CEAM009902

Operation & Maintenance Manual

PC400LC-8

HYDRAULIC EXCAVATOR

SERIAL NUMBERS **PC400LC-8** **A88001** and UP

Engine **SAA6D125E-5**

June 2010

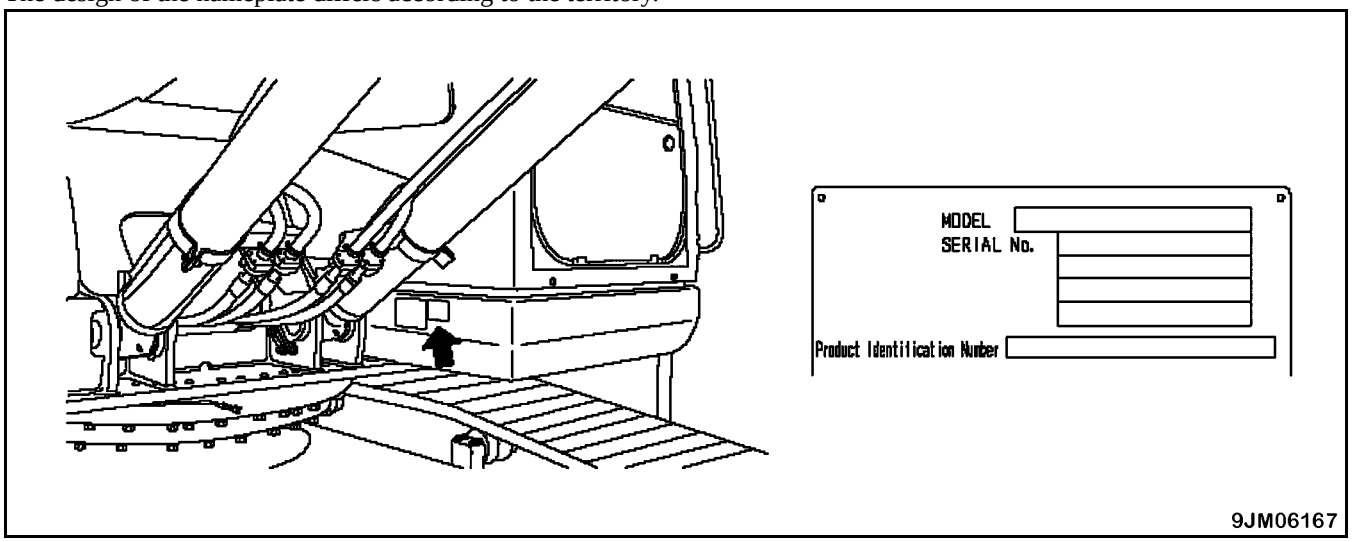
Published in USA
Komatsu America Corp.

Product Information

When requesting service or ordering replacement parts, please inform your Komatsu distributor of the following items.

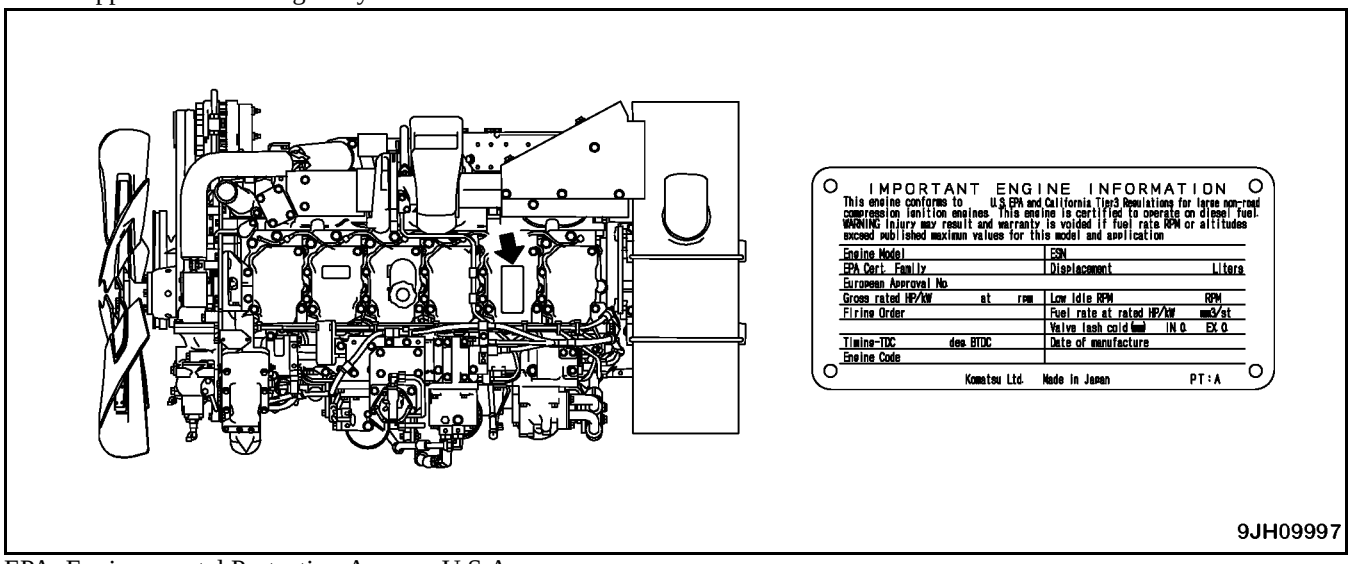
Product Identification Number (PIN)/machine Serial No. Plate

On the bottom right of the operator's cab.
The design of the nameplate differs according to the territory.



EPA Regulations, Engine Number Plate

On the upper side of the engine cylinder head cover.



EPA: Environmental Protection Agency, U.S.A.

SAFETY

⚠ WARNING

Please read and make sure that you fully understand the precautions described in this manual and the safety labels on the machine. Read and follow all safety precautions. Failure to do so may result in serious injury or death.

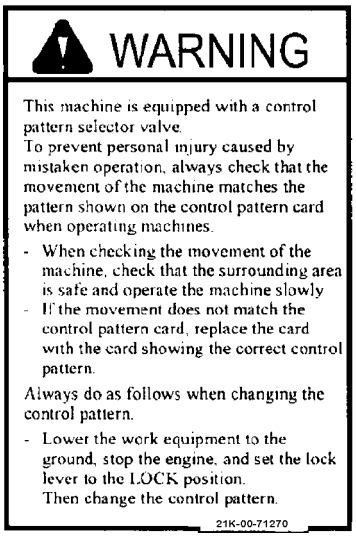
26. BH warning (21K-00-71270)

WARNING - The machine is equipped with a control pattern selector valve.
To prevent personal injury caused by mistaken operation, always check that the movement of the machine matches the pattern shown on the control pattern card when operating machines.

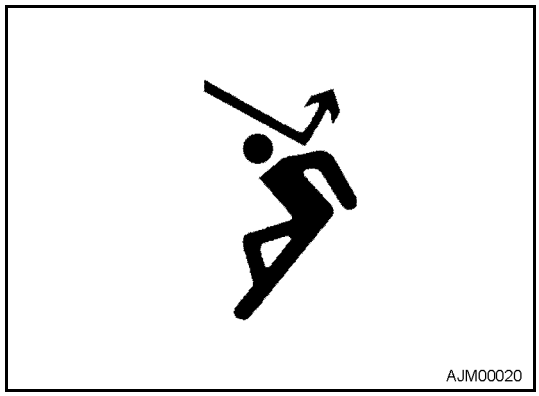
- When checking the movement of the machine, check that the surrounding area is safe and operate the machine slowly.
- If the movement does not match the control pattern card, replace the card with the card showing the correct control pattern.

Always do as follows when charging the control pattern.

- Lower the work equipment to the ground, stop the engine, and set the lock lever to the LOCK position.
  Then change the control pattern.



- When carrying out the above operations, always close the front window. In addition, always ensure that by-standers are a safe distance away and are not in hazard from falling or flying objects.
- The above recommendations assume that the conditions are for standard operations, but it may be necessary to add additional guards according to the operating conditions on the jobsite. Always contact your Komatsu distributor for advice.



Attachment Installation

- When installing optional parts or attachments, there may be problems with safety or legal restrictions. Therefore contact your Komatsu distributor for advice.
- Any injuries, accidents, or product failures resulting from the use of unauthorized attachments or parts will not be the responsibility of Komatsu.
- When installing and using optional attachments, read the instruction manual for the attachment, and the general information related to attachments in this manual.

Attachment Combinations

Depending on the type or combination of work equipment, there is a hazard that the work equipment may hit the cab or other parts of the machine. Before using unfamiliar work equipment, check if there is any hazard of interference, and operate with caution.

Precautions Related To Cab Glass

- If the cab glass is broken during operations, stop operations and repair the cab glass immediately.
- If the cab glass on the work equipment side is broken, there is a hazard that the operator may be directly hit or caught in the work equipment. If the glass is broken, stop operations immediately and replace the glass.
- The ceiling window is made of plastic, so if it is scratched, the visibility will become poor and there is danger that it may break. If it is scratched, replace it with the new part as soon as possible. If the window is scratched and is not replaced, there is danger that any rocks falling on it will cause it to break, leading to injury to the operator.

Unauthorized Modifications

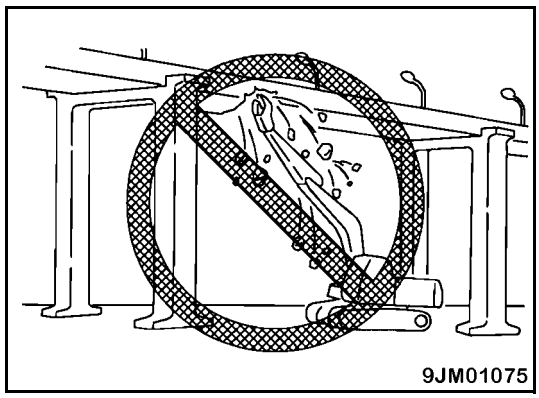
If this machine is modified without permission from Komatsu, there is danger that problems may occur with safety and that this may lead to serious personal injury. Modifications may have an adverse effect on items such as machine strength and visibility. Before making any modifications, please consult your Komatsu distributor. Komatsu cannot take any responsibility for accidents, failures, or damage caused by modifications not authorized by Komatsu.

Safety At Jobsite

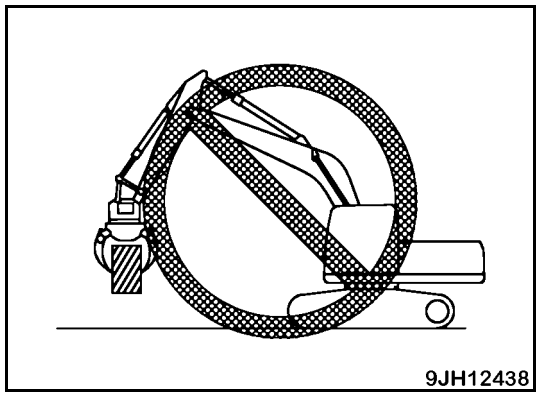
Before starting operations, thoroughly check the area for any unusual conditions that could be dangerous.

- When carrying out operations near combustible materials such as thatched roofs, dry leaves or dry grass, there is a hazard of fire, so be careful when operating.
- Check the terrain and condition of the ground at the worksite, and determine the safest method of operation. Do not operate where there is a hazard of landslides or falling rocks.

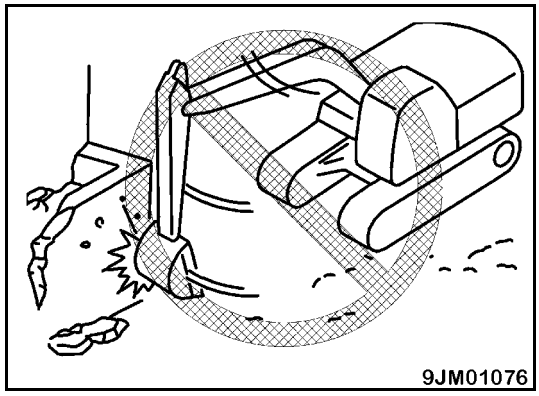
- When carrying out demolition work, do not carry out demolition above your head. There is a hazard of broken parts falling or of the building collapsing and causing serious injury or property damage.



- In the operation using the fork or grapple, do not attempt to pick up an object with their tips.
  There is a danger of damage to the machine or personal injury, as the picked - up object can easily slip off.



- Do not use the impact force of the work equipment for breaking work. There is a hazard of damage to the work equipment, or a hazard of serious personal injury being caused by flying pieces of broken materials, or of the machine tipping over due to reaction from the impact.
- Generally speaking, the machine is more liable to overturn when the work equipment is at the side than when it is at the front or rear.
- When using a breaker or other heavy work equipment, there is a hazard of the machine losing its balance and tipping over. When operating on flat ground as well as on slopes.
  - Do not suddenly lower, swing, or stop the work equipment.
  - Do not suddenly extend or retract the boom cylinder. There is a hazard that impact will cause the machine to tip over.

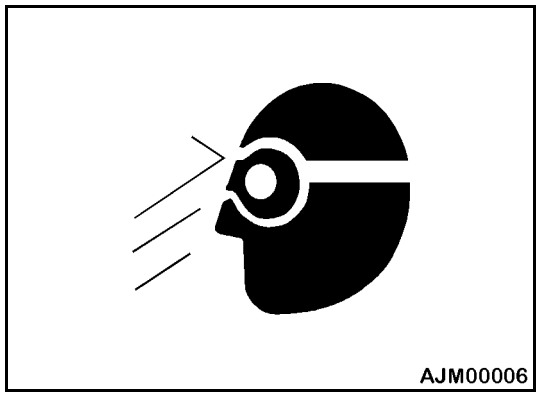


- Do not pass the bucket over the head of other workers or over the operator's seat of dump trucks or other hauling equipment. The load may spill or the bucket may hit the dump truck and cause serious injury or property damage.

Operations On Snow

- Snow-covered or frozen surfaces are slippery, so be extremely careful when traveling or operating the machine, and do not operate the levers suddenly. Even a slight slope may cause the machine to slip, so be particularly careful when working on slopes.
- With frozen ground surfaces, the ground becomes soft when the temperature rises, and this may cause the machine to tip over.
- If the machine enters deep snow, there is a hazard that it may tip over or become buried in the snow. Be careful not to leave the road shoulder or to get trapped in a snow drift.
- When clearing snow, the road shoulder and objects placed beside the road are buried in the snow and cannot be seen. There is a hazard of the machine tipping over or hitting covered objects, so always carry out operations carefully.

When Using Hammer



When using a hammer, pins may fly out or metal particles may be scattered. This may lead to serious injury. Always do as follows:

- If hard metal parts such as pins, bucket teeth, cutting edges, or bearings are hit with a hammer, there is a hazard that pieces might be scattered and cause injury. Always wear safety glasses and gloves.
- When hitting pins or bucket teeth, there is a hazard that broken pieces might be sent flying and injure people in the surrounding area. Always check that there is no one in the surrounding area.
- There is a hazard that the pin hit with strong force may fly out and injure people in the surrounding area.

Welding Works

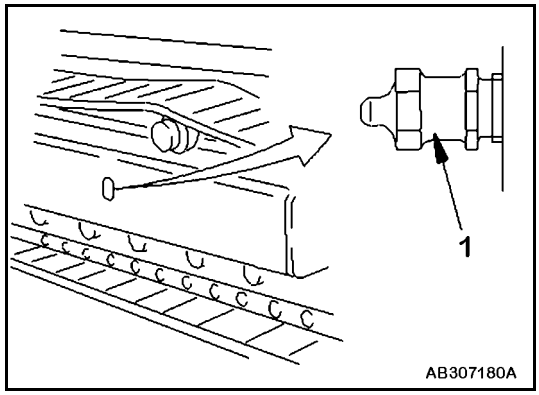
Welding operations must always be carried out by a qualified welder and in a place equipped with proper equipment. There is a hazard of gas, fire, or electrocution when carrying out welding, so never allow any unqualified personnel to carry out welding.

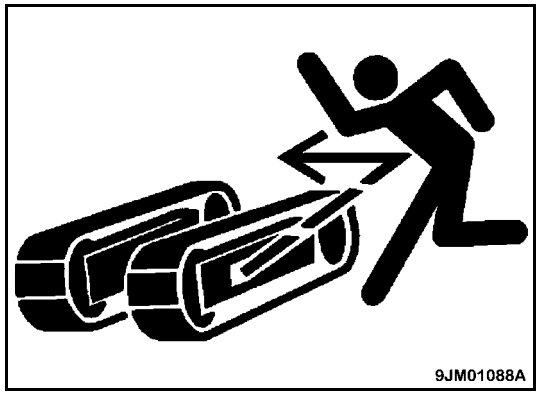
Removing Battery Terminals

When repairing or welding the electrical system, wait for approximately one minute after turning off the engine starting switch key, and then disconnect the negative (-) terminal of the battery to stop the flow of electricity.

Safety First When Using High-pressure Grease To Adjust Track Tension

- Grease is pumped into the track tension adjustment system under high pressure.
- If the specified procedure for maintenance is not followed when making adjustments, grease drain plug (1) may fly out and cause serious injury or property damage.
- When loosening grease drain plug (1) to loosen the track tension, never loosen it more than one turn. Loosen the grease drain plug slowly.
- Never put your face, hands, feet, or any other part of your body close to grease drain plug (1).

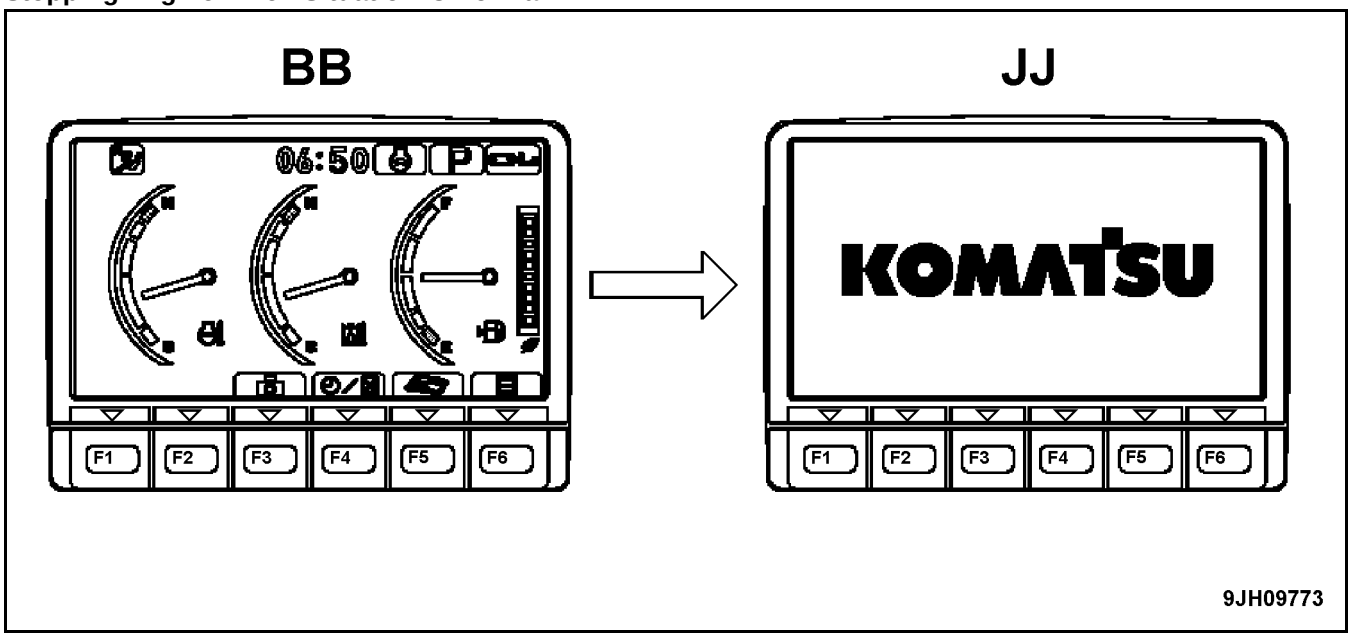




Remark

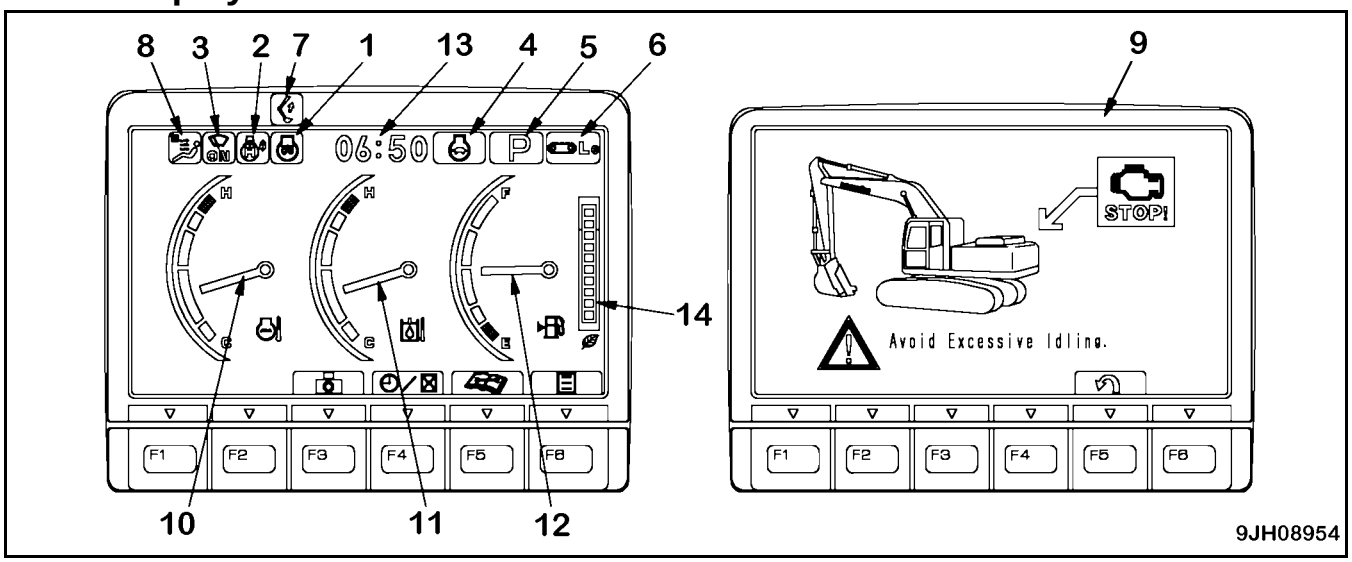
When the engine is started, the battery voltage may suddenly drop depending on the temperature and the battery condition. If this happens, the display on the machine monitor may momentarily go out, but this does not indicate any abnormality.

Stopping Engine When Situation Is Normal



- When the starting switch is turned to the OFF position, ending screen JJ is displayed for 5 seconds, then the display goes out.

Meter Display Portion



Pilot display

1. Engine pre-heating monitor
2. Swing lock monitor
3. Wiper monitor
4. Auto-deceleration monitor
5. Working mode monitor
6. Travel speed monitor
7. One-touch power max. monitor
8. Air conditioner monitor
9. Idle stop guidance

Gauge and Meter

10. Engine coolant temperature gauge
11. Hydraulic oil temperature gauge
12. Fuel gauge
13. Service meter, clock
14. ECO gauge

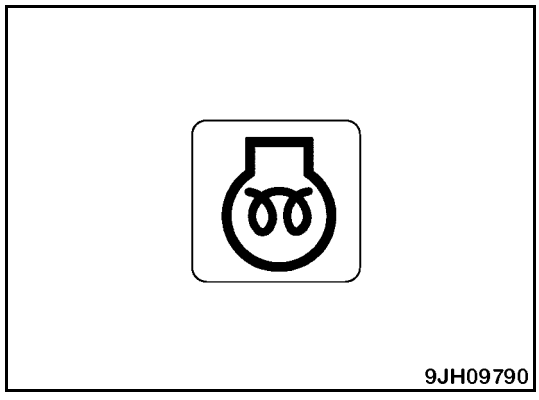
Pilot Display

- The pilot display at the top of the screen consists of the pilot lamps to confirm the actuation of each function.
- When the starting switch is turned ON, the pilot lamp lights up when the display items are functioning.

Engine Pre-heating Monitor

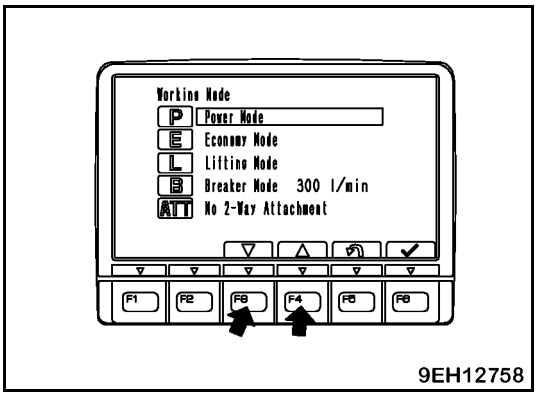
This monitor (1) lights up when the engine preheating electric heater is actuated. When the ambient temperature is low and the starting switch is set to the ON position, the lamp lights up, and when the preheating is completed, it goes out.

The preheating time differs according to the ambient temperature.



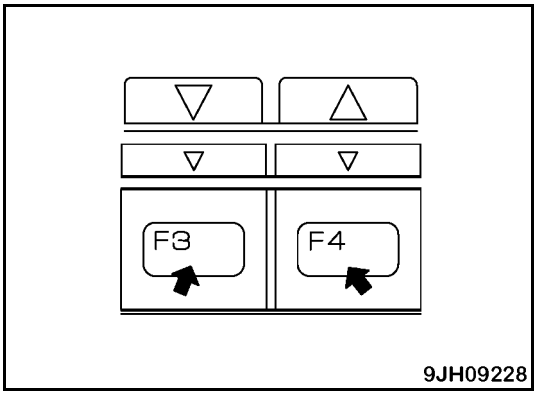
Procedure For Operation

1. If working mode selector switch (1) is pressed, the Working Mode screen is displayed on the monitor.



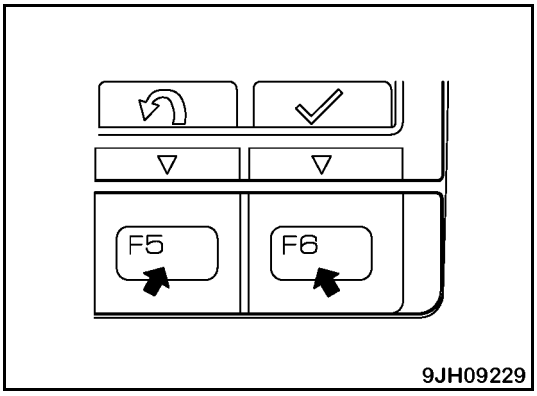
2. Press function switches F3 or F4 at the bottom of the screen or working mode selector switch (1) to change the mode selection one at a time.

   - If no switch is touched for more than five seconds, the selected working mode is automatically set as the working mode and the screen changes to Steps 3 and Steps 4.



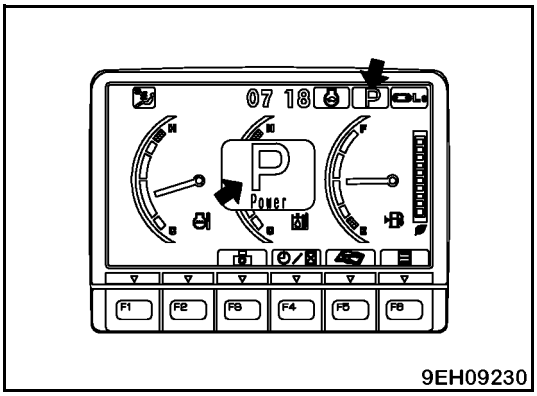
Remark

To return to the standard screen without changing the working mode, press function switch F5.



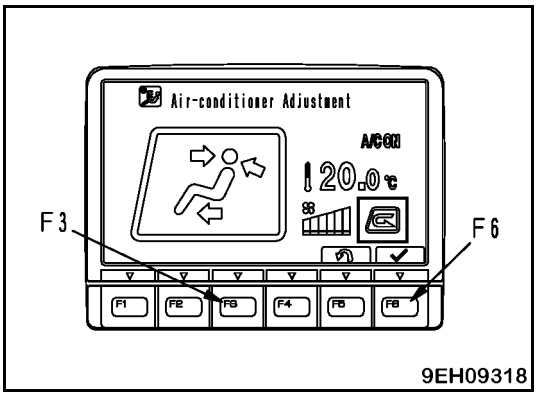
3. After selecting the desired mode, press function switch F6 and the mode is displayed in the center of the monitor display.
   (Example: If power mode is selected: P)

4. After two seconds, the pilot monitor display at the top right of the screen is highlighted in orange.



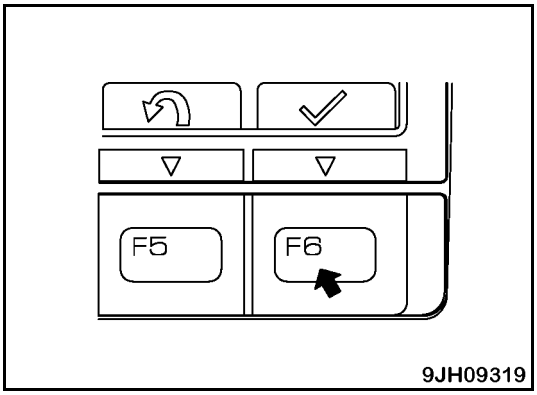
Other Mode Operations When Displaying Camera Image

- Even during the camera display, it is possible to operate other modes.



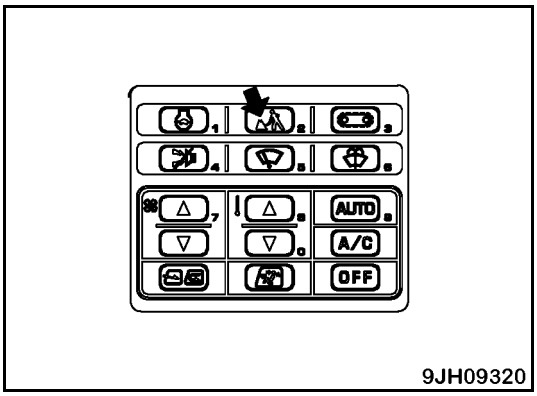
9EH09318

- The air conditioner can be operated.
  If the air conditioner switch is operated, the screen switches to the air conditioner control screen. If the screen switches to the air conditioner control screen, press switch F6 to return to the camera image screen. In addition, if no operation is carried out for 5 seconds after the screen switches to the air conditioner control screen, the screen automatically returns to the camera image screen.
  For details of the operation of the air conditioner, see “AIR CONDITIONER CONTROLS” on page 2-92.



9JH09319

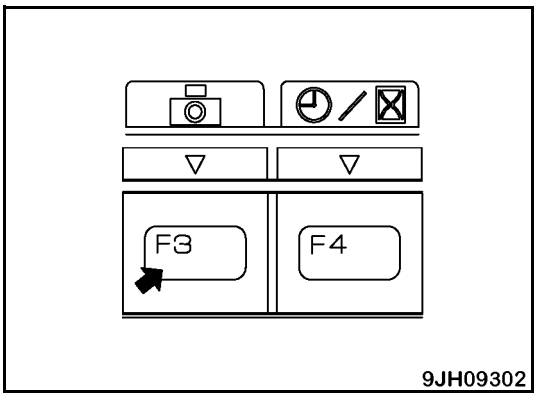
- It is possible to change the working mode by pressing the working mode selector switch.
  For details of the working mode selector switch, see “Working Mode Selector Switch” on page 2-25.



9JH09320

If the working mode is changed, the screen returns to the standard screen.

Press switch F3 again to return to the camera image display.

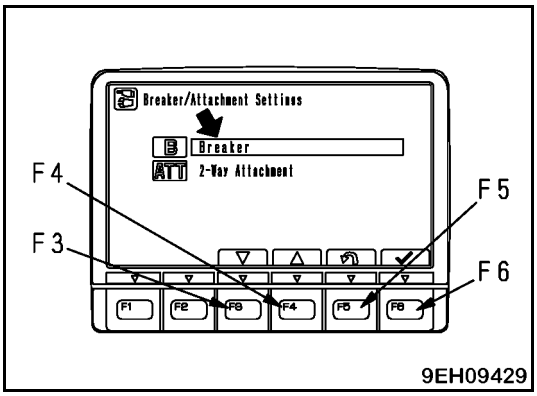


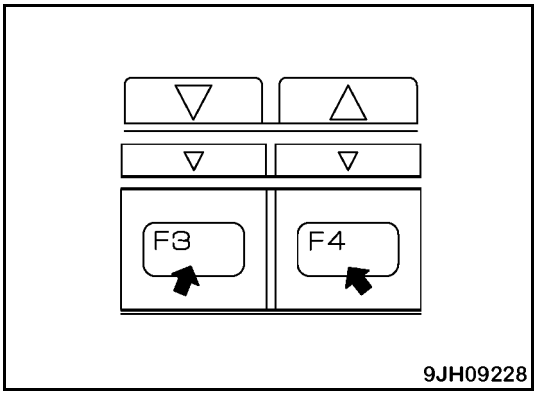
9JH09302

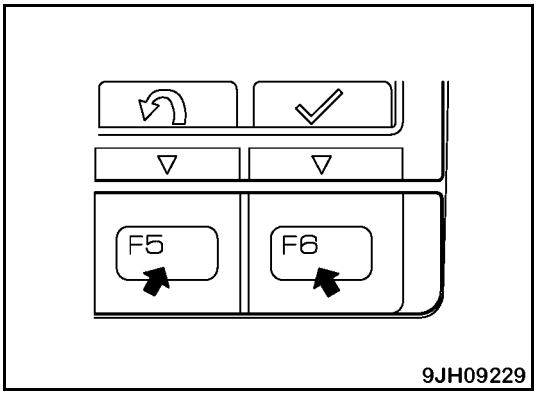
3. On the working mode selection screen shown on the right, select B Breaker and press switch F6.

   - On the working mode selection screen shown on the right, it is possible to carry out the following operations with switches F3 to F6.

   F3: Moves to next item (1 line down).
   F4: Moves to previous item (1 line up).
   F5: Returns to user menu screen.
   F6: Switches to setting screen for selected item.

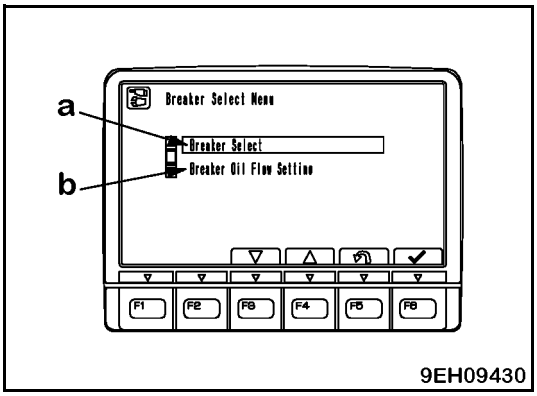






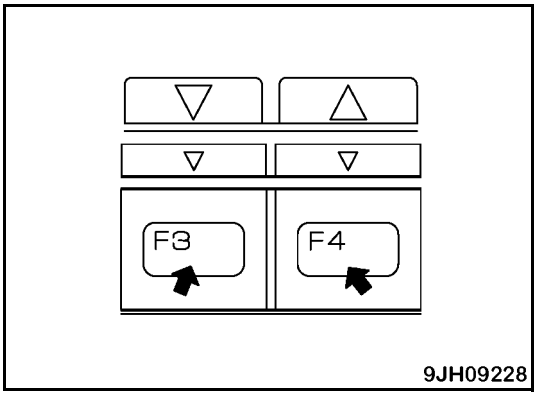
4. The screen switches to the Breaker Select Menu.

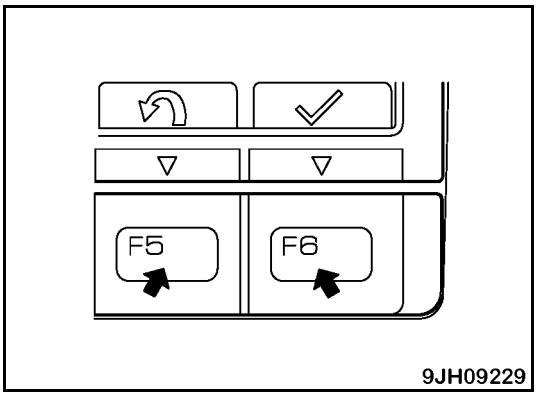
   - Breaker setting selection menu
     In breaker Select (a), the oil flow to be set in B mode can be set to one of two set values.
   - Breaker flow setting menu
     In the breaker flow setting (b), the oil flow to be set in B mode can be changed.



- On the 2-Way Attachment Select Menu screen and 2-Way Attachment Select Menu screen, it is possible to carry out the following operations with switches F3 - F6.

F3: Moves to next item (1 line down).
F4: Moves to previous item (1 line up).
F5: Returns to previous screen.
F6: Switches to setting screen for selected item.

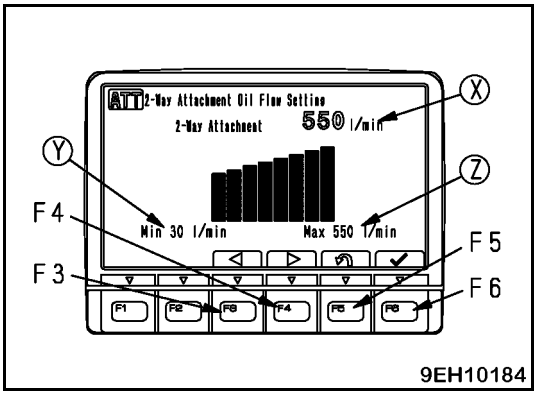


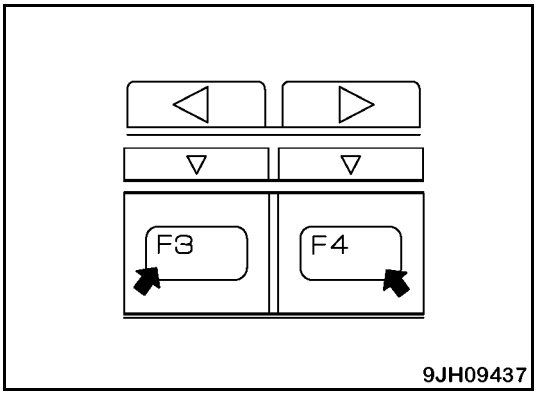


3. On the 2-Way Attachment Oil Flow Setting menu, it is possible to change the oil flow setting.

- After using switches F3 or F4 to change to a suitable oil flow, press switch F6 to accept the change in the oil flow and return to the previous screen.
- When switch F5 is pressed, no change is made in the oil flow and the screen returns to the previous screen.

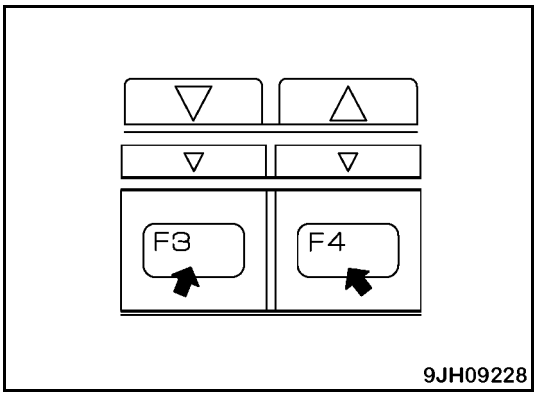
(X): Present oil flow setting
(Y): Min. adjusted oil flow
(Z): Max. adjusted oil flow

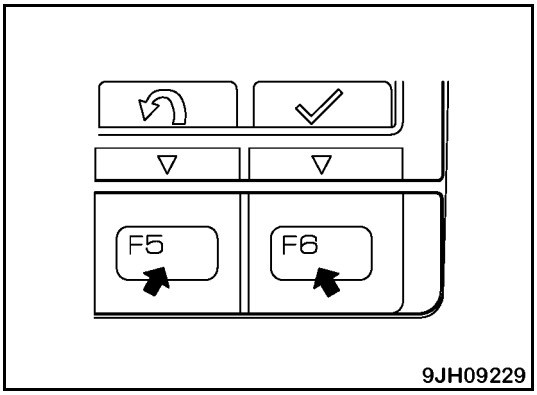




b. When minute display (c) is highlighted in orange, operate the switches as follows to adjust minute display (c).
If it is not necessary to change the minute setting, press switch F6. If the time has been changed, always press switch F6.

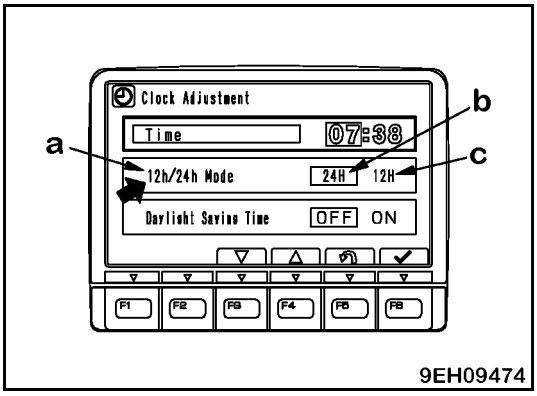
F3: Time advances 1 minute.
F4: Time goes back 1 minute.
F5: Cancels change and returns to user menu.
F6: Accepts change and goes to setting for 12/24 hour display mode.





- 12h/24h Mode.
Choose either a 12-hour display (am/pm) or a 24-hour display.

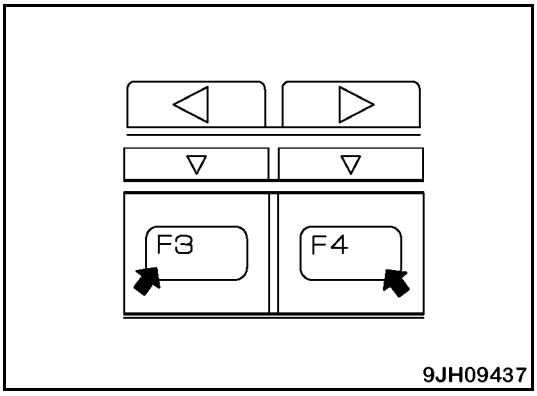
(b): 24-hour display.
(c): 12-hour display (am/pm).



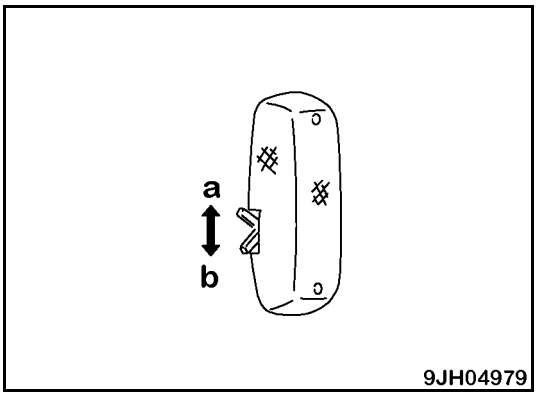
1. If “12h/24h Mode” (a) is not highlighted in yellow, press switch F6 to highlight “12h/24h Mode” (a) in yellow.

2. Change the “12h/24h mode” with the switches as follows.
The selected display mode (b) or (c) is highlighted in green.

F3: Moves 1 item to left.
F4: Moves 1 item to right.



Room Lamp Switch



Remark

It is possible to turn on the interior cab room lamp even when starting switch is in the OFF position, do not forget to turn it off.

Use this switch (12) to light up the room lamp.

(a) ON position: . . . . . Lamp lights up
(b) OFF position: . . . . . Lamp goes out

The room lamp lights up even when the starting switch is at the OFF position

Emergency Pump Drive Switch

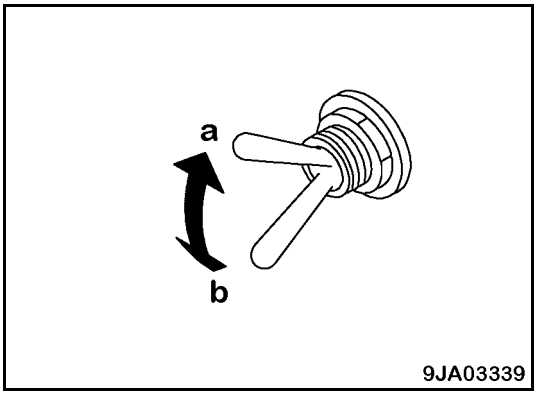
Remark

This switch is provided to enable you to carry out operation temporarily, when any problem occurs on the pump control system. Do not use it except in emergency. Furthermore, remove the cause of the problem immediately.

If this switch is depressed and moved to the EMERGENCY position by mistake, while the machine is in normal condition, an "E02" mark is shown in the display.

If "E02" is displayed during work, check that the switch is in the NORMAL position.

This switch (13) is used to make it possible to carry out operations temporarily if any problem should occur in the pump control system (when the display shows "E02").



(a) EMERGENCY: . . . . . When abnormal (move switch up)
(b) NORMAL: . . . . . When normal (move switch down)

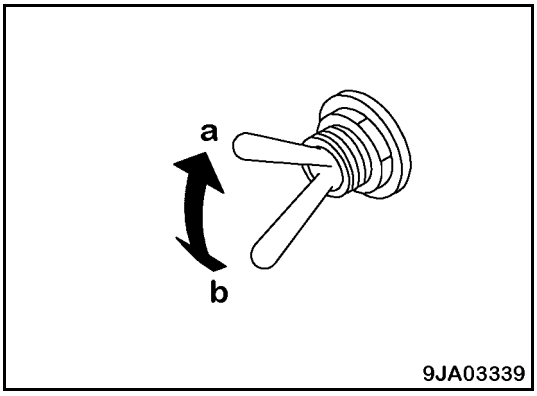
If the display shows "E02", move the switch up to make it possible to carry out work.

Swing Parking Brake Release Switch

Remark

This switch makes it possible to perform swing operations for a short even when there is a problem in the swing parking brake electric system. DO NOT use this switch except in emergencies. Repair the problem as soon as possible.

This switch (14) is used to make it possible to carry out operations temporarily if any problem should occur in the swing parking brake system (when the display shows "E03").

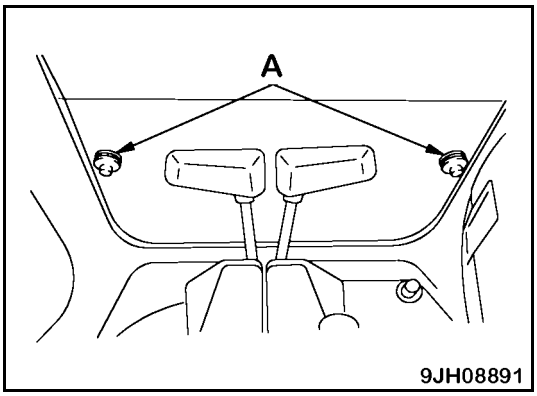


(a) FREE: . . . . . When abnormal (move switch up)
(b) NORMAL: . . . . . When normal (move switch down)

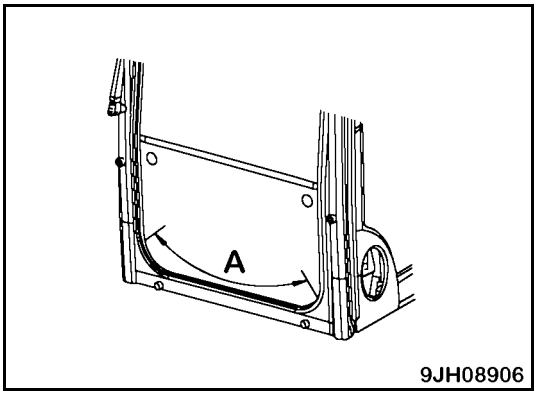
- If the display shows "E03", move the switch up to the FREE position, to make it possible to carry out work.
- When pushing this switch up to the FREE position, the swing lock monitor lamp begins to flash.

Removing Lower Windshield

1. Open the front window, then hold grip (1), pull up, and remove the bottom window.

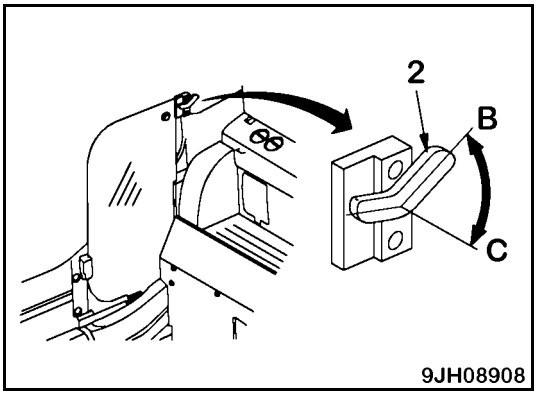


- If sand or dust is collected at the bottom of the front window, it will be difficult to remove the window. In addition, when stowing, the sand and dust stuck to the glass will be carried inside the cab. To prevent this, clean area (A) before removing.



2. After removing the lower windshield, store it at the right rear of the operator's cab, and set lever (2) to lock position (B) to hold it securely in position.

3. When removing it, set lever (2) to release position (C), hold the glass with both hands, and pull it up.



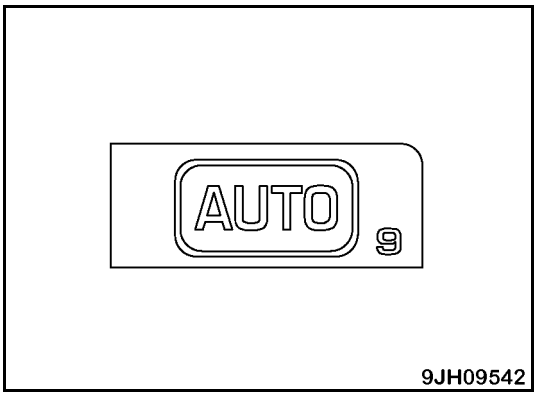
Method Of Operation

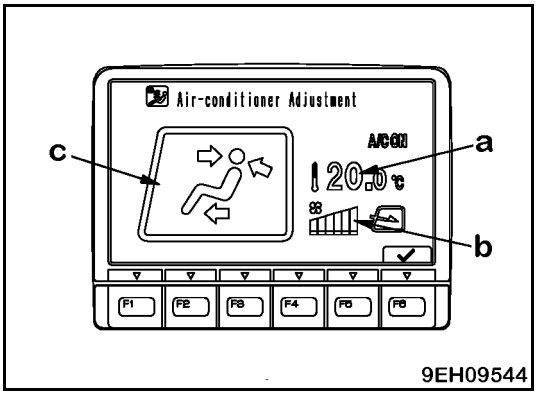
The air conditioner can be operated automatically or manually. Select the method of operation as desired.

Automatic Operation

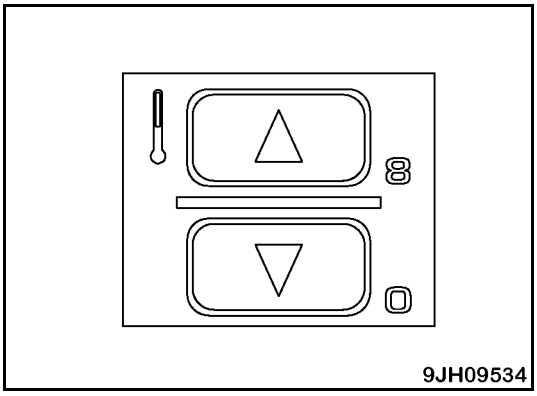
1. Turn auto switch (5) ON.

    - The monitors for the set temperature (a) and air flow (b) are also displayed.



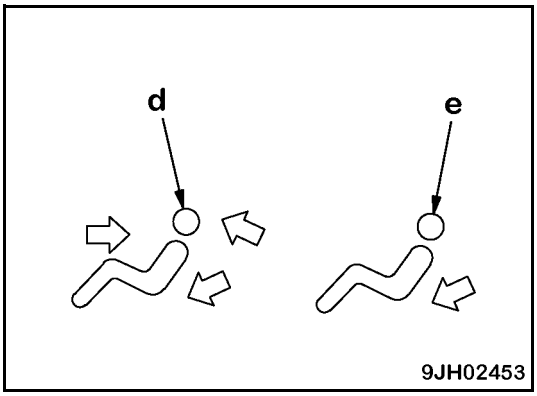


2. Use temperature set switch (3) to set to the desired temperature. The air flow, combination of vents, and selection of fresh or recirculated air is automatically selected according to the set temperature, and the air conditioner is operated automatically to provide the set temperature.



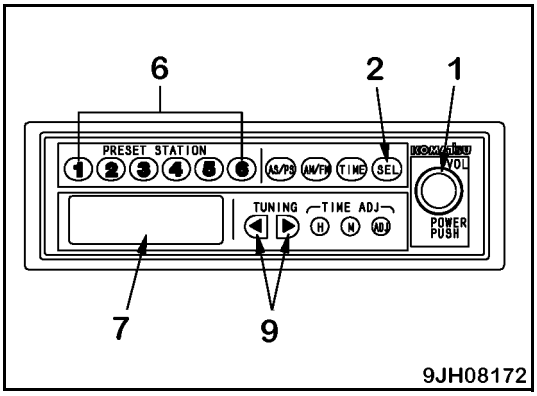
Remark

When vent display monitor (c) displays (d) or (e), and engine coolant temperature is low, the air flow is automatically limited to prevent cold air from blowing out.



Controls Of Radio

Method of Setting with Preset Button



1. Press power switch (1) and display the frequency on display (7).

2. Use tuning button (9) to set to the desired frequency. There are two methods for tuning: auto tuning and manual tuning.

3. With the display (7) showing the desired frequency, keep the desired Preset button No pressed for at least 1.5 seconds. The reception sound will disappear, but when the presetting operation (saving to memory) is completed, the sound will appear again and the Preset No and frequency will be shown on the display to show that the presetting operation has been completed.
   After completing the presetting, press Preset button (6) and release it within approximately 1.5 seconds. This will make it possible to receive the channel preset to that button. One channel each for AM and FM can be preset to each Preset button.

Remark

It is also possible to save to the Preset button by using the auto store button.

Method of Tuning

1. Press power switch (1) and display the frequency on display (7).

2. Use tuning button (9) to set to the desired frequency. There are two methods for tuning: auto tuning and manual tuning.

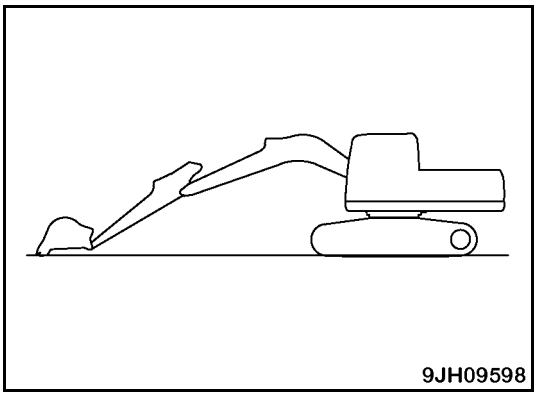
- Manual tuning.
  Press tuning button (9) until the frequency is displayed on display (7).
  < button: Frequency moves down
  > button: Frequency moves up
  When the frequency reaches the top or bottom frequency, it automatically continues as follows: Top ➡ Bottom, or Bottom ➡ Top.
- Auto tuning.
  Press tuning button (9) for at least 3 seconds. When a station is picked up, the tuning automatically stops. To search for the next station, press the tuning button again for at least 3 seconds.
  < button: Frequency moves down
  > button: Frequency moves up
  If this button is pressed during auto tuning, the auto tuning will be cancelled and the setting will return to the frequency in use before the button was pressed.

Check Oil Level in Hydraulic Tank, Add Oil

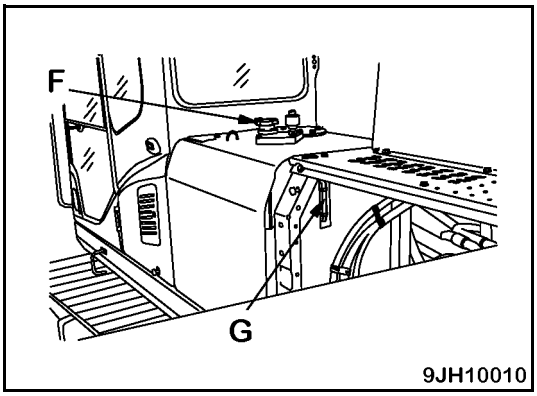
⚠ WARNING

- **The parts and oil are at high temperature immediately after the engine is stopped, and may cause burns. Wait for the temperature to go down before starting the work.**
- **When removing the oil filler cap, turn it slowly to release the internal pressure, then remove it.**

1. Set the work equipment in the posture shown in the diagram on the right, then check the oil level and add oil if necessary.



2. If the work equipment is not in the condition shown in the diagram on the right, start the engine, run the engine at low speed, retract the arm and bucket cylinder rods fully, then lower the boom, set the bucket teeth in contact with the ground, and stop the engine.



3. Within 15 seconds after stopping the engine, move each control lever (for work equipment and travel) to the full stroke in all directions to release the internal pressure.

4. Check sight gauge (G). The oil level should be between the H and L marks.

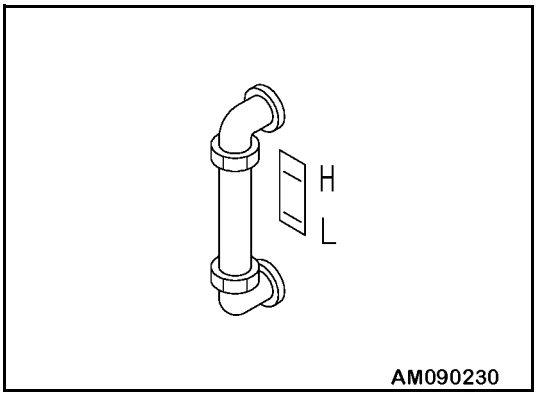
5. If the level is below the L mark, add oil through oil filler (F) at the top of the hydraulic tank.

Remark

The oil level will vary depending upon the oil temperature.

Accordingly, use the following as a guide:

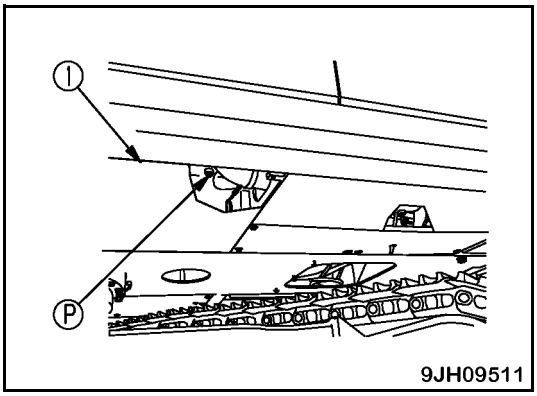
- *Before starting operation: Between H and L levels (Oil temperature 10 to 30°C (50 to 86°F))*
- *Normal operation: Around H level (Oil temperature 50 to 80°C (122 to 176°F))*



Remark

Do not add oil above the H line. This will damage the hydraulic circuit or cause the oil to spurt out.

If oil has been refilled, exceeding the H level, swing the upper structure until drain plug (P) beneath the hydraulic tank comes between the right and left track shoes and stop the engine. Wait for the oil to cool down sufficiently, then remove cover (1) and drain the excess oil through drain plug (P).



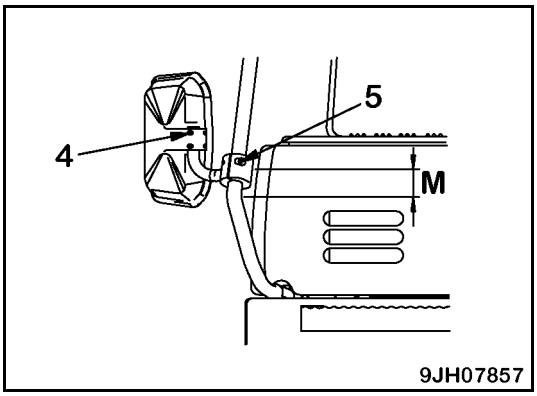
Mirror (B)

- Adjust the mirror mount so that it is possible to see people at the rear right of the machine.
- Install the side view mirror in the location indicated in the figure at right.

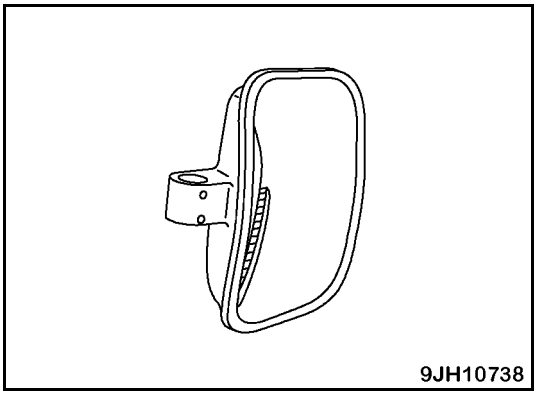
(M):. . . . . 40 mm (1.6 in)

- If the side view mirror does not move smoothly when adjusting its angle, loosen mirror securing bolt (4) and mirror securing stay bolt (5).

Torque bolt (4):. . . . . 1.96 - 2.94 N•m (1.4 - 2.2 lb ft)



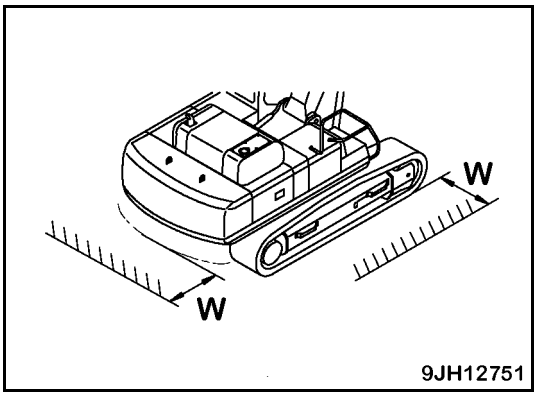
- When adjusting the side view mirror angle, make an adjustment so that the side of the machine comes into view on the mirror as shown in the figure at right.



Mirrors (C)

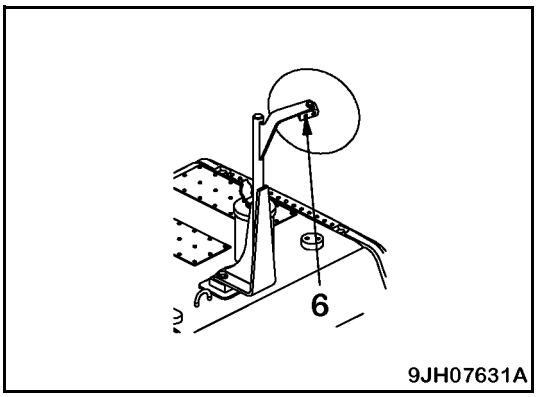
Adjust the side view mirrors so that people around 1 m away from the machine can be seen.

(W): . . . . . 1 m (3 ft 3 in)

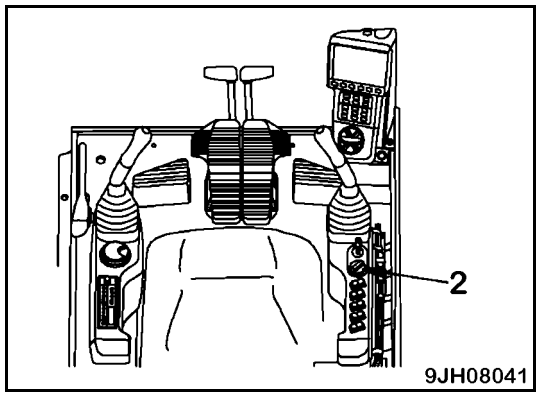


If side view mirror (C) does not move smoothly when adjusting its angle, loosen mirror securing screw (6).

Torque screw (6):. . . . . 0.98 - 1.47 N•m (0.7 - 1.1 lb ft)



Engine Warm Up



Remark

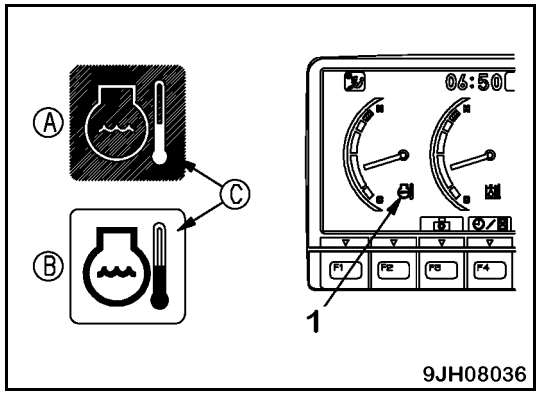
- Do not accelerate the engine suddenly until the warm-up operation has been completed.
- Do not run the engine at low idling or high idling under no load for more than 20 minutes. This will have an adverse effect on the environment, and will also have an adverse effect on the internal structure of the engine. If it is necessary to run the engine at idling for more than 20 minutes, apply a load from time to time or run at a mid-range speed.

After the engine starts, do not start operating the machine immediately. First, carry out the following operations and checks.

1. This machine is equipped with an automatic engine warm-up system, so if the engine water temperature is below 30°C after the engine is started, the engine warm-up operation starts automatically. When the engine automatic warm-up operation starts, the engine speed is maintained at a speed higher than the normal low idling speed.

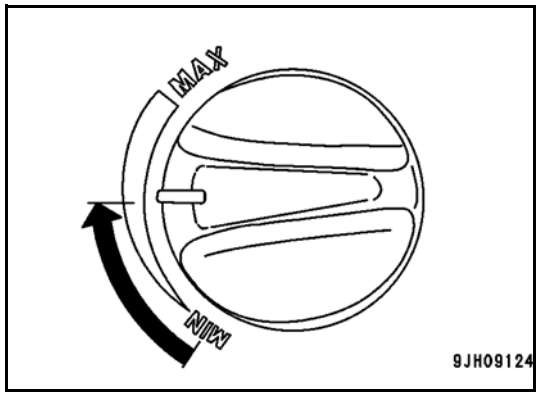
   If the engine water temperature goes above 30°C or if the warm-up operation has been continued for more than 10 minutes, the automatic warm-up operation is cancelled and the engine speed drops to the normal low idling speed.

2. Check that engine coolant temperature monitor (1) displays the operating temperature range.
   If it displays low temperature, use the procedure in Step 3 to carry out additional warm-up of the engine until the monitor displays that the coolant is in the operating temperature range.
   Coolant temperature indicator



(A) Display when temperature is in operating range: . . . . . Monitor background (C) is blue
(B) Display when temperature is low: . . . . . Monitor background (C) is white

3. Turn fuel control dial (2) to a point midway between low idling (MIN) and full speed (MAX), run the engine under no load at a mid-range speed until engine coolant temperature monitor (1) displays operating temperature range.



If the engine coolant temperature monitor displays a blue background, the engine warm-up operation is completed.

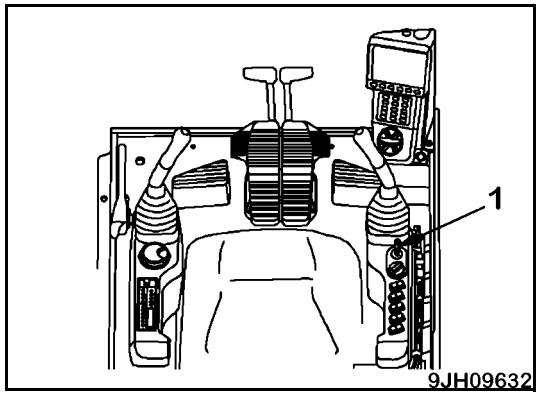
With the engine warm-up complete, proceed to carry out the warm-up operation for the hydraulic system.

Stopping The Engine

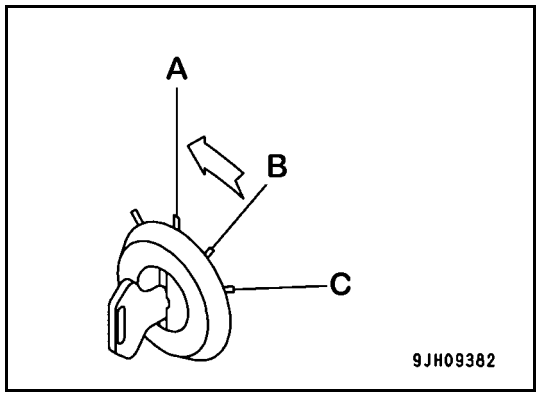
Remark

If the engine is stopped abruptly, service life of component parts of the engine may be considerably reduced. Do not stop the engine abruptly except in an emergency. If the engine has overheated, do not try to stop it abruptly but run it at medium speed to allow it to cool down gradually, and then stop it.

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



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



Working Mode

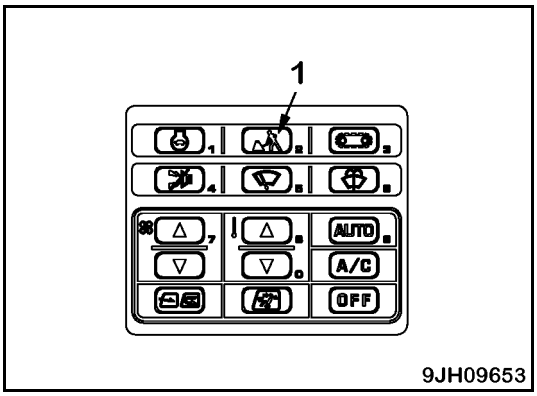
Working Mode

Use working mode selector switch (1) to select the working mode that matches the operating conditions or purpose. This will make it possible to carry out operations efficiently.

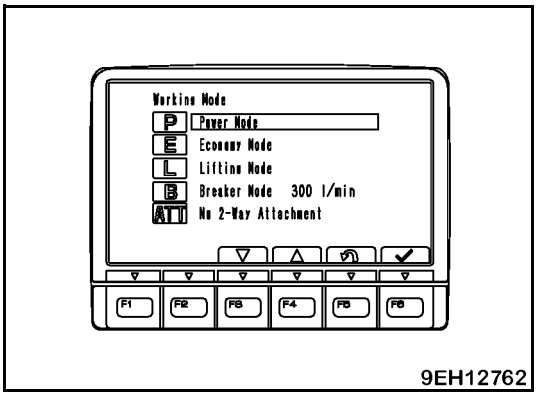
Use the following procedure to select the most efficient working mode.

When the starting switch is turned ON, the working mode is set to the mode that was in operation when the starting switch was last turned OFF.

Use the working mode switch to set the mode to the most efficient mode to match the type of work.



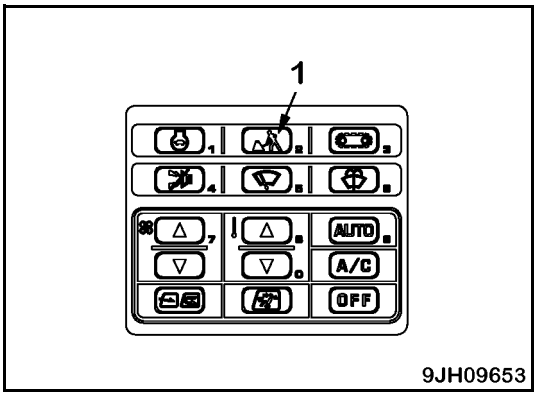
Working mode	Applicable operations
P mode	Normal digging or loading operations (operations with emphasis on production)
E mode	Normal digging or loading operations (operations with emphasis on fuel consumption)
L mode	Aligning position (fine control operations)
B mode	Breaker operations
ATT mode	Operations with the crusher or other double-acting action attachment



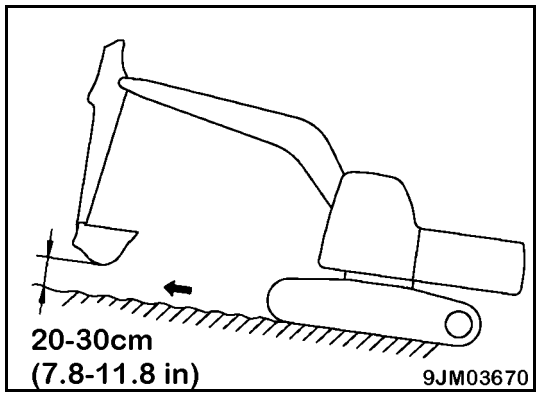
Remark

If breaker operations are carried out in a mode other than the breaker mode, there is danger of breakage of the hydraulic equipment. Do not carry out breaker operations in any mode except the breaker mode.

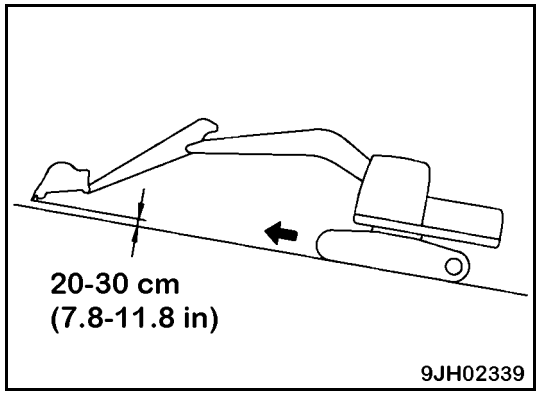
1. If working mode selector switch (1) is pressed, the working mode selection screen is displayed on the monitor.



2. When traveling up a steep hill of more than 15°, set the work equipment to the posture shown in the diagram on the right.



- When traveling up a steep slope, extend the work equipment to the front to improve the balance, keep the work equipment approximately 20 to 30 cm (8 to 12 in) above the ground, and travel at low speed.



Traveling Downhill

Put the travel lever in the neutral position. This will cause the brake to be automatically applied.

Engine Stopped on Slope

If the engine stops when traveling uphill, move the travel levers to the neutral position, lower the bucket to the ground, stop the machine, then start the engine again.

Cab Doors on Slope

- If the engine stops when the machine is on a slope, never use the left work equipment control lever to carry out swing operations. The upper structure will swing under its own weight.
- Do not open or close the door when the machine is on a slope. The operating effort may suddenly change. Always keep the door locked in position when it is open and when it is closed.

MACHINE INSPECTION AFTER DAILY WORK

1. Walk around the machine and check the work equipment, machine exterior, and undercarriage, also check for any leakage of oil or coolant. If any problems 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 affixed to the undercarriage.

Locking

Always lock the following places.

(1) Operator's cab door (Always close the window).

(2) Fuel tank filler port

(3) Battery box cover

(4) Left side door of the machine

(5) Right side door of the machine

(6) Hydraulic tank filler port

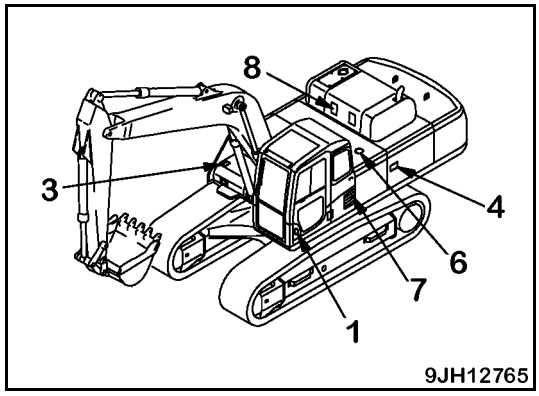
(7) Air conditioner FRESH filter intake port

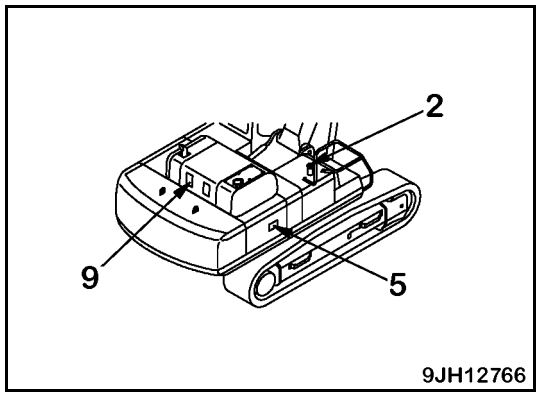
(8) Engine hood front cover

(9) Engine hood rear cover

Remark

Use the starting switch key to lock and unlock all these places.

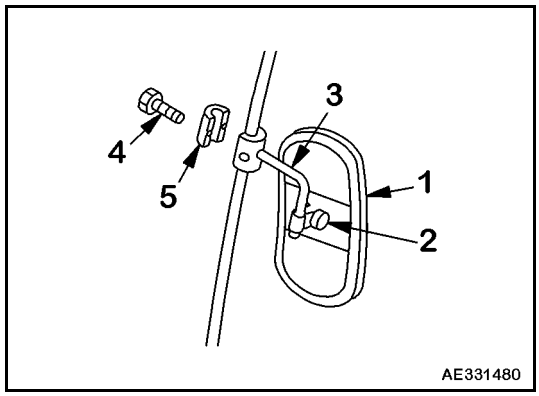




Installation

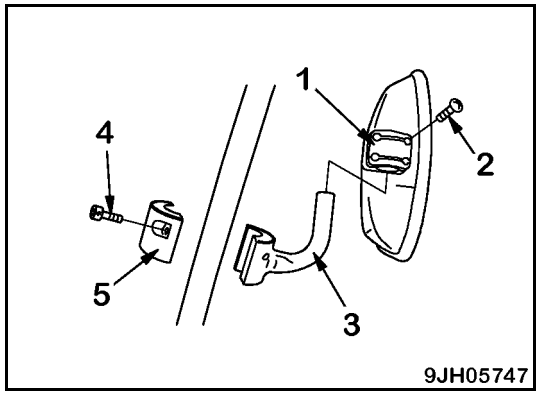
- Mirror (A)

1. Install support (3) and clamp (5) to the handrail, then tighten with bolt (4).
2. Install mirror (1) to bracket (3),then tighten locknut (2).



- Mirror (B)

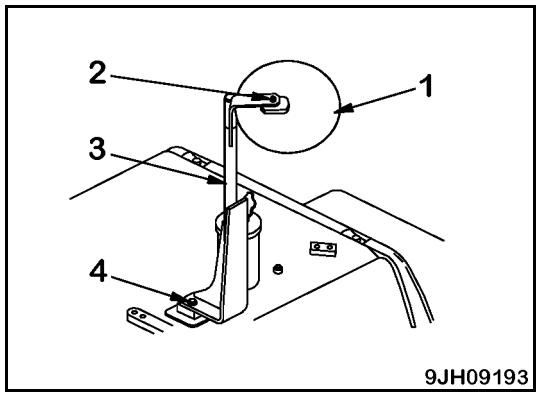
3. Install support (3) and clamp (5) to the handrail, then tighten with bolt (4).
4. Install mirror (1) to support (3),then tighten lock bolt (2).



- Mirrors (C)

(If equipped)

5. Install bracket (3) to the machine with bolt (4).
6. Install mirror (1) to bracket (3),then tighten locknut (2).



COLD WEATHER OPERATION

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

Fuel and Lubricants

Change to fuel and oil with low viscosity for all components. For details of the specified viscosity, see “RECOMMENDED FUEL, COOLANT, AND LUBRICANT” on page 3-9.

Cooling System Coolant

⚠ WARNING

- **Antifreeze is toxic. Be careful not to get it into your eyes or on your skin. If it should get into your eyes or on your skin, wash it off with large amounts of fresh water and see a doctor at once.**
- **When changing the coolant or when handling coolant containing antifreeze that has been drained when repairing the radiator, please contact your Komatsu distributor or request a specialist company to carry out the operation. Antifreeze is toxic. Do not let it flow into drainage ditches or spray it onto the ground surface.**
- **Antifreeze is flammable. Do not bring any flame close. Do not smoke when handling antifreeze.**

Remark

Use Komatsu Supercoolant (AF-NAC) wherever available, or use permanent type antifreeze coolant.

Never use methanol, ethanol, or propanol-based antifreeze.

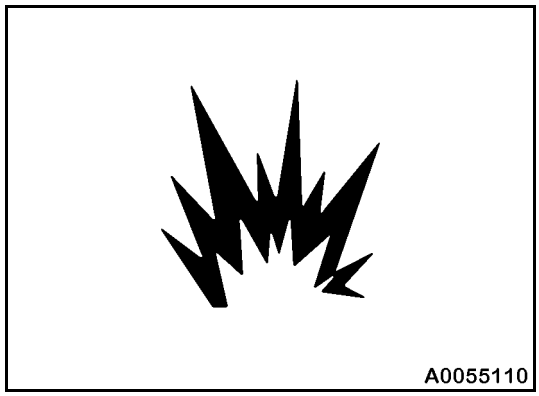
Do not use any water leakage prevention agent, either alone, or in combination with antifreeze.

Do not mix one brand of antifreeze with a different brand.

When using Komatsu Supercoolant (AF-NAC), there is no need to use a corrosion resistor. For details, see “Clean Inside Of Cooling System” on page 3-24.

For details of the antifreeze mixture when changing the coolant, see “Clean Inside Of Cooling System” on page 3-24.

Battery Charges



When charging the battery, if the battery is not handled correctly, there is a hazard that the battery may explode. Always follow the instructions, see “Discharged Battery” on page 2-206 and the instruction manual accompanying the charger, and do as follows.

- Set the voltage of the charger to match the voltage of the battery to be charged. If the correct voltage is not selected, the charger may overheat and cause an explosion.
- Connect the positive (+) charger clip of the charger to the positive (+) terminal of the battery, then connect the negative (-) charger clip of the charger to the negative (-) terminal of the battery. Be sure to attach the clips securely.
- Set the charging current to 1/10 of the value of the rated battery capacity; when carrying out rapid charging, set it to less than the rated battery capacity.
- If the charger current is too high, the electrolyte will leak or dry up, and this may cause the battery to catch fire and explode.
- If the battery electrolyte is frozen, do not charge the battery or start the engine with a different power source. There is a danger that this will ignite the battery electrolyte and cause the battery to explode.
- Do not use or charge the battery if the battery electrolyte level is below the LOWER LEVEL line. This may cause an explosion. Check the battery electrolyte level periodically and add distilled water to bring the electrolyte level to the UPPER LEVEL line.

Dusty Jobsite

When working at dusty work sites, do as follows:

- Clean the radiator fins and other parts of the heat exchange equipment more frequently, and take care not to let the fins become clogged.
- Replace the fuel filter more frequently.
- Clean electrical components, especially the starting motor and alternator, to avoid accumulation of dust.
- When checking and replacing the oil or filters, move the machine to a place where there is no dust and take care to prevent dust from entering the system.

Avoid Mixing Lubricants

If a different brand or grade of oil has to be added, drain the old oil and replace all the oil with the new brand or grade of oil. Never mix different brand or grade of oil.

Locking the Inspection Covers

Lock inspection cover securely into position with the lock bar. If inspection or maintenance is performed with inspection cover not locked in position, there is a danger that it may suddenly blow shut by the wind and cause injury to the worker.

Hydraulic System - Air Bleeding

When hydraulic equipment has been repaired or replaced, or the hydraulic piping has been removed and installed again, the air must be bled from the circuit. For details, see “Bleeding Air From Hydraulic System” on page 3-44.

Hydraulic Hose Installation

- When removing parts at locations where there are O-rings or gasket seals, clean the mounting surface, and replace with new parts.
  When doing this, be careful not to forget to assemble the O-rings and gaskets.
- When installing the hoses, do not twist them or bend them sharply. If they are installed so, their service life will be shortened extremely and they may be damaged.

Checks After Inspection and Maintenance Works

If you forget to perform the checks after inspection and maintenance, unexpected problems may occur, and this may lead to serious injury or property damage. Always do the following:

- Checks after operation (with engine stopped).
  - Have any inspection and maintenance points been forgotten?
  - Have all inspection and maintenance items been performed correctly?
  - Have any tools or parts been dropped inside the machine? It is particularly dangerous if parts are dropped inside the machine and get caught in the lever linkage mechanism.
  - Are there any leakage of coolant or oil? Have all nuts and bolts been tightened?
- Checks when operating engine.
  - For details of the checks when operating the engine, see “Two Workers For Maintenance When Engine Is Running” on page 1-38 and pay careful attention to safety.
  - Are the inspection and maintenance items working properly?
  - Is there any leakage of fuel or oil when the engine speed is raised?

SAFETY CRITICAL PARTS

For using the machine safely for an extended period of time, you must periodically replace the safety critical and fire prevention-related parts listed in the table of important parts.

Material quality of these parts can change as time passes and they are likely to wear out or deteriorate. However, it is difficult to determine the extent of wear or deterioration at the time of periodic maintenance. Hence, it is required to replace them with new ones regardless of their condition after a certain period of usage. This is important to ensure that these parts maintain their full performance at all times.

Furthermore, should anything abnormal be found on any of these parts, replace it with a new one even if the periodic replacement time for the part has not yet arrived.

If any of the hose clamps show deterioration like deformation or cracking, replace the clamps at the same time as the hoses.

Also perform the following checks with hydraulic hoses which need to be replaced periodically. Tighten all loose clamps and replace defective hoses, as required.

When replacing hoses, always replace O-rings, gaskets, and other such parts at the same time.

Have your Komatsu distributor replace the critical parts.

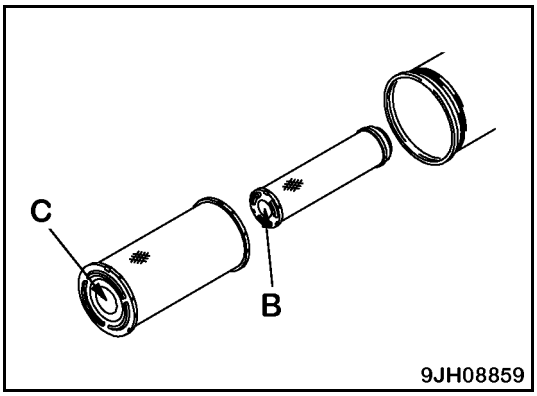
Safety Critical Parts List

No.	Safety critical parts for periodic replacement	Q'ty	Replacement interval
1	Fuel tank - block	1	Every 2 years or 4000 hours, whichever comes sooner
2	block - fuel pre-filter	1	
3	Fuel pre-filter - supply pump	1	
4	Supply pump - engine controller base	1	
5	Engine controller base - fuel main filter	1	
6	Over flow hose (supply pump - fuel tank)	1	
7	Spill hose (engine controller base - fuel tank)	1	
8	Pump outlet hose (pump - control valve)	2	
9	Work equipment hose (boom cylinder inlet port)	4	
10	Work equipment hose (bucket cylinder line, boom foot)	2	
11	Work equipment hose (bucket cylinder inlet port)	2	
12	Work equipment hose (bucket cylinder inlet port, 4.0 m arm)	2	
13	Work equipment hose (arm cylinder line, boom foot)	2	
14	Work equipment hose (arm cylinder inlet port)	2	
15	Attachment additional line hose (boom foot)	2	
16	Attachment additional line hose (boom intermediate)	2	
17	Attachment additional line hose (boom top)	2	
18	Swing line hose (swing motor inlet port)	2	
19	Main suction hose	1	
20	Gear pump suction hose	1	
21	Heater hose	2	
22	Travel line hose (control valve - swivel joint)	4	
23	Travel line hose (swivel joint - travel motor)	4	
24	Accumulator (for control circuit)	1	
25	High-pressure piping clamp	10	Every 8000 hours
26	Missing fuel spray prevention cap	12	
27	Seat belt	1	Every 3 years after the start of usage or 5 years after the date of manufacture or at first sign of wear or damage

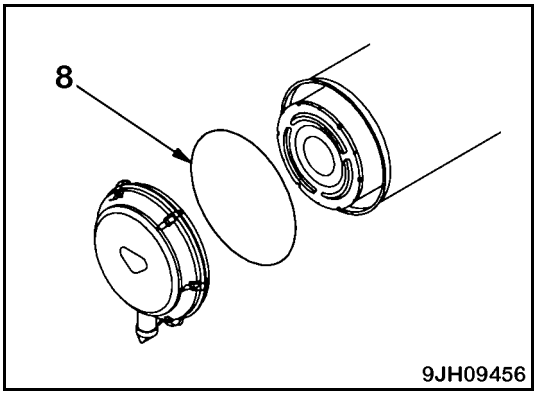
Remark

Be sure to install the air cleaner element facing in the correct direction.

Install so that the bottom of the air cleaner element cylinder (face where no hole is drilled) (B), (C) is at cover (3) end. If the direction of installation is mistaken, there is danger that it will cause breakage of the air cleaner element or serious damage to the engine.



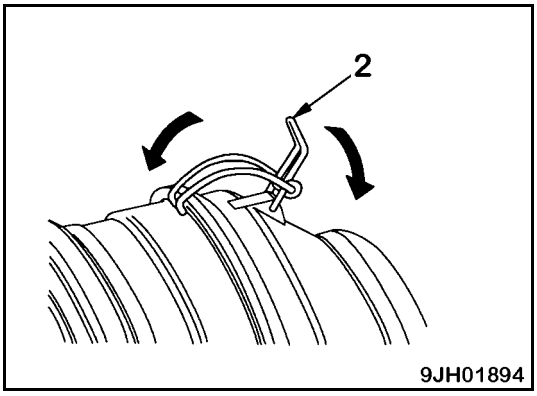
8. Replace O-ring (8) of cover (3) with a new part.



Remark

When inserting the element, if the rubber at the tip is swollen or the outer element is not pushed in straight, and cover (3) is assembled by force to hook (2), there is danger that the hook and air cleaner body may be damaged, so be careful when assembling.

9. Install cover (3) as follows.



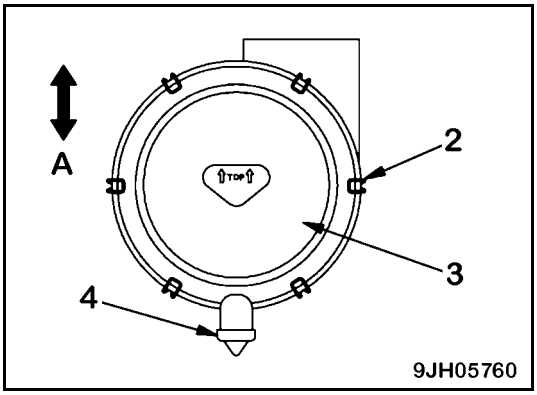
   A. Align cover (3) with the element.

   B. Hook the tip of hook (2) to the protruding part of the air cleaner body and lock it in position.

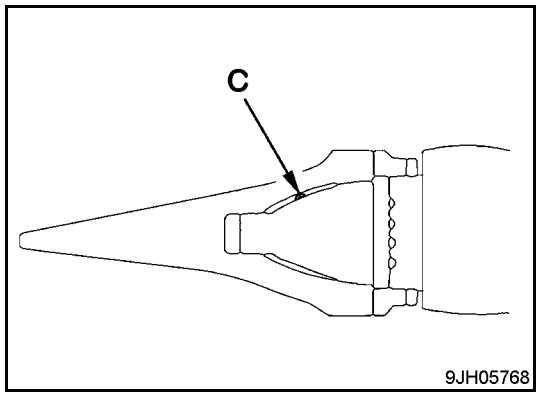
   C. When locking hooks (2) in position, apply the hooks in turn on opposite sides (top, bottom, left, right) in the same way as when tightening bolts.

   D. Always install cover (3) so that the evacuator (4) is facing the ground (A).

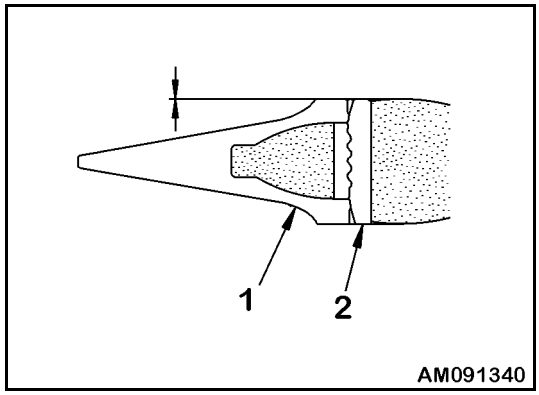
   E. When cover (3) is installed, check that the clearance between the air cleaner body and cover (3) is not too large. If it is too large, install again.



8. Fit tooth (1) to adapter (4), and confirm that when the pointer is pressed strongly, the rear face of the hole for the pin of the teeth (1) is at the same level as the rear face of the hole for the pin of the adapter (4).
   If the rear face of the pin hole of tooth (1) protrudes in front of the rear face of the pin hole of adapter (4), do not knock the pin in.
   If this happens, there is something (C) preventing the tooth (1) from fitting completely in adapter (4), locate the problem and remove the obstruction. When tooth (1) fits completely in adapter (4), knock in lock pin (2).



9. Insert lock pin (2) in the pin hole in the tooth (1), and knock it in so that the top surface of lock pin (2) is the same height as the surface of tooth (1).



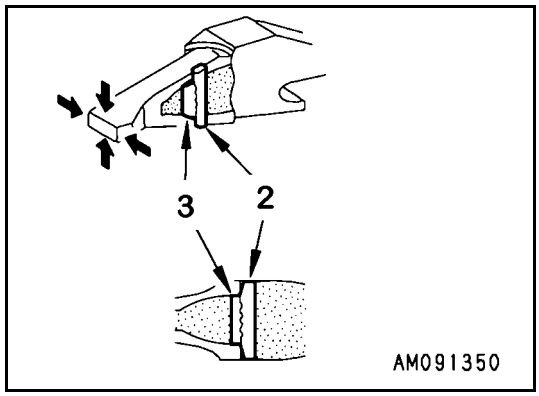
10. After replacing a bucket tooth, always check the following.

    A. After the lock pin (2) has been knocked in completely, check that it is secured by the teeth (1) and surface.

    B. Lightly hit lock pin (2) in the reverse direction from which it was hit in.

    C. Lightly hit the tip of the teeth (1) from above and below, and hit its sides from right and left.

    D. Confirm that rubber pin lock (3) and lock pin (2) are set as shown in the figure.



Remark

If the tooth is turned, the wear will become uniform. This will extend the service life of the tooth and reduce the frequency of replacement.

When replacing the tooth, replace the rubber pin lock and lock pin with new parts at the same time. This will prevent the tooth from falling out.

Check Gas Spring

⚠ WARNING

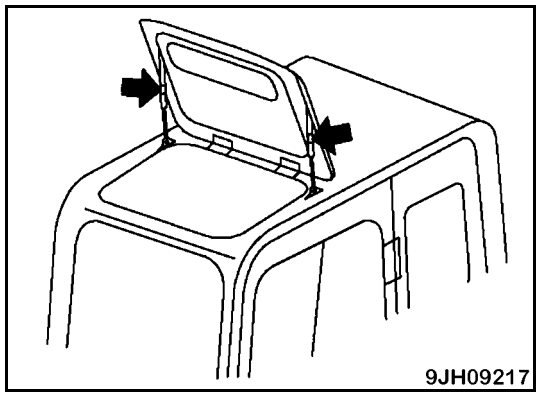
The gas spring is charged with high-pressure nitrogen gas, so mistaken operation may cause an explosion, which will lead to serious injury or damage. When handling the gas spring, always do as follows.

- **Do not disassemble the accumulator.**
- **Do not bring it near flame or dispose of it in fire.**
- **Do not make holes in it or weld it.**
- **Do not hit it, roll it, or subject it to any impact.**
- **When disposing of the accumulator, the gas must be released. Please contact your Komatsu distributor to have this work carried out.**

The gas springs are located at the cab roof (left, right: two places).

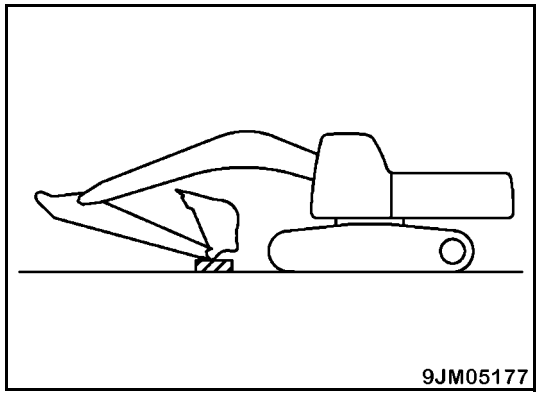
In the following cases, please ask your Komatsu distributor to carry out inspection, repair, and replacement.

- When the sun roof is heavy to open.
- When the sun roof is not held open.
- When oil or gas is found to be leaking from the gas spring.



Every 500 Hours Maintenance

Maintenance for every 50 and 250 hours service should be carried out at the same time.


9JM05177

Lubricating

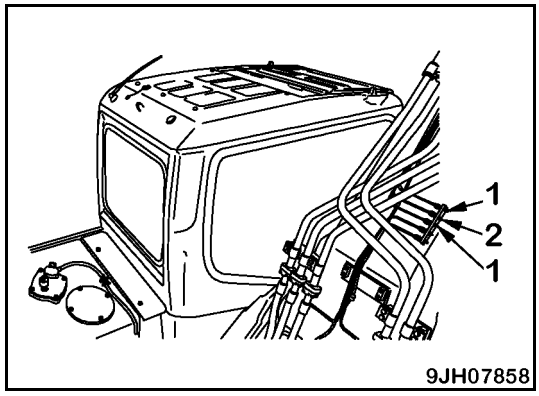
Remark

- *If any abnormal noise is generated from any greasing point, carry out greasing regardless of the greasing interval.*
- *Carry out greasing every 10 hours for the first 50 hours on a new machine.*
- *After the machine was subjected to jobs in the water, be sure to grease the wet pins.*
- *When carrying out heavy-duty operations, such as hydraulic breaker operations, carry out the greasing every 100 hours.*

1. Set the machine to the greasing posture shown on the right, lower the work equipment to the ground, then stop the engine.

2. Using a grease pump, pump in grease through the grease fittings shown by arrows.

3. After greasing, wipe off any old grease that was pushed out.



9JH07858

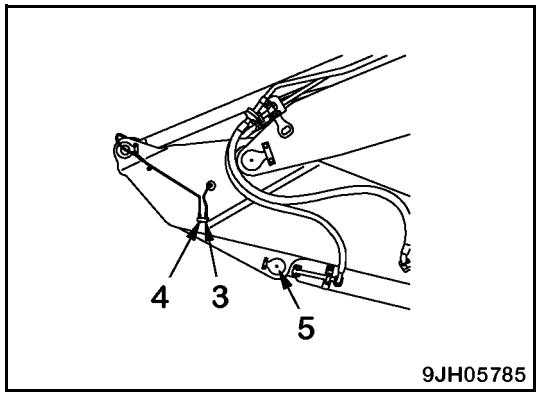
(1) Boom cylinder rod pin (2 places)

(2) Arm cylinder foot pin (1 places)

(3) Boom-Arm coupling pin (1 place)

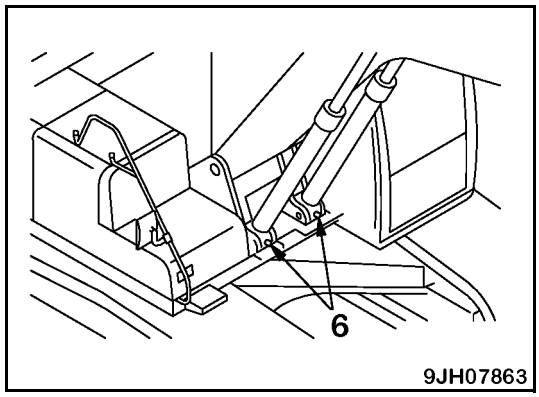
(4) Arm cylinder rod end (1 place)

(5) Bucket cylinder foot pin (1 place)



9JH05785

(6) Boom cylinder foot pin (2 places)



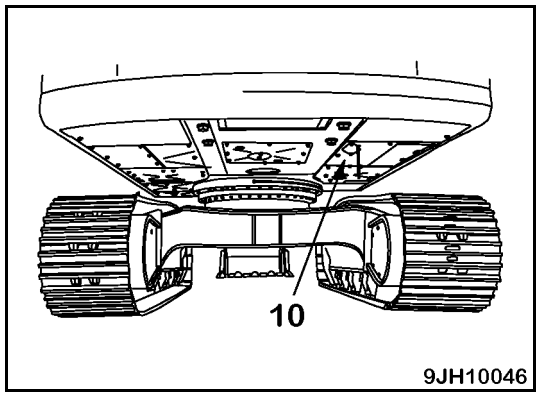
9JH07863

7. Remove undercover (10) and blow the mud, dirt, and leaves that have been cleaned off to the outside.

8. Push in cleaned net (3) back to the original place and secure it with screw (2).

9. Secure bracket (5) with bolt (4).

10. Remove the cover (1) and undercover(10).



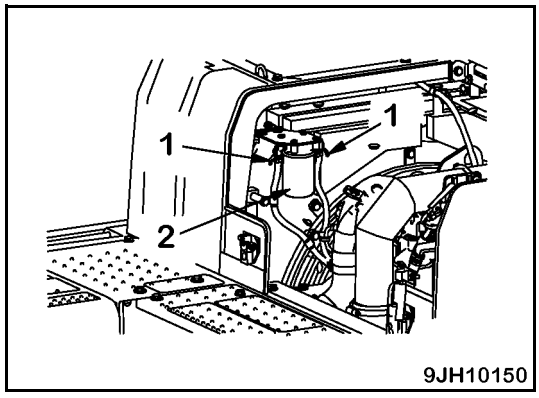
Replace Corrosion Resistor Cartridge

(If equipped)

⚠ WARNING

The oil is at high temperature after the engine has been operated, so never replace the cartridge immediately after finishing operations.
Wait for the oil to cool down before replacing cartridge.

1. Open the front engine hood.
2. Screw in 2 valves (1) at the top of the corrosion resistor.
3. Using a filter wrench, turn cartridge (2) to the left to remove it.
4. Install a new filter cartridge after coating oil on its sealing face.
   In the installation, turn the cartridge by two-thirds of one turn after the packing surface comes to contact with the sealing face of the cartridge stand.
   A genuine Komatsu filter cartridge is recommended for use.
5. Open valves (1) (2 places).



6. Run the engine and check that there is no leakage of coolant from the seal surface.

Every 5000 Hours Maintenance

Maintenance for every 50, 250, 500 and 1000 hours service should be carried out at the same time.

Change Oil In Hydraulic Tank

⚠ WARNING

- **The parts and oil are at high temperature immediately after the engine is stopped, and may cause burns. Wait for the temperature to go down before starting the work.**
- **When removing the oil filler cap, turn it slowly to release the internal pressure, then remove it.**

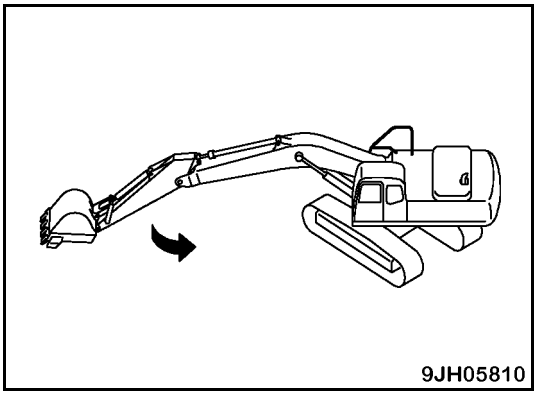
Remark

If the machine is equipped with a hydraulic breaker, the hydraulic oil will deteriorate much faster than during normal bucket operations. For details, see "Maintenance Interval For Hydraulic Breaker" on page 3-16" when carrying out maintenance.

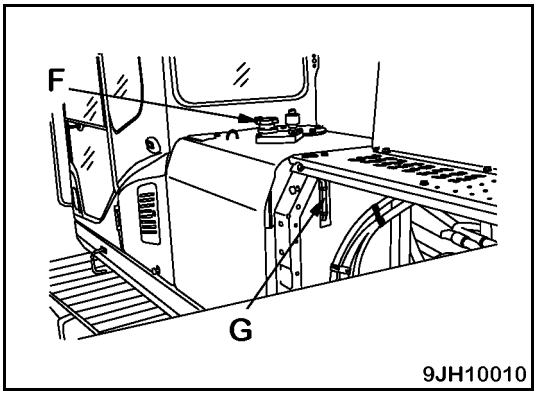
Refill, capacity:. . . . . 248 liters (65.527 US gal)

- Prepare a handle (for the socket wrench).

1. Swing the upper structure so that hydraulic tank drain plug (P) and drain plug (A) at the bottom of the pump suction tube are in the middle between the left and right tracks.



2. Retract the arm and bucket cylinders, then lower the boom and put the teeth in contact with the ground.
3. Set the lock lever to the LOCK position and stop the engine.
4. Remove the cap of oil filler port (F) at the top of the hydraulic tank.



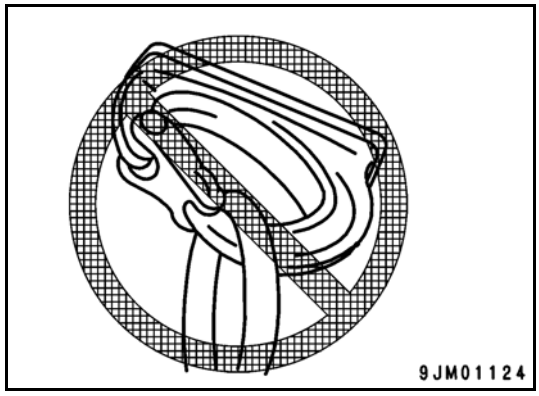
BUCKET WITH HOOK

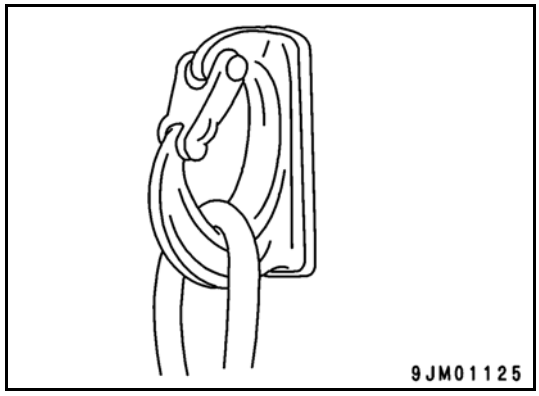
Hook Condition

Check that there is no damage to the hook, stopper, or hook mount. If there is any problem, contact your Komatsu distributor.

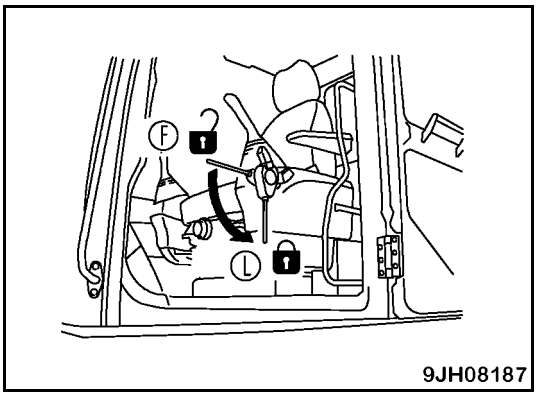
Prohibited Operations

- When carrying out lifting operations, reduce the engine speed and use the L mode (for fine-control operations).
- Depending on the posture of the work equipment, there is the danger that the wire or load may slip off the hook.
  Always be careful to maintain the correct hook angle to prevent this from happening.
- Never travel the machine while lifting a load.
- If the bucket with hook is turned and used for operations, it will hit the arm during dumping operations, be careful when using it.
- If you are planning to newly install a hook, contact your Komatsu distributor.

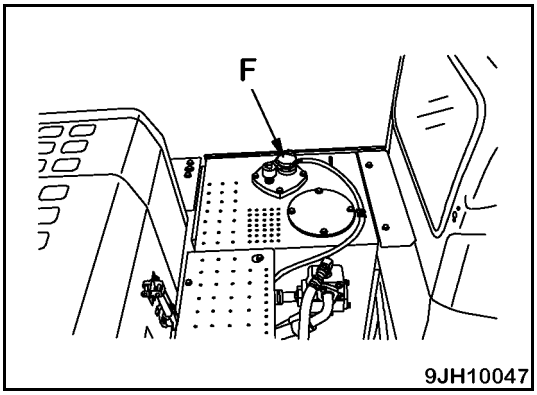




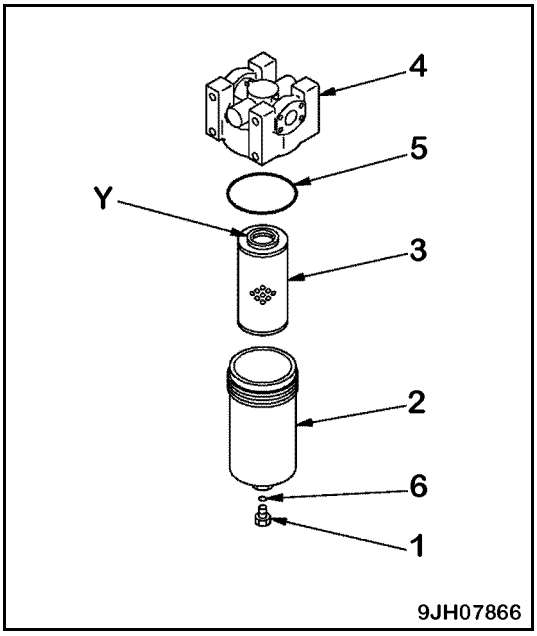
4. Set the lock lever to LOCK position (L).



5. Loosen slowly oil filler cap (F) on top of the hydraulic tank to eliminate the internal pressure in the hydraulic circuit.



6. Place a container under the filter element to catch the oil.
7. Set a container in position to catch the drained oil, then remove plug (1) and drain the oil accumulated in filter case (2).
8. Turn filter case (2) to the left, remove it, then take out element (3).
9. Clean the removed parts, then install new element (3).
   - Element (3) must be installed facing in the correct direction. Set direction (Y) with the holes in it facing up, and insert the hole in element (3) on the protruding portion inside filter head (4).
10. Install new O-ring (5) to filter case (2), then screw filter case (2) into filter head (4). When the top of filter case (2) comes into contact with the filter head, tighten it at least a further 1/2 turns.
11. Clean plug (1), then fit a new O-ring (6) to plug (1).
12. Install plug (1) to filter case (2).



ATTACHMENT GUIDE

⚠ WARNING

- **Please read the instruction manual for the attachment and the sections of this manual related to attachments and options.**
- **When installing any attachment or option, there may be problems with safety, so please contact your Komatsu distributor before installing.**
- **Installing attachments or options without consulting your Komatsu distributor may not only cause problems with safety, but may also have an adverse effect on the operation of the machine and the life of the equipment.**
- **Any injuries, accidents, or damage resulting from the use of unauthorized attachments or options will not be the responsibility of Komatsu.**

Attachment Combinations

⚠ WARNING

- **Depending on the type or combination of work equipment, there is danger that the work equipment may hit the cab or machine body.**
- **When using unfamiliar work equipment for the first time, check before starting if there is any danger of interference, and operate with caution.**

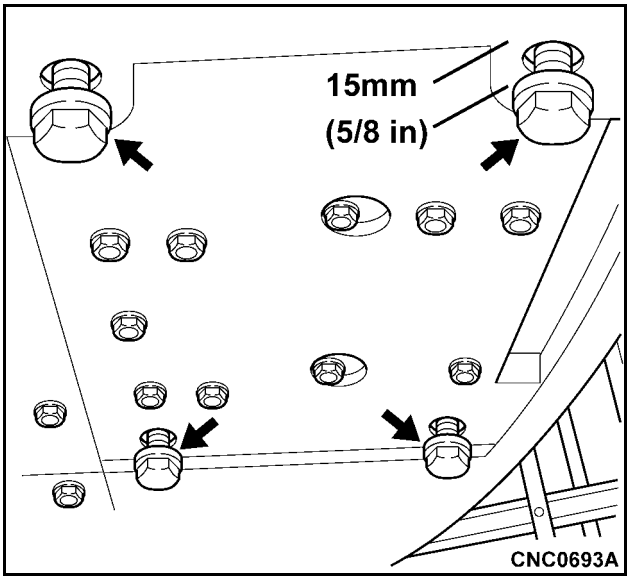
Removing the Counterweight

1. Make sure that the bolts (9 in total) on the counterweight (remover base) are not loose.

⚠ WARNING

If the counterweight removal procedure is performed with bolts loose on the remover base, it could cause sudden failure and the counterweight could drop.

2. Loosen the counterweight mounting bolts (4 bolts on the counterweight underside) by turning each approximately 15 mm (5/8 in.).



3. Make sure that the remover control lever is in neutral.