TEN00514-01

Operation & Maintenance Manual

HYDRAULIC
EXCAVATOR

PC18MR-3

SERIAL NUMBERS 20994 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

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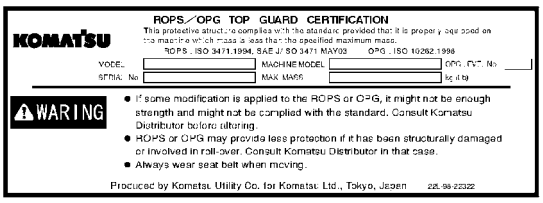

(13) Caution when changing operating pattern (22L-98-22311)

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SIGNALMAN'S SIGNAL AND SIGNS

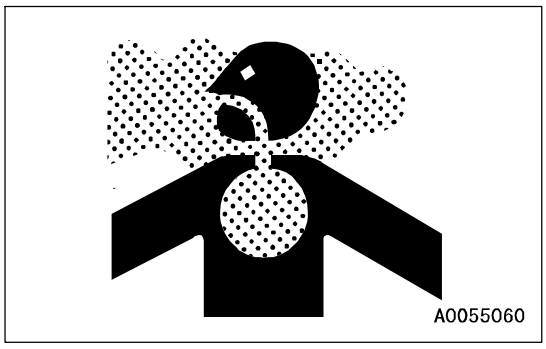
- Set up signs to inform of road shoulders and soft ground. If the visibility is not good, position a signalman if necessary. Operators should pay careful attention to the signs and follow the instructions from the signalman.
- Only one signalman should give signals.
- Make sure that all workers understand the meaning of all signals and signs before starting work.

ASBESTOS DUST HAZARD PREVENTION

Asbestos dust in the air can cause lung cancer if it is inhaled. There is danger of inhaling asbestos when working on jobsites handling demolition work or work handling industrial waste. Always observe the following.

- Spray water to keep down the dust when cleaning. Do not use compressed air for cleaning.
- If there is danger that there may be asbestos dust in the air, always operate the machine from an upwind position. All workers should use an approved respirator.
- Do not allow other persons to approach during the operation.
- Always observe the rules and regulations for the work site and environmental standards.

This machine does not use asbestos, but there is a danger that imitation parts may contain asbestos, so always use genuine Komatsu parts.

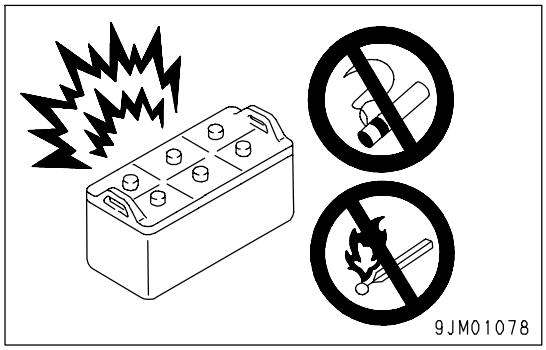


BATTERY

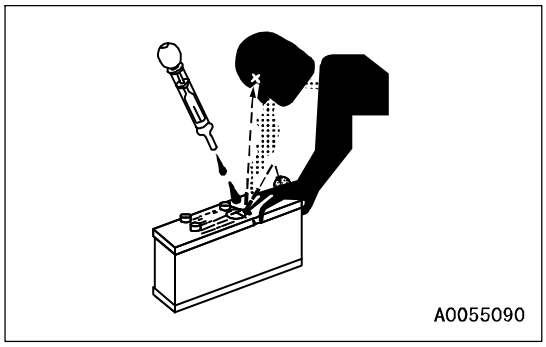
BATTERY HAZARD PREVENTION

Battery electrolyte contains sulphuric acid, and batteries generate flammable hydrogen gas, which may explode. Mistaken handling can lead to serious injury or fire. For this reason, always observe the following precautions.

- Do not use or charge the battery if the battery electrolyte level is below the LOWER LEVEL line. This may cause an explosion. Check the battery electrolyte level periodically and add distilled water to bring the electrolyte level to the UPPER LEVEL line.
- When working with batteries, always wear safety glasses and rubber gloves.
- Never smoke or use any flame near the battery.



- If you spill acid on your clothes or skin, immediately flush the area with large amount of water.
- If acid gets into your eyes, flush them immediately with large amount of water and seek medical attention.

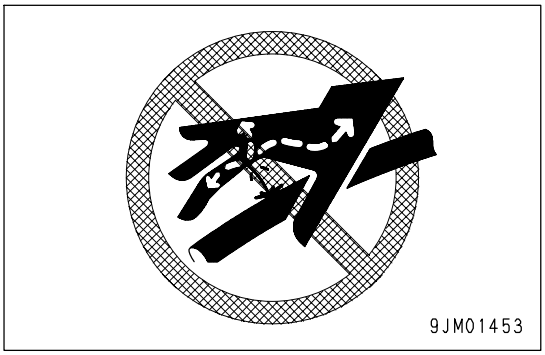


- Before working with batteries, turn the starting switch to the OFF position.

As there is a hazard that sparks will be generated, always do as follows.

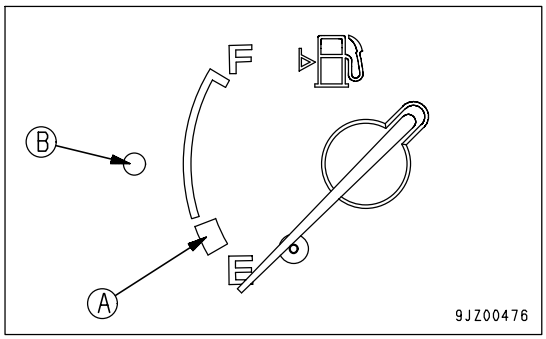
- Do not let tools or other metal objects make any contact between the battery terminals. Do not leave tools or other metal objects on top of the battery.
- When disconnecting the battery terminals, wait for approx. one minute after turning off the engine starting switch key, and be sure to disconnect the grounding terminal (negative (-) terminal) first. Conversely, when connecting them, begin with the positive (+) terminal and then the grounding (-) terminal. Make sure that all the terminals are connected securely.
- Flammable hydrogen gas is generated when the battery is charged, so remove the battery from the chassis, take it to a well-ventilated place, and remove the battery caps before charging it.
- Tighten the battery caps securely. If any battery cap is damaged, replace it immediately.
- Install the battery securely to the determined place. When doing this, be careful not to let the clamps contact the terminals.
- Make sure that the cover on top of the battery covers the battery completely. Do not let it roll back. If the cover is damaged, replace it immediately.
- If there are chlorides accumulated on the top surface of the battery or around the terminals, wash with hot water at a temperature of about 40°C (104°F), then dry completely before installing the battery cable.

- There is a hazard that high-pressure oil leaking from small holes may penetrate your skin or cause blindness if it contacts your eyes directly. If you are hit by a jet of high-pressure oil and suffer injury to your skin or eyes, wash the place with clean water, and consult a doctor immediately for medical attention.



Fuel Gauge

This meter (2) shows the fuel level in the fuel tank.
F indicates that the tank is full.
E indicates that the fuel level is low. If the fuel level goes below 6.0 liters (1.59 US gal), the indicator enters red range (A), and at the same time, pilot lamp (B) flashes.
If the indicator enters red range (A) or pilot lamp (B) flashes, check the fuel level and add fuel.

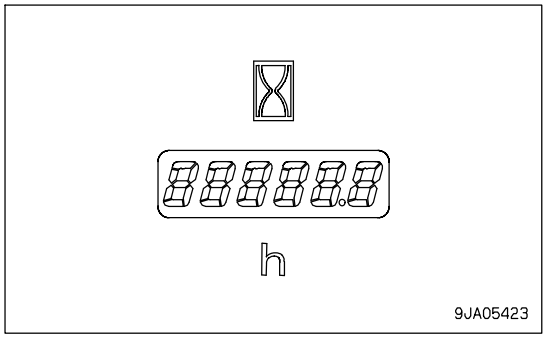


The correct level may not be displayed for a short time after the starting switch is turned to the ON position, but this is not a problem.

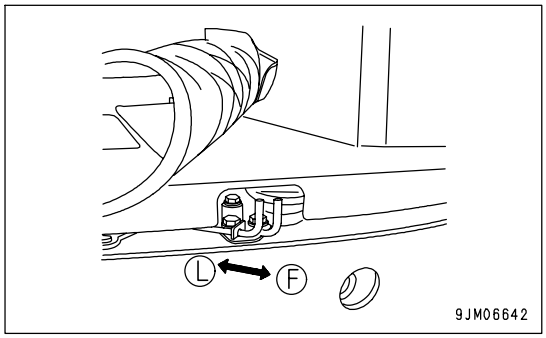
REMARK
The fuel gauge indicator moves to the right position after it once swings to either E or F when the starting switch is turned to the ON position.

Service Meter

This meter (3) shows the total time that the machine has been operated.
Use this display to manage the specified service intervals.
If the engine is running, the service meter advances even if the machine is not being operated.
The meter advances 0.1 for every 1/10 hours (6 minutes) of engine operation, regardless of the engine speed.



When opening or closing the floor, pull this lever (9) to FREE (F) position to release the lock.
Open or close the floor while pulling this lever (9).
After opening or closing the floor, release lever (9). It will return automatically to LOCK position (L).
(F): Free
(L): Lock

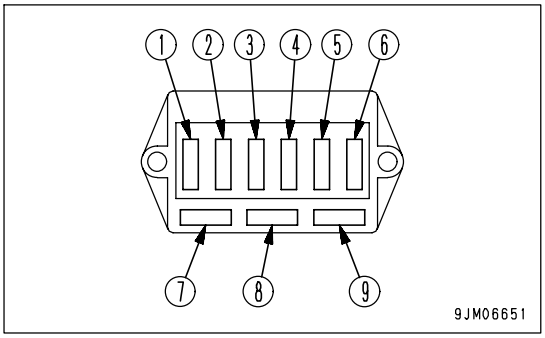


When opening (tilting) the floor, see "METHOD OF OPENING (TILTING) FLOOR (PAGE 3-23)" for details.

Fuse Capacities and Circuit Names

• Fuse box (A)

No.	Fuse capacity	Name of circuit
(1)	10A	PPC solenoid, battery
(2)	30A	Work lamp, feed pump
(3)	30A	Engine stop solenoid
(4)	20A	Monitor panel, buzzer, travel solenoid, Gauge solenoid
(5)	20A	Horn, option power source (1)
(6)	30A	Option power source (2)
(7)	10A	Spare
(8)	20A	Spare
(9)	30A	Spare



• Fuse box (B)

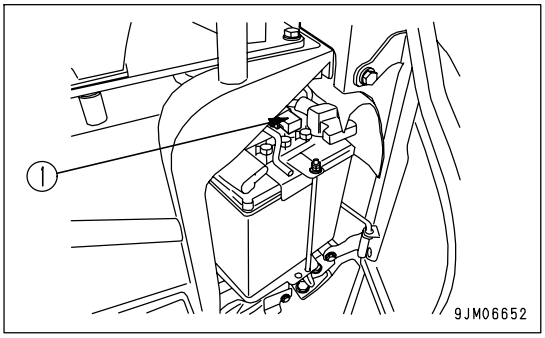
Fuse capacity	Name of circuit
10A	External power supply

BLOCK FUSE

If the starting motor does not turn even when the starting switch is turned to the ON position, block fuse (1) is probably blown, so open the cover at the left side of the machine and check or replace the fuse.

This is at the top surface of the battery.

For details of the method of opening and closing the cover on the left side of the machine, see "BATTERY COVER (PAGE 3-22)".



REMARK

A block fuse is a large fuse wire installed to the circuit where a large-capacity current is flowing. It acts in the same way as a normal fuse to protect the electrical equipment and wiring from burning out under abnormal current.

OPERATION MANUAL STORAGE

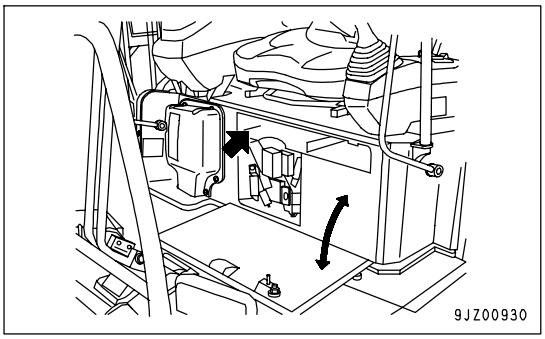
NOTICE

Except when opening the cover for some reason, always keep the cover locked.

This is under the operator's seat.

There is a box for keeping the Operation and Maintenance Manual in the rear of the operator's seat backrest.

Keep the Operation and Maintenance Manual in the box so that it can be seen at any time.

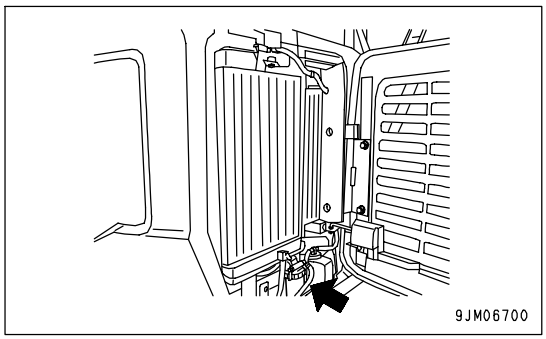


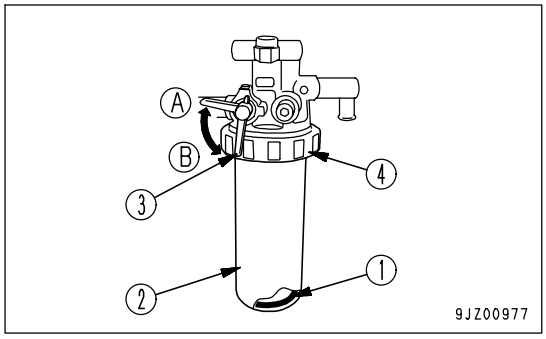
Check Water Separator

If red ring (1) of the water separator is at the bottom of case (2), there is no water.
If the ring (1) is floating, there is water up to the bottom of the ring, so drain the water as follows.

- Prepare a filter wrench

1. Open the cooling cover and set handle (3) to the CLOSED position (A).
   (For details, see "COOLING COVER (PAGE 3-21)".)
2. Using the filter wrench, loosen ring (4), then remove case (2) and throw out the water inside it.
3. Set case (2) in position, then tighten ring (4) to install it.
4. Set handle (3) to the OPEN position (B).
5. Drain any water or sediment from the fuel tank. For details, see "DRAIN WATER AND SEDIMENT FROM FUEL TANK (PAGE 4-24)".





Check Electric Wiring

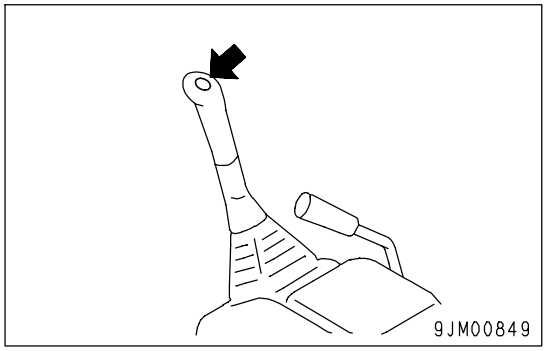
CAUTION

- **If the fuses frequently blow or if there are traces of short circuits in the electrical wiring, locate the cause and immediately perform repairs, or contact your Komatsu distributor for repairs.**
- **Keep the top surface of the battery clean and check the breather hole in the battery cap. If it is clogged with dirt or dust, wash the battery cap to clean the breather hole.**

Check for damage and wrong capacity of the fuse and any sign of disconnection or short circuit in the electric wiring.
Check also for loose terminals and tighten any loose parts.
Check the wiring of the "battery", "starting motor" and "alternator" carefully in particular.
Always check if there is any accumulation of flammable material around the battery, and remove such flammable material.
Please contact your Komatsu distributor for investigation and correction of the cause.

Check Function of Horn

1. Turn the starting switch to the ON position.
2. Confirm that the horn sounds immediately when the horn button is pressed.
   If the horn does not sound, contact your Komatsu distributor for repair.



AFTER STARTING ENGINE

WARNING

- **Emergency stop**
  If there has been any abnormal action or trouble, turn the starting switch key to the OFF position.
- **If the work equipment is operated without warming the machine up sufficiently, the response of the work equipment to the movement of the control lever will be slow, and the work equipment may not move as the operator desires, so always carry out the warming-up operation, particularly in cold areas, be sure to carry out the warming-up operation fully.**
- **For operation patterns other than the standard one (ISO pattern), refer to the chapter of ATTACHMENTS AND OPTIONS in this manual.**

Breaking-in the New Machine

CAUTION

Your Komatsu machine has been thoroughly adjusted and tested before shipment. However, operating the machine under severe conditions at the beginning can adversely affect the performance and shorten the machine life.
Be sure to break-in the machine for the initial 100 hours (as indicated by the service meter).
During break-in operations, follow the precautions described in this manual.

- Idle the engine for 5 minutes after starting it up.
- Avoid operation with heavy loads or at high speeds.
- Immediately after starting the engine, avoid sudden starts, sudden acceleration, unnecessary sudden stops, and sudden changes in direction.

Checking of Engine Startability and Noise

When starting the engine, check that the engine causes no abnormal noise and that it starts up easily and smoothly. Check also that there is no abnormal noise when the engine is idling or when the revolution rises slightly.

- When there is an abnormal noise at the engine startup and if that condition continues, the engine may be damaged. In that case, ask your Komatsu distributor to check the engine as soon as possible.

Checking of Engine Acceleration and Deceleration

Check that the engine speed rises smoothly, when the fuel control lever is moved from the low idling position to the full (MAX) speed after warming-up operation.

- Make an inspection in a safe place, being careful of safety in the surrounding area.
- When the engine performs very badly at low idling and in the acceleration and if that condition is allowed to continue, the engine may be damaged, or the operator's sense of operation may be confused, or the braking efficiency is lowered, all leading to an unexpected accident. In that case, ask your Komatsu distributor to check the engine as soon as possible.

Changing Direction of the Machine

When turning to the left:

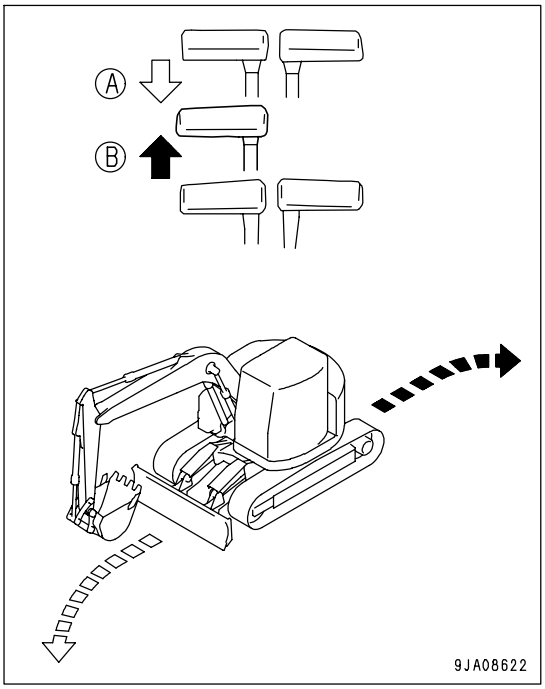
If the left travel lever is returned to the neutral position, the machine will turn to the left.

(A): Forward left turn

(B): Reverse left turn

REMARK

When turning to the right, operate the right travel lever in the same way.

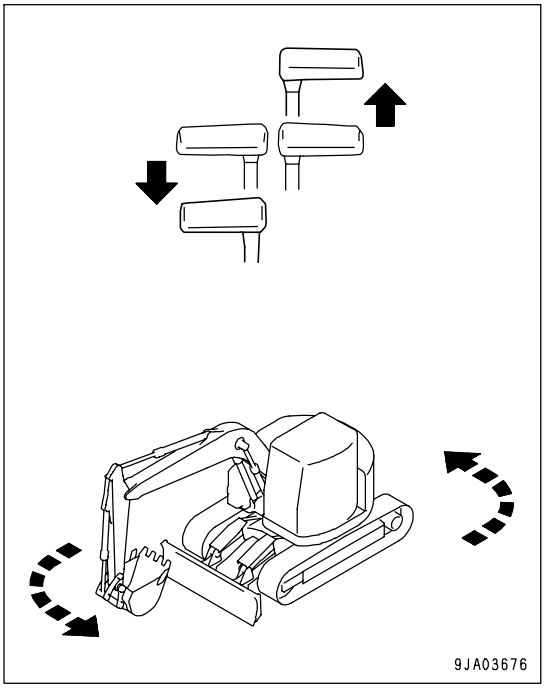


Counter-rotation Turn (Spin Turn)

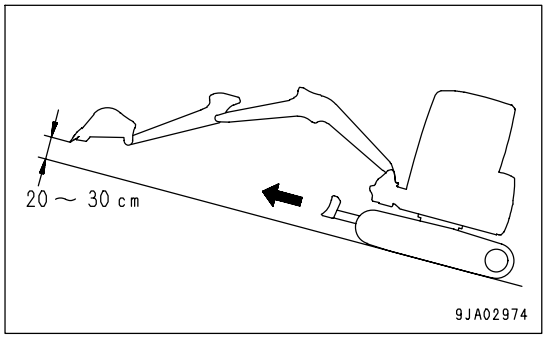
When using counter-rotation (spin turn) to turn left, pull the left travel lever back and push the right travel lever forward.

REMARK

When using counter-rotation to turn right, pull the right travel lever back and push the left travel lever forward.



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



Traveling Downhill

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

Engine Stopped on Slope

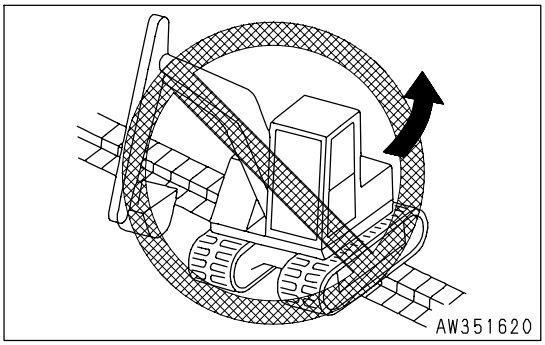
If the engine stops when traveling uphill, move the travel levers to the neutral position, lower the bucket to the ground, stop the machine, then start the engine again.

Cab Doors on Slope

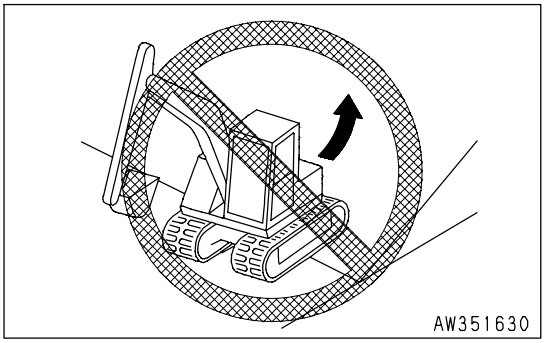
- If the engine stops when the machine is on a slope, never use the left work equipment control lever to carry out swing operations. The upper structure will swing under its own weight.

- Always maintain the rubber shoes at the proper tension to prevent them from coming off.
  If the tension is low, the rubber shoes will come off under the following conditions.
  Even if the tension is correct, be extremely careful when carrying out operations.

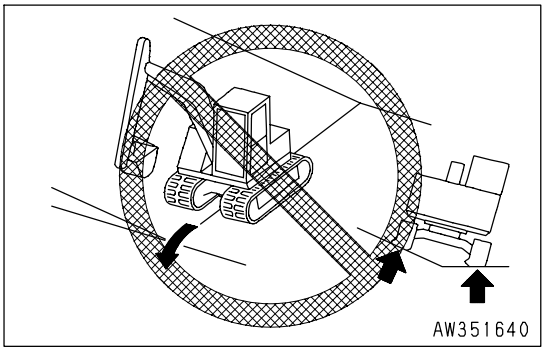
1. Avoid operating the steering when traveling over curbs, rocks, or places where there is a big difference in height (more than approx. 20 cm (8 in)). When traveling over such objects, always travel at right angles to the object.



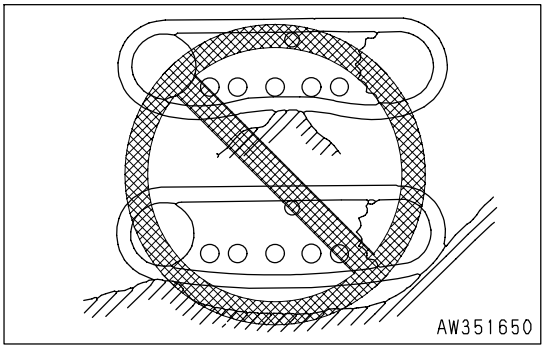
2. When traveling in reverse up a slope, do not turn when moving from flat ground onto the slope.
   If it is necessary to turn on slopes, be sure to turn gradually.



3. Avoid traveling along the edge of slopes or on rough ground with the track on one side raised (with the machine tilting at an angle of more than approx. 10°) and with the track on the other side on flat ground. To avoid damage to the rubber shoes, travel with the tracks on both sides on flat ground.



4. If the machine is operated as explained in 1 to 3 above, the rubber shoes is slackened. Do not steer the machine in the positions shown in the figure.



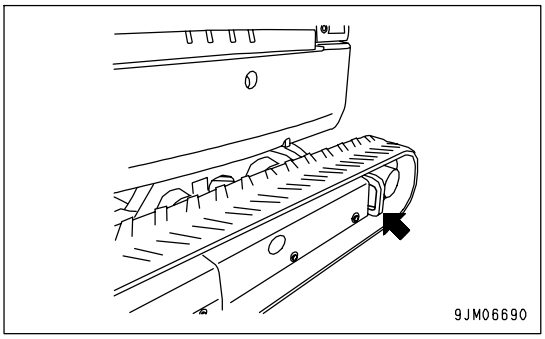
LIFTING MACHINE

WARNING

- Never raise the machine with any worker on it.
- Always make sure that the wire rope used for lifting the machine is of ample strength for the weight of the machine.
- Never lift the machine with the upper structure swung to the side. Swing the work equipment so that it is at the sprocket end and set the undercarriage and upper structure parallel before lifting.
- When lifting, keep the machine horizontal.
- Never go under the machine when it is raised.
- Never try to lift the machine in any posture other than the posture given in the procedure below.
  There is a hazard that the machine may lose its balance.

CAUTION

It is prohibited to use the transportation holes in the track frame to lift the machine. This will damage the track frame.



NOTICE

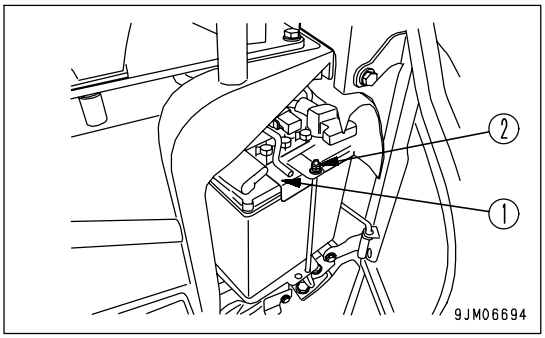
- For the details on the machine weight, see the section of "SPECIFICATIONS (PAGE 5-2)".
- The lifting procedure applies to machines with standard specifications.
  The method of lifting differs according to the attachments and options actually installed. In such cases, please contact your Komatsu distributor for information.

Battery Removal and Installation

NOTICE

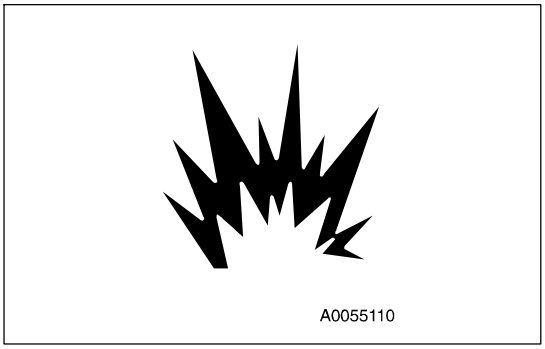
After securing the battery, check that it does not move. If it moves, tighten it again securely.

- Before removing the battery, remove the ground cable (normally connected to the negative (-) terminal). If any tool touches between the positive terminal and the chassis, there is a hazard of sparks being generated.
- When installing the battery, connect the ground cable last.
- Install the battery securely to the determined place. When doing this, be careful not to let the clamps contact the terminals.
- When replacing the battery, fix the new battery securely in position with battery mounting clamp (1).
  Tightening torque of mounting nut (2) is 4.9 to 5.9 Nm (0.5 to 0.6 kgm , 3.6 to 4.3 lbft).
- Make sure that the cover on top of the battery covers the battery completely. Do not let it roll back.
  If the cover is damaged, replace it immediately.
- If there are chlorides accumulated on the top surface of the battery or around the terminals, wash with hot water at a temperature of about 40°C (104°F), then dry completely before installing the battery cables.



Battery Charges

When charging the battery, if the battery is not handled correctly, there is a hazard that the battery may explode. Always follow the instructions of "DISCHARGED BATTERY (PAGE 3-97)" and the instruction manual accompanying the charger, and do as follows.



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

OUTLINE OF SERVICE

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

Item	Type
Engine oil pan	Engine oil EO10W30DH (Komatsu genuine parts)
Final drive case	Powertrain oil TO30 (Komatsu genuine parts)
Hydraulic oil tank (doubles as a swingmachinery case)	Powertrain oil TO10 (Komatsu genuine parts)
Radiator	Supercoolant (AF-NAC) (Komatsu genuine parts) (density: 30% or above)

HANDLING OIL, FUEL, COOLANT, AND PERFORMING OIL CLINIC

OIL

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

MAINTENANCE SCHEDULE

If the machine is equipped with a hydraulic breaker, the maintenance schedule for some parts will be different. For details, see "MAINTENANCE INTERVAL FOR HYDRAULIC BREAKER (PAGE 4-15)" to confirm the correct maintenance schedule when carrying out maintenance.

MAINTENANCE SCHEDULE CHART

WHEN REQUIRED
CHECK, CLEAN AND REPLACE AIR CLEANER ELEMENT ---- 4- 16
CLEAN INSIDE OF COOLING SYSTEM ---- 4- 19
CHECK LEVEL OF BATTERY ELECTROLYTE ---- 4- 22
CLEAN WATER SEPARATOR ELEMENT ---- 4- 24
DRAIN WATER AND SEDIMENT FROM FUEL TANK ---- 4- 24
CHECK AND ADJUST TRACK TENSION (Machine equipped with steel shoe) ---- 4- 25
CHECK RUBBER SHOES (Machine equipped with rubber shoes) ---- 4- 27
CHECK AND ADJUST RUBBER SHOE TENSION (Machine equipped with rubber shoes) ---- 4- 29
REPLACE RUBBER SHOES (Machine equipped with rubber shoes) ---- 4- 31
REPLACE BUCKET TEETH ---- 4- 34
BLEEDING AIR FROM HYDRAULIC SYSTEM ---- 4- 37

CHECKS BEFORE STARTING

EVERY 500 HOURS MAINTENANCE
LUBRICATING ---- 4- 39
CHANGE OIL IN ENGINE OIL PAN, REPLACE ENGINE OIL FILTER CARTRIDGE ---- 4- 42
REPLACE FUEL FILTER ELEMENT ---- 4- 43
CHECK OIL LEVEL IN FINAL DRIVE CASE, ADD OIL ---- 4- 44
CLEAN AND INSPECT RADIATOR FINS AND OIL COOLER FINS ---- 4- 44
CHECK AND ADJUST COOLING FAN BELT TENSION ---- 4- 45

EVERY 1000 HOURS MAINTENANCE
CHANGE OIL IN FINAL DRIVE CASE ---- 4- 47
REPLACE HYDRAULIC OIL FILTER ELEMENT ---- 4- 48
CHECK ENGINE VALVE CLEARANCE, ADJUST ---- 4- 49

EVERY 1500 HOURS MAINTENANCE
CHECK AND CLEAN FUEL INJECTION SYSTEM ---- 4- 50

EVERY 2000 HOURS MAINTENANCE
CHANGE OIL IN HYDRAULIC TANK, CLEAN STRAINER ---- 4- 51
CHECK ALTERNATOR, STARTING MOTOR ---- 4- 52
CHECKING CHARGE PRESSURE OF NITROGEN GAS IN ACCUMULATOR (FOR CONTROL CIRCUIT) ---- 4- 53

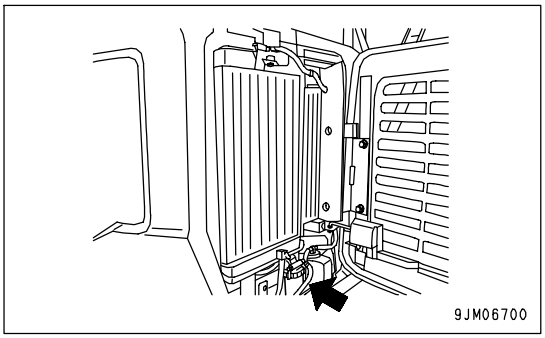
CLEAN WATER SEPARATOR ELEMENT

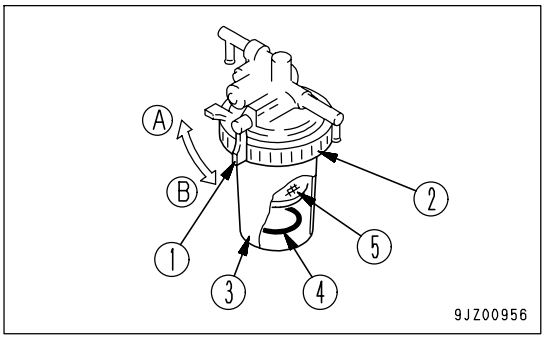
WARNING

Do not bring any fire or flame close.

- Prepare a filter wrench
- Prepare a container to catch the fuel that is drained.

1. Open the cooling cover.
   (For details, see "COOLING COVER (PAGE 3-21)".)
2. Set handle (1) of the water separator to CLOSED position (A).
3. Using a filter wrench, loosen ring (2), remove case (3), then throw out the water inside.
   Be careful not to lose red ring (4) inside the case.
4. Wash element (5) and the inside of the case with diesel fuel.
5. Set case (3) in position, then tighten ring (2) to install.
6. Set handle (1) to the OPEN position (B).





DRAIN WATER AND SEDIMENT FROM FUEL TANK

NOTICE

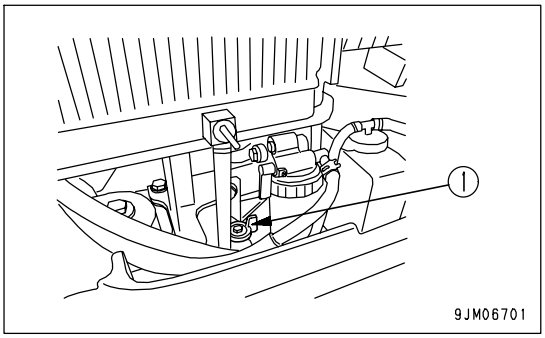
Never use trichlene for washing the inside of the tank.

Use diesel fuel only.

Carry out this procedure before operating the machine.

- Prepare a container to catch the fuel that is drained.

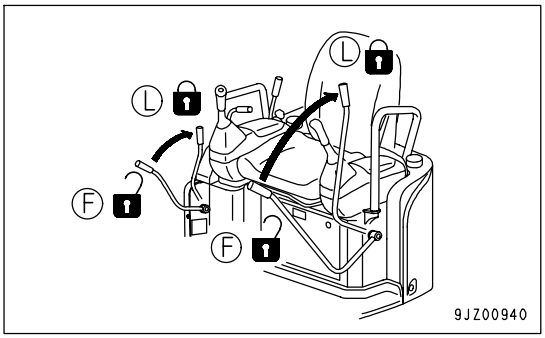
1. Swing the upper structure so that drain valve (1) is between the tracks.
2. Open the cooling cover.
   (For details, see "COOLING COVER (PAGE 3-21)".)
3. Open drain valve (1) and drain the sediment and water collected at the bottom together with the fuel.
   When doing this, be careful not to get fuel on yourself.
4. When only clean fuel comes out, tighten drain valve (3).



REPLACE BUCKET TEETH

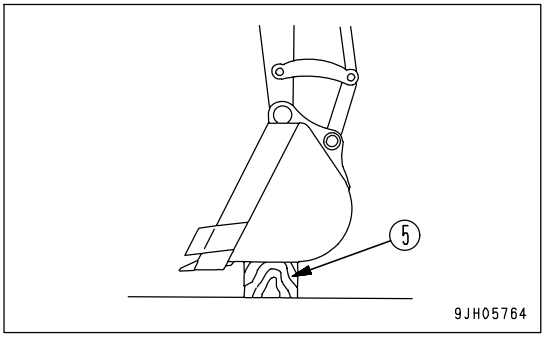
WARNING

- **It is dangerous if the work equipment moves by mistake when the teeth are being replaced.**
  Set the work equipment in a stable condition, stop the engine, then set the lock lever securely to the LOCK position (L).
- **The pin is knocked out by force, so there is danger of the pin flying out. Check that nobody is in the surrounding area.**
- **There is danger of broken pieces flying during the replacement operation, so wear protective glasses, gloves, and other protective equipment.**

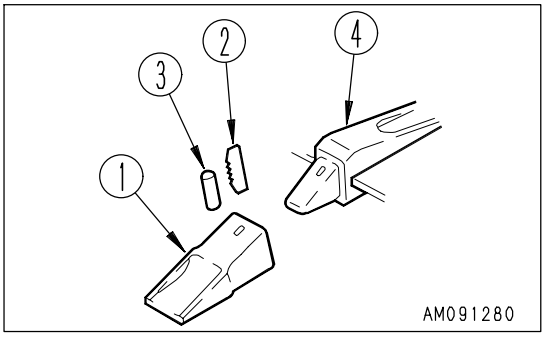


Replace the bucket teeth before the adapter starts to wear.

1. To make it possible to knock out the pin of tooth (1), set the bottom surface of the bucket on a block (5), check that the work equipment is in a stable condition, then set the lock lever to the LOCK position (L).
   Set so that the bottom face of the bucket is horizontal.

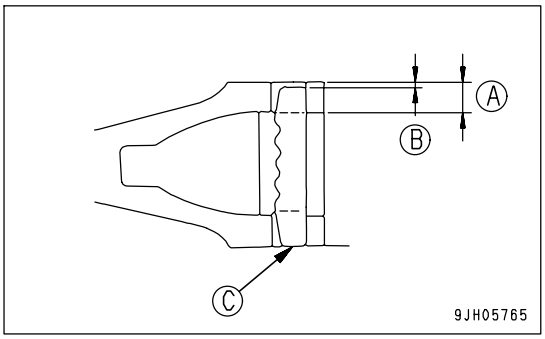


2. Use a hammer and drift to knock out lock pin (2). (If the drift is set against rubber pin lock (3) when it is hit, the rubber pin lock may break. Set it against the back of the pin.)
3. After removing lock pin (2) and rubber pin lock (3), check them.



If lock pins (2) and rubber pin locks (3) with the following defects are used, the teeth may come off the bucket. Replace them with new ones.

- The lock pin (2) is too short.
  Dimension (B) is 1/3 or more of dimension (A) when locking pin (2) is aligned with bottom face (C).



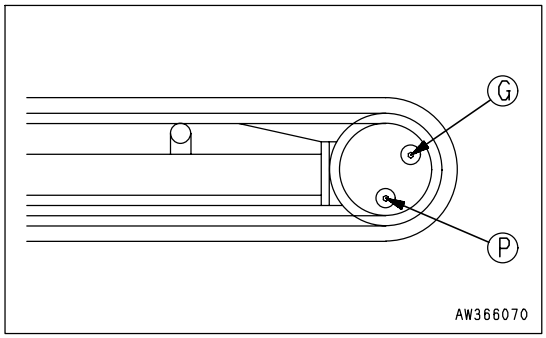
CHECK OIL LEVEL IN FINAL DRIVE CASE, ADD OIL

WARNING

- **The parts and oil are at high temperature immediately after the engine is stopped, and may cause serious burns. Wait for the temperature to go down before starting the operation.**
- **If there is internal pressure inside the case, the oil or plug may fly out. Loosen the plug slowly to release the pressure.**

- Prepare a container to catch drained oil.
- Prepare a hexagon wrench.

1. Set so that drain plug (P) is at the bottom.
2. Set a container under plug (G) to catch the oil.
3. Remove plug (G) with a hexagonal wrench. Oil level shouldbe near the bottom of the plug hole (G).
4. If the oil level is low, add oil through the hole in plug (G) until the oil overflows.
5. After checking, install plug (G).



CLEAN AND INSPECT RADIATOR FINS AND OIL COOLER FINS

WARNING

If compressed air, high-pressure water, or steam hits your body directly or dirt is sent flying by the compressed air, high-pressure water, or steam, there is danger of personal injury. Always wear protective glasses, dust mask, and other protective equipment.

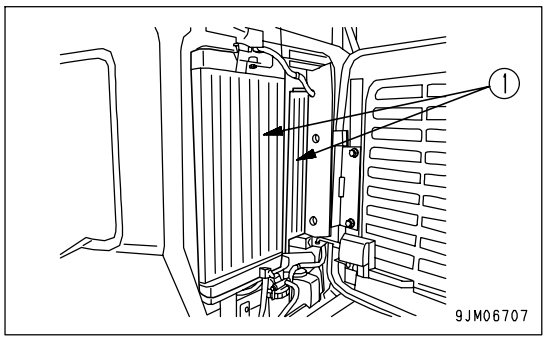
NOTICE

When use the compressed air, keep a distance from air nozzle, to prevents damage to the fins.

To prevent damage to the fins, apply compressed air from and appropriate distance. Damaged fins may cause water leakage or overheating. In a dusty site, check the fins daily, irrespective of the maintenance interval.

1. Open the cooling cover. For details, see "COOLING COVER (PAGE 3-21)".
2. Use compressed air, steam, or water to blow off the mud, dirt, and leaves clogging radiator fins and oil cooler fins (1).

   Steam or water may be used instead of compressed air. However, when carrying out powerful steam cleaning (high-pressure machine wash) of the heat exchange equipment (radiator, oil cooler), maintain sufficient distance from the machine when carrying out the operation. If steam cleaning (high-pressure machine wash) is carried out at close range, there is danger that the internal fins of the heat exchange equipment may be deformed, and this will cause early clogging and breakage.



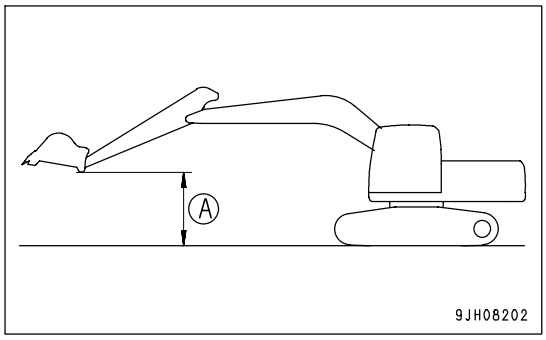
CHECKING FUNCTION OF ACCUMULATOR

CAUTION

When carrying out the inspection, check first that there is no person or obstacle in the surrounding area.

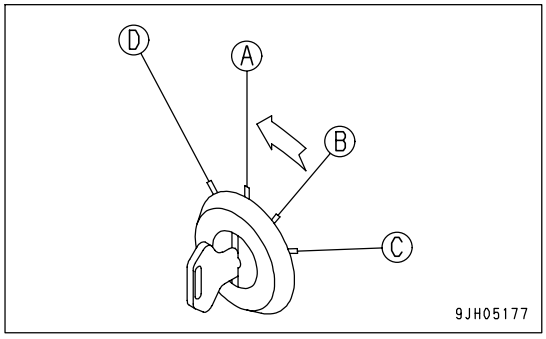
Check the nitrogen gas charge pressure as follows.

1. Stop the machine on firm, level ground.
2. Hold the work equipment in the maximum reach posture (arm fully out, bucket fully dumped) at a height (A) 1.5 m (4 ft 11 in) from the ground.

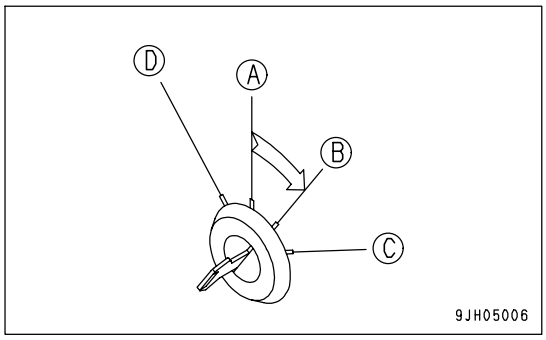


Carry out Steps 3 - 5 within 15 seconds.
When the engine is stopped, the pressure in the accumulator gradually goes down. For this reason, the check can only be carried out immediately after the engine is stopped.

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



4. Turn the key in the starting switch to the ON position (B).



BUCKET WITH HOOK

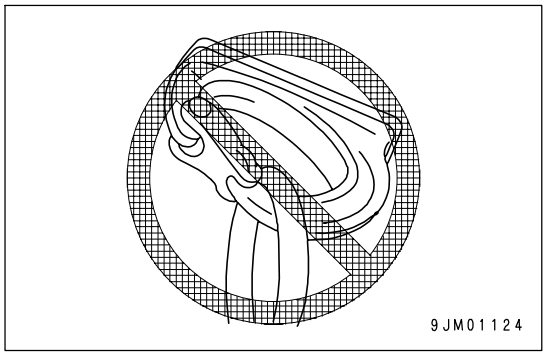
HOOK CONDITION

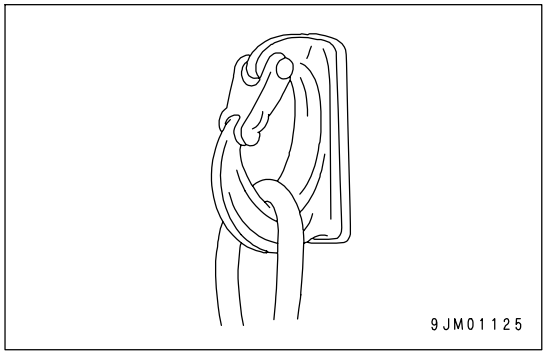
Check that there is no damage to the hook, stopper, or hook mount. If there is any problem, contact your Komatsu distributor.

PROHIBITED OPERATIONS

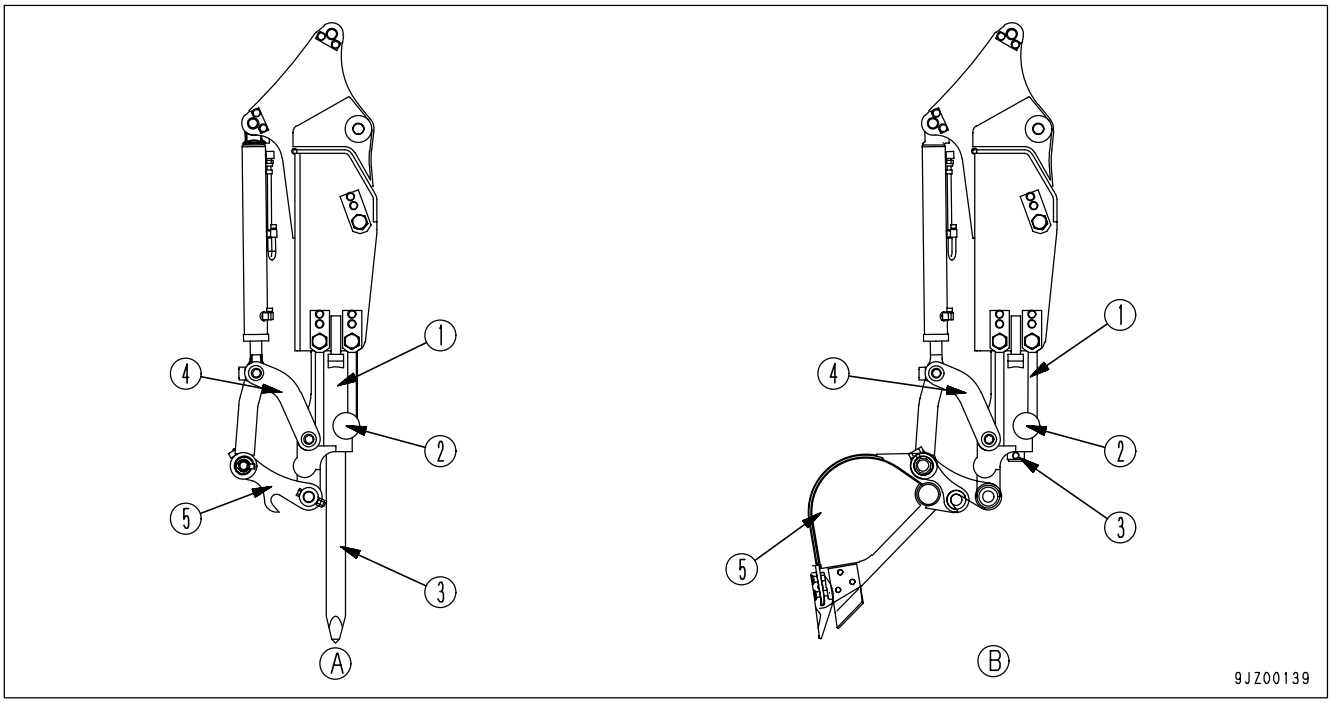
Operations with Care

- When lifting loads, do not exceed the following weights.
  When standard arm is installed: 90 kg (198 lb)
  When long arm is installed: 60 kg (132 lb)
- It is dangerous if the load sways excessively. Lower the engine speed and operate the control levers slowly.
- The swing speed of this machine is 3 to 4 times the speed of a mobile crane. Be particularly careful to check that the surrounding area is safe when operating the swing.
- Check that there is no damage to the hook, stopper, and hook mount. If any problem is found, please contact your Komatsu distributor.
- Never travel the machine while lifting a load.
- Depending on the operating posture, there is danger that the wire or pulley may come off from the hook. To avoid these parts from coming off, pay careful attention to the angle of the hook. In addition, do not allow any person to come under or in the area around a raised load.
- If the bucket with hook is turned and used for operations, it will hit the arm during dumping operations, be careful when using it.
- It is prohibited to swing or offset the boom when carrying out lifting operations.
  Set the boom facing the center.
- If a hook is to be installed, please consult your Komatsu distributor.





HANDLING ARM WITH BUILT-IN BREAKER



(A) When a chisel is installed

(1) Breaker
(2) Chisel Lock Pin
(3) Chisel
(4) Arm Link
(5) Bucket Coupler

(B) When a bucket is installed

(1) Breaker
(2) Chisel Lock Pin
(3) Dummy Chisel
(4) Arm Link
(5) Bucket

The breaker arm is used for breaker operations after the bucket is removed.

REMOVING AND INSTALLING CHISEL

WARNING

- **Install stopper pin (1) without fail. If it is not installed, chisel lock pin (2) can slip off, causing the chisel to come off during the operation.**
- **If the chisel notch faces in the wrong direction, the chisel cannot be locked when it is installed.**
- **If stopper pin (1) is not securely installed, there is a possibility that the chisel drops off of its own weight.**
- **When installing and removing the chisel, hold if firmly with hands. Moreover, do not put the foot under the chisel.**