heat.
  - If heat is applied directly to rubber hoses or piping under pressure, they may suddenly break, so cover them with a fireproof covering.
  - Wear protective clothing.
  - Make sure there is good ventilation.
  - Remove all flammable objects and provide a fire extinguisher.

### REMOVE BATTERY TERMINALS


PUNPLGBAT

- When repairing the electrical system or when carrying out electrical welding, remove the negative ⊖ terminal of the battery to stop the flow of current.

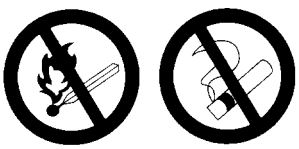
### ACTION WHEN ABNORMALITY IS FOUND DURING INSPECTION

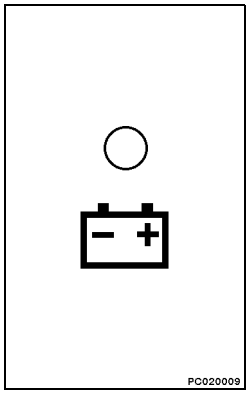
- If any abnormality is found during inspection, always carry out repairs. In particular, if the machine is used when there are still problems with the brake or work equipment systems, it may lead to serious injury.
- If necessary depending on the type of failure, please contact your distributor for repairs.

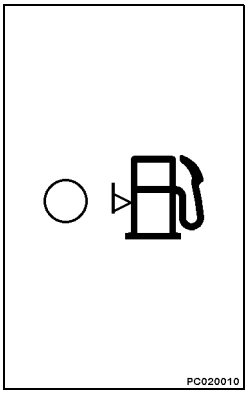
### RULES TO FOLLOW WHEN ADDING FUEL

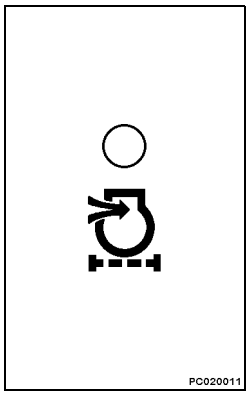

PFIREPREV

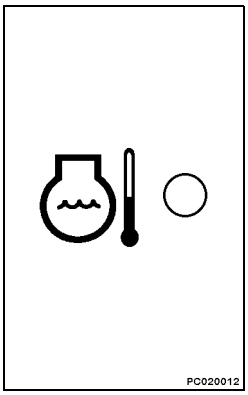
- If flame is brought close to fuel or oil, there is danger that it will catch fire. Always do as follows.
  - Stop the engine when adding fuel or oil.
  - Do not smoke.
  - Wipe up spilled fuel and oil immediately.
  - Always tighten the caps of the fuel and oil fillers securely.
  - Always add fuel and oil in a well ventilated place.
  - Do not leave the work place when adding fuel or oil.

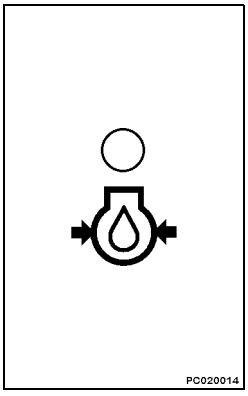

PNOSMOKE




### 5. Charge Level (Caution Items)

This monitor indicates an abnormality in the charging system while the engine is running. If the monitor light flashes, check the V belt tension.

**If any abnormality is found, see "CHECK FAN BELT TENSION, ADJUST" on page 3-50.**

***Remark***

*While the starting switch is on, the light will remain lit and will go off once the engine is started.*

### 6. Fuel Level

If the fuel drops below 55 L, this light will flash. Fill up with fuel at this time.

### 7. Air Cleaner Clogging

If the air cleaner element has clogged, the monitor light flashes. Stop the engine, check the air cleaner element and clean it.

### 8. Engine Coolant Temperature (Emergency Stop Items)

If the temperature of the engine coolant becomes abnormally high, the monitor light flashes, and the overheat prevention system is automatically actuated to reduce the engine speed. Stop operations and run the engine at low idle until the engine coolant temperature gauge enters the green range.

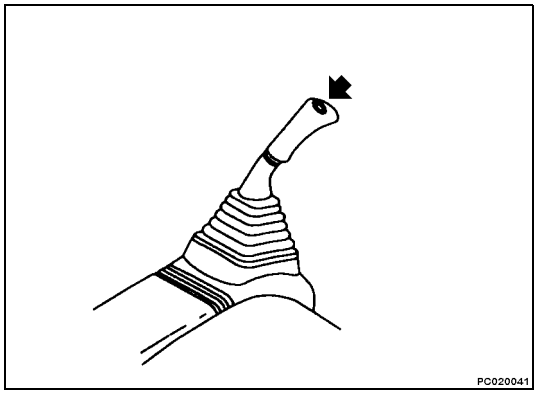
### 9. Engine Oil Pressure

If the engine oil pressure drops below the normal pressure, the monitor light flashes. At this time, stop the engine and inspect it accordingly.

**See "OTHER TROUBLE" on page 2-107.**

***Remark***

*While the starting switch is on, the light remains lit and goes off once the engine is started. When the engine starts, the buzzer may sound for a short time, however, this does not indicate a fault.*

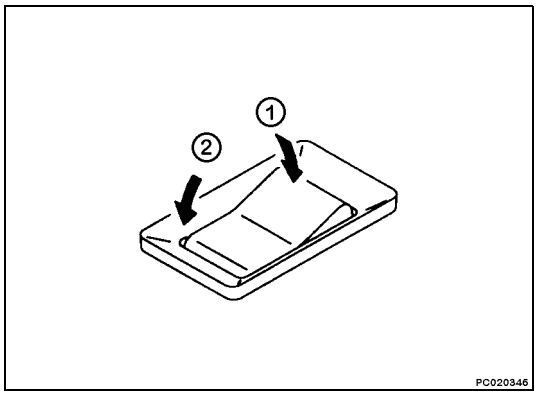



### 9. Knob Switch

The knob switch on the left work equipment lever is used to actuate the power max or swift slow down functions. Keep the switch pressed.

The power max function can be used for a maximum of 8.5 seconds in H/O or G/O modes only.

The swift slow down function can be used for as long as the switch is kept pressed in the remaining three modes.

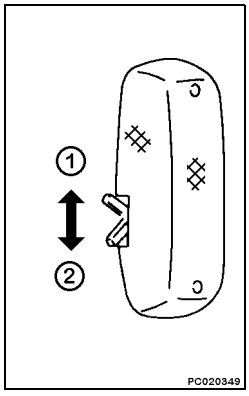


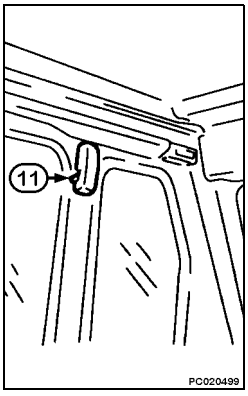

### 10. Machine Push Up Switch

This switch is used to switch the safety valve set pressure at the head end of the boom cylinder to two levels.

Lo setting (1): The boom thrust force is weak, so the swaying of the chassis is small during digging operations, and digging operations can be carried out smoothly. This is used for general digging operations on normal ground, soft rock, or blasted rock.

Hi setting (2): The thrusting force of the boom becomes more powerful, so it is easy to twist and swing or escape from soft ground. It is effective in carrying out digging operations using the bucket and the weight of the machine in confined areas.



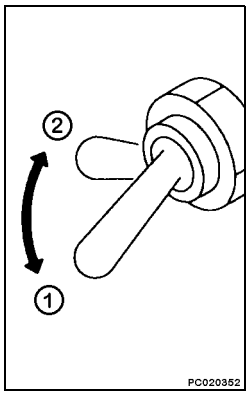

### 11. Room Light Switch

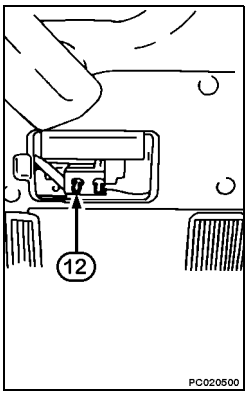
The switch is used to turn on the room light.

**ON** (1): .....Lights up

**OFF** (2): ..... Turns off

It is possible to turn on the room light even when the starting switch is at the off position, so be careful not to forget to turn it off.

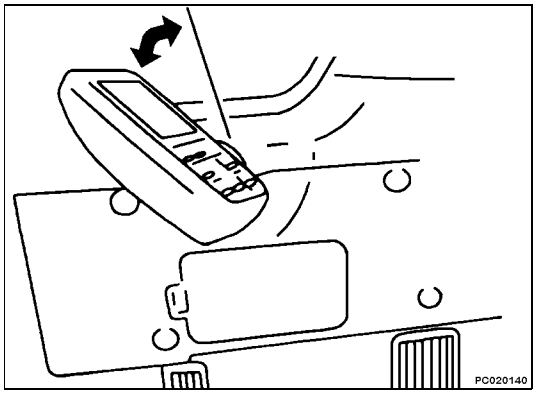



### 12. Pump Control Over Ride Switch

| | |
|---|---|
| Normal (1) | Switch is pushed down |
| Abnormal (2) | When the monitor display shows E02 (TVC valve system error), move the switch up to make it possible to carry out work. |

The pump control over ride switch is provided to make it possible to carry out work for a short time when there is a failure in the pump control system (TVC valve system error). It is necessary to repair the abnormal location as soon as possible.

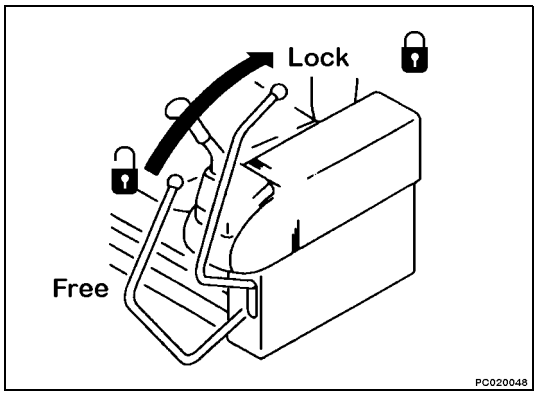



## MONITOR PANEL

### ADJUSTMENT ANGLE

Turn the monitor panel so that the operator can view the monitor with ease. When adjusting the angle, the panel should be set to the desired position using both hands. The panel is automatically locked at that position.

Amount of adjustment .....30° (stepless)

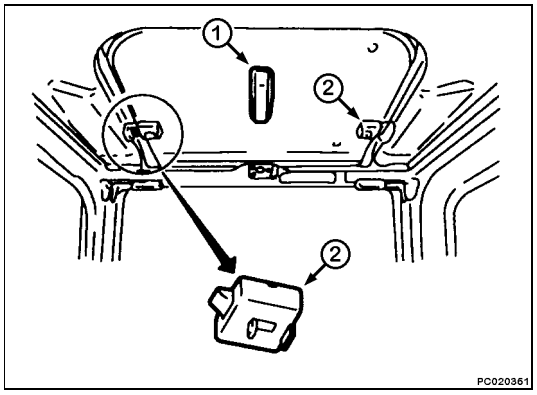



## ROOF VENT

**WARNING**

**When leaving the operator's compartment, set the safety lock lever securely to the lock position.**

**If the control levers are not locked, and they are touched by mistake, this may lead to a serious accident.**




### WHEN OPENING

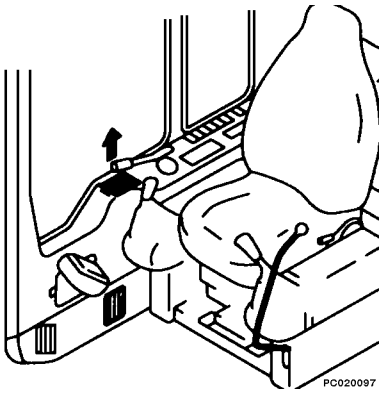
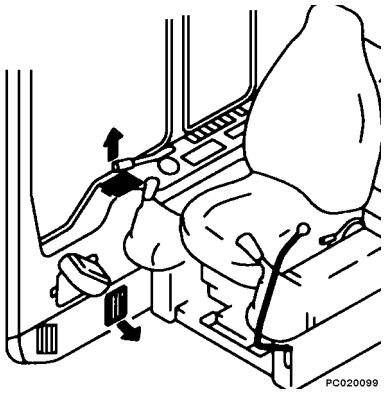
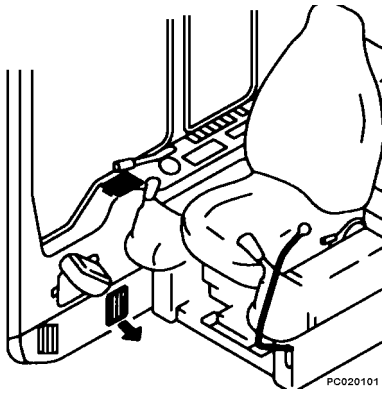
1. Lock the safety lock lever securely.
2. Open the ceiling window by pulling the lock knob (2) located on both sides, then push up and open the ceiling window grasping grip (1).

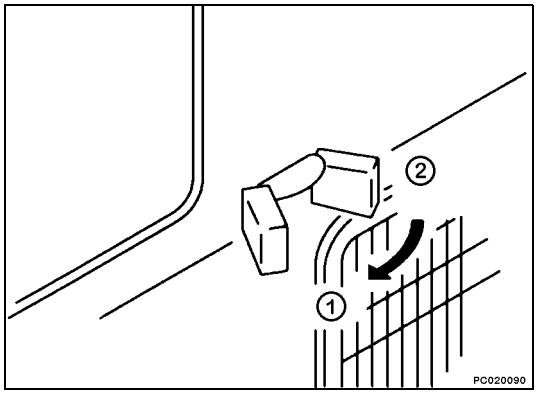
### WHEN CLOSING

1. Close the ceiling window grasping grip (1) and lock it with the lock knob (2). If the lock cannot be applied, open and close the ceiling window again.

### VENT SELECTOR SWITCH

This is used to select the vents which match the purpose of use.

| Use | Breeze to upper part of body | Breeze to upper part of body and feet | Breeze to feet |
|---|---|---|---|
| Lever |  |  |  |
| Vent |  PC020097 |  PC020099 |  PC020101 |



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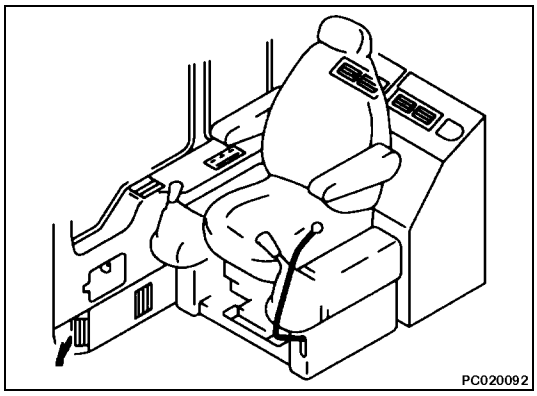
### DEFROSTER SELECTOR LEVER

This is used to clear the mist from the front glass in cold or rainy conditions.

Selector lever forward (1)..... Defroster

Selector lever back (2).....Feet

The defroster can be used when the vent selector panel is at the  or,  position.


PC020092

# OPERATION

## CHECK BEFORE STARTING ENGINE

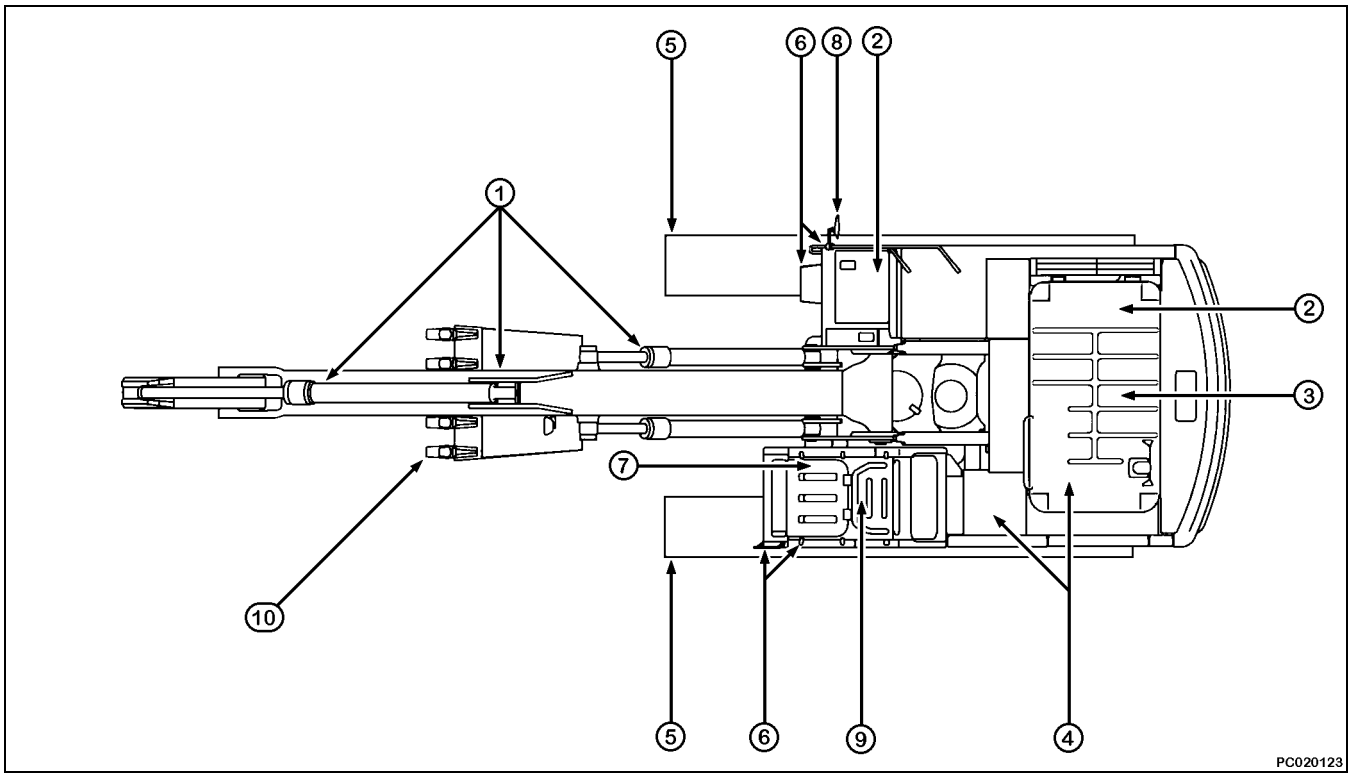
Perform following check for operator safety and maintenance of machine performance.

### WALK AROUND CHECK

**WARNING**

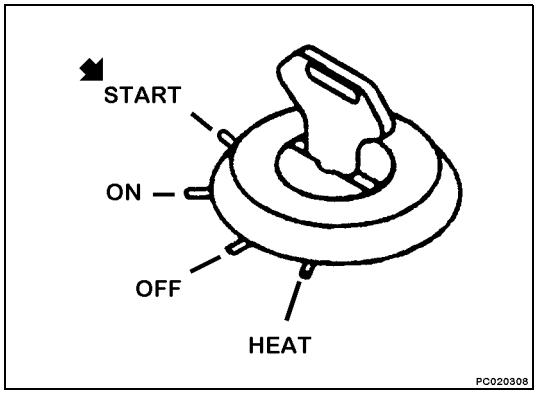
**Leakage of oil or fuel, or accumulation of flammable material around high temperature parts, such as the engine muffler or turbocharger, may cause fire. Check carefully, and if any abnormality is found, repair it or contact your distributor.**

Before starting the engine, look around the machine and under the machine to check for loose nut or bolts, or leakage of oil, fuel, or coolant, and check the condition of the work equipment and hydraulic system. Check also for loose wiring, play, and collection of dust at places which reach high temperatures. Always carry out the items in this section before starting the engine each day.

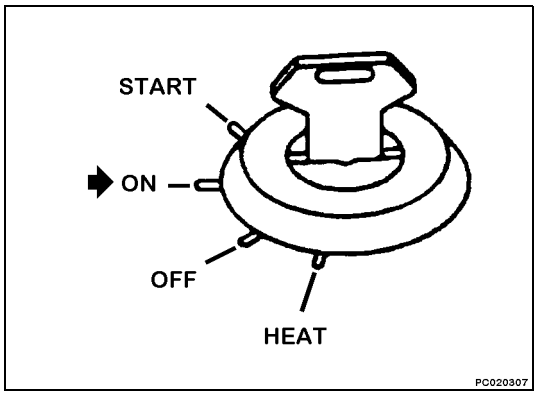



**1. Check for Damage, Wear, Play in Work Equipment, Cylinders, Linkage, Hoses**

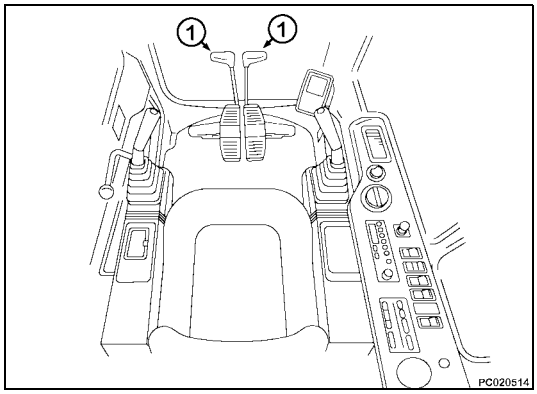
Check that there are no cracks, excessive wear, or play in the work equipment, cylinders, linkage, or hoses. If any abnormality is found, repair it.




3. When preheating monitor (3) flashes, turn the key in starting switch (2) to the start position to start the engine.




4. When the engine starts, release the key in starting switch (2). The key will return automatically to the on position.



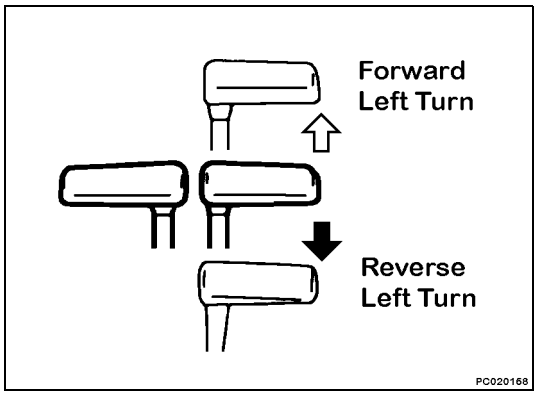

## STEERING MACHINE

### STEERING (CHANGING DIRECTION)

**WARNING**

**Before operating the travel levers, check the position of the sprocket. If the sprocket is at the front, the operation of the travel levers is reversed.**

Use the travel levers to change direction. Avoid sudden changes of direction as far as possible. In particular, when carrying out counter rotation (spin turn), stop the machine first before turning. Operate the two travel levers (1) as follows.

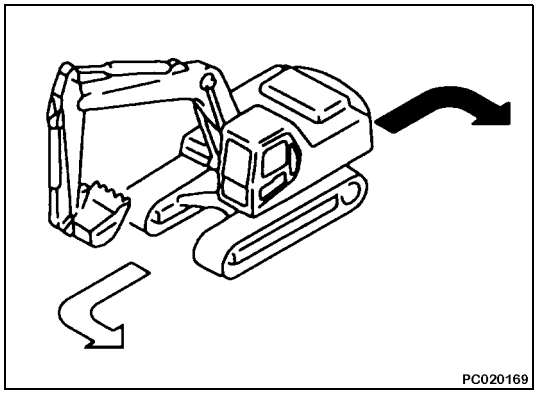


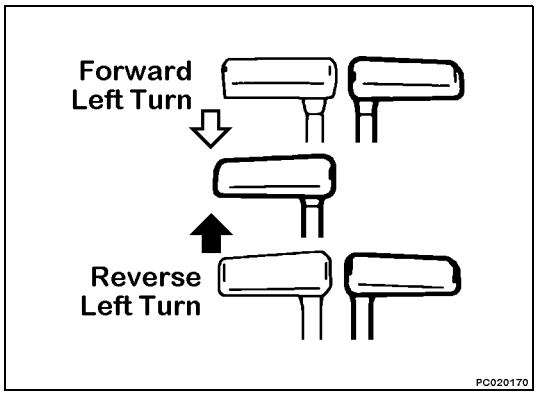

#### Changing Direction of Machine When Stopped

When turning to the left; Push the right travel lever forward to travel left when traveling forward; and pull it back to turn left when traveling in reverse.

***Remark***

*When turning to the right, operate the left travel lever in the same way.*



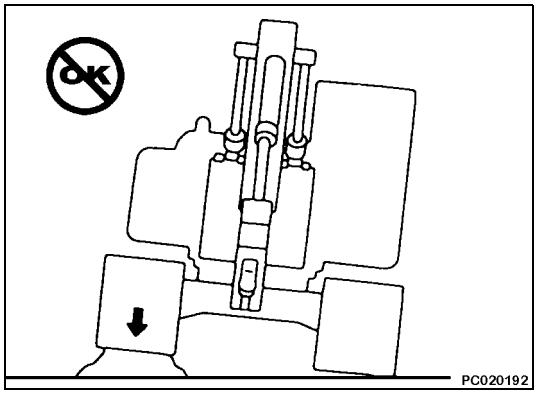




#### Steering When Traveling (Left and Right Travel Levers Both Operated in Same Direction)

When turning to the left; If the left travel lever is returned to the neutral position, the machine will turn to the left.

***Remark***

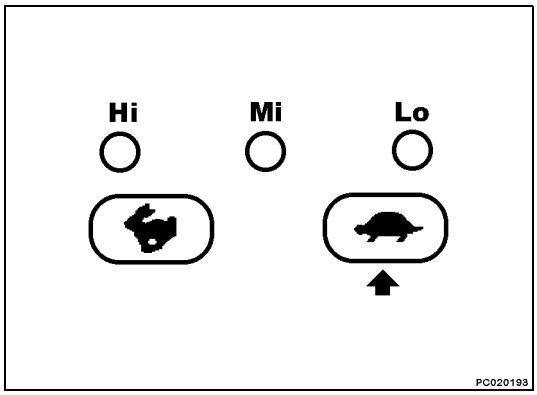
*When turning to the right, operate the right travel lever in the same way.*




## PRECAUTIONS FOR OPERATION

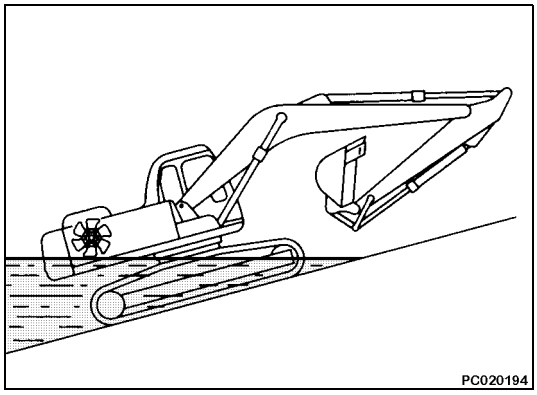
### PRECAUTIONS WHEN TRAVELING

When traveling over obstacles such as boulders or tree stumps, the machine (in particular, the undercarriage) is subjected to a large shock, so reduce the travel speed and travel over the obstacle at the center of the tracks. As far as possible, remove such obstacles or avoid traveling over them.




### PRECAUTIONS AT HI SPEED TRAVEL

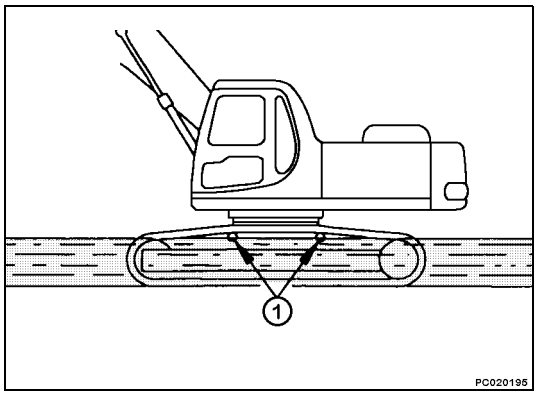
On uneven roadbeds such as rock beds or uneven roads with large locks, travel at Lo speed. When traveling at Hi speed, set the idler in the forward direction.



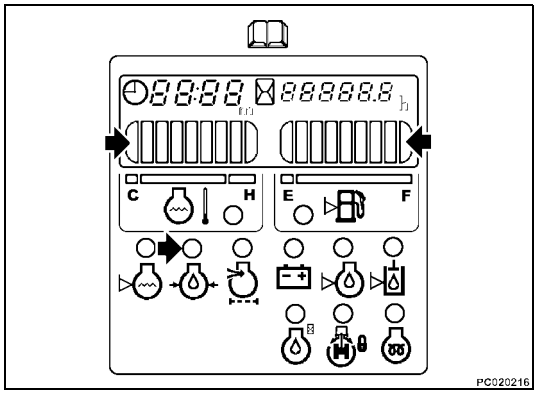

### PERMISSIBLE WATER DEPTH

***Remark***

*When driving the machine out of water, if the angle of the machine exceeds 15°, the rear of the upper structure will go under water, and water will be thrown up by the radiator fan. This may cause the fan to break. Be extremely careful when driving the machine out of water.*

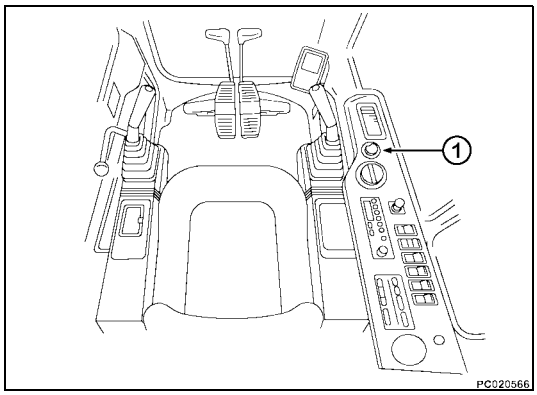



Do not immerse the machine in water by more than the permissible depth, under center of carrier roller (1). In addition, for parts that have been immersed in water for a long time, pump in grease until the old grease comes out from the bearings, around the bucket pins.




## CHECK AFTER FINISHING WORK

1. Check the engine coolant temperature, engine oil pressure and fuel level on the monitor.

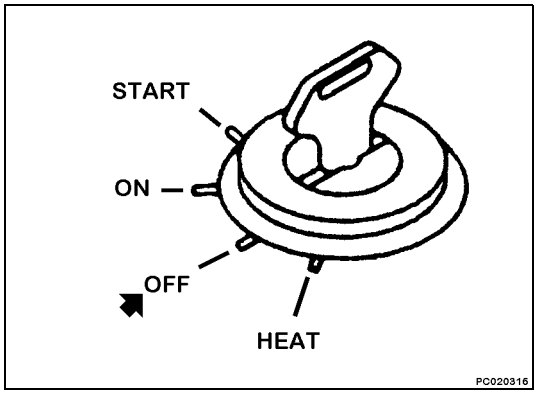



## STOPPING ENGINE

***Remark***

*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.*

1. Run the engine at low idle speed for about 5 minutes to allow it to gradually cool down.




2. Turn the key in starting switch (1) to the off position and stop the engine.
3. Remove the key from starting switch

## CHECK AFTER STOPPING ENGINE

1. Walk around the machine and check the work equipment, paint work, and undercarriage, and check also for leakage of oil or water. If any abnormalities are found, repair them.
2. Fill the fuel tank.
3. Check the engine compartment for paper and debris. Clean out any paper and debris to avoid a fire hazard.
4. Remove any mud stuck to the undercarriage.

# COLD WEATHER OPERATION

## PRECAUTIONS FOR LOW TEMPERATURE

If the temperature becomes low, it becomes difficult to start the engine, and the coolant may freeze, so do as follows.

### FUEL AND LUBRICANTS

Change to fuel and oil with low viscosity for all components.

**For details of the specified viscosity; see "USE OF FUEL, COOLANT AND LUBRICANTS" on page 3-8.**

### COOLANT

**WARNING**

**Keep antifreeze fluid away from an open flame. Never smoke when using antifreeze.**

***Remark***

*Never use methanol, ethanol or propanol based antifreeze. Absolutely avoid using any water leak preventing agent irrespective of whether it is used independently or mixed with an antifreeze. Do not mix one antifreeze with a different brand.*

**For details of the specified viscosity; see "USE OF FUEL, COOLANT AND LUBRICANTS" on page 3-8.**

Use a permanent antifreeze (ethylene glycol mixed with corrosion inhibitor, antifoam agent, etc.) meeting the standard requirements as shown below. With permanent antifreeze, no change of coolant is required for a year. If it is doubtful that an available antifreeze meets the standard requirements, ask the supplier of that antifreeze for information.

Standard requirements for permanent antifreeze

SAE ..... J1034

FEDERAL STANDARD ..... O-A-548D

***Remark***

*Where no permanent antifreeze is available, an ethylene glycol antifreeze without corrosion inhibitor may be used only for the cold season. In this case, clean the cooling system twice a year (in spring and autumn). When refilling the cooling system, add antifreeze in autumn, but do not add any in spring.*

### CHASSIS

| Problem | Main Causes | Remedy |
|---|---|---|
| Speed of travel, swing, boom, arm, bucket is slow | ● Lack of hydraulic oil | ● Add oil to specified level; **see "CHECK BEFORE STARTING" on page 3-39.** |
| Pump generates abnormal noise | ● Clogged element in hydraulic tank strainer | ● Clean; **see "EVERY 2000 HOURS SERVICE" on page 3-59.** |
| Excessive rise in hydraulic oil temperature | ● Loose fan belt<br>● Dirty oil cooler<br>● Lack of hydraulic oil | ● Adjust fan belt tension; **see "EVERY 250 HOURS SERVICE" on page 3-47.**<br>● Clean, **see "EVERY 500 HOURS SERVICE" on page 3-52.**<br>● Add oil to specified level; **see "CHECK BEFORE STARTING" on page 3-39.** |
| Track comes off or abnormal wear of sprocket | ● Track too loose | ● Adjust track tension; **see "WHEN REQUIRED" on page 3-25.** |
| Bucket rises slowly, does not rise | ● Lack of hydraulic oil | ● Add oil to specified level; **see "CHECK BEFORE STARTING" on page 3-39.** |
| Does not swing | ● Swing lock switch still applied | ● Turn swing lock switch off |

# USE OF FUEL, COOLANT AND LUBRICANTS

## PROPER SELECTION OF FUEL, COOLANT AND LUBRICANTS

It is not our policy to approve lubricants or to guarantee oil performance in service. The responsibility of quality of the lubricant must remain with the supplier of the lubricant. When in doubt consult your distributor. The lubricants specified for this machine are shown below.

| RESERVOIR | TYPE | AMBIENT TEMPERATURE °C -30 -20 -10 0 10 20 30 40 50 °C | CAPACITY (L) Specified | Refill |
|---|---|---|---|---|
| Crankcase and filter change w/o by pass filter | Engine oil, see "ENGINE OIL SPECIFICATIONS" on page 3-9. | SAE 30 / SAE 10W / SAE 10W-30 / SAE 15W-40 | 38 | 34 |
| Crankcase and filter change w/ by pass filter | | SAE 30 / SAE 10W / SAE 10W-30 / SAE 15W-40 | 41 | 37 |
| Damper case | | | 0.75 | --- |
| Swing case | | | 21.5 | 21.5 |
| Final drive/each | | SAE 30 | 12 | 11.5 |
| Front idler/each | | | 0.34 to 0.36 | 0.34 to 0.36 |
| Track roller/each | | | 0.28 to 0.31 | 0.28 to 0.31 |
| Top idler/each | | | 0.45 to 0.5 | 0.45 to 0.5 |
| Hydraulic system | | SAE 10W / SAE 10W-30 / SAE 15W-40 | 490 | 270 |
| Fuel tank | DF | D975 No. 2 / D975 No. 1 | 605 | --- |
| All lube fittings | Grease | Komatsu Super Grease or NLGI No.2 lithium MPG with 3% molybdenum disulfide | Fill as instructed | |
| Cooling system | | See "COOLING SYSTEM" on page 3-11. | 43.9 | --- |

### ABBREVIATIONS

SAE: Society of Automotive Engineers

API: American Petroleum Institute

NLGI: National Lubricating Grease Institute

ASTM: American Society of Testing and Materials

# PERIODIC REPLACEMENT OF CRITICAL PARTS

To ensure safety at all times when operating or driving the machine, the user of the machine must always carry out periodic maintenance. In addition, to further improve safety, the user should also carry out periodic replacement of the parts given in the table on the next page. These parts are particularly closely connected to safety and fire prevention.

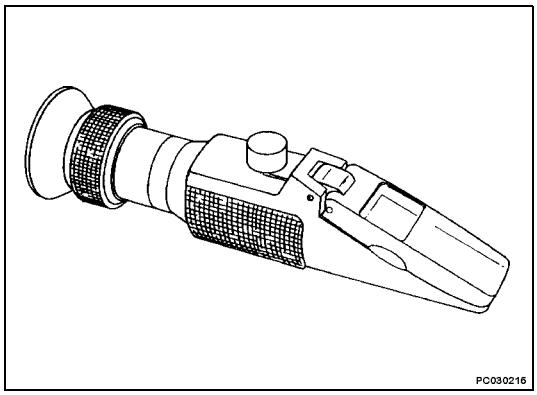
With these parts, the material changes as time passed, or they easily wear or deteriorate. However, it is difficult to judge the condition of the parts simply by periodic maintenance, so they should always be replaced after a fixed time has passed, regardless of their condition. This is necessary to ensure that they always maintain their function completely.

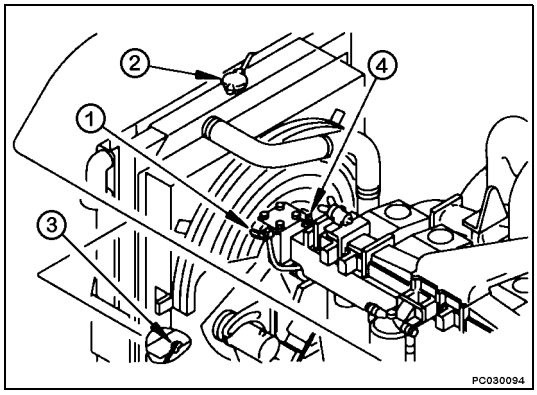
However, if these parts show any abnormality before the replacement interval has passed, they should be repaired or replaced immediately. If the hose clamps show any deterioration, such as deformation or cracking, replace the clamps at the same time as the hoses. When replacing the hoses, always replace the o-rings, gaskets, and other such parts at the same time. Ask your distributor to replace the critical parts.

| No. | Safety Critical Parts for Periodic Replacement | Qty. | Replacement Interval |
|---|---|---|---|
| 1. | Fuel hose (fuel tank - engine) | 2 | Every 2 years or 4000 hours, whichever comes first |
| 2. | Spill hose (nozzle - fuel tank) | 1 | |
| 3. | Spill hose (between nozzles) | 2 | |
| 4. | Fuel hose (fuel filter - injection pump) | 2 | |
| 5. | Pump output hose | 2 | |
| 6. | Boom cylinder inlet port hose | 4 | |
| 7. | Bucket cylinder line, boom foot hose | 2 | |
| 8. | Bucket cylinder inlet port hose | 2 | |
| 9. | Bucket cylinder inlet port hose, 4.0 m arm | 2 | |
| 10. | Arm cylinder line hose, boom foot | 2 | |
| 11. | Arm cylinder inlet port hose | 2 | |
| 12. | Attachment additional line hose, boom foot | 2 | |
| 13. | Attachment additional line hose, boom intermediate | 2 | |
| 14. | Attachment additional line hose, boom top | 2 | |
| 15. | Swing line hose, swing motor inlet port | 2 | |
| 16. | Main suction hose | 1 | |
| 17. | Gear pump suction hose | 1 | |
| 18. | Heater hose | 2 | |
| 19. | Fuel injection nozzle tip | 6 | Every 4000 hours |
| 20. | Seat belt | 1 | Every 3 years |

Mixing Rate of Water and Antifreeze

| Min. atmospheric temperature | °C | -5 | -10 | -15 | -20 | -25 | -30 |
|---|---|---|---|---|---|---|---|
| Amount of antifreeze | L | 10.2 | 13.3 | 16 | 18.2 | 20.4 | 22.2 |
| Amount of water | L | 34.2 | 31.1 | 28.4 | 26.2 | 24 | 22.2 |


PC030216



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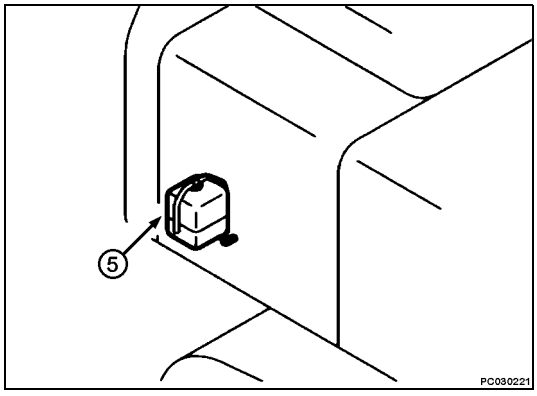


PC030221

- Use city water for the cooling water. If river water, well water or other such water supply must be used, contact your distributor. We recommend use of an antifreeze density gauge to control the mixing proportions

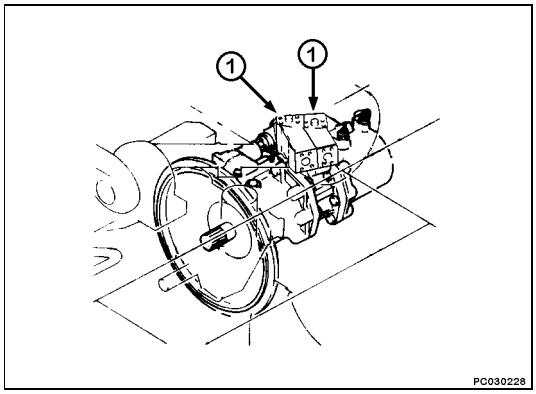
**WARNING**

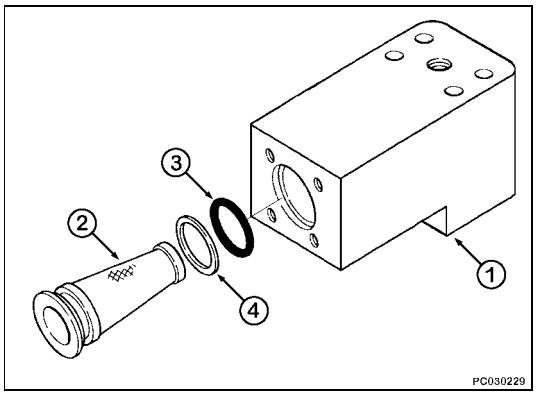
**When removing drain plug, avoid pouring coolant on yourself.**

Prepare a container to catch drained coolant:

Coolant catch container ..... Min 45 L capacity

1. Close the valves (1) at each side of the corrosion resistor. Turn radiator cap (2) slowly to remove it.
2. Remove the undercover, then set a container to catch the coolant under the drain valves. Open the drain valve (3) at the bottom of the radiator and the drain valve (4) at the engine oil cooler to drain the coolant. After draining, close the drain valves (3) and (4) and add water. When the radiator is full, start the engine and run at low idle.
3. Open drain valves (3) and (4), run the engine at low idle, and flush water through the system for 10 minutes. When doing this, adjust the speed of filling and draining the water so that the radiator is always full. While flushing water through the system, watch carefully that the water inlet hose does not come out of the radiator water filler.
4. After flushing, stop the engine, open drain valves (3) and (4), then close it again after all the coolant has drained out. After draining the water, clean with a flushing agent. We recommend use of a Komatsu genuine cleaning agent. For details of the cleaning method, see the instructions given with the cleaning agent.
5. After cleaning, open drain valves (3) and (4) to drain all the coolant, then close them and fill slowly with clean coolant. When the coolant comes up to near the water filler port, open drain valves (3) and (4), run the engine at low idle, and continue to run coolant through the system until clean colorless water comes out. When doing this, adjust the speed of filling and draining the water so that the radiator is always full.
6. When the water is completely clean, stop the engine, close drain valve (3), then wrap with sealing tape and close drain valve (4).




**CLEAN IN LINE FILTERS**

***Remark***

*If the hydraulic system between the pump to either of the in line filters (1) have been opened, or if there is any abnormality in the hydraulic equipment, remove the dirt inside the circuit as follows:*

1. With a suitable container to catch oil, remove [one at a time] hose from filter (1) to valve.

2. Remove filter (2) and discard o-ring (3) and back up ring (4). Clean filter as follows;

   A. When cleaning the filter, remove all dirt stuck to the side of the filter.

   B. When reassembling the filter replace o-ring (3) and back up ring (4) at the same time.

   C. Install filter and secure hoses.

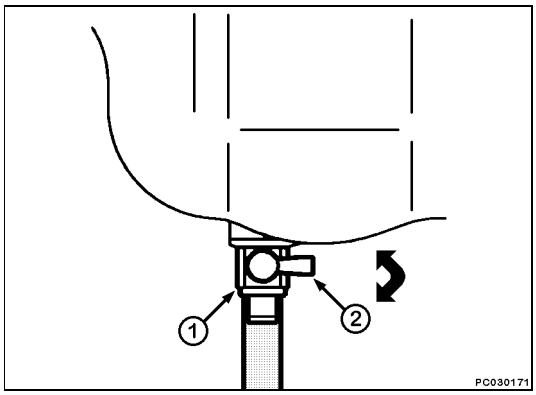
   D. Start the engine and run at low idle for five minutes to bleed the air. It is not necessary to operate the control levers to bleed the air.

### CHANGE ENGINE OIL, REPLACE FILTER CARTRIDGE

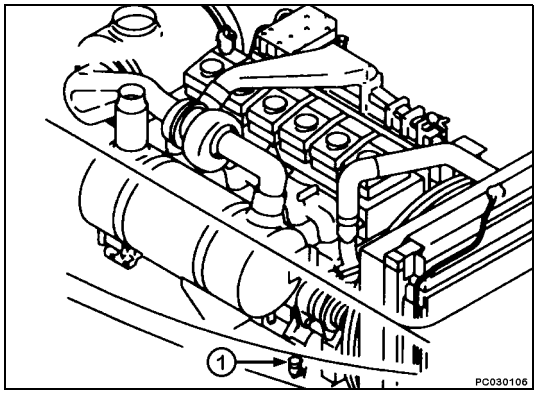
**WARNING**

**The oil is at high temperature after the engine has been operated, so never change the oil immediately after finishing operations. Wait for the oil to cool down before changing it.**

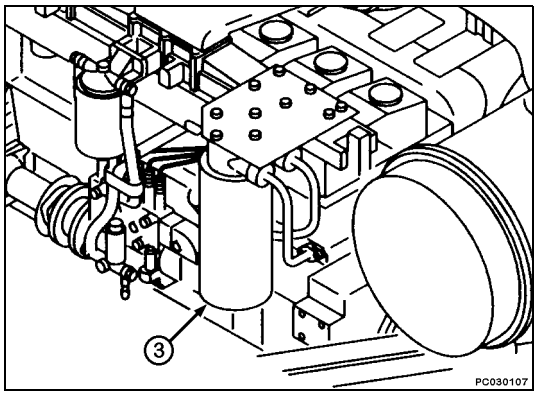
Oil catch container..... Min 34 L capacity



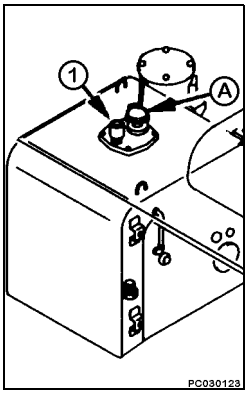

1. Remove the inspection cover of the undercover directly under drain valve (1) under the machine, then place a container to catch the oil.
2. Lower the lever (2) of the drain valve (1) slowly to prevent getting oil on yourself, and drain the oil. After draining the oil, raise the lever to close the valve.

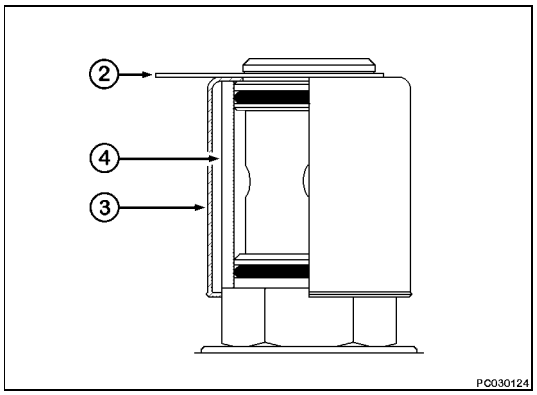



3. Check the drained oil, and if there are excessive metal particles or foreign material, please contact your distributor. Tighten drain valve (1).




4. Open the engine hood. Using the filter wrench from the upper side of the engine, turn filter cartridge (3) counterclockwise to remove it. In particular, if this operation is carried out immediately after stopping the engine, a large amount of oil will come out, so wait for 10 minutes before starting the operation.




### REPLACE HYDRAULIC TANK RELIEF VALVE ELEMENT

**WARNING**

**Replace the element when the oil is cold. When removing the oil filler cap (A), turn it slowly to release the internal pressure before removing it.**

1. Open the filler cap (A) on top of the hydraulic tank.
2. After removing snap ring (2) of breather assembly (1), take off cover (3).
3. Replace filter element (4) with a new element.
4. Install cover (3) and retain with snap ring (2).
5. Close cover (A).

### CHECK TIGHTENING PARTS OF TURBOCHARGER

Contact your distributor to have the tightening portions checked.

### CHECK PLAY OF TURBOCHARGER ROTOR

Contact your distributor to check the play of the turbocharger rotor.

**PC400HD-6LK**

| | | | | Operating Weight | Ground Pressure |
|---|---|---|---|---|---|
| WEIGHTS | ● Operating weight | | 600 mm shoes | 43850 kg | 0.79 kg/cm² |
| | | | 700 mm shoes | 44300 kg | 0.68 kg/cm² |
| | | | 800 mm shoes | 44760 kg | 0.60 kg/cm² |
| | | | | **Width** | **Weight** |
| PERFORMANCE | ● Bucket | HD Cast | 0.96 m³ capacity | 762 mm | 1175 kg |
| | | STD Plate | 1.25 m³ capacity | 914 mm | 1235 kg |
| | | HD Plate | 1.25 m³ capacity | 914 mm | 1498 kg |
| | | HD Cast | 1.15 m³ capacity | 838 mm | 1267 kg |
| | | STD Plate | 1.50 m³ capacity | 1067 mm | 1368 kg |
| | | HD Plate | 1.50 m³ capacity | 1067 mm | 1671 kg |
| | | HD Cast | 1.33 m³ capacity | 991 mm | 1348 kg |
| | | STD Plate | 1.82 m³ capacity | 1219 mm | 1456 kg |
| | | HD Plate | 1.82 m³ capacity | 1219 mm | 1766 kg |
| | | HD Cast | 1.62 m³ capacity | 1143 mm | 1511 kg |
| | | STD Plate | 2.10 m³ capacity | 1372 mm | 1606 kg |
| | | HD Plate | 2.10 m³ capacity | 1372 mm | 1932 kg |
| | | STD Plate | 2.29 m³ capacity | 1524 mm | 1691 kg |
| | | HD Plate | 2.29 m³ capacity | 1524 mm | 2048 kg |
| | ● Travel speed | | Low speed | 3.2 km/h | |
| | | | Middle speed | 4.5 km/h | |
| | | | High speed | 5.5 km/h | |
| | ● Swing speed | | | 9.3 rpm | |
| SHOES | ● Triple grouser shoes | | | 600 mm | |
| | | | | 700 mm | Standard |
| | | | | 800 mm | |
| ENGINE | ● Model | | | Komatsu SA6D125E-2 | |
| | ● Flywheel horsepower | | | 228 kW @ 2050 rpm | |
| | ● Starting motor | | | 24V 11kW | |
| | ● Alternator | | | 24V 70A | |
| | ● Battery | | | 12V 150 Ah x 2 | |

**2400 mm Arm** **Unit kg**

| A | 1.5 m | | 3 m | | 4.6 m | | 6.1 m | | 7.6 m | | 9.1 m | | 10.7 m | | ◊ MAX | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs |
| 9.1 m | | | | | | | | | | | | | | | | |
| 7.6 m | | | | | | | | | *9800 | 8950 | | | | | *9700 | 8250 |
| 6.1 m | | | | | | | *11750 | *11750 | *10200 | 8750 | | | | | *9450 | 6750 |
| 4.6 m | | | | | *18200 | *18200 | *13350 | 12100 | *10950 | 8450 | *9550 | 6150 | | | *9450 | 5950 |
| 3 m | | | | | | | *14800 | 11150 | *11750 | 8050 | 9600 | 5950 | | | 8950 | 5550 |
| 1.5 m | | | | | | | *10750 | 10750 | *12350 | 7700 | 9400 | 5800 | | | 8880 | 5450 |
| 0 m | | | | | *20650 | 16250 | *16000 | 10450 | 12350 | 7500 | 9300 | 5700 | | | 9150 | 5600 |
| -1.5 m | | | *16350 | *16350 | *19500 | 16350 | *15200 | 10400 | *11900 | 7450 | | | | | *9850 | 6100 |
| - 3 m | | | *20050 | *20050 | *16950 | 16650 | *13450 | 10550 | 10300 | 7600 | | | | | *9750 | 7250 |
| -4.6 m | | | | | *12800 | *12800 | *10000 | *10000 | | | | | | | *9000 | 7250 |
| -6.1 m | | | | | | | | | | | | | | | | |
| -7.6 m | | | | | | | | | | | | | | | | |

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

**2900 mm Arm** **Unit kg**

| A | 1.5 m | | 3 m | | 4.6 m | | 6.1 m | | 7.6 m | | 9.1 m | | 10.7 m | | ◊ MAX | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs |
| 9.1 m | | | | | | | | | | | | | | | | |
| 7.6 m | | | | | | | | | *9100 | 9050 | | | | | *8900 | 7500 |
| 6.1 m | | | | | | | | | *9600 | 8850 | *8800 | 6300 | | | *8750 | 6000 |
| 4.6 m | | | | | *16850 | *16850 | *12650 | 12300 | *10450 | 8500 | *9150 | 6200 | | | *8800 | 5500 |
| 3 m | | | | | *20300 | 17750 | *14350 | 11450 | *11350 | 8100 | *9550 | 5950 | | | 8350 | 5150 |
| 1.5 m | | | | | *20000 | 16600 | *15550 | 10800 | *12050 | 7750 | 9400 | 5800 | | | 8200 | 5000 |
| 0 m | | | | | *21870 | 16200 | *15950 | 10450 | 12300 | 7500 | 9250 | 5650 | | | 8450 | 5150 |
| -1.5 m | | | *16000 | *16000 | *20400 | 15500 | *15500 | 10300 | *12050 | 7350 | 9200 | 5600 | | | 9150 | 5600 |
| -3 m | | | *23100 | *23100 | *18150 | 16450 | *14100 | 10400 | *10900 | 7400 | | | | | *9450 | 6500 |
| -4.6 m | | | *17900 | *17900 | *14500 | 14500 | *11100 | 10450 | | | | | | | *9150 | 8500 |
| -6.1 m | | | | | | | | | | | | | | | | |
| -7.6 m | | | | | | | | | | | | | | | | |

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

**4000 mm Arm** **Unit kg**

| A / B | 1.5 m | | 3 m | | 4.6 m | | 6.1 m | | 7.6 m | | 9.1 m | | 10.7 m | | ◊ MAX | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs |
| 9.1 m | | | | | | | | | | | | | | | | |
| 7.6 m | | | | | | | | | | | *7450 | 6800 | | | *4900 | *4900 |
| 6.1 m | | | | | | | | | | | *7750 | 6700 | | | *4900 | *4900 |
| 4.6 m | | | | | | | | | *9300 | 8950 | *8250 | 6500 | | | *5050 | 4600 |
| 3 m | | | | | *17700 | *17700 | *12900 | 12150 | *10400 | 8600 | *8850 | 6250 | | | *5350 | 4300 |
| 1.5 m | | | | | *20600 | 17500 | *14550 | 11350 | *11330 | 8050 | *9400 | 5950 | | | *5800 | 4200 |
| 0 m | | | *9200 | *9200 | *21750 | 16700 | *15550 | 10760 | *12000 | 7650 | 9450 | 5750 | | | *6500 | 4300 |
| -1.5 m | *9400 | *9400 | *13350 | *13350 | *21500 | 16400 | *15750 | 10450 | *12200 | 7460 | 9300 | 5600 | | | 7550 | 4550 |
| -3 m | *13800 | *13800 | *18400 | *18400 | *20100 | 16400 | *15050 | 10400 | *11650 | 7400 | *9100 | 5600 | | | *8200 | 5100 |
| -4.6 m | *18800 | *18800 | *23800 | *23800 | *17500 | 16700 | *13300 | 10500 | *10200 | 7500 | | | | | *8150 | 6200 |
| -6.1 m | | | *17200 | *17200 | *13150 | *13150 | *9950 | *9950 | | | | | | | *7650 | *7650 |
| -7.6 m | | | | | | | | | | | | | | | | |

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

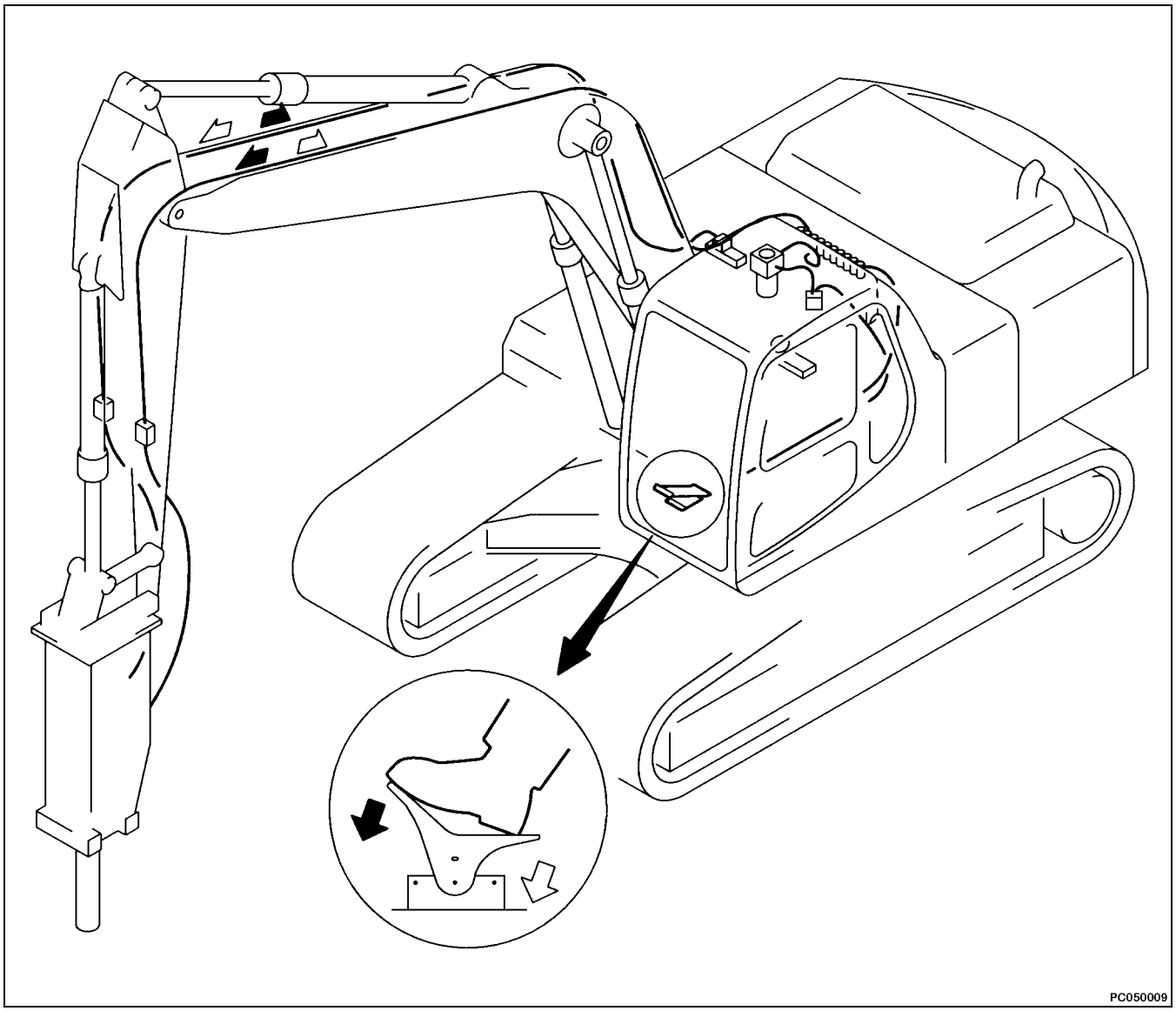
**4800 mm Arm** **Unit kg**

| A / B | 1.5 m | | 3 m | | 4.6 m | | 6.1 m | | 7.6 m | | 9.1 m | | 10.7 m | | ◊ MAX | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs | Cf | Cs |
| 9.1 m | | | | | | | | | | | | | | | | |
| 7.6 m | | | | | | | | | | | | | | | *3850 | *3850 |
| 6.1 m | | | | | | | | | | | *7060 | 6950 | | | *3800 | *3800 |
| 4.6 m | | | | | | | | | | | *7660 | 6700 | | | *3750 | *3750 |
| 3 m | | | | | | | *11700 | *11700 | *9650 | 8750 | *8350 | 6400 | | | *4100 | 3800 |
| 1.5 m | | | | | *19150 | 18300 | *13650 | 11700 | *10750 | 8250 | *9000 | 6100 | | | *4400 | 3700 |
| 0 m | | | *9700 | *9700 | *21200 | 17060 | *15050 | 10950 | *11650 | 7800 | 9550 | 5800 | | | *4850 | 3750 |
| -1.5 m | *8000 | *8000 | *12350 | *12350 | *21750 | 16460 | *16650 | 10500 | *12100 | 7500 | 9350 | 5650 | | | *5550 | 3950 |
| -3 m | *11550 | *11550 | *16150 | *16150 | *21000 | 16300 | *15540 | 10350 | *11950 | 7350 | 8250 | 5550 | | | *6500 | 4350 |
| -4.6 m | *15050 | *15050 | *21100 | *21100 | *19100 | 15400 | *14360 | 10350 | *11050 | 7350 | *8500 | 5600 | | | *7550 | 5150 |
| -6.1 m | *20550 | *20550 | *21750 | *21750 | *15800 | 15800 | *11950 | 10600 | *8900 | 7650 | | | | | *7350 | 6600 |
| -7.6 m | | | | | *10200 | *10200 | *7250 | *7250 | | | | | | | *6450 | *6450 |

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

**PATH OF OIL FLOW**

The direction of operation of the pedal and the path of the oil flow is as shown in the following diagram.



### GREASING POSITION FOR HYDRAULIC BREAKER

Supply grease in the correct position.

***Remark***

*If grease is supplied in an incorrect position, the breaker is filled with more grease than necessary. As a result, soil and sand will enter the hydraulic circuit and can damage the hydraulic devices while the breaker is used. Accordingly, be sure to supply grease in the correct position.*