Operation & Maintenance Manual

EENAM04020

PC2000-11E0

HYDRAULIC EXCAVATOR

SERIAL NUMBER

PC2000-11E0 - 30015 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 inside the cab for reference and periodically reviewed by all personel who will come into contact with the machine.

ORIGINAL INSTRUCTIONS

KOMATSU

correction is submitted, such request must be accompanied of proof of the flawed nature of the data for which correction is asked.

You have the right to request that personal data pertaining to you will be deleted if they are no longer required in light of the purposes outlined above. However, you need to keep in mind that a request for deletion will be evaluated by us against:

- overriding interests of Komatsu, Komatsu Europe or any other third party
- legal or regulatory obligations or administrative or judicial orders which may contradict such deletion

Instead of deletion you can also ask that we limit the processing of your personal data if and when (a) you contest the accuracy of that data, (b) the processing is illegitimate or (c) the data are no longer needed for the purposes which are outlined above, but you need them to defend yourself in judicial proceedings.

You have the right to oppose the processing of personal data for the purposes (a) to (l) in section 4, but you are required to explain your particular circumstances on which your request for opposition is based.

As explained earlier, if you wish to submit a request to exercise one or more of the rights listed in this section, you must first and foremost contact your employer. Each request addressed to us can be sent via e-mail to PrivacyOffice@komatsu.eu for all data subject right matters.

An e-mail requesting to exercise a right will not be construed as consent with the processing of your personal data beyond what is required for handling your request. Such request should clearly state and specify which right you wish to exercise and the reasons for it, if such is required. It should also be dated and signed, and accompanied by a digitally scanned copy of your valid identity card proving your identity.

Without prejudice to the allocation of responsibilities as outlined in section 1, we will promptly inform you of having received this request. If the request proves valid, we will notify you as soon as reasonably possible and at the latest thirty (30) days after having received the request.

If you have any complaint regarding the processing of your personal data by Komatsu or Komatsu Europe via MMS, you may always contact us via the e-mail address mentioned in the first paragraph of this clause. If you remain unsatisfied with our response, you may file a complaint with the competent data protection authority.

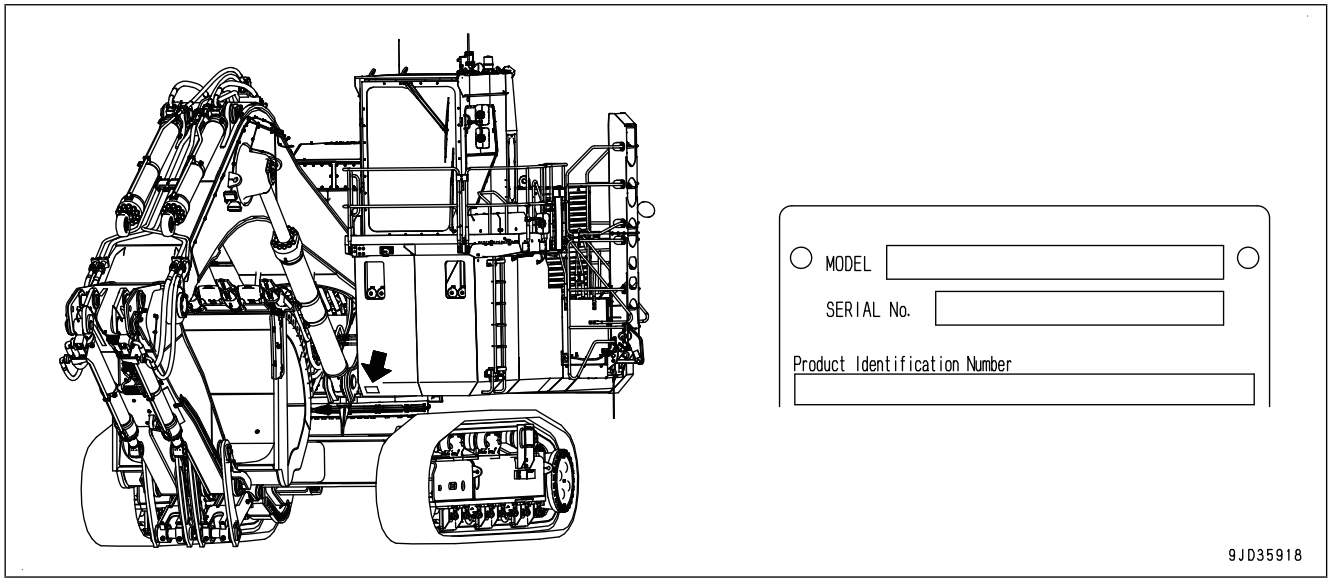
PRODUCT INFORMATION

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

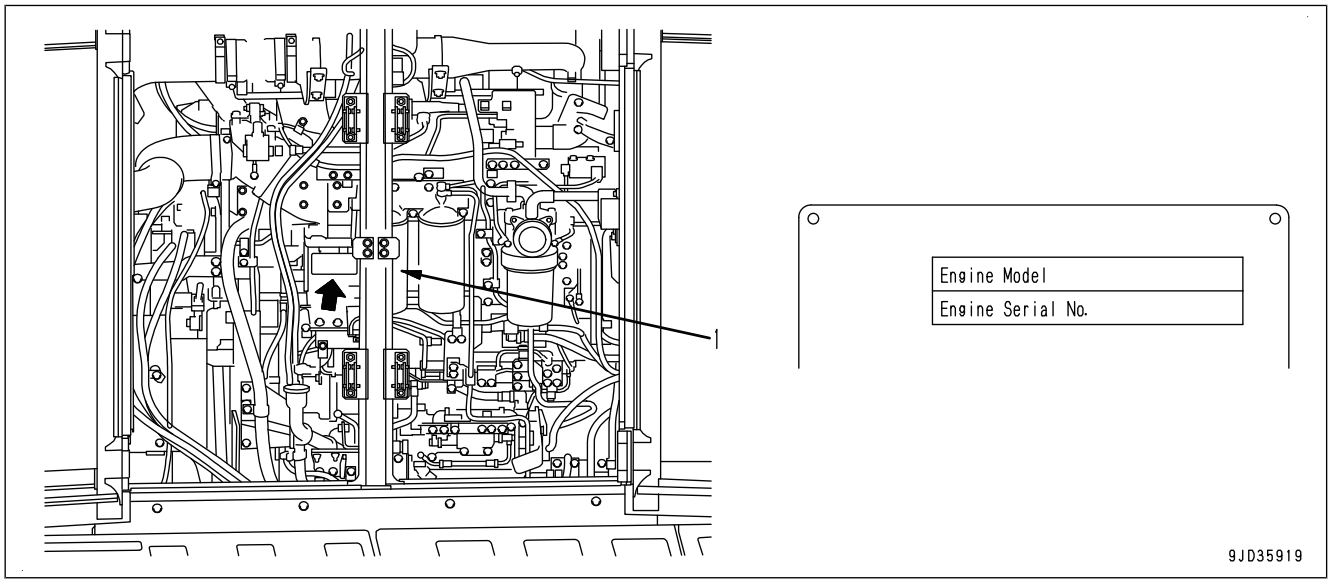
It is located on the right bottom of the cab base.

The design of the nameplate varies according to the district.



LOCATION OF ENGINE NUMBER PLATE

It is located on the left side of the fuel filter (1) on the engine cylinder block if you look from the machine front side.



Caution for electric cables

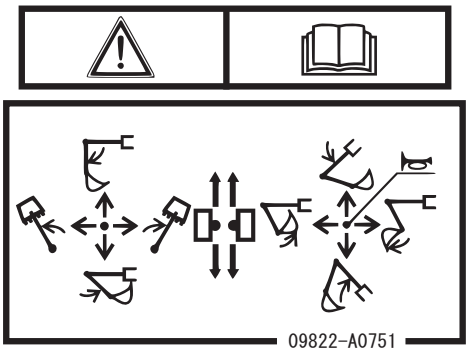
“09801–A0641”

- An electrocution hazard if the machine is brought too near to electric power lines.
- Keep a safe distance from electric power lines.

Caution for control pattern

“09822-A0751”

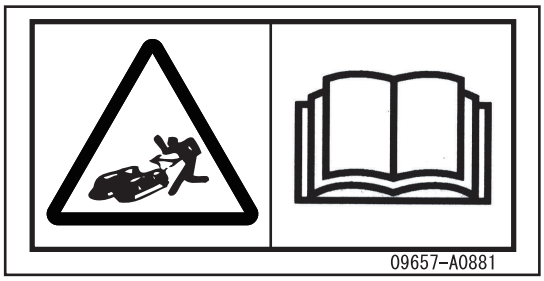
In order to prevent an accident resulting in injury or death caused by error-operation, check the machine motion and indicated control pattern, when operating machines. Pay attention to the circumference and operate slowly when checking the machine motion.



Caution for adjusting track tension

“09657-A0881”

- Sign indicates a hazard of flying plug from track adjuster that could cause injury.
- Read manual when adjusting track for safe and proper handling.



Caution for high-temperature oil

“09653-B0361”

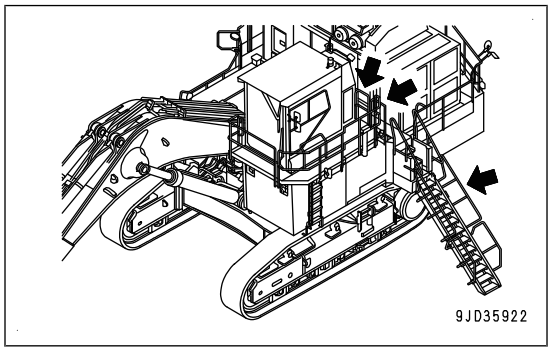
- Sign indicates a burn hazard from spurting hot oil if hydraulic tank is uncapped while hot.
- Allow hydraulic tank to cool before removing cap.

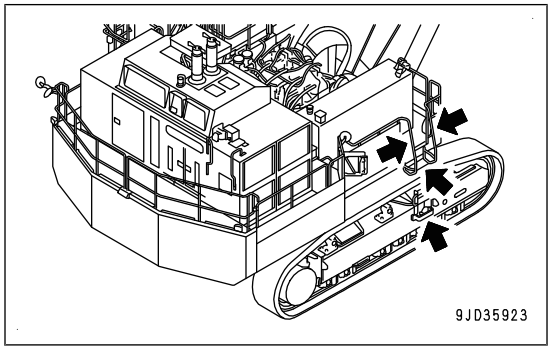
PRECAUTIONS WHEN GETTING ON OR OFF MACHINE

USE HANDRAILS AND STEPS WHEN GETTING ON OR OFF MACHINE

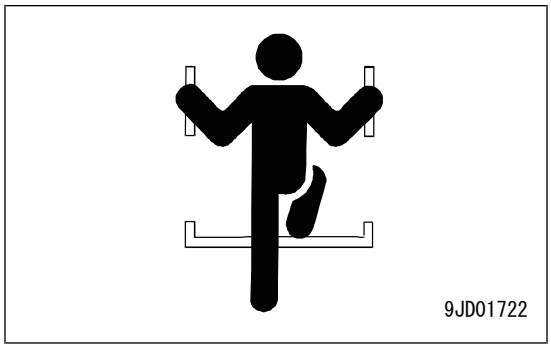
To prevent personal injury caused by slipping or falling off the machine, always observe the following.

- Use the handrails and steps marked by arrows in the figure 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. If there is any loose bolt on the handrail and step, tighten it securely.
  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 or off the machine, take care that your body or clothes do not touch the control 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.

LIFTING OF PERSONNEL PROHIBITED

Under no circumstances should this machine be used for the lifting of personnel.

PRECAUTIONS WHEN STARTING ENGINE

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

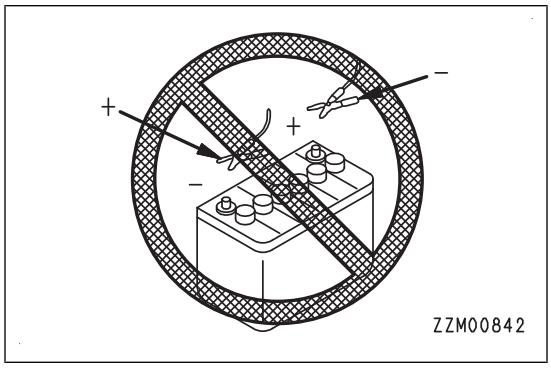
- Start the engine only while sitting down in the operator's seat.
- When starting the engine, sound the horn as a warning.
- Operator and operations trainer are only persons allowed to ride.
- Do not attempt to start the engine by short-circuiting the engine starting circuit. This may cause fire, serious 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.

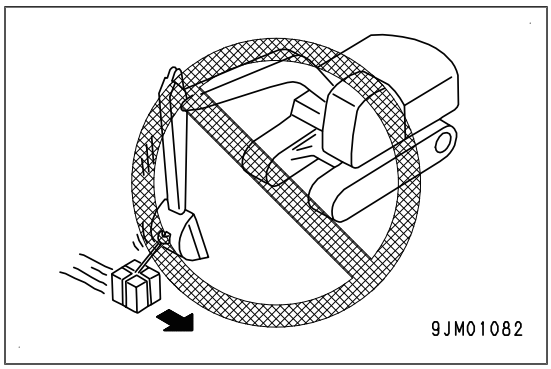


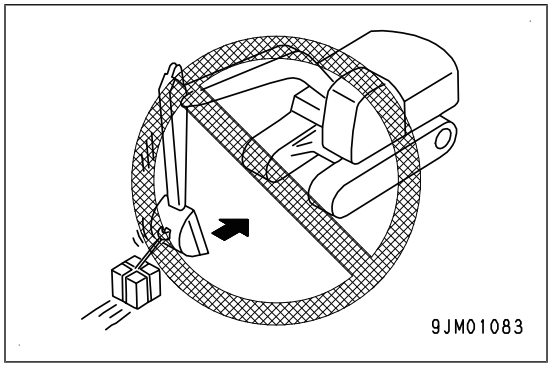
- Always wear protective eyeglasses and rubber gloves when starting the engine by using the jumper cables.
- When connecting a normal machine to a failed machine with the jumper cables, always use the normal machine with the same battery voltage as the failed machine.
- When starting the engine with 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.

START WITH JUMP START RECEPTACLE

- For machines with the jump start receptacle (optional), turn the starting switch key to OFF position, wait for 3 minutes or more, turn the battery isolator switch to OFF position. Then, perform connecting and disconnecting of the jump start receptacle.
- For starting procedure of the jump start receptacle, see “METHOD FOR CONNECTING EXTERNAL POWER SUPPLY”.

- 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 HIGH-PRESSURE FUEL

While the engine is running, high-pressure is generated in the engine fuel piping. If you try to disassemble the piping before the internal pressure is released, serious personal injury or death can result. When performing inspection or maintenance of the fuel piping system, stop the engine and wait for at least 30 seconds to allow the internal pressure to go down before starting the work.

HANDLE HIGH-PRESSURE HOSES AND PIPING

If oil or fuel leaks from high-pressure hoses or piping, it may cause fire or defective operation. It is dangerous and may cause serious personal injury or death. If the hose or piping mounts are loose or oil or fuel is found to be leaking from the mount, stop operations and tighten to the specified torque.

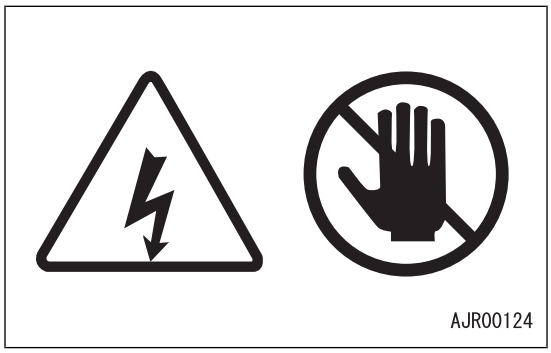
If any damaged or deformed hoses or piping are found, consult your Komatsu distributor.

Replace the hose if any of the following problems are found.

- Damaged hose or deformed hydraulic fitting.
- Frayed or cut covering or exposed reinforcement wire layer.
- Covering swollen in places.
- Twisted or crushed movable portion.
- Foreign material embedded in covering.

PRECAUTIONS FOR HIGH VOLTAGE

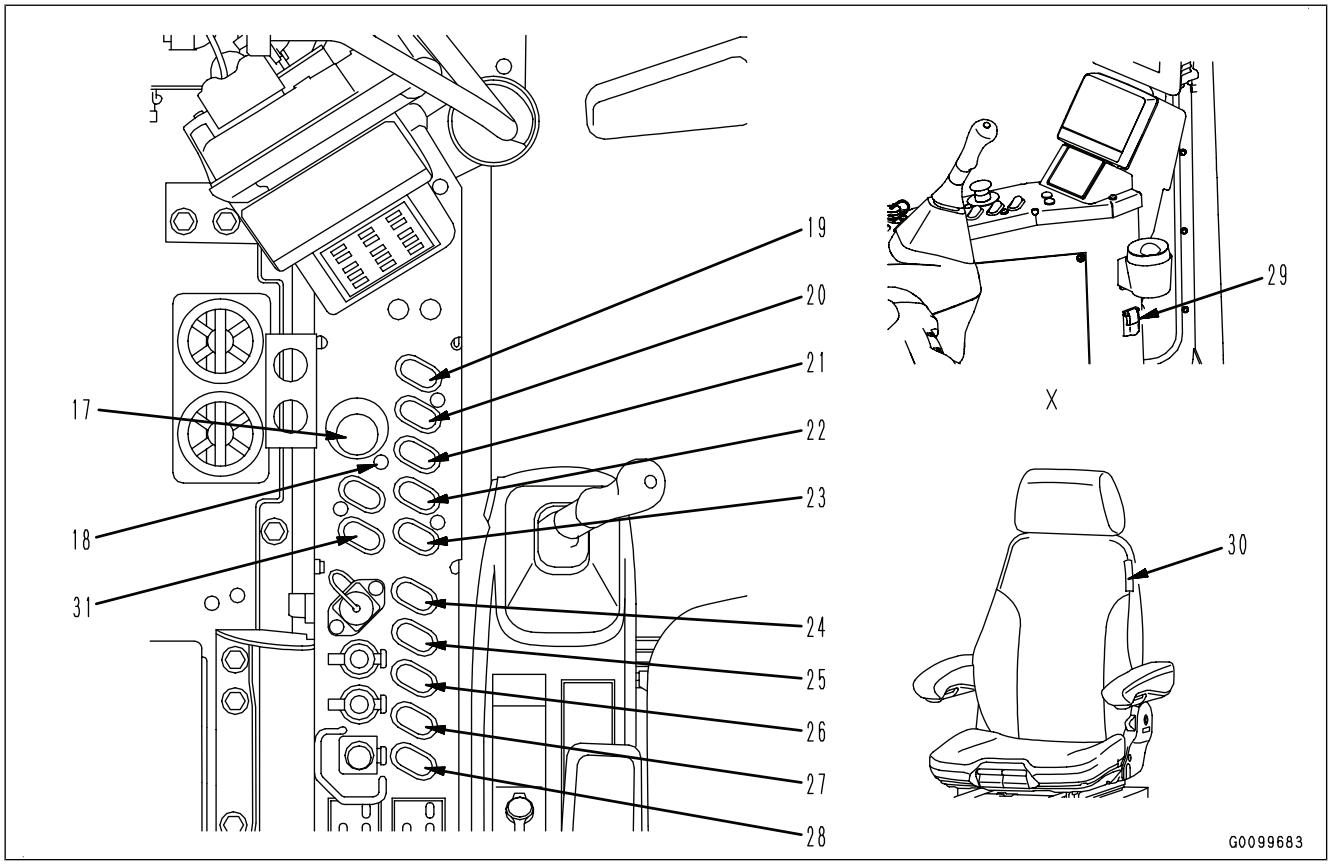
When the engine is running and immediately after it is stopped, high voltage is generated inside the engine controller and the engine injector, and there is danger of electric shock. Never touch the inside of the engine controller or the injector part of the engine. If it is necessary to touch the inside of the engine controller or the injector part of the engine, consult your Komatsu distributor.



PRECAUTIONS FOR NOISE

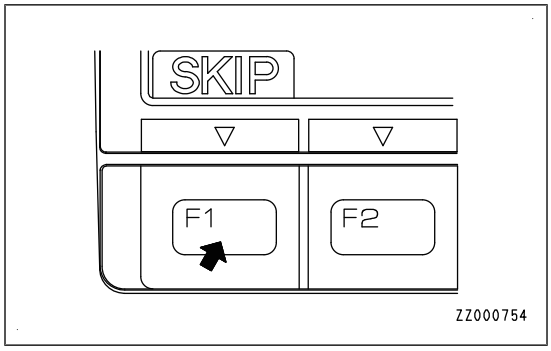
When performing maintenance of the engine and you are exposed to noise for long periods of time, wear ear covers or ear plugs while working.

If the noise is too loud, it may cause temporary or permanent hearing problems.



(17) Emergency engine stop switch
(18) Emergency engine stop indicator
(19) Service center switch (if equipped)
(20) Greasing mode switch
(21) Machine push-UP switch
(22) Boom shock absorbing control switch
(23) Swing lock switch
(24) Room lamp switch
(25) Staircase lighting switch
(26) Working lamp switch
(27) Auxiliary lamp switch
(28) Revolving lamp switch (if equipped)
(29) Engine shutdown secondary switch
(30) Seat heater switch
(31) Heated mirror switch

On the ID number input screen LL (with SKIP), press the switch F1, and the screen changes to the check before starting screen BB without inputting ID number.



REMARK

- Contact your Komatsu distributor for the method of setting, changing, or canceling the operator identification function.
- Depending on the set value of ID holding time in set items of operator identification function, even if inputting the ID number for operator identification setting is set, the ID number input screen LL (with SKIP) or MM (without SKIP) may not be displayed while the starting switch is turned to ON position.

If the incorrect ID number is inputted for 3 times in a row, you cannot input the ID number in the next 5 minutes. Wait for more than 5 minutes, and try inputting the ID number again.

As long as the ID number input screen is displayed, the engine cannot be started. If you forget the ID number and cannot start the engine, ask the person in charge of the machine for it.

NOTICE

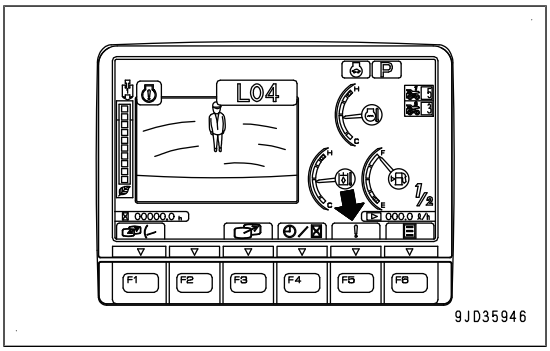
The operator identification function has no anti-theft effect. It is neither for security enhancement nor for a protection against theft. Do not use it for the purpose of security enhancement.
Komatsu cannot accept any responsibility for any loss or damage resulting from the wrong use of ID or unauthorized use of ID by a third party.

CURRENT ABNORMALITY DISPLAY SWITCH

If there is any error generated, “!” is displayed above the switch F5.

Monitor display screen is shifted to occurred error list screen by pressing the switch F5 while “!” is displayed.

Take appropriate actions according to the message displayed on the monitor.



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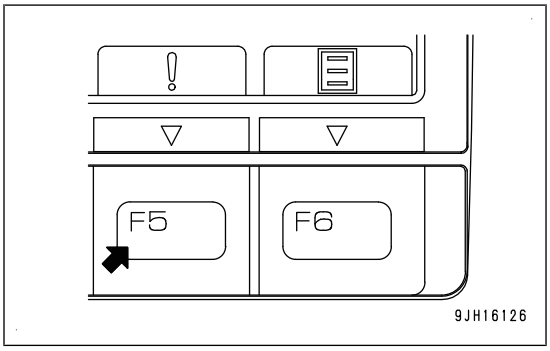
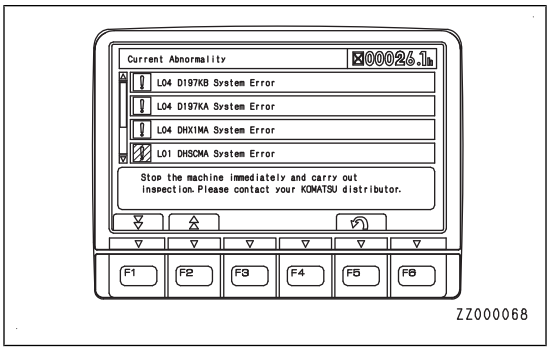


9JH16126

Operation on “Current Abnormality” screen

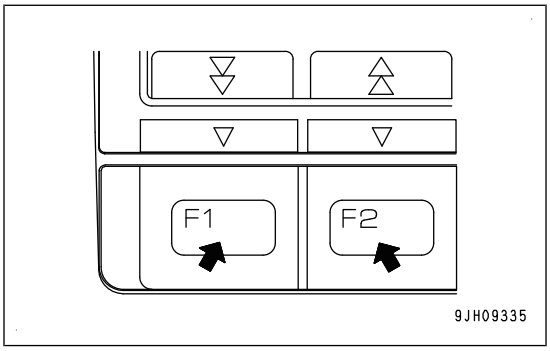
On “Current Abnormality” screen, the following operations can be performed with switches F1, F2 and F5.



ZZ000068

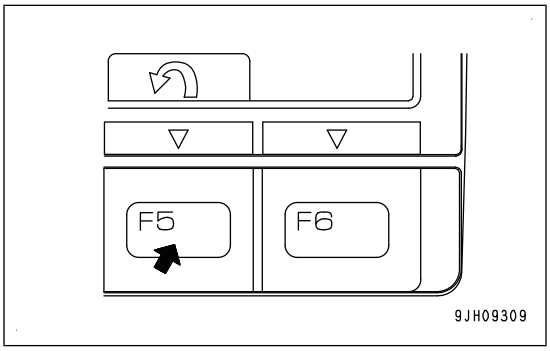
F1: Displays the next page. When on the last page, it displays the first page.

F2: Displays the previous page. When on the first page, it displays the last page.



9JH09335

F5: Returns the screen to the standard screen.

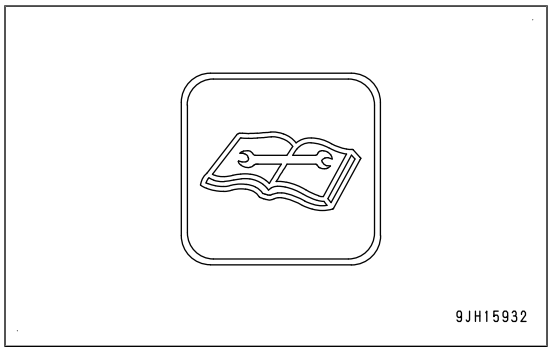


9JH09309

MAINTENANCE TIME CAUTION LAMP

Maintenance time caution lamp displays the notices and alarms concerning maintenance time.

This lamp lights up when the starting switch is turned to “ON” position. It goes out after 30 seconds and the display changes to the standard screen.



When the due time is over

The caution lamp lights up in red.

The maintenance due time is over.

If no action is taken, the machine performance will become worse and the machine life will be shortened.

Perform necessary maintenance as soon as possible.

When giving the notice of the due time

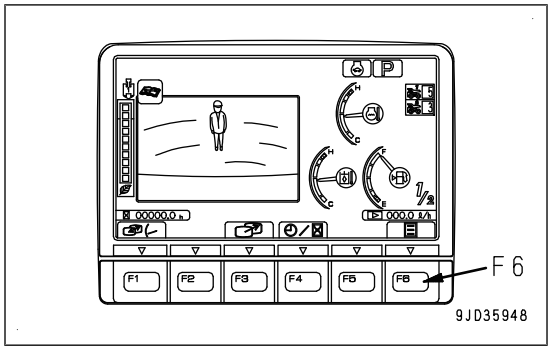
The caution lamp lights up in yellow.

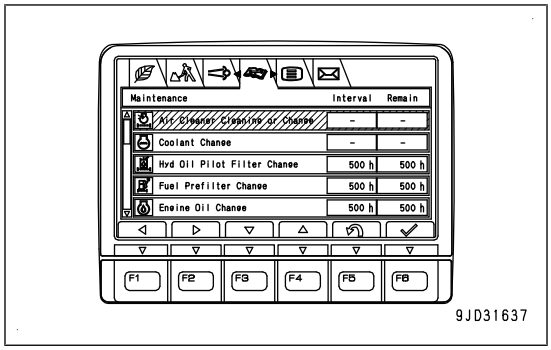
The maintenance time is approaching.

Prepare necessary parts for the maintenance.

REMARK

- You can check the maintenance items on the maintenance tab screen by pressing the switch F6 on the maintenance time warning screen shown in the figure or on the standard screen.
- The lighting time of maintenance time notice (yellow) has been initially set to 30 hours, but it can be changed.
  To change it, ask your Komatsu distributor.
- For the operations on the maintenance tab screen, see “MAINTENACE SCREEN SETTING”.

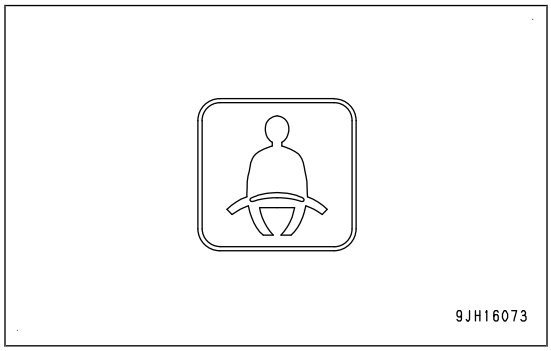




SEATBELT CAUTION LAMP

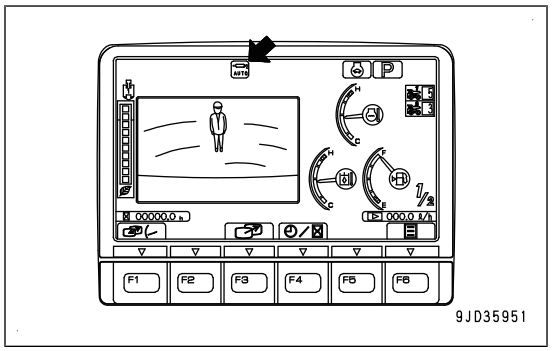
The seat belt caution lamp lights up when the seat belt is not fastened. It goes out when the seat belt is fastened.

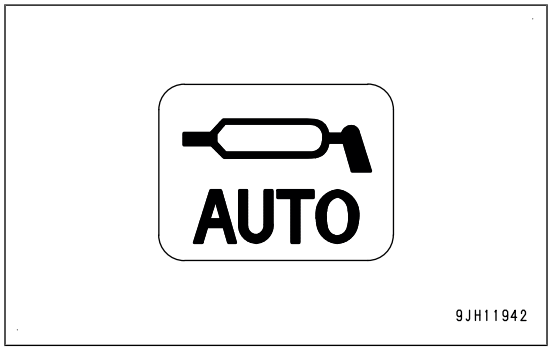
For fastening the seat belt, see “METHOD FOR FASTENING AND UNFASTENING SEAT BELT”.



AUTO-GREASING OPERATION PILOT LAMP

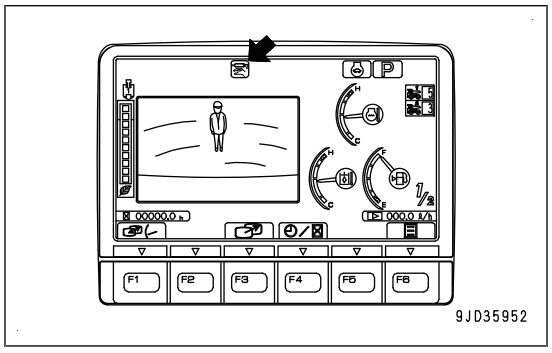
The auto-greasing operation pilot lamp is displayed when the greasing mode selector switch is at AUTO side and the grease pump is in operation.

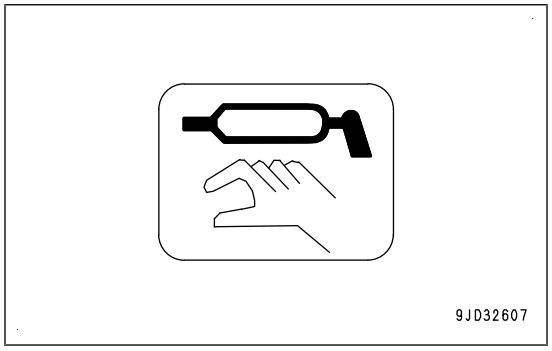




MANUAL-GREASING OPERATION PILOT LAMP

Manual-greasing operation pilot lamp is displayed when the greasing mode selector switch is turned to MANUAL side.

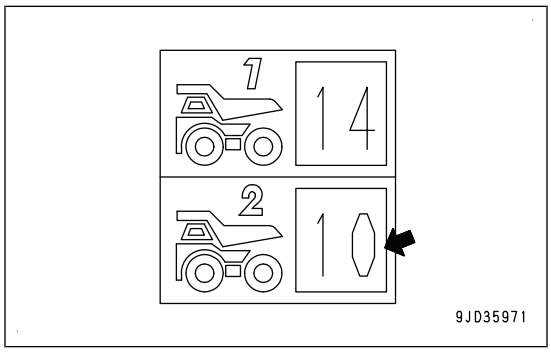




Truck counter 2 display

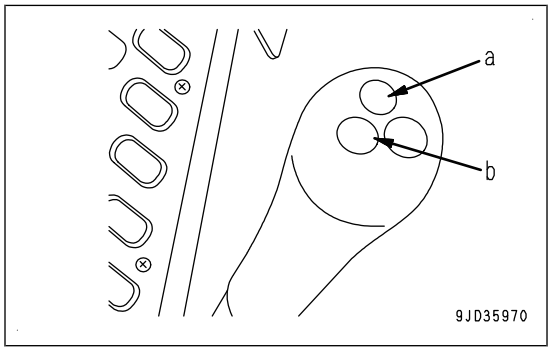
Truck counter 2 display shows the number of loads counted for the truck.

When the truck counter switch (b) at the machine front side on top of the L.H. work equipment control lever is pressed, the count advances. Each time the truck counter switch (b) is pressed, the buzzer emits a sound (peep), so it is possible to check that the switch has been pressed.



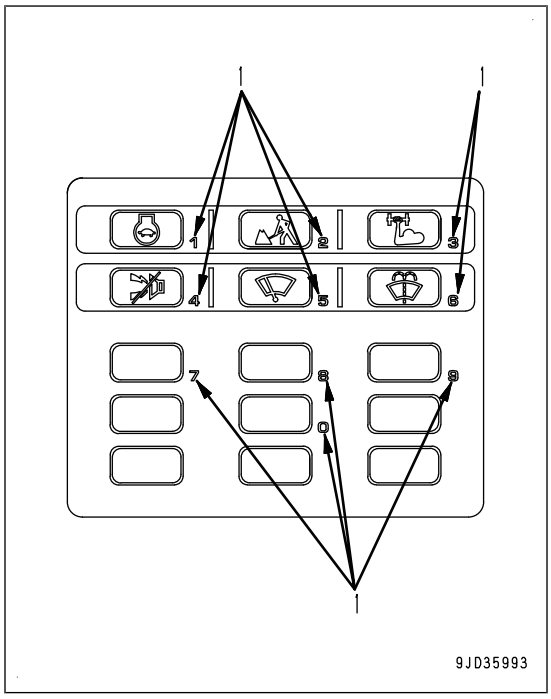
REMARK

- It is possible to divide into truck counters 1 and 2 to distinguish the count according to the size or type of load of the truck being loaded.
- If the switch is pressed too many times by mistake during operations, it is possible to correct the count from the user menu. When correcting it, see “TRUCK COUNTER RESET”.
- In addition, by holding down the switch (a) or (b) for approximately 3 seconds, it is possible to reduce the count by 1.



NUMERIC INPUT SWITCH

These switches consist of 10 switches of 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. These switches are used for numeric input column such as the message display is displayed. Switch corresponds to the numeral (1) shown on the lower right of the switch.

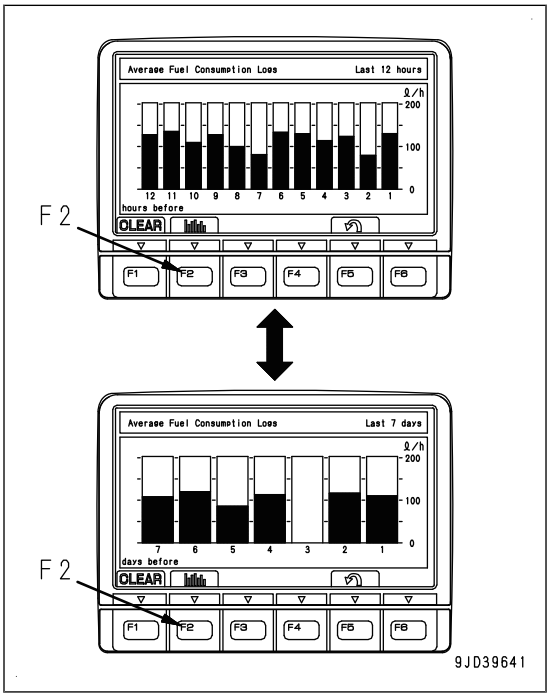


Switching of the displayed graph

Press F2 on “Average Fuel Consumption Record” screen to change the currently displayed graph to another.

REMARK

There are 2 types of graphs. One shows hourly average fuel consumption during last 12 hours and the other is daily average fuel consumption during last 7 days. Switching among them is available.

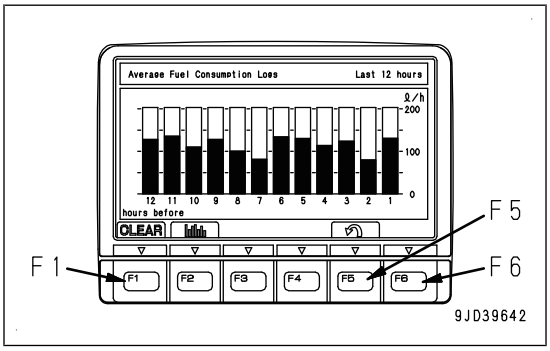


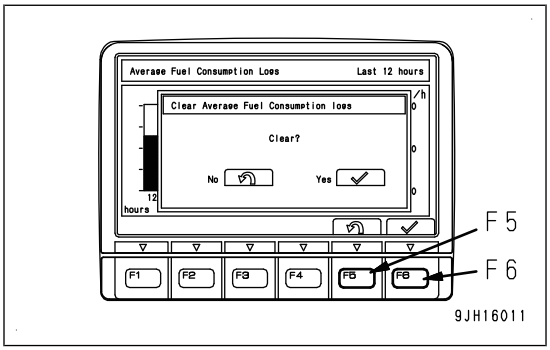
Delete “Average Fuel Consumption Record”

1. The reconfirmation screen shown in the figure is displayed when the switch F1 (CLEAR) is pressed.
2. If you press the switch F6, graphs data of the last 12 hours and the last 1 week are both deleted, and the screen returns to “Average Fuel Consumption Record” screen.

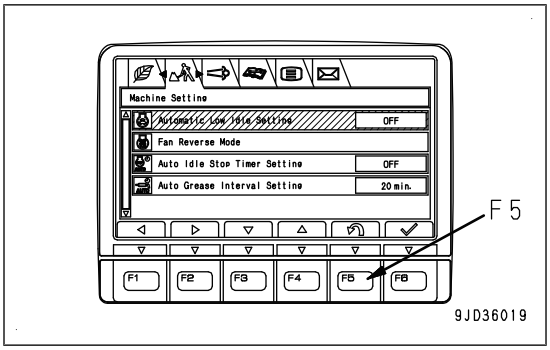
REMARK

Press the switch F5 to cancel the data deletion (clear) operation.

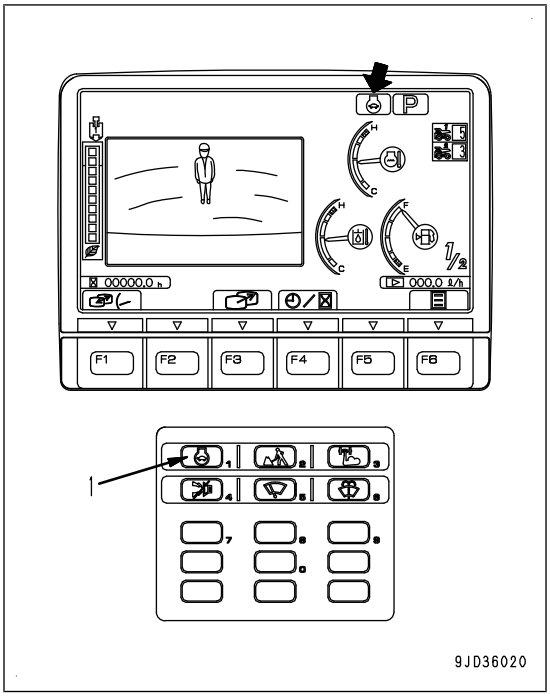




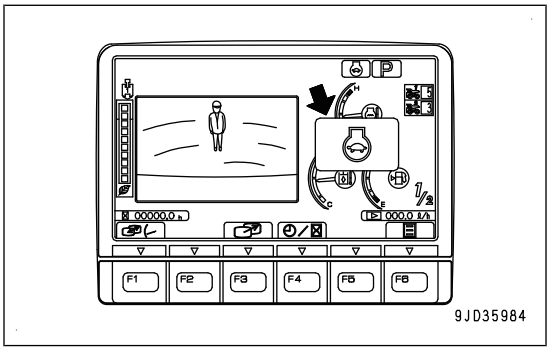
3. Press the switch F5. The screen returns to the standard screen.



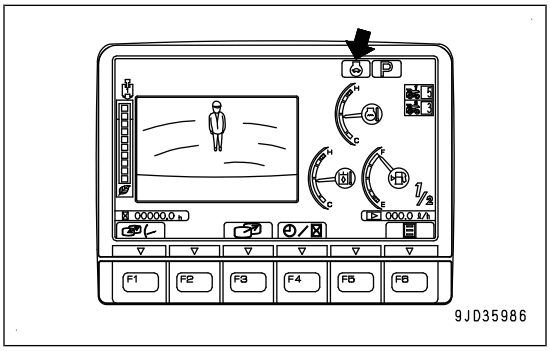
4. Press the auto-deceleration switch (1) to enable the auto-deceleration function.



5. When the auto-deceleration function is enabled, the mode is displayed in the right side of the monitor display, and the screen returns to the standard screen 2 seconds later.



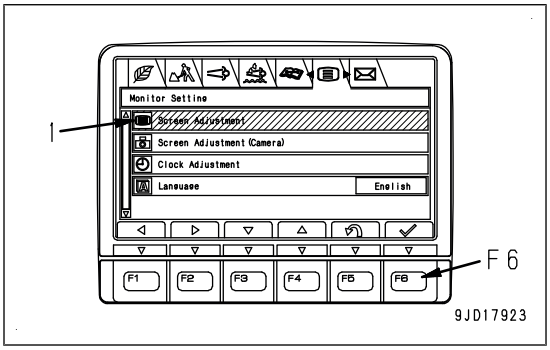
6. The auto-deceleration pilot lamp lights up on the standard screen. (It goes out when the auto-deceleration function is disabled.)



SCREEN ADJUSTMENT

Use “Screen Adjustment” menu to adjust the brightness of the monitor screen.

1. Select the screen adjustment (1) on the “Monitor Setting” menu screen, then press the switch F6.



2. Use the switches F2 to F6 to adjust the brightness of the screen.

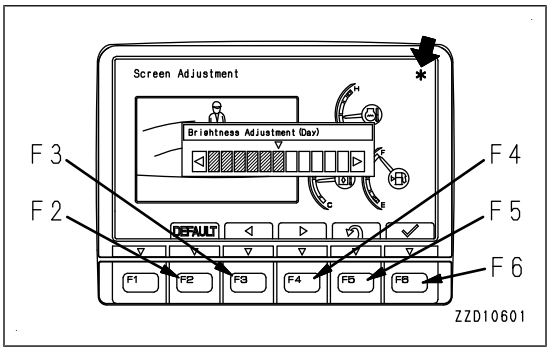
   F2: Resets an adjusted value to default value.

   F3: Moves the indicator to the left by one level.

   F4: Moves the indicator to the right by one level.

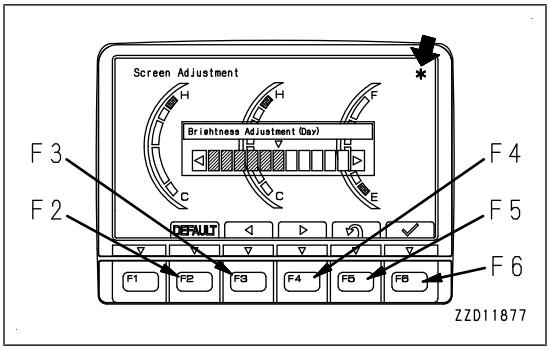
   F5: Cancels the change and returns to the monitor setting menu screen.

   F6: Accepts the change and then returns to the monitor setting menu screen.



REMARK

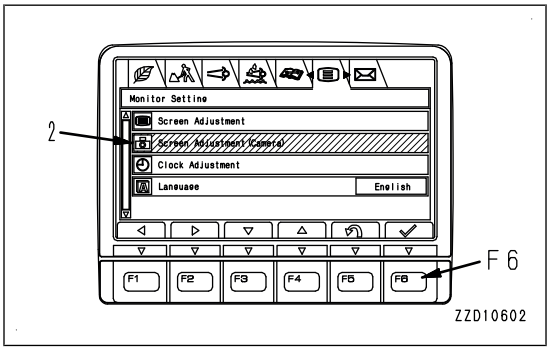
- If the light switch is at night mode ON, and the screen is adjusted, it is possible to adjust the brightness of the monitor screen (night mode).
- If the light switch is at day mode ON, and the screen is adjusted, it is possible to adjust the brightness of the monitor screen (day mode).
- As long as “*” mark is displayed in the upper right corner of the screen, brightness is automatically restricted by the machine monitor to protect the liquid crystal. Screen adjustment may not change the screen brightness as long as “*” mark is displayed. However, it is not an error.
- The state of the previous screen display (camera display and meter display or only meter display) is reflected on the background of the screen adjustment screen.



Screen Adjustment (Camera)

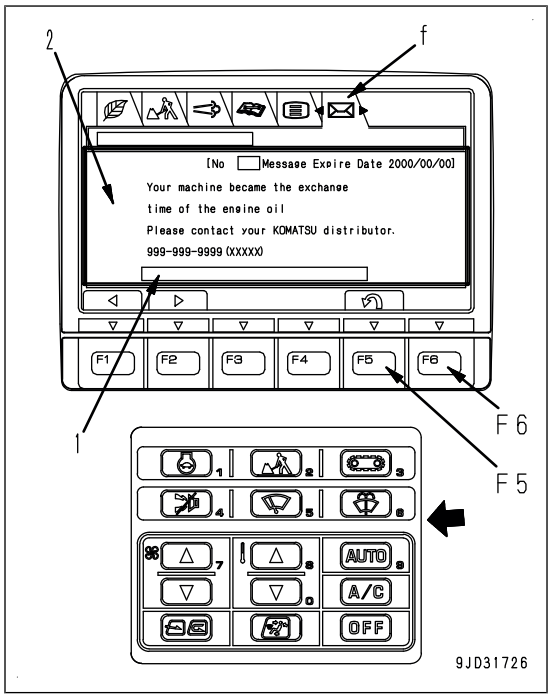
Use “Screen Adjustment (Camera)” menu to adjust the brightness of the camera screen.

1. Select the screen adjustment (camera) (2) on the “Monitor Setting” menu screen, then press the switch F6.

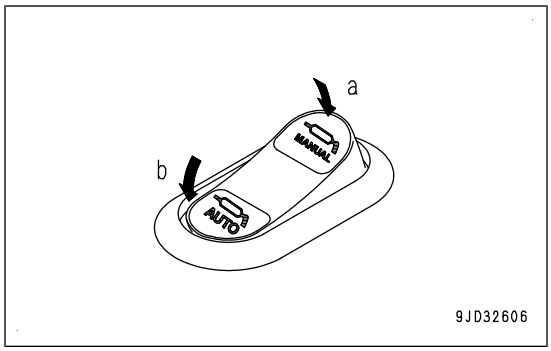


REPLY TO MESSAGE

1. When replying to a message, input the selected item number in “Numeric Input” column (1) on the screen of mail confirmation menu (f). The selected item number is written in place (2) of the message text.
   - Input the number by using the monitor switch. Each switch corresponds to the numerical value shown on the lower right of the switch.
   - If you input an incorrect number, press the switch F5, and you can clear an input character at a time.
   - If the switch F5 is pressed when the input column is blank, the screen returns to the standard screen.
2. After inputting the selected item number, press the switch F6.
3. When the message “Do you send Numeric Input?” is displayed in the column (1) of the mail confirmation menu screen, press the switch F6 again. The input value is sent out.
   When “Do you send Numeric Input?” is displayed, press the switch F5, and the screen returns to the message reply screen. At this time, the previous input value will be cleared.



GREASING MODE SELECTOR SWITCH



Greasing mode selector switch is used to switch the operating mode of the grease pump.

(a) MANUAL

Operates the grease pump continuously. Set it to (a) MANUAL when using the grease gun manually.

The manual greasing operating pilot lamp lights up on the machine monitor.

(b) AUTO

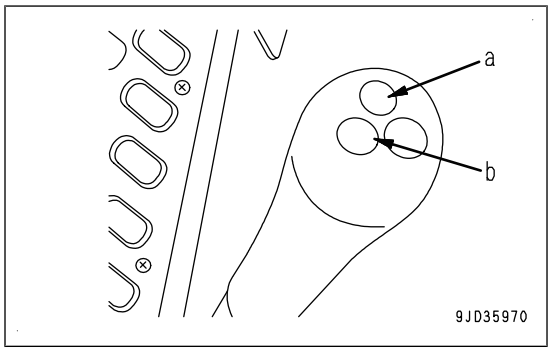
Performs the auto-greasing. Set it to (b) AUTO usually.

The auto-greasing operating pilot lamp lights up on the machine monitor when the grease pump is activated.

When switching (b) AUTO to (a) MANUAL, or (a) MANUAL to (b) AUTO within 3 seconds, 1 cycle of auto-greasing operates. Greasing can be performed anytime as needed.

When using the grease gun, turn the greasing mode selector switch to MANUAL position. It can be used to check the grease pump operating state or to bleed air from the grease line.

TRUCK COUNTER SWITCH



When the truck counter switch on the L.H. work equipment control lever is pressed, the count advances on the truck counter display on the standard screen of the machine monitor. There are 2 truck counter switches (a) and (b). For the explanation of the truck counter display, see “TRUCK COUNTER”.

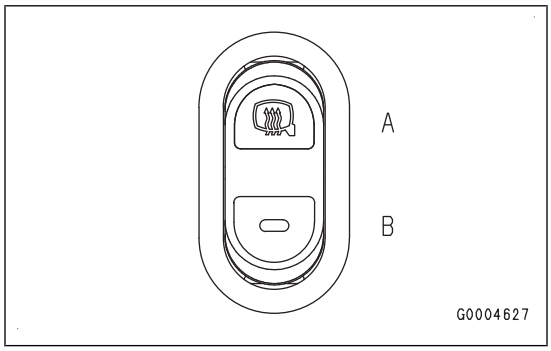
(a): Truck counter 1 switch

(b): Truck counter 2 switch

- When the truck counter switch is pressed, the buzzer emits a peep at the same time, so you can check that the truck counter switch has been pressed.
- When the truck counter switch is held down for approximately 3 seconds, the buzzer emits a sound (peep peep) and the count on the truck counter on the standard screen of the machine monitor is reduced by 1. Use this to correct the count if the switch has been pressed too many times by mistake.

SWITCH FOR MIRROR WITH HEATED WIRE

(option)



You can turn on or off the heater for side view mirrors with the mirror heater switch.

The wire heater is not automatically turned off even when it becomes hot. In case when there is no need to heat, set the switch manually to OFF position (B).

(A) ON position

The wire heater operates.

(B) OFF position

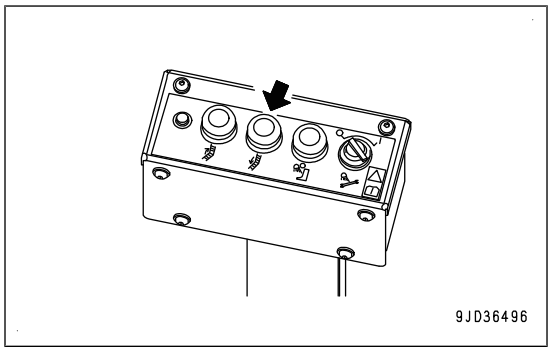
The wire heater stops.

STAIRWAY LOWER SWITCH

Stairway lower switch is used to lower the stairway.

REMARK

For handling the stairway, see “HANDLE THE HYDRAULICALLY OPERATED STAIRWAY”.



TRAVEL LEVER

⚠ WARNING

- **If you perform operations with your foot on the pedal, the machine may suddenly start if you depress the pedal by mistake, and this may lead to serious personal injury or death. Be extremely careful when using the pedal for travel and steering operations, and do not put your foot on the pedal when it is not necessary.**
- **When the track frame is facing the rear, the direction of operation of the steering lever is the opposite to the direction of movement of the machine (forward/reverse, right/left turn).**
  When operating the travel lever, always 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.)

The travel lever is used to change the direction of travel between forward and reverse. ( ) shows the pedal operation.

(a) FORWARD

The lever is pushed forward

(Depress the front side of pedal.)

(b) REVERSE

The lever is pulled back

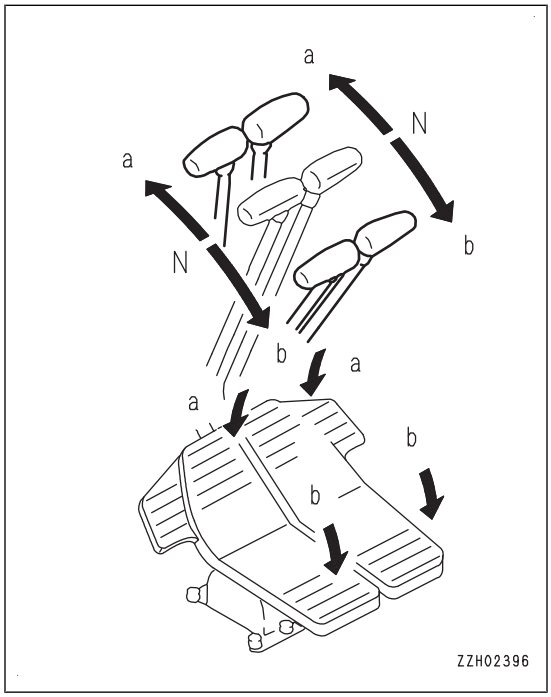
(Depress the rear side of pedal.)

N (NEUTRAL)

The machine stops.

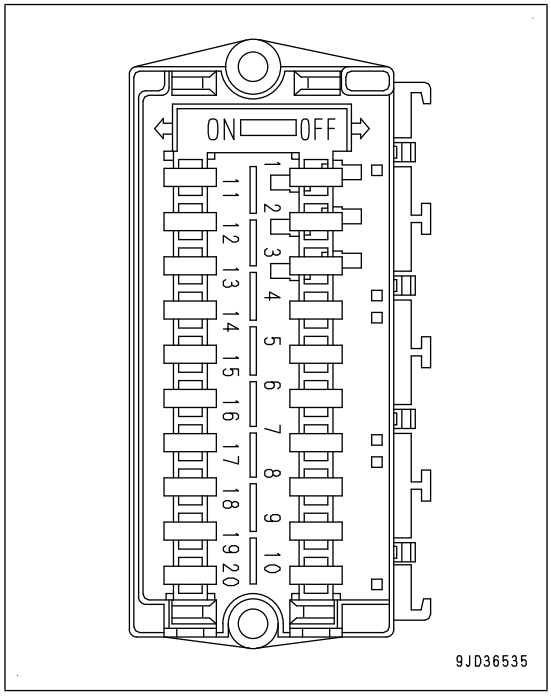
REMARK

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



Fuse capacities and circuit names

No.	Fuse	Name of circuit
(1)	10 A	Swing parking brake solenoid valve
(2)	10 A	Machine push-up solenoid valve, boom shock-less solenoid valve
(3)	10 A	Starting motor cut-off relay
(4)	10 A	Cigarette lighter
(5)	20 A	Horn, flash light
(6)	10 A	Power supply for cab lever switch
(7)	10 A	Revolving lamp
(8)	20 A	Side lamp, rear lamp
(9)	10 A	Radio
(10)	30 A	Windshield wiper, window washer
(11)	20 A	Air conditioner (upper)
(12)	20 A	Air conditioner (lower)
(13)	20 A	12 V power supply
(14)	5 A	L.H. bank engine controller ACC
(15)	5 A	R.H. bank engine controller ACC
(16)	10 A	Radio backup power supply, room lamp
(17)	10 A	Network path power supply, spare
(18)	20 A	Machine cab room lamp power supply
(19)	20 A	System operating lamp, normal power supply for cab
(20)	20 A	Staircase lighting



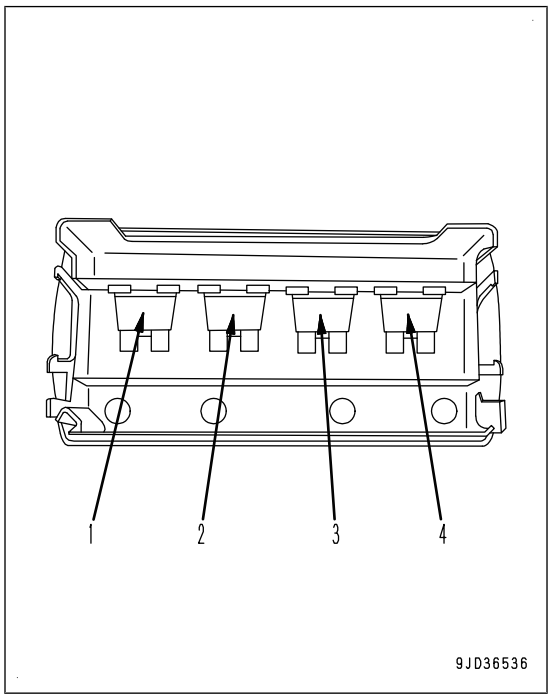
Spare fuses are stored on the back of the fuse holder cover.

(1): 30 A

(2): 20 A

(3): 10 A

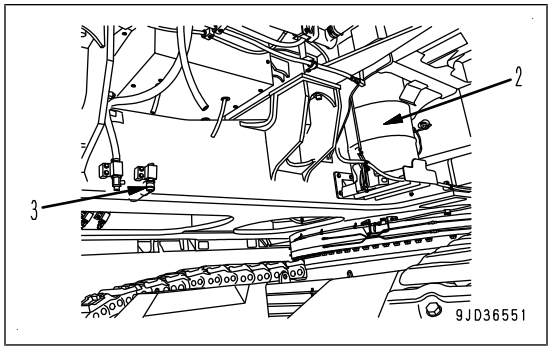
(4): 5 A



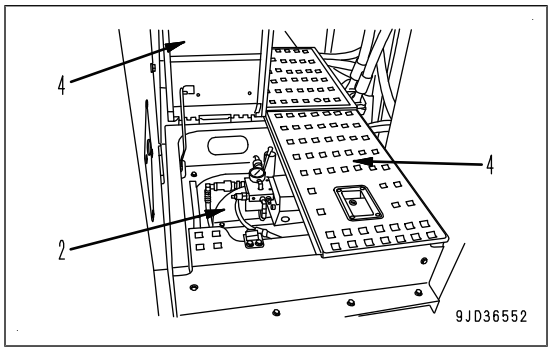
METHOD FOR ADDING GREASE

When replacing grease can

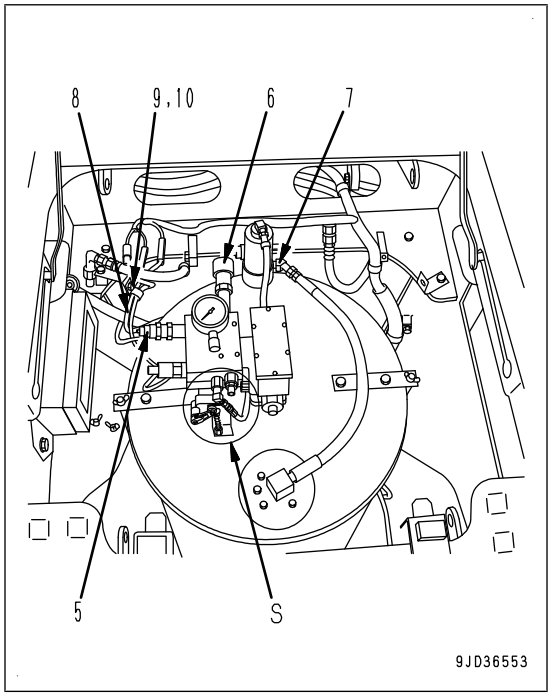
1. When replacing the grease can (2), do as follows.



2. Open the storage case cover (4) of grease can (2) at 2 places.

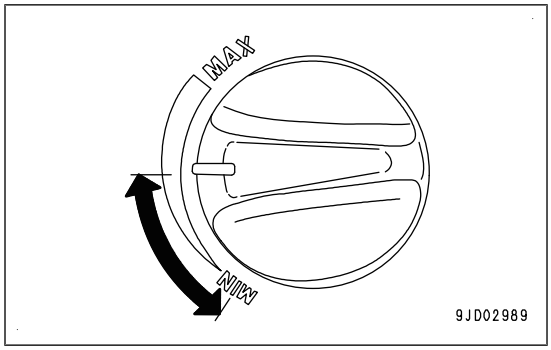


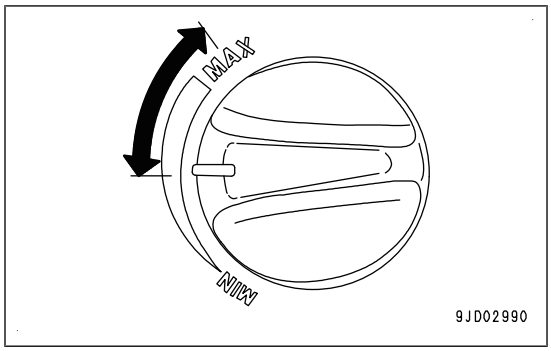
3. Remove the quick couplers (5), (6), (7), wiring harness (8), wiring clamp (9) and mounting bolts (10).



REMARK

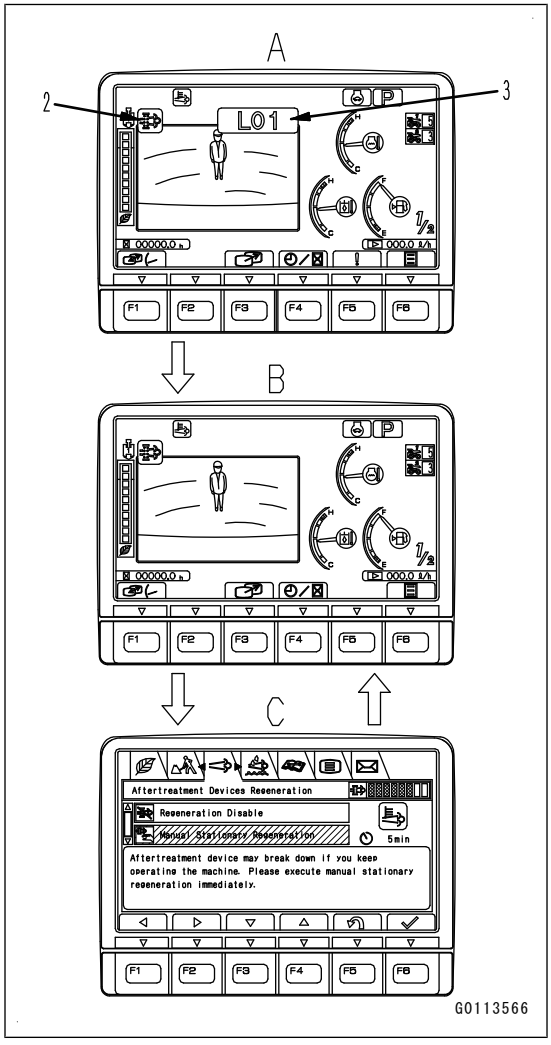
If heavy-duty operation is performed for more than 30 minutes with the fuel control dial between Low idle (MIN) position and High idle (MAX) position, soot is accumulated much and action level “L03” may be displayed. However, this does not indicate abnormality.
After performing manual stationary regeneration, turn the fuel control dial to a point above the midpoint between Low idle (MIN) position and High idle (MAX) position to continue the operation.



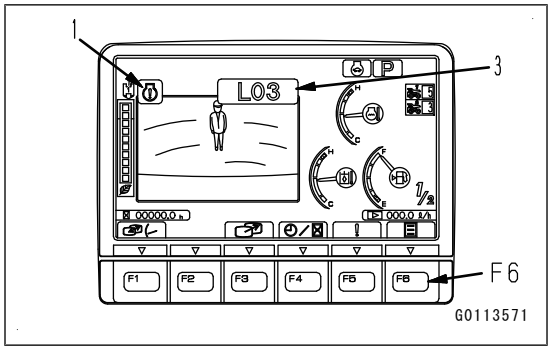


When the degree of emergency is low

- If KDPF soot accumulation caution lamp (2) lights up in yellow (action level (3): “L01”), screen (A) is displayed first.
- The action level goes out 2 seconds later, and the screen changes back to standard screen (B).
- If the lock lever is set to LOCK position or all the work equipment control levers are set in NEUTRAL, the screen changes to “Aftertreatment Devices Regeneration” screen (C) after 3 seconds only the first time. If the manual stationary regeneration is not performed, the screen returns to standard screen (B) after 30 seconds.
  Then, if the accumulated soot does not decrease, “Aftertreatment Devices Regeneration” (C) is displayed for 30 seconds every 2 hours.
- If KDPF soot accumulation caution lamp (2) lights up in yellow, stop the machine in a safe place after finishing the work and perform the manual stationary regeneration.

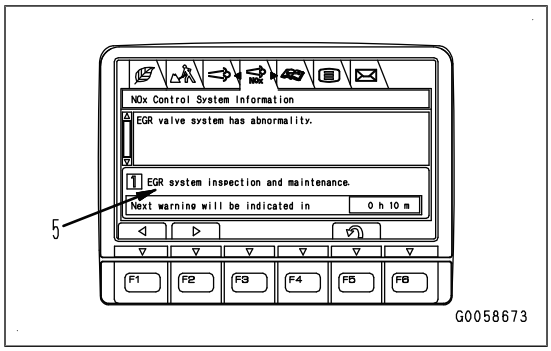


- Warning:
  The alarm buzzer operates in the Intermittent alarm.
  The engine system caution lamp (1) lights up in red.
  “L03” is shown in red on the action level display (3).
  Push the switch F6 to show “NOx Control System Information” screen.



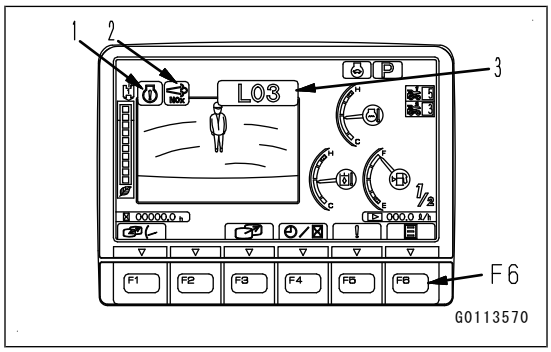
  “NOx Control System Information” screen message (5): “1 EGR system inspection and maintenance”

  Stop the operation and move the machine to a safe area, then consult your Komatsu distributor for inspection and maintenance.
  If operation continues for 5 hours after “Warning” started with no actions instructed by the action level table, Inducement goes to “Continuous Warning”.
  In “Warning”, engine power will be derated.
  Because of the reduction of engine power, the machine normal operation will be limited.



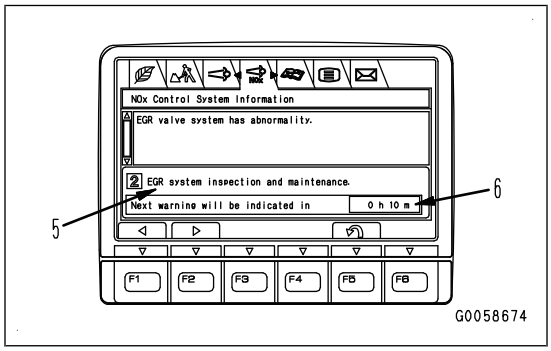
- Continuous Warning

  The alarm buzzer operates in the Continuous alarm.
  The engine system caution lamp (1) lights up in red.
  The NOx control system caution lamp (2) lights up in yellow.
  “L03” is shown in red on the action level display (3).
  Push the switch F6 to show “NOx Control System Information” screen.



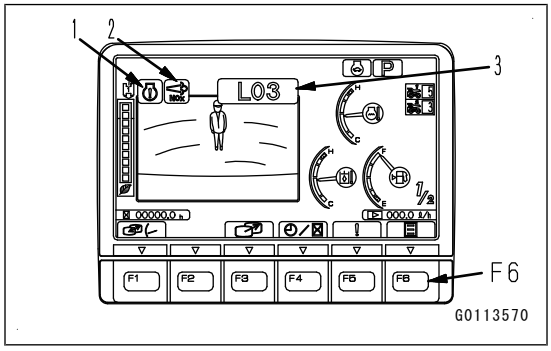
  “NOx Control System Information” screen message (5): “2 EGR system inspection and maintenance”

  Stop the operation and move the machine to a safe area, then consult your Komatsu distributor for inspection and maintenance.
  The duration time of “Continuous Warning” is 5 hours. The remaining time (hours and minutes) to “Low level Inducement” is shown in the column (6) of “NOx Control System Information” screen.



- Low level Inducement

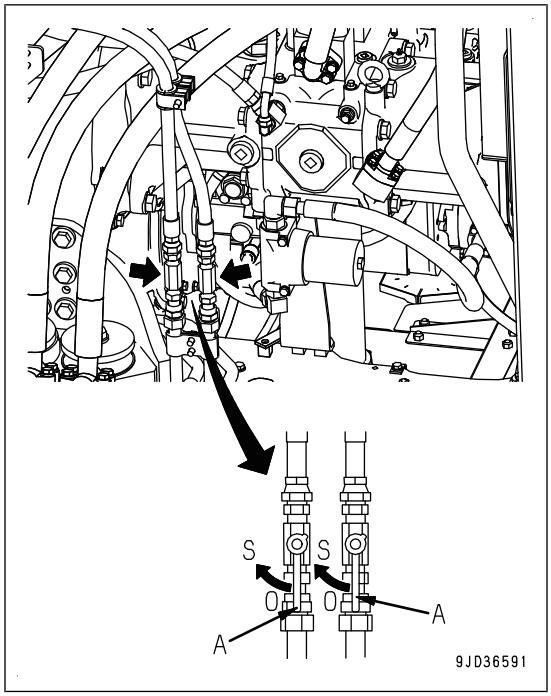
  The alarm buzzer operates in the Intermittent alarm.
  The engine system caution lamp (1) lights up in red.
  The NOx control system caution lamp (2) lights up in red.
  “L03” is shown in red on the action level display (3).
  Push the switch F6 to show “NOx Control System Information” screen.



3. Pull up the fuel shut off lever (A) which is installed on the main pump front in the pump room, and shut off the circuit to supply fuel from the fuel tank.

   (S): CLOSE

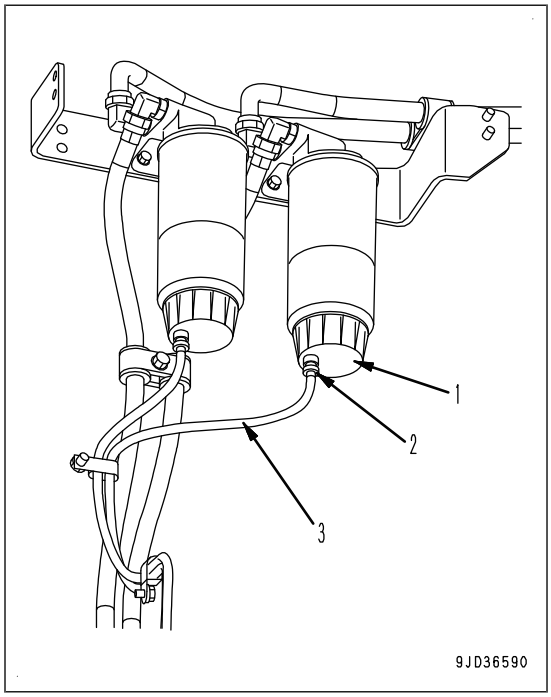
   (O): OPEN



4. Loosen the plug (2) and drain the water.
5. When water is drained and fuel starts draining from drain hose (3), tighten plug (2) immediately.

   Tightening torque:0.2 to 0.45 Nm {0.02 to 0.046 kgfm,0.14 to 0.33 lbft}
6. Push down the fuel shut off lever (A), and open the circuit to supply fuel.
7. After water draining is finished, bleed air in the same way as replacing the fuel filter cartridge.

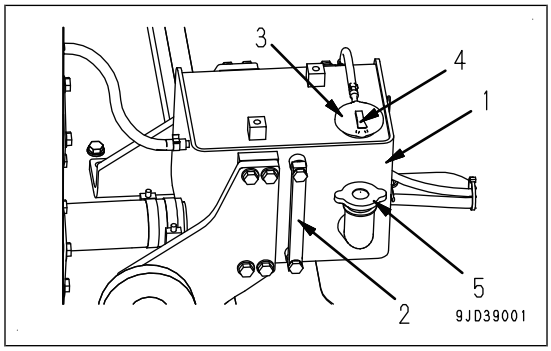
   For the air bleeding procedure of hydraulic circuit, see “METHOD FOR BLEEDING AIR FROM FUEL CIRCUIT”.



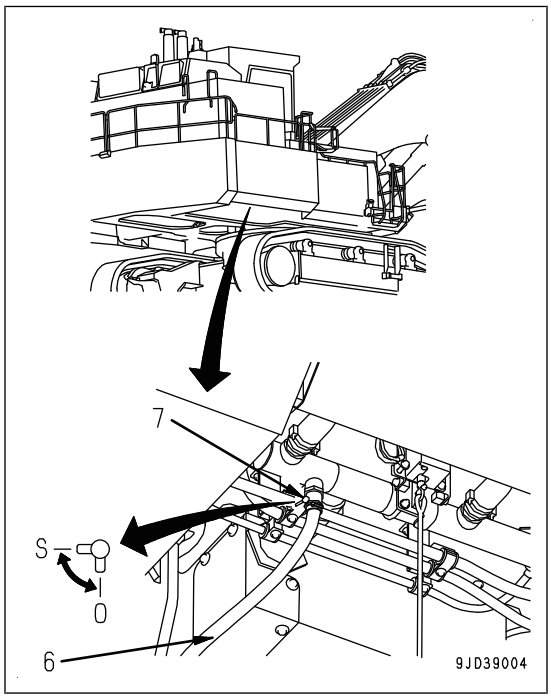
Method for draining coolant

Drain the coolant if its level exceeds “Hi”.

1. Check that the cap surface of the pressurized reservoir tank (1) is not too hot to touch with your bare hand. Pull up the cap lever (4) to release the internal pressure from the pressurized reservoir tank.
2. Remove the cap (5) from the coolant filler port (1).



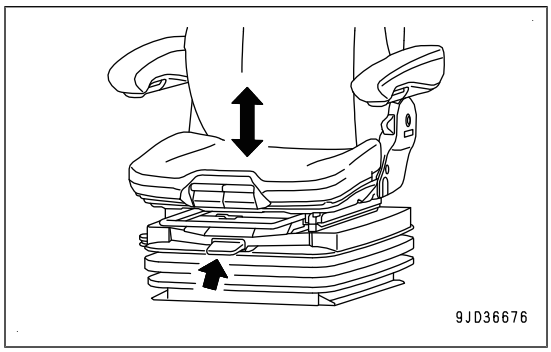
3. Install the drain hose (6).
4. Place a drum can under the drain hose (6) attached on the bottom of the machine to catch the coolant mixture.
5. Put the drain hose (6) into the drum can.
6. Turn the drain valve (7) to (O) position to open, and drain the coolant.
7. Turn the drain valve (7) to (S) position, and close it.
8. Close the coolant filler port cap (5).
9. Put down the cap lever (4) of cap (3).
10. Remove the drain hose (6).



METHOD FOR ADJUSTING SEAT HEIGHT

The seat height is adjusted pneumatically and in stepless.

The seat height is adjusted by fully pressing down or pulling up the lever (for the maximum stroke after a click is felt). Release the lever with the seat at the desired height.
Adjustment amount: 80 mm



(h) Highest position

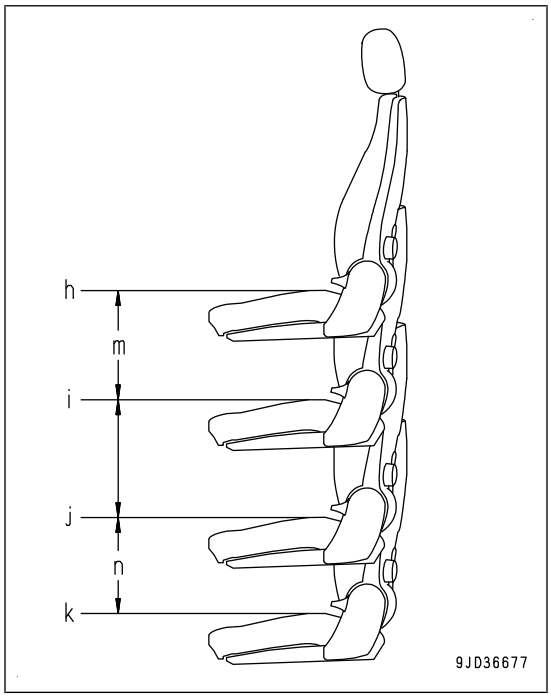
(i) Height adjustment upper limit

(j) Height adjustment lower limit

(k) Lowest position

(m) Automatic lowering range

(n) Automatic rising range



REMARK

- If the seat is stopped at higher position (m) or lower position (n) than the height adjustment range, the suspension lowers or rises automatically to secure some stroke.
  “Automatic lowering”
  When the seat is stopped within range (m) in the height adjustment process (raising adjustment), it automatically lowers and stops at height adjustment upper limit (i).
  “Automatic rising”
  When the seat is stopped within range (n) in the height adjustment process (lowering adjustment), it automatically rises and stops at height adjustment lower limit (j).
  Adjust the seat height in the range between upper limit (i) and lower limit (j).
- Operate the lever fully pressing it down or pulling it up (for the maximum stroke after a click is felt). Automatic lowering range (m) and automatic rising range (n) may shift and the following phenomena may occur, if “the lever operation stroke is short”, “the lever is operated finely”, or “the automatic weight adjustment is not performed after the operator changes”.
  - The air compressor does not stop.
  - Air is released unintentionally.

  If these unexpected phenomena occur, perform the “Automatic weight adjustment of seat” again to restore automatic lowering range (m) and automatic rising range (n) to the normal ranges before using the machine.
- Keep your body in the ordinary operating posture during the height adjustment. If you stand up from the seat or try to change the load applied to the seat during adjustment, the air in the suspension may be released.

PROCEDURE FOR ADJUSTING MACHINE LEFT FRONT MIRROR (B)

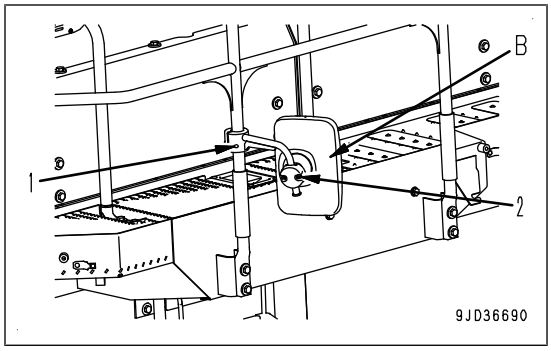
⚠ CAUTION

The following conditions must be met before starting the work to prevent the machine from moving during the work.

- **The machine is placed on a level ground.**
- **The work equipment is lowered to the ground in stable posture.**
- **The lock lever is in LOCK position.**
- **The engine is stopped.**

Adjust the mirror (B) so that the person at the left end of the stairway (when stored) and the person on the ground at the left end of the machine can be seen in it.

1. Loosen the bolt (1) and bolt (2) which are installed to the mirror (B), then adjust the mirror to the position that provides the best view from the operator's seat.
2. Adjust the mirror so that the operator can see the catwalk portion.
3. Check that you can see a person at the rear left end of the machine.



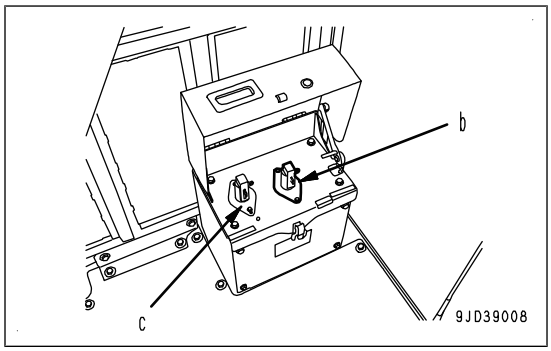
If the mirror is adjusted by loosening the mounting bolts, be sure to adjust the mirror to its regular position. For the adjustment method, see “PROCEDURE FOR ADJUSTING REGULAR POSITION OF MACHINE LEFT FRONT MIRROR (B)”.

METHOD FOR OPERATIONS AND CHECKS BEFORE STARTING ENGINE

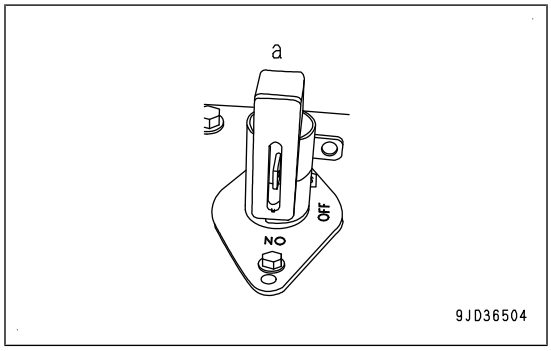
⚠ WARNING

Check that the lock lever is securely in LOCK position when starting the engine.

Perform the check before starting the engine according to the following procedure.

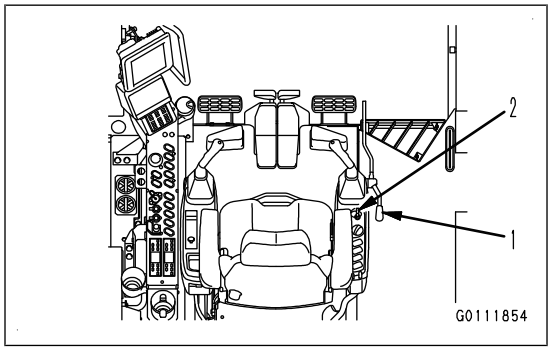


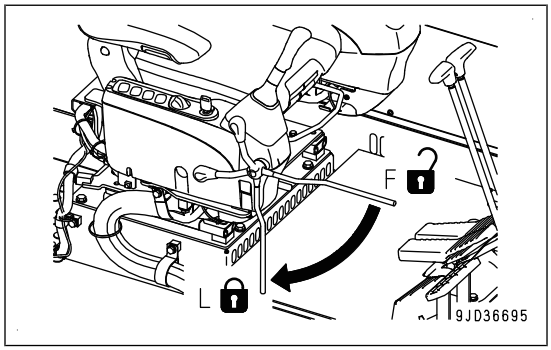
1. Check that the battery isolator switch (b) and starting motor isolator switch (c) are in ON position (a) if the machine is equipped with the battery isolator switch (b) and starting motor isolator switch (c).



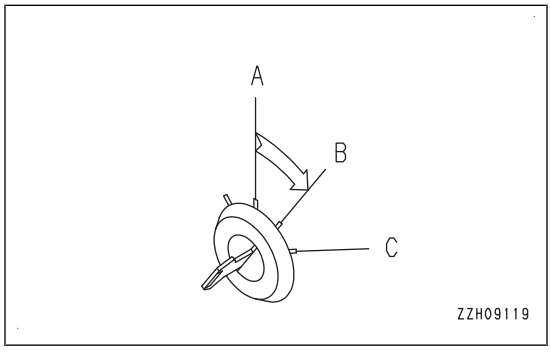
2. Check that lock lever (1) is at LOCK position (L).
3. Check that all the control levers and control pedals are at NEUTRAL position.

   If all the control levers and control pedals are released, they return to NEUTRAL position.





4. Insert the key into starting switch (2) and turn it to ON position (B).



This machine is equipped with an automatic engine warm-up system, so if the engine coolant temperature is 30 °C {86 °F} or lower 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.

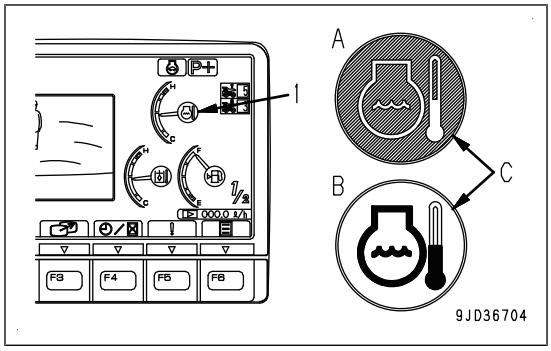
If the engine coolant temperature goes 30 °C {86 °F} or higher or if the warm-up operation is continued for more than 10 minutes, the automatic warm-up operation is canceled and the engine speed drops to the normal speed at low idle.

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

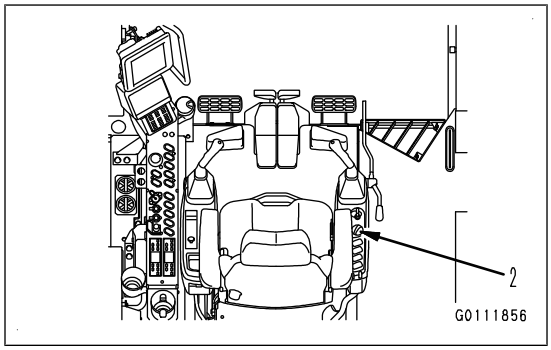
1. Check that the engine coolant temperature caution lamp (1) displays the correct temperature.

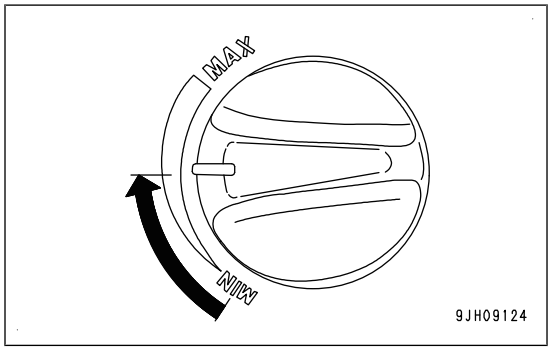
   If it displays the low temperature, perform additional warm-up operation according to step 2 until it displays the correct temperature.

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



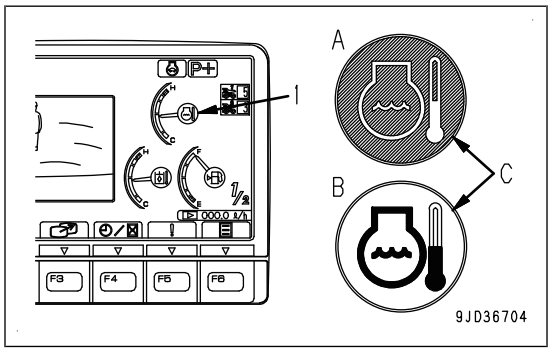
2. Turn the fuel control dial (2) to the middle between Low idle (MIN) and High idle (MAX) to run the engine at a medium speed.





Run the engine with no load until the engine coolant temperature caution lamp (1) displays the correct temperature.

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



If the engine coolant temperature caution lamp displays the correct temperature, the engine warm-up operation is completed.

Then, perform the warm-up operation for the hydraulic components.

STOP ENGINE IN EMERGENCY

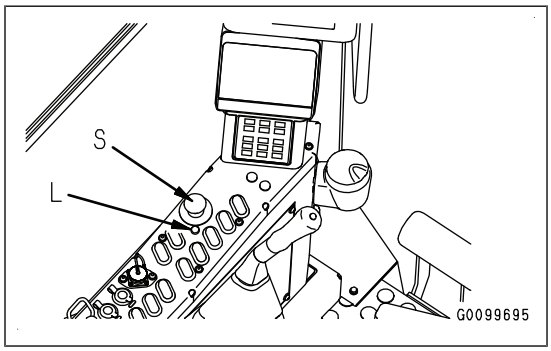
METHOD FOR STOPPING ENGINE IN CAB IN EMERGENCY

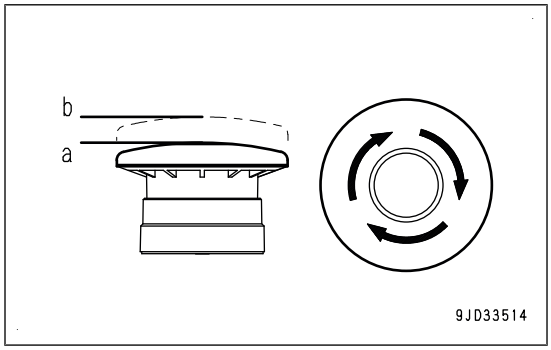
NOTICE

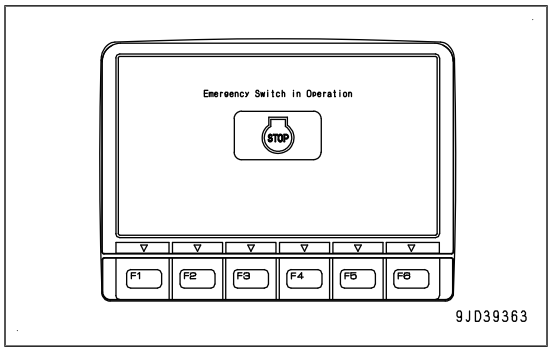
This emergency engine stop switch is used to stop the engine in emergency.
In normal cases, keep the emergency engine stop switch to OFF (normal operation) position.

Press the emergency engine stop switch (S) which is installed inside the cab to ON (emergency stop) position (a).
When the emergency engine stop switch (S) is at ON (emergency stop) position (a), the machine condition is as follows.

- If the emergency engine stop switch (S) is set to ON (emergency stop) position (a) while the engine is running, the engine stops and a caution is displayed on the machine monitor.
- Even if the starting switch key is turned to START position, the engine does not start.
- The emergency engine stop indicator (L) in cab lights up in green to show that the emergency engine stop switch is enabled. The emergency engine stop indicator (L) lights up regardless of the starting switch operation.



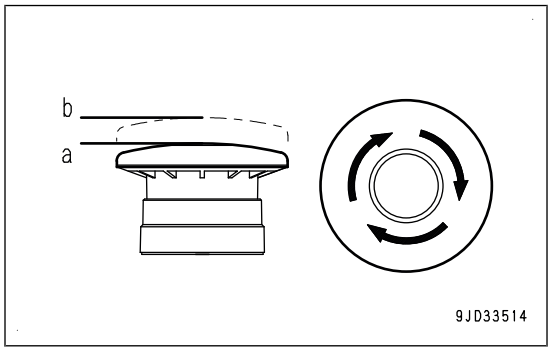




Restart the engine after stopping according to the following procedure.

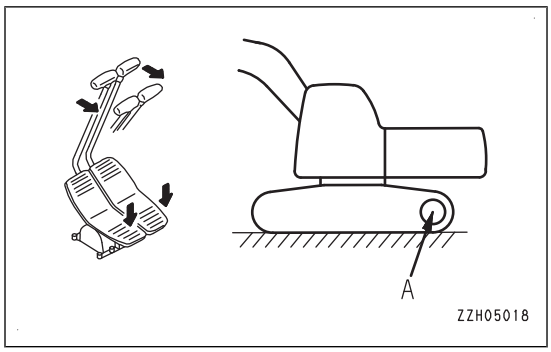
1. Turn the top of the emergency engine stop switch (S) clockwise.

   The switch part comes out a little to be returned to OFF position (B) (normal operation). Check that the emergency engine stop indicator (L) is not lit.



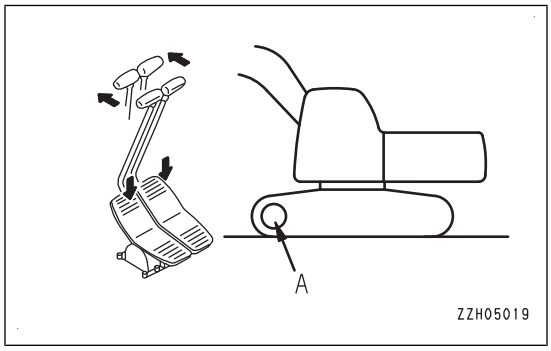
- When the sprocket (A) is at the rear of the machine

  Start the machine either by pulling levers (5) backward slowly or by depressing the rear parts of pedals (6) slowly.



- When the sprocket (A) is at the front of the machine

  Start the machine either by pushing the levers (5) forward slowly or by depressing the front parts of pedals (6) slowly.



4. When traveling, check that the travel alarm sounds normally.

   If the travel alarm does not sound, ask your Komatsu distributor for repair.

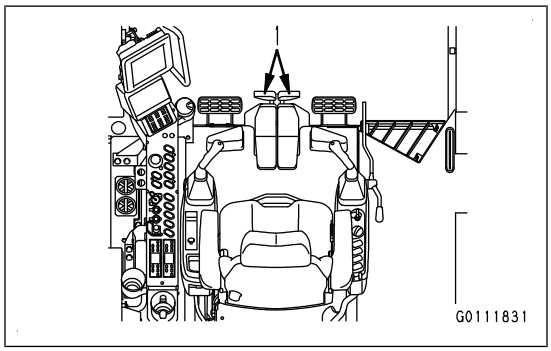
REMARK

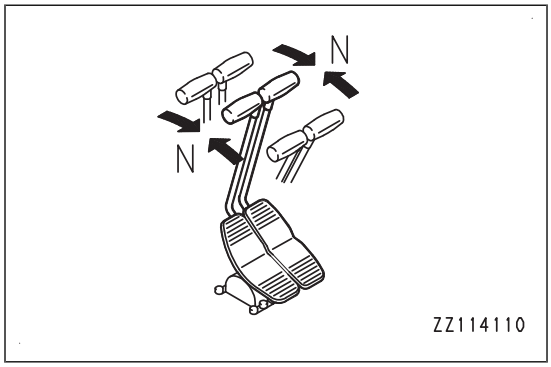
In low temperatures, if the machine travel speed is not normal, thoroughly perform the warm-up operation.
In addition, if the undercarriage is packed with mud and the machine travel speed is not normal, remove the mud from the undercarriage.

METHOD FOR STOPPING MACHINE

Avoid a sudden stop. Stop the machine gradually.

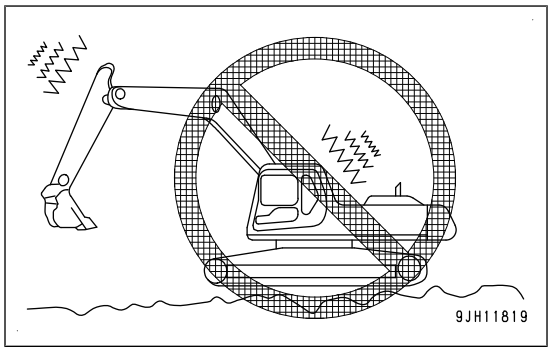
Set right and left travel levers (1) in NEUTRAL position (N).
The machine stops.



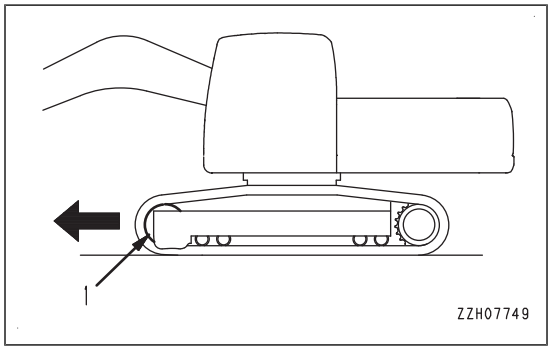


PROHIBITION OF HIGH-SPEED TRAVEL OPERATIONS ON ROUGH GROUND

If the machine travels on rough ground (rock-bed, etc.) at high speed, large push-up loads are applied to the chassis, thus the service life of the chassis is shortened.



When driving on rough ground (rock-bed, etc.), direct the idler (1) having the cushion mechanism in the travel direction and drive the machine at low speed.



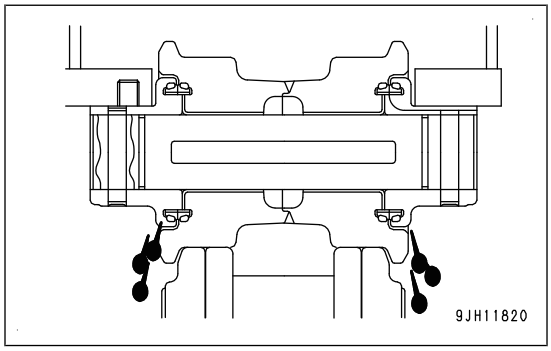
DO NOT TRAVEL LONG -TIME CONTINUOUSLY

If the machine travels continuously at high speed for 1.5 hours or more, the temperature of lubricating oil inside the track rollers and final drive will rise up. This may cause breakage to the oil seal or leakage of oil.

When travelling continuously for a long time, stop the machine for 30 minutes every 1.5 hours for the lubricating oil inside the track rollers and final drive to cool down.

If the machine travels continuously for a long time with the tracks loosened, it may break the undercarriage parts.

When driving the machine for a long time, check the track tension every 1.5 hours and if any looseness is found, adjust the tension.



For the adjustment, see MAINTENANCE, “METHOD FOR CHECKING AND ADJUSTING TRACK TENSION”.

LOCK

Position to be locked

Always lock the following positions.

(1) Operator's cab door

Always close the window.

(2) Cab base door

(3) Fuel tank filler port

(4) Hydraulic tank filler port

(5) Power module front side door (5 places)

(6) Power module rear side door (3 places)

(7) Battery case cover (2 places)

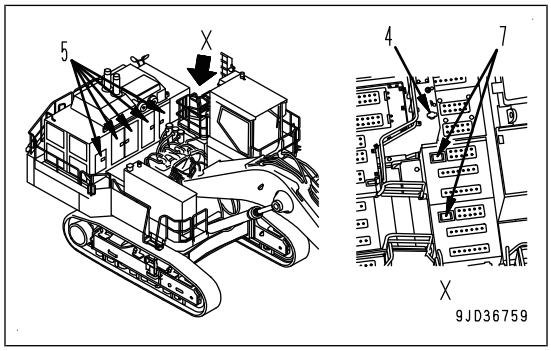
(8) Air conditioner box cover

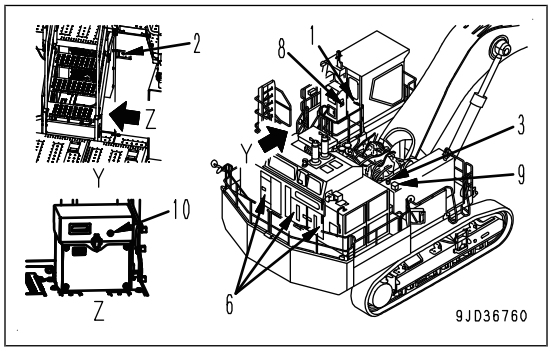
(9) Breather cover on fuel tank

(10) Starting motor and battery isolator case

REMARK

The starting switch key can be used for above positions except for (1) and (3).





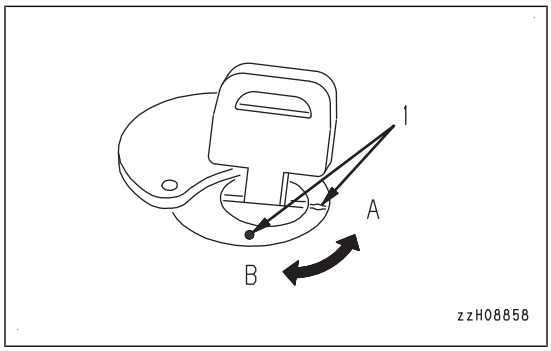
METHOD FOR OPENING AND CLOSING CAP WITH LOCK

PROCEDURE FOR OPENING CAP WITH LOCK

1. Insert the key into the key slot.
2. Turn the key clockwise, align the matching marks (1) of the key groove and the cap, then open the cap.

   Position (A): OPEN

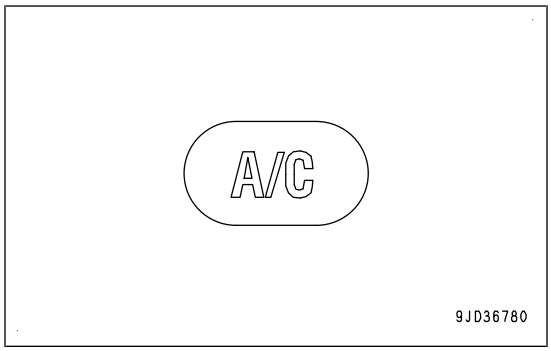
   Position (B): CLOSE (LOCK)



AIR CONDITIONER SWITCH

Use the air conditioner switch for turning the air conditioner (cooling, dry heating) ON or OFF.

- Press the air conditioner switch when the fan is operating (when display (b) is shown on the display monitor). The air conditioner is switched ON, the air conditioner switch lamp lights up, and the air conditioner starts. Press the switch again to stop the air conditioner, and the air conditioner switch lamp goes out.
- Air conditioner cannot be operated while the fan is not operating.

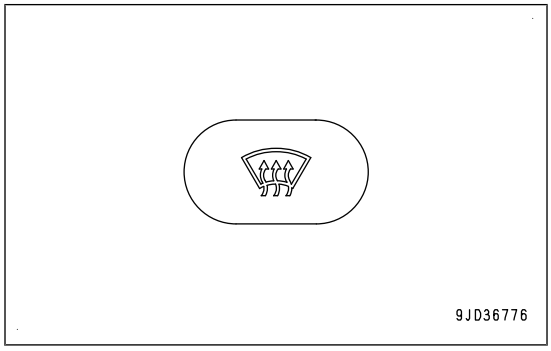


DEFROSTER SELECTOR SWITCH

Use the defroster selector switch to select the defroster vent mode.

- When the defroster selector switch is pressed, the switch lights up and the display on the display monitor changes. Air blows out from the defroster vent.
- When the defroster selector switch is pressed again, the switch goes out and the vent just before being switched to defroster vent is selected.

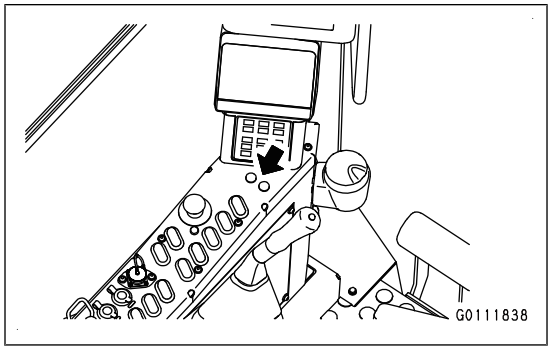
Air blows out from the vents marked with ○.



No.	Liquid crystal display	Air vent mode	Vent				Remarks
			(A)	(B)	(C)	(D)	
M6		DEF				○	Not selected in auto mode

SUNLIGHT SENSOR

Sunlight sensor automatically adjusts the flow of air from the vents to match the strength of the sun's rays. In addition, it automatically detects changes in the temperature inside the cab caused by changes in the strength of the sun's rays beforehand and automatically adjusts the temperature.



Some operating systems do not support the playback of music files.

Bluetooth®

By the pairing of the Bluetooth® audio player, you can connect the radio and play the music files.

For details, see “PAIRING”.

The Bluetooth® profiles below are supported.

- A2DP
- AVRCP

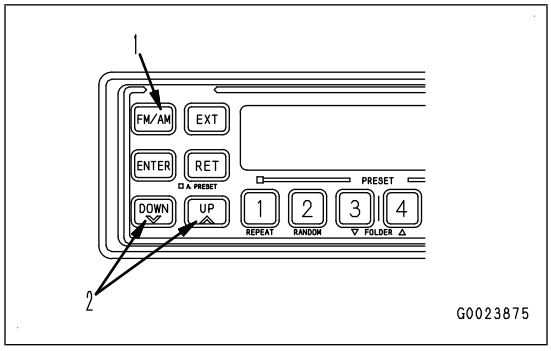
In some versions of the Bluetooth®, connection cannot be done.

Even if the Bluetooth® profile of the equipment is supported, the Bluetooth® connection cannot be done, or the display and actuation could be different by the characteristics and specifications of the destination equipment.

OPERATE RADIO

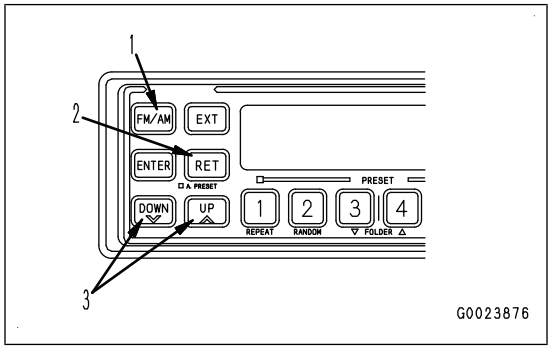
OPERATE RADIO WHEN YOU LISTEN

ADJUST FREQUENCY



1. Push the radio band selector switch (1) and select FM1, FM2, or AM.
2. Push the tuning/time adjustment switch (2) to adjust the frequency.
   - Push the UP switch to increase the frequency.
   - Hold down the UP switch to increase the frequency continuously.
     When the UP switch is released at this state, the tuning stops automatically at the frequency in good reception.
   - Push the DOWN switch to decrease the frequency.
   - Hold down the DOWN switch to decrease the frequency continuously.
     When the DOWN switch is released at this state, the tuning stops automatically at the frequency in good reception.

AUTO PRESET SETTING

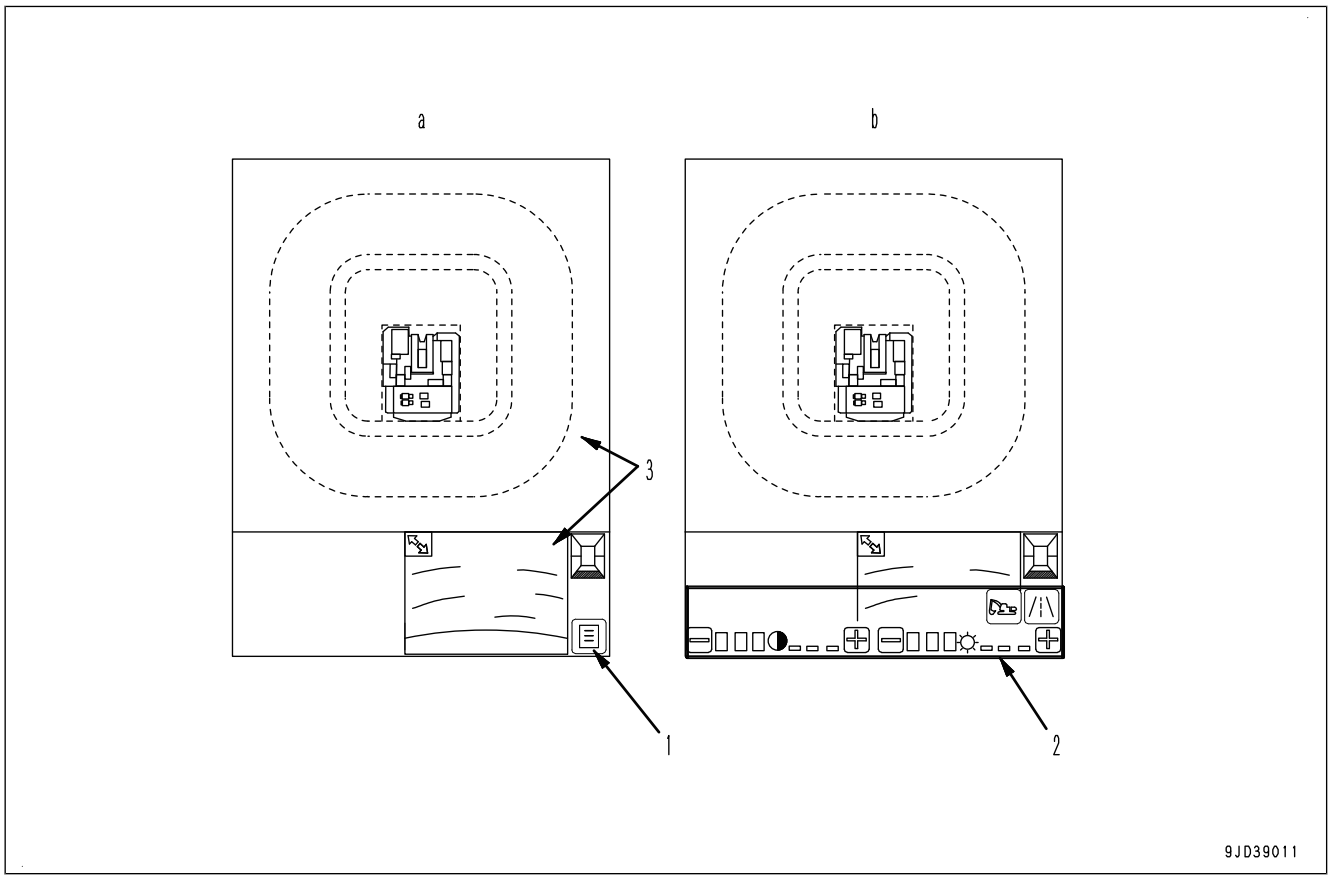


1. Push the radio band selector switch (1) and select FM1, FM2, or AM.
2. Hold down the RET switch (2) on the menu switch.

   Push the tuning/time setting switch (3) to cancel the sensing.

   When a frequency in good reception is sensed, it is automatically registered to preset memories 1 to 6.

EXPLANATION OF KomVision MONITOR EQUIPMENT



(a): Standard screen, (b): When menu button is pressed

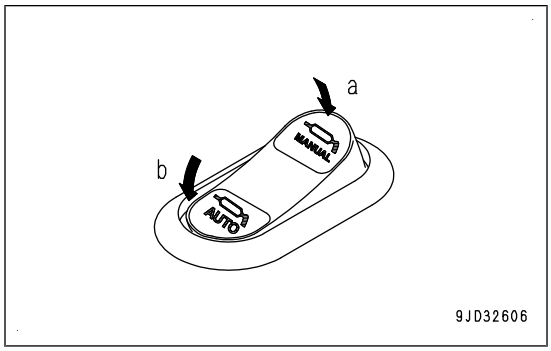
(1) Menu button

(2) Menu display

(3) Camera image display

METHOD FOR OPERATING GREASING MODE SELECTOR SWITCH AT AUTO POSITION

Auto-greasing system is actuated by operating the greasing mode selector switch to AUTO position (b) after the starting switch of the machine is turned to ON position. The greasing mode selector switch is on the right console in the operator's cab.



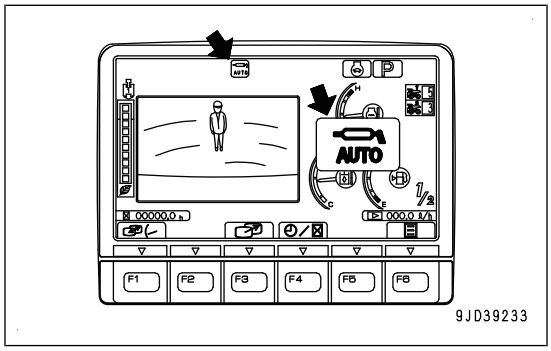
(b) AUTO

Performs the auto-greasing. Set it to (b) AUTO usually.

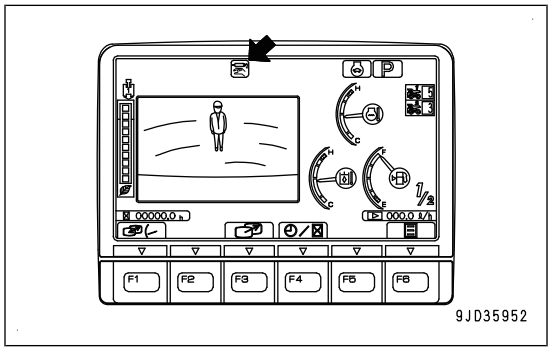
The auto-greasing operating pilot lamp lights up on the machine monitor.

Auto-greasing starts at the time when the starting switch of the machine is turned to ON position if the greasing mode selector switch has been in AUTO position (b).

1. The auto-greasing pilot lamp appears in the center of the monitor display when turning the greasing mode selector switch to AUTO position (b).

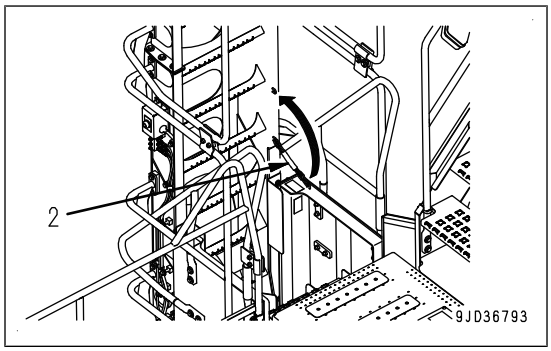


2. The screen returns to the standard screen after 2 seconds.



PROCEDURE FOR LOWERING STAIRWAY BY OPERATING FROM MACHINE

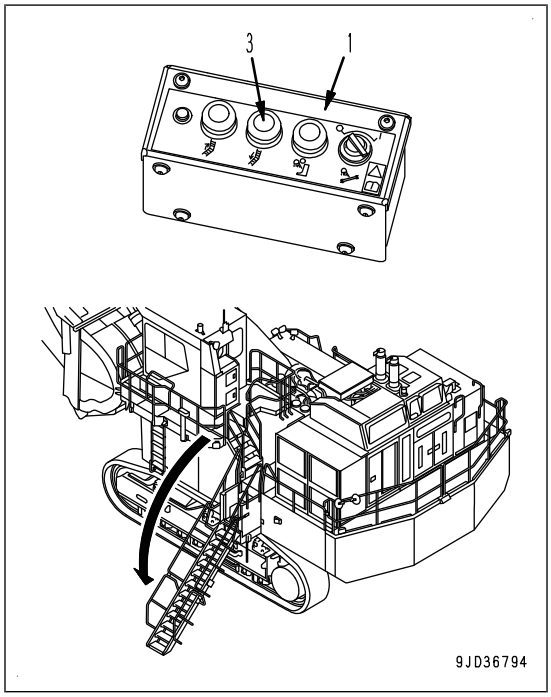
1. Put the stairway lowering prevention chain (2) on the hook on the stairway side if it is put on the hook on the machine side.



2. Keep pressing the stairway lower switch (3) in the switch box until the stairway automatically stops lowering.

   REMARK

   Stairway can be lowered even when the engine is stopped. The moving speed of the Stairway when the engine is stopped is slower than that when the engine is running.

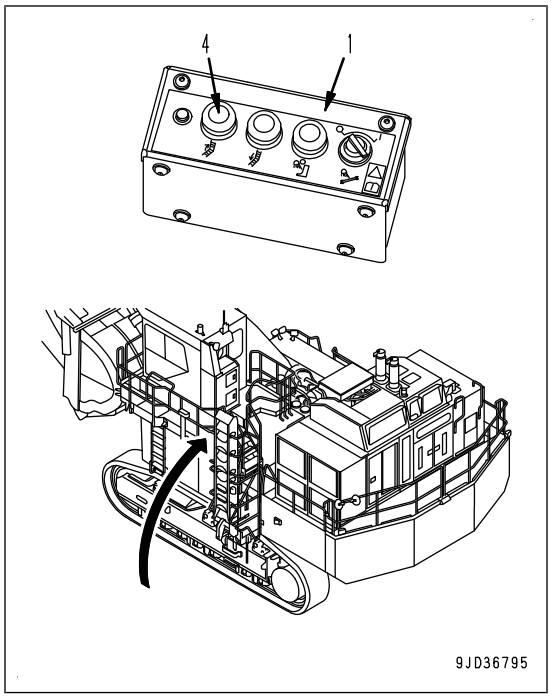


PROCEDURE FOR STORING STAIRWAY BY OPERATING FROM MACHINE

1. Press the stairway raise switch (4) in the switch box (1), and raise the stairway.

   REMARK

   Stairway raising operation is available only while the engine is running.



TROUBLES AND ACTIONS

ACTIONS WHEN RUNNING OUT OF FUEL

When starting the engine again after running out of fuel, fill it up with fuel and bleed air from the fuel system before stating.

Always check the fuel level to prevent running out of fuel.

If the engine has stopped because of running out of fuel, all the air in the fuel circuit must be bled by using the fuel feed pump.

PROCEDURES FOR BLEEDING AIR FROM FUEL CIRCUIT

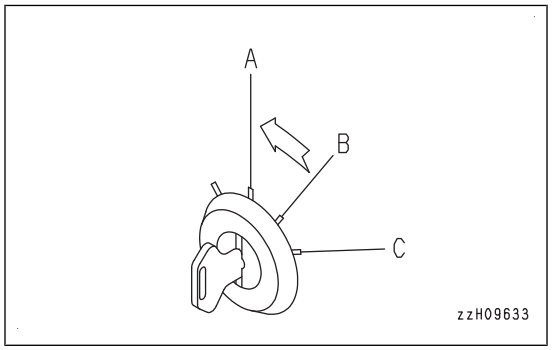
This machine is equipped with the fuel feed pump to bleed air from the fuel circuit. Bleed air according to the following procedure in the below cases.

- When the fuel filter is replaced
- When fuel is used up
- When starting the engine for the first time after the piping or such is modified or supply pump is replaced.

⚠ WARNING

- **Immediately after the engine is stopped, all of parts are still very hot. It may cause a burn injury. Wait for the temperature to go down, and then start the work.**
- **When using the fuel feed pump, do not loosen the air bleeding plug of the fuel circuit. The fuel circuit is pressurized while the fuel feed pump is operated. If the air bleeding plug is loosened at this time, fuel may spurt out and it is dangerous.**

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



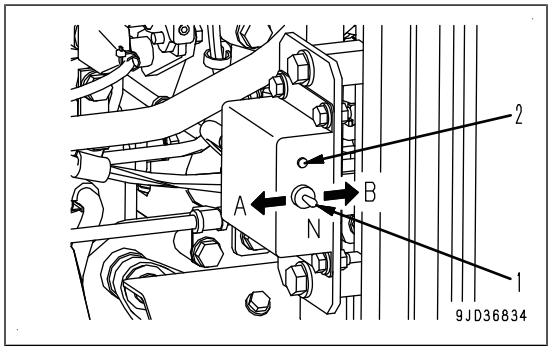
2. Set the fuel feed pump switch (1) to ON position (A).

   Lamp (2) flashes and the fuel feed pump operates.

   Let go of the fuel feed pump switch (1). The fuel feed pump switch (1) returns to the original position (N) by itself.

   REMARK

   - While the lamp (2) is flashing, the fuel feed pump repeats 30 seconds in operation and 10 seconds not in operation until the lamp (2) goes out.
   - If the switch is set to OFF position while the lamp is lit, the lamp goes out and the fuel feed pump stops.
   - The fuel feed pump stops while the lamp is flashing, but this is not abnormal.



3. After a lapse of the specified time (approximately 7 minutes), the lamp (2) goes out automatically and the fuel feed pump stops.

PHENOMENA AND ACTIONS FOR ENGINE RELATED PARTS

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

Problem	Main cause	Remedy
Engine oil pressure caution lamp lights up.	Oil in oil pan is insufficient.	Add the oil to the specified level by referring to the check before starting.
	Oil filter cartridge is clogged.	Replace the cartridge by referring to “EVERY 500 HOURS MAINTENANCE”.
	Oil is leaked due to improper connection or breakage of oil pipe or pipe joint.	Check, repair. (*)
	Wiring to the sensor is disconnected or broken.	Repair the wiring, or connect it. (*)
	Sensor has a failure. Monitor has a failure.	Replace (*)
Steam spurts out from top of radiator (pressure valve). Radiator coolant level caution lamp lights up. Engine coolant temperature gauge is in red range. Engine coolant temperature caution lamp lights up.	Coolant is insufficient, coolant leaks.	Check, add coolant, repair by referring to “CHECKS BEFORE STARTING”.
	Dirt or scale is accumulated in cooling system.	Change the coolant, flush inside of cooling system by referring to “WHEN REQUIRED”.
	Coolant level sensor has a failure.	Replace the coolant level sensor. (*)
	Radiator fin is clogged, fins are fallen.	Clean or repair. See “EVERY 500 HOURS SERVICE”.
	Coolant temperature gauge has a failure.	Replace the coolant temperature gauge. (*)
	Thermostat has a failure.	Replace thermostat. (*)
	Thermostat seal has a failure.	Replace the thermostat seal. (*)
	Water pump has a failure.	Check, repair (*), replace. (*)
	Radiator filler cap is loose (in high altitude operation)	Tighten the cap or replace packing.
	Wiring to the sensor is disconnected or broken.	Repair the wiring, or connect it. (*)
Engine coolant temperature gauge does not increase, and stays at lowest position.	Engine coolant temperature gauge has a failure.	Replace the engine coolant temperature gauge.
	Thermostat has a failure.	Replace thermostat. (*)
	Fan pump system error	Check, repair. (*)
	The engine is exposed to the cold wind in cold weather.	Install the radiator curtain. (*)

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), 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.

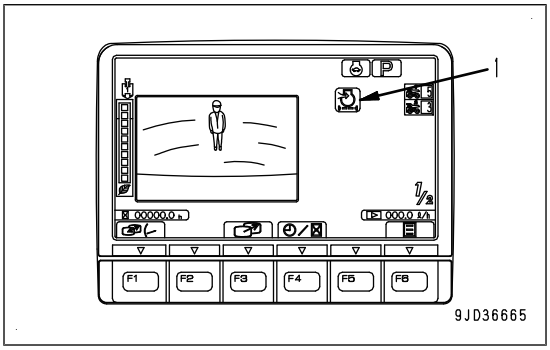
In the EU, purchase the biofuel from the member companies of European Biodiesel Board (EBB).

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

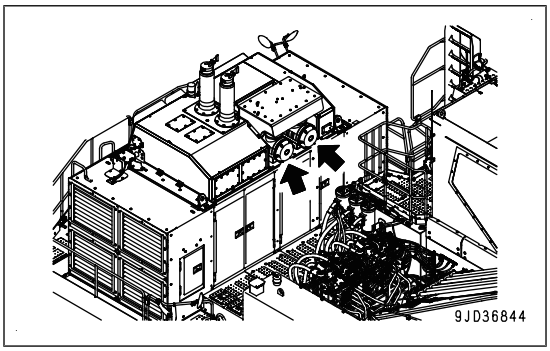
METHOD FOR CHECKING AIR CLEANER

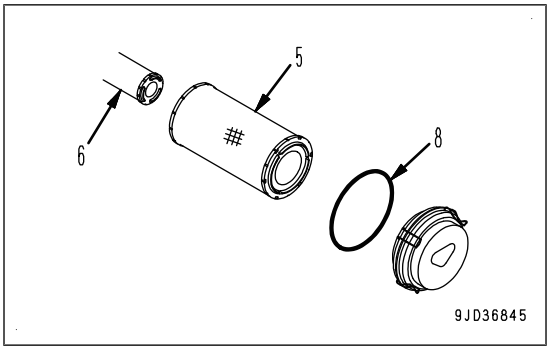
The air cleaner clogging caution lamp informs when the air cleaner element should be checked.

Check that air cleaner clogging caution lamp (1) on the machine monitor is lit.
If air cleaner clogging caution lamp (1) lights up, clean the air cleaner element.



If the element is used for one year, or air cleaner clogging caution lamp (1) on the machine monitor lights up soon after the element is cleaned, replace the outer element (5), inner element (6), and O-ring (8).



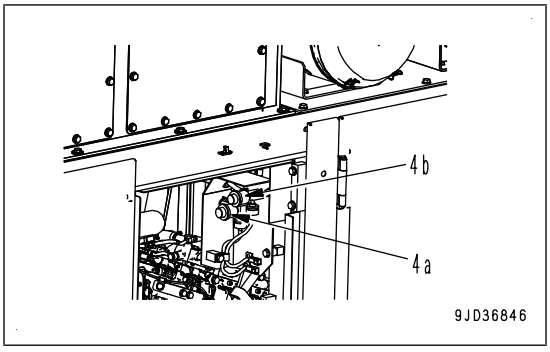


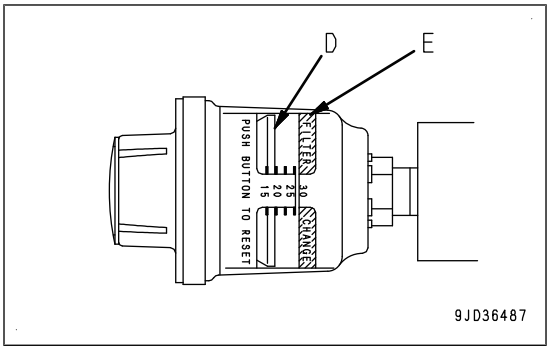
REMARK

Use the dust indicators (4a) or (4b) as a guide to determine the timing for cleaning the air cleaner element.
When the end face (D) of the yellow piston enters red (7.5 kPa {0.08 kgf/cm^2,1.14 PSI}) range (E), it is the time for cleaning.

(4a) R.H. air cleaner dust indicator

(4b) L.H. air cleaner dust indicator





CHECK KOMATSU MAINTENANCE-FREE BATTERY INDICATOR

(if equipped)

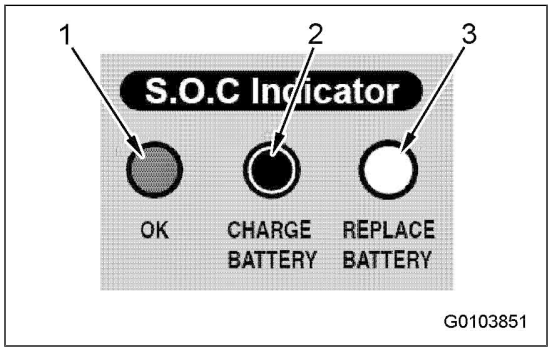
Perform this check before operating the machine.

⚠ WARNING

- **Do not let an open flame be near the battery. The battery releases the flammable gas, and it can cause an explosion.**
- **Battery electrolyte is dangerous object. Be careful not to let it get in your eyes or on your skin. If it gets on you, wash it off with a lot of water and consult a doctor.**
- **Battery electrolyte cannot be topped up.**

- Indicators that show the charging state and battery electrolyte level are located on the top of the battery.
- Check the display status and follow the instructions.
- The indicator display can not be correct at low temperatures.

1. Green: Normal
2. Black: Charging is required. Follow the instruction manual for the battery charger and charge it correctly.
3. White: Battery electrolyte is insufficient. Replace the battery with a new one. Battery electrolyte cannot be topped up.

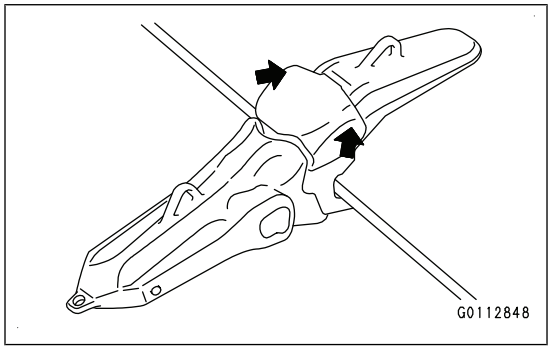


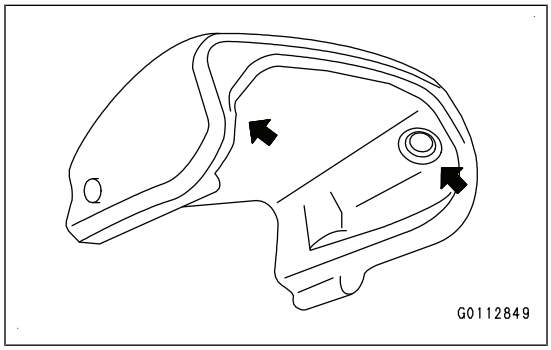
METHOD FOR REPLACING WEAR CAP(K PRIME)

If the wear cap has a hole on the wear sign part, or has a crack, replace it.

⚠ WARNING

- **It is dangerous if the work equipment moves by mistake when the wear cap is being replaced.**
  Set the work equipment in a stable condition, stop the engine and set the lock lever securely to LOCK position.
- **Broken pieces may fly during the replacement work, so always wear the protective equipment such as protective eyeglasses and gloves.**
- **If the tooth pin cannot be removed by this method, ask your Komatsu distributor to have the replacement performed for safety.**

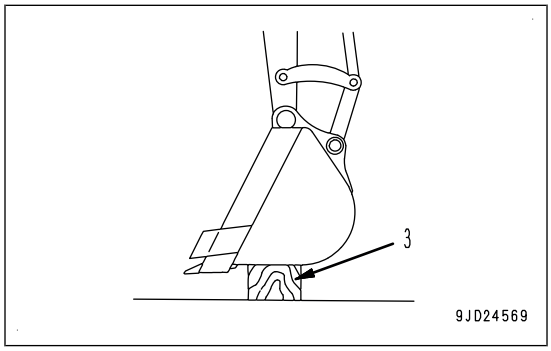




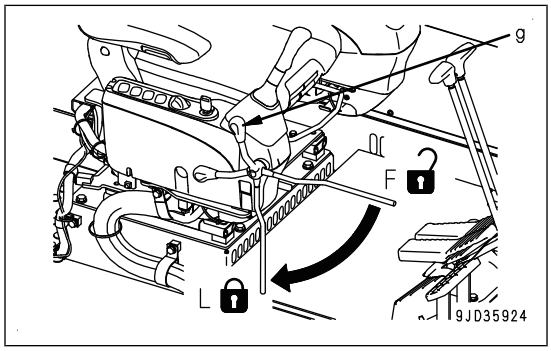
Items to be prepared

Socket wrench of 19 mm {0.7 in} width

1. Place a block (3) under the bucket so that the pin (1) is pull out, and stop the engine.



2. Turn the starting switch to ON position within 15 seconds after stopping the engine, and move each control lever (for work equipment and travel) to the full stroke in all directions in order to release the internal pressure.
3. Check that the work equipment is in a stable condition, then operate the operating portion (g) of the lock lever to set it to LOCK position (L).



3) Before starting the engine, check that the oil (3) oozes out from the air bleeder (1), and then tighten the air bleeders (1) of PF pump and P2 pump lightly.

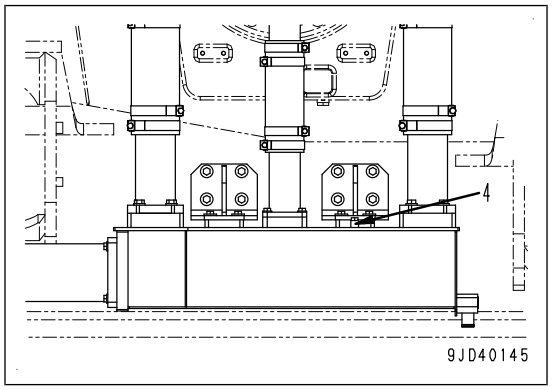
4) Loosen the suction tube plug (4), check that oil flows out, and then tighten the plug (4) lightly.

5) Crank the engine, check that the oil (3) flows out from the air bleeder (1), and then tighten it lightly.

   Perform cranking of engine approximately 2 times. (Cranking should be within maximum of 15 seconds.)

6) Loosen the air bleeder (1) of P2 pump. Crank the engine and check that the oil (3) flows out from the air bleeder (1), then tighten it lightly.

7) After canceling the automatic warm-up operation, start the engine and keep it at low idle.



8) Loosen the air bleeders (1) of all hydraulic pumps and check that the oil (3) which no bubbles are mixed flows out.

9) Tighten the air bleeders (1) of all hydraulic pumps lightly.

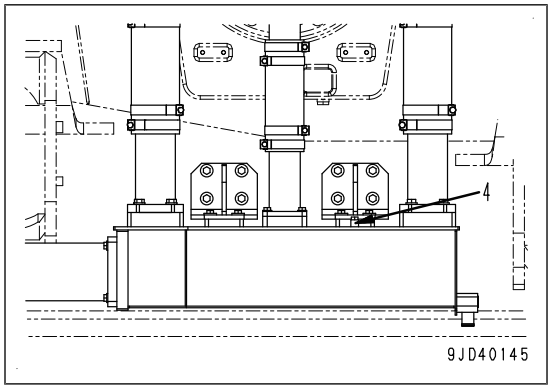
10) Close the hydraulic tank cap.

11) Keep the engine at low idle, raise the work equipment above the ground, swing the upper structure by 180° at very slow speed, and then lower the work equipment to the ground.

12) Loosen the suction tube plug (4), check that oil flows out, and then tighten the plug (4).

    Tightening torque of plug (4): 58.8 to 78.4 Nm {6 to 8 kgfm, 43.4 to 57.9 lbft}

13) Loosen the air bleeders (1) of all hydraulic pumps and check that the oil (3) which no bubbles are mixed flows out.



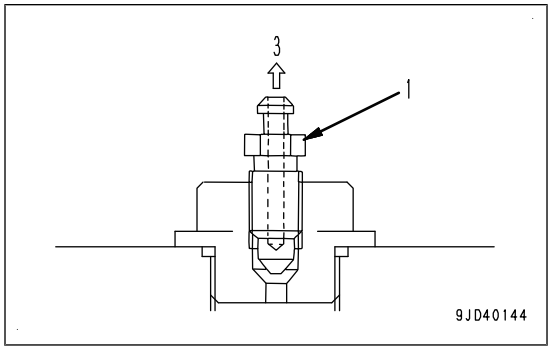
14) Tighten the air bleeder (1).

    Tightening torque of air bleeder (1): 8.8 to 9.8 Nm {0.9 to 1 kgfm, 6.51 to 7.2 lbft}

15) Finish the air bleeding from the pump and stop the engine.

16) Loosen the oil filler cap of hydraulic tank gradually to remove it, and release the internal pressure of hydraulic tank.

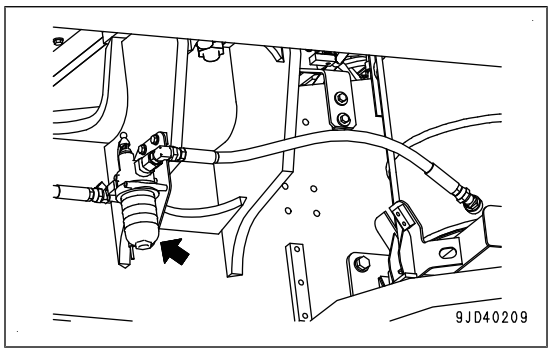
17) Check the hydraulic oil level, and add oil to the specified level if it is insufficient.



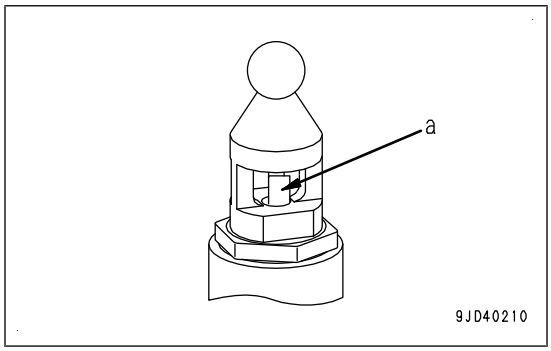
METHOD FOR CHECKING AND CLEANING GREASE REFILL FILTER

(if equipped)

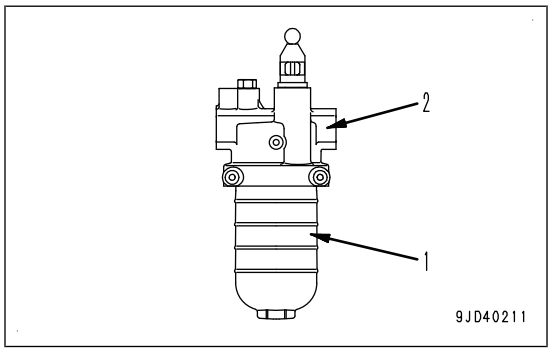
An optional grease refill filter is installed to the filler port of the machine equipped with a grease refilling drum can.



Check the indicator (a) of grease refill filter and if it is red, wash the grease refill filter and discharge the dust.



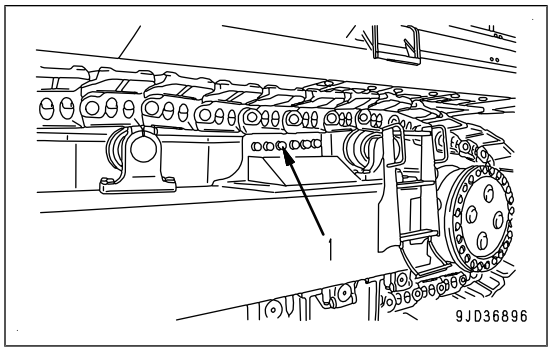
1. Stop the engine.
2. Place a container under the filter case (1) to catch the drained oil.
3. Turn the filter case (1) counterclockwise and remove it from the filter head (2).
4. Put the filter case on a clean dry place.

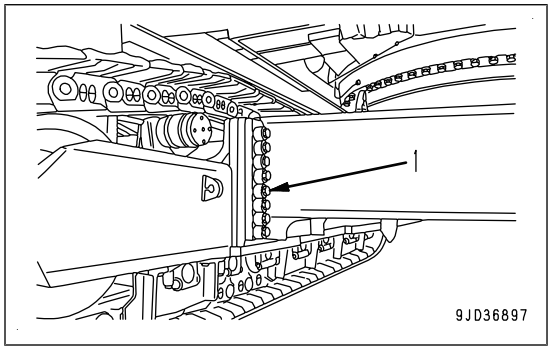


METHOD FOR CHECKING LOOSENESS AND TIGHTENING TRACK FRAME AND AXLE CONNECTING BOLTS

If the bolts (1) (12 places) connecting the track frame and axle are continually used, they will break. Ask your Komatsu distributor to perform the tightening as soon as you find the looseness.

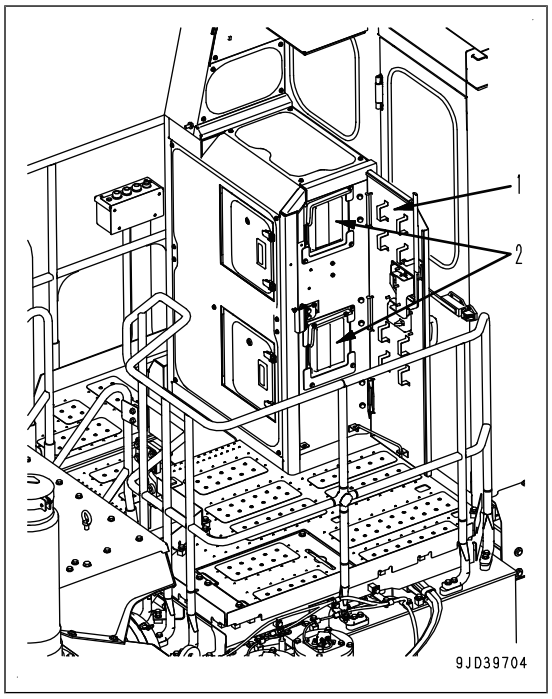
Tightening torque:4658±245 Nm {475±25 kgfm,3440±181 lbft}





METHOD FOR CLEANING FRESH AIR FILTER

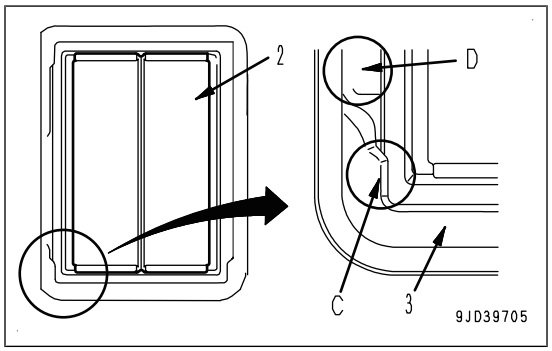
1. 2 units of the air conditioner body are located in the air conditioner box on the rear side of the cab.
2. Open the cover (1) of the air conditioner box.



3. Remove the filter (2).

   REMARK

   - Insert your finger into dent (D) of duct and pull it toward you to remove the filter.
     If you grasp the filter with excessive force, it will be deformed or damaged.
   - If the filter is damaged or deformed, replace it with new one.

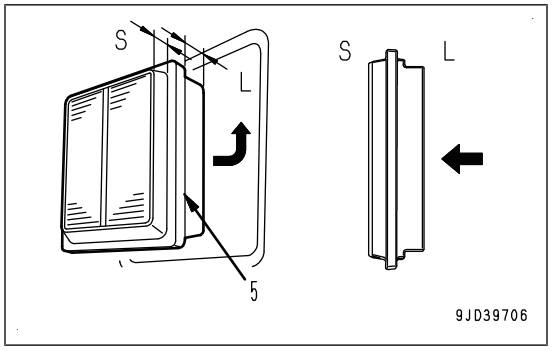


4. Clean the filter (2) with compressed dry air.

   Set the compressed air pressure to be less than 0.2 MPa {2.1 kgf/cm^2,29.9 PSI}and blow it in the arrow direction.

   If the filter is severely clogged and you cannot clean it, or oil sticks to the filter, or the filter gets dirty heavily, replace it with new one. Replacement of it with the new one once in a year is recommended for usual usage.

   Replace it with the new one if the filter is damaged or deformed.



5. Return the filter (2) after cleaning.

METHOD FOR REPLACING FUEL MAIN FILTER CARTRIDGE

⚠ WARNING

- **After the engine is stopped, all parts are still very hot, so do not replace the filter immediately. Wait until all of parts cool down before starting the work.**
- **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 the engine is stopped to let the internal pressure go down before replacing the filter.**
- **Do not bring any open flame close.**
- **When opening the air bleeding plug of the fuel filter head, take care. There may be remaining pressure and it may spurt out.**

NOTICE

- **Komatsu genuine fuel filter cartridges use a special filter that has highly efficient filtering ability. When replacing the parts, Komatsu recommends using Komatsu genuine parts.**
- **The common rail fuel injection system used on this machine consists of more precise parts than those in the conventional injection pump and nozzles. If any cartridge other than a Komatsu genuine filter cartridge is used, dust or dirt may get in and cause problems with the injection system. Never use a substitute.**
- **When performing inspection and maintenance of the fuel system, be careful not to let any foreign material get in, more than ever before. If dust sticks to the fuel system, wash it off thoroughly with fuel.**

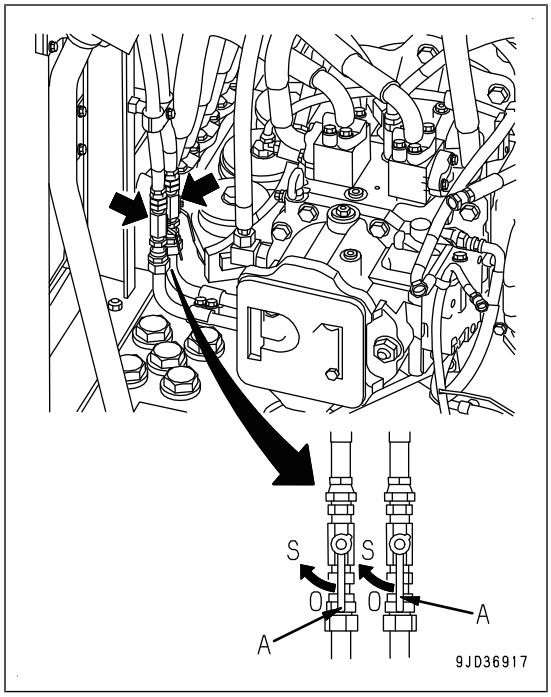
Items to be prepared

- Container to receive the fuel
- Filter wrench

1. Pull the fuel shut off lever (A) to your side which is installed on the main pump front in the pump room, and shut off the circuit to supply fuel from the fuel tank.

   (S): CLOSE

   (O): OPEN



METHOD FOR REPLACING SWING MOTOR COOLING FILTER ELEMENT

⚠ WARNING

Do not replace the filter immediately after the engine is stopped. The parts are still very hot. Wait until all of parts cool down before starting the work.

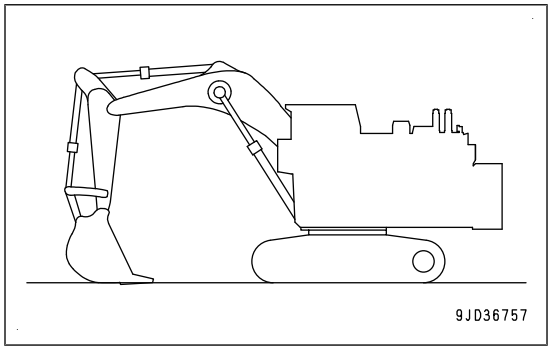
NOTICE

Komatsu genuine fuel filter cartridges use a special filter that has highly efficient filtering ability. When replacing the parts, Komatsu recommends using Komatsu genuine parts.

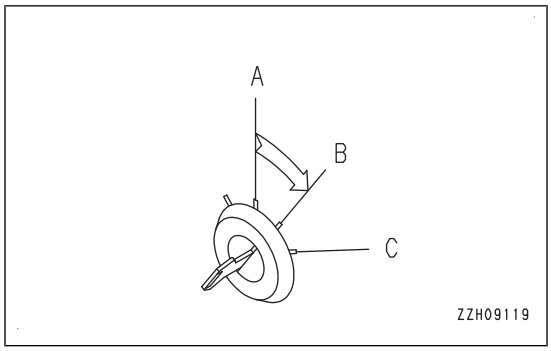
Items to be prepared

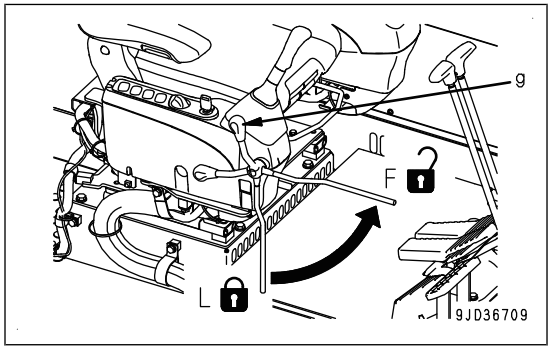
Container to receive the drained oil

1. Lower the work equipment to the ground and stop the engine.

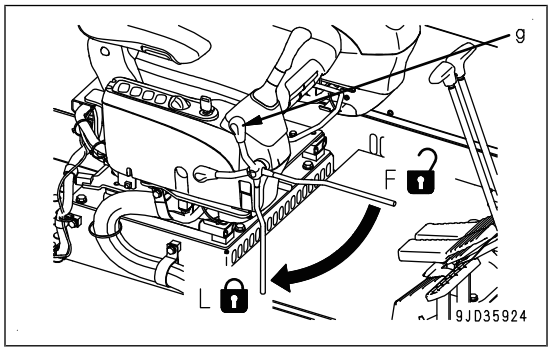


2. Turn the starting switch to ON position (B), and operate the operating portion (g) of the lock lever to set it to FREE position (F).
3. Operate each work equipment control lever and attachment control pedal fully to the front, rear, right, and left for 2 to 3 times within 15 seconds to release the internal pressure in the hydraulic circuit after operating Step 2.



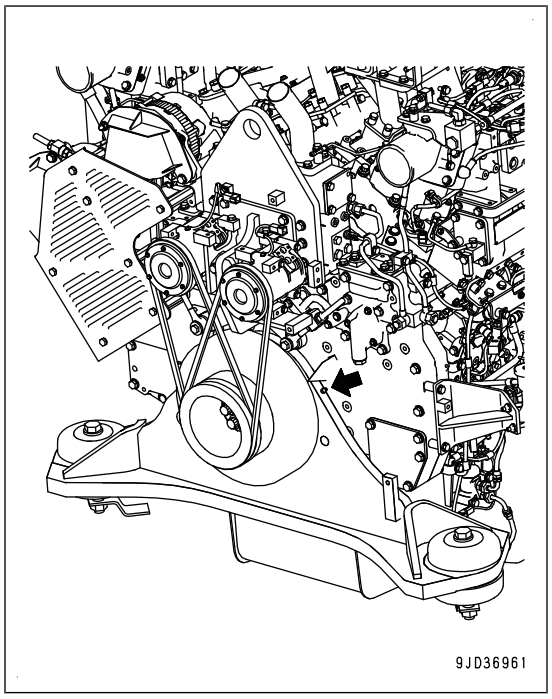


4. Operate the operating portion (g) of the lock lever to set it to LOCK position (L).



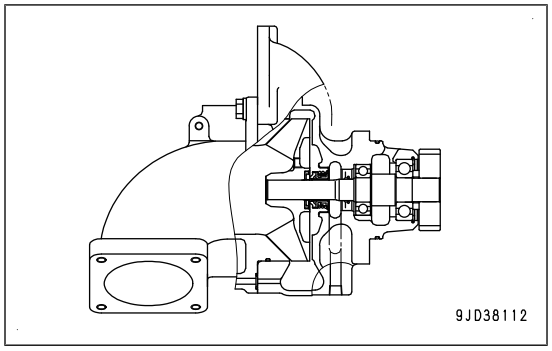
METHOD FOR LUBRICATING ENGINE MOUNT

Lubricate the grease fitting of the engine mount with a grease gun.



METHOD FOR CHECKING WATER PUMP

Check for leakage of water and oil around the water pump. If any problem is found, ask your Komatsu distributor to perform disassembly, repair, or replacement.



CHECK ALTERNATOR PULLEY AND AIR CONDITIONER COMPRESSOR PULLEY

Check the pulley for play or leakage of grease. Consult your Komatsu distributor for inspection and repair if a problem is found.

SPECIFICATIONS

No.	Name	Necessary condition
3	Ground cable (Note. 1)	• The ground cable must be grounded. • The ground bar, etc. is buried in the ground for grounding.
4	External power supply input cable	• Prepare 2 cables which meet the conditions that follow. 1. It is 3-core cable. 2. Nominal cross-sectional area of the single core is 5 to 8 mm^2. 3. It is the cabtyre cable type. 4. Maximum length is 30 m . (Note. 2)

Note. 1: Ground fault circuit interrupter and ground cable are installed to prevent the electric shock on person in case the supplied electric current is leaked to the machine.

Note. 2: This is to prevent the voltage drop.

FABRICATE EXTERNAL POWER SUPPLY CABLE

External power supply input cable can be fabricated at site according to the local need, but here we provide some guidance for you to conform to.

Fabricate the cable in accordance with the following procedure.

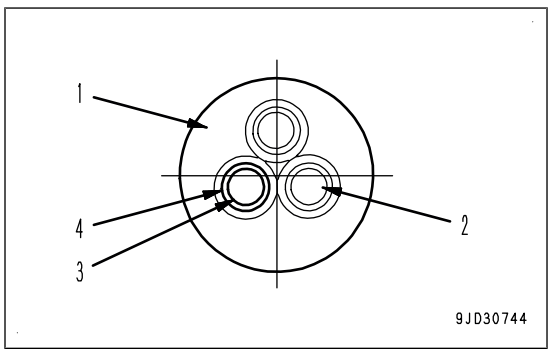
Procedure for fabrication

⚠ CAUTION

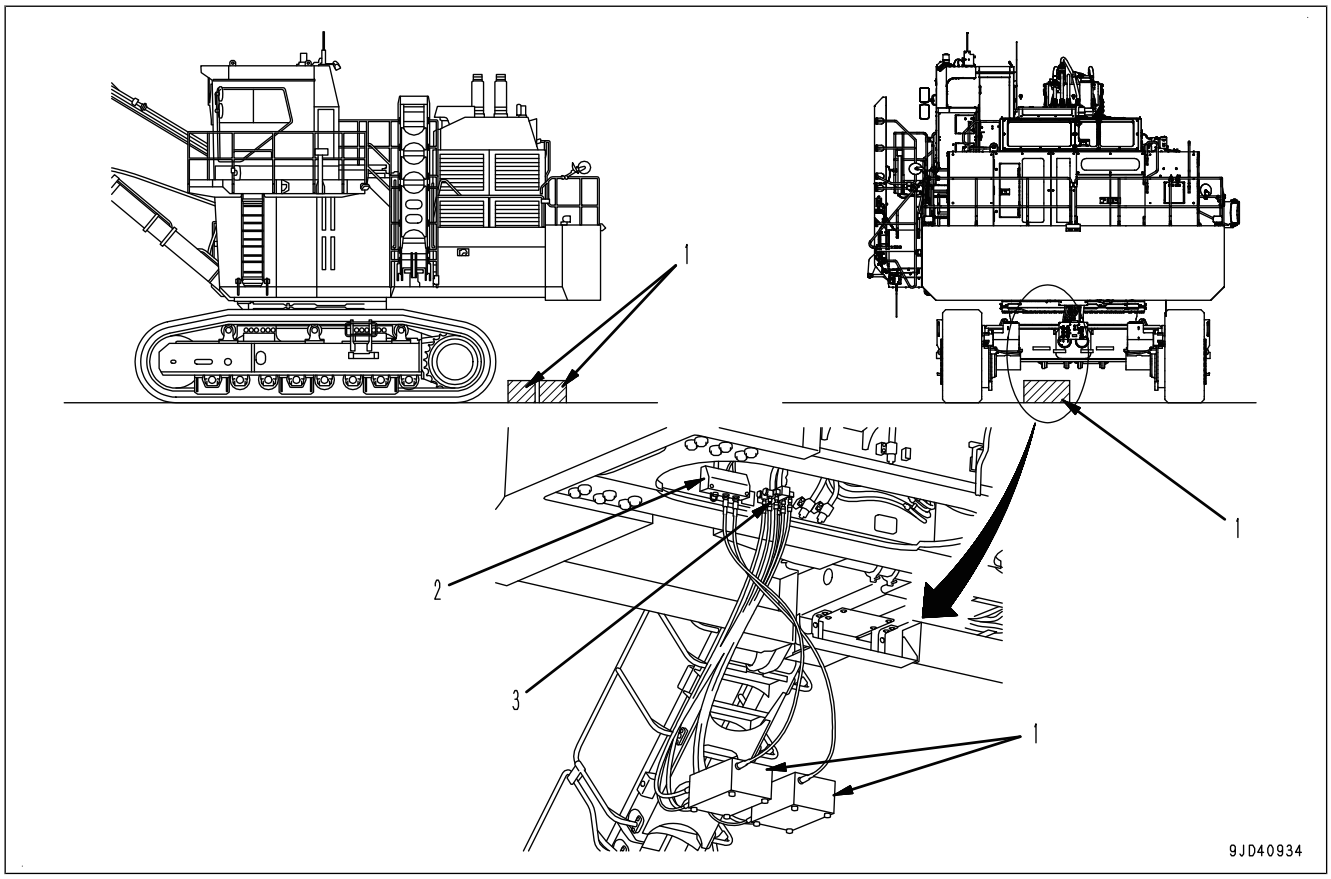
- **Always solder the connections between the connector and the core wire.**
- **Fit a rubber tube or a tape on the soldering parts for insulation to prevent short circuit caused by contact between conductors.**
- **Always use 175-06-32781 for the plug. If other plug is used, it will be impossible to connect to the external power supply input (receptacle).**
- **Before you connect to the power supply system, be sure to turn the main switch of power supply system to the "OFF".**
- **Connect it to let each power supply circuit and ground circuit (of each power supply system and machine input plug) match.**

1. Locally purchase the 3-core chloroprene sheathed cabtyre cable.
   - Correct nominal cross-sectional area of the single core is 5 to 8 mm^2.
   - For the withstand voltage performance, the cable must be resistant against 3000 V for 1 minute.
   - Length of the cable must be 30 m or less to prevent the voltage drop.
   - Cross section as an example

   (1) Chloroprene sheathe
   (2) Conductor
   (3) Paper tape
   (4) Insulator



GENERAL VIEW



(1) Diesel preheater body
(2) Connecting port (power supply)
(3) Connecting port (fuel, coolant)

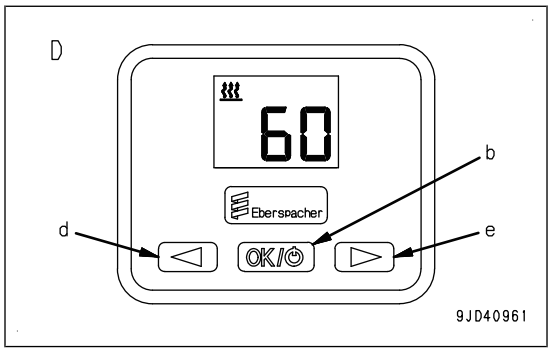
2. Operate the movable diesel preheater in the procedure that follows.

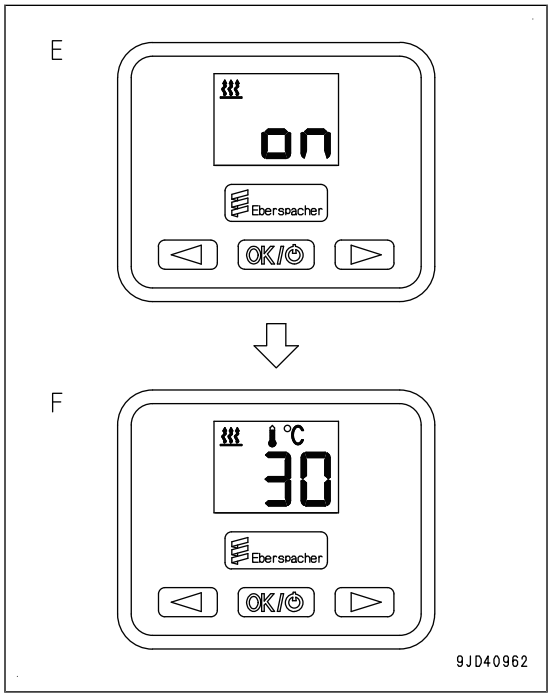
   The movable diesel preheater is used in two ways as shown in the step 1 and step 2.

   You can operate it with each procedure.

   - Step 1
     Hold down the button (b) on the control panel for longer than 2 seconds to let the diesel preheater operate.

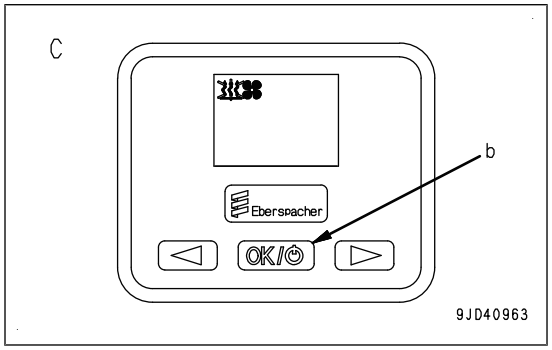
     The movable diesel preheater operates after approximately 1 minute of the fuel intake operation.
     If the remaining operation time (minutes) of the heater is shown on the control panel, the diesel preheater operates normally.
     (E): Movable diesel preheater is turned on (fuel intake operation starts)
     (F): Operation time is shown (diesel preheater is normally operated)



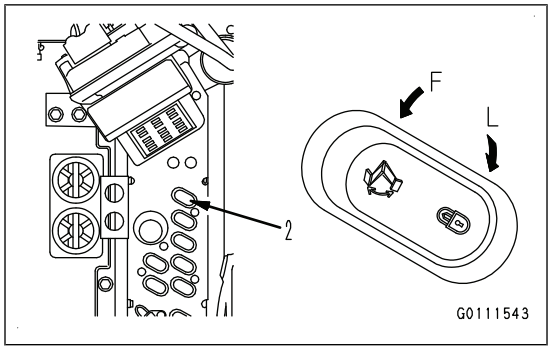


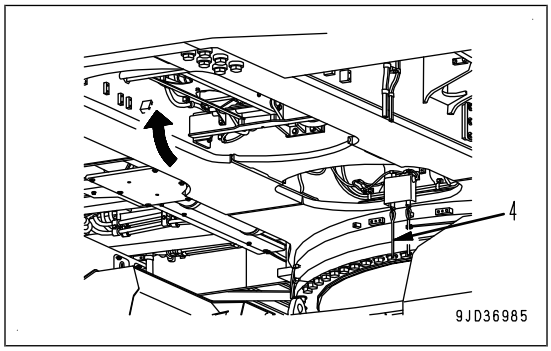
   - Step 2
     Push the button (b) on the control panel (for 2 seconds or below) to let the start screen be shown.

     Push the button (b) on the control panel (for 2 seconds or below) again to let the movable diesel preheater operate.
     (C): Start screen



3. Check that the service center switch (2) is in FREE position (F).
4. Keep pulling the service arm raising switch (4) (green) which is on the rear of the swing circle until the service arm is automatically stopped.
5. Turn the service center switch (2) to LOCK position (L) after the service arm is stowed.





NOTICE

Always turn the service center switch to LOCK position after using the service arm.
The service arm can be operated from the ground when it is in FREE position. It may lead to a serious accident.

REMARK

Service arm raising operation is available only while the engine is running.
Service arm will be lowered by hydraulic drift when the engine is stopped for a long time. This is not a failure.

- Check that there is no persons around the service arm before starting the engine, since the service arm is automatically restored to the storage position at starting the engine if the hydraulic drift angle is within 15 °.
- Store the service arm by pulling the service arm raising switch, since the service arm is not automatically restored to the storage position if the hydraulic drift angle is 15 ° or more.

DRAIN OR ADD OIL, GREASE AND COOLANT THROUGH SERVICE PANEL

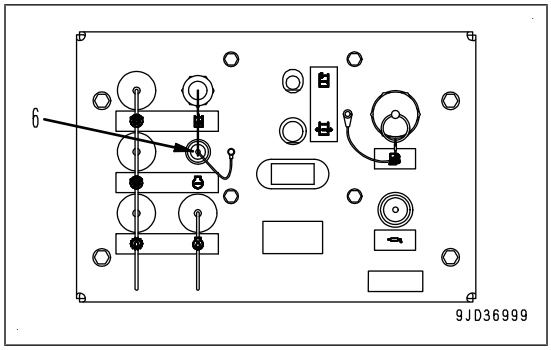
A pressure pump and pressure pump coupler are needed to perform draining or adding the lubricant and coolant from each coupler of the service center.

- Equivalent couplers manufactured by SHAW are used for each coupler of the service center. When preparing a coupler for the pressure pump, use the equivalent of the SHAW part number in the following table.

Item	Coupler (service center side)	Coupler (pressure pump side)
Engine oil coupler	971-0988-01R	971-0988-01N
Swing machinery oil (rear) coupler	971-0988-01R	971-0988-01N
Swing machinery oil (front) coupler	971-0988-01R	971-0988-01N
PTO oil coupler	971-0988-01R	971-0988-01N
Hydraulic oil coupler	971-0987-01R	971-0987-01N
Coolant coupler	971-0985-01R	971-0985-01N
Fuel coupler	971-0500-01	971-2020-01
Grease coupler	971-0988-01N	971-0988-01R

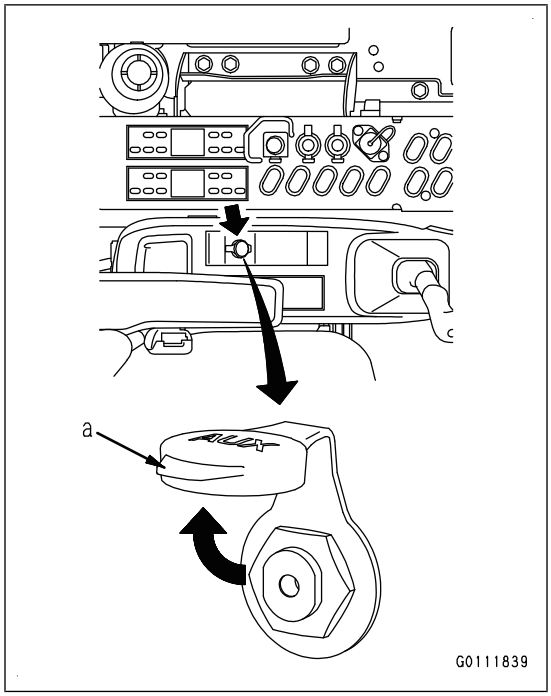
- When using the couplers manufactured by WIGGINS, consult your Komatsu distributor.

6. Remove the coolant coupler (6) cap, and securely connect the coupler on the pressure pump side.
7. Drain the coolant.
8. Start adding the coolant.
9. After finishing draining and adding the coolant, remove the coupler on the pressure pump side.
10. Install the cap to the coupler.
11. Turn the drain valve (P) on the bottom of the machine to CLOSE position (S).

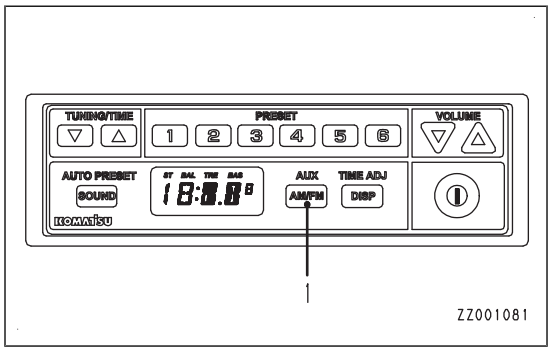


12. Install the cap (5) of coolant filler port.
13. Push down the cap lever (4) of cap (3) on top of the pressurized reservoir tank.
14. Check that the coolant level (2) of the pressurized reservoir tank (1) is within “Hi-Low” range by referring to “METHOD FOR CHECKING COOLANT LEVEL, ADDING COOLANT”.

1. Open the cap (a).
2. Connect a portable audio equipment by using a commercially available audio cable.



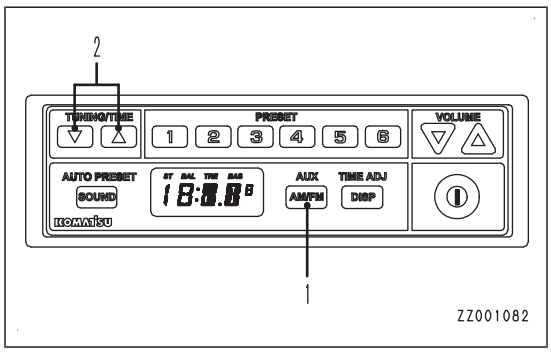
3. Press the band/AUX selector button (1) and select “AUX”.



METHOD FOR CONTROLLING RADIO

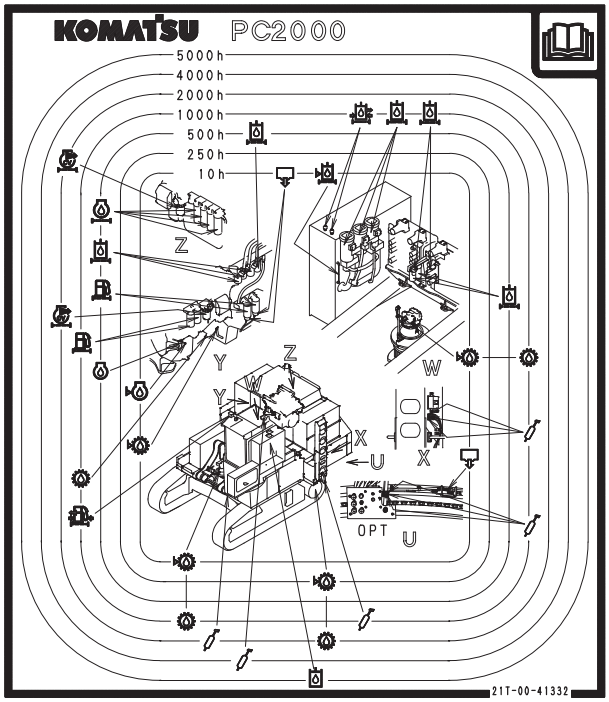
METHOD FOR ADJUSTING FREQUENCY

1. Press band/AUX selector button (1) and select FM or AM.
2. Press tuning/time adjustment button (2) to adjust the frequency.
   - Press the △ button, and the frequency increases; press the ▽ button, and the frequency decreases.
   - Hold down the △ button, and the frequency increases continuously; hold down the ▽ button, and the frequency decreases continuously.
   - Hold down the △ button and release it, then the frequency increases continuously. Hold down the ▽ button and release it, them the frequency decreases continuously as an auto seek. When a proper frequency is picked up, the tuning automatically stops.



LUBRICATION CHART

- The lubrication chart uses symbols to show the lubrication points and types of lubricant by each lubrication interval.
  Keep this chart in the magazine box inside the cab so that the people concerned can refer it any time during lubrication.
- Even if the same symbol is used in the lubrication chart, the recommended genuine oil may differ according to the lubrication points and the ambient temperature.



The symbols used in the lubrication standard chart are explained as follows.

Symbol	Meaning of the symbol	Symbol	Meaning of the symbol
	Read the Operation and Maintenance Manual.		Supply grease
	Change engine oil		Check oil level in engine oil pan, add oil
	Replace hydraulic oil		Check oil level in hydraulic tank
	Replace power train oil		Check oil level in power train
	Replace engine oil filter		Replace hydraulic oil filter
	Replace breather element in hydraulic tank		Replace fuel filter
	Replace breather element in fuel tank		Replace KCCV filter element