TEN00894-06

Operation & Maintenance Manual

HYDRAULIC
EXCAVATOR

PC240LC-11

SERIAL NUMBERS 95486 and up

⚠ 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

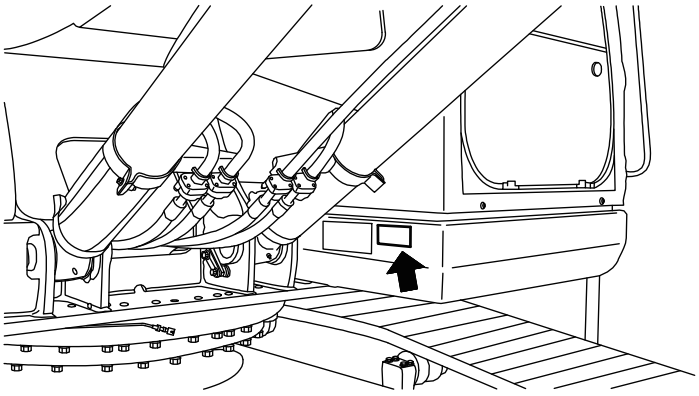
PRODUCT INFORMATION

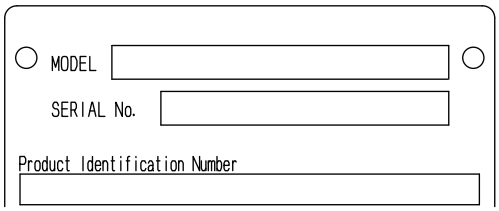
When requesting service or ordering replacement parts, inform your Komatsu distributor of the following items.

LOCATION OF PRODUCT IDENTIFICATION NUMBER (PIN)/MACHINE SERIAL NO. PLATE

It is located on the right bottom of the operator's cab.

The design of the nameplate differs according to the district.

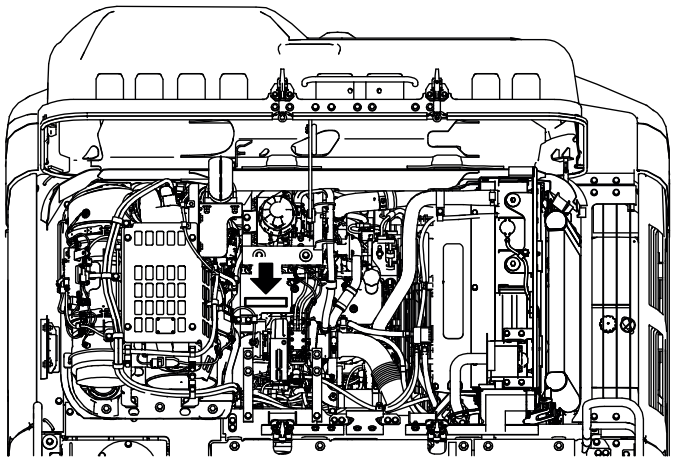


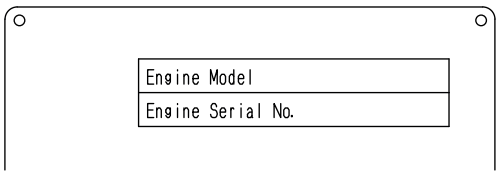


9JH16455

LOCATION OF ENGINE NUMBER PLATE

They are on top of the engine cylinder head cover.





ZZD11344

Caution for high-temperature oil

"09653-03001"

Caution for high-temperature coolant

"09668-03001"

Caution for handling accumulator and gas spring

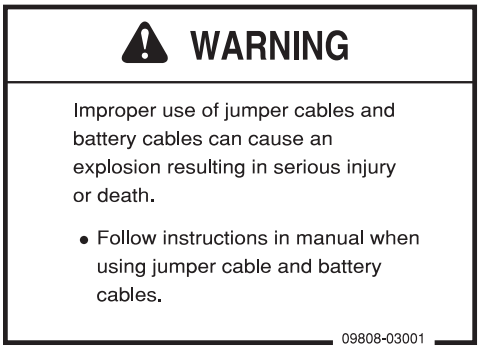
"09659-53000"

Caution for adjusting track tension

"09657-03003"

Caution for handling cable

"09808-03001"

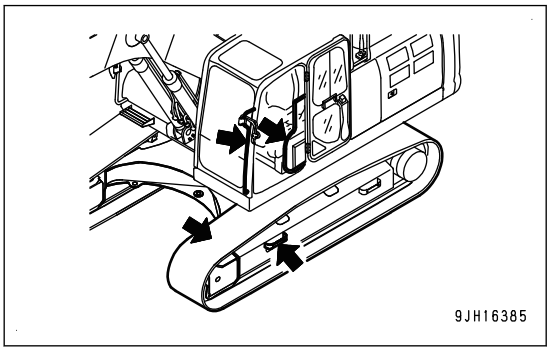


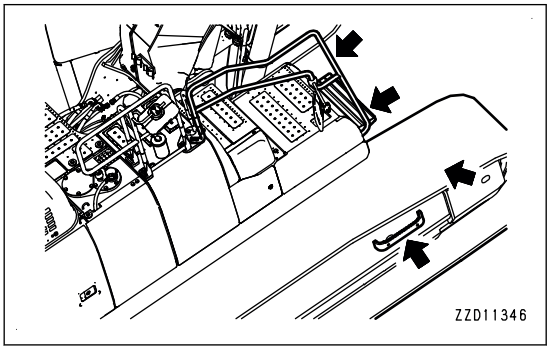
PRECAUTIONS WHEN GETTING ON OR OFF MACHINE

USE HANDRAILS AND STEPS WHEN GETTING ON OR OFF MACHINE

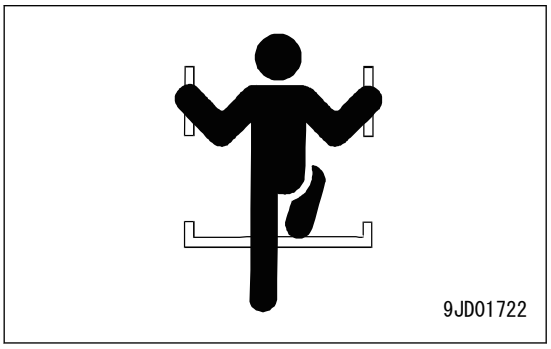
To prevent personal injury caused by slipping or falling off the machine, always observe the following.

- Use the handrails and steps marked by arrows in the figure on the right when getting on and off the machine.





- Always face the machine and maintain at least three-point contact (both feet and one hand, or both hands and one foot) with the handrails and steps to ensure that you support yourself.
- Before getting on and off the machine, check the handrails and steps if there is any oil, grease, or mud on them. Wipe it off immediately not to slip if any. In addition, tighten any loose bolt of the handrails and steps.
  If the handrails and steps are damaged or deformed, they need to be repaired immediately. Ask your Komatsu distributor to perform this work.



- Do not grip the control levers or lock lever when getting on or off the machine. When getting on and off the machine, be careful that your body or clothes do not touch the levers.
- Never climb on the engine hood or covers where there are no non-slip pads.
- Do not get on or off the machine with tools in your hand.
- Do not grab a foldable mirror as a handrail since it turns.

NO JUMPING ON OR OFF MACHINE

Getting on or off the moving machine can cause serious personal injury or death. Always observe the following.

- Never jump on or off the machine. Never get on or off a moving machine.
- If the machine starts to move when there is no operator on the machine, do not jump on to the machine and try to stop it.

NO PEOPLE ON ATTACHMENTS

Never let anyone ride on the work equipment or other attachments. There is a hazard of falling and suffering serious personal injury or death.

PRECAUTIONS WHEN STARTING ENGINE

The machine may suddenly move off and this may lead to serious personal injury or death. Always observe the following.

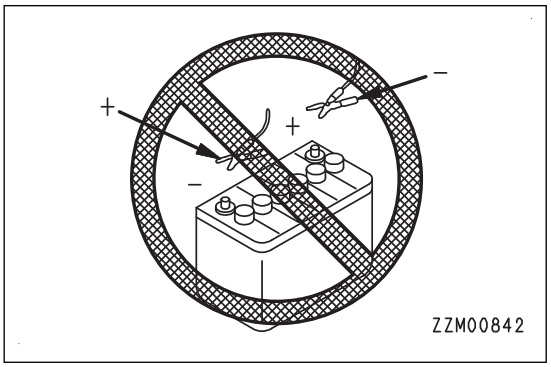
- Start the engine only while sitting down in the operator's seat.
- When starting the engine, sound the horn as a warning.
- Prohibit other personnel to get on the machine.
- Do not attempt to start the engine by short-circuiting the engine starting circuit. This may cause fire, serious personal injury or death.

IN COLD WEATHER

- If the warm-up operation is not performed thoroughly, and the work equipment is operated, the reaction of the work equipment to the operation of the control levers and pedals will be slow and the movement of it may not be what the operator intended. Be sure to perform the warm-up operation. Particularly in a cold weather, be sure the warming-up operation is completed.
- If the battery electrolyte is frozen, do not charge the battery or start the engine with a different power source. There is a hazard that this will ignite the battery and cause the battery to explode.
  Before charging or starting the engine with a different power source, melt the battery electrolyte and check that there is no leakage of electrolyte before starting.

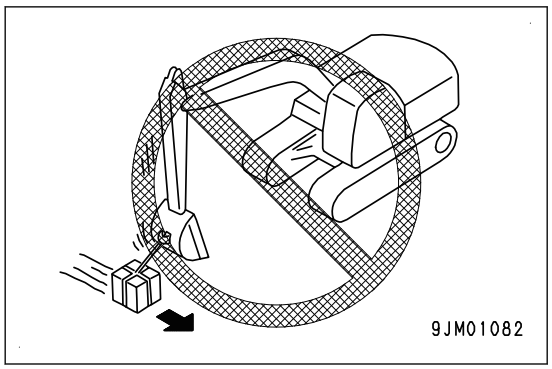
START ENGINE WITH JUMPER CABLES

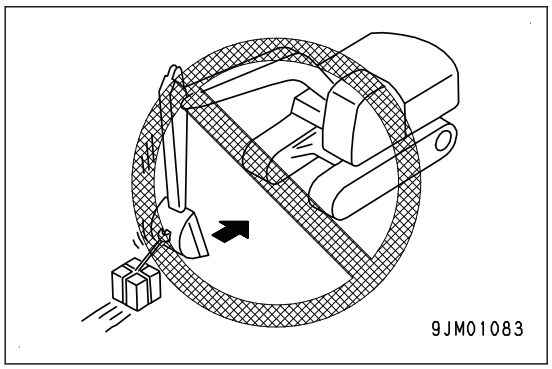
If any mistake is made in the method of connecting the jumper cables, it may cause the battery to explode, so always observe the following.



- Always wear protective eyeglasses and rubber gloves when starting the engine by using the jumper cables.
- When connecting a normal machine to a failed machine with the jumper cables, always use the normal machine with the same battery voltage as the failed machine.
- When starting the engine with the jumper cables, perform the starting operation with 2 workers (one worker sitting in the operator's seat and the other working with the battery).
- When starting from another machine, be careful that the normal machine does not contact with the failed machine.
- When connecting the jumper cables, turn the starting switch to OFF position for both the failed machine and the normal machine. If the failed machine has a battery disconnect switch, turn it to OFF position, and turn it ON again after connecting the cables.
  It is dangerous that the machine may move when the power is connected.
- Be sure to connect the positive (+) cable first when installing the jumper cables. Disconnect the negative (-) cable (ground side) first when removing them.
- When disconnecting the jumper cables, take care not to bring the clips in contact with each other or with the machine.

- Do not use the work equipment or swing to pull the load in any direction. There is danger that the hook may break and the load come off, causing the work equipment to move suddenly and cause personal injury.
- Do not leave the operator's seat while the load is being lifted.

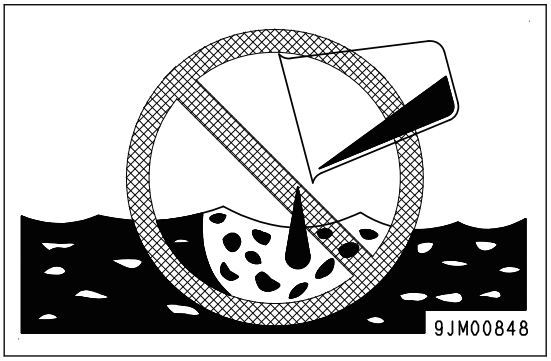




PRECAUTIONS FOR DISPOSING OF WASTE MATERIALS

To prevent pollution, pay full attention to the way to dispose of waste materials.

- Always drain the oil from your machine in containers. Never drain the oil and coolant directly onto the ground or dump into the sewage system, rivers, seas, or lakes.
- Obey appropriate laws and regulations when disposing of harmful objects such as oil, fuel, coolant, solvent, filters, batteries, and DEF.



Avoid exposure to burning rubber or plastics which produce a toxic gas that is harmful to people.

- When disposing of parts made of rubber or plastics (hoses, cables, and harnesses), always comply with the local regulations for disposing industrial waste products.

METHOD FOR SELECTING WINDOW WASHER FLUID

Use an ethyl alcohol base washer liquid.

Methyl alcohol base washer liquid may irritate your eyes, so do not use it.

PERIODIC INSPECTION OF DEFINED LIFE PARTS

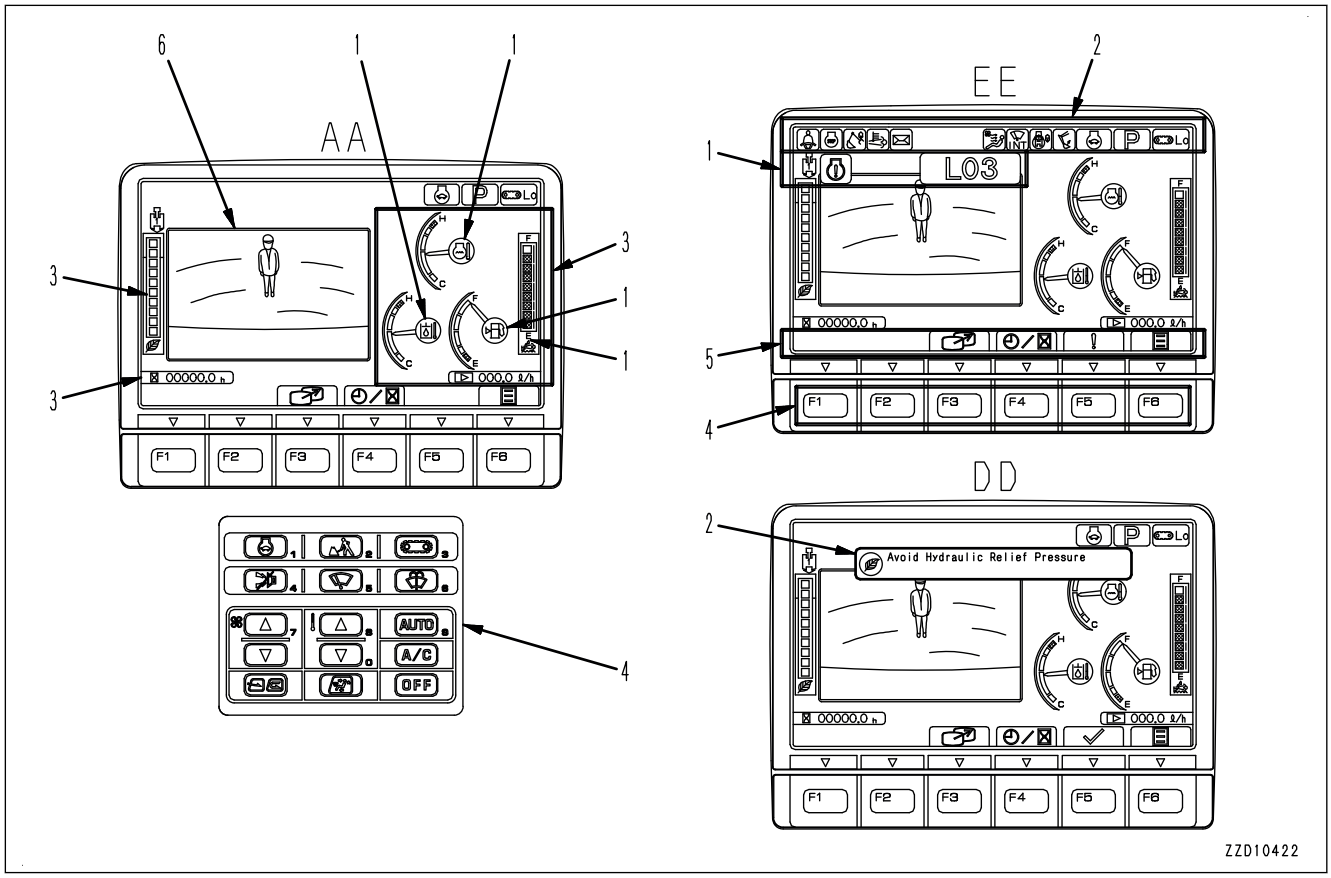
- To use the machine safely for a long period, be sure to periodically inspect the defined life parts that have an especially close relation to safety, such as hoses and the seat belt. If an abnormality is found, replace it immediately.
- The material of these components naturally changes over time, and repeated use causes deterioration, wear, and fatigue. As a result, there is a hazard that these components can fail and cause serious personal injury or death. It is not easy to judge the remaining life of these components but inspect them as much as possible before work and at the regular maintenance.
- Replace or repair the defined life parts if a defect is found by the check.

EXPLANATION OF COMPONENTS

The following is an explanation of devices necessary to operate the machine.

To perform suitable operations correctly and safely, it is important to completely understand methods of operating the equipment, and the meanings of the displays.

EXPLANATION OF MACHINE MONITOR EQUIPMENT



AA: Standard screen, EE: Warning or Error screen, DD: Guidance screen

(1) Warning display

(2) Pilot display

(3) Meter display

(4) Monitor switch area

(5) Guidance icon display

(6) Camera image display

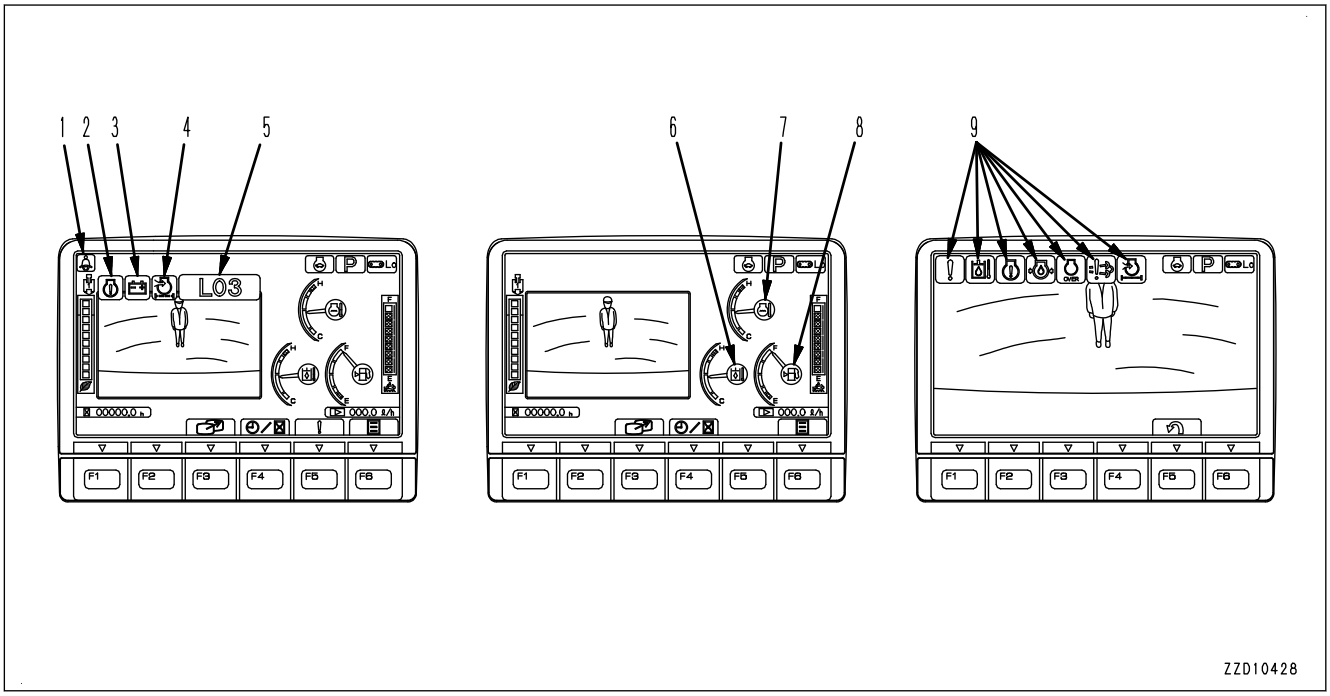
REMARK

- One of the features of liquid crystal display panels is that there may be black spots (spots that do not light up) or white spots (spots that stay lit) on the screen. When there are fewer than 10 black or white spots, this is not a failure or a defect.
- If environmental temperature of the machine monitor is high, brightness may be automatically reduced to protect the liquid crystal. However, it is not abnormal.

WARNING DISPLAY

NOTICE

Appearance of any of action levels “L01” to “L04” on the machine monitor indicates presence of an abnormality the machine.
Take appropriate actions following the list of action level displays and remedies.
The caution lamp that lights up in red when an action level is displayed warns operator to stop the machine urgently, stop or pause the current operation.
If no action is taken, the machine can be seriously affected. Take necessary actions immediately.



(1) Seat belt caution lamp
(2) Caution lamp
(3) Caution lamp
(4) Caution lamp
(5) Action level display
(6) Engine coolant temperature caution lamp
(7) Hydraulic oil temperature caution lamp
(8) Fuel level caution lamp
(9) Caution lamp

Standard screen (camera display and meter display)

When 1 type of caution is generated, it is displayed on caution lamp (2).

When 2 types of caution are generated, they are displayed on caution lamps (2) and (3).

When 3 types of caution are generated, they are displayed on caution lamps (2), (3), and (4).

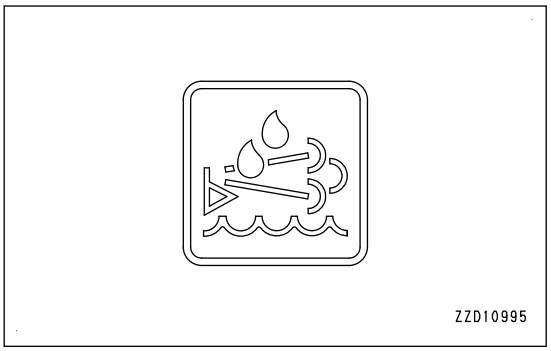
When 4 types or more of caution are generated, they are displayed on caution lamps (2), (3), and (4) alternately at intervals of 2 seconds.

Whole camera image display screen

The current cautions are indicated by flashing of caution lamp (9).

When 2 or more cautions are generated, they are sequentially displayed starting from the leftmost side of the screen.

DEF LEVEL CAUTION LAMP



DEF level caution lamp alerts when DEF tank level becomes low.

Whenever the caution lamp lights up in red, immediately add DEF.

Fault conditions that result in activation of the Inducement strategy for engine derates to prompt to maintain or repair the emission control system.

When Lightning in red,

With Action level “L04”, DEF tank level is too low. Inducement status is “Final Inducement”. Engine speed is fixed at low idle.

With Action level “L04”, DEF tank level is too low. Inducement status is “Severe Inducement”. Engine power is under heavy deration.

With Action level “L03”, DEF tank level is low. Inducement status is “Mild Inducement”. Engine power is under deration.

With No Action level display. DEF tank level is lower. Inducement status is “Escalated Warning”. Need to add DEF immediately to avoid advancing to the next Inducement status.

With No Action level display. Warning starts. Inducement status is “Warning”. Need to add DEF immediately.

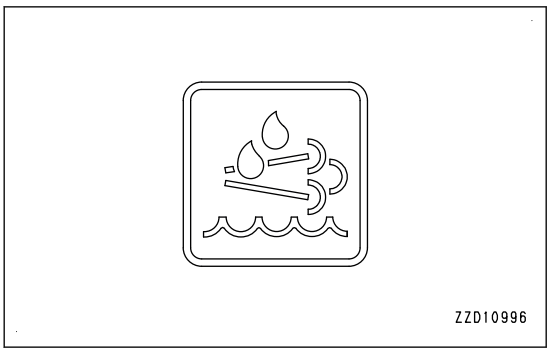
When Lightning in white

When fluctuation of DEF tank level is large, frozen, or not limited to, tank level sensing is not performed correctly.

When DEF is added after engine starting switch turn to OFF.

When DEF tank level sensor is defective.

DEF SYSTEM CAUTION LAMP



DEF system caution lamp alerts when abnormality in the system are detected.

Whenever the caution lamp lights up in yellow or in red, take necessary actions by instructions.

Fault conditions that result in activation of the Inducement strategy for engine derates to prompt to maintain or repair the emission control system.

Lighting in red

With Action level “L04”, Inducement status is “Final Inducement”. Engine speed is fixed at low idle.

With Action level “L04”, Inducement status is “Severe Inducement”. Engine power is under heavy deration.

With Action level “L03”, Inducement status is “Mild Inducement”. Engine power is under deration.

Lighting in yellow

With Action level “L01”, Inducement status is “ Warning” or “Escalated Warning”.

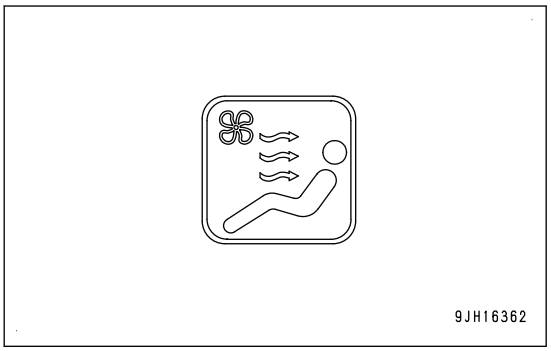
When “Escalated Warning”, If no maintenance, advancing to the next Inducement status. Engine power will be derated.

AIR CONDITIONER PILOT LAMP

The air conditioner pilot lamp shows the operating state of the air conditioner.

Pilot lamp lights up: Air conditioner ON

Pilot lamp goes out: Air conditioner OFF



MESSAGE DISPLAY

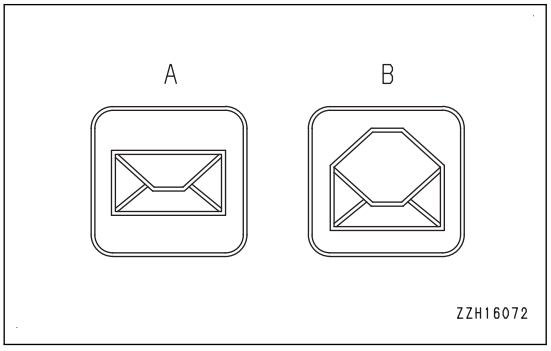
The message display lights up when there is a message from Komatsu.

To read the message, see PILOT DISPLAY, “MESSAGE DISPLAY”.

Lights up in green (A): There is unread message.

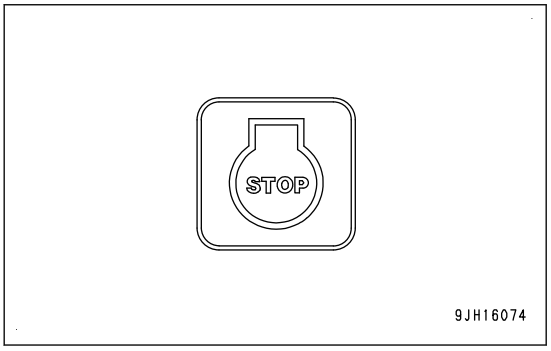
Lights up in blue (B): There is any read message to which no reply is made.

OFF: No messages



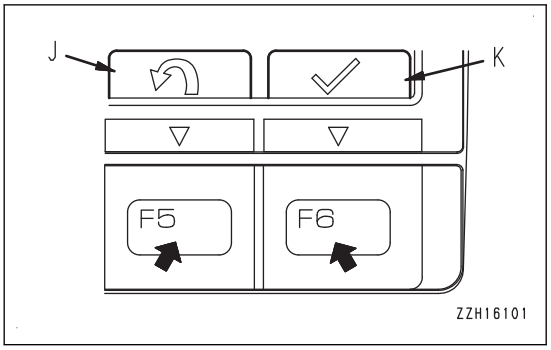
ENGINE STOP PILOT LAMP

The engine stop pilot lamp is displayed while the engine is stopped. It goes out when the engine is started.



(J) Switch F5: Cancels any change and returns the screen to the previous screen.

(K) Switch F6: Enters the selection and contents to change, and proceeds the screen to the next screen.



REMARK

- Even if some icons look the same, their display positions and corresponding function switches may differ according to the screens to be displayed.
- For the guidance icons and their functions not explained above, see the pages where the control methods of respective screens are explained.

WORKING MODE SELECTOR SWITCH

Use working mode selector switch (1) to set the movement or power of the work equipment.

The operation becomes easier by selecting the mode to match the content of the operation.

P mode: For heavy-duty operations

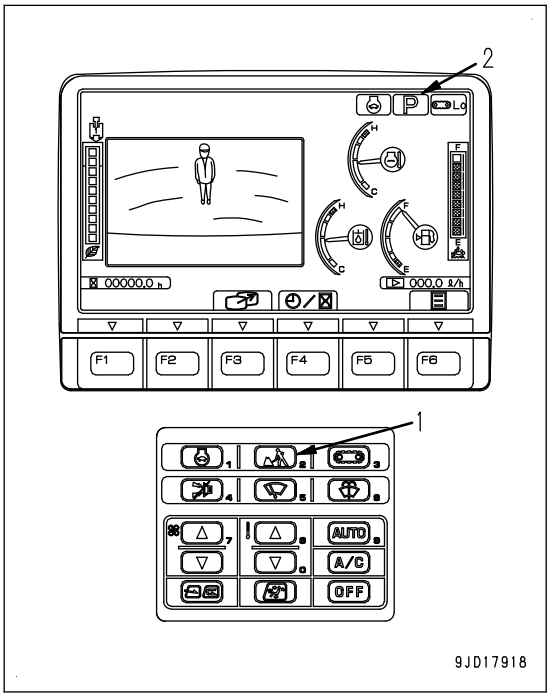
E mode: For operations with emphasis on fuel consumption

L mode: For fine control operations

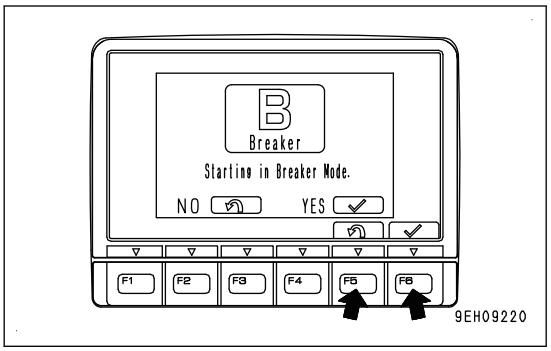
B mode: For breaker operations

ATT/P mode: For operations of 2-way attachments like crusher (machines ready for installation of attachment)

ATT/E mode: For operations emphasizing fuel consumption out of those of 2-way attachments like crusher (machines ready for installation of attachment)



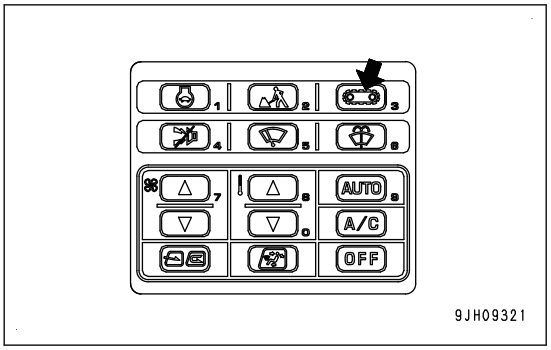
- When the monitor is turned ON, it is automatically set to the mode used when the starting switch was turned to OFF position last.
- Press the switch to display the working mode selection screen (2). For each set mode, P, E, L, B, ATT/P, ATT/E are displayed at the top right of the monitor display.
- For machines ready for installation of attachment, the attachment mode is added to the display.
- When the monitor starts up, if the working mode setting is B mode, the confirmation message in the figure is displayed and the buzzer sounds.
- When starting up and staying in B mode, always press switch F6.
  If you press F5, the system starts up in E mode.



If you want to have automatic setting of P, E, L, B, ATT/P or ATT/E mode (optional default setting) when starting engine , ask your Komatsu distributor to change the setting.

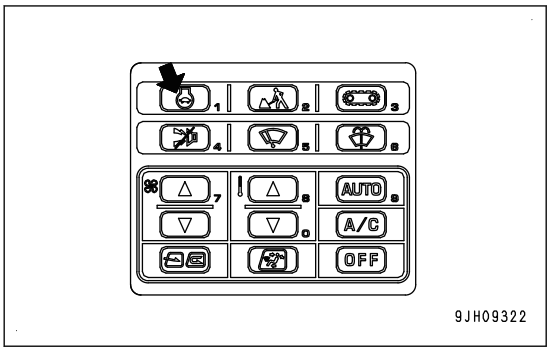
- Press the travel speed selector switch to change the travel speed.

  When the travel speed is changed, the travel speed display at the top right of the monitor display is highlighted in yellow for 2 seconds, then returns to blue.



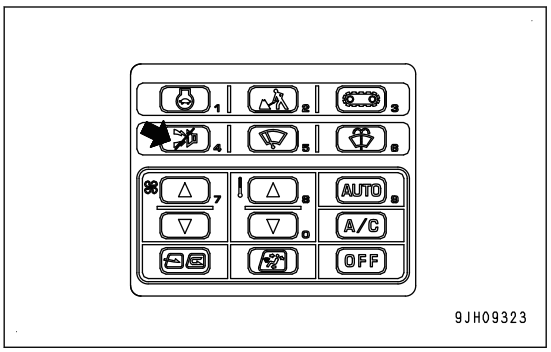
- Press the auto-deceleration switch to turn the auto-deceleration function ON/OFF.

  Even if the auto-deceleration switch is pressed, the camera image display screen does not switch to another screen or return to the standard screen display.



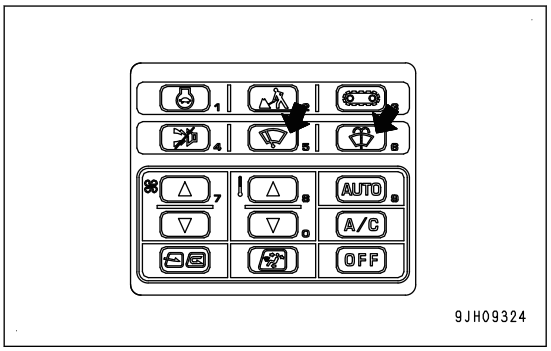
- It is possible to stop the alarm buzzer for the warning item where there is an abnormality, by pressing the buzzer cancel switch.

  Even if the buzzer cancel switch is pressed, the camera image display screen does not switch to another screen or return to the standard screen.
  Depending on the warning, alarm buzzer does not stop sounding by pressing the buzzer cancel switch.



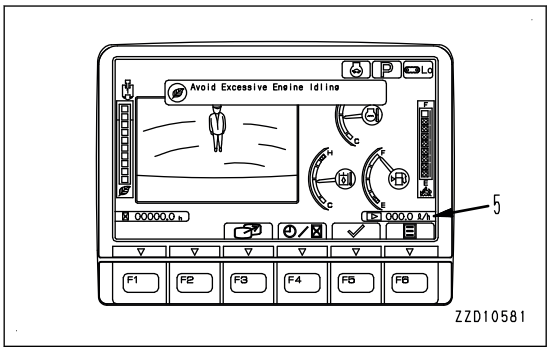
- Press the wiper switch and washer switch to operate the wipers and washer.

  Even if the wiper switch or washer switch is pressed, the camera image display screen does not switch to another screen or return to the standard screen display.



SET DISPLAY OF FUEL CONSUMPTION GAUGE

It is possible to change the display of fuel consumption gauge (5) and the setting of Display/Non-display.



1. Select Average Fuel Consumption Display (6) from the Configurations screen, then press switch F6.

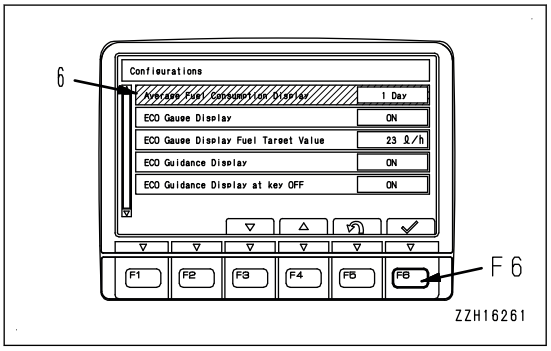
   On this screen, it is possible to perform the following operations with switches F3 to F6.

   F3: Moves to the next item (1 line below). When on the last line, it moves to the first line on the next page.

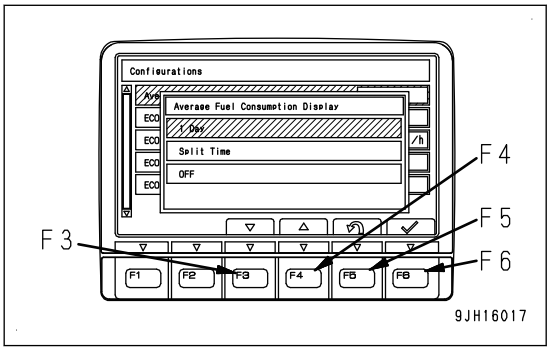
   F4: Moves to the previous item (1 line above). When on the first line, it moves to the last line on the previous page.

   F5: Cancels the setting and returns to Configurations screen.

   F6: Changes the setting and returns to Configurations screen.



2. The Average Fuel Consumption Display screen appears.
   - 1 Day
     Displays the average fuel consumption from 0:00 a.m. of the day to 0:00 a.m. of the next day.
   - Split Time
     Displays the average fuel consumption during the split measurement period.
     Select the split to start the automatic measurement of fuel consumption.
   - None
     Does not display the fuel consumption gauge.



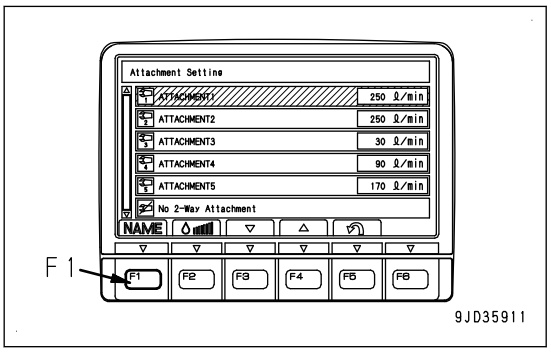
F5: Returns the screen to the Attachment Setting screen without changing the name.

F6: Enters the change and returns to the Attachment Setting screen.

It is not possible to change the name for “No Attachment” setting.

Changing “2-Way Attachment Oil Flow Rate Setting”

1. Select an attachment setting to change its oil flow rate on the “Attachment Setting” screen, then press switch F2.



2. The “2-Way Attachment Oil Flow Rate Setting” screen is displayed.

   On the “2-Way Attachment Oil Flow Rate Setting” screen, you can perform the following operations with switches F3 to F6.

   F3: Decreases the flow by 1 level.

   F4: Increases the flow by 1 level.

   F5: Returns to the “Attachment Setting” screen without changing the oil flow rate.

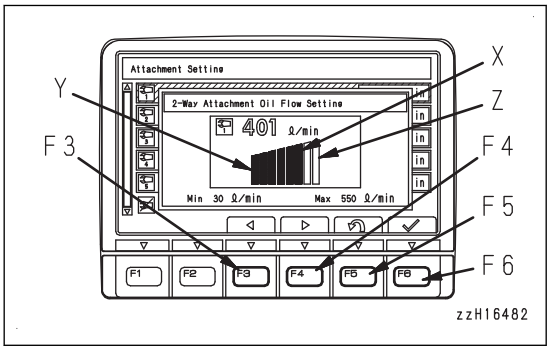
   F6: Enters the oil flow setting and returns to the “Attachment Setting” screen.

   (X): Present oil flow setting

   (Y): Min. adjusted oil flow

   (Z): Max. adjusted oil flow

   It is not possible to change the oil flow for “No Attachment” setting.

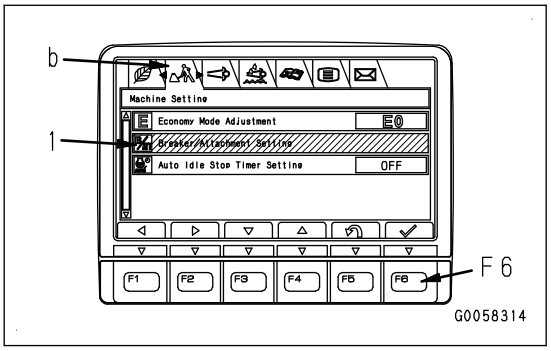


BREAKER/ATTACHMENT SETTING

On “Breaker/Attachment Setting”, you can change the name of attachment displayed on the monitor and the attachment oil flow rate setting.

For the machines that have no attachment, “Attachment Setting” menu is not displayed.

1. Select “Attachment Setting” (1) on the “Machine Setting” menu (b) screen, then press the switch F6.



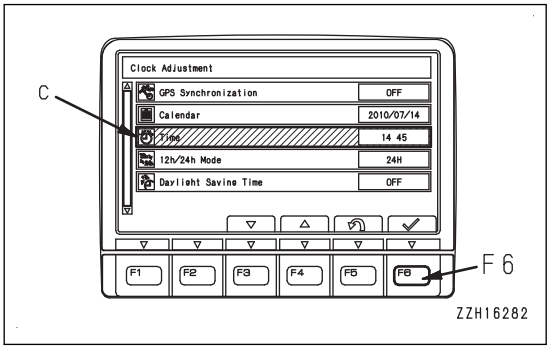
TIME SETTING

Adjust the time of the monitor clock.

REMARK

As long as “GPS Synchronization” is turned on, “Time” menu is not selectable.

1. Select “Time” (c) on “Clock Adjustment” screen, then press switch F6.



2. The “Time” screen is displayed.

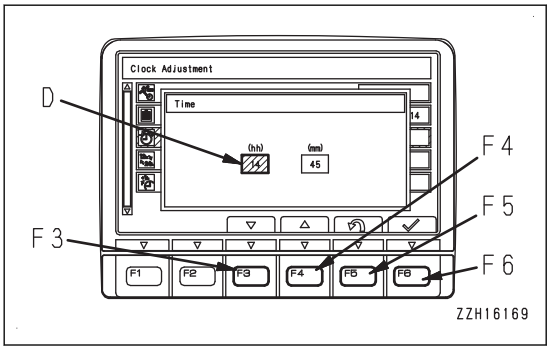
   When the hour display (D) is highlighted in yellow, operate the switches as follows to change hour display (D). If it is not necessary to change the hour setting, press switch F6.

   F3: The time goes back 1 hour.

   F4: The time advances 1 hour.

   F5: Cancels change and returns the screen to “Clock Adjustment” screen.

   F6: Proceeds to setting for the minute.



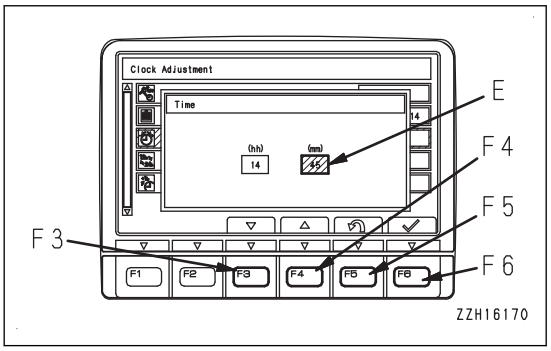
3. When minute display (E) is highlighted in yellow, operate the switches as follows to change minute display (E). If it is not necessary to change the minute, press switch F6.

   F3: The time goes back 1 minute.

   F4: The time advances 1 minute.

   F5: Cancels change and returns to the time setting screen.

   F6: Accepts change and returns the screen to “Clock Adjustment” screen.



SWING LOCK SWITCH

⚠ WARNING

- **When not using the swing operation, e.g. when traveling, put the swing lock switch to ON position.**
- **On slopes, even when the swing lock switch is at ON position, the weight of the work equipment may cause the upper structure to swing if the swing control lever is operated in the downhill direction.**

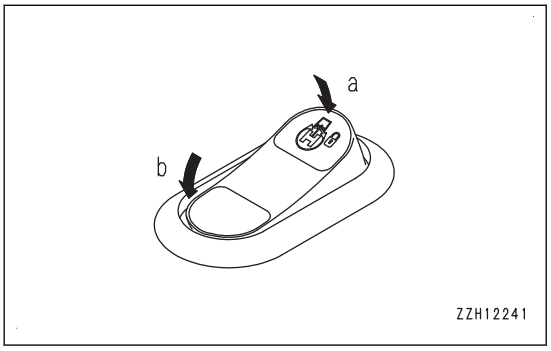
Swing lock switch is used to lock the upper structure so that it cannot swing.

(a) ON position

The swing lock is always applied, and the upper structure does not swing even when the swing is operated. In this condition, the swing lock pilot lamp lights up.

(b) OFF position

The swing lock is canceled allowing the upper structure to swing when operating the swing control lever.



LAMP SWITCH

Lamp switch is used to light up the working lamp and monitor illumination.

(a) Night position

Lamps light up and monitor illumination is set to night mode.

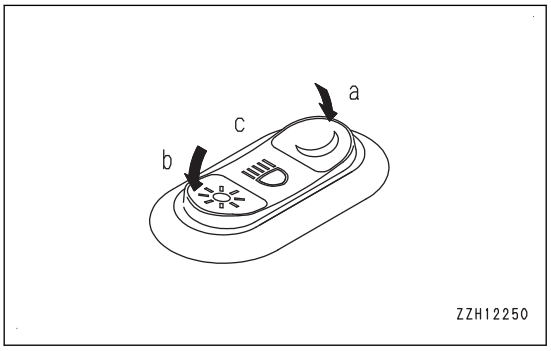
(b) Day position

Lamps light up and monitor illumination is set to day mode.

(c) OFF position

Lamps go out.

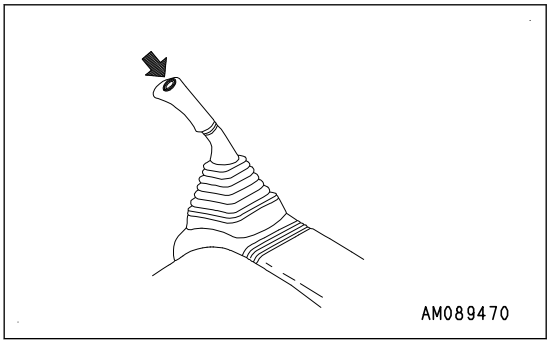
(The monitor illumination is set to day mode.)



HORN SWITCH

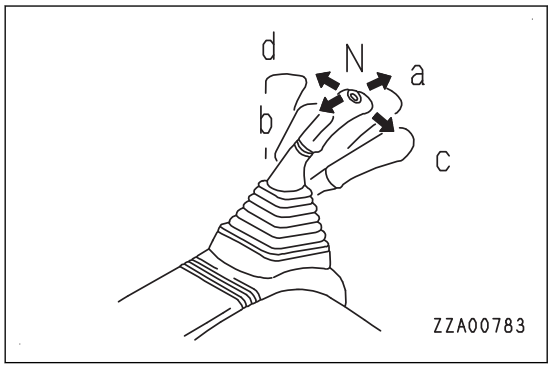
Horn switch is located on top of the R.H. work equipment control lever.

When switch is pressed, the horn sounds.



WORK EQUIPMENT CONTROL LEVER

The L.H. work equipment control lever is used to operate the arm and upper structure.



Arm control

(a): Arm OUT

(b): Arm IN

Swing control

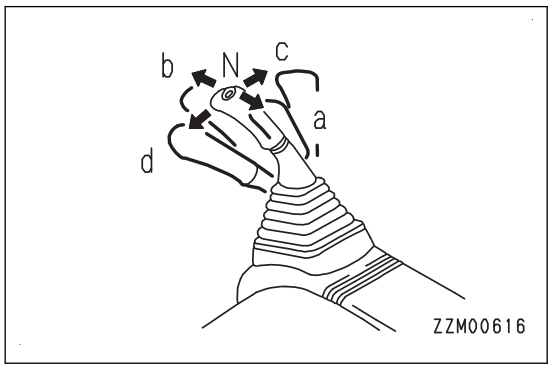
(c): Swing RIGHT

(d): Swing LEFT

N (NEUTRAL)

The upper structure and arm are held in position and do not move.

The R.H. work equipment control lever is used to operate the boom and bucket.



Boom control

(a): Boom RAISE

(b): Boom LOWER

Bucket control

(c): Bucket DUMP

(d): Bucket CURL

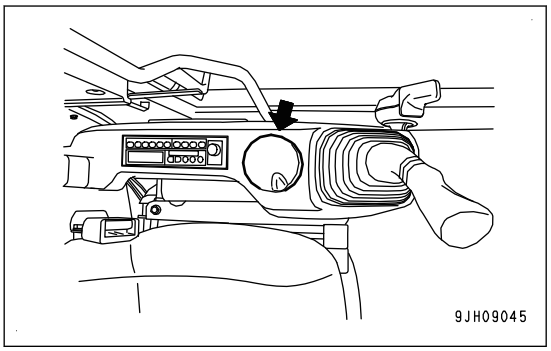
N (NEUTRAL)

The boom and bucket are held in position and do not move.

ASHTRAY

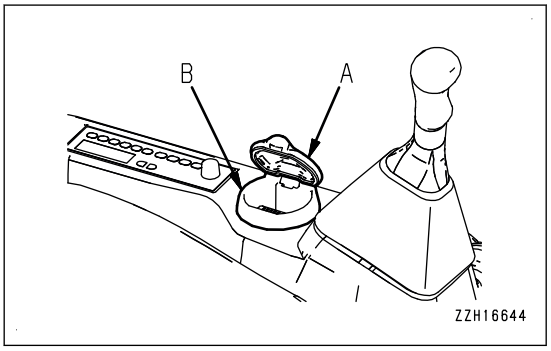
This is on top of the console box on the left side of the operator's seat.

Always extinguish your cigarette before putting it in the ashtray and be sure to close the lid.



NOTICE

While removing the ashtray, if it is stuck in the console cover and hard to be removed, open lid (A) of ashtray, then hold the ashtray body (B) and twist it to remove.
If you hold lid (A) of ashtray and twist it, the ashtray may break.



POWER SUPPLY OUTLET

24 V power source

NOTICE

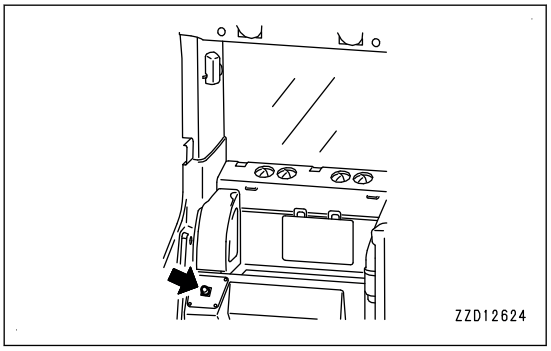
Do not use it as a power supply for 12 V equipment.
This will cause failure of the equipment.

When cigarette lighter is removed, the lighter socket can be used as a power source.

The capacity of the cigarette lighter is 85 W (24 V x 3.5 A).

REMARK

Use 24 V power source while engine is running.



12 V power source

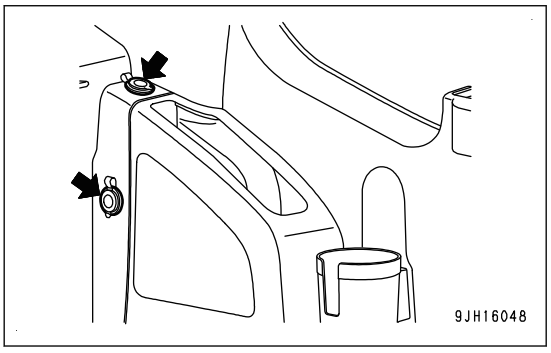
This power source can be used up to a capacity of 144 W (12 V x 12 A).

When it is used at 1 place: 144 W (12 V x 12 A)

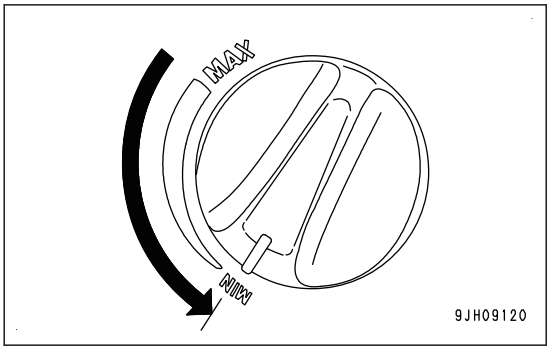
When it is used at 2 places: 144 W in total

REMARK

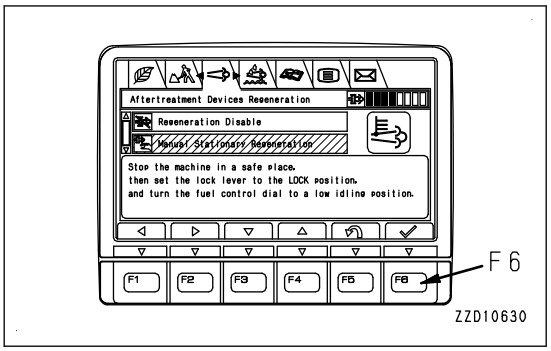
Use 12 V power source while engine is running.



4. Set the fuel control dial to Low idle (MIN) position.



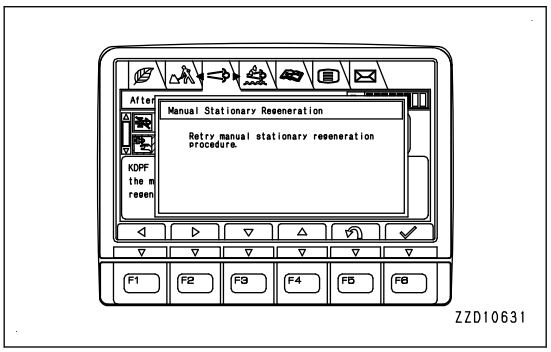
5. Press switch F6 to display the “Aftertreatment Devices Regeneration” screen.

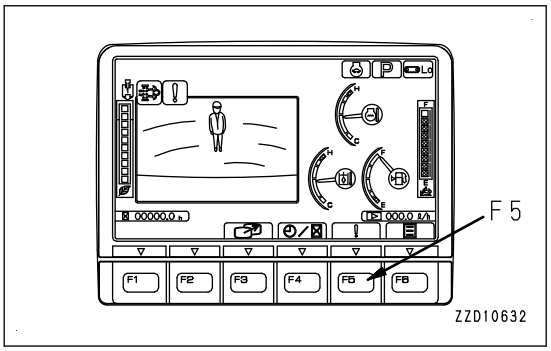


6. Select manual stationary regeneration, check again that there is no person or combustible material around the machine, then press switch F6.
If the machine needs to be moved again to secure safety, move it to a safe place and repeat the procedure from step 1.

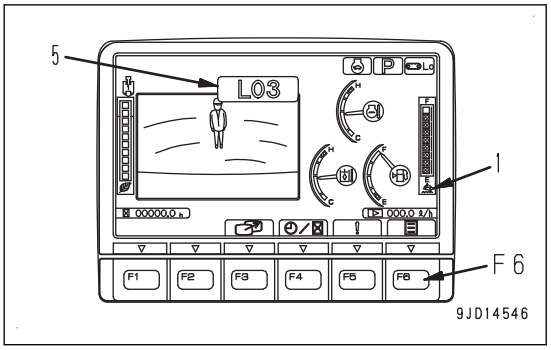
REMARK

After switch F6 is pressed in step 6, the screen shown in the figure may be displayed. This indicates that the operations in steps 1 to 4 were not performed correctly or there is trouble other than KDPF soot accumulation abnormality. Check that the engine is running normal, the lock lever is in LOCK position (L), and the fuel control dial is in Low idle (MIN) position, then repeat the procedure from step 6.
If the manual stationary regeneration still cannot be performed, return to the standard screen, press switch F5 to check the contents of other occurring troubles, stop the work and perform inspection and maintenance.

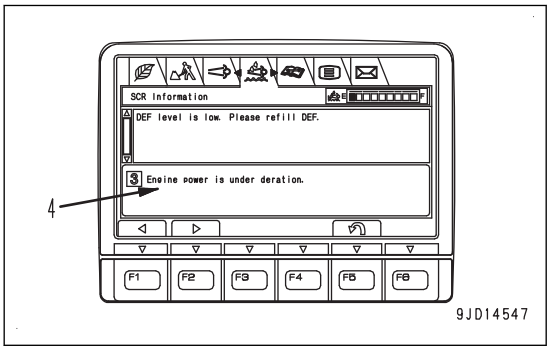




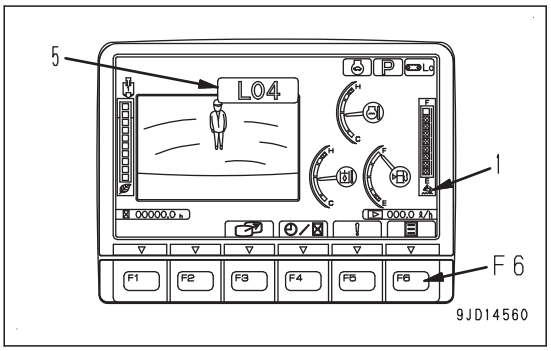
- Mild Inducement:
  The audible alert sounds in short and sharp beeps.
  1 gradation of the DEF level gauge light up in red.
  The DEF level caution lamp (1) lights up in red.
  Action Level “L03” is displayed in red (5).
  Press F6 to display the “SCR Information” screen.



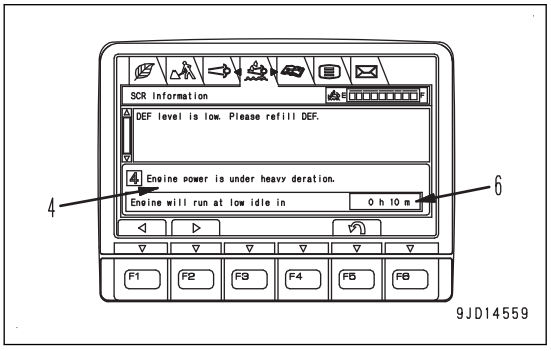
  Inducement status (4): “3 Engine power is under deration.”
  Add DEF to the DEF tank immediately.



- Severe Inducement:
  The audible alert sounds in continuous beep.
  No gradation of the DEF level gauge lights up.
  The DEF level caution lamp (1) lights up in red.
  The Action level “L04” is displayed in red (5).
  Press F6 to display the “SCR Information” screen.
  When all gradations of the DEF level gauge go off, DEF refilling amount is approximately 23.1ℓ {6.1US gal} to fill up the DEF tank.



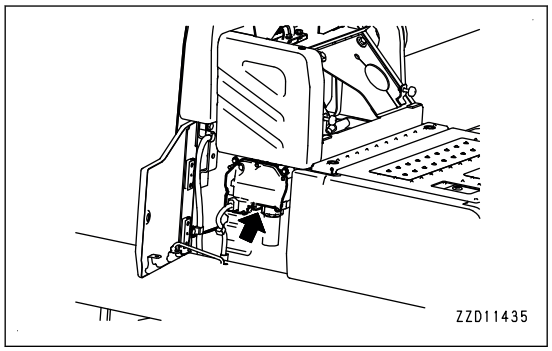
  Inducement status (4): “4 Engine power is under heavy deration.”
  The remaining time (Hour and minute) to the Final Inducement is displayed in the column (6) of the “SCR Information” screen. If no DEF is added during the “Severe Inducement”, Inducement advances to “Final Inducement” within 1 hour. At “Final Inducement”, engine speed is fixed at low idle.



  Engine power can be restored temporarily from power derate. This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of the “Mild Inducement”. The operator can restore engine power through the machine monitor. For the engine power restoration procedure, refer to the section of “Temporary Restoration from Inducement” in this manual. Once in “Severe Inducement” and it becomes necessary to restore engine power, use the engine power restoration function to move the machine to a safe place and add DEF.

DEF FILTER

DEF filter is an filter element to clean DEF sucked from the DEF tank by DEF pump, and to supply it to DEF injector.



NOTICE

- **The DEF filter element needs to be replaced every 2000 hours.**
- **If the machine is operated without DEF filter attached, or with the filter other than Komatsu genuine parts, foreign materials may enter into DEF pump and DEF injector which will cause failure of the machine. Never operate the machine without DEF filter attached, nor use the filter other than Komatsu genuine parts.**
- **DEF filter cannot be flushed. Flushing or regenerating of it will degrade the performance of DEF filter, and will contaminate DEF pump and DEF injector which will cause the failure of the machine. Never reuse the DEF filter.**

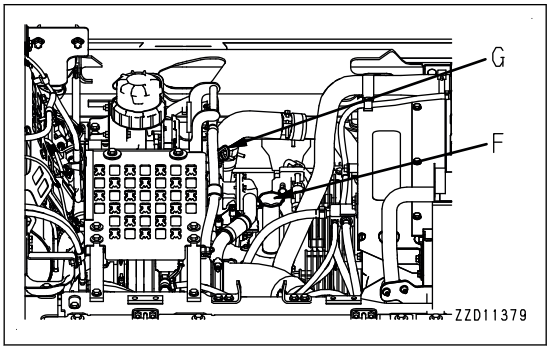
METHOD FOR CHECKING OIL LEVEL IN ENGINE OIL PAN, ADDING OIL

⚠ WARNING

Immediately after the engine is stopped, its parts and oil are still very hot, and may cause burn injury. Accordingly, wait until they have cooled down before starting the work.

- 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 inclining, make it level before checking.
- When the ambient temperature is low, water or emulsified matter may stick to the dipstick, fuel filler cap, etc. or the drained oil may be milky white because of water vapor in the blowby gas. However, if the coolant level is normal, it is not a problem.

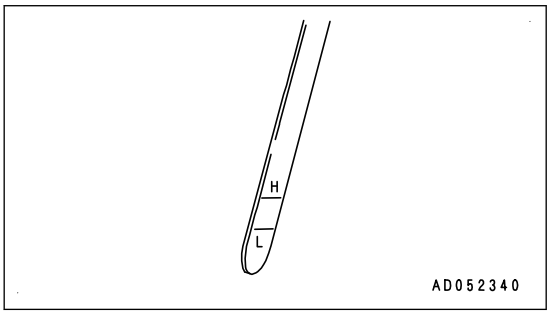
1. Open the engine hood.
2. Pull out dipstick (G) and wipe the oil off with a cloth.
3. Fully insert dipstick (G) into the dipstick pipe, then remove it.



4. Check if the oil is sticking up to between marks H and L on dipstick (G).

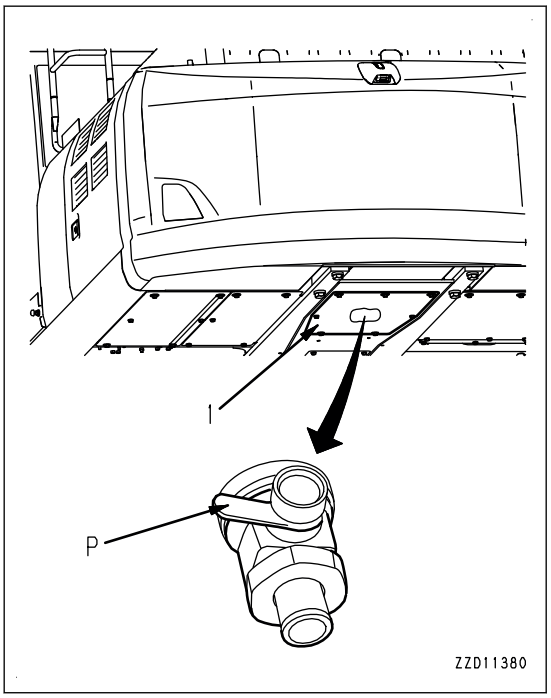
   It is appropriate if the oil level is between marks H and L.

   If the oil level is below the L mark, add oil through oil filler port (F).



5. If the oil level is higher than H, decrease it to a proper level according to the following procedure.
   1) Remove cover (1).
   2) Drain excessive engine oil through drain valve (P) at the bottom of the engine oil pan.

      When draining, put a container to receive the oil under the drain plug.
   3) Check the oil level again.
6. If the oil is at the correct level, tighten the oil filler cap securely and close the engine hood.

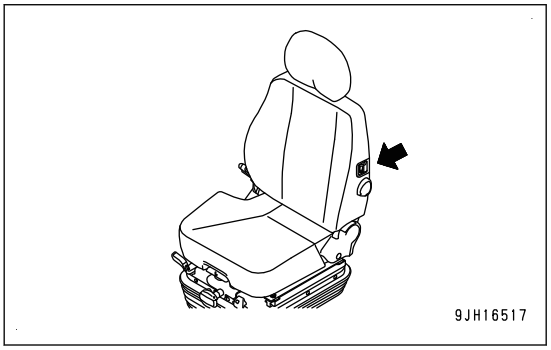


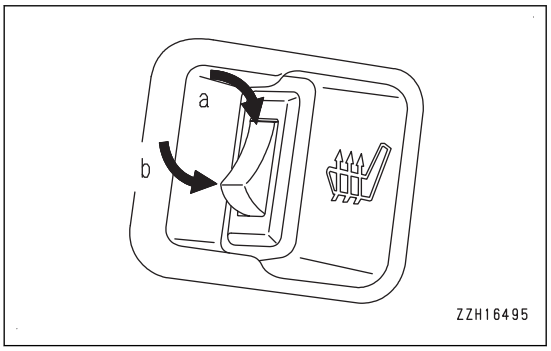
METHOD FOR HEATING SEAT

Heated seat (if equipped)

⚠ CAUTION

- **Do not use it in the following cases to prevent low temperature burn or excessive cooling.**
  - **When a person's ability to perceive the temperature is decreased**
  - **When a person's ability to feel pain is decreased**
  - **When a person has a delicate skin**
- **Do not put a heavy object on the seat cushion. Do not stick the seat cushion with needles or nails.**
- **When you use it, do not put objects which retain heat such as blankets or floor cushions on the seat. The seat heater will overheat and it can cause burn injury or failure.**
- **Do not use it while the seat is wet. If water or beverage is spilled, immediately wipe it off with a dry cloth and dry it well. Do not use the seat heater to dry the seat.**





Turn the seat heater switch ON.
(a): OFF position

(b): ON position

The seat cushion and backrest become warm.

METHOD FOR REMOVING AND INSTALLING HEADREST

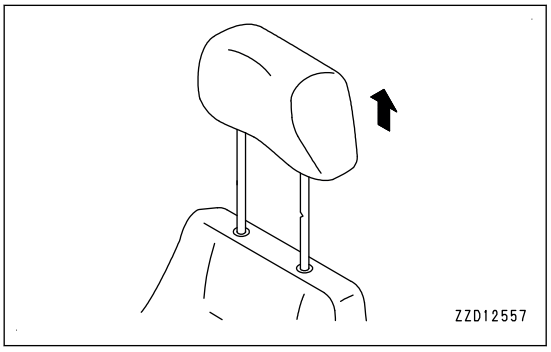
METHOD FOR REMOVING HEADREST

When the headrest is not necessary, remove it according to the following procedure.

Pull up the headrest 80 mm {3.1 in} or more.
The headrest is pulled out.

NOTICE

When removing the headrest, operate it so that the shaft of the headrest becomes straight. If it is forcibly twisted, the installation part may be broken.



METHOD FOR INSTALLING HEADREST

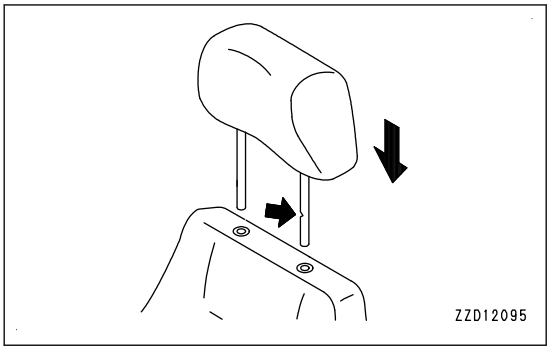
1. Insert the headrest into the hole at the seat back.

   When installing, turn the notch of the shaft toward the front of the machine.

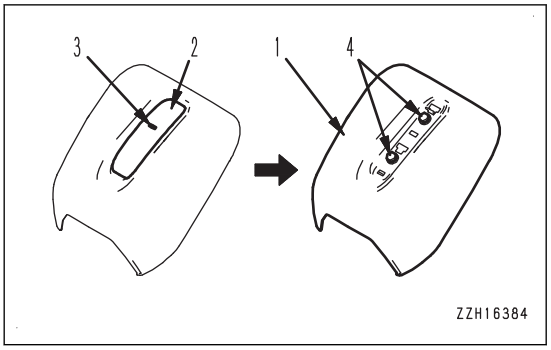
2. Push down the headrest.

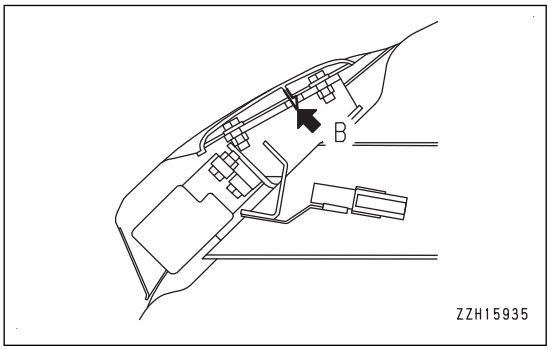
   NOTICE

   When installing the headrest, operate it so that the shaft of the headrest becomes straight. If it is forcibly twisted, the installation part may be broken.



1. Insert a flat-head screwdriver or the like into hole (3) of cover (2) and push inside tooth (B) to remove the cover.
2. Remove bolts (4) (2 places).

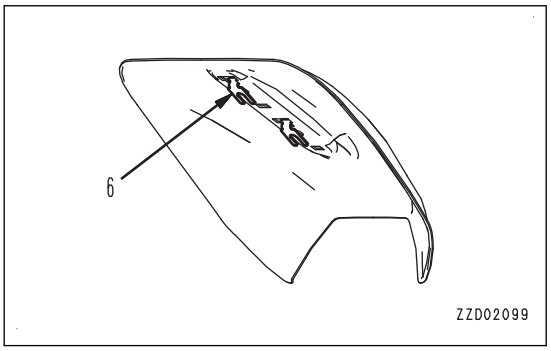




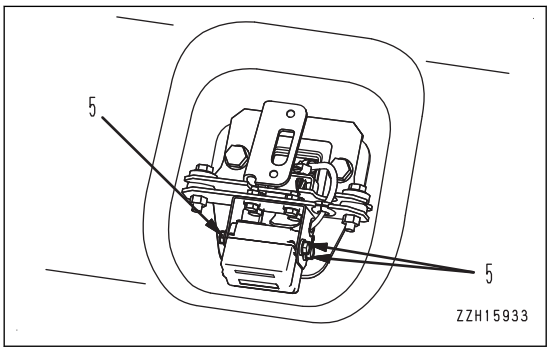
3. Remove cover (1).

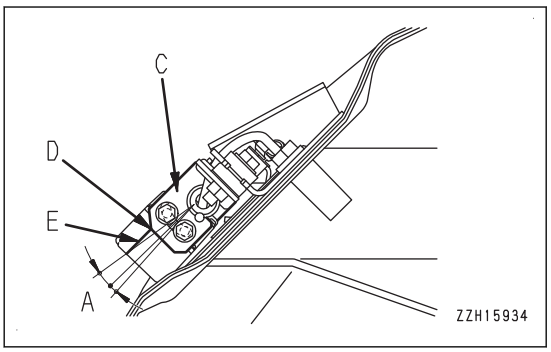
REMARK

- Shim (6) may be inserted in the cover mounting bolts to adjust the clearance in the rim of the cover. When removing cover (1), record the places and quantities of the shims. When installing the cover, insert the shims according to the record.
- Take care of shim (6), since it comes off together with cover (1).



4. Loosen camera mounting bolts (5) (3 places) and adjust camera mounting angle (A) so that corner (D) of mounting bracket (C) is aligned with horizontal line (E).





5. After adjusting, tighten bolts (5).

METHOD FOR ENGINE WARM-UP OPERATION

NOTICE

- **Do not accelerate the engine abruptly until it is warmed up.**
- **Do not run the engine at low idle or high idle under no load for more than 20 minutes. This will have an adverse effect on the environment and also on the internal structure of the engine. If it is necessary to run the engine at idle for 20 minutes or more, apply a load from time to time or run at a medium speed.**

This machine is equipped with an automatic engine warm-up system, so if the engine coolant temperature is 30 °C {86 °F} or less 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 higher than the normal speed at low idle.

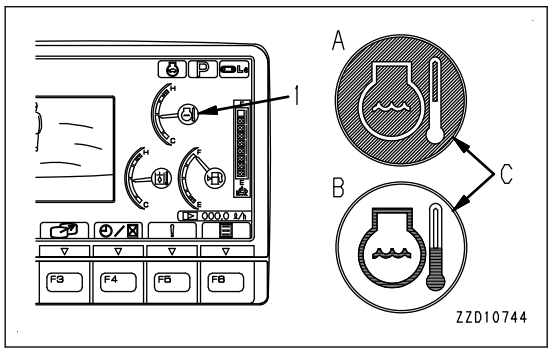
If the engine coolant temperature goes 30 °C {86 °F} or more or if the warm-up operation is continued for more than 10 minutes, the automatic warm-up operation is canceled and the engine speed drops to the normal speed at low idle.

Do not start operating the machine immediately. First, perform the following operations and checks.

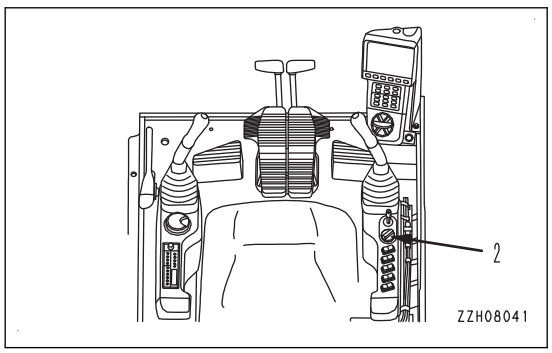
1. Check that engine coolant temperature caution lamp (1) displays the proper temperature.

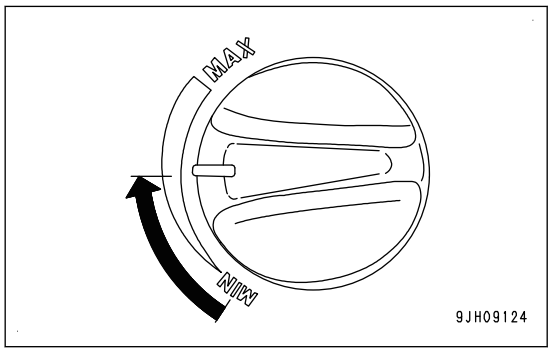
   If it displays low temperature, perform additional warm-up of the engine according to step 2 until it displays the proper temperature.

   - Display (A) when temperature is proper: Caution lamp background (C) is blue.
   - Display (B) when temperature is low: Caution lamp background (C) is white.



2. Turn fuel control dial (2) to the middle between Low idle (MIN) and High idle (MAX) to run the engine at a medium speed.





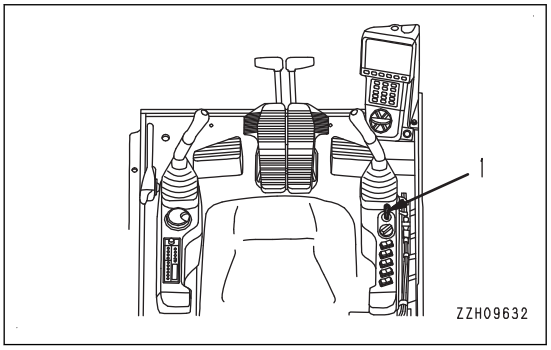
METHOD FOR STOPPING ENGINE

⚠ WARNING

Keep away from the exhaust pipe immediately after stopping the engine.

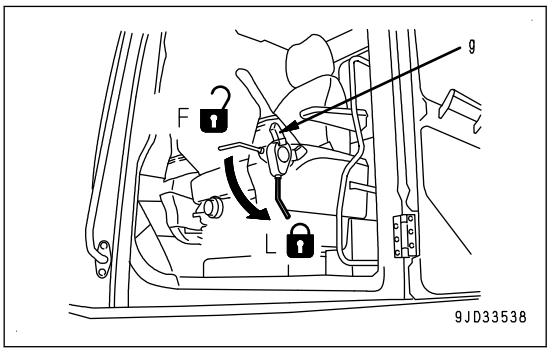
NOTICE

If the engine is stopped abruptly, the service lives of component parts of the engine may be considerably reduced. Do not stop the engine abruptly except in an emergency.
Do not stop the engine abruptly except the case in an emergency. If the engine is 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.
If the engine is stopped during the aftertreatment devices regeneration, the components may be damaged.
When stopping the engine, stop the aftertreatment devices regeneration first, and run the engine at low idle for approximately 5 minutes. Then stop the engine.

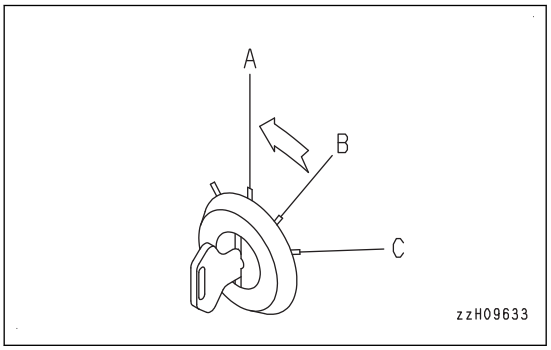


Stop the engine according to the following procedure.

1. Operate the control grip (g) of the lock lever to set it securely to LOCK position (L).
2. Run the engine at low idle for approximately 5 minutes to cool down gradually.



3. Turn the starting switch to OFF position (A), and stop the engine.



4. Remove the key from starting switch (1).

HANDLE WORKING MODE

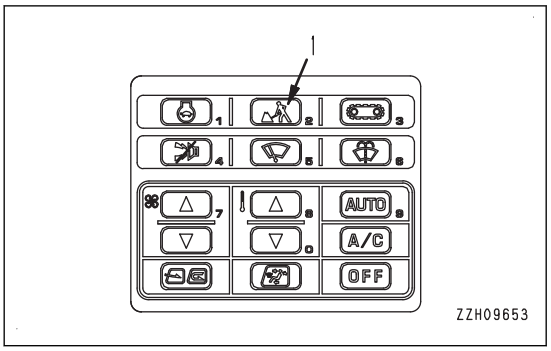
METHOD FOR SELECTING WORKING MODE

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

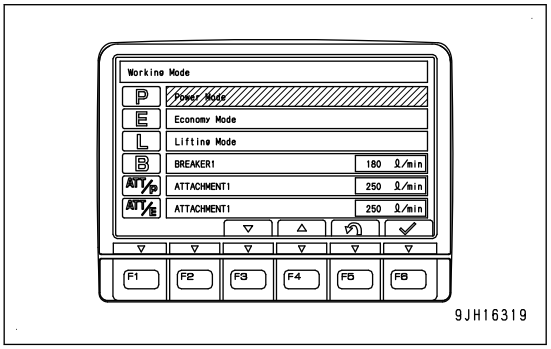
Use the following procedure to select the most efficient working mode.

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 selector 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 (production conscious operation)
E mode	Normal digging or loading operations (fuel consumption conscious operation)
L mode	Positioning operations (fine control operations)
B mode	Breaker operations
ATT/P mode	Operations of double-acting attachment on crusher (production conscious operation)
ATT/E mode	Operations of double-acting attachment on crusher (fuel consumption conscious operation)



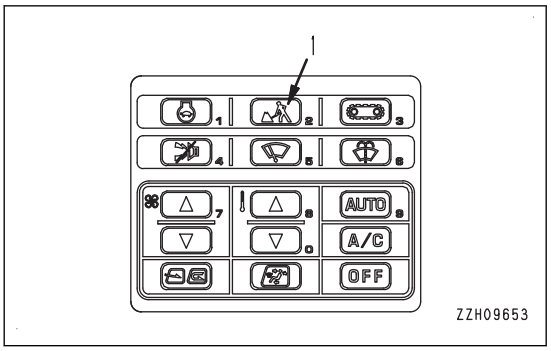
NOTICE

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

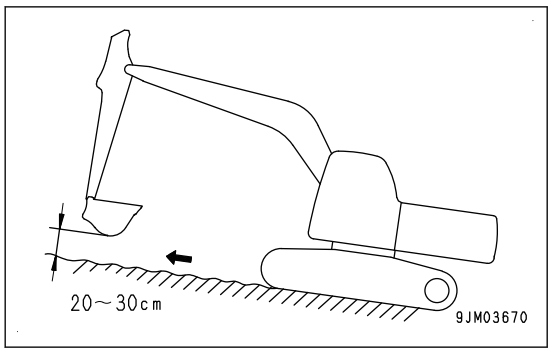
Set the working mode according to the following procedure.

1. Press working mode selector switch (1).

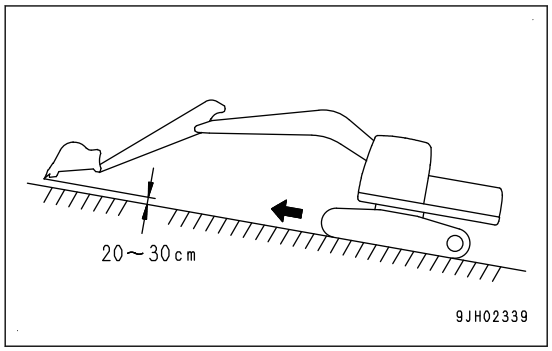
   The screen changes to the working mode selection screen.



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



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 {7.9 to 11.8 in} above the ground, and travel at low speed.



Braking on downhill slope

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

If engine stops on slope

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

Pay attention to DEF level

Before working on a slope or traveling on a rough ground, check DEF tank and add sufficient amount of DEF as necessary. If the remaining DEF level becomes low, sudden drop of its level or abnormality in urea SCR system may be detected. If DEF level caution lamp or DEF system caution lamp lights up in red, move the machine to a level place immediately and add DEF.

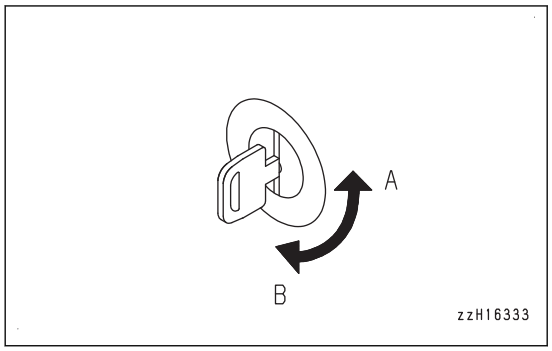
PROCEDURE FOR CLOSING CAP WITH LOCK

1. Screw in the cap until it becomes tight, then insert the key into the key slot.
2. Turn the starting switch key to CLOSE position (B), then remove the key.

METHOD FOR OPENING AND CLOSING COVER WITH LOCK

METHOD FOR OPENING COVER WITH LOCK

1. Insert the key into the key slot.
2. Turn the key counterclockwise and open the cover by pulling the cover handle.
   Position (A): OPEN
   Position (B): LOCK



METHOD FOR LOCKING COVER WITH LOCK

1. Close the cover and insert the key into the key slot.
2. Turn the starting switch key to CLOSE position (B), then remove the key.

METHOD FOR OPENING AND CLOSING ENGINE HOOD

⚠ CAUTION

- **When opening or closing the engine hood, place the machine on a level ground, lower the work equipment to the ground, stop the engine, then perform the operation.**
- **When opening the engine hood, do not release the handle until the stay is set in the lock position securely.**
- **When closing the engine hood, hold the handle securely since the engine hood may move down because of its weight.**
  If the engine hood is not locked, it may close suddenly because of wind, etc.
- **Immediately after the engine is stopped, the engine hood and aftertreatment devices are still hot. Accordingly wait until they have cooled down before opening or closing the engine hood.**

HANDLE AIR CONDITIONER

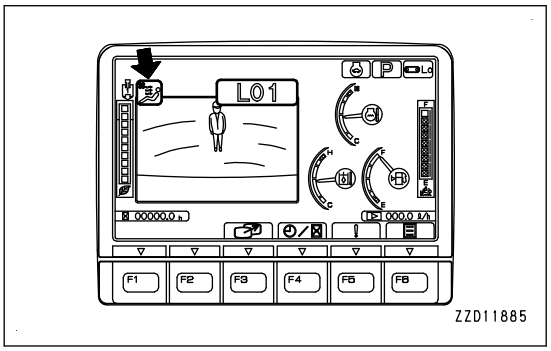
NOTICE

- **When performing running-in of the air conditioner, always start with the engine running at low speed. Never start the air conditioner when the engine is running at high speed. It will cause failure of the air conditioner.**
- **If water gets to the control panel, sunlight sensor, and filter, it can cause failure. Do not let water get on them. Also, do not let open flame be near them.**
- **For the auto function of the air conditioner to work properly, always keep the sunlight sensor clean. Do not leave anything around the sunlight sensor that may interfere with its sensor function.**

When the air conditioner is not used every day, to prevent loss of the film of oil at various parts, run the air conditioner with the engine at low speed from time to time and perform cooling or dry heating for several minutes.

When the temperature inside the cab is low, the air conditioner may not work. In this case, circulate recirculation air to warm the inside of the cab. After that, turn the air conditioner switch ON, the air conditioner will work.

If any abnormality is detected in any equipment or sensor used on the air conditioner, the air conditioner system caution lamp lights up on the monitor screen. If the air conditioner system caution lamp lights up, ask your Komatsu distributor for inspection and repair.



Ventilation

- When running the air conditioner for a long time, turn the lever to FRESH position once an hour to perform ventilation and cooling.
- If you smoke when the air conditioner is on, the smoke may hurt your eyes. In such case, open the window and turn the lever to FRESH for a while for ventilation and driving smoke out.

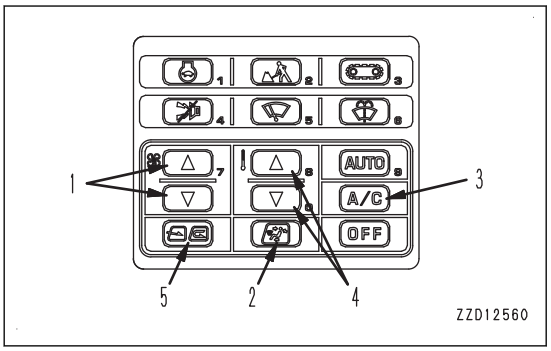
Temperature control

For reasons of health, it is said that the optimum setting for cooling is the temperature when it feels slightly cool (5 to 6 °C {9 to 10.8 °F} lower than the ambient temperature) when you enter the cab.

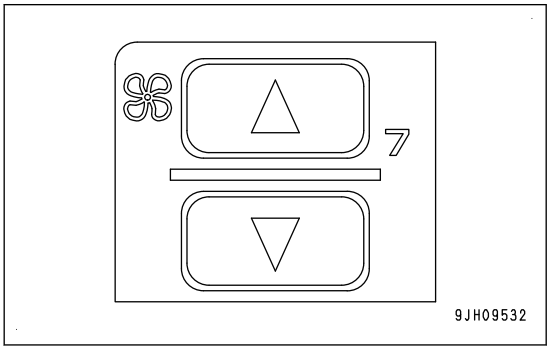
Be careful to select the appropriate temperature.

METHOD FOR OPERATING WITH COLD AIR TO FACE AND WARM AIR TO FEET

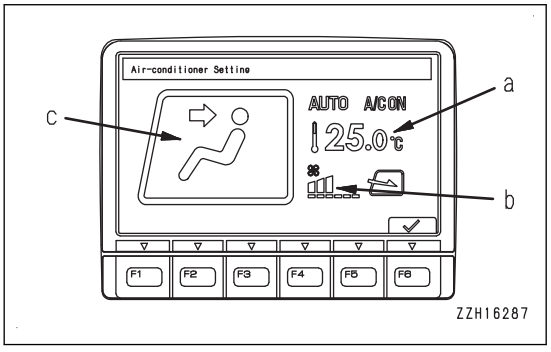
To operate with cold air blowing to the face and warm air blowing to the feet, set as follows.



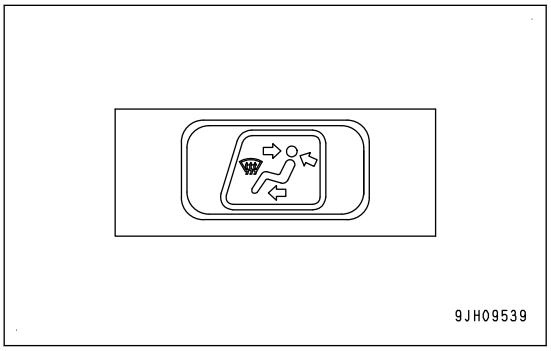
1. Press fan switch (1) and adjust the air flow.

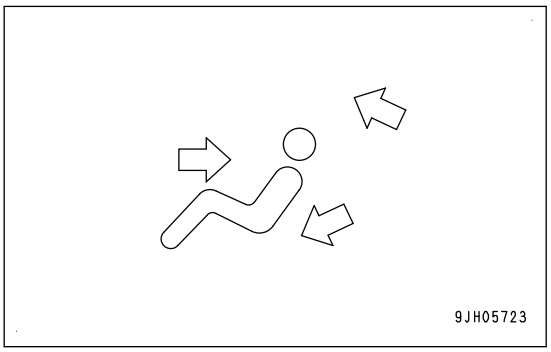


When doing this, check that temperature setting (a) and air flow (b) are displayed on the monitor.



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



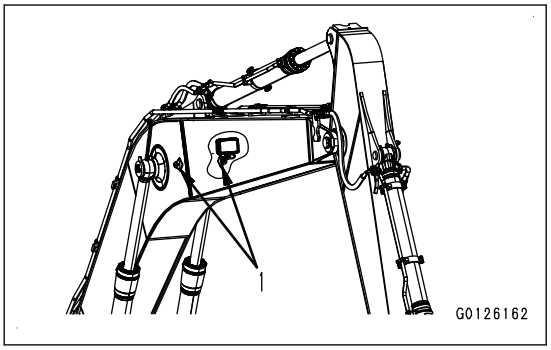


HANDLE ANCHOR POINT FOR TIE-OFF

You can install the personal fall-arrest equipment to the anchor point for tie-off (1).

Use it when you do the maintenance of the arm cylinder hoses and such which are on the position higher than the anchor point for tie-off (1).

Do not set other ones than the hook of the personal fall-arrest equipment to the anchor point for tie-off.



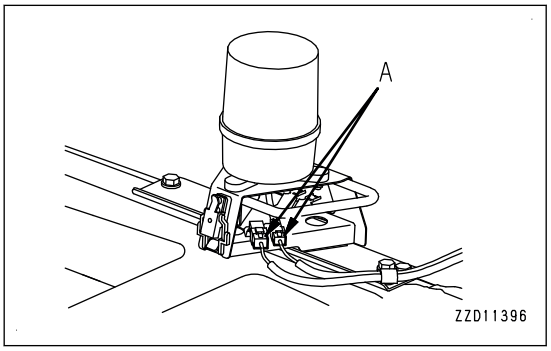
METHOD FOR REMOVING AND INSTALLING REVOLVING LAMP

METHOD FOR REMOVING REVOLVING LAMP

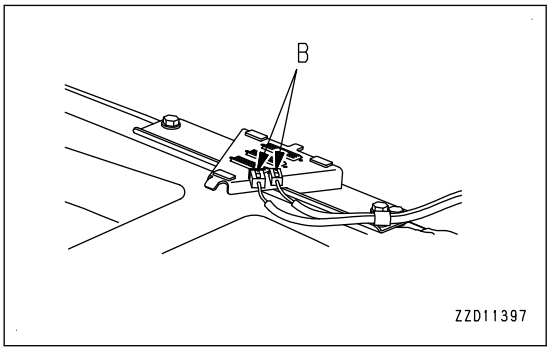
Remove the revolving lamp according to the following procedure.

1. Remove connector (A) of the revolving lamp.

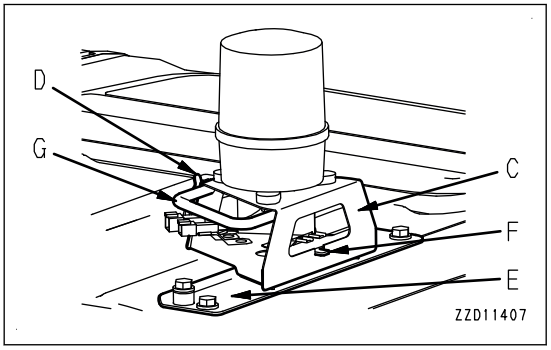
   When removing the connector, pull it out while pressing the claw in the center of the connector.

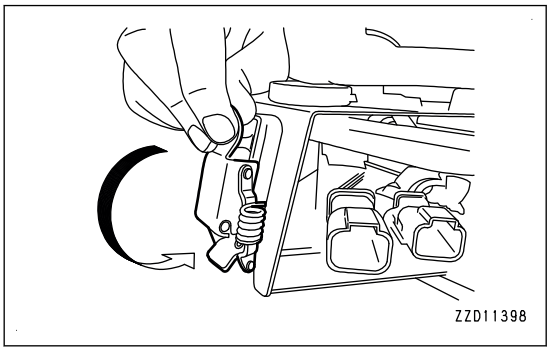


2. Place the connector for wiring (B) in a clean vinyl bag or the like to protect it from water, etc. during transportation and fix it to the operator's cab with sealing tape or the like.



3. Tilt down lock (D) of revolving lamp bracket (C).





STARTING MACHINE AFTER LONG-TERM STORAGE

NOTICE

If the machine has been stored without performing the monthly rust-prevention operation, consult your Komatsu distributor before using it.

When using the machine after long-term storage, perform the following items before using it.

- Wipe off the grease from the hydraulic cylinder rods.
- Add oil and grease at all lubrication points.
- When the machine is stored for a long period, moisture in the air will mix with the oil. Check the oil before and after starting the engine. If there is water in the oil, change all the oil.
- Insert the battery disconnect switch key and turn it to ON position.
- If the machine is stored for a long period with the battery disconnect switch OFF or the battery terminal disconnected, the clock information and radio tuning information may be lost. In this case, set again. For detail, see “CLOCK ADJUSTMENT” and “HANDLE RADIO”.

If the machine has been stored for more than 2 months, perform the following procedure.

- Before starting the engine, replace DEF filter and fill up DEF tank according to the procedure in “METHOD FOR REPLACING DEF FILTER”.
- Start the engine and check correctly.
  If SCR system has any abnormality, warning is displayed on the monitor screen and the audible alert sounds. If SCR system has any abnormality, stop the engine, and then start it again.
  If SCR system still has abnormality after the engine is restarted, contact your Komatsu distributor.
- If DEF is kept in DEF tank for more than 1 year, ask your Komatsu distributor for replacement.
  Dispose of drained DEF according to the local regulations and rules.
  Aged DEF may have smell of ammonia. Replace DEF in a well-ventilated place and take care not to inhale its vapor.

Problem	Main causes	Remedy
Engine does not start easily at low temperature, or it is not felt warm when you touch the external part of the electric heater by hand immediately after it is preheated.	Defective wiring	Check, repair. (*)
	Open circuit in the electric heater	Replace. (*)
	Defective heater relay	Replace. (*)
	Fuse of heater is blown.	Replace. (*)
Engine does not start. (“L04” lights up on monitor.)	Data in the controller is damaged.	Check, repair. (*)
	Other system has problems.	Check, repair. (*)

PHENOMENA AND ACTIONS FOR CHASSIS

- For the remedies indicated with (*) in the remedy column, always contact your Komatsu distributor.
- In cases of problems or causes which are not listed below, ask your Komatsu distributor for repairs.

Problem	Main causes	Remedy
Speed of travel, swing, boom, arm, bucket is slow	Lack of hydraulic oil	Set oil to specified level. See CHECKS BEFORE STARTING.
Pump generates abnormal noise. (sucking in air)	Clogged element in hydraulic tank strainer, lack of oil	Clean. See EVERY 2000 HOURS MAINTENANCE.
Excessive rise in hydraulic oil temperature	Loose fan belt	Check fan belt tension and replace. (*)
	Dirty oil cooler	Clean. See EVERY 500 HOURS MAINTENANCE.
	Lack of hydraulic oil	Set oil to specified level. See CHECKS BEFORE STARTING.
Track comes off.	Track too loose	Adjust track tension, see WHEN REQUIRED.
Abnormal wear of sprocket	Track too loose	Adjust track tension, see WHEN REQUIRED.
Boom rises slowly or does not rise.	Lack of hydraulic oil	Set oil to specified level. See CHECKS BEFORE STARTING.
Does not swing.	Swing lock switch still applied	Turn swing lock switch OFF.
	Swing brake system error	Check, adjust. (*)
		When move of machine to safe place is required, turn the swing parking brake cancel switch to ON position temporarily.

FUEL

- To prevent water formation inside the fuel tank because of condensation caused by the moisture in the air, fill the tank with fuel after the day's work is completed.
- The fuel pump is a precision instrument. If fuel which contains water or dirt is used, it cannot work correctly.
- Be very careful not to let foreign material get in when you store or add fuel.
- Be sure to use the fuel that agrees with the temperature as in the Operation and Maintenance Manual.
  - If the fuel is used at the temperatures lower than the specified temperature (particularly at temperatures below -15 °C{5 °F}), the fuel will solidify.
  - If the fuel is used at temperature higher than the operating temperature, the viscosity will decrease, and it can result in failures such as a drop of output.
- Before you start the engine, or after 10 minutes of refuel, drain the sediment and water from the fuel tank.
- When you run out of fuel or replace the filters, it is necessary to bleed air from the circuit.
- If foreign material is mixed in the fuel tank, clean the tank and fuel system.

NOTICE

Be sure to use the ultra-low sulfur diesel fuel.
To get good fuel consumption properties and exhaust gas properties, the engine mounted on this machine uses an electronically controlled high-pressure fuel injection device and emission gas control system (KDPF). The high-pressure fuel injection device requires high precision parts and lubrication. If low viscosity fuel with low lubrication quality is used, its durability can decrease significantly. Also, if fuel with high sulfur content is used, it can deteriorate the engine parts and KDPF catalyzer, and can cause failures, decrease of the service life, and degradation in performance.

BIO-FUEL

The biofuel is a fuel that is formed in a transesterification reaction of vegetable oil, animal fat, and edible oil.

The ASTM D975 diesel fuel can contain 5 % or less of biofuel.

Use the biofuel conforming to ASTM D7467 if its mixing ratio is between 6% to 20%.

The EN590 diesel fuel can contain 7 % or less of biofuel.

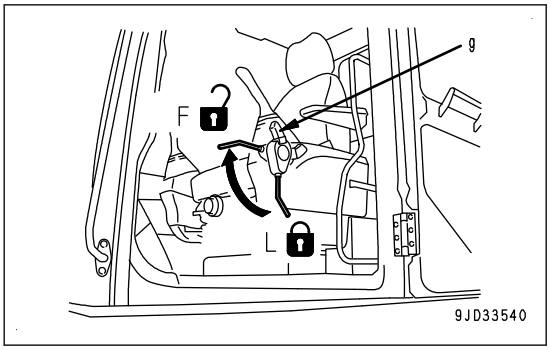
When you use 100% biofuel for mixing, it needs to conform to ASTM D6751 or EN14214.

In the United States, purchase the biofuel from the dealer certified by BQ-9000.

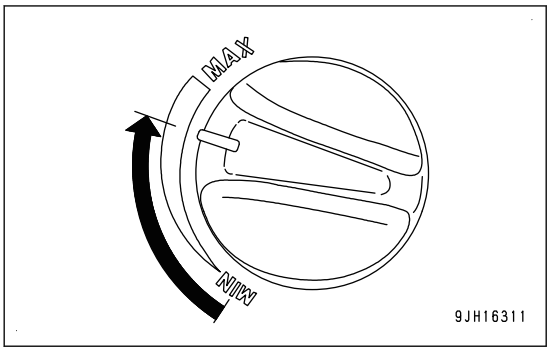
In the EU, purchase the biofuel from the member companies of European Biodiesel Board (EBB).

In other countries or regions, purchase the biofuel from the dealer that guarantees the same quality as BQ-9000 or EBB.

12. Operate the operating portion (g) of the lock lever slowly and securely to set it to FREE position (F), then raise the bucket from the ground.



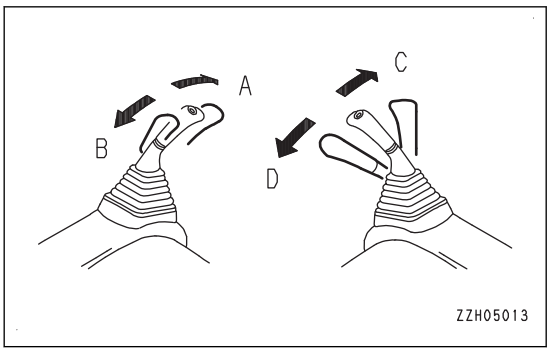
13. Turn the fuel control dial to a point of 2/3 between Low idle (MIN) position and High idle (MAX) position.



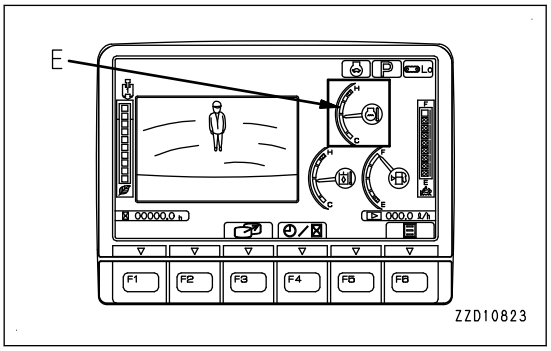
NOTICE

When the work equipment is operated, take care that it does not interfere with the machine or ground.

14. Operate the work equipment control levers according to the following procedure.
    1) Move the R.H. work equipment control lever slowly in the direction to the bucket CURL side (D). Operate the lever to the end of its travel and hold it in position for 30 seconds.
    2) Move the R.H. work equipment control lever slowly in the direction to the bucket DUMP side (C). Operate the lever to the end of its travel and hold it in position for 30 seconds.
    3) Move the L.H. work equipment control lever slowly in the direction to the arm IN side (B). Operate the lever to the end of its travel and hold it in position for 30 seconds.
    4) Move the L.H. work equipment control lever slowly in the direction to the arm OUT side (A). Operate the lever to the end of its travel and hold it in position for 30 seconds.



When the operations of steps 1) to 4) are repeated, the pointer of the engine coolant temperature gauge rises. The pointer of the engine coolant temperature gauge moves down temporarily around the center of scale (E). Then, continue the operation for approximately 10 minutes.



METHOD FOR CHECKING AND MAINTENANCE AIR CONDITIONER

SERVICE ITEM

Some maintenance items of the air conditioner are to be inspected periodically and the others are to be inspected when required. Check and maintenance the air conditioner according to the following list to use it effectively.

Check, maintenance item	Content of check, maintenance	Guideline for maintenance interval
Refrigerant (gas)	Charge amount	Twice a year (spring, autumn)
Air conditioner condenser	Clogged fins	Every 500 hours “METHOD FOR CHECKING AND CLEANING RADIATOR FINS, OIL COOLER FINS, AFTERCOOLER FINS, FUEL COOLER FINS, AND AIR CONDITIONER CONDENSER FINS”
Compressor	Operating condition	Every 4000 hours
V-belt	Damage, tension	Every 250 hours “METHOD FOR CHECKING AND ADJUSTING AIR CONDITIONER COMPRESSOR BELT TENSION”
Blower motor, fan	Operating condition (Check for unusual noise)	When required
Control mechanism	Operating condition (Check that function is normal)	When required
Piping mounts	Mounting condition, looseness at tightening or connecting portions, leakage of gas, damage	When required

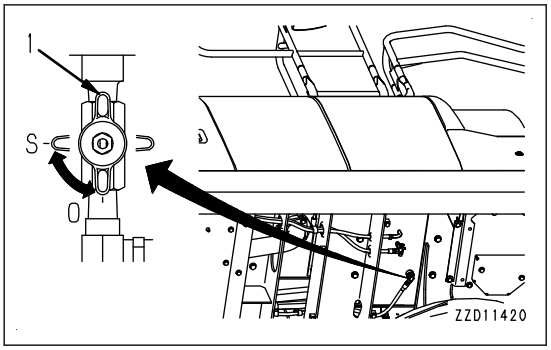
Even during the off-season, operate the air conditioner for 3 to 5 minutes once a month to maintain the oil film at all parts of the compressor.

CHECKS BEFORE STARTING

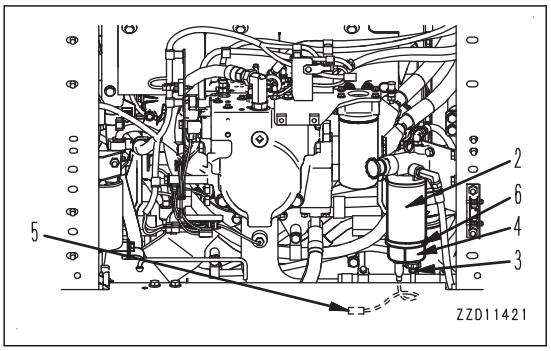
For the following items, see OPERATION, “METHOD FOR CHECKING BEFORE STARTING”.

- Method for draining water and sediment from fuel tank
- Method for checking water separator, draining water and sediment
- Method for checking oil level in hydraulic tank, adding oil
- Method for checking coolant level, adding coolant
- Method for checking oil level in engine oil pan, adding oil
- Method for checking electric wiring
- Method for checking fuel level, adding fuel
- Method for checking DEF level, adding DEF
- Method for checking working lamp
- Method for checking horn

1. Turn valve (1) at the bottom of the fuel tank to CLOSE position (S).
2. Open the door on the right side of the machine.



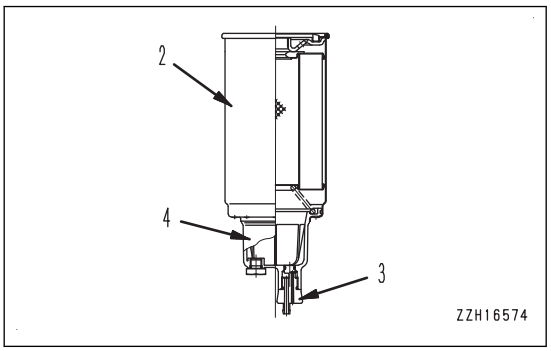
3. Place a container under fuel prefilter cartridge (2) to receive the fuel.
4. Loosen drain valve (3) and drain water and sediments from transparent cup (4), and also drain all the fuel from filter cartridge (2).
5. Remove connector (5). Wrap the removed connector with a vinyl bag to prevent fuel, oil or water from being splashed on it.



6. Turn transparent cup (4) counterclockwise to remove it by using the filter wrench. This transparent cup is used again.
7. Turn filter cartridge (2) counterclockwise by using the filter wrench, and remove it.
8. Install currently removed transparent cup (4) to the bottom of the new filter cartridge.

   At this time, be sure to replace O-ring (6) with a new one.
9. Make sure that drain valve (3), which is provided in the lower part of transparent cup (4) of the new filter cartridge, is firmly tightened.

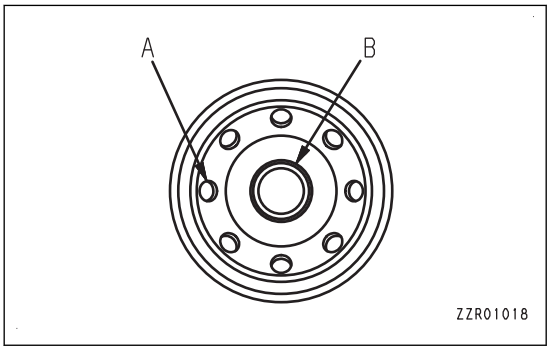
   Tightening torque: 2.5 to 3.4Nm {0.25 to 0.35kgfm, 1.81 to 2.53lbft}



10. Clean the filter head, fill the new filter cartridge with clean fuel, thinly apply oil to the packing surface, then install it to the filter head.

NOTICE

- **When filling the filter cartridge with fuel, do not remove cap (B). Always fill with fuel from 8 small holes (A) on the dirty side.**
- **After filling with fuel, remove cap (B) and install the fuel filter.**
- **Always fill with clean fuel. Be careful not to let any dirt or dust get into the fuel. In particular, center portion is the clean side, so do not remove cap (B) when filling with fuel. Be careful not to let dirt or dust get into the center portion on the clean side.**



11. When installing the cartridge, tighten it until the packing surface contacts the sealing surface of the filter head, then tighten it 1/4 to 1/2 turn.

REMARK

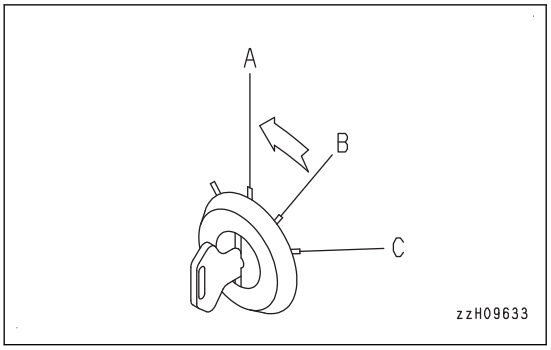
If the filter cartridge is fastened too much, the packing will be damaged and this leads to leakage of fuel. If the filter cartridge is too loose, fuel will also leak from the packing. Therefore, be sure to observe the tightening angle.
When tightening with a filter wrench, be extremely careful not to dent or damage the filter.

6. Clean the removed parts by using cleaning oil.
7. Install the new element in the place where old element (5) was installed.
8. Place strainer (4), valve (3) and spring (2) onto the element.
9. Set cover (1) in position, press it down by hand, and install the cover with the mounting bolts.
10. Install the oil filler cap.
11. Start the engine and run it at low idle for 10 minutes to bleed air.
12. Stop the engine.

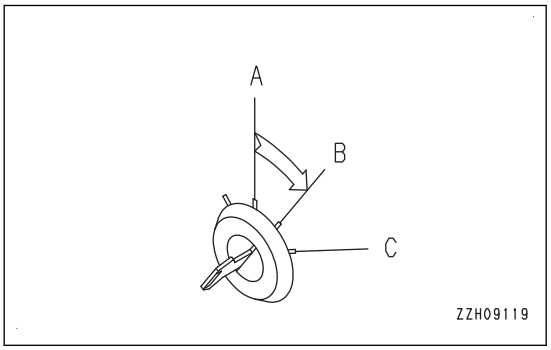
    REMARK

    Leave the engine stopped for at least 5 minutes, and then start it. This will remove the air bubbles in the oil inside the tank.
13. Check that there is no leakage of oil and wipe off any oil that is spilled.

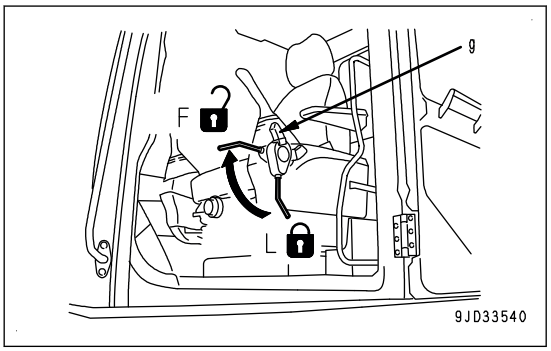
1) Keep the work equipment at the maximum reach posture, turn the starting switch to OFF position (A), and stop the engine.



2) Turn the starting switch to ON position (B).

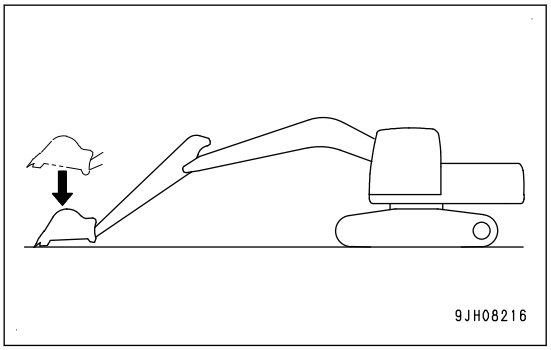


3) Operate the operating portion (g) of the lock lever to set it securely to FREE position (F) and then operate the work equipment control levers fully in LOWER direction and check that the work equipment is lowered to the ground.



If the work equipment goes down under its own weight and contacts the ground, the accumulator is normal.

If the work equipment does not go down or stops in midway, the charged pressure of the gas in the accumulator for the hydraulic circuit has probably dropped. Ask your Komatsu distributor for inspection.



This completes the inspection. After completion of the inspection, set the lock lever to LOCK position and turn the starting switch to OFF position.

METHOD FOR REPLACING ACCUMULATOR (FOR CONTROL CIRCUIT)

⚠ WARNING

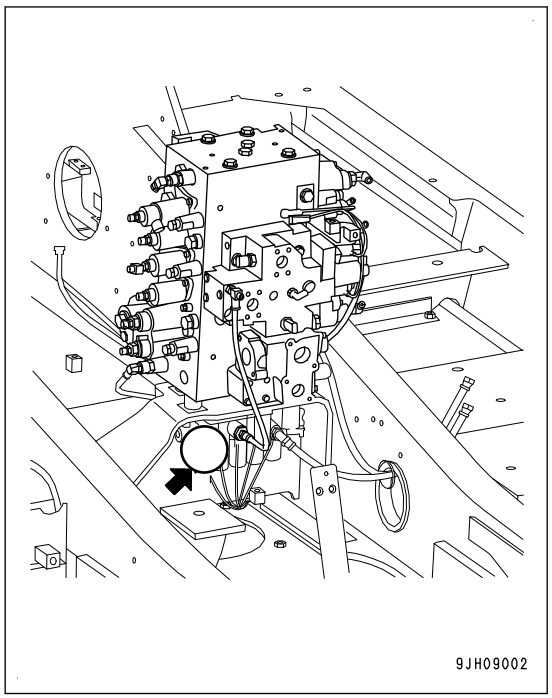
The accumulator is charged with high-pressure nitrogen gas, so improper operation may cause an explosion, which will lead to serious injury or death. For handling, always observe the following.

- **The pressure in the hydraulic circuit cannot be completely removed. When removing the hydraulic equipment, do not stand in the direction that the oil spurts out when performing the operation. In addition, loosen the bolts slowly when performing the work.**
- **Do not disassemble.**
- **Do not bring open flame close to it or do not dispose of it in fire.**
- **Do not perform drilling, welding or flame-cutting.**
- **Do not hit or roll it, or subject it to any impact.**
- **When disposing of it, the gas must be released. Ask your Komatsu distributor to have this work performed.**

NOTICE

If the nitrogen gas charge pressure in the accumulator is low and operations are continued, it becomes impossible to release the remaining pressure inside the hydraulic circuit if a failure occurs on the machine.

Replace the accumulator every 2 years or every 4000 hours, whichever comes sooner. Ask your Komatsu distributor for replacement.
The accumulator is installed to the position shown in the figure.



METHOD FOR CHECKING AIR CONDITIONER COMPRESSOR OPERATION

Check the following 2 items.

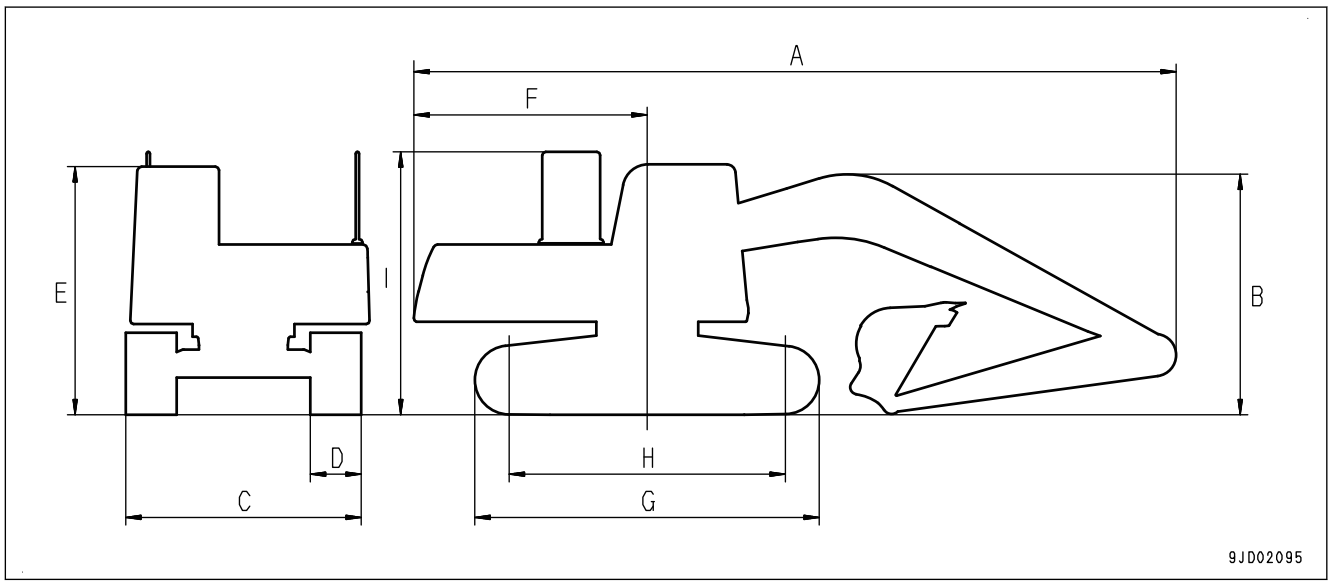
1) When the air conditioner switch is turned ON-OFF, do the air conditioner compressor and the magnet clutch also turn ON-OFF?
2) Is any abnormal noise generated by the magnet clutch or the air conditioner compressor body?

   If any abnormality is found, ask your Komatsu distributor to have the parts disassembled, repaired, or replaced.

SPECIFICATIONS

SPECIFICATIONS: PC240LC-11

	Item		Unit	PC240LC-11
	Operating weight		kg {lb}	24900 {54905}
	Bucket capacity		m^3 {cu_yd}	1.0 {1.3}
	Engine model		-	Komatsu SAA6D107E-3 diesel engine
	Rated horse-power	SAE J1995 (Gross)	kW/min^{-1} {HP/rpm}	141/2000 {189/2000}
		ISO 9249/SAE J1349 (Net)		132/2000 {177/2000}
A	Overall length		mm {ft in}	9965 {32' 8"}
B	Overall height (work equipment)		mm {ft in}	3185 {10' 5"}
C	Overall width		mm {ft in}	3280 {10' 9"}
D	Shoe width		mm {ft in}	700 {2' 4"}
E	Cab height		mm {ft in}	3055 {10' 0"}
F	Tail swing radius		mm {ft in}	3020 {9' 11"}
G	Overall length of track		mm {ft in}	4640 {15' 3"}
H	Distance between tumbler centers		mm {ft in}	3845 {12' 7"}
I	Height of handrail		mm {ft in}	3150 {10' 4"}
	Min. ground clearance		mm {ft in}	440 {1' 5"}
	Travel speed (Lo/Mi/Hi)		km/h {MPH}	3.0/4.1/5.5 {1.9/2.5/3.4}
	Swing speed		min^{-1} {rpm}	11.7 {11.7}

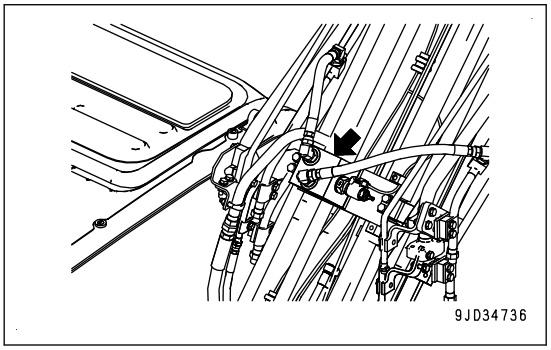


ATTACHMENT 2 VARIABLE RELIEF PRESSURE VALVE

(if equipped)

When the attachment control function by attachment 2 is installed to the machine, the attachment set pressure which is selected with the machine monitor will be outputted.

The pressure automatically changes by the attachment to be selected.



CONTROL PEDAL

⚠ WARNING

If you perform operations with your foot on the pedal, the attachment may suddenly move if you depress the pedal by mistake, and this may lead to serious personal injury or death. Lock the pedal with the lock pin when pedal operation is not necessary.

Control pedal is used to control the attachment.

When the front, center (neutral), and rear of the pedal are depressed, the movement of the attachment is as follows.

Hydraulic breaker

Front of pedal (A)

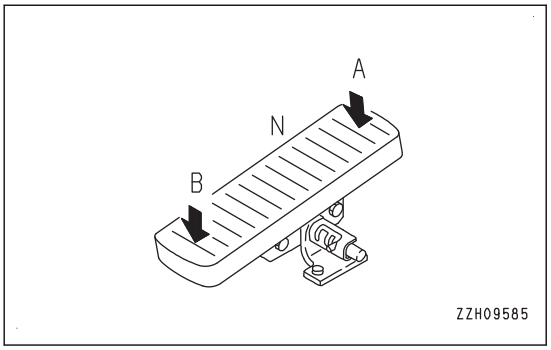
Actuated

Center of pedal (N)

Stop

Rear of pedal (B)

Stop



REMARK

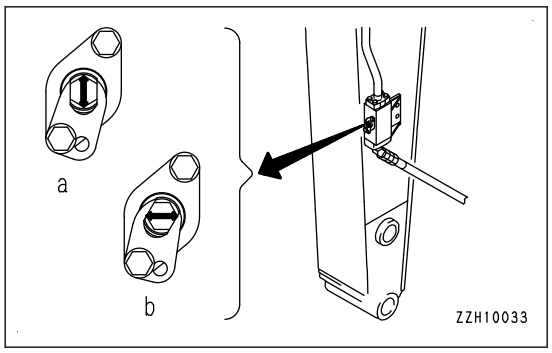
Regarding other attachments, discuss with the attachment manufacturer how the pedal and attachment operate at the time of installation before using it.
Before start using the attachment, make sure that the attachment operates normally.

7. Set the rotor of the stop valve installed to the piping for the inlet port and the outlet port on the side face of the arm to LOCK position (b).

   (a) FREE: Hydraulic oil flows (direction of arrow is parallel to longitudinal direction of arm)

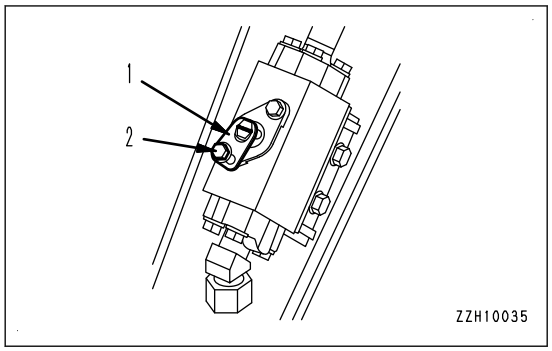
   (b) LOCK: Hydraulic oil does not flow (direction of arrow is at right angle to longitudinal direction of arm)

   • When setting FREE or LOCK position of the stop valve rotor, remove bolt (2) of the rotor, tip over plate (1), then turn the rotor. After setting, install plate (1) again with bolt (2).



8. Remove the hoses on the attachment side. Install the plugs to outlets (2 places).

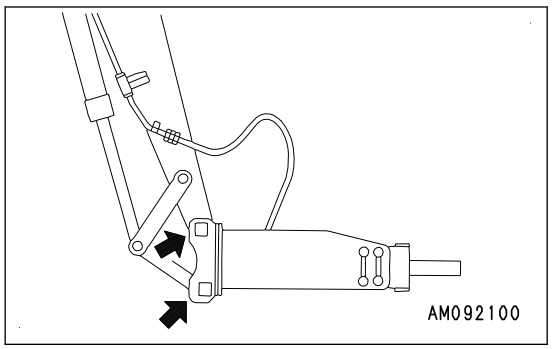
   The plugs are used to prevent the attachment from making incorrect operation caused by mixing in of foreign matter. After the plugs are correctly installed, store the attachment.



9. Pull out the mounting pins (2 places), remove the attachment, then install the bucket.

   For the installation procedure of the bucket, see “METHOD FOR REPLACING AND INVERTING BUCKET”.

10. Check the oil level in the hydraulic tank.



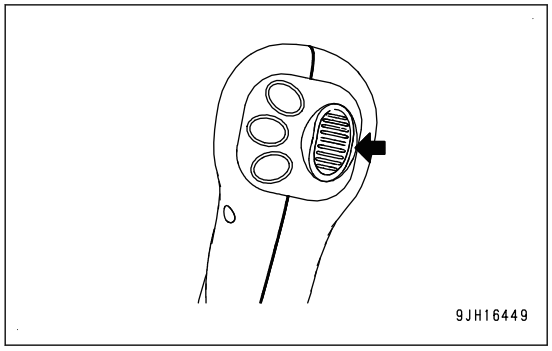
METHOD FOR OPERATING ATTACHMENT 2 (CLAMSHELL ROTATION AND CRUSHER ROTATION ETC)

(if equipped)

REMARK

Ask your Komatsu distributor to have the monitor setting changed so that two attachments are available if the attachment 2 system is to be equipped as a field kit.

Operate the attachment 2 proportional switch on L.H. lever.



Rolling up the switch generates the attachment movement in one direction. Rolling down the switch generates the attachment movement in an opposite direction.

Operate the roller slightly, and the attachment moves slightly. Operate the roller fully, and the attachment moves quickly.

If the working mode pilot monitor does not show ATT/P or ATT/E for the attachment mode, follow the instructions by referring to “CHECK POINTS WHEN USING GENERAL ATTACHMENT SUCH AS CRUSHER ETC”.

BUCKET TEETH SELECTION

Depending on the working conditions, there is a danger that an adapter and tooth may be lost. Select either one from the vertical pin type of tooth or horizontal pin type of tooth that is suitable for the purpose.

While the standard teeth of both vertical and horizontal pin types may be used widely, the following kinds of teeth are recommended depending on the working conditions.

METHOD FOR SELECTING TEETH

VERTICAL PIN TYPE TOOTH

General digging: Digging and loading normal soil, such as sand, gravel, clay, etc.

Light-duty digging: Digging and loading dry and loose sandy soil, or muddy soil.

Loading: Loading of dry and loose earth.

HORIZONTAL PIN TYPE TOOTH

Heavy-duty digging: Digging and hammering work on hard soil, soil with rocks, scraping or other heavy-duty work

- The heavy-duty bucket is of a horizontal pin type and as such, use it for heavy duty-digging.

LONG-LIFE TOOTH

- Jobsites where long wear life is required, such as when loading hard rocks.
- Jobsites where no penetration is needed, such as when working with crushed rocks after blasting or ripping.
- Jobsites where heavy-duty operations are performed, such as hitting or pulling up rocks with the tips of the teeth.

SELF-SHARPENING TOOTH (HORIZONTAL PIN TYPE, VERTICAL PIN TYPE)

- Jobsites requiring penetration such as digging and loading sandy or clayey soil.

SELECTION GUIDE FOR VERTICAL OR HORIZONTAL PIN TYPE TOOTH

<table>
<tr><td colspan="3" rowspan="2"></td><td colspan="4">Applicable work site</td></tr>
<tr><td>Rock</td><td>Crushed stone</td><td>Clayey soil, Decompressed granite soil</td><td>Sand</td></tr>
<tr><td rowspan="4">Type of operation</td><td rowspan="4">Heavy
↑
↓
Light</td><td>Digging with hammering work</td><td colspan="2">Horizontal pin type teeth</td><td colspan="2">Vertical pin type teeth</td></tr>
<tr><td>Scraping down</td><td colspan="2">Horizontal pin type teeth</td><td colspan="2">Vertical pin type teeth</td></tr>
<tr><td>General excavation</td><td colspan="4">Vertical pin type teeth</td></tr>
<tr><td>Loading</td><td colspan="4">Vertical pin type teeth</td></tr>
</table>

DEFINED LIFE PARTS

- For using the machine safely for a long period, always perform periodic inspection of the defined life parts that have a particularly close relation to safety, such as hoses and the seat belt.
- The material of these components naturally changes over time, and repeated use causes deterioration, wear, and fatigue. As a result, there is a hazard that these components may fail and cause serious personal injury or death. Check if there is any abnormality in wear or deterioration on them before work and at the regular maintenance.
- Replace immediately the hose if any defect is found by checking. If any of the hose clamps show deterioration like deformation or cracking, replace the clamps at the same time as the hoses.
- Tighten all loose hoses and replace defective hoses, as required. When replacing hoses, always replace O-rings, gaskets, and other such parts at the same time.

DEFINED LIFE PARTS LIST

<table>
<tr><th>No.</th><th colspan="2">Target Parts</th><th>Inspection /Replacement interval</th></tr>
<tr><td>1</td><td>Fuel system</td><td>Fuel hose
Spill hose</td><td>Every 2 years or every 4000 hours, whichever comes sooner.</td></tr>
<tr><td>2</td><td>Engine lubrication system</td><td>Turbocharger lubrication hose
Engine oil filter hose</td><td rowspan="4">Replace if any of the damages were found when the daily check or periodical maintenance.</td></tr>
<tr><td rowspan="3">3</td><td rowspan="3">Work equipment hydraulic system</td><td>Main pump delivery hose
Pump delivery hose</td></tr>
<tr><td>Pump branch hose
Main pump LS hose</td></tr>
<tr><td>External work equipment hose
• Boom foot joint hose
• Boom cylinder hose
• Arm connection hose
• Arm cylinder hose
• Line hose for additional attachment</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Others</td><td>PPC accumulator
Attachment additional accumulator</td><td></td></tr>
<tr><td>Seat belt</td><td>Every 3 years from start of usage or 5 years after manufacturing of seat belt, whichever comes sooner.</td></tr>
</table>