TEN00826-08

Operation & Maintenance Manual

HYDRAULIC
EXCAVATOR

PC2000-11

SERIAL NUMBERS 30001 and up

⚠ WARNING

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

NOTICE

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

KOMATSU

ENGINE TECHNOLOGY TO CONFORM EXHAUST GAS EMISSION

About Engine Technology

This engine technology uses Komatsu Diesel Particulate Filter (KDPF) to conform EPA Tier4 Final emission regulation in North America.

- Komatsu Diesel Particulate Filter (KDPF): A device which captures diesel particular matter or soot in the exhaust gas to purify exhaust gas. If soot is accumulated to a certain level in the filter, a purification process to burn the soot is performed automatically to keep the filtering performance of KDPF high.

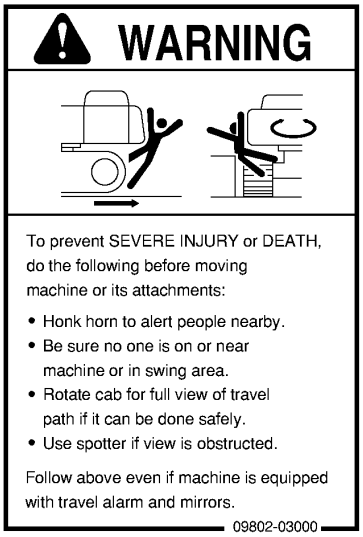
CONTENTS OF SAFETY LABELS

Caution for operation, inspection and maintenance

"09651-03001"

Caution before operating

"09802-03000"



Caution when leaving operator's seat

"09654-03001"

- Keep all the electric wiring connections clean and securely tightened.
- Check the wiring every day for looseness or damage. Reconnect any loose connectors or refasten wiring clamps. Repair or replace any damaged wiring.

Fire caused from piping

Check that all the hose and tube clamps, guards, and cushions are securely fixed in position.

If they are loose, they may vibrate during operation and rub against other parts. There is danger that this may lead to damage to the hoses and cause high-pressure oil to spurt out, leading to fire and serious personal injury.

Fire around the machine due to highly heated exhaust gas

This machine is equipped with Komatsu Diesel Particulate Filter (hereafter KDPF).

KDPF is a device to purify the soot in the exhaust gas. Exhaust gas temperature may increase during the purification process (regeneration). Do not bring any combustible material close to the outlet of the exhaust pipe.

When there are thatched houses, dry leaves or pieces of paper near the job site, set the system to the regeneration disable to prevent fire hazards due to highly heated exhaust gas during the aftertreatment devices regeneration.

Explosion caused by lighting equipment

- When checking fuel, oil, battery electrolyte, or coolant, always use lighting with anti-explosion specifications.

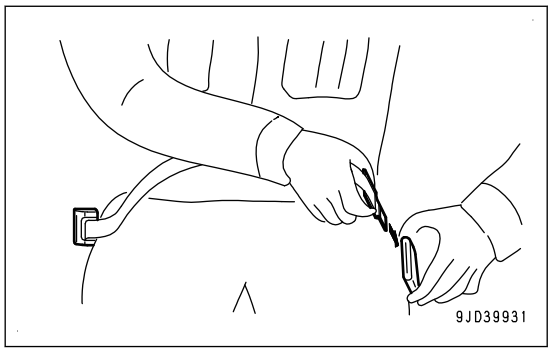
PRECAUTIONS FOR OPERATION

CHECKS BEFORE OPERATION

If the checks before starting are not performed properly, the machine will be unable to display its full performance. It is dangerous and may cause serious personal injury or death.

When performing the checks, move the machine to a wide area with no obstructions, and pay careful attention to the surroundings. Prohibit other personnel from coming close to the machine during checks.

- Fasten the seatbelt. When the brakes are applied suddenly, the operator may be thrown out of the operator's seat. It is dangerous and may cause personal injury.
- Check that the movement of the machine matches the display of the control pattern.
- Check the operating condition of the machine, work equipment, and travel and swing systems.
- Check for any problem in the sound, vibration, heat and smell of the machine, or abnormalities of instruments. Also check that there is no leakage of oil or fuel.
- If any problem is found, repair it immediately.



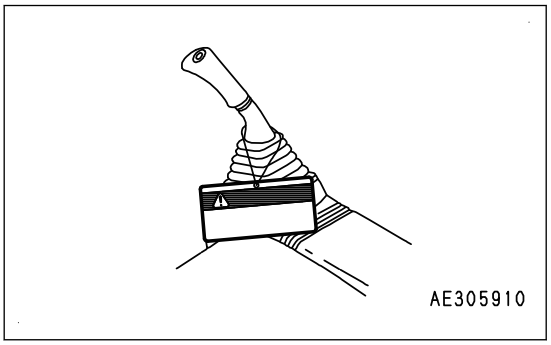
PRECAUTIONS FOR MAINTENANCE

PRECAUTIONS BEFORE STARTING INSPECTION AND MAINTENANCE

DISPLAY WARNING TAG DURING INSPECTION AND MAINTENANCE

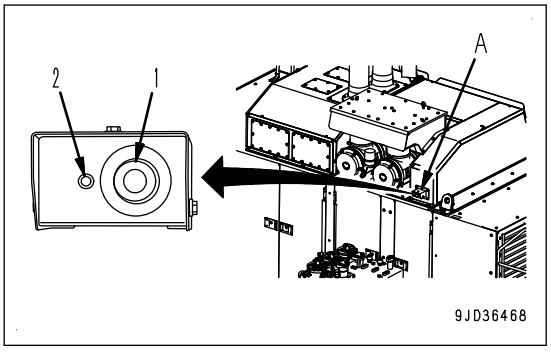
- During inspection and maintenance, always display the “DANGER! Do NOT operate!” warning tag.

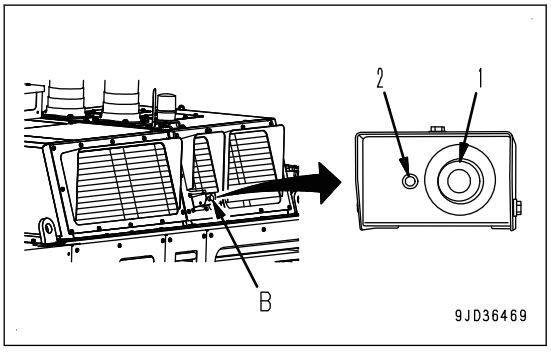
  If there is the “DANGER! Do NOT operate!” warning tag displayed, it means that someone is performing inspection and maintenance of the machine. If the warning tag is ignored and the machine is operated, the person performing inspection or maintenance will be caught in the rotating parts or moving parts. It is dangerous and may cause serious personal injury or death. Do not start the engine or touch the levers.
  If necessary, put up signs around the machine as well.
  Warning tag part No. 09963-03001
  When not using this warning tag, keep it in the toolbox. If there is no toolbox, keep it in the pocket for Operation and Maintenance Manual.



- Before entering the power module, press the emergency engine stop switch (1) to prevent unexpected starting of engine.

  Emergency engine stop switch (1) is installed on 2 places at the front part (A) and rear part (B) of power module. Press either emergency engine stop switch (1).
  When emergency engine stop switch (1) is pressed, it stays pressed in and the emergency engine stop indicator (2) lights up in green regardless of the operation of the starting switch.
  To cancel the stop condition, turn the emergency engine stop switch (1) clockwise, and the emergency engine stop indicator (2) goes out.

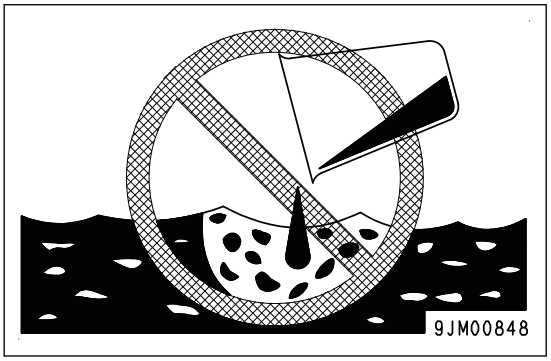




PRECAUTIONS FOR DISPOSING OF WASTE MATERIALS

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

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



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

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

METHOD FOR SELECTING WINDOW WASHER FLUID

Use an ethyl alcohol base washer liquid.

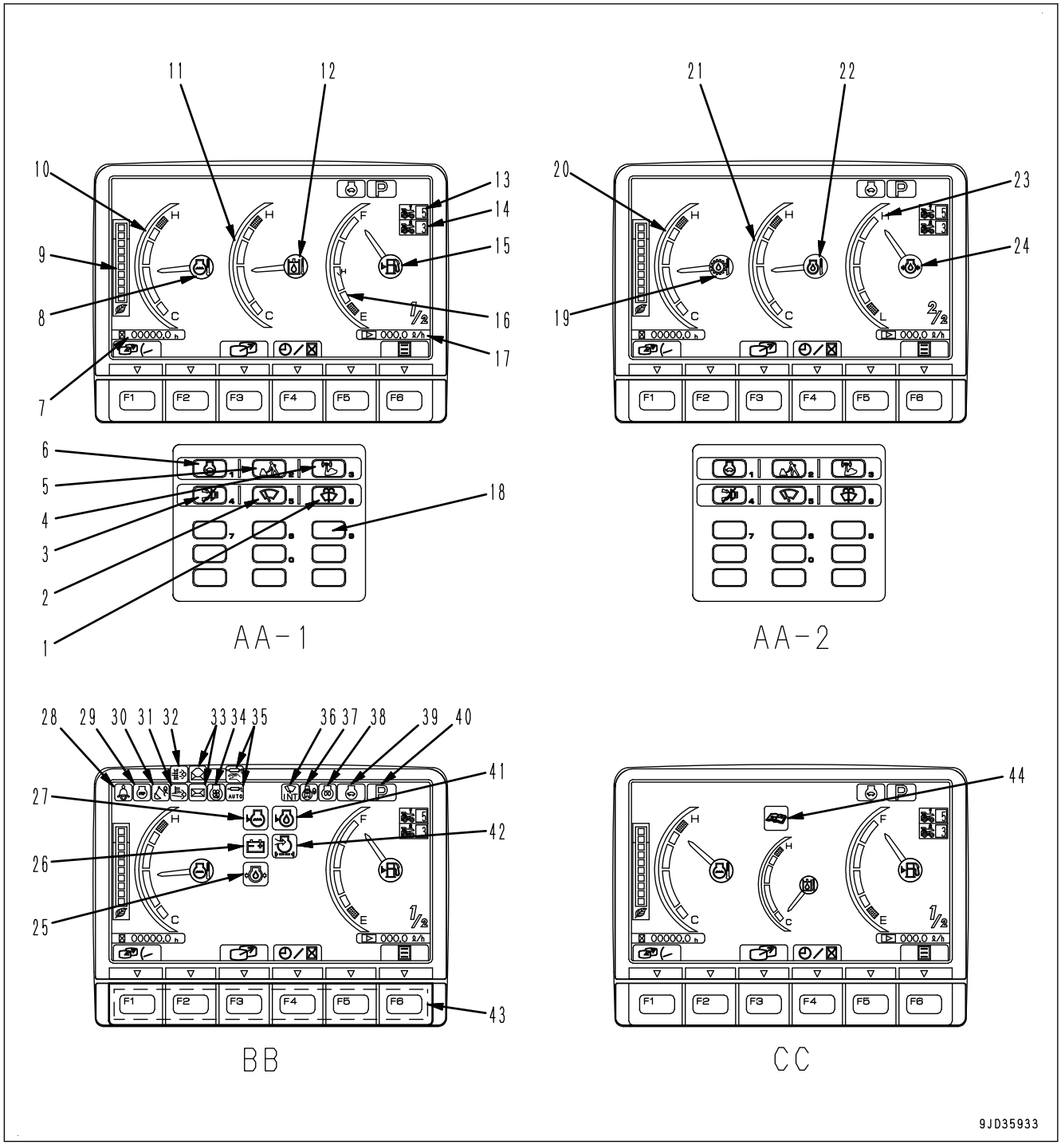
Methyl alcohol base washer liquid may irritate your eyes, so do not use it.

PERIODIC INSPECTION OF DEFINED LIFE PARTS

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

Displaying only meters

On the standard screen (for camera display and meter display), you can switch the display to only the meter display by pressing the switch F3.



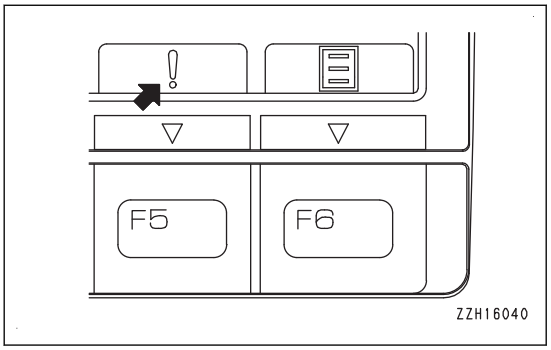
AA-1: Standard screen (1/2), AA-2: Standard screen (2/2), BB: Check before starting screen, CC: Maintenance time warning screen

Press the switch F1 of function switch (43) to switch between screen AA-1 and screen AA-2.

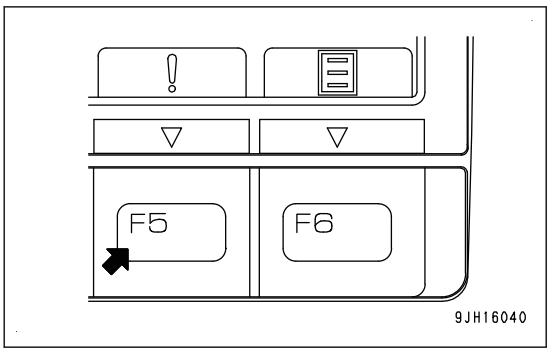
(1) Window washer switch
(2) Wiper switch
(3) Buzzer cancel switch
(4) Heavy lift switch
(5) Working mode selector switch
(6) Auto-deceleration switch
(7) Service meter/clock
(8) Engine coolant temperature caution lamp

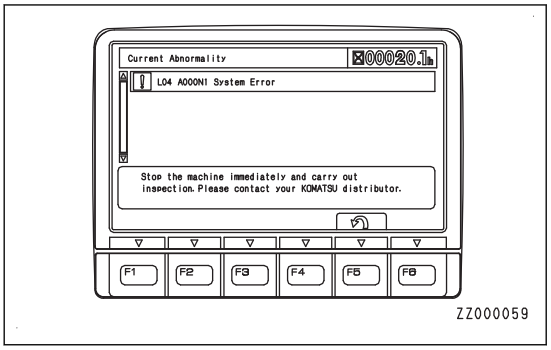
- If any abnormality occurs during operation, the standard screen AA changes to the warning screen FF-(1) or the error screen EE.
- After displaying warning screen FF-(1) for 2 seconds, the screen automatically changes to warning screen FF-(2).

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

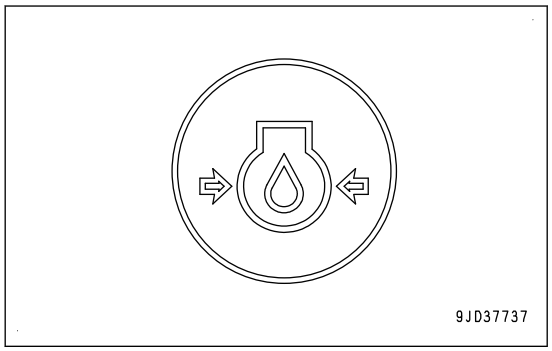


Press the switch F5 to check the detail of the error. Current Abnormality screen is displayed.





ENGINE OIL PRESSURE CAUTION LAMP



Engine oil pressure caution lamp warns about the drop of engine oil pressure.

When engine oil pressure is low

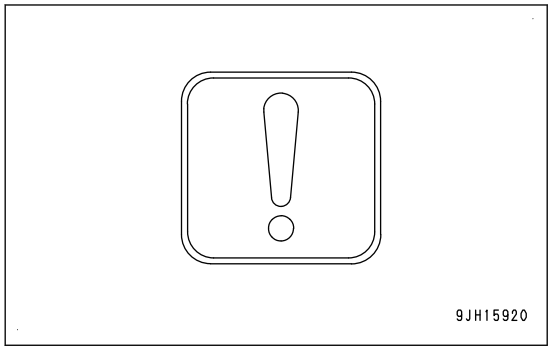
The caution lamp lights up in red and indicates action level “L03”.

Stop the engine, and check the lubrication system and oil level in engine oil pan, etc.

When normal

The caution lamp lights up in blue.

SYSTEM CAUTION LAMP



The system caution lamp warns about abnormality in the machine system, including the sensors.

When action level “L04” is displayed

The caution lamp lights up in red and the alarm buzzer sounds continuously.

Stop the machine immediately and ask your Komatsu distributor for inspection and maintenance.

When action level “L03” is displayed

The caution lamp lights up in red and the alarm buzzer sounds intermittently.

Stop the operation and move the machine to a safe place, then ask your Komatsu distributor for inspection and maintenance.

When action level “L01” is displayed

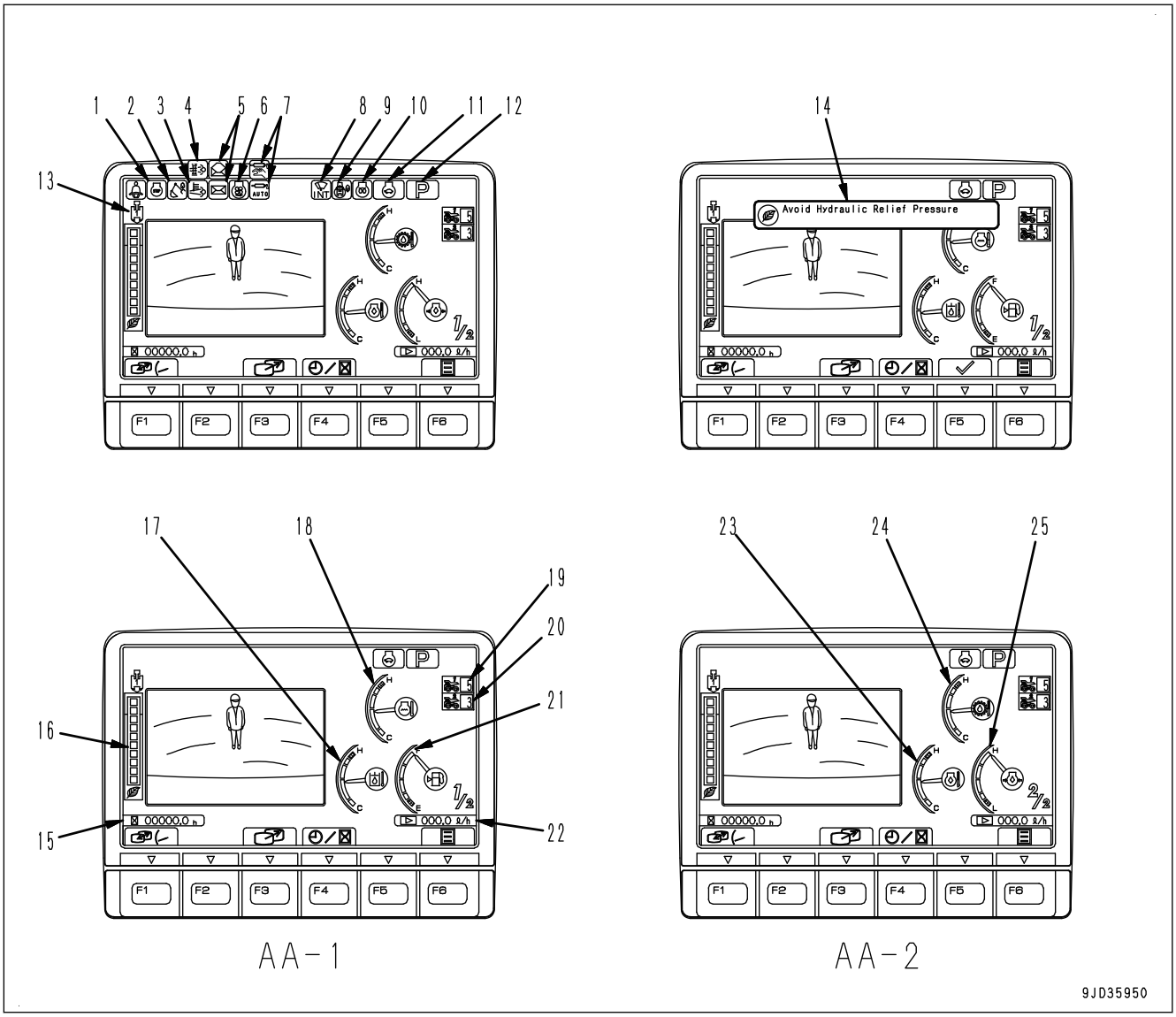
The caution lamp lights up in yellow.

Some functions may be restricted for use, but the machine can operate.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for inspection and maintenance as needed.

PILOT DISPLAY AND METER DISPLAY



AA-1: Standard screen (1/2) AA-2: Standard screen (2/2)

AA-1 screen and AA-2 screen are changed alternately by pressing the switch F1.

Pilot display

(1) Engine stop pilot lamp
(2) Lock lever pilot lamp
(3) Aftertreatment devices regeneration pilot lamp
(4) Aftertreatment devices regeneration disable pilot lamp
(5) Message display
(6) Fan reverse rotation pilot lamp
(7) Auto-greasing pilot lamp/manual greasing pilot lamp
(8) Wiper pilot lamp
(9) Swing lock pilot lamp
(10) Preheating pilot lamp
(11) Auto-deceleration and automatic low Idle pilot lamp
(12) Working mode display
(13) Camera direction display
(14) ECO guidance

Meter display

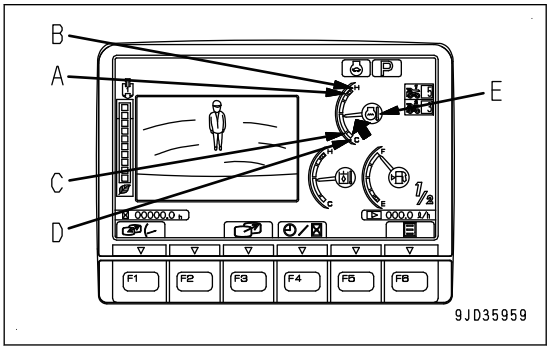
(15) Service meter/clock
(16) ECO gauge
(17) Hydraulic oil temperature gauge
(18) Engine coolant temperature gauge
(19) Truck counter 1
(20) Truck counter 2

METER DISPLAY

ENGINE COOLANT TEMPERATURE GAUGE

Engine coolant temperature gauge shows the engine coolant temperature.

The engine coolant temperature is normal if the indicator is in green range during operation. If the indicator exceeds (A) of red range during operations, the overheat prevention system is activated.



(A) to (B): Red range

(A) to (C): Green range

(C) to (D): White range

REMARK

The hydraulic oil temperature shown with the indicator in the red ranges (A) to (B) is as follows.

Red range (A) position: 102 °C {215.6 °F} or higher

Red range (B) position: 105 °C {221 °F} or higher

The hydraulic oil temperature shown with the indicator in the white range (D) is as follows.

White range (D) position: 30 °C {86 °F} or higher

Operation of the overheat prevention system is as follows.

Red range (A) position: Engine coolant temperature caution lamp (E) shows the abnormality display.

Red range (B) position: Engine speed changes to low idle, engine coolant temperature caution lamp (E) shows abnormality display and alarm buzzer sounds at the same time

The overheat prevention system continues to operate until the indicator enters the green range.

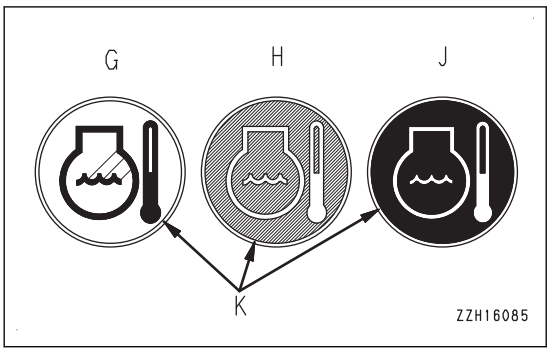
The engine coolant temperature caution lamp (E) shows the low-temperature display when the indicator is in (D) position at the engine start.

Perform the warm-up operation in such a case.

Display (G) of low temperature: Caution lamp background (K) is white.

Display (H) of correct temperature: Caution lamp background (K) is blue.

Display (J) of abnormal temperature: Caution lamp background (K) is red.

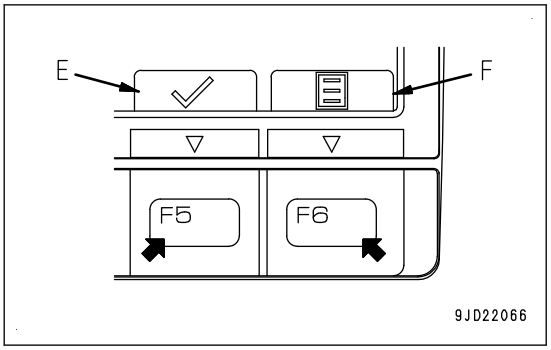


(E) Switch F5: Energy saving (ECO) guidance erase switch

(Only while ECO guidance is displayed)

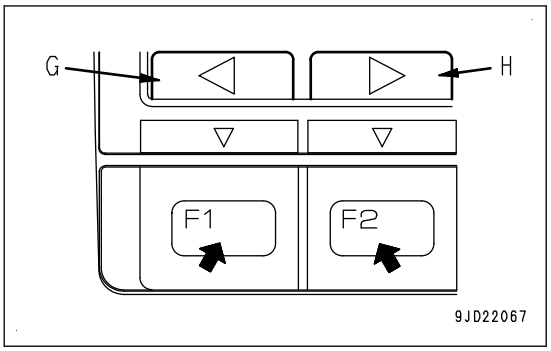
(F) Switch F6: User menu display switch

Guidance icons and their functions differ with the contents of the displayed screen, but representative guidance icons frequently used and their functions are as follows.



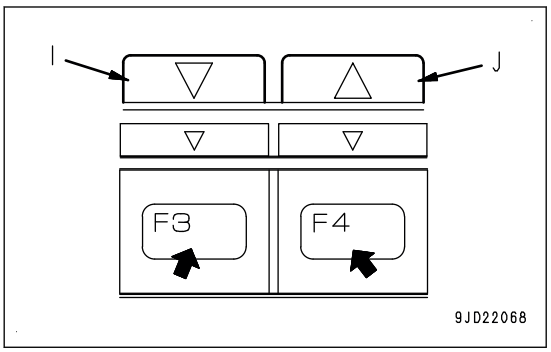
(G) Switch F1: Moves to the left item. (When on the left end, it moves to the right end.)

(H) Switch F2: Moves to the right item. (When on the right end, it moves to the left end.)



(I) Switch F3: Moves to the item below (forward). (When on the last line, it moves to the first line.)

(J) Switch F4: Moves to the item above (backward). (When on the first line, it moves to the last line.)

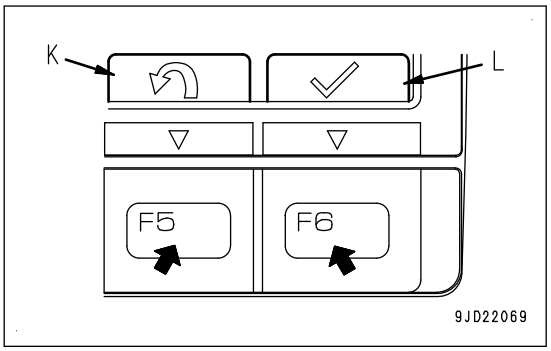


(K) Switch F5: Cancels any change and returns to the previous screen.

(L) Switch F6: Decides any selection and changes contents and advances to the next screen.

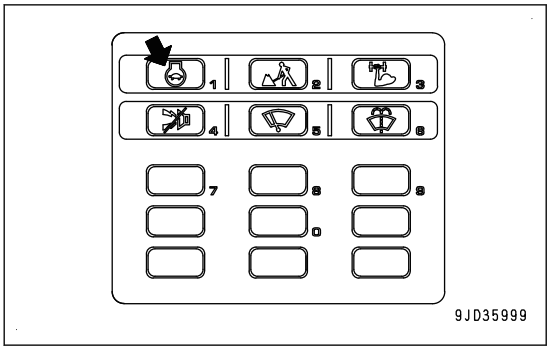
REMARK

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



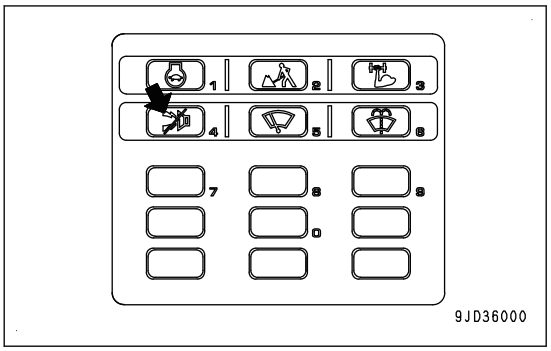
- Press the auto-deceleration switch to turn on or off the auto-deceleration function.

  Even if the auto-deceleration switch is pressed, the camera image display screen neither switches to another screen nor returns to the standard screen display.



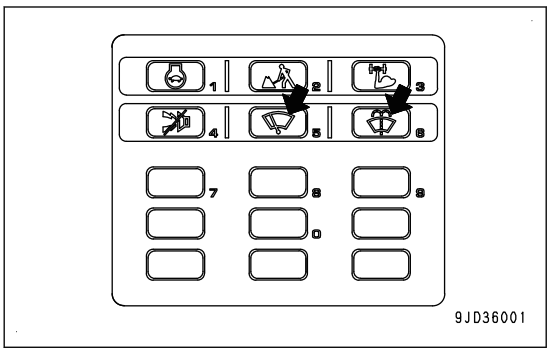
- Press the buzzer cancel switch to stop the alarm buzzer for the warning item where there is an abnormality.

  Even if the buzzer cancel switch is pressed, the camera image display screen neither switches to another screen nor returns to the standard screen.
  Depending on the warning, alarm buzzer does not stop sounding by pressing the buzzer cancel switch.



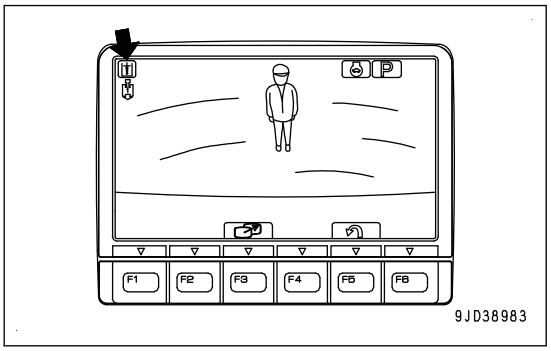
- Press the wiper switch and washer switch to operate the wipers and washer.

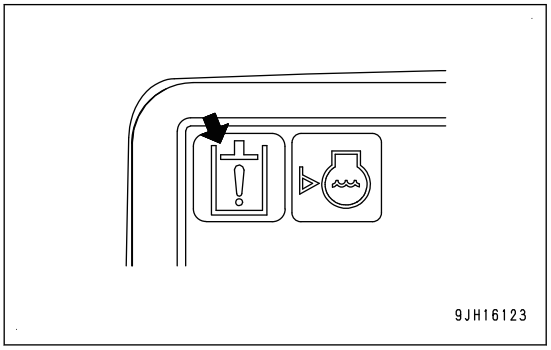
  Even if the wiper switch or washer switch is pressed, the camera image display screen neither switches to another screen nor returns to the standard screen.



Actions against warning during camera image display

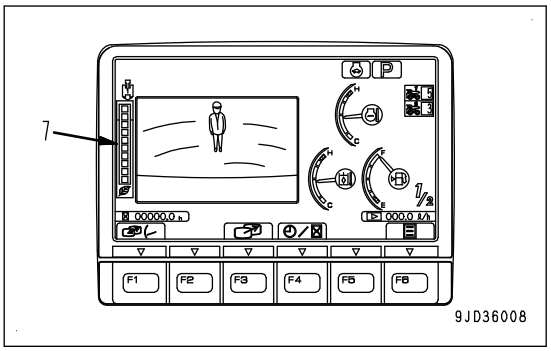
- If any abnormality is generated on the machine while the camera image is displayed, the caution lamp flashes at the top left of the screen.





SWITCH DISPLAY/NON-DISPLAY OF ECO GAUGE

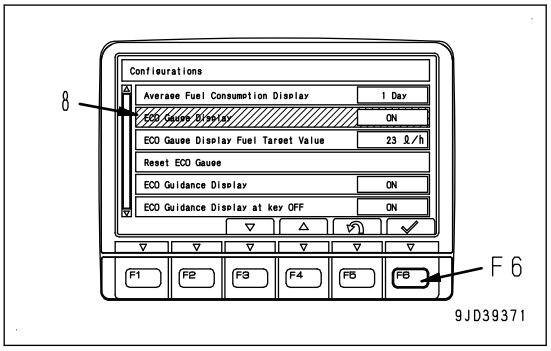
The setting of Display/Non-display of ECO gauge (7) can be changed.



1. Select “ECO Gauge Display” (8) on “Configurations” screen, then press the switch F6.
2. “ECO Gauge Display” setting screen is displayed.

   ON: Displays the ECO gauge (7) on the standard screen.

   OFF: Does not display the ECO gauge (7) on the standard screen.



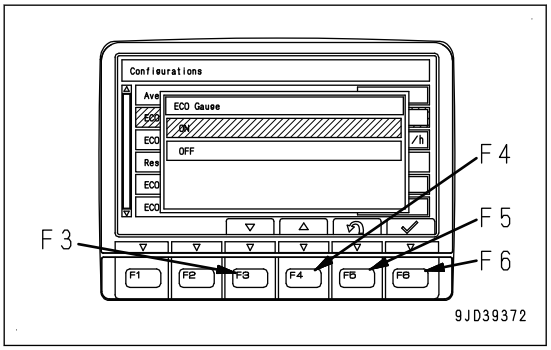
On the Configurations screen, it is possible to perform the following operations with switches F3 to F6.

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

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

F5: Cancels the setting change and returns the screen to “Configurations” screen.

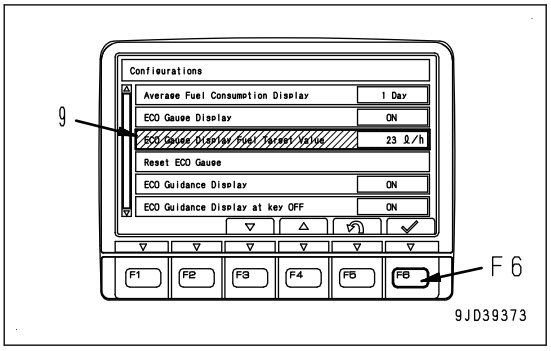
F6: Changes the setting and returns the screen to “Configurations” screen.



SET TARGET FUEL CONSUMPTION VALUE DISPLAYED IN ECO GAUGE

It is possible to change the target fuel consumption value (the upper limit value of the green range) of the ECO gauge .

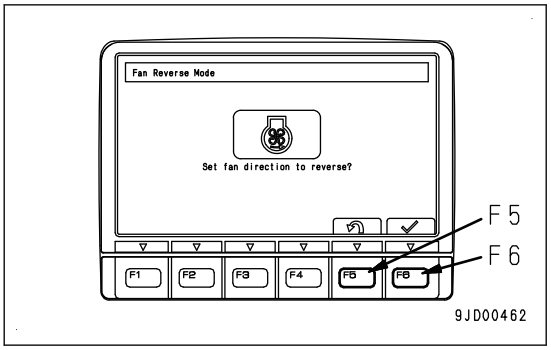
1. Select the ECO Gauge Target Value (9) from the Configurations screen, then press switch F6.



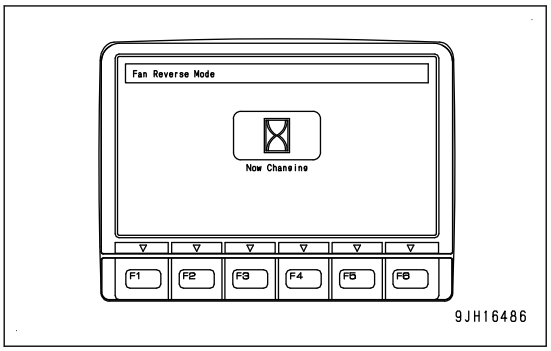
2. ECO Gauge Display Fuel Target Value appears.

8. Press the switch F6 when the confirmation screen shown in the figure is displayed.

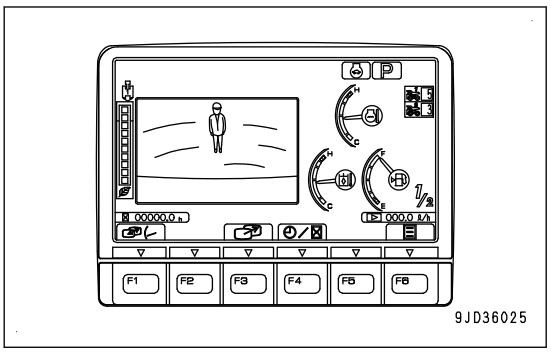
   (If the switch F5 is pressed, the screen returns to the previous screen.)



9. If the screen shown in the figure is displayed, the engine speed is set to low idle automatically and the fan rotation direction is returned to normal in approximately 15 seconds. Approximately 4 seconds after, the engine speed returns to the original level.



10. When the fan rotation direction returns to normal, the standard screen is displayed automatically.



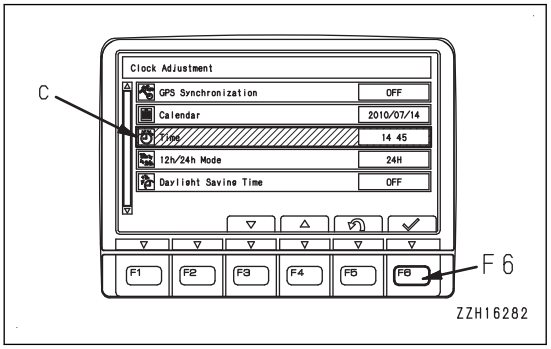
TIME SETTING

Adjust the time of the monitor clock.

REMARK

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

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



2. The “Time” screen is displayed.

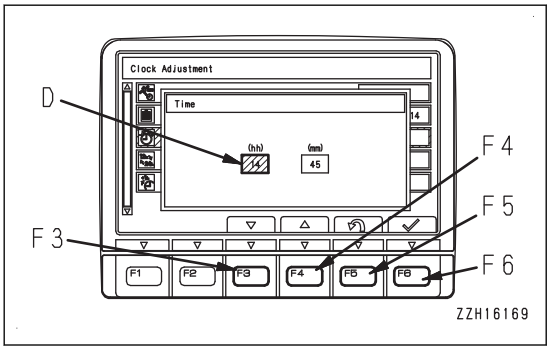
   When the hour display (D) is highlighted in yellow, operate the switches as follows to change hour display (D). If it is not necessary to change the hour setting, press switch F6.

   F3: The time goes back 1 hour.

   F4: The time advances 1 hour.

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

   F6: Proceeds to setting for the minute.



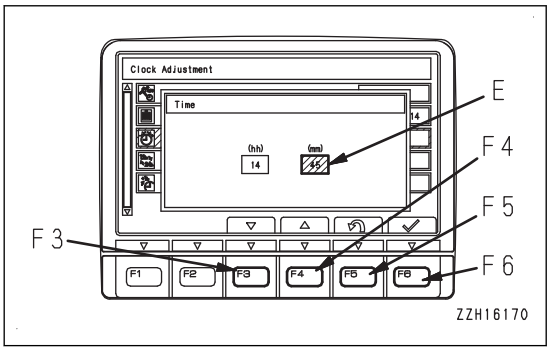
3. When minute display (E) is highlighted in yellow, operate the switches as follows to change minute display (E). If it is not necessary to change the minute, press switch F6.

   F3: The time goes back 1 minute.

   F4: The time advances 1 minute.

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

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

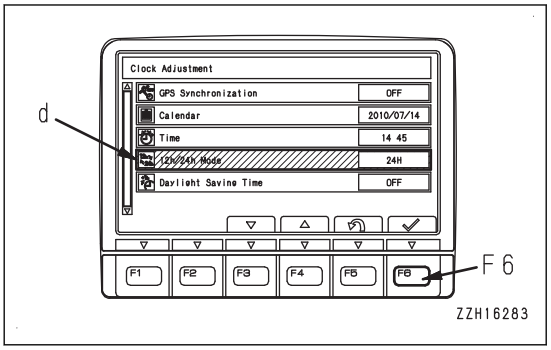


SWITCH 12H/24H DISPLAY MODE

Choose either a 12-hour display (AM/PM) or a 24-hour display.

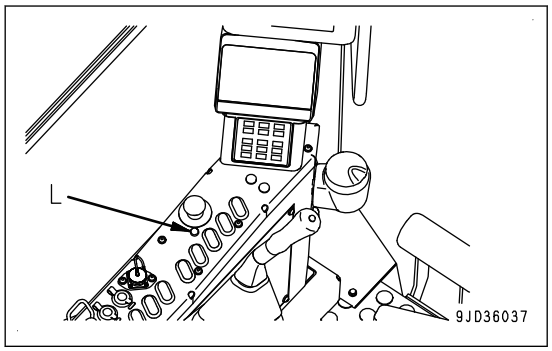
- 24-hour system display
- 12-hour system display (AM/PM)

1. Select “12h/24h Mode” (d) on “Clock Adjustment” screen, then press switch F6.



EMERGENCY ENGINE STOP SWITCH

The emergency engine stop switch is used to stop the engine in emergency.

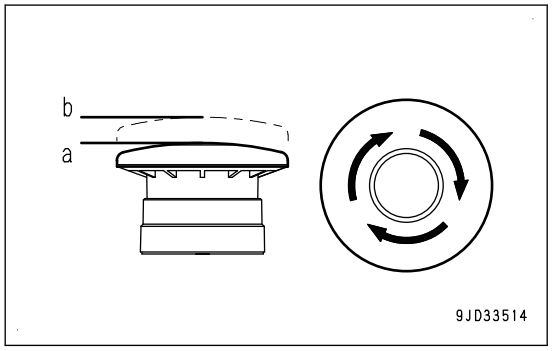


(a) ON (emergency stop) position

If the emergency engine stop switch is pressed when the emergency engine stop indicator (L) is not lit, the engine will make an emergency stop. When this happens, the emergency engine stop indicator (L) lights up in green to indicate that the emergency engine stop switch has been actuated.

(b) OFF (normal operation) position

When the emergency engine stop switch has been actuated (when the emergency engine stop indicator (L) is lit), if the head of the switch is turned clockwise, the switch returns to the OFF position and the emergency engine stop is canceled. When this happens, the emergency engine stop indicator (L) goes out.



REMARK

It is possible to judge the status (ON/OFF) of the emergency engine stop switch by checking the condition of the emergency engine stop indicator (L).

Lit: Emergency engine stop switch is at ON (emergency stop) position

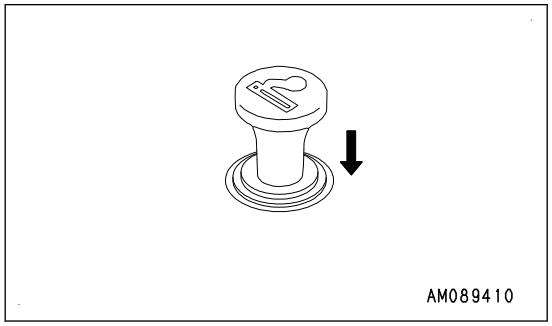
Not lit: Emergency engine stop switch is at OFF (normal operation) position

CIGARETTE LIGHTER

The cigarette lighter is used to light cigarettes.

When the cigarette lighter is pushed in, it will return to its original position after a few seconds, so pull it out to use it.

If the cigarette lighter is removed, the socket can be used as an 85 W (24 V x 3.5 A) power source.



NOTICE

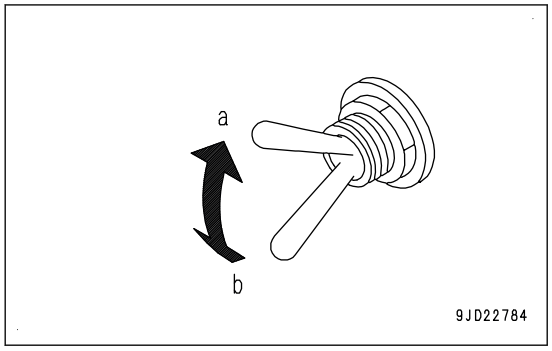
This cigarette lighter is for 24 V. Do not use it as a power supply for 12 V equipment.

SWING PARKING BRAKE CANCEL SWITCH

NOTICE

Swing operations can be performed temporarily with the swing parking brake cancel switch when there is a problem in the swing parking brake system. It is not intended for permanent use. Repair the problem as soon as possible.

Swing operations can be performed temporarily with the swing parking brake cancel switch when there is a problem in the swing parking brake system (when the upper structure does not swing but the display does not show “L03”).



(a) Cancel

When abnormal (switch is set to upper position)

(b) Normal

When normal (switch is set to lower position)

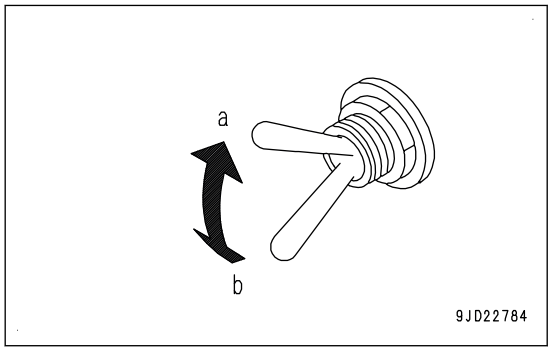
- When the display does not show “L03”, move this switch to the Cancel position (a), and operation can be performed.
- When the switch is moved to Cancel position (a), the swing lock pilot lamp flashes.

LOCK LEVER AUTOMATIC LOCK CANCEL SWITCH

NOTICE

The lock lever automatic lock cancel switch is used to disable the lock lever automatic lock function and enable the operations of the work equipment and machine temporarily, when the lock lever automatic lock function is abnormal. Use this switch only when the machine or the work equipment needs to be moved temporarily in an abnormal and emergency condition. Repair the problem as soon as possible.

If the lock lever automatic lock function is abnormal, when the lock lever is canceled normally under the condition that the work equipment control lever or travel lever is in neutral position, this function is actuated by mistake and the machine or the work equipment may not move.



The machine or the work equipment can be operated temporarily by setting the lock lever automatic lock cancel switch to the cancel position (a).

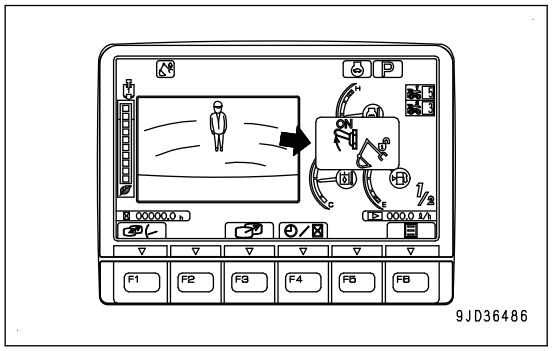
(a) Cancel

When abnormal (switch is set to upper position)

(b) Normal

When normal (switch is set to lower position)

- When the lock lever automatic lock cancel switch is set to cancel position (a), the lock lever automatic lock cancel pilot lamp lights up. At the same time, the mode is displayed in the center of the monitor display, and after 2 seconds, the screen returns to the standard screen.
- After moving the machine or work equipment temporarily by canceling this switch, stop the engine, return the switch to the normal position (b), and then ask your Komatsu distributor for repair.



BATTERY ISOLATOR SWITCH

⚠ CAUTION

Do not operate the battery isolator switch while the engine is running.
The large current generated by the alternator may burn the electric parts and cause a fire.
Operate the battery isolator switch only when the engine is stopped.

NOTICE

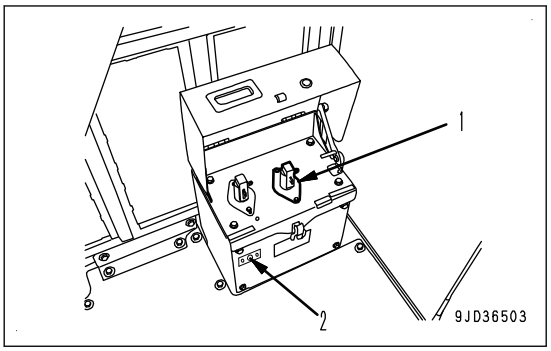
Keep the battery isolator switch in ON position under normal conditions.
In the following cases, turn the battery isolator switch to OFF position.

- **When storing the machine for a long time (more than 1 month)**
- **When repairing the electrical system**
- **When performing the electric welding**
- **When handling the battery (replacing, etc.)**
- **When replacing the fuse, etc.**

Be careful of the following items if you set the battery isolator switch to OFF position.

- **Do not turn the battery isolator switch to OFF position while the system operating lamp is lit. The data in the controller may be lost by turning the battery isolator switch to OFF position while this lamp is lit.**
- **When the battery isolator switch is turned to OFF position, all the electrical systems are shut off, and the data for the clock and radio station selection may be lost.**
  In such a case, set them again by referring to "CLOCK ADJUSTMENT" and "HANDLE RADIO".

The battery isolator switch (1) is used when shutting off all the electric systems connected to the battery.



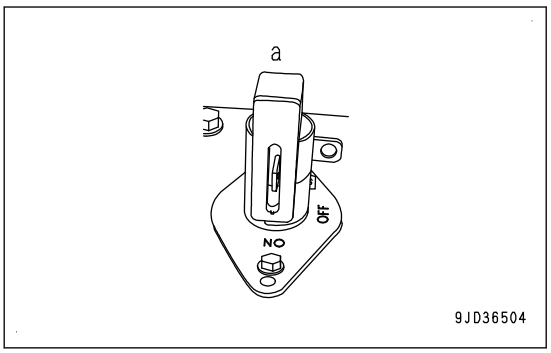
REMARK

Operate this switch while the system operating lamp (2) is not lit.

(a) ON position

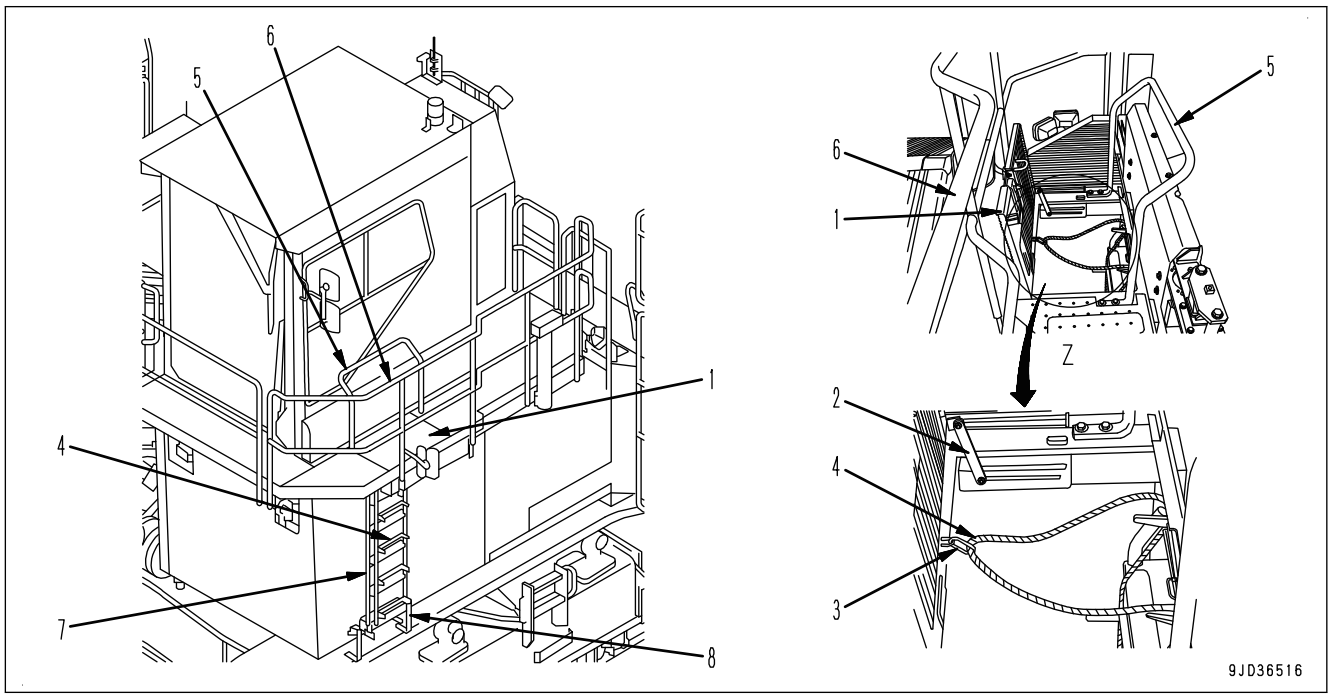
Power is supplied to all the electric systems which are connected to the battery. Set the switch to this position for normal operation.

Check that this switch is in ON position before starting the engine.



EMERGENCY LADDER

Handle emergency ladder



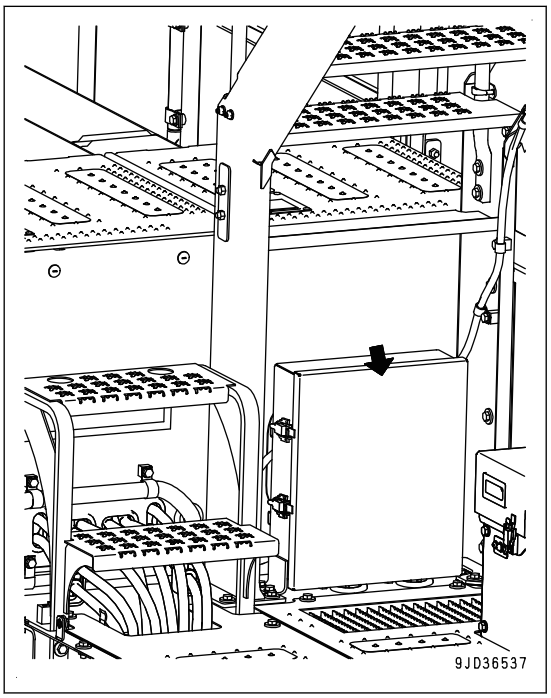
(1) Escape door
(2) Stopper
(3) Snap hook
(4) Rope ladder
(5) Handrail
(6) Handrail
(7) Fixed ladder
(8) Handrail

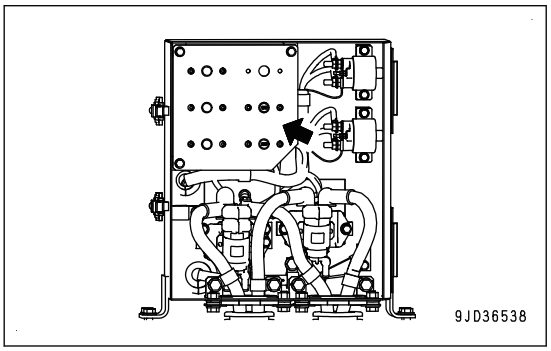
Circuit breaker (B)

The switchboard is installed under the left floor step.

REMARK

This circuit breaker is a large-size breaker installed to the circuits where a large-capacity current flows. In the same way as normal fuses and circuit breakers installed to the switchboard inside the cab base room, this circuit breaker protects the electrical components and wiring from burning out if there is a surge of current.

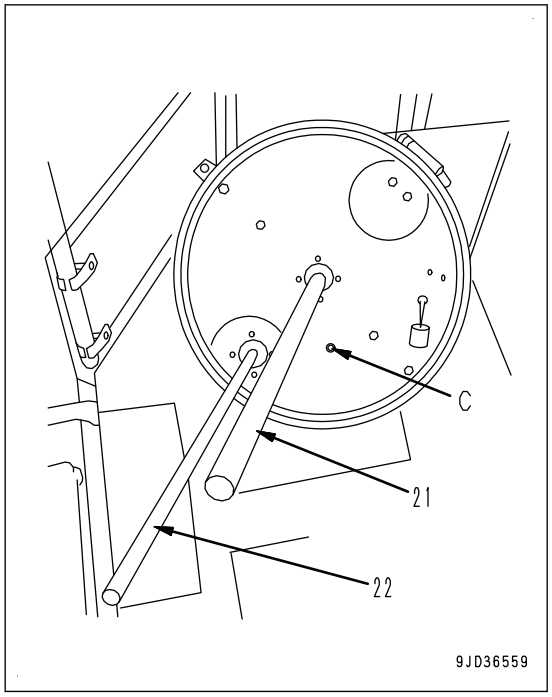


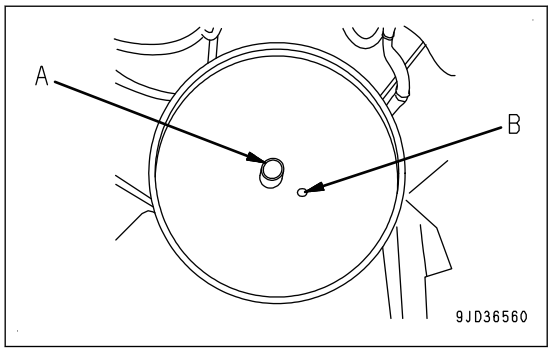


When the circuit breaker operates

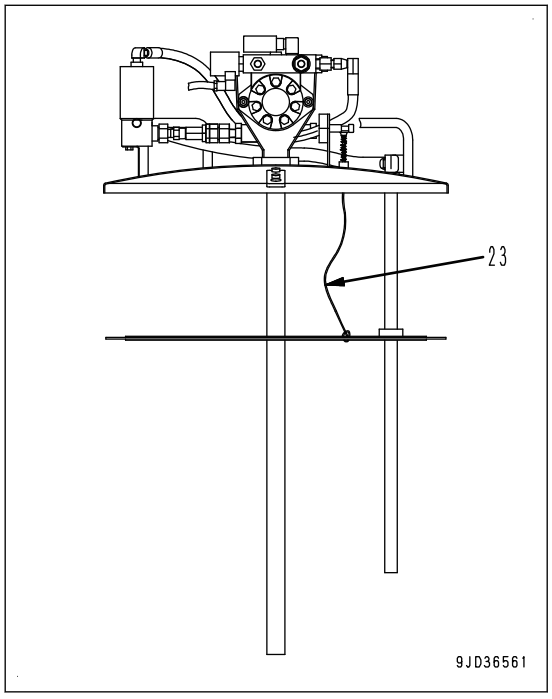
1. Turn the starting switch to OFF position.
2. Push in the reset button after a lapse of 5 to 10 minutes of cutting off.
3. Check the reset button.
   Operating effort of the reset button becomes larger when the circuit is open than when the circuit is not open.
   If the operating effort is still large after the reset button has been pushed in, the electrical circuit may be open. In such case, ask your Komatsu distributor for repair.

11. Lift up the grease can cover (16), align the shaft (21) and shaft (22) with follower plate holes (A) and (B), then insert the shafts.
12. Insert the wire (23) of the grease level sensor through the hole (C) in grease can cover (16).
13. Be careful not to drop the wire (23) into the grease can when inserting it. Insert the grease can cover (16) until it is in tight contact with the grease can itself.





14. Set the grease can on the machine, then set the grease can cover (16) in the reverse order to the steps 1 to 5.

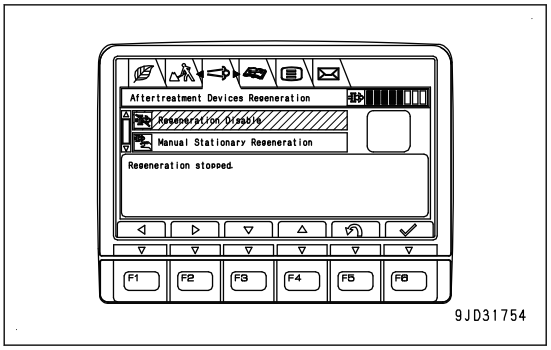


When using grease charging line (if equipped)

- It is possible to charge with grease from the grease charging port (1) under the machine.

REMARK

- The progress of the manual stationary regeneration performed when soot is accumulated can be checked by the number of lighting lamps of the soot accumulation level (4). The manual stationary regeneration starts at the soot accumulation level “4” or higher and finishes when all the level lamps go out.
- The time required for the manual stationary regeneration depends on the soot deposition level or the ambient temperature when it is started. If the regeneration starts at soot accumulation level “6” or higher, it may take approximately 2 hours to finish.
- The manual stationary regeneration for protection of the system may start even when the soot accumulation level is “0” to “3”. In this case, the soot accumulation level may not decrease, but this is not a failure. The progress is not displayed on the monitor during this regeneration. It is completed in approximately 10 minutes.
- If the lock lever or the fuel control dial is operated during the manual stationary regeneration, the regeneration is stopped automatically. Return the lock lever to LOCK position (L) and return the fuel control dial to Low idle (MIN) position, then repeat the procedure from step 6.
- If the machine needs to be moved during the manual stationary regeneration, stop the regeneration temporarily and move the machine by referring to the aftertreatment devices regeneration disable and cancel procedures described below.
  When restarting the manual stationary regeneration, secure the safety of the machine and around it, then cancel the regeneration disable.



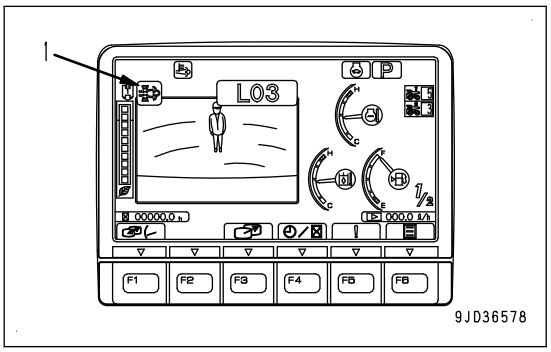
8. After the manual stationary regeneration is completed, the screen automatically returns to the standard screen.

PROCEDURE FOR AFTERTREATMENT DEVICES REGENERATION DISABLE SETTING

If there is combustible material around the machine and the active regeneration that increases the exhaust temperature must not be performed, the automatic active aftertreatment devices regeneration can be disabled. Also, the regeneration in progress can be stopped.

NOTICE

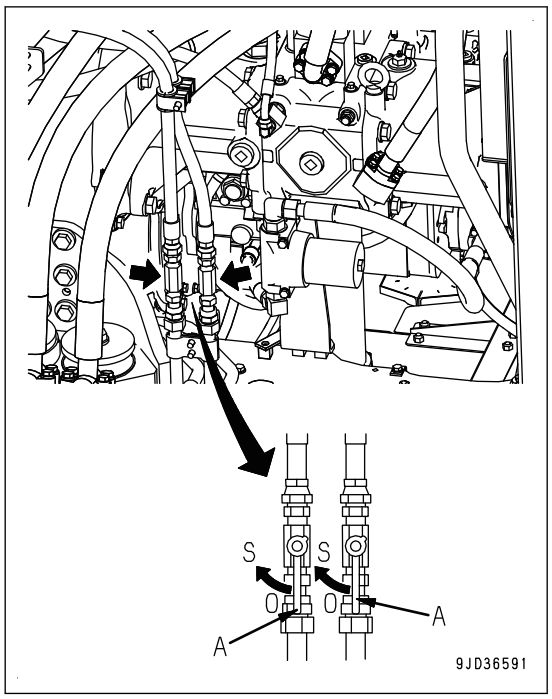
Even if the regeneration is disabled, the KDPF soot accumulation caution lamp (1) lights up if soot is accumulated and the manual stationary regeneration is required. If the KDPF soot accumulation caution lamp lights up, move the machine to a safe place and perform the manual stationary regeneration.
If the operation is continued without performing the manual stationary regeneration, it may cause the failure of KDPF or the engine.



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

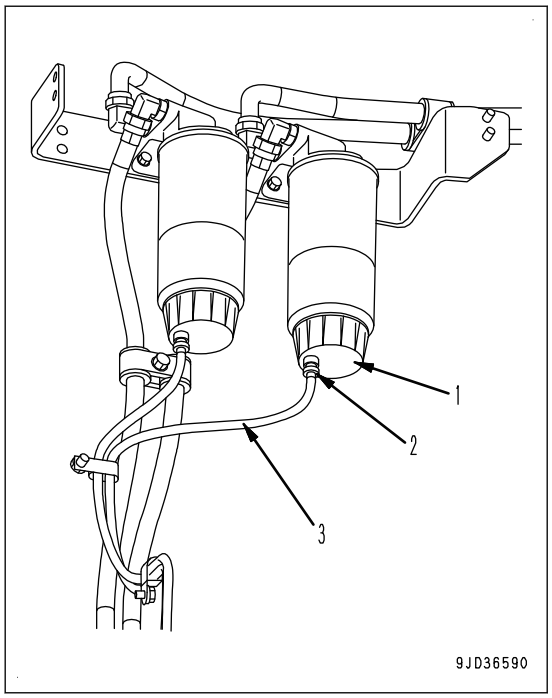
   (O): OPEN



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.

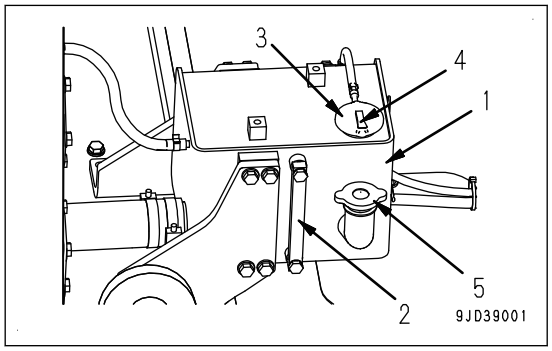
   For the air bleeding procedure of hydraulic circuit, see “METHOD FOR BLEEDING AIR FROM FUEL CIRCUIT”.



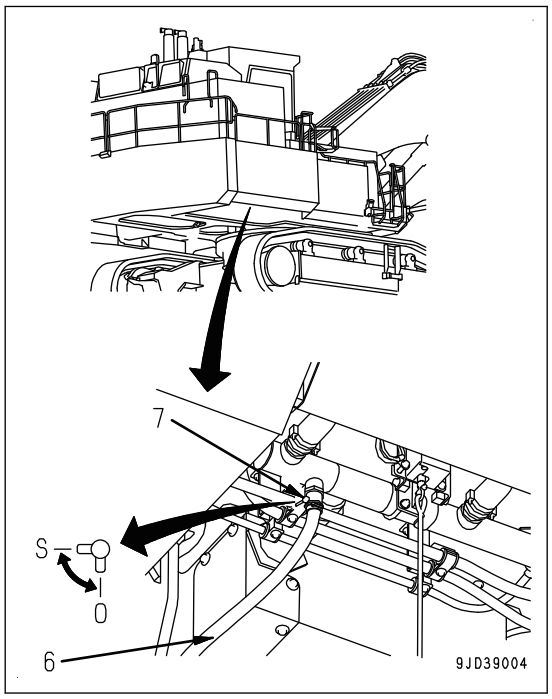
Method for draining coolant

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).



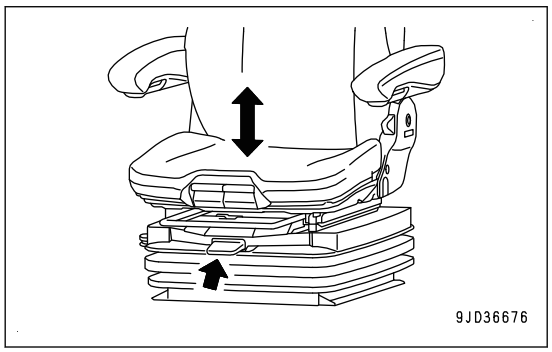
3. Install the drain hose (6).
4. Place a drum can under the drain hose (6) attached on the bottom of the machine to catch the coolant mixture.
5. Put the drain hose (6) into the drum can.
6. Turn the drain valve (7) to (O) position to open, and drain the coolant.
7. Turn the drain valve (7) to (S) position, 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

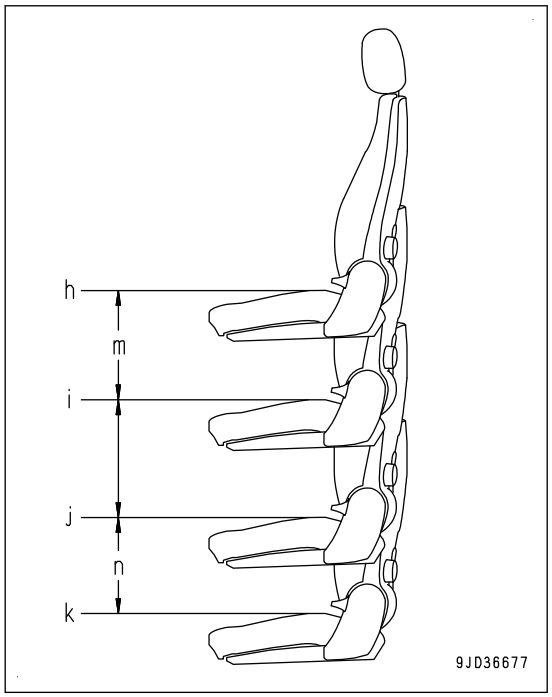
(i) Height adjustment upper limit

(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)

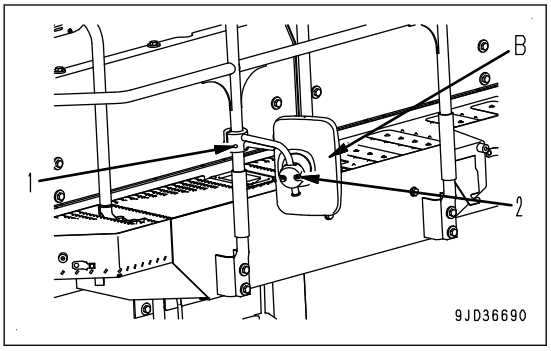
⚠ CAUTION

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.



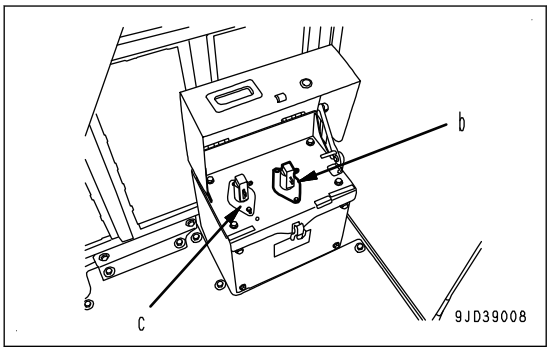
If the mirror is adjusted by loosening the mounting bolts, be sure to adjust the mirror to its regular position. For the adjustment method, see “PROCEDURE FOR ADJUSTING REGULAR POSITION OF MACHINE LEFT FRONT MIRROR (B)”.

METHOD FOR OPERATIONS AND CHECKS BEFORE STARTING ENGINE

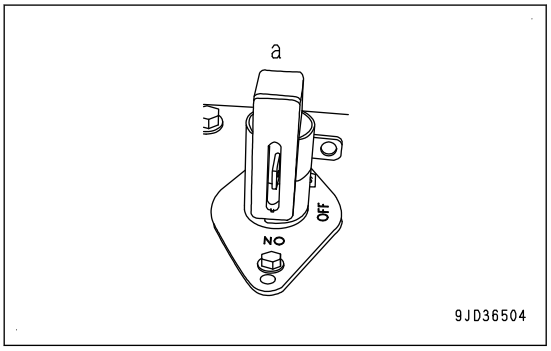
⚠ WARNING

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.

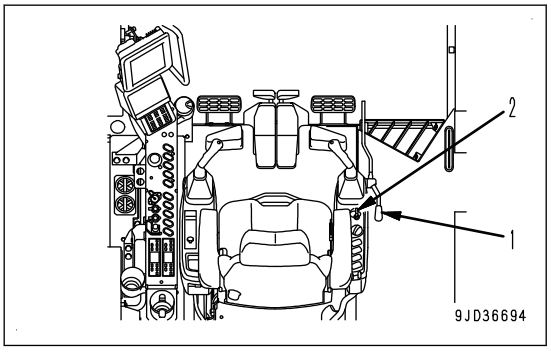


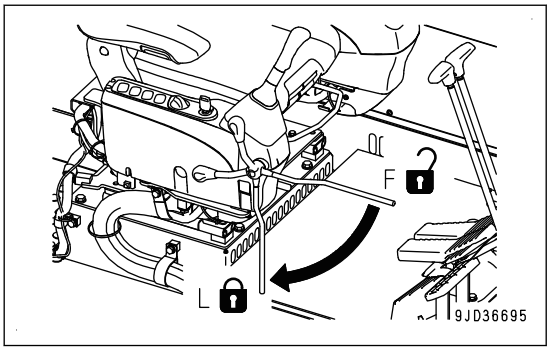
1. Check that the battery isolator switch (b) and starting motor isolator switch (c) are in ON position (a) if the machine is equipped with the battery isolator switch (b) and starting motor isolator switch (c).



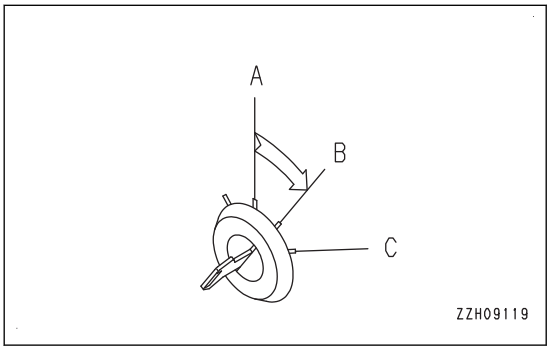
2. Check that lock lever (1) is at LOCK position (L).
3. Check that all the control levers and control pedals are at NEUTRAL position.

   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.

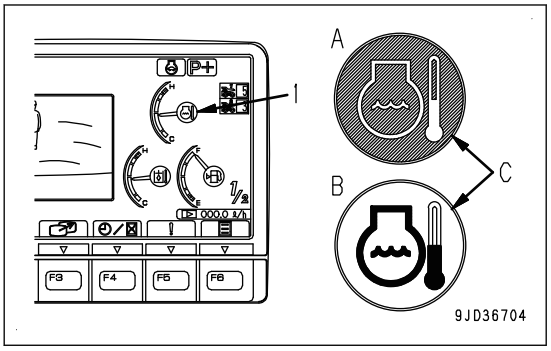
If the engine coolant temperature goes 30 °C {86 °F} or higher or if the warm-up operation is continued for more than 10 minutes, the automatic warm-up operation is canceled and the engine speed drops to the normal speed at low idle.

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

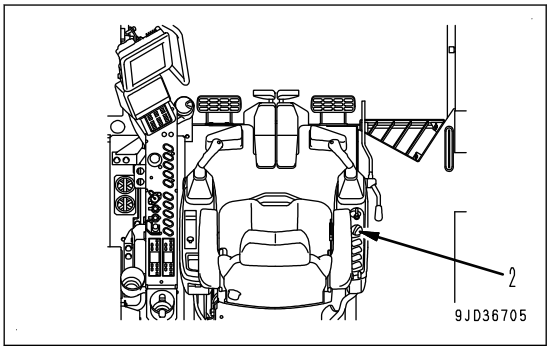
1. Check that the engine coolant temperature caution lamp (1) displays the correct temperature.

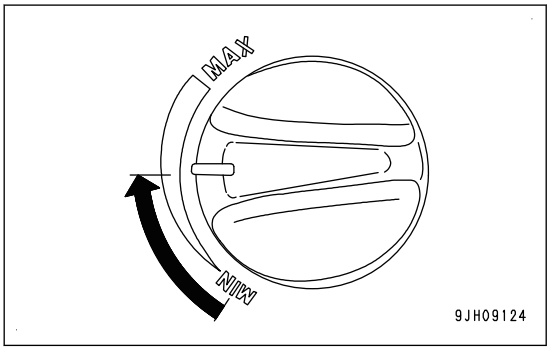
   If it displays the low temperature, perform additional warm-up operation according to step 2 until it displays the correct temperature.

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



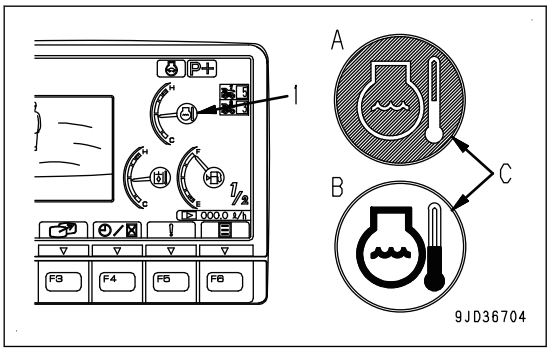
2. Turn the fuel control dial (2) to the middle between Low idle (MIN) and High idle (MAX) to run the engine at a medium speed.





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

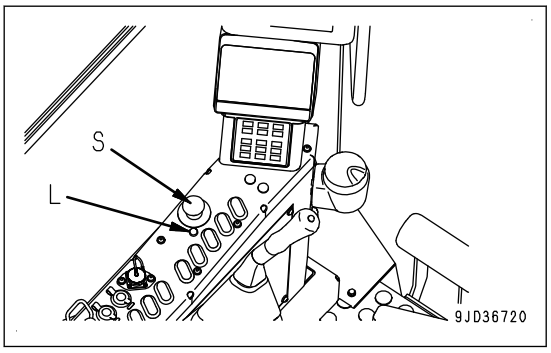
METHOD FOR STOPPING ENGINE IN CAB IN EMERGENCY

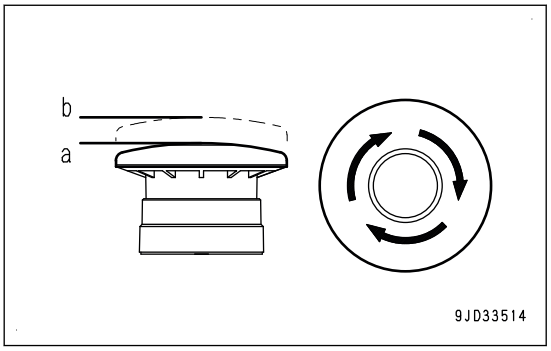
NOTICE

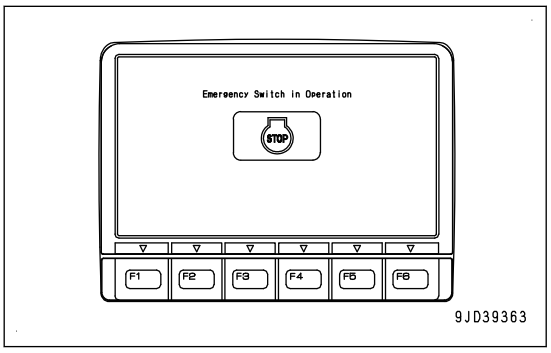
This emergency engine stop switch is used to stop the engine in emergency.
In normal cases, keep the emergency engine stop switch to OFF (normal operation) position.

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.



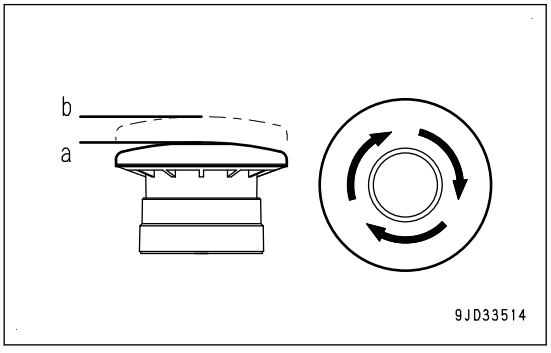




Restart the engine after stopping according to the following procedure.

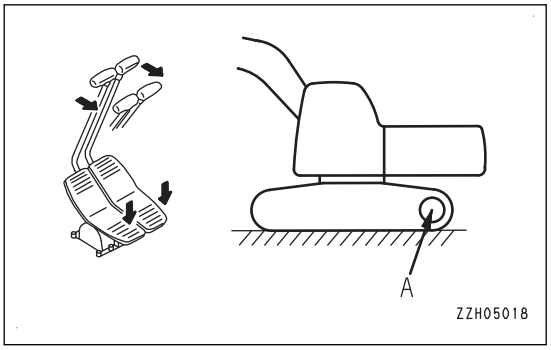
1. Turn the top of the emergency engine stop switch (S) clockwise.

   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.

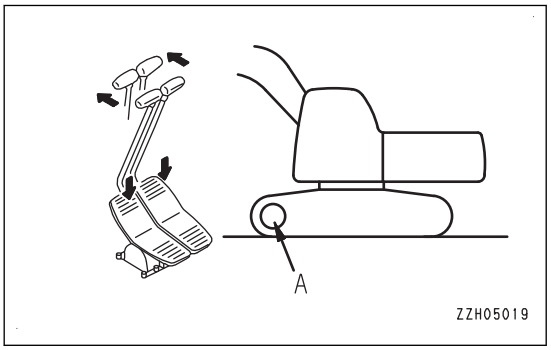


- When the sprocket (A) is at the front of the machine

  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.



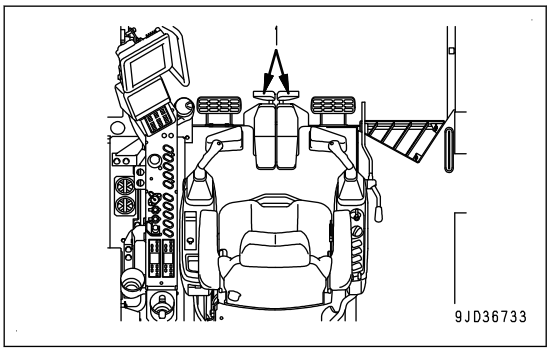
REMARK

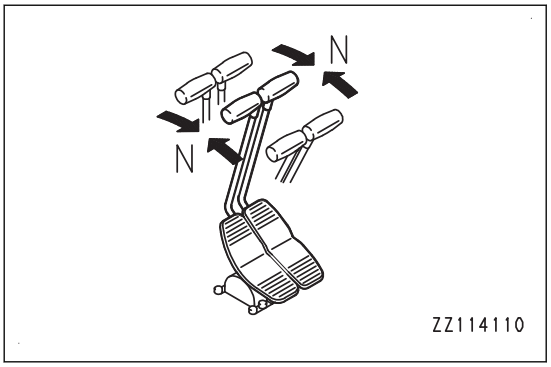
In low temperatures, if the machine travel speed is not normal, thoroughly perform the warm-up operation.
In addition, if the undercarriage is packed with mud and the machine travel speed is not normal, remove the mud from the undercarriage.

METHOD FOR STOPPING MACHINE

Avoid a sudden stop. Stop the machine gradually.

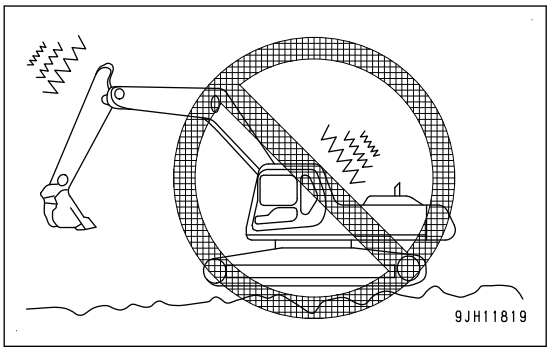
Set right and left travel levers (1) in NEUTRAL position (N).
The machine stops.



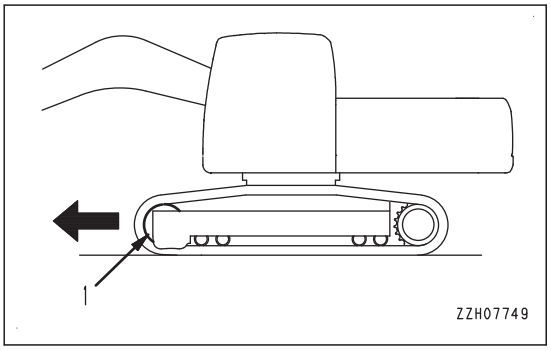


PROHIBITION OF HIGH-SPEED TRAVEL OPERATIONS ON ROUGH GROUND

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.



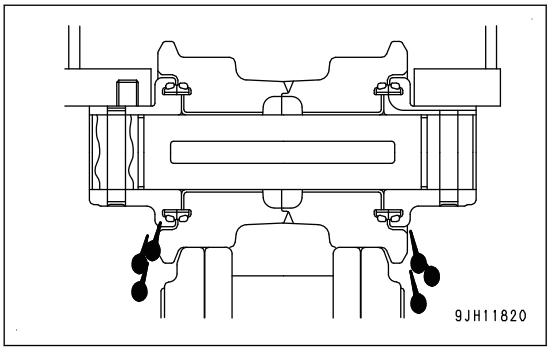
DO NOT TRAVEL LONG -TIME CONTINUOUSLY

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 traveling 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)

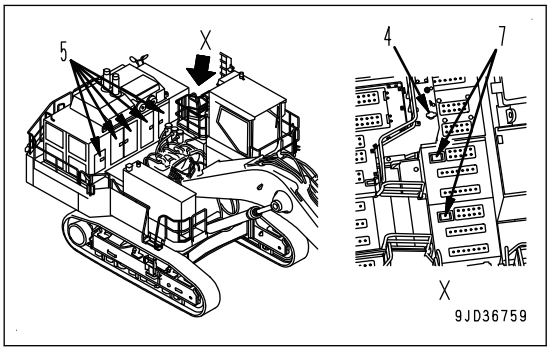
(8) Air conditioner box cover

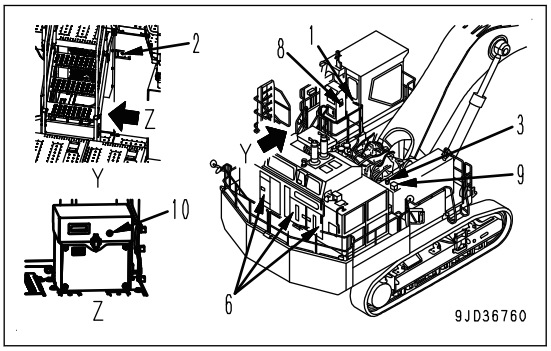
(9) Breather cover on fuel tank

(10) Starting motor and battery isolator case

REMARK

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





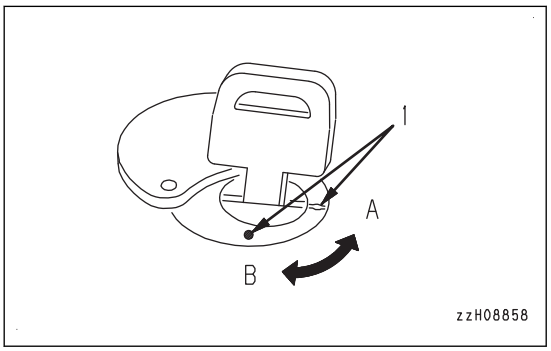
METHOD FOR OPENING AND CLOSING CAP WITH LOCK

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

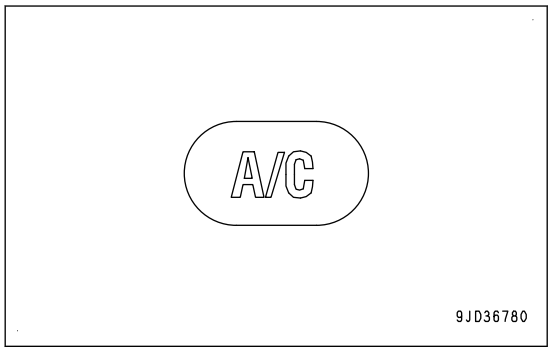
   Position (B): CLOSE (LOCK)



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.

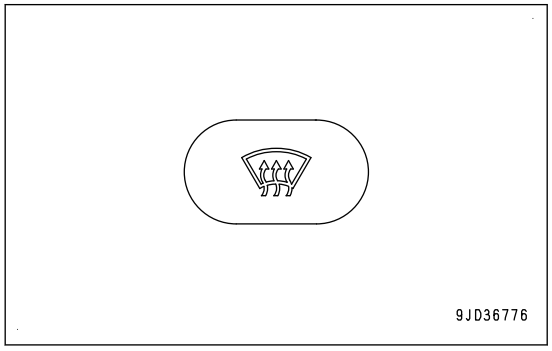


DEFROSTER SELECTOR SWITCH

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.

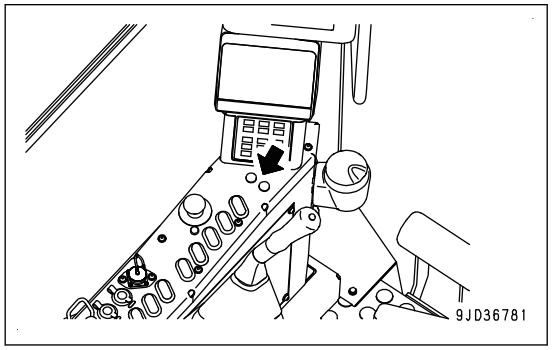
Air blows out from the vents marked with ○.



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

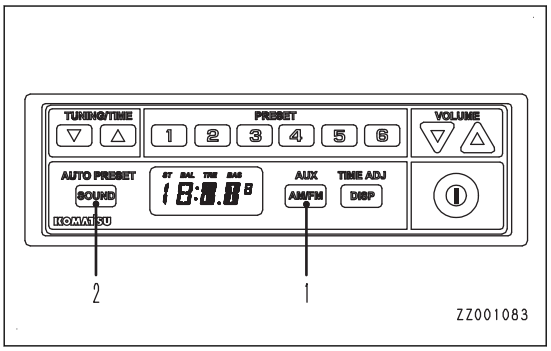
SUNLIGHT SENSOR

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.



METHOD FOR ADJUSTING FREQUENCY (AUTO PRESETTING)

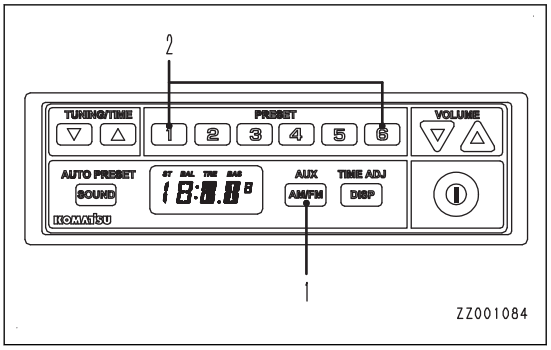
1. Press band/AUX selector button (1) and select FM or AM.
2. Hold down sound control button (2).



When a proper frequency is picked up, it is automatically registered to preset memories 1 to 6.

METHOD FOR CALLING PRESET

1. Press band/AUX selector button (1) and select FM or AM.
2. Press one of 1 to 6 of preset button (2).



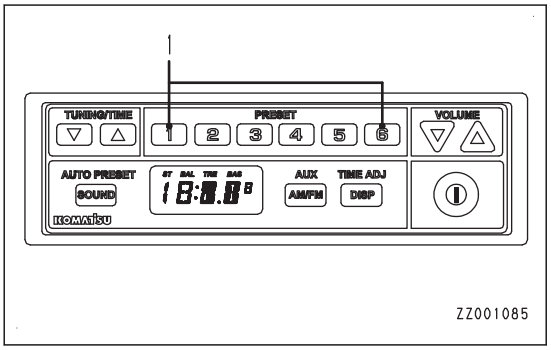
The frequency registered in the preset number of the pressed button is called up and received.

“Example”
While a frequency is displayed, press button 1 of preset button (2), and the preset number “P-1” appears on the display.

The preset number is shown for 0.5 seconds, and then the frequency is displayed.

METHOD FOR REGISTERING PRESET

Hold down one of 1 to 6 of preset button (1) while listening to the radio.

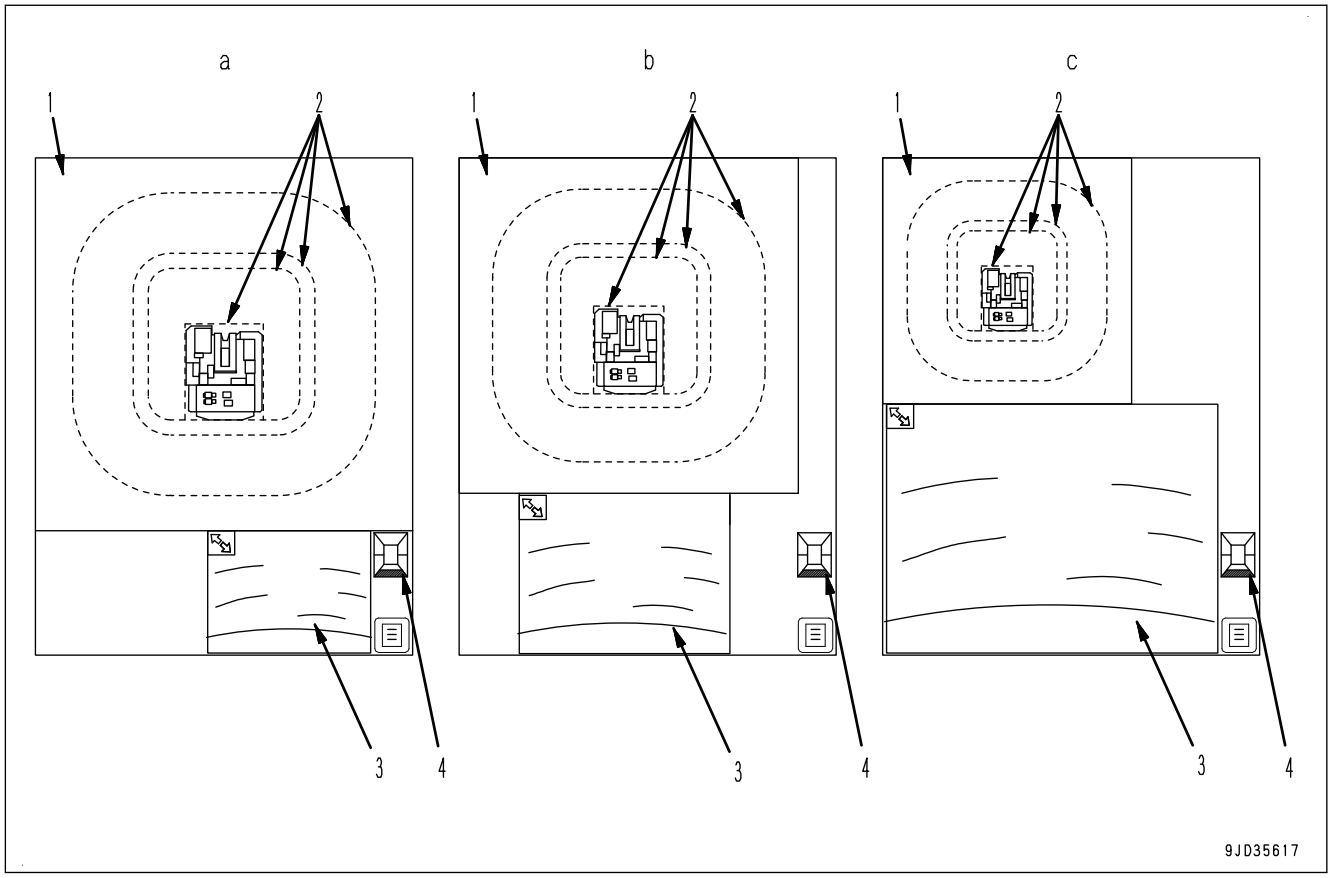


The currently received frequency is registered to the preset number corresponding to the pressed button.

“Example”
While a frequency is displayed, keep pressing button 1 of preset button (1), and the preset number “P-1” is displayed.

After the preset number flashes 3 times, the frequency is displayed and then registered to preset number “P-1”.

KomVision MONITOR DISPLAY



(a): Bird's eye view display mode (Large), (b): Bird's eye view display mode (Medium), (c): Bird's eye view display mode (Small)

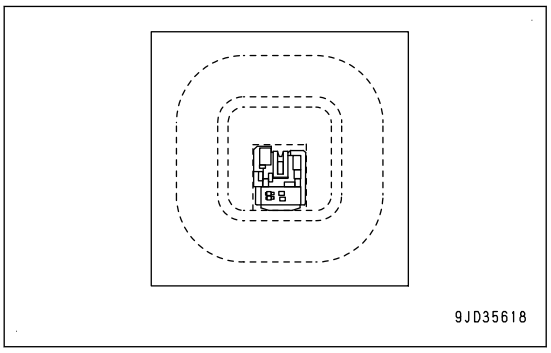
(1) Bird's eye view display

(2) Reference line

(3) Camera image

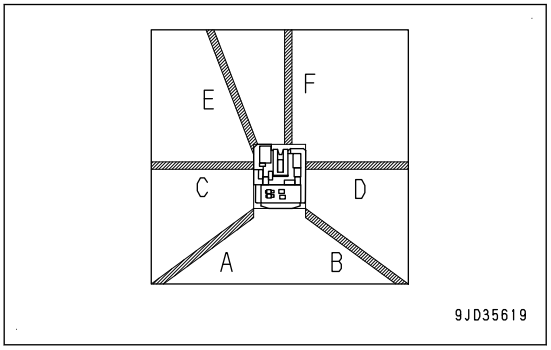
(4) Camera switch display

KomVision synthesizes the images of 7 cameras and displays the image from 360 ° above the machine.



Since this image is electronically synthesized, the objects in the image may be displayed double or distortions or misalignment may occur in the machine rear areas A and B, machine side areas C and D, machine front areas E and F.

For the camera image, the image shot by each of the loaded cameras is displayed.



Status	Main cause	Remedy
Auto-greasing caution lamp lights up	• Grease pail is empty.	
	• Grease pail is deformed. Follower plate is not lowered. Air is sucked.	• Replace the grease pail. Fill it with grease.
	• Grease leaks from greasing piping (piping from pump through injector).	• Check, repair.
	• Grease leaks from injector.	• Replace.
	• Improper pressurization of pump	• Replace.
Injector operates but indicator does not operate.	• Injector has a trouble. • NLGI No. 2 or equivalent grease is used in a cold district.	• Replace. • Replace grease with NLGI No. 0 or equivalent grease for cold district.

If any problem caused by other causes than shown in the table is found, ask your Komatsu distributor for repair.

TRANSPORTATION

PRECAUTIONS FOR TRANSPORTING MACHINE

⚠ WARNING

This machine needs to be divided into components for transportation depending on the regulation. When transporting the machine, consult your Komatsu distributor.

SELECT TRANSPORTATION METHOD

When transporting the machine, choose the transportation method in reference to the weight and dimensions shown in “SPECIFICATIONS”.

Note that the weight and dimension given in “SPECIFICATIONS” (weight and dimension) may differ according to the type of track shoe or arm, or other attachments.

METHOD FOR LIFTING THE UNITS FOR TRANSPORTATION

⚠ WARNING

- **Do not lift the machine with someone in it.**
- **Always use a wire rope that has ample strength for the weight of the machine.**
- **Lift the unit carefully so that it is stable and well balanced at the center of gravity.**

MACHINE CONFIGURATION FOR TRANSPORTATION

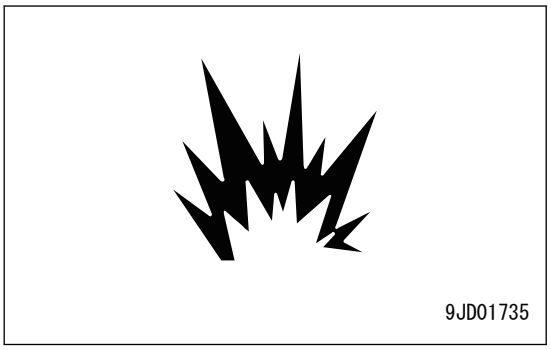
The machine can be divided into the following units for transportation: upper structure, operator's cab, crawler frame, center frame, work equipment, and counterweight. When transporting the machine, consult your Komatsu distributor.

PRECAUTIONS FOR CHARGING BATTERY

⚠ WARNING

When charging the battery, if the battery is not handled correctly, it is dangerous that the battery may explode. Always follow the instruction manual accompanying the charger, and observe the following.

- **Set the voltage of the charger to match the voltage of the battery to be charged. If the correct voltage is not selected, the charger may overheat and cause an explosion.**
- **Connect the positive (+) charger clip of the charger to the positive (+) terminal of the battery, then connect the negative (-) charger clip of the charger to the negative (-) terminal of the battery. Be sure to attach the clips securely.**
- **In the case of a liquid stopper type, set the charge current to 1/10 or less of the value of the rated battery capacity. When you do the fast charging, set it to less than the rated battery capacity.**
  When you do the fast charging, set it to less than the rated battery capacity.
  For the Komatsu maintenance-free battery (if equipped), the charging current is less than 1/10 of the rated capacity of the battery. Do not do the fast charging.
  If the charger current is too high, the electrolyte will leak or dry up, and this may cause the battery to catch fire and explode.
- **If the battery electrolyte is frozen, do not charge the battery or start the engine with a different power source.**
  There is a danger that this will ignite the battery electrolyte and cause the battery to explode.
- **Do not use or charge the battery if the battery electrolyte level is below the LOWER LEVEL line. It can cause explosion. Be sure to do the periodic inspection of the battery electrolyte level. In the case of a liquid stopper type, add purified water (such as a commercial battery fluid) to UPPER LEVEL line.**
  For the Komatsu maintenance-free battery (if equipped), check the indicator display and follow the instructions. See "CHECK KOMATSU MAINTENANCE-FREE BATTERY INDICATOR (4-28)" for how to read the indicator.



PERFORM KOWA (Komatsu Oil Wear Analysis)

KOWA is a maintenance service that makes it possible to prevent machine failures and downtime. With KOWA, the oil is periodically sampled and analyzed. This enables early detection of wear of the machine drive parts and other problems.

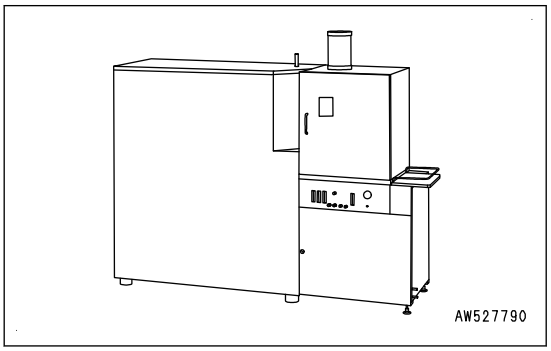
Thanks to long term experience and ample data accumulated, we can grasp condition of your machine accurately and provide proper recommendation.

We strongly recommend you to use this service. The oil analysis is performed at actual cost, so the cost is low, and results of the analysis and recommendations are reported promptly.

KOWA analysis items

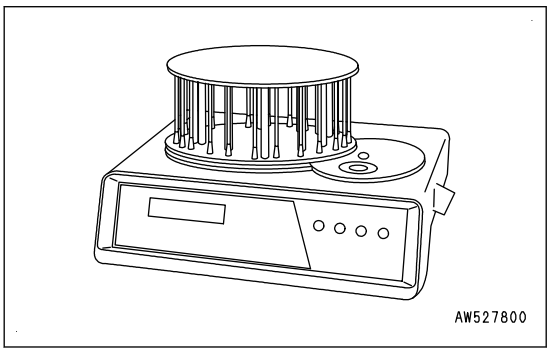
Measurement of metallic powder concentration

An ICP (Inductively Coupled Plasma) analyzer is used for measuring the concentration of iron, copper, and other metal powder in the oil.



Measurement of quantity of iron particles

A PQI (Particle Quantifier Index) measuring instrument is used for measuring the quantity of iron particles of 5 µm or more, enabling early detection of failures.



Others

Measurements are made of items such as the ratio of water, coolant, and fuel in the oil, and dynamic viscosity, if necessary, to enable a highly precise diagnosis of the machine and the components' condition.

Oil sampling interval

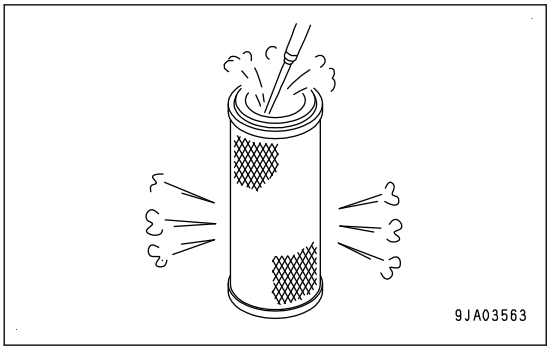
500 hours

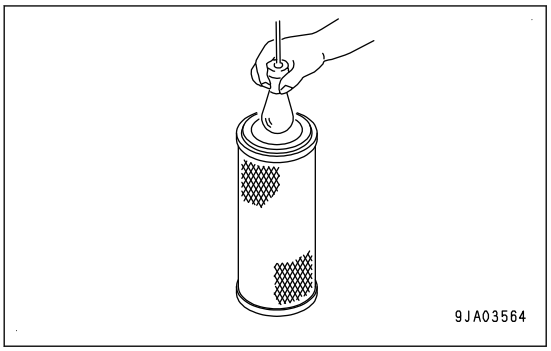
Precautions when sampling

- Make sure that the oil is well mixed before sampling.
- Perform sampling at regular fixed intervals.
- Do not perform sampling on rainy or windy days when water or dust can get into the oil.

For further details of KOWA, contact your Komatsu distributor.

6. Blow dry compressed air (0.2 MPa {2.1 kgf/cm^2,29.9 PSI} or less) from the inside of the outer element along the pleats.
   1) Replace the outer element after you have cleaned 6 times or it has been used for a year. Replace the inner element as well at the same time.
   2) If the air cleaner clogging caution lamp (1) lights up soon after cleaning even if the outer element has not been cleaned up to 6 times, replace both the inner element and outer element.
7. After cleaning, light up the inside of the element with a lighting bulb to see if the element has a small hole or a thin part. Replace it if it has any of these.
8. Remove the cover of cloth or tape attached to inner element (6).





NOTICE

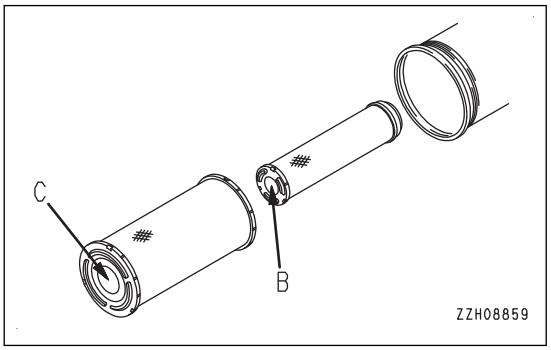
- **Do not use the element with damaged pleats or a damaged gasket or seal.**
- **If the element and O-ring are cleaned and used again after they are used for more than one year, it will cause problems. Do not use them again.**

9. Check the seal of the cleaned or new element for adhesion of dusts and oil and wipe them off, if any.
10. Push the outer element in straight with your hand when installing it to the air cleaner body.

    Hold the outer element, and rock it lightly up and down and to the right and left while pushing it in, the outer element can be inserted easily.

NOTICE

- **Be sure to install the air cleaner element facing in the correct direction. Install so that the bottom of the air cleaner element (face where no hole is drilled) (B), (C) comes to cover (3) end. If it is installed in wrong direction, it may cause breakage of the air cleaner element or serious damage to the engine.**
- **When inserting the element into the body, if the rubber at the tip is swollen or the outer element is not pushed in straight, and cover (3) is installed by force with hook (2), there is a danger that the hook and air cleaner body may be damaged, so be careful when installing.**



11. Install cover (3) as follows.

METHOD FOR CHECKING AND ADJUSTING TRACK TENSION

⚠ WARNING

Before performing this operation, be sure to bleed air from the circuit according to "Bleeding air from idler cushion circuit".

The wear of the pins and bushings of the undercarriage depends on the working condition and soil condition. Check the track tension occasionally and keep it in the standard range.

Perform the check and adjustment on a level and firm ground.

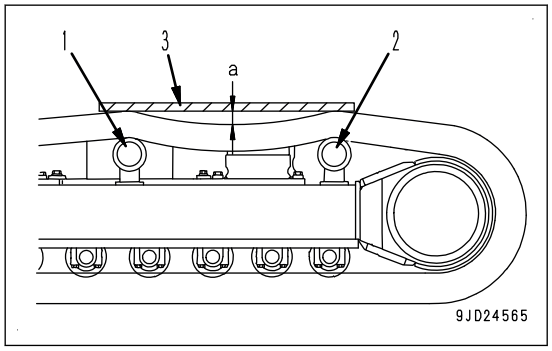
METHOD FOR CHECKING TRACK TENSION

1. Run the engine at low idle, then move the machine forward for a distance equal to the track length on ground, and slowly stop the machine.
2. Prepare the straight wooden bar (3) which has an enough length from the second carrier roller (1) to the third carrier roller (2). Put it onto the track shoe.
3. Measure the maximum deflection (a) between the bottom surface of the wooden bar and top surface of the track shoes.

   Standard deflection

   Deflection (a) is correct if it is 10 to 30 mm {0.4 to 1.2 in} .

   If the deflection is out of the standard range, adjust it into the standard range.



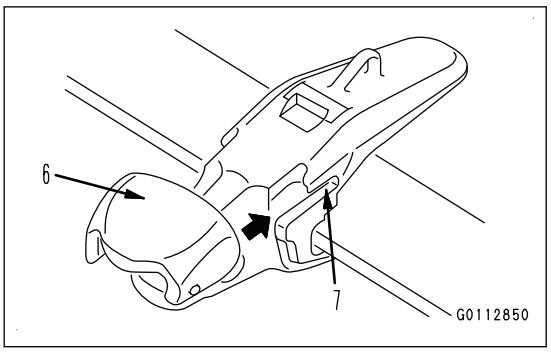
METHOD FOR ADJUSTING TRACK TENSION

⚠ WARNING

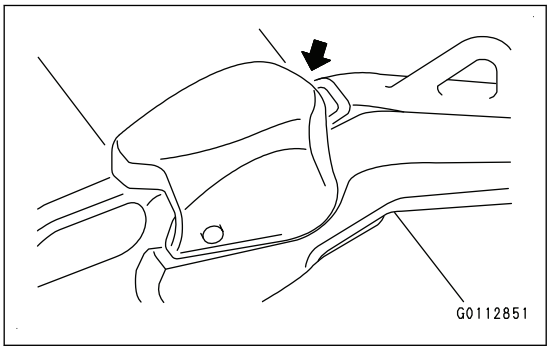
Never loosen the valve (1) more than 1 turn.
If the valve (1) is loosened more than 1 turn, there is a danger of valve (1) flying out under the high internal pressure of the grease.
Do not loosen any part other than the valve (1). Do not turn your face toward the direction that the valve (1) is installed.
If the track tension cannot be loosened by the above procedure, ask your Komatsu distributor for repair.

If the track tension is not at the standard value, adjust it in the following manner.

7. Remove the tooth (2), and remove the wear cap (6) to clean the mounting surface and the mounting hole (7).

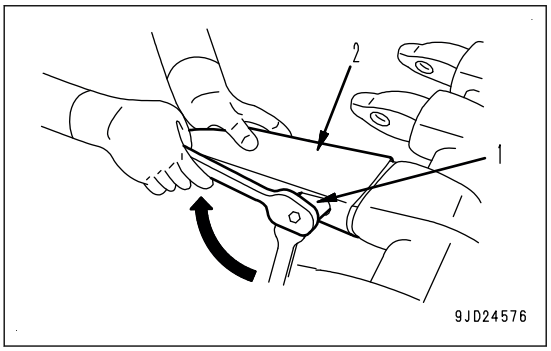


Pry it with a tool as needed and remove it.

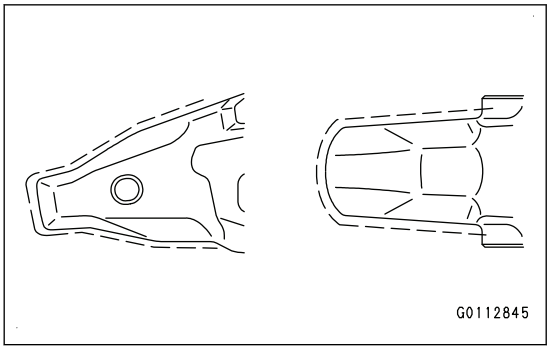


8. Slide and install the new wear cap (6) along the guide (7) of the adapter.
9. Clean the mounting surface of the tooth. Fit the tooth (2) in the adapter. Push in the pin (1), and rotate it clockwise with a socket wrench by 90 °. Lock the pin to install it.

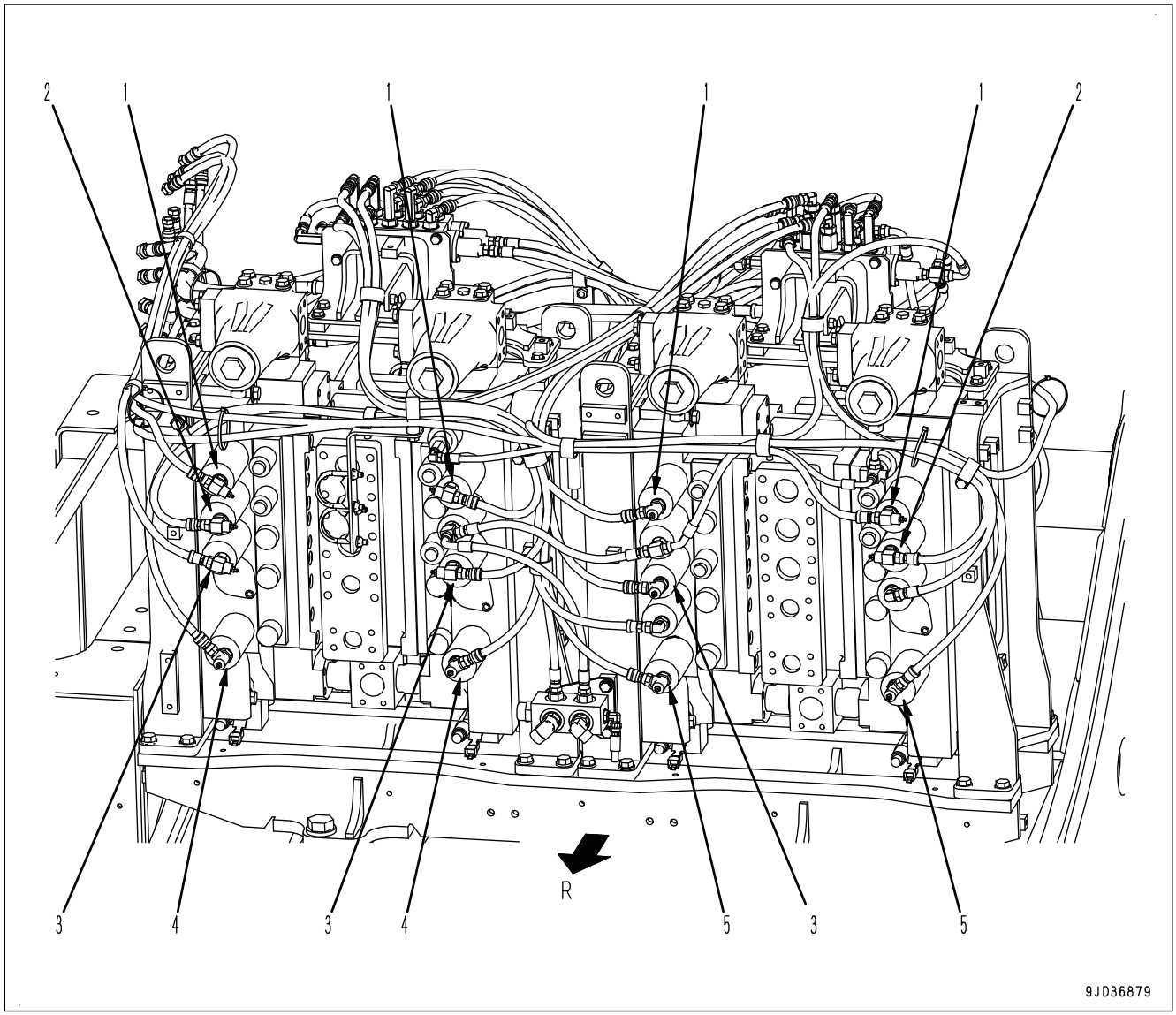
   Make sure that a click sound occurs when it is locked.



Area to be cleaned of the tooth mounting face



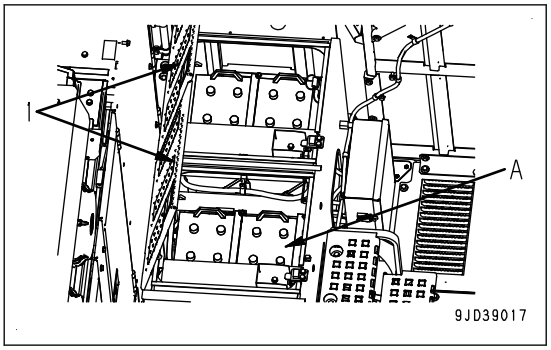
Rear of main valve



(R) Rear of the machine
(1) Arm OUT (4 places)
(2) Boom LOWER (2 places)
(3) Bucket DUMP (3 places)
(4) Left FORWARD travel (2 places)
(5) Right FORWARD travel (2 places)

Open the cover (1) at the rear of the cab base on the left side of the machine, and you'll find the battery. The battery is installed at (A) part.

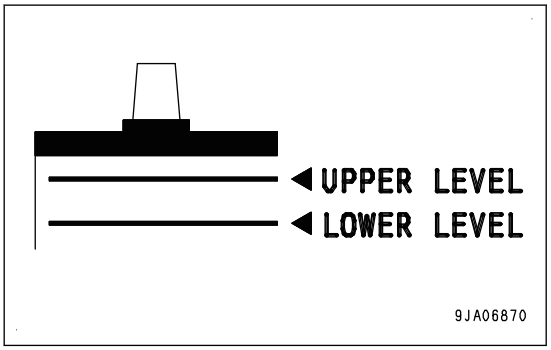
Inspect the battery electrolyte level at least once a month according to the following procedure.



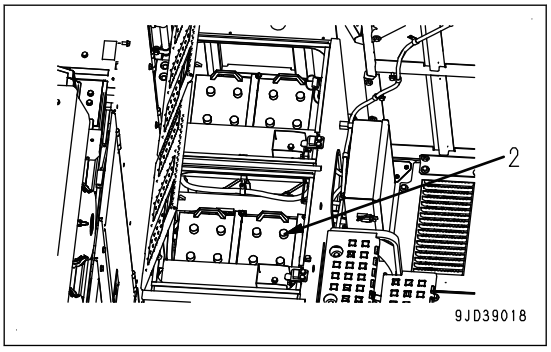
METHOD FOR CHECKING ELECTROLYTE LEVEL FROM SIDE OF BATTERY

If it is possible to check the electrolyte level from the side of the battery, check as follows.

1. Use a cloth wet with water to clean the area around the electrolyte level lines and check that the electrolyte level is between UPPER LEVEL (U.L.) and LOWER LEVEL (L.L.) lines.



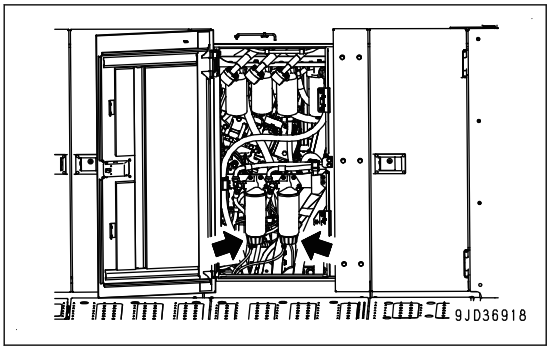
2. If the electrolyte level is below the middle between UPPER LEVEL (U.L.) and LOWER LEVEL (L.L.) lines, immediately remove the cap (2) and add the purified water (such as a commercial battery fluid) to U.L. line.
3. After adding the purified water, tighten the cap (2) securely.



REMARK

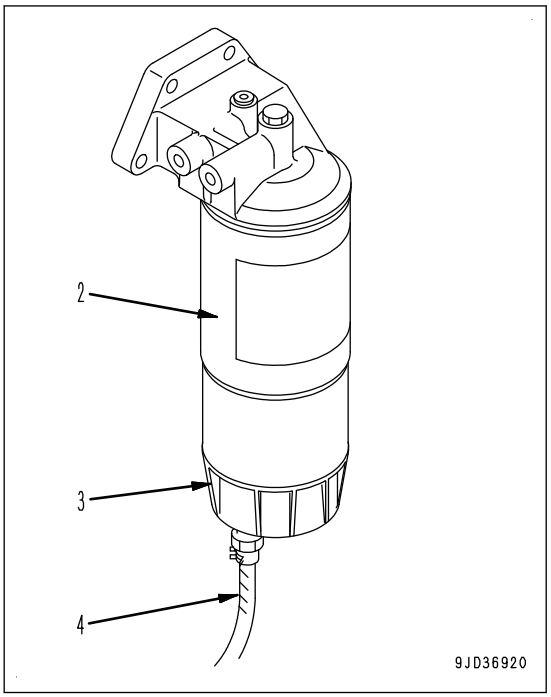
If the purified water exceeds UPPER LEVEL (U.L.) line, remove it by using a syringe so that it is lower than UPPER LEVEL (U.L.) line. Neutralize the removed electrolyte with baking soda (sodium bicarbonate), then flush it away with a large amount of water. If necessary, consult your Komatsu distributor or a battery manufacturer.

2. Place the container to receive the fuel under pre-filter cartridge.



3. Remove the drain hose (4) of the cup (3) of the water separator.
4. Turn the filter cartridge (2) counterclockwise by using the filter wrench, and remove it.
5. Turn the water separator cup (3) in counterclockwise direction to remove, which is installed at the bottom of the removed cartridge. (This cup is used again.)
6. Install the cup (3) which has been removed to the bottom of the new fuel prefilter cartridge. (At this time, be sure to replace the O-ring with new one.)

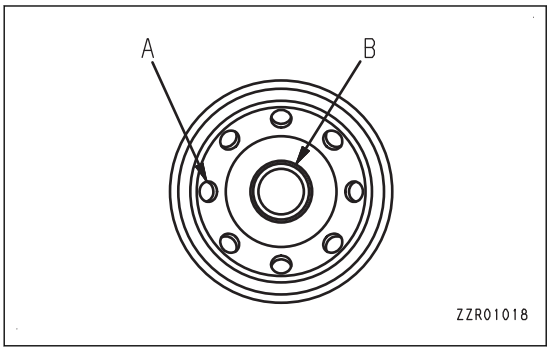
   Cup tightening torque:10 Nm {1.0 kgfm,7.23 lbft}



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

   NOTICE

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



8. When installing the cartridge, tighten it until the packing surface contacts the sealing surface of the filter head, then tighten it 3/4 of a turn.

   If the filter cartridge is tightened too far, the packing will be damaged and this will lead to leakage of fuel. If the filter cartridge is tightened too loose, fuel will also leak from the packing, so always tighten to the specified angle.

   - When tightening with a filter wrench, be extremely careful not to dent or damage the filter.
9. Install the drain hose (4).
10. Check that the drain plug at the bottom of the water separator cup is tightened securely.

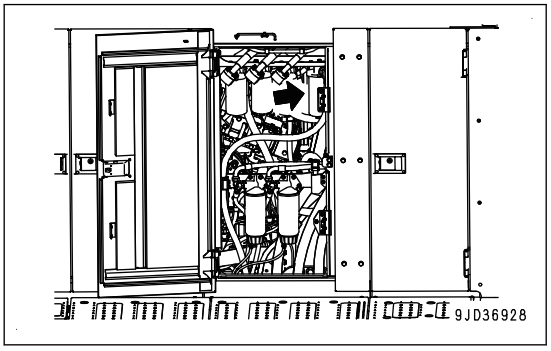
METHOD FOR REPLACING PILOT FILTER CARTRIDGE

⚠ WARNING

Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury. Wait for the temperature to go down, and then start the work.

1. Turn the filter cartridge (1) counterclockwise by using the filter wrench, and remove it.
2. Fill the new filter cartridge with hydraulic oil, apply oil to the packing surface, then install it.

   When installing the cartridge, tighten it until the packing surface contacts the seal surface of the filter holder, then tighten it 1/2 to 3/4 of a turn.



NOTICE

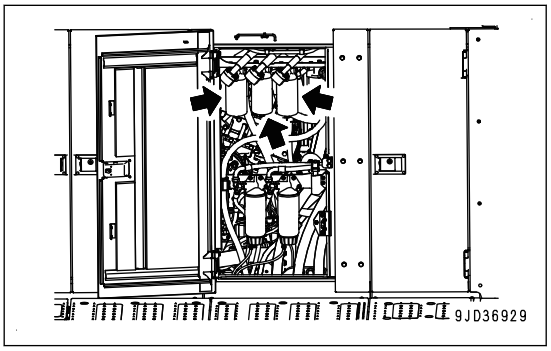
Check that there is no iron powder or foreign material, contaminant attached to the filter case bottom or around the cartridge when replacing the cartridge.
There may be an abnormality in the hydraulic circuit if any of these are attached. Ask your Komatsu distributor for the inspection and repair.

METHOD FOR CHECKING AND REPLACING HYDRAULIC PUMP DRAIN FILTER CARTRIDGE

(3 place)

1. Turn the filter cartridge counterclockwise by using the filter wrench, and remove it.
2. Fill the new filter cartridge with hydraulic oil, apply oil to the packing surface, then install it.

   When installing the cartridge, tighten it until the packing surface contacts the seal surface of the filter holder, then tighten it 1/2 to 3/4 of a turn.



NOTICE

Check that there is no iron powder or foreign material, contaminant attached to the filter case bottom or around the cartridge when replacing the cartridge.
There may be an abnormality in the hydraulic circuit if any of these are attached.
Ask your Komatsu distributor for the inspection and repair.

REMARK

Drain filter cartridge consists of the following two parts.
(1): Hydraulic pump drain filter cartridge (3 pieces)
(2): Swing, travel motor, drain filter cartridge (2 pieces)

METHOD FOR REPLACING FUEL TANK BREATHER ELEMENT

⚠ WARNING

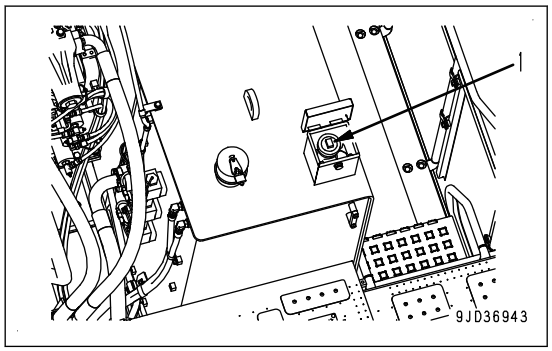
Immediately after the engine is stopped, all the parts are still very hot, and may cause burn injury. Wait for the temperature to go down, and then start the work.

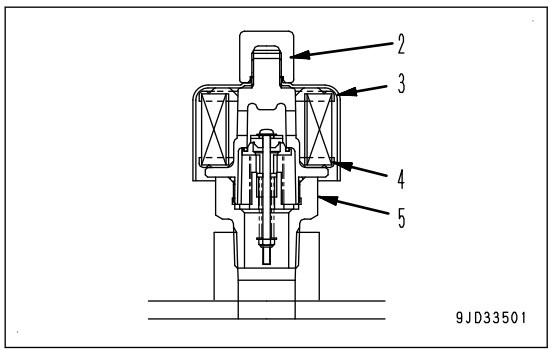
NOTICE

- **For the machines equipped with service center (optional), see "ATTACHMENTS AND OPTIONS", "HANDLE SERVICE CENTER", "METHOD FOR REPLACING FUEL TANK BREATHER ELEMENT".**
- **For the machines equipped with fuel quick charge system (optional), see "ATTACHMENTS AND OPTIONS", "HANDLE FUEL QUICK CHARGE SYSTEM", "METHOD FOR REPLACING FUEL TANK BREATHER ELEMENT".**

1. Remove the nut (2) of the breather assembly (1) on the top face of the fuel tank, then remove the cover (3).
2. Replace the breather element (4) with a new one.
3. Install the cover (3) and nut (2).

   Tightening torque of the nut (2):10 to 14 Nm {1.0 to 1.4 kgfm,7.23 to 10.1 lbft}





NOTICE

If the breather assembly (1) is removed for replacement, apply a tool to the bolt (5) and tighten it.
Tightening torque: 39 to 42 Nm {4 to 5 kgfm}

METHOD FOR CHECKING ALL TIGHTENING POINTS OF ENGINE INTAKE PIPE CLAMPS

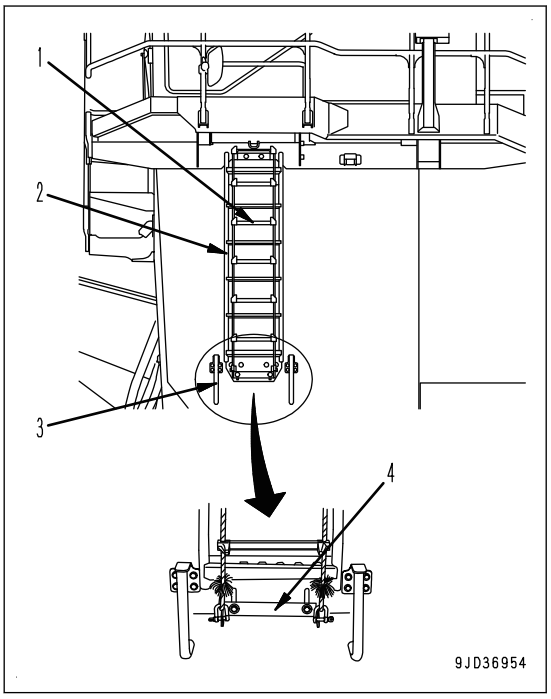
Ask your Komatsu distributor for checking the tightening of the clamps between the air cleaner - turbocharger - aftercooler - engine.

METHOD FOR CHECKING EMERGENCY LADDER

Check that there is no abnormality such as wear or damage on the rope ladder (1), fixed type ladder (2), handrail (3), and mounting bracket (4). If any, replace it with the genuine part.

NOTICE

Replace the rope ladder (1) every two years since the strength has been decreased by aged deterioration even when there is no visible wear or damage on the appearance.



METHOD FOR LUBRICATING THE HYDRAULICALLY OPERATED STAIRWAY

Set the hydraulically operated stairway to the position shown in the right figure, and lubricate the grease fittings (1) to (4) with a grease gun.

REMARK

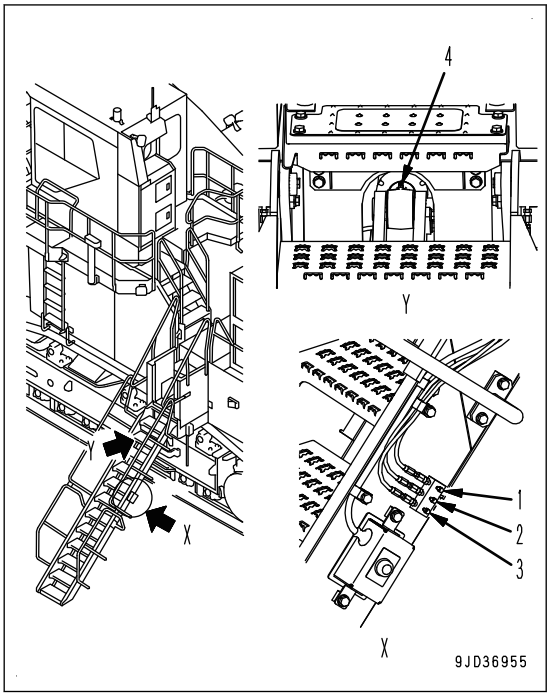
Target points of the lubrication of the grease fitting

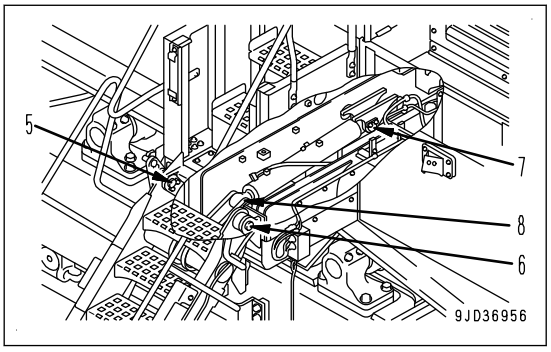
(1): Stairway link pin (front) (5)

(2): Stairway link pin (rear) (6)

(3): Stairway cylinder bottom pin (7)

(4): Stairway cylinder head pin (8)





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

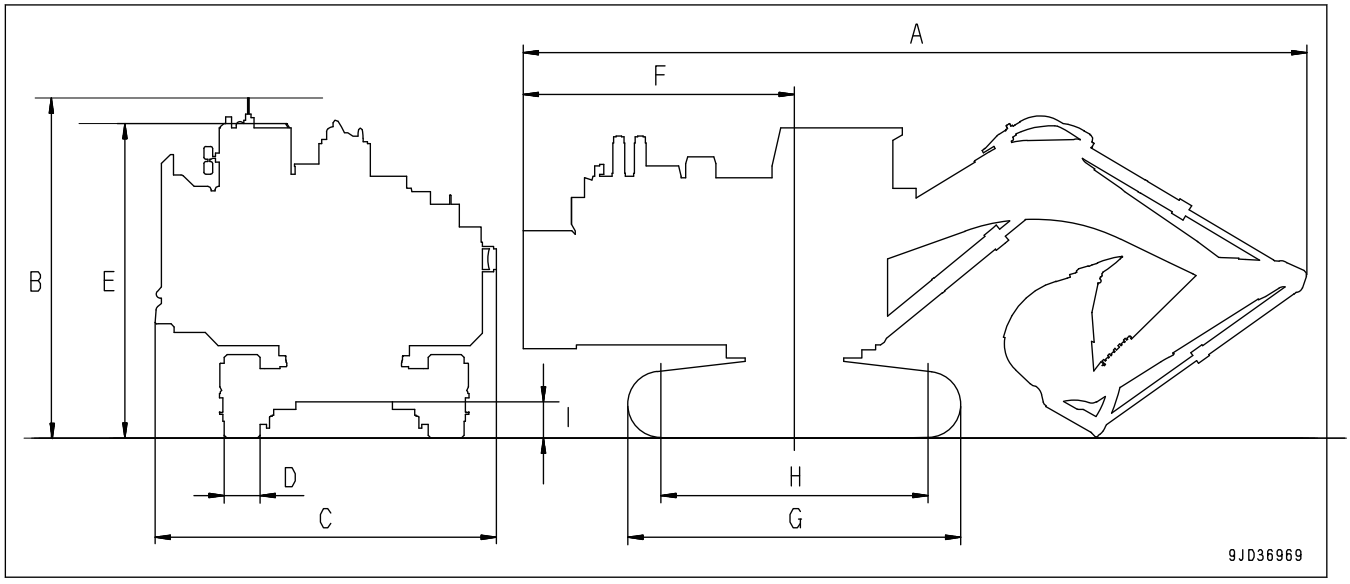
   If any abnormality is found, ask your Komatsu distributor to have the parts disassembled, repaired, or replaced.

SPECIFICATIONS

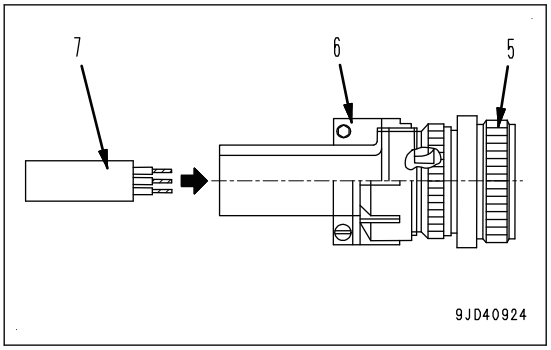
SPECIFICATIONS: PC2000-11

	Item		Unit	PC2000-11
	Operating weight		kg {lb}	201500 {441308}
	Bucket capacity		m^3 {cu/yd}	12.0 {15.7}
	Engine model		-	Komatsu SAA12V140E-7 diesel engine
	Rated horse-power	SAE J1995 (gross)	kW {HP} / min^{-1} {rpm}	794 {1080} / 1800 {1800}
		ISO 9249 / SAE J1349 (net)		780{1060} / 1800 {1800}
A	Overall length		mm {ft in}	17030 {55'10"}
B	Overall height		mm {ft in}	7625 {25' 0"}
C	Overall width *1		mm {ft in}	7685 {25' 3"}
D	Track width		mm {ft in}	810 {2'8"}
E	Cab height		mm {ft in}	7030 {23'1"}
F	Tail swing radius		mm {ft in}	5980 {19'7"}
G	Overall length of track		mm {ft in}	7445 {24'5"}
H	Distance between tumbler centers		mm {ft in}	5780 {19'}
I	Minimum ground clearance		mm {ft in}	825 {2'8"}
	Travel speed (Lo/Hi)		km/h {MPH}	2.7 {1.7}
	Swing speed		min^{-1} {rpm}	4.8 {4.8}

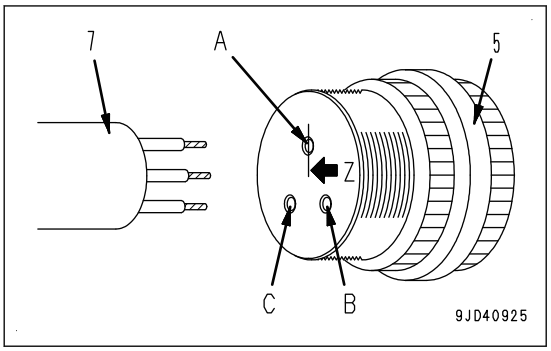
*1 With hydraulically operated stairway



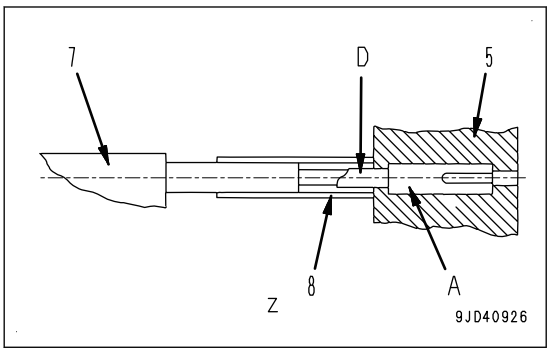
2. Remove the clamp (6) of the machine input plug (5) (shipped alone: 175-06-37871), and put the purchased cable (7) through from behind (rubber bushing side).



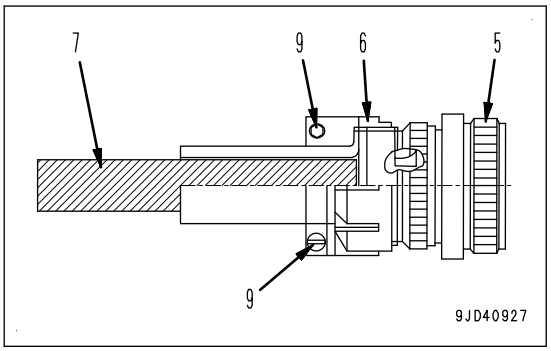
3. Connect 3 pieces of core wires of the cable (7) to the contacts (A) to (C) of the machine input plug (5) one by one, and solder them.
   - Contact (A): Ground circuit
   - Contact (B): Power supply circuit
   - Contact (C): Power supply circuit



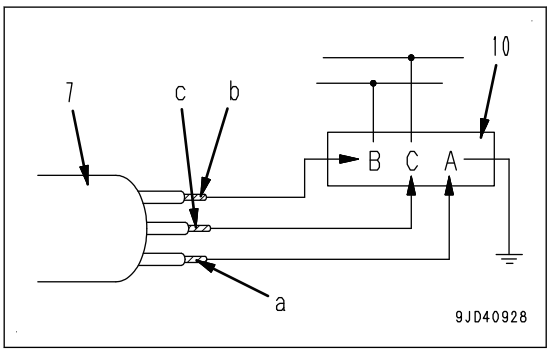
4. Cover the soldered part (D) with a rubber tube or an insulation tape (8) for the insulation.



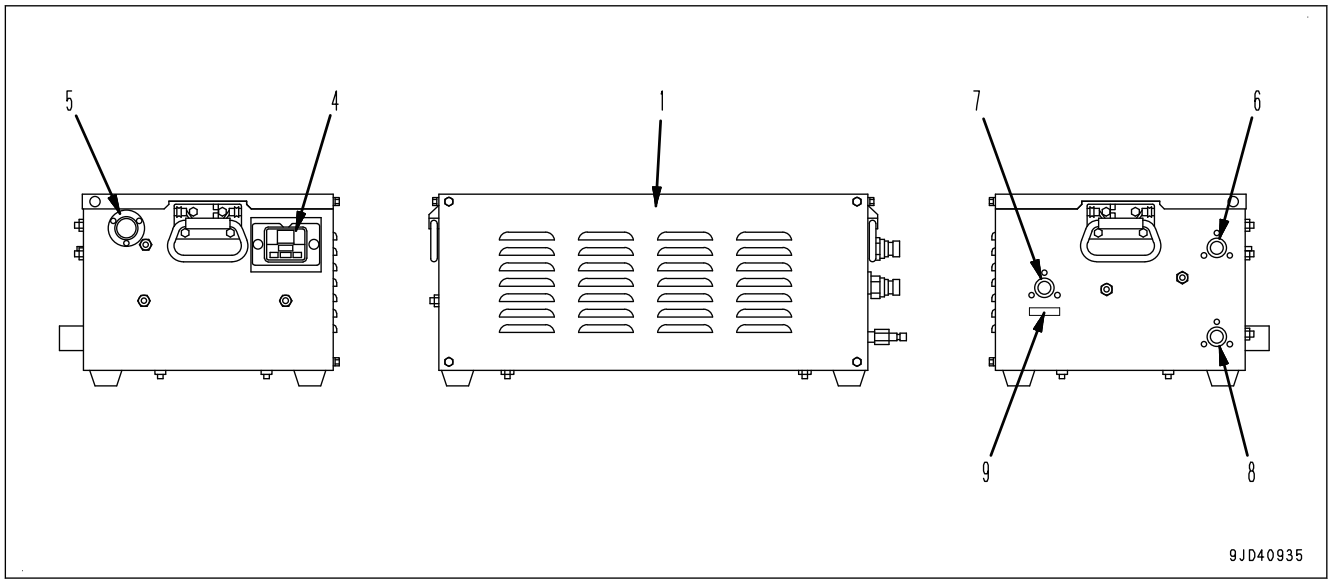
5. Install the clamp (6) to the machine input plug (5).
6. Tighten the bolts (9) (2 pieces) of clamp (6) equally, and fix them not to let the cable (7) come off.



7. Connect the other core wires (a) through (c) to each ground circuit (A), power supply circuits (B) and (C).
   - Core wire (a): Core wire which is connected to the ground circuit (A) of plug (2)
   - Core wire (b): Core wire which is connected to the power supply circuit (B) of plug (2)
   - Core wire (c): Core wire which is connected to the power supply circuit (C) of plug (2)

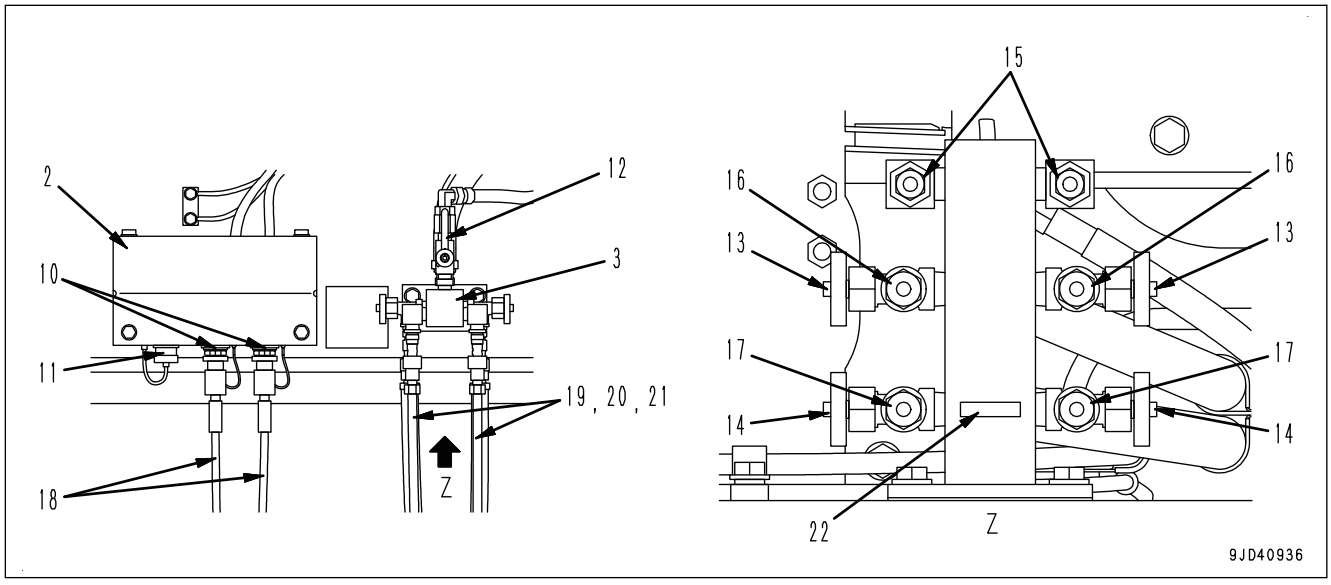


Movable diesel preheater



(1) Movable diesel preheater body
(4) Control panel
(5) Power supply input receptacle
(6) Coolant supply plug
(7) Coolant receive plug
(8) Fuel receive plug
(9) White tape

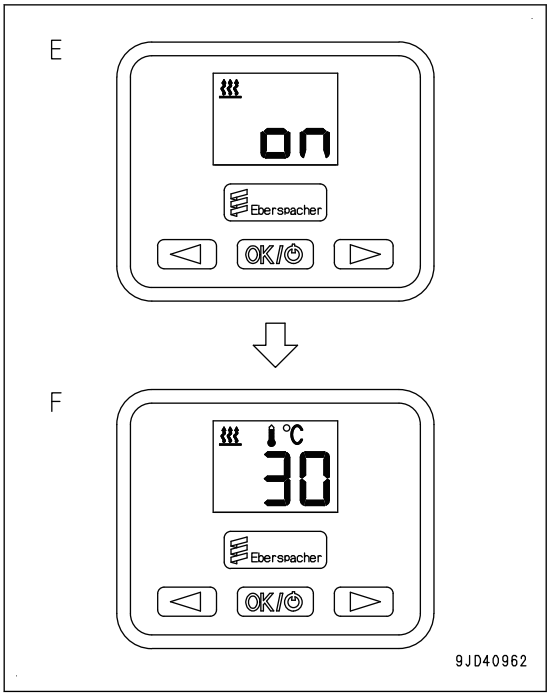
Connecting port



(2) Connecting port (power supply)
(3) Connecting port (fuel, coolant)
(10) Power supply output receptacle
(11) Power supply input receptacle (for external power supply)
(12) Fuel supply open/close lever
(13) Coolant receive open/close valve
(14) Coolant supply open/close valve
(15) Fuel supply valve
(16) Coolant receive plug
(17) Coolant supply plug
(18) Power supply cable
(19) Fuel hose
(20) Coolant hose 1
(21) Coolant hose 2
(22) White tape

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 movable diesel preheater operates normally.
(E): Movable diesel preheater is turned on (fuel intake operation starts)
(F): Operation time is shown (movable diesel preheater is normally operated)



METHOD FOR STOPPING OPERATION

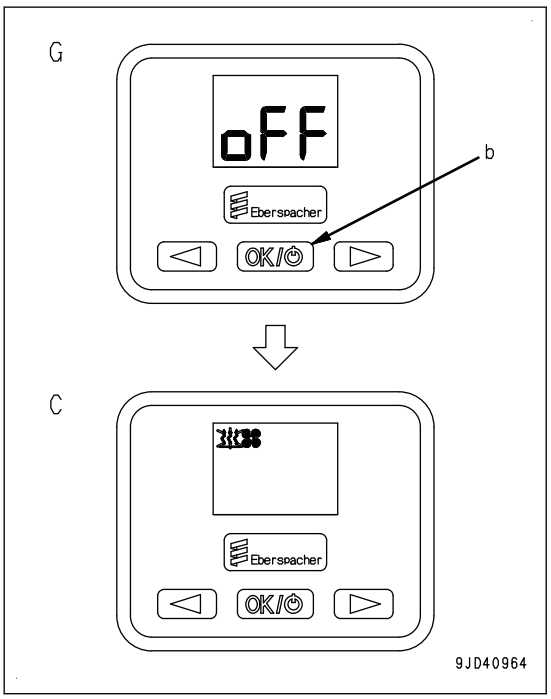
When the movable diesel preheater is operated for the specified operation time, disconnect the movable diesel preheater as follows.

1. After the movable diesel preheater is operated more than the specified operation time, check with the monitor in the operator's cab that the engine coolant temperature is correct.
2. After you are sure that the temperature is correct, push the button (b) (for 2 seconds or below) to stop the diesel preheater.

   The start screen is shown and the screen goes off after 10 seconds.

   (G): Movable diesel preheater stops

   (C): Start screen



REMARK

Komatsu does not handle the pressure pumps, but if a pressure pump coupler is needed, consult your Komatsu distributor.

NOTICE

- **Before connecting the service center coupler and pressure pump coupler, wipe off all dirt, oil, or other foreign material from each coupler to prevent dirt from getting inside the piping.**
- **When adding lubricant and coolant, always check that the amount is the specified amount.**

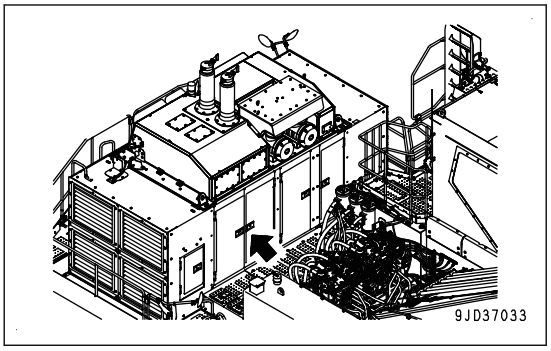
METHOD FOR DRAINING AND ADDING ENGINE OIL

⚠ WARNING

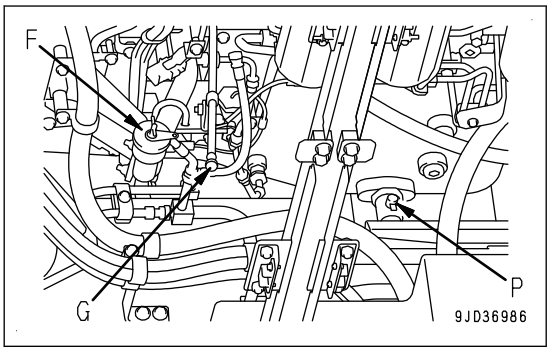
Immediately after the engine is stopped, its parts and oil are still very hot, and may cause burn injury. Wait for the temperature to go down, and then start the work.

- Refill capacity of oil pan: 128ℓ {33.8US gal}

1. Open the door of the power module on the front side of the machine body.



2. Open the engine oil filler port (F).

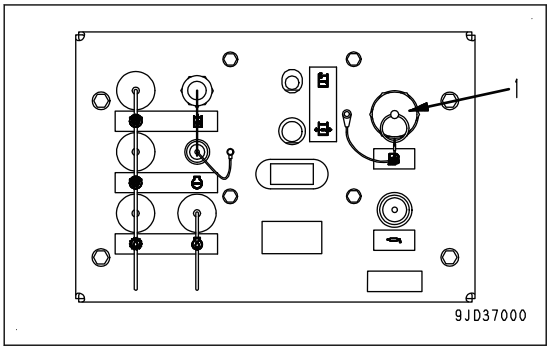


METHOD FOR ADDING FUEL

⚠ WARNING

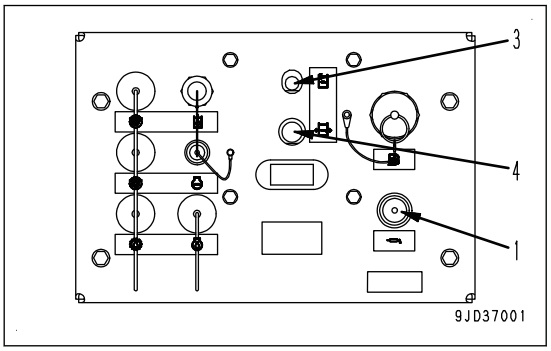
- **Fuel causes fire, so be extremely careful not to let the fuel overflow when adding fuel. If any fuel has spilled, wipe it up completely. If fuel has spilled over soil or sand, remove that soil or sand.**
- **Fuel is highly flammable and dangerous. Do not bring any open flame near fuel.**
- **Before adding fuel, stop the engine and set the lock lever to LOCK position.**

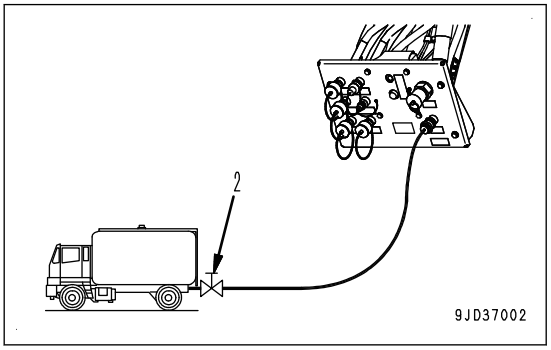
1. Remove the cap of the fuel coupler (1), and securely connect the coupler on the pressure pump side.
2. Start adding of fuel.
   Fuel tank capacity: 3409.6ℓ {901US gal}
3. After completing the fuel adding operation, remove the coupler on the pressure pump side.
4. Install the cap to the coupler.



Method for adding grease

1. Remove the cap of the grease coupler (1), and securely connect the coupler on the pressure pump side.
2. Open the pressure pump source pressure valve (2) (or start the grease pressure pump), and add grease.
3. When lamp (3) lights up in red to show that the adding of grease has been completed, tighten the source pressure valve (2). (Or stop the grease pressure pump.)
4. Press the remaining pressure release switch (4) and bleed the remaining pressure inside supply hose.
5. Install the cap to the coupler.





REMARK

- After the completion of adding grease, the lamp lights up in red to show that the adding of grease has been completed, and at the same time, the shut-off valve on the machine closes and the supply of grease stops automatically.
- Releasing the remaining pressure from inside the grease supply hose may take several seconds or several tens of seconds. Keep pressing the remaining pressure release switch until the coupler can be removed.

RECOMMENDED FUEL, COOLANT, AND LUBRICANT

NOTICE

- **Komatsu genuine oils are adjusted to keep the reliability and durability of Komatsu construction equipment and components.**
  To keep your machine in the best condition for long period of time, follow the instructions in this Operation and Maintenance Manual.
- **Failure to follow these recommendations can cause shortened life or excessive wear of the engine, power train, cooling system, and other components.**
- **Commercially available lubricant additives can be good or bad for the machine. Komatsu does not recommend the commercially available lubricant additive.**
- **Komatsu recommends the use of Komatsu genuine engine oil for KDPF. The use of oil other than Komatsu genuine engine oil for KDPF will have bad effects to the engine components such as reduced KDPF filter cleaning interval or reduced lubrication function by deterioration of the engine oil. This can cause failure, decrease of the service life, degradation in performance, or increase of fuel consumption of the machine.**
- **Use the fuels, oils, and lubricants which are recommended in response to the ambient temperature.**
- **If the machine is operated at a temperature of -20 °C {-4 °F} or below, separate devices are needed, so consult your Komatsu distributor.**

NOTICE

Be sure to use the ultra-low sulfur diesel fuel.
To get good fuel consumption characteristics and exhaust gas characteristics, an electronically controlled high-pressure fuel injection device and emission gas control system (KDPF) are used for this machine. 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.
For the fuel, do not use additive agents that contain metal component.
Metal component in the additives will not be burned during the KDPF regeneration, and can cause abnormal conditions in the exhaust gas aftertreatment devices.

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

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