PEN00308-00TH

Operation & Maintenance Manual

HYDRAULIC
EXCAVATOR

PC160LC-8

SERIAL NUMBERS PC160LC-8 C20001 and up

PC160LC-8

ecot3

WARNING

Unsafe use of this machine may cause serious injury or death. Operators and maintenance personnel must read this manual before operating or maintaining this machine. This manual should be kept near the machine for reference and periodically reviewed by all personnel who will come into contact with it.

NOTICE

Komatsu has Operation & Maintenance Manuals written in some other languages. If a foreign language manual is necessary, contact your local distributor for availability.

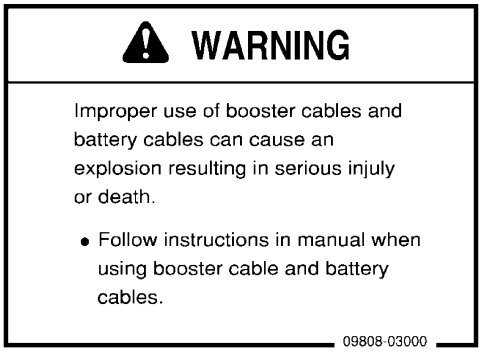
KOMATSU

KOMATSU

(10) Caution for handling accumulator and gas spring (09659-53000)

(11) Caution for adjusting track tension (09657-03003)

(12) Caution for handling cable (09808-03000)



(13) Stopping rotation for inspection and maintenance (09667-03001)

UNAUTHORIZED MODIFICATION

- Komatsu will not be responsible for any injuries, accidents, product failures or other property damages resulting from modifications made without authorization from Komatsu.
- Any modification made without authorization from Komatsu can create hazards. Before making a modification, consult your Komatsu distributor.

PRECAUTIONS RELATED TO ATTACHMENTS AND OPTIONS

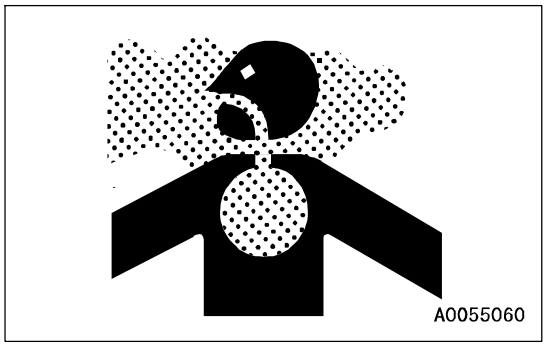
- Any injuries, accidents, product failures or other property damages resulting from the use of unauthorized attachments or parts will not be the responsibility of Komatsu.
- When installing optional parts or attachments, there may be problems with safety or legal restrictions. Therefore contact your Komatsu distributor for advice.
- Depending on type of combination of work equipment, there is hazard that the work equipment may hit the cab or other parts of the machine. During operation, an interference of the work equipment with the machine may cause a serious personal injury. Before using unfamiliar work equipment, check there is hazard of interference, and operate within not contact.
- When installing and using optional attachments, read the instruction manual for the attachment, and the general information related to attachments in this manual.

PRECAUTIONS RELATED TO CAB GLASS

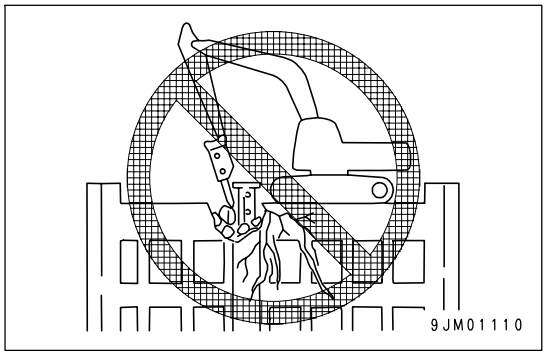
- If the cab glass is broken during operations, stop operations and repair the cab glass immediately.
- If the cab glass on the work equipment side is broken, there is a hazard that the operator may be directly hit or caught in the work equipment. If the glass is broken, stop operations immediately and 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.

PRECAUTIONS WHEN RUNNING ENGINE INSIDE BUILDING

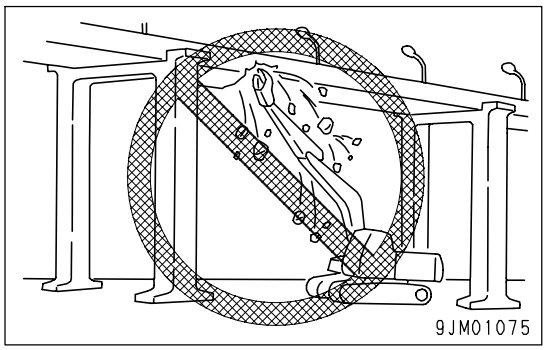
The engine exhaust gas contains substances that may damage your health or even cause death. Start or operate the engine in a place where there is good ventilation. If the engine or machine must be operated inside a building or under ground, where the ventilation is poor, take steps to ensure that the engine exhaust gas is removed and that ample fresh air is brought in.



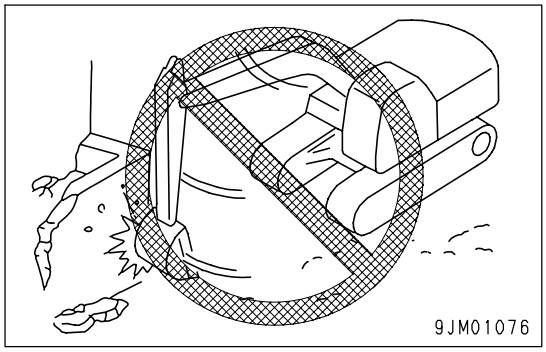
- When carrying out demolition work, do not carry out demolition work under the front of the machine. This makes the ground unstable, and there is a hazard of the machine falling.



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



- When carrying out demolition work, do not use the impact force of the work equipment for breaking work. There is a hazard of damage to the work equipment and also a hazard of serious personal injury or death being caused by flying pieces of broken materials, or of the machine tipping over due to reaction from the impact.



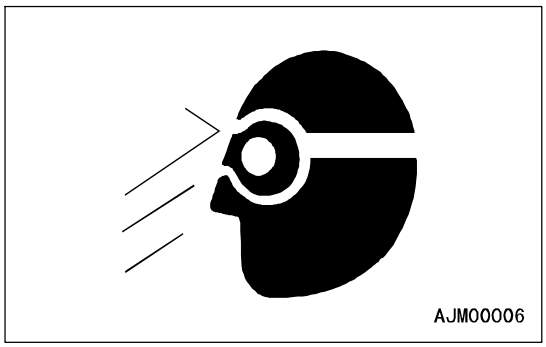
- The not pass the bucket over the heads of other workers or over the operator's seat of dump trucks or other hauling equipment. There is danger that the load may spill or the bucket may hit the dump truck and cause serious personal injury or death.
- When working on or from the top of buildings or other structures, check the strength and the structure before starting operations. There is a hazard of the building collapsing and causing serious injury or damage.
- 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.

- **Danger of sparks**
  There is hazard that sparks will be generated, so always observe the following.
  - Do not let tools or other metal objects make any contact between the battery cables. Do not leave tools lying around near the battery.
  - When removing the battery cables, remove the ground cable (negative (-) cable) first. When installing, connect the positive (+) cable first, then connect the ground.
    Tighten the battery cable terminals securely.
  - Secure the battery firmly in the specified position.

PRECAUTIONS WHEN USING HAMMER

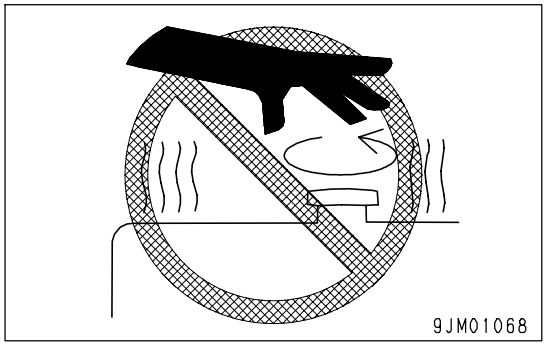
When using a hammer, pins may fly out or metal particles may be scattered. This may lead to serious personal injury or death. Always do as follows.

- 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.
- 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 serious personal injury or death. Always wear safety glasses and gloves.
- If the pin is hit with strong force, there is a hazard that it may fly out and injure people in the surrounding area. Do not allow anyone to enter the surrounding area.



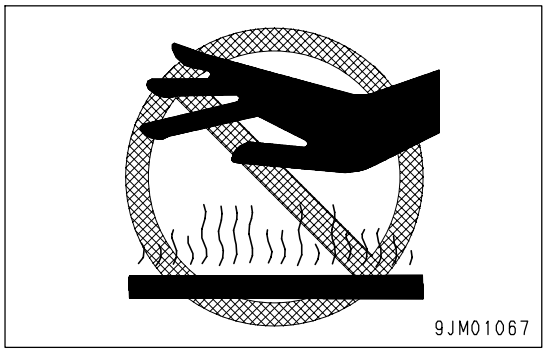
PRECAUTIONS WITH HIGH-TEMPERATURE COOLANT

To prevent burns from boiling water or steam spurting out when checking or draining the coolant, wait for the coolant to cool down to a temperature where the radiator cap can be touched by hand. Then loosen the cap slowly to release the pressure inside the radiator, and remove the cap.



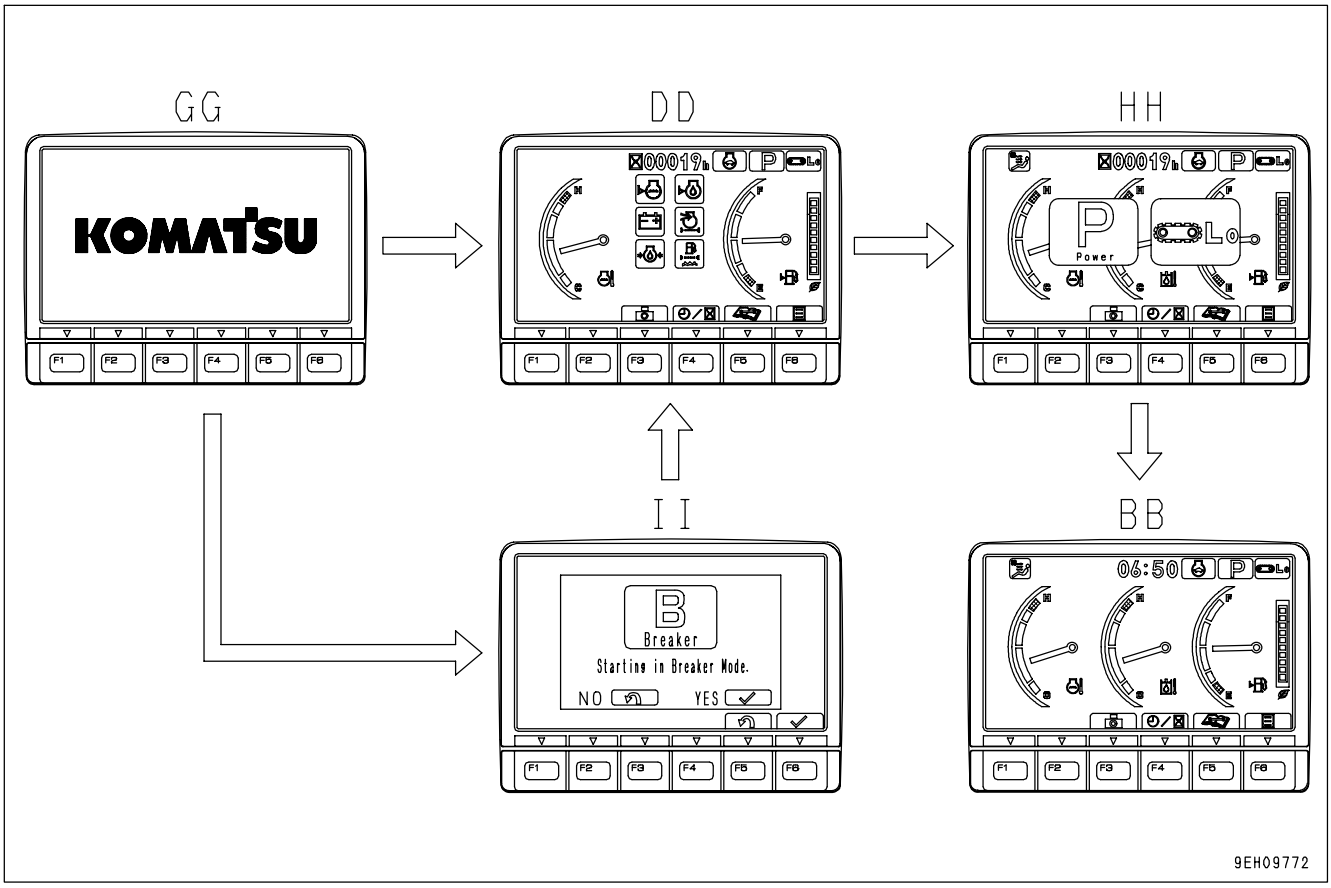
PRECAUTIONS WITH HIGH-TEMPERATURE OIL

To prevent burns from hot oil spurting out or from touching high-temperature parts when checking or draining the oil, wait for the oil to cool down to a temperature where the cap or plug can be touched by hand. Then loosen the cap or plug slowly to release the internal pressure and remove the cap or plug.



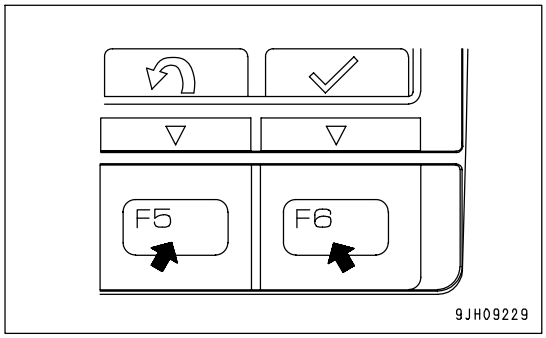
Basic Operation of Machine Monitor

Starting Engine When Situation is Normal



- When the starting switch is turned to the ON position, the opening screen GG is displayed.
- After the opening screen GG is displayed for 2 seconds, the screen switches to the check before starting screen DD.
- After the check before starting screen DD is displayed for 2 seconds, the screen switches to the working mode/travel mode display screen HH.
- After the working mode/travel mode display screen HH is displayed for 2 seconds, the screen switches to standard screen BB.
- If the working mode when the engine is started is B mode, the opening screen GG is displayed for 2 seconds, and the screen then switches to the breaker mode confirmation screen II.

When starting in B mode, press switch F6. If you do not want to start B mode, press switch F5. In this case, the system starts with E mode.



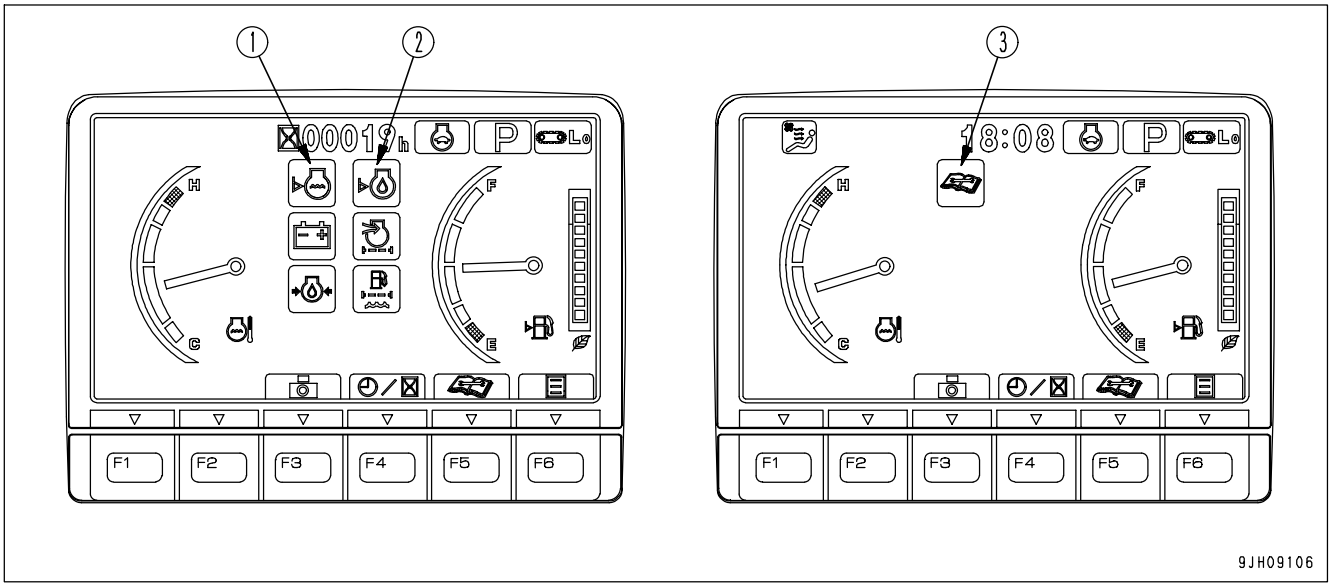
Basic Check Monitors

CAUTION

These monitors do not guarantee the condition of the machine.

Do not simply rely on the monitor when carrying out checks before starting (daily inspection). Always get off the machine and check each item directly.

Displays basic items among the check before starting items that must be checked before starting the engine. If there is any abnormality, monitor for the location of abnormality will light up.

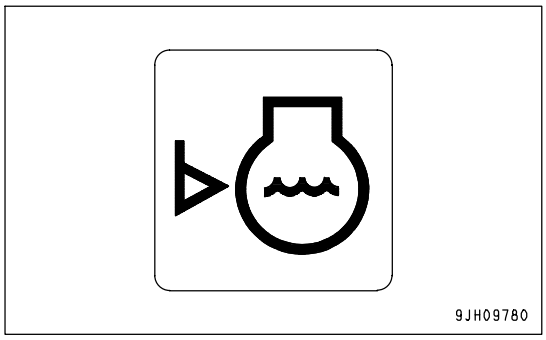


(1) Radiator coolant level monitor
(2) Engine oil level monitor
(3) Maintenance interval monitor

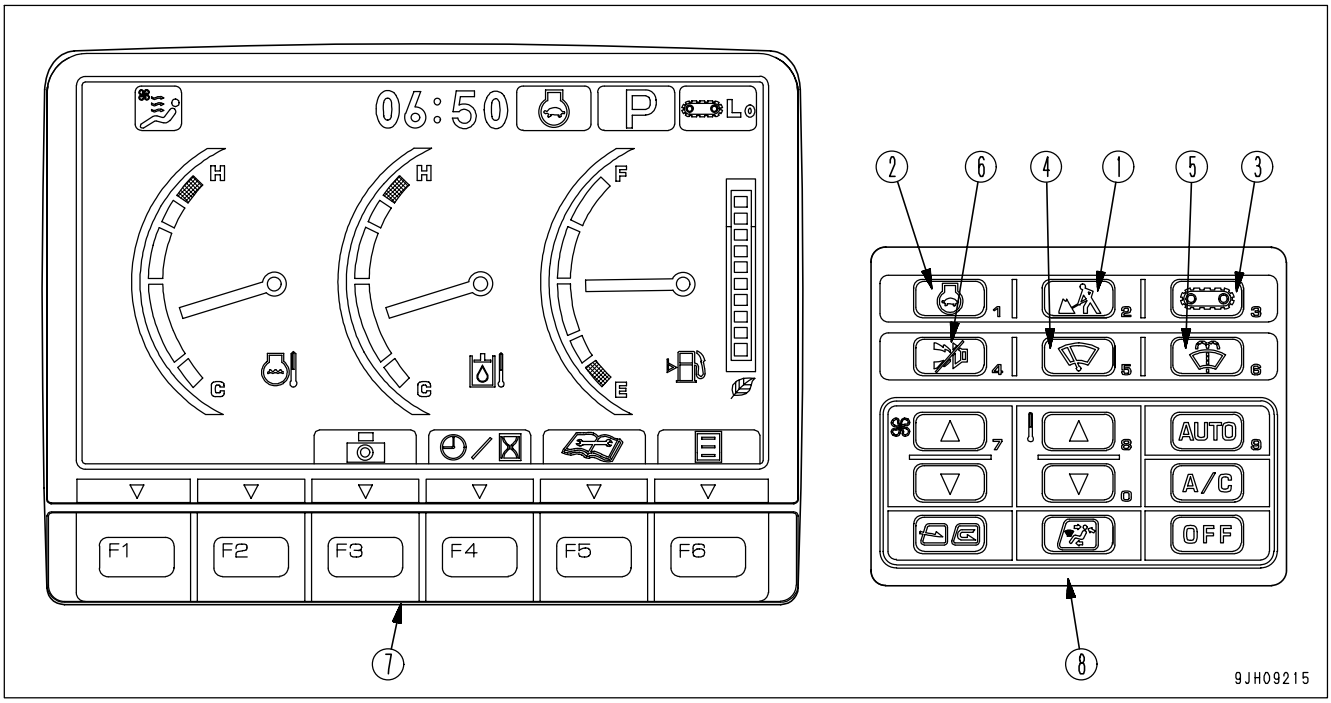
Radiator Coolant Level Monitor

Monitor (1) warns the operator that there has been a drop in the radiator coolant level.

If the radiator coolant is low, the lamp lights up red, so check coolant level in the radiator and subtank, and add coolant.



Monitor Switches Portion



(1) Working mode selector switch
(2) Auto-deceleration switch
(3) Travel speed selector switch
(4) Wiper switch
(5) Window washer switch
(6) Buzzer cancel switch
(7) Function switches
(8) Air conditioner switch

Working Mode Selector Switch

Use this switch (1) to set the movement or power of the work equipment.

The operation becomes easier if the mode is selected to match the content of the operation.

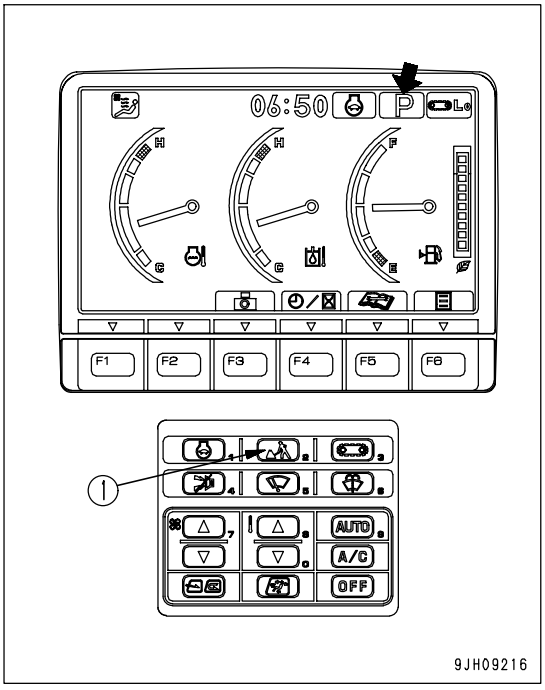
P mode: For heavy-load operations

E mode: For operation with emphasis on fuel consumption

L mode: For fine control operations

B mode: For breaker operations

ATT mode: For double-acting circuit attachment, such as crusher (attachment-ready machines)

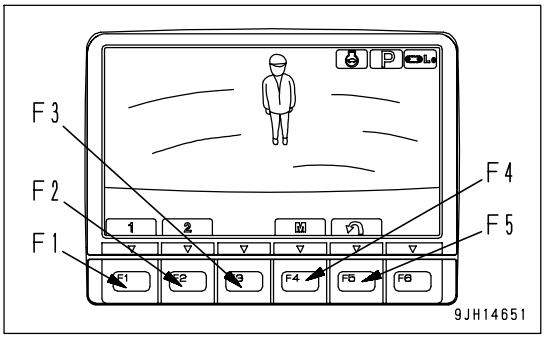


- When the monitor first appears, it is automatically set to the mode in use when it was started the previous time.
- Press switch (1) to display the working mode selection screen. For each set mode, the pilot monitor at the top right of the monitor display shows P, E, L, B, ATT.

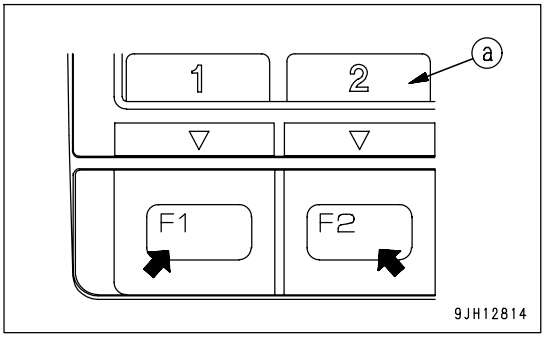
Operations on Camera 1 Image Display Screen

The following explanation describes the method of operation when it is desired to display only one camera screen on the monitor.

- On the standard screen, if switch F3 is pressed, the image display screen is displayed.



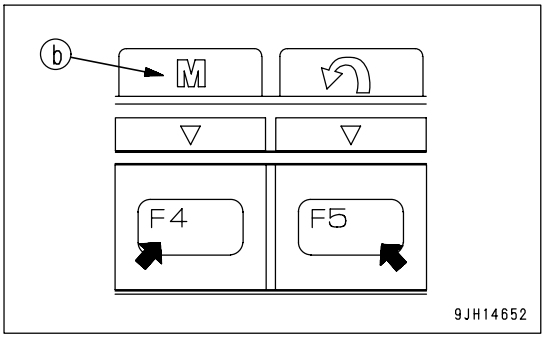
- Press switch F1 to display all the screens for images from the No. 1 camera.
- Press switch F2 to display all the screens for images from the No. 2 camera.



REMARK

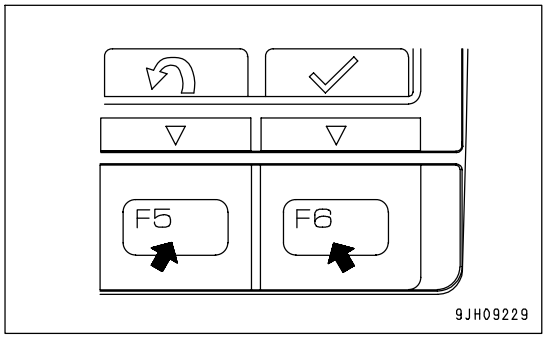
If the machine is not equipped with a No. 2 camera, guidance icons (a) and (b) are not displayed.

- Press switch F5 to return to the standard screen.



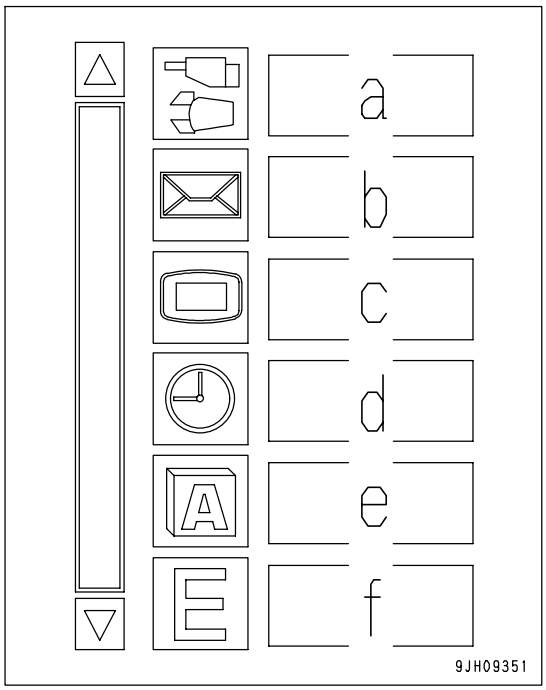
F5: Returns to standard screen.
F6: Switches to setting screen for selected item.

- If no switch is operated for 30 seconds on the user menu screen, the screen automatically returns to the previous screen.

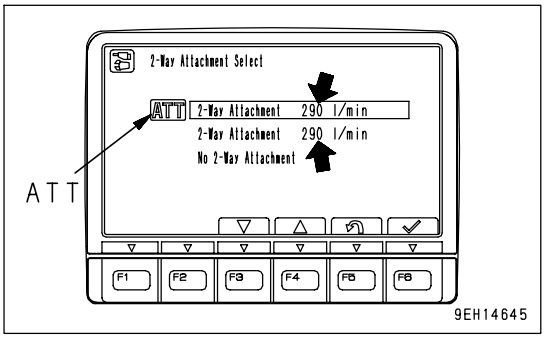


- The following items can be set.

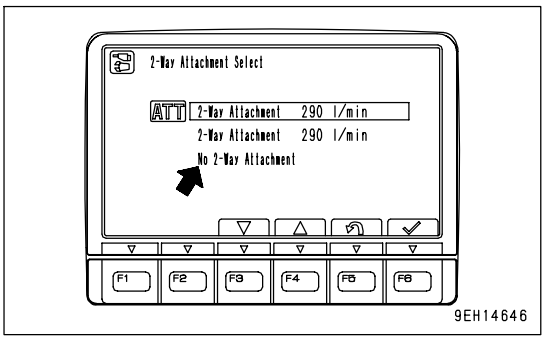
a: Breaker/attachment setting
(machines ready for installation of attachment)
b: Message display
(machines equipped with KOMTRAX)
c: Screen adjustment
d: Clock adjustment
e: Language selection
f: Economy mode adjustment



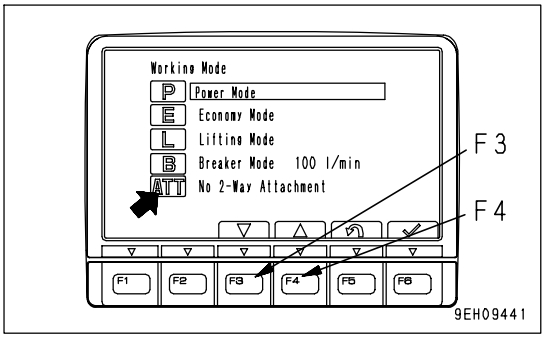
2. On the 2-Way Attachment Select Menu, select one of the two set values for the oil flow, then press switch F6.
   - The default values for the oil flow setting are both set to 290 liters/min, as shown in the illustration on the right.
     To change the oil flow setting, follow the procedure given in "Changing attachment flow setting (PAGE 3-57)".
   - The present oil flow set for ATT mode is marked with ATT in front of the item name as shown in the illustration on the right.



- If No 2-Way Attachment is selected, it becomes impossible to select the attachment mode on the working mode selection screen.

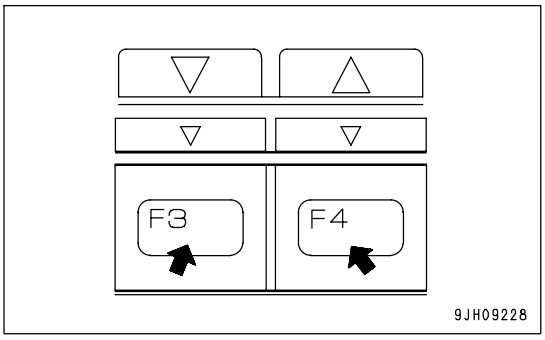


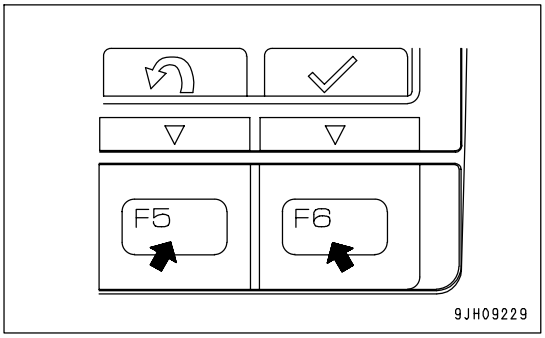
On the working mode selection screen, it is not possible to select No 2-Way Attachment.



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

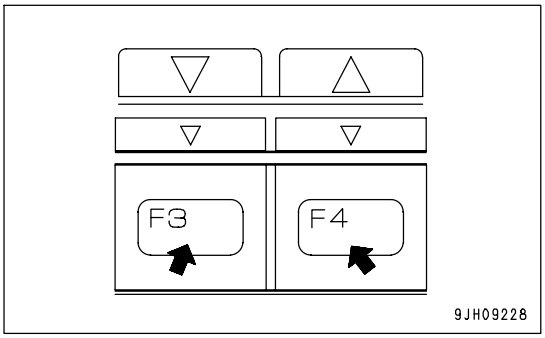
F3: Moves to next item (1 line down).
F4: Moves to previous item (1 line up).
F5: Returns to previous screen.
F6: Switches to setting screen for selected item.

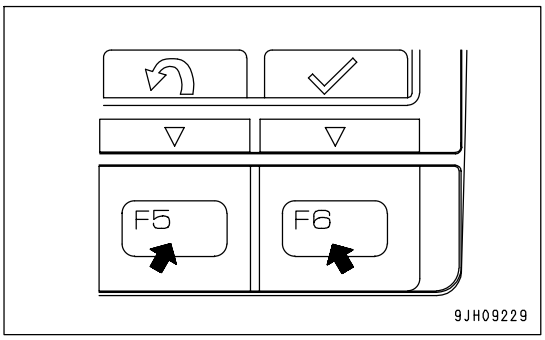




2) When minute display (c) is highlighted in orange, operate the switches as follows to adjust minute display (c).
If it is not necessary to change the minute setting, press switch F6. If the time has been changed, always press switch F6.

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.

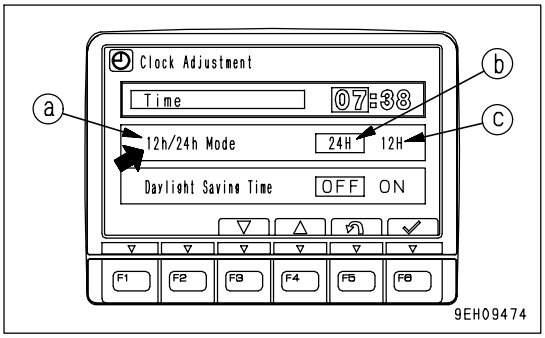




- 12h/24h Mode
  Choose either a 12-hour display (am/pm) or a 24-hour display.

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

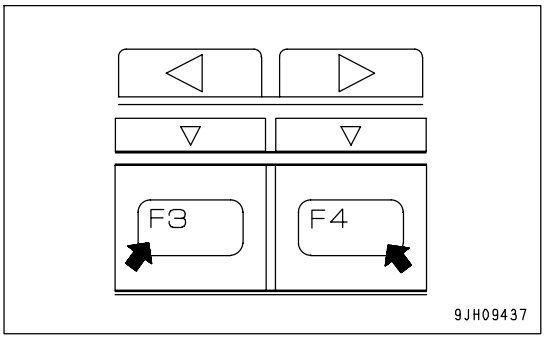
1) If "12h/24h Mode" (a) is not highlighted in yellow, press switch F6 to highlight "12h/24h Mode" (a) in yellow.
2) Change the "12h/24h mode" with the switches as follows.

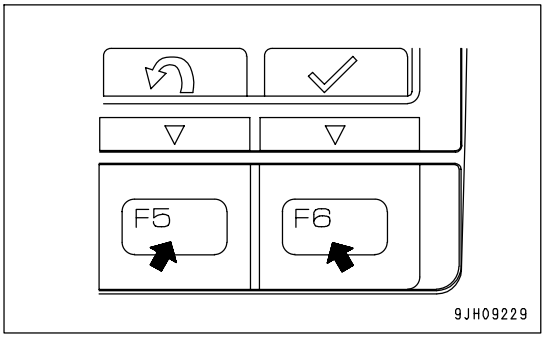


The selected display mode (b) or (c) is highlighted in green.

F3: Moves 1 item to left.
F4: Moves 1 item to right.
F5: Cancels change and returns to user menu.
F6: Accepts change and goes to setting for "Daylight Saving Time".

If the setting has been changed, always press switch F6.



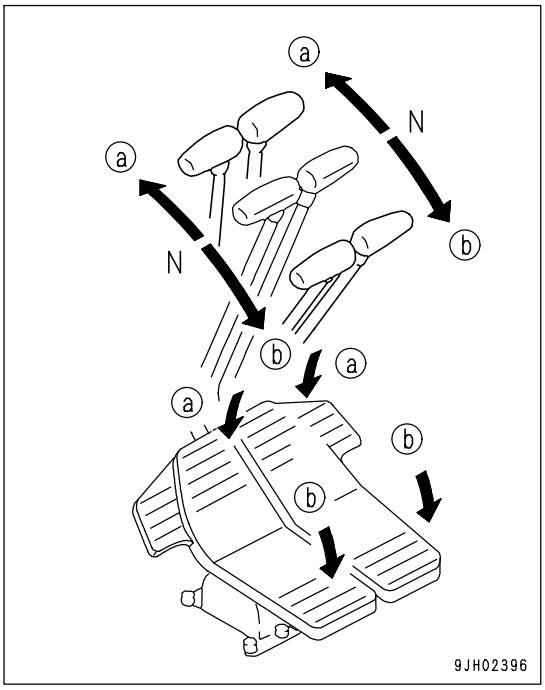


Travel Levers

WARNING

- **Do not rest your foot on the pedal during operations. If the pedal is depressed by mistake, the machine may suddenly move and cause a serious accident. Be extremely careful when operating the pedal for travel or steering operations. When you are not using the pedal, do not rest your foot on it.**
- **If the track frame is facing the rear, the direction of travel operations will be reversed when the travel lever is operated. (The machine will travel forward when operated in reverse, and in reverse when operated forward; the left and right directions will also be reversed.)**
- **When operating the travel levers, check if the track frame is facing the front or the rear. (If the sprocket is at the rear, the track frame is facing the front.)**

This lever (2) is used to change the direction of travel between forward and reverse. ( ) shows the pedal operation.
(a) FORWARD: The lever is pushed forward
(The pedal is angled forward)
(b) REVERSE: The lever is pulled back
(The pedal is angled back)
N (Neutral): The machine stops

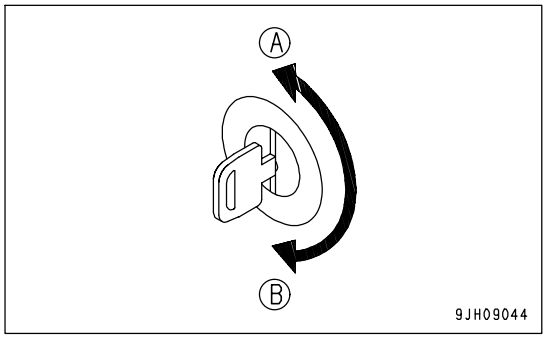


REMARK
If the lever is shifted to the FORWARD or REVERSE position from the Neutral position, the alarm sounds to warn that the machine is starting to move.

Opening and Closing Cover with Lock

Opening the Cover (Locked Cover)

1. Insert the key into the key slot.
2. Turn the key counterclockwise and open the cover by pulling the cover grip.
   (A): Open
   (B): Lock

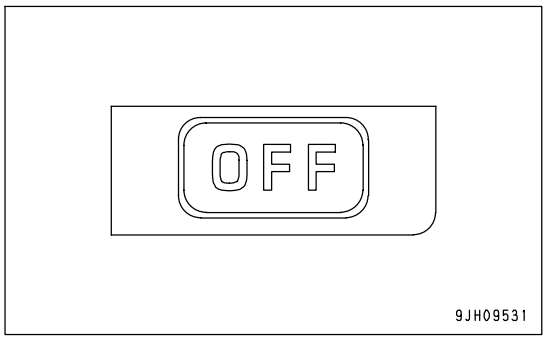


Locking the Cover

1. Close the cover and insert the key into the key slot.
2. Turn the key clockwise and take the key out.

Stopping Manual Operation

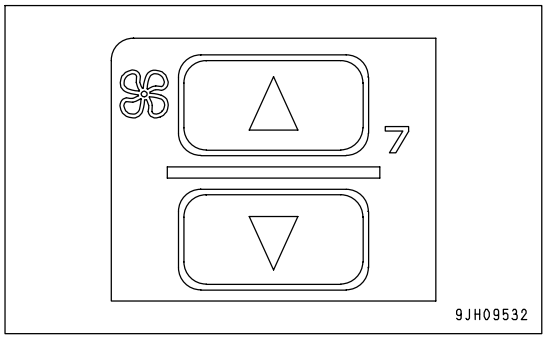
Press OFF switch (1). Operation stops.

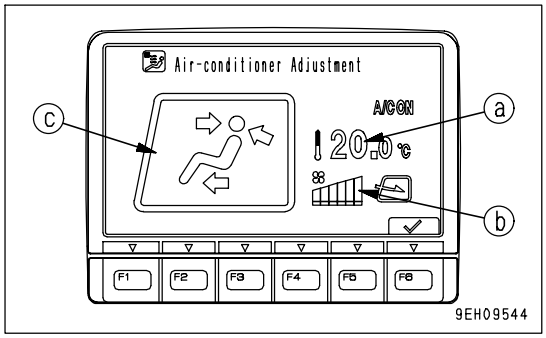


Operation with Cold Air to Face and Warm Air to Feet

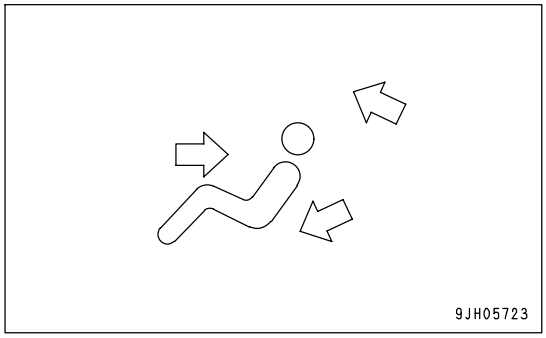
To operate with cold air blowing to the face and warm air blowing to the feet, set as follows.

1. Press fan switch (2) and adjust the air flow. When doing this, check that temperature setting (a) and air flow (b) are displayed on monitor (7).





2. Press vent selector switch (4) and set the vent display on the display monitor to the display shown in the diagram on the right.

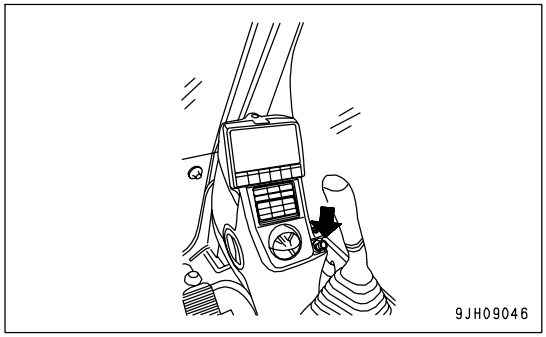


AUXILIARY ELECTRIC POWER

24V Power Source

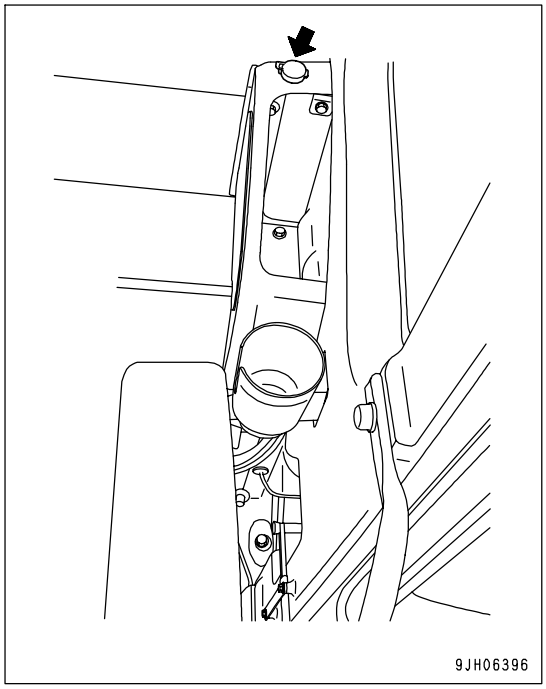
NOTICE
Do not use this as the power supply for 12V equipment.
It will cause failure of the equipment.

Pull out the connector plug for taking out electric power from the rear side of the panel.
Maximum usable electric power is 85 W (24 V x 3.5 A).



12V Power Source

(If equipped)
This power source can be used up to a capacity of 60W (12V x 5A).

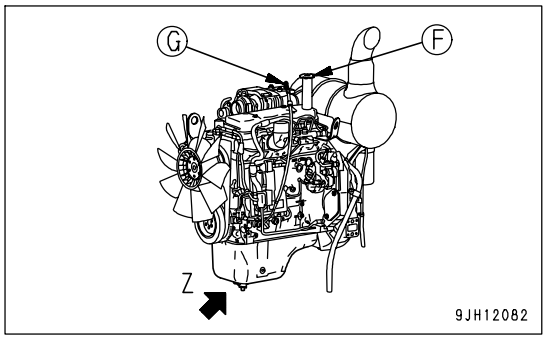


Check Oil Level in Engine Oil Pan, Add Oil

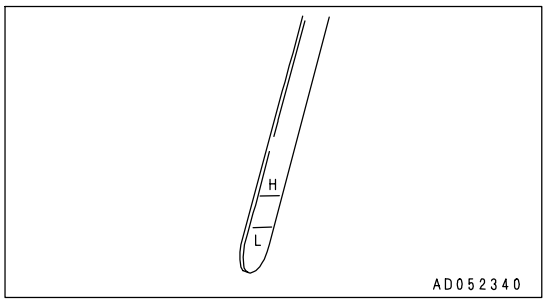
WARNING

Parts and oil are at high temperature immediately after the engine is stopped and may cause serious burns. Wait for the oil temperature to go down before performing this operation.

1. Open the engine hood.
2. Remove dipstick (G), and wipe the oil off with a cloth.
3. Fully insert dipstick (G) into filler pipe, then remove it.

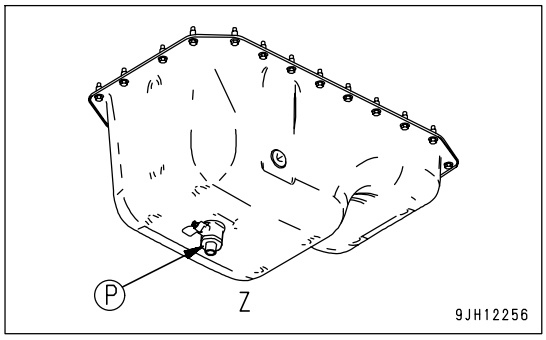


4. The oil level should be between the H and L marks on dipstick (G).
   If the oil level is below the L mark, add oil through oil filler port (F).



5. If the oil is above the H line, open drain valve (P) at the bottom of the engine oil pan, drain the excess engine oil, then check the oil level again.

6. If oil level is correct, securely tighten the oil filler cap and close the engine hood.



REMARK

When checking the oil level after the engine has been operated, wait for at least 15 minutes after stopping the engine before checking.

If the machine is at an angle, make it horizontal before checking.

Seat Belt

WARNING

- **Before fitting the seat belt, check that there is no problem in the belt mount bracket or mounting belt. If it is worn or damaged, replace the seat belt.**
- **Even if no problem can be seen in the belt, replace the seat belt every 3 years. The date of manufacture of the belt is shown on the back of the belt.**
- **Always wear the seat belt during operations.**
- **Fit the seat belt so that it is not twisted.**

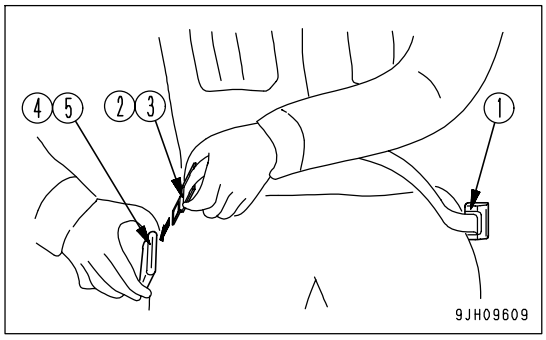
Fastening and Removing

This seat belt has a wind-in device, so it is not necessary to adjust the length.

Fastening Seat Belt

Hold grip (2) and pull the belt out from wind-in device (1), check that the belt is not twisted, then insert tongue (3) into buckle (4) securely.

When doing this, pull the belt lightly to check that it is properly locked.

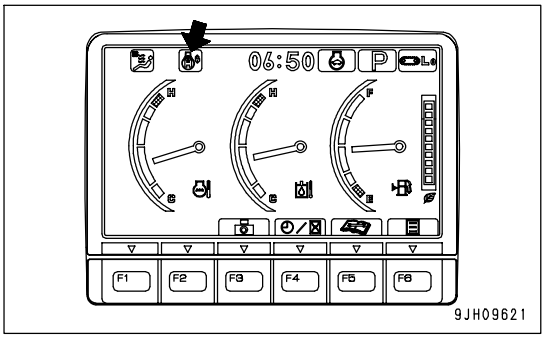


Removing Belt

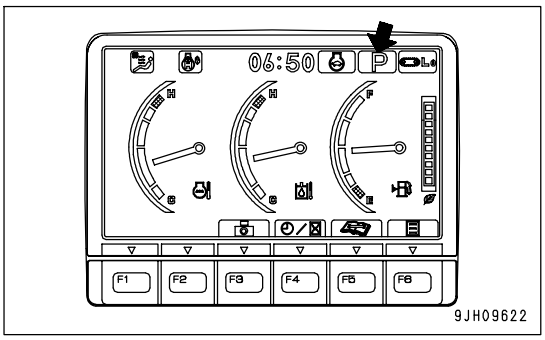
Press button (5) in buckle (4), and remove tongue (3) from buckle (4).

The belt is automatically wound in, hold grip (2) and return the belt slowly to wind-in device (1).

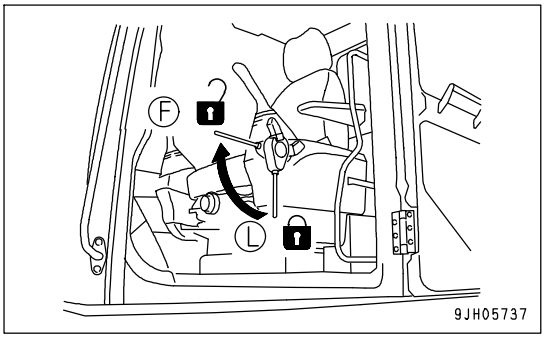
2. Turn swing lock switch (2) ON and check that the swing lock monitor lights up.



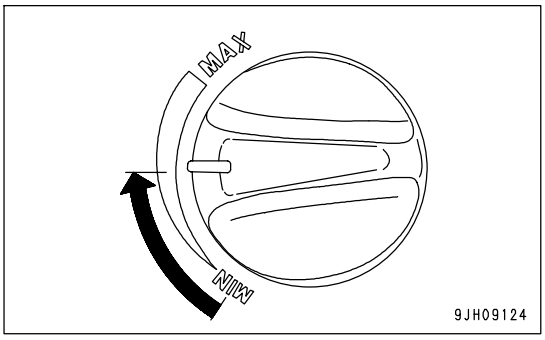
3. To complete the warm-up operation of the hydraulic equipment more quickly, set the working mode to P mode (heavy-duty mode).
   For details of the procedure for setting the working mode, see "Working Mode Selector Switch (PAGE 3-26)".



4. Move lock lever (3) slowly to the FREE position (F), then raise the bucket from the ground.

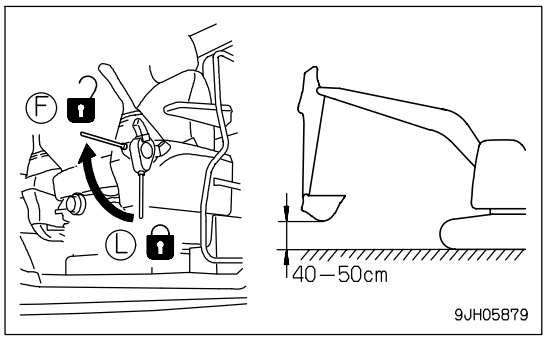


5. Turn fuel control dial (4) to a point midway between low idling (MIN) and full speed (MAX).



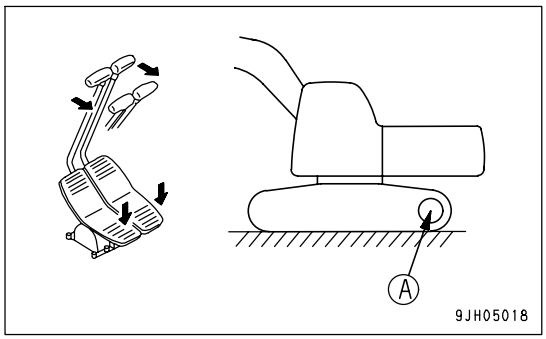
Moving Machine Backward

1. Set lock lever (4) in the FREE position (F), fold the work equipment, and raise it 40 to 50 cm (16 to 20 in) from the ground.
   - If the work equipment blocks the view and it is difficult to travel in safety, raise the work equipment to a greater height.

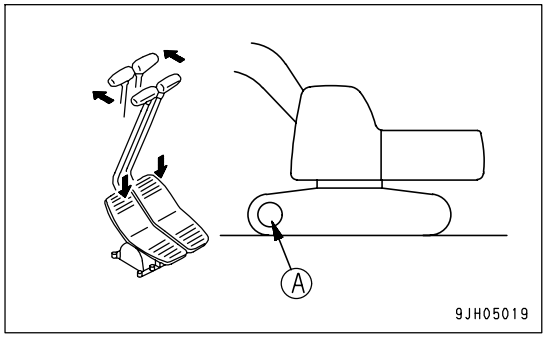


2. Operate the right and left travel levers (5), or the right or left travel pedals (6) as follows:

- When sprocket (A) is at the rear of the machine:
  Slowly pull the levers (5) backward, or slowly depress the rear part of the pedals (6) to move the machine backward.



- When sprocket (A) is at the front of the machine:
  Slowly push the levers (5) forward, or slowly depress the front part of the pedals (6) to move the machine backward.



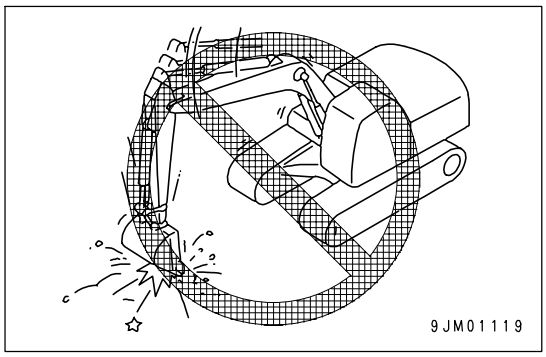
3. Check that the travel alarm sounds properly. If the travel alarm does not sound, please contact your Komatsu distributor for repair.

REMARK

In cold temperatures, if the machine travel speed is not normal, thoroughly perform the warming-up operation.
In addition, if the undercarriage is clogged with mud and the machine travel speed is not normal, remove the soil and mud from the undercarriage.

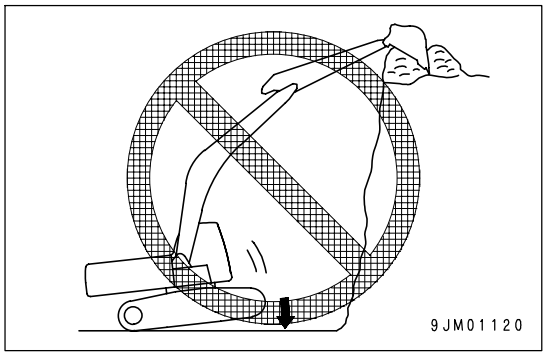
Operations Using Bucket Dropping Force

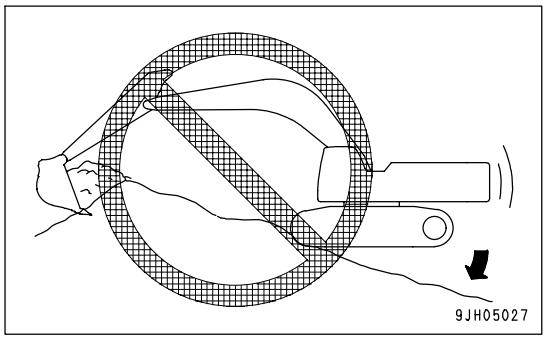
Do not use the dropping force of the machine for digging, or use the dropping force of the bucket as s pickaxe, breaker, or pile driver. This will drastically reduce the life of the machine.



Operations Using Machine Dropping Force

Do not use the dropping force of the machine for digging.

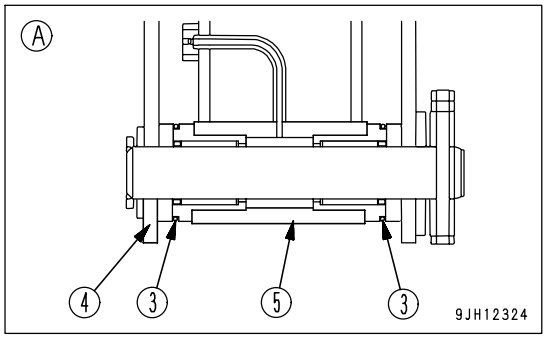




Digging Hard Rocky Ground

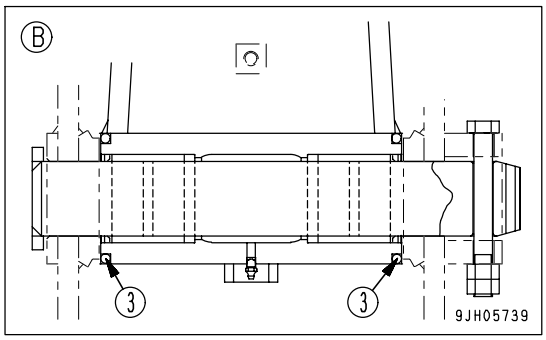
Do not attempt to directly excavate hard rocky ground with the work equipment. It is better to excavate it after breaking up by some other means. This will not only save the machine from damage but will make for better economy.

REMARK
When installing the bucket, for arm pin portion (A), fit O-ring (3) to bucket (4) in the position shown in the diagram on the right. After inserting the pin, fit it in the standard groove.
For link pin portion (B), install the bucket with O-ring (3) fitted in the standard groove.

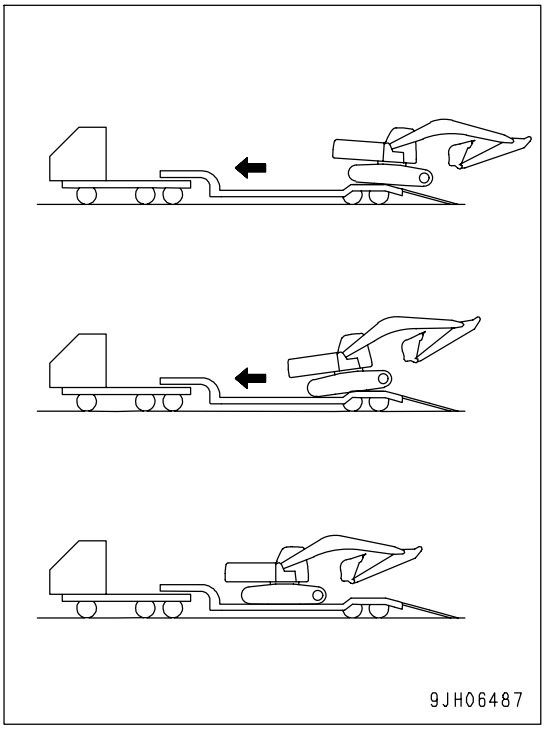


4. Install the stopper bolts and nuts for each pin, then grease the pin.

REMARK
- Lubricate with grease thoroughly until the grease comes out from the end face.
- When replacing the bucket, replace the dust seal if it has been damaged. If a damaged seal is used without being replaced, sand and dirt may enter the pin portion and cause abnormal wear of the pin.



10. When the machine travels over the rear wheels of the trailer, it becomes unstable, drive slowly and carefully. (Never operate the steering.)
11. At the moment the machine passes the rear wheels, it tilts forward, be careful not to let the work equipment hit the trailer body. Drive the machine forward to the specified position, then stop the machine.
12. Lower the work equipment on top of wooden blocks.



Battery

WARNING

- **The battery generates flammable gas. Do not bring fire or sparks near the battery.**
- **Battery electrolyte is dangerous. If it gets in your eyes or on your skin, wash it off with a large amount of water and consult a doctor.**
- **Battery electrolyte dissolves paint. If it gets on the bodywork, wash it off immediately with water.**
- **If the battery electrolyte is frozen, do not charge the battery or start the engine with a different power source. There is danger that the battery may explode.**
- **Battery electrolyte is toxic. Do not let it flow into drainage ditches or spray it on to the ground surface.**

When the ambient temperature drops, the capacity of the battery will also drop. If the battery charge ratio is low, the battery electrolyte may freeze. Maintain the battery charge as close as possible to 100%. Insulate it against cold temperature to ensure the machine can be started easily the next morning.

REMARK
Measure the specific gravity and calculate the charging rate from the following conversion table.

Electrolyte Temperature / Charging Rate (%)	20°C (68°F)	0°C (32°F)	-10°C (14°F)	-20°C (-4°F)
100	1.28	1.29	1.30	1.31
90	1.26	1.27	1.28	1.29
80	1.24	1.25	1.26	1.27
75	1.23	1.24	1.25	1.26

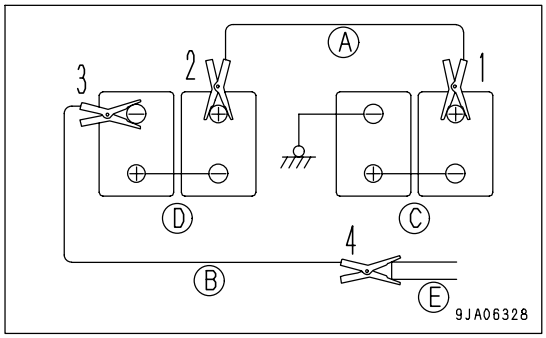
- As the battery capacity drastically drops in low temperatures, cover or remove the battery from the machine, store the battery in a warm place, and install it again the next morning.
- If the electrolyte level is low, add distilled water in the morning before beginning work. Do not add water after the day's work to prevent diluted electrolyte in the battery from freezing during the night.

Booster Cable Connection

Keep the starting switch of the normal machine and problem machine in the OFF position.

Connect the booster cable as follows, in the order of the numbers marked in the diagram.

1. Connect the clip of booster cable (A) to the positive (+) terminal of battery (C) on the problem machine.
2. Connect the clip at the other end of booster cable (A) to the positive (+) terminal of battery (D) on the normal machine.
3. Connect the clip of booster cable (B) to the negative (-) terminal of battery (D) on the normal machine.
4. Connect the other clip of booster cable (B) to the revolving frame (E) of the problem machine.



Starting the Engine

WARNING

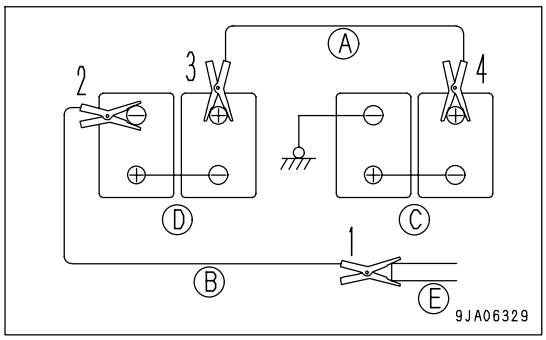
Always check that the lock lever is set to the LOCK position, regardless of whether the machine is working normally or has failed. Check also that all the control levers are in the neutral position.

1. Make sure the clips are firmly connected to the battery terminals.
2. Start engine of the normal machine and run it at high idle speed.
3. Turn the starting switch of the problem machine to the START position and start the engine.
   If the engine doesn't start at first, try again after 2 minutes or so.

Booster Cable Disconnection

After the engine has started, disconnect the booster cables in the reverse of the order in which they were connected.

1. Remove one clip of booster cable (B) from the revolving frame (E) of the problem machine.
2. Remove the clip of booster cable (B) from the negative (-) terminal of battery (D) on the normal machine.
3. Remove the clip of booster cable (A) from the positive (+) terminal of battery (D) on the normal machine.
4. Remove the clip of booster cable (A) from the positive (+) terminal of battery (C) on the problem machine.



OUTLINE OF SERVICE

- Always use Komatsu genuine parts for replacement parts, grease or oil.
- When changing the oil or adding oil, do not mix different types of oil. When changing the type of oil, drain all the old oil and fill completely with the new oil. Always replace the filter at the same time. (There is no problem if the small amount of oil remaining in the piping mixes with the new oil.)
- Unless otherwise specified, when the machine is shipped from the factory, it is filled with the oil and coolant listed in the table below.

Item	Type
Engine oil pan	Engine oil EO15W40DH (Komatsu genuine parts)
Damper case	Powertrain oil TO30 (Komatsu genuine parts)
Swing machinery case	
Final drive case	
Hydraulic oil system	Powertrain oil TO10 (Komatsu genuine parts)
Radiator	Supercoolant AF-NAC (density: 30% or above) (Komatsu genuine parts)

HANDLING OIL, FUEL, COOLANT, AND PERFORMING OIL CLINIC

OIL

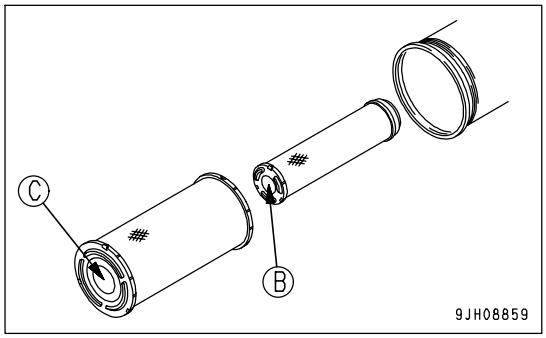
- Oil is used in the engine and hydraulic equipment under extremely severe conditions (high temperature, high pressure), and deteriorates with use.
  Always use oil that matches the grade and maximum and minimum ambient temperatures recommended in the Operation and Maintenance Manual. Even if the oil is not dirty, always change the oil at the specified interval.
- Oil corresponds to blood in the human body, always be careful when handling it to prevent any impurities (water, metal particles, dirt, etc.) from getting in.
  The majority of problems with the machine are caused by the entry of such impurities.
  Take particular care not to let any impurities get in when storing or adding oil.
- Never mix oils of different grades or brands.
- Always add the specified amount of oil.
  Having too much oil or too little oil are both causes of problems.
- If the oil in the work equipment is not clear, there is probably water or air getting into the circuit. In such cases, please contact your Komatsu distributor.
- When changing the oil, always replace the related filters at the same time.
- We recommend you have an analysis made of the oil periodically to check the condition of the machine. For those who wish to use this service, please contact your Komatsu distributor.
- When using commercially available oil, it may be necessary to reduce the oil change interval.
  We recommend that you use the Komatsu oil clinic to carry out a detailed checks of the characteristics of the oil.

SAFETY CRITICAL PARTS LIST

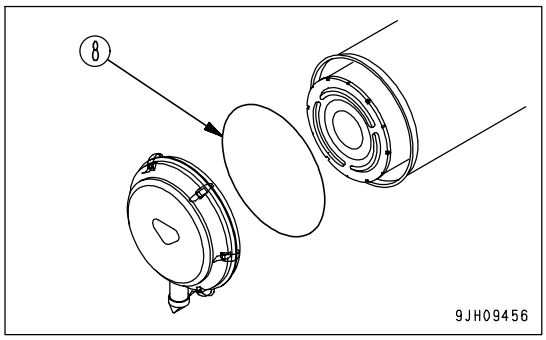
No.	Safety critical parts for periodic replacement	Q'ty	Replacement interval
1	Fuel hose (fuel tank - fuel pre-fillter)	1	Every 2 years or 4000 hours, whichever comes sooner
2	Fuel hose (fuel pre-fillter - supply pump)	1	
3	Fuel return hose, cooler (engine - fuel cooler)	1	
4	Fuel return hose (fuel cooler - fuel tank)	1	
5	Fuel hose (supply pump - fuel main fillter)	2	
6	Fuel return tube (injector, supply pump, fuel return merge tube from common rail)	1	
7	Pump outlet hose (pump - control valve)	2	
8	Work equipment hose (boom cylinder inlet port)	4	
9	Work equipment hose (bucket cylinder line, boom foot)	2	
10	Work equipment hose (bucket cylinder inlet port)	2	
11	Work equipment hose (arm cylinder line, boom foot)	2	
12	Work equipment hose (arm cylinder inlet port)	2	
13	Attachment additional line hose (boom foot)	2	
14	Attachment additional line hose (boom top)	2	
15	Swing line hose (swing motor inlet port)	2	
16	Main suction hose	1	
17	Heater hose	2	
18	Travel line hose (control valve - swivel joint)	4	
19	Travel line hose (swivel joint - travel motor)	4	
20	Pump LS hose	2	
21	Pump pressure hose	1	
22	Accumulator (for additional attachment low pressure, high pressure)	each 1	
23	High-pressure piping clamp	1set	Every 8000 hours
24	Fuel spray prevention cap	1set	
25	Seat belt	1	Every 3 years

NOTICE

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.



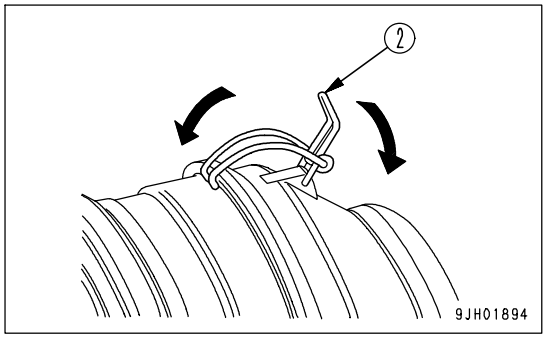
8. Replace O-ring (8) of cover (3) with a new part.

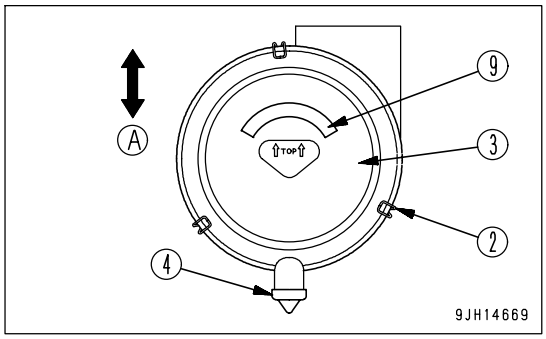


NOTICE

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.
   1) Align cover (3) with the element.
   2) Hook the tip of hook (2) to the protruding part of the air cleaner body and lock it in position.
   3) Always install cover (3) so that the evacuator (4) is facing the ground (A).
   4) 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.





10. Replace seal (9) on the cover (3) with a new seal.

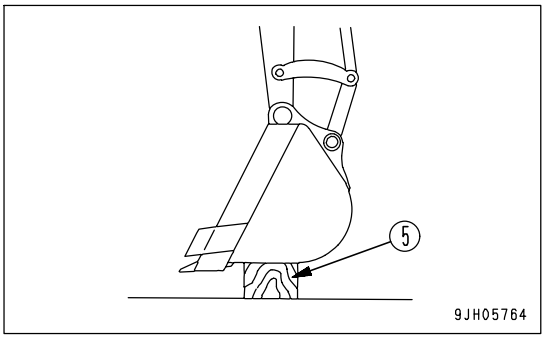
REPLACE BUCKET TEETH (HORIZONTAL PIN TYPE)

Replace the bucket teeth before the adapter starts to wear.

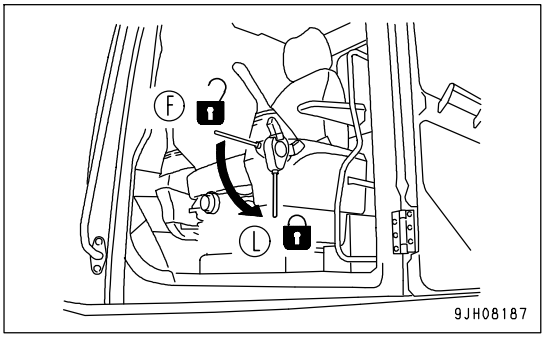
⚠ WARNING

- **It is dangerous if the work equipment moves by mistake when the teeth are being replaced. Set the work equipment in a stable condition, then stop the engine and set the lock lever securely to the LOCK position.**
- **The pins can be knocked out only with strong force, so there is a hazard that the pin may fly out. Check that there is no one in the surrounding area.**
- **There is a hazard that fragments will fly during the replacement work, so always wear protective equipment like safety glasses and gloves.**

1. To make it possible to knock out pin (1) of tooth (2), put block (5) under the bottom of the bucket, and set so that the bottom surface of the bucket is horizontal.



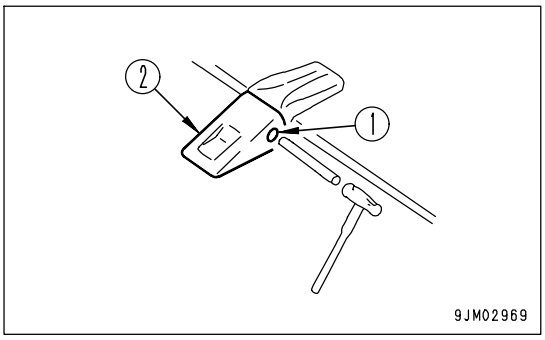
2. Check that the work equipment is in a stable condition, then set the lock lever to the LOCK position (L).



3. Place a bar on the head of pin (1), hit the bar with a hammer to knock out the pin, then remove tooth (2).

REMARK

- If the bucket teeth cannot be safely removed by this mothod, have your Komatsu distributor replace the bucket teeth.



CHECK BEFORE STARTING

For details of the following items, see "Checks Before Starting (PAGE 3-112)" in the OPERATION section.

- Check coolant level, add coolant
- Drain water and sediment from fuel tank
- Check for water and sediment in water separator, drain water
- Check oil level in hydraulic tank, add oil
- Check oil level in engine oil pan, add oil
- Check fuel level, add fuel
- Check electric wiring
- Check working lamp switch
- Check function of horn

REPLACE FUEL PRE-FILTER CARTRIDGE

⚠ WARNING

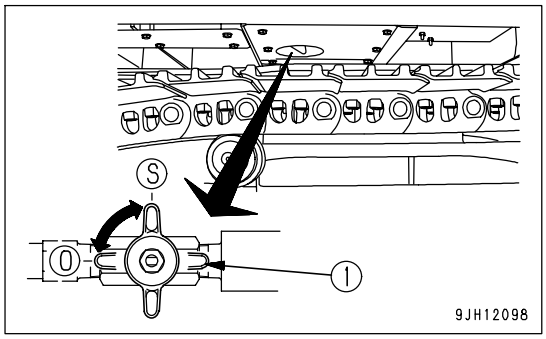
- **After the engine has been operated, all parts are at high temperature, so do not replace the filter immediately. Wait for all parts to cool down before starting the operation.**
- **High pressure is generated inside the engine fuel piping system when the engine is running.**
  When replacing the filter, wait for at least 30 seconds after stopping the engine to let the internal pressure go down before replacing the filter.
- **Do not bring any fire or flame close.**

NOTICE

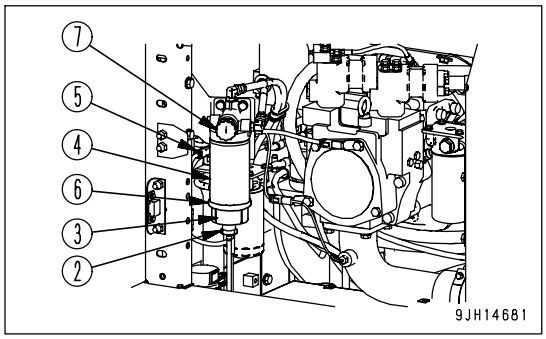
- **Genuine Komatsu fuel filter cartridges use a special filter that has highly efficient filtering ability. When replacing the filter cartridge, always use a genuine Komatsu part.**
- **The common rail fuel injection system used on this machine consists of more precise parts than the conventional injection pump and nozzle.**
  If any part other than a genuine Komatsu filter cartridge is used, dust or dirt may get in and cause problems with the injection system. Always avoid using substitute parts.
- **When carrying out inspection or maintenance of the fuel system, pay more attention than normal to the entry of dirt. If dirt is stuck to any part, use fuel to wash it off completely.**

- Prepare a container to catch drain fuel.
- Prepare a filter wrench

1. Turn the valve (1) at the bottom of the fuel tank to the CLOSE position (S).



2. Open the cover on the right side of the machine.
3. Set the container to catch the fuel under the pre-filter cartridge.
4. Loosen drain valve (2), then drain all the water and sediment in the transparent cap (3) and also the fuel accumulated in filter cartridge (4).
5. Remove connector (5). Wrap the removed connector in a vinyl bag to prevent water from getting on it.
6. Using a filter wrench, turn transparent cap (3) to the left to remove it. (This cap is used again.)



7. Using a filter wrench, turn cartridge (4) to the left to remove it.
8. Install transparent cap (3) to the bottom of the new filter cartridge. (When doing this, always replace O-ring (6).)

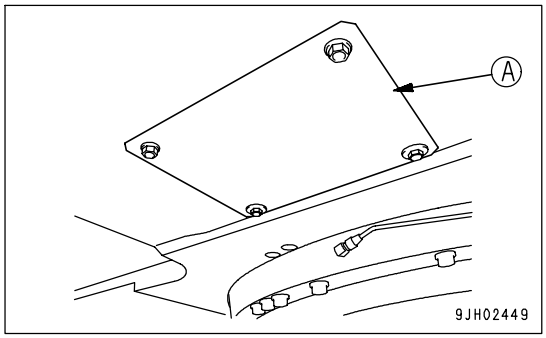
CHANGE OIL IN SWING MACHINERY CASE

WARNING

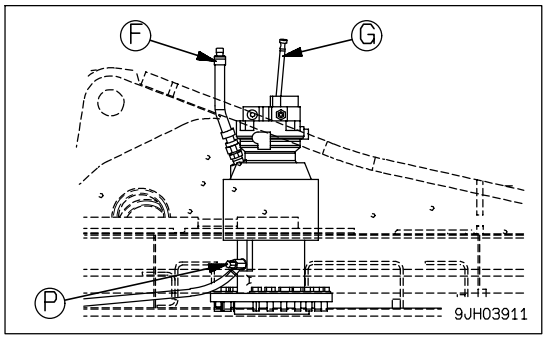
Parts and oil are at high temperature immediately after the engine is stopped and may cause serious burns. Wait for the oil temperature to go down before performing this operation.

- Refill capacity: 4.5 liters (1.19 US gal)

1. Remove cover (A) of the inspection hole.



2. Set a container under drain valve (P) under the machine body to catch the oil.
3. Loosen drain valve (P) under the body, drain the oil, then tighten the drain valve again.



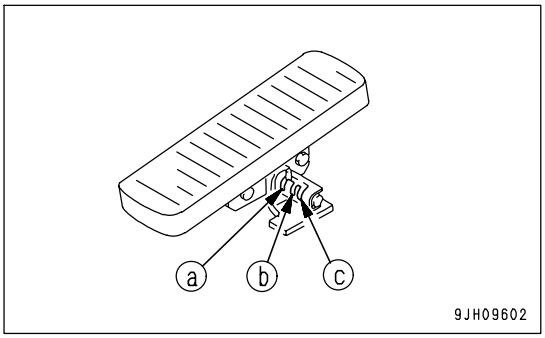
REMARK

- If the oil forms thin threads, there is no problem in stopping the draining operation.
- In low temperatures, swing the work equipment to raise the oil temperature slightly before starting the operation to drain the oil. However, never swing the work equipment during the draining operation. This will cause breakage of the swing machinery.

4. Remove the cap of oil filler (F), then add the replacement amount of oil through oil filler (F).
5. Check the oil level. For details, see"CHECK OIL LEVEL IN SWING MACHINERY CASE, ADD OIL (PAGE 4-49)".

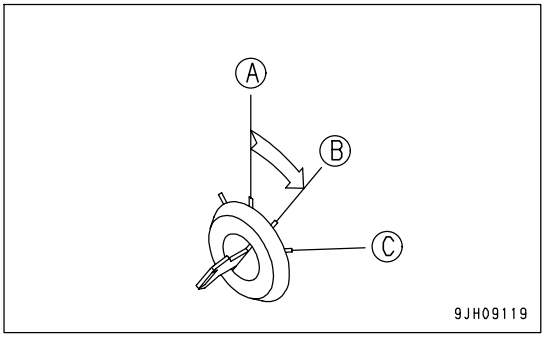
METHOD OF RELEASING PRESSURE IN HYDRAULIC CIRCUIT

1. Place the work equipment on the ground. Close the crusher attachment jaws, etc.
2. Operate the work equipment lock lever to the LOCK position.
3. Insert the lock pin for the attachment control pedal in position (c) where it is possible to operate the pedal.
   (If equipped)

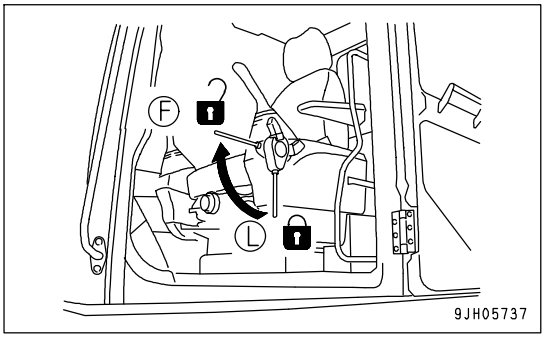


Carry out Steps 4 - 6 within 15 seconds.
When the engine is stopped, the pressure in the accumulator gradually goes down. For this reason, the release can only be carried out immediately after the engine is stopped.

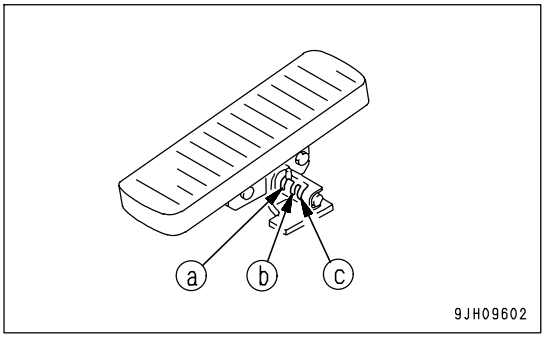
4. Stop the engine.
5. Turn the starting switch to the ON position (B).



6. Set lock lever to FREE position (F), then operate the work equipment control levers and the attachment control pedal (if equipped) fully to the front, rear, left, and right to release the pressure in the control circuit.

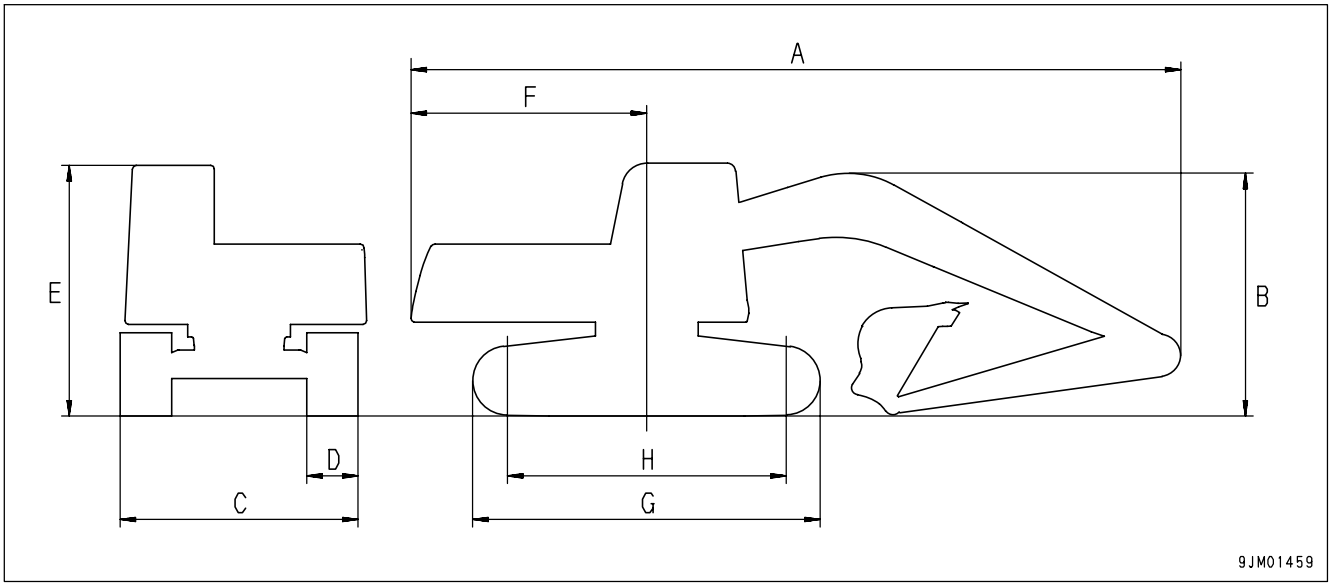


7. Set the lock lever to the LOCK position, then turn the starting switch to the OFF position.
8. Insert the lock pin in position (a) so that the attachment control pedal cannot be operated.
   (If equipped)



SPECIFICATIONS

	Item	Unit	PC160LC-8
	Operating weight	kg (lb)	16,600 (36,603)
	Bucket capacity	m^3 (cu.yd)	0.65 (0.85)
	Name of engine	-	KOMATSU SAA4D107E-1 diesel engine
	Engine horsepower	kW (HP) / rpm	86 (117) / 2,200
A	Overall length	mm (ft in)	8,565 (28’ 1")
B	Overall height, work equipment	mm (ft in)	3,025 (9’ 11")
C	Overall width	mm (ft in)	2,490 (8’ 2")
D	Track width	mm (ft in)	500 (1’ 8")
E	Height of cab	mm (ft in)	3,030 (9’ 11")
F	Radius of upper structure	mm (ft in)	2,435 (7’ 12")
G	Length of track	mm (ft in)	3,965 (13’ 0")
H	Tumbler center distance	mm (ft in)	3,170 (10’ 5")
	Min. ground clearance	mm (ft in)	440 (1’ 5")
	Travel speed (Low/High)	km/h (MPH)	3.4/5.5 (2.1/5.5)
	Swing speed	rpm	12.0



HYDRAULIC CIRCUIT

NOTICE

- **The return circuit when a breaker is installed must return directly to the return filter, so do not use it except in B mode.**
- **The standard set pressure for the safety valve in the service valve is set when the machine is shipped from the factory. When B mode is selected, it is set to 24.5MPa (250 kg/cm^2, 3,550 PSI); when ATT mode is selected, it is set to 20.6MPa (210 kg/cm^2, 2,982 PSI). Depending on the attachment, adjustment may be necessary. In such a case, please ask your Komatsu distributor to carry out the adjustment.**

Switching Hydraulic Circuit

- Depending on the type of attachment, set the working mode on the monitor as follows.
- The set pressure of the safety valve in the service valve and the hydraulic circuit switch is according to the working mode selected.

Attachment	Working mode	Hydraulic circuit	Set pressure of safety valve in service valve
One-way circuit attachment, such as breaker	B mode	Automatically forms circuit where return circuit does not pass through control valve	When shipped from factory 20.6 MPa (210 kg/cm^2, 2982 PSI)
Double-acting circuit attachment, such as crusher	ATT mode	Automatically forms circuit where return circuit passes through control valve	When shipped from factory 24.5 MPa (250 kg/cm^2, 3550 PSI)

Adjusting Oil Flow

Depending on the attachment, it is necessary to change the oil flow in the service circuit.
For details of setting the oil flow, see "ATTACHMENT OPERATIONS (PAGE 6-17)".

Switching Between Breaker and General Attachment

- When optional attachment is installed and working mode is set to B mode
  (1) Forms breaker circuit (one-way circuit).
  (2) Hydraulic oil flowing through breaker circuit passes through additional filter for breaker.
  (3) Relief valve is set to low pressure.
  When shipped from factory: 20.6 MPa (210 kg/cm^2, 2980 PSI)
  (4) Maximum oil flow can be adjusted in user mode.

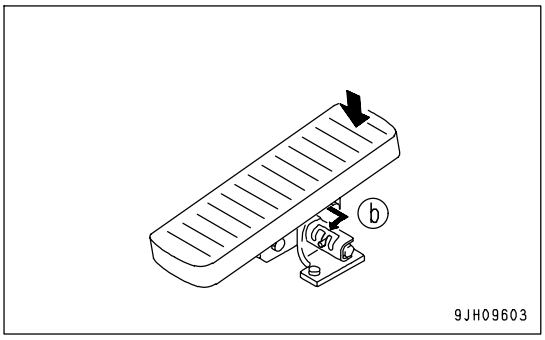
- When optional attachment is installed and working mode is set to ATT mode
  (1) Forms crusher circuit (double-acting circuit).
  (2) Hydraulic oil flowing through crusher circuit does not pass through additional filter for breaker.
  (3) Relief valve is set to high pressure.
  When shipped from factory: 24.5 MPa (250 kg/cm^2, 3550 PSI)
  (4) Maximum oil flow can be adjusted in user mode.

When Using Breaker

NOTICE

When carrying out breaker operations, use the breaker mode. If the breaker mode is not used, the breaker may be damaged.

With the working mode set to B mode, insert the lock pin in front-only FREE position (b). Press the front of the pedal to operate the breaker.



If the working mode pilot monitor does not display B for the breaker mode, press working mode selector switch (1) and set to the breaker mode as follows.

- When working mode selector switch (1) is pressed, the screen switches to the working mode selection screen.