

Operation & Maintenance Manual

UEAM002401

PC160LC-7KA

HYDRAULIC EXCAVATOR

SERIAL NUMBER PC160LC-7KA - K40001 and up



WARNING

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

FOR US MARKET ONLY

KOMATSU

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MACHINE SERIAL PLATE

Valid until 31 December 2003

| | | |
|-----------|-----------------------------------|---|
| CE | MODEL | <input type="text"/> |
| | SERIAL No | <input type="text"/> |
| | KOMATSU MANUFACTURING YEAR | <input type="text"/> |
| | MASS | <input type="text"/> |
| | ENGINE POWER | <input type="text"/> |
| | MANUFACTURER | Komatsu UK Ltd, Birtley, Co. Durham, United Kingdom |

205-00-K1290

Valid as of 1 January 2004

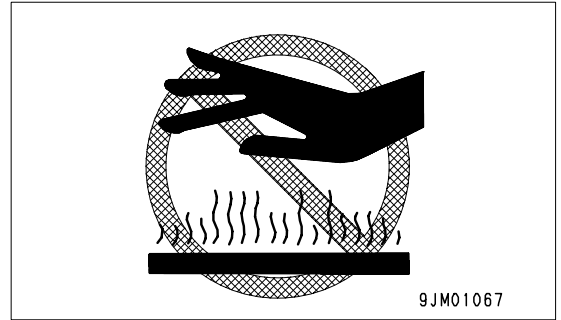
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| MODEL | <input type="text"/> | |
| SERIAL No. | <input type="text"/> | |
| MANUFACT. YEAR | <input type="text"/> | |
| MASS | <input type="text"/> | kg |
| ENGINE POWER | <input type="text"/> | kW |
| Product Identification Number | <input type="text"/> | |
| MANUFACTURER | Manufactured by Komatsu UK Ltd. for Komatsu Ltd., Tokyo, Japan | |
| KOMATSU | 21P-00-K1632 | |

| | |
|---|------|
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BURN PREVENTION

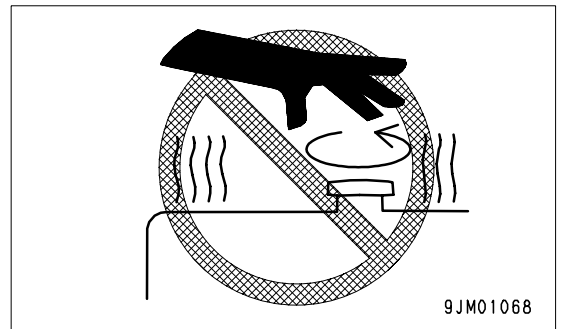
Hot coolant

- To prevent burns from hot water or steam spurting out when checking or draining the coolant, wait for the water to cool to a temperature where it is possible to touch the radiator cap by hand before starting the operation. Even when the coolant has cooled down, loosen the cap slowly to relieve the pressure inside the radiator before removing the cap.



Hot oil

- To prevent burns from hot oil spurting out when checking or draining the oil, wait for the oil to cool to a temperature where it is possible to touch the cap or plug by hand before starting the operation. Even when the oil has cooled down, loosen the cap or plug slowly to relieve the internal pressure before removing the cap or plug.

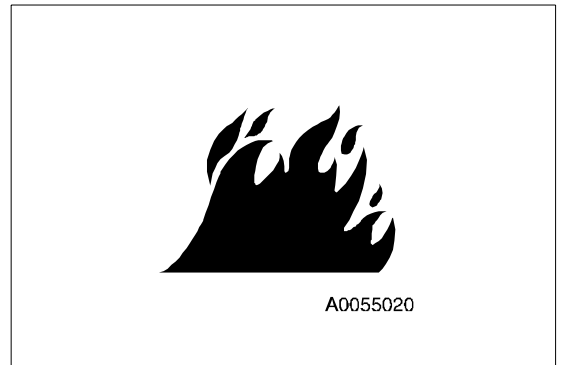


FIRE PREVENTION AND EXPLOSION PREVENTION

● **Fire caused by fuel or oil**

Fuel, oil, antifreeze, and window washer liquid are particularly flammable and can be hazardous. To prevent fire, always observe the following:

- Do not smoke or use any flame near fuel or oil.
- Stop the engine before refueling.
- Do not leave the machine while adding fuel or oil.
- Tighten all fuel and oil caps securely.
- Do not spill fuel on overheated surfaces or on parts of the electrical system.
- Use well-ventilated areas for adding or storing oil and fuel.
- Keep oil and fuel in the determined place and do not allow unauthorized persons to enter.
- After adding fuel or oil, wipe up any spilled fuel or oil.
- When carrying out grinding or welding work on the chassis, move any flammable materials to a safe place before starting.
- When washing parts with oil, use a non-flammable oil. Diesel oil and gasoline may catch fire, so do not use them.
- Put greasy rags and other flammable materials into a safe container to maintain safety at the work place.
- Do not weld or use a cutting torch to cut any pipes or tubes that contain flammable liquids.



● **Fire caused by accumulation of flammable material.**

Remove any dry leaves, chips, pieces of paper, dust, or any other flammable materials accumulated or affixed around the engine, exhaust manifold, muffler, or battery, or inside the undercovers.

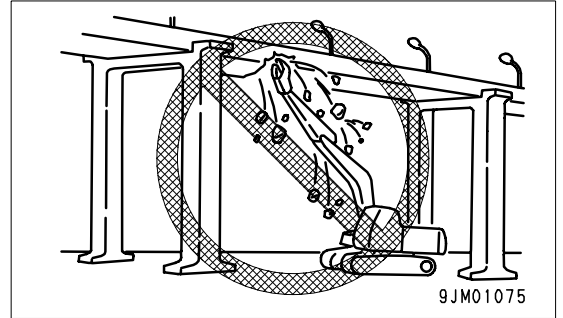
● **Fire coming from electric wiring**

Short circuits in the electrical system can cause fire.

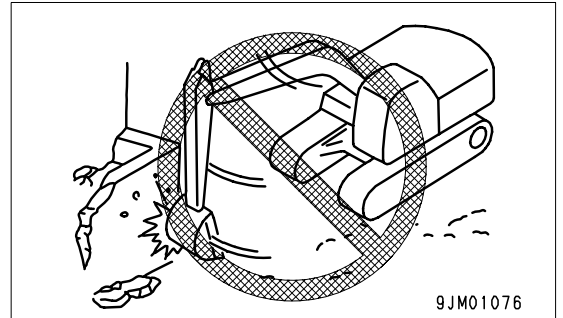
- Always keep electric wiring connections clean and securely tightened.
- Check the wiring every day for looseness or damage. Tighten any loose connectors or wiring clamps. Repair or replace any damaged wiring.



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



- Do not use the impact force of the work equipment for breaking work. There is a hazard of damage to the work equipment or a hazard of serious personal injury being caused by flying pieces of broken materials or the machine tipped over due to reaction from the impact.
- Generally speaking, the machine is more liable to overturn when the work equipment is at the side than when it is at the front or rear.



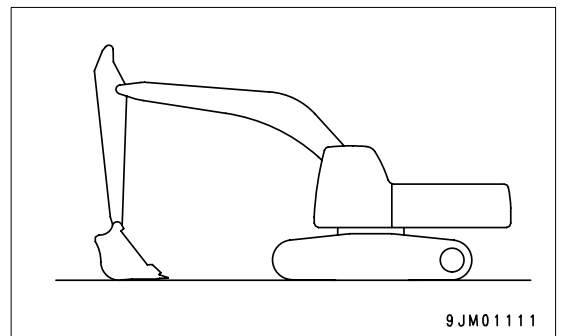
- When using a breaker or other heavy work equipment, there is a hazard of the machine losing its balance and tipping over. When operating on flat ground as well as on slopes.
 - Do not suddenly lower, swing, or stop the work equipment.
 - Do not suddenly extend or retract the boom cylinder. There is a hazard that impact will cause the machine to tip over.
- Do not pass the bucket over the head of other workers or over the operator's seat of dump trucks or other hauling equipment. The load may spill or the bucket may hit the dump truck and cause serious injury or property damage.

OPERATIONS ON SNOW

- Snow-covered or frozen surfaces are slippery, so be extremely careful when traveling or operating the machine, and do not operate the levers suddenly. Even a slight slope may cause the machine to slip, so be particularly careful when working on slopes.
- With frozen ground surfaces, the ground becomes soft when the temperature rises, and this may cause the machine to tip over.
- If the machine enters deep snow, there is a hazard that it may tip over or become buried in the snow. Be careful not to leave the road shoulder or to get trapped in a snow drift.
- When clearing snow, the road shoulder and objects placed beside the road are buried in the snow and cannot be seen. There is a hazard of the machine tipping over or hitting covered objects, so always carry out operations carefully.

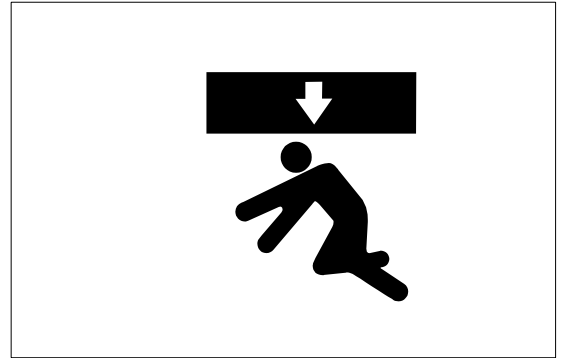
PARKING MACHINE

- Park the machine on firm, level ground.
- Select a place where there is no hazard of falling rocks or landslides, or of flooding if the land is low.
- Lower the work equipment completely to the ground.



WORK UNDER THE MACHINE

- If it is necessary to go under the work equipment or the machine to carry out service and maintenance, support the work equipment and machine securely with blocks and stands strong enough to support the weight of the work equipment and machine.
- It is extremely dangerous to work under the machine if the track shoes are lifted off the ground and the machine is supported only with the work equipment. If any of the control levers is touched by accident, or there is damage occurring to the hydraulic piping, the work equipment or the machine will suddenly drop. This is extremely dangerous. Never work under the work equipment or the machine.

**NOISE**

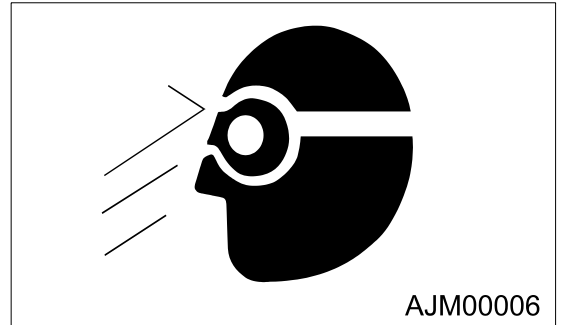
When carrying out maintenance of the engine and you are exposed to noise for long periods of time, wear ear covers or ear plugs while working.

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

WHEN USING HAMMER

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

- If hard metal parts such as pins, bucket teeth, cutting edges, or bearings are hit with a hammer, there is a hazard that pieces might be scattered and cause injury. Always wear safety goggles and gloves.
- When hitting pins or bucket teeth, there is a hazard that broken pieces might be sent flying and injure people in the surrounding area. Always check that there is no one in the surrounding area.
- There is a hazard that the pin hit with strong force may fly out and injure people in the surrounding area.

**WELDING WORKS**

Welding operations must always be carried out by a qualified welder and in a place equipped with proper equipment. There is a hazard of gas, fire, or electrocution when carrying out welding, so never allow any unqualified personnel to carry out welding.

REMOVING BATTERY TERMINALS

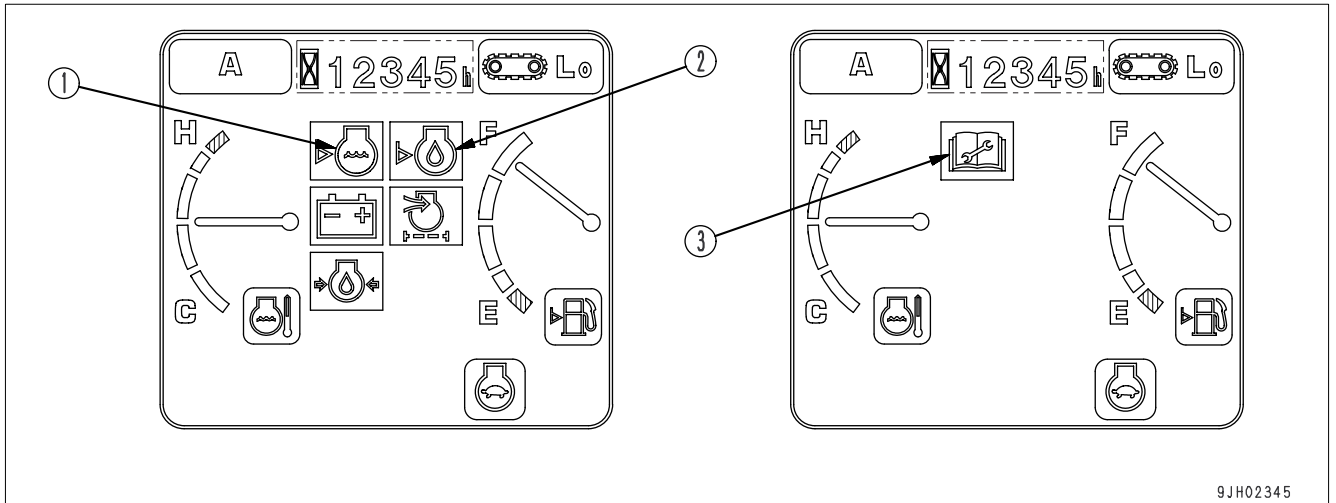
When repairing the electrical system or when carrying out electrical welding, remove the negative (-) terminal of the battery to prevent the flow of current.

Basic Check Monitors

⚠ CAUTION

These monitors do not ensure that the machine is in good condition. When carrying out checks before starting (daily checks), do not simply rely on the monitors. Always get off the machine and check each item directly.

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

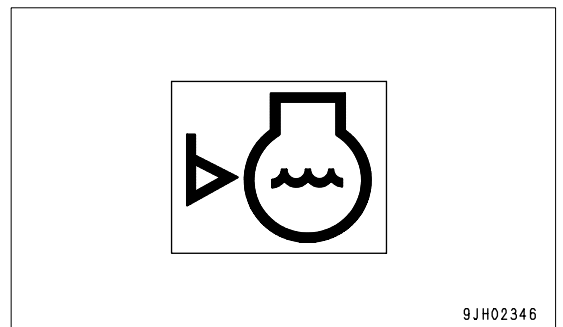


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| | |
|------------------------------------|----------------------------------|
| (1) Radiator coolant level monitor | (3) Maintenance interval monitor |
| (2) Engine oil level monitor | |

Radiator Coolant Level Monitor

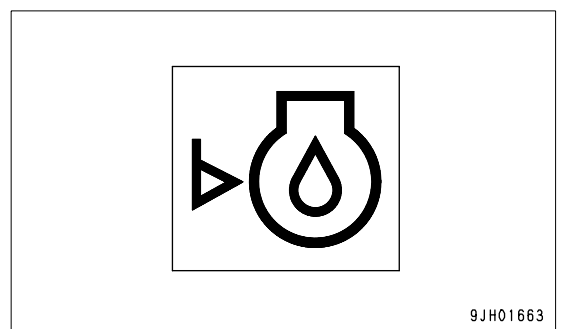
This monitor (1) warns the operator that there has been a drop in the radiator water level. If the radiator water level is low, the lamp lights up red, so check the water level in the radiator and the sub tank, and add water.



9JH02346

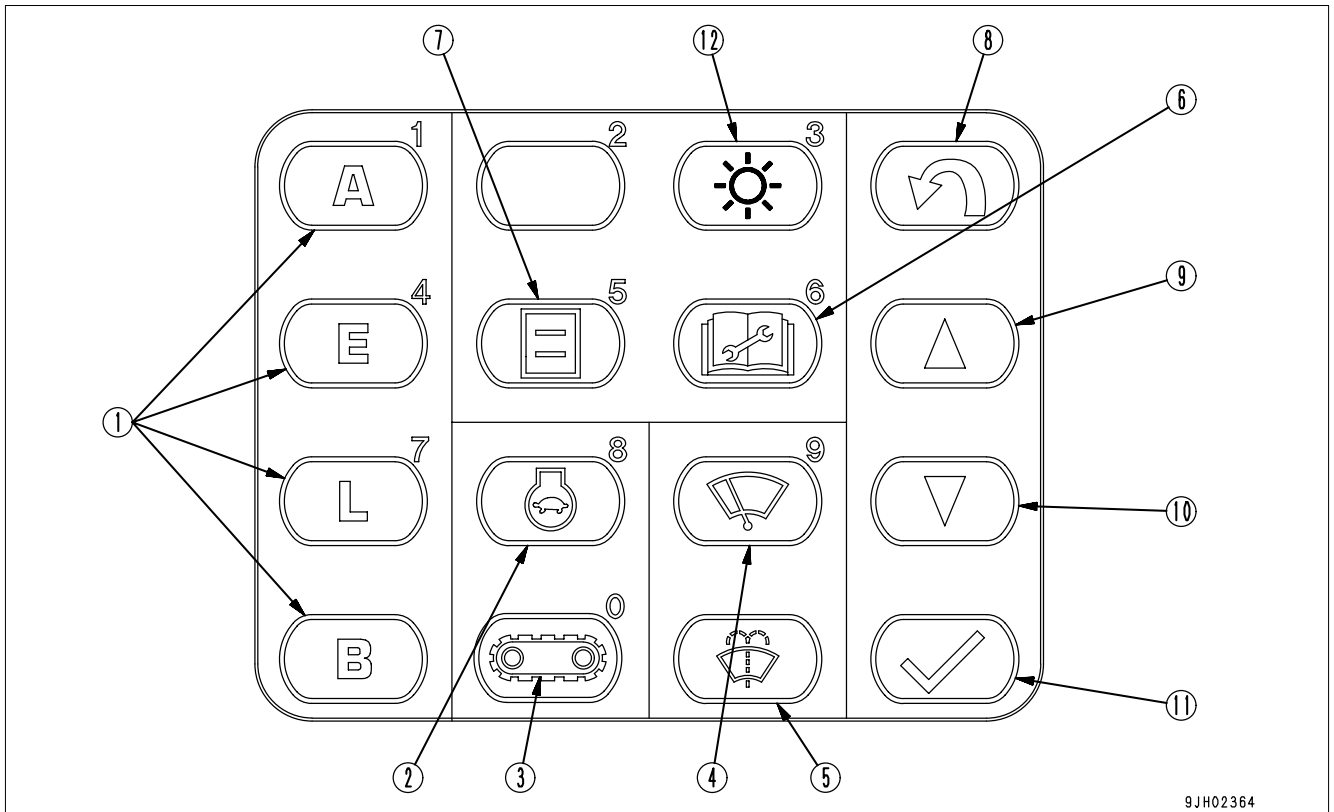
Engine Oil Level Monitor

This monitor (2) warns the operator that there has been a drop in the oil level in the engine oil pan. If the oil level in the engine oil pan is low, the lamp lights up red, so check the oil level in the engine oil pan, and add oil.



9JH01663

Monitor Switches Portion



| | |
|---|--|
| (1) Working mode selector switch (basic switch) | (7) Select switch |
| (2) Auto-deceleration switch (selection switch) | (8) Back switch |
| (3) Travel speed switch | (9) Up switch |
| (4) Wiper switch | (10) Down switch |
| (5) Window washer switch | (11) Input confirmation switch |
| (6) Maintenance switch | (12) Adjusting Brightness And Contrast |

Working Mode Selector Switch (Basic Switch)

This switch (1) is used to set the power and movement of the work equipment.

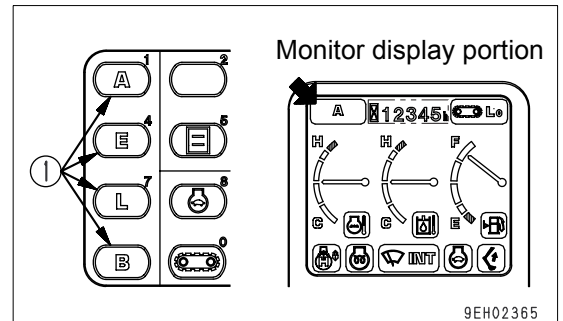
Operations can be carried out more easily by selecting the mode to match the type of operation.

A mode: For heavy-load operations

E mode: For operations with emphasis on fuel economy

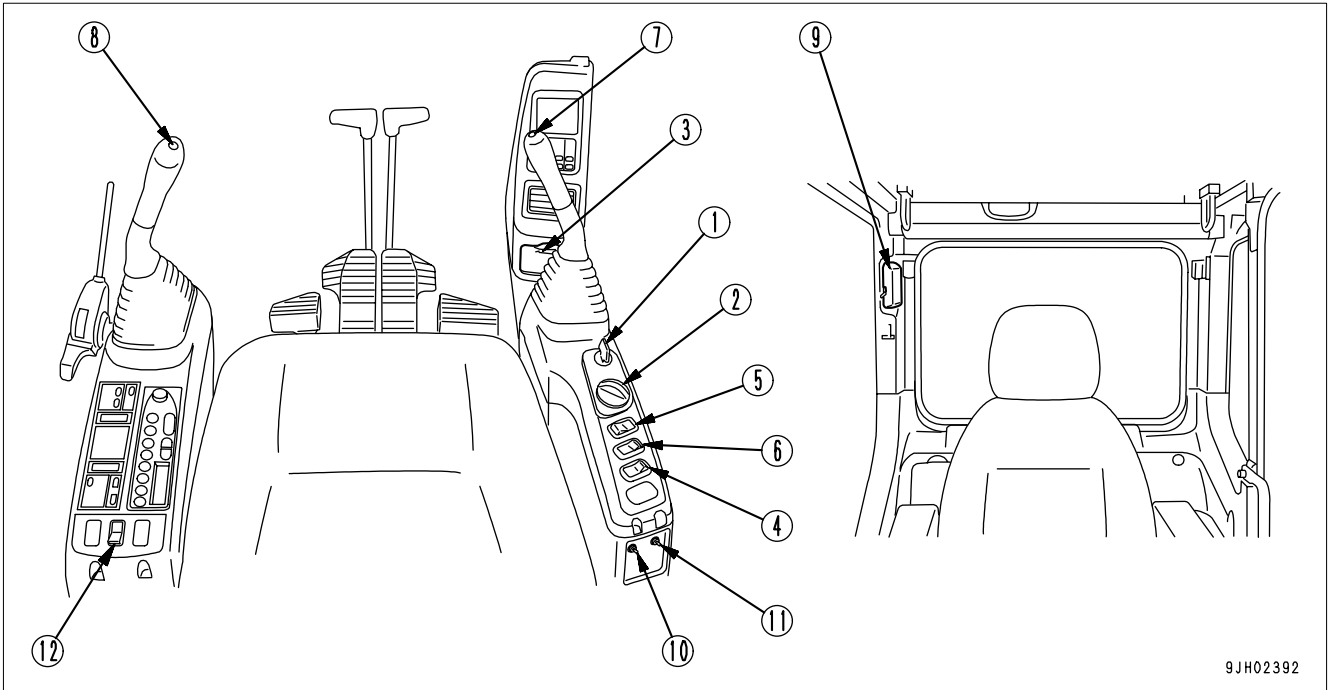
L mode: For fine-control operations

B mode: For breaker operations



- When the engine is started, the working mode is set automatically to A mode. When the switch is pressed, it is possible to select the other modes. The monitor display on the monitor display portion changes for each mode.
- If it is desired to have the working mode set to start automatically in E, L, or B mode (default options setting), please ask your Komatsu distributor to change the setting.

SWITCHES



| | |
|------------------------------|---|
| (1) Starting Switch | (7) Horn Switch |
| (2) Fuel Control Dial | (8) Knob switch |
| (3) Cigarette lighter | (9) Room Lamp Switch |
| (4) Swing Lock Switch | (10) Emergency pump drive Switch |
| (5) Lamp Switch | (11) Swing Brake Cancel Switch |
| (6) Alarm buzzer stop switch | (12) Rotating Lamp Switch (if Equipped) |

Starting Switch

This switch (1) is used to start or stop the engine.

OFF position

The key can be inserted or withdrawn. The switches for the electric system except the room lamp, are all turned off and the engine is stopped.

ON position

Electric current flows in the charging and lamp circuits. Keep the starting switch key at the ON position while the engine is running.

START position

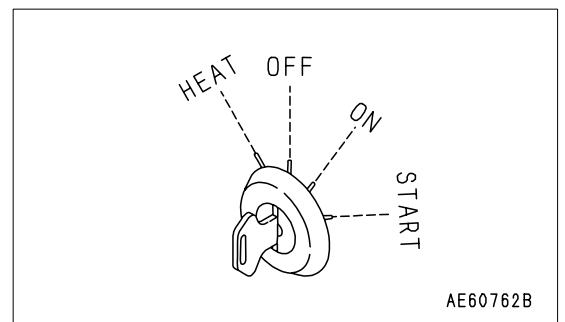
This is the engine-start position. Keep the key at this position during cranking. Immediately after starting the engine, release the key. It will automatically return to the ON position.

HEAT position

When starting the engine in cold temperatures, set the key to this position. When the key is set to the HEAT position, the preheating monitor lights up. Keep the key at this position until the preheating monitor flashes.

When the preheating monitor flashes, release the key immediately.

When the key is released, it will return automatically to the OFF position, so turn it immediately to the START position to start the engine.

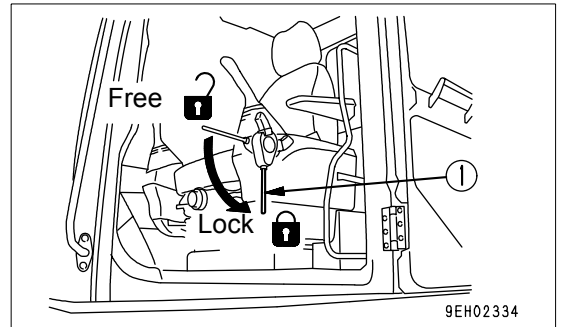


Closing

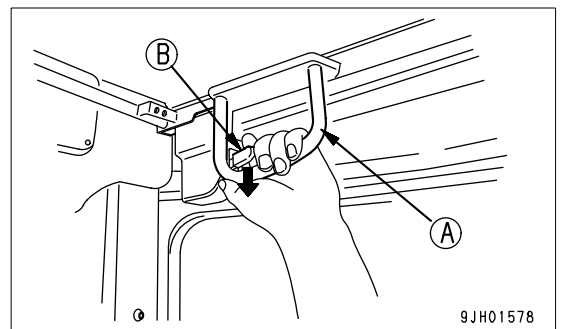
⚠ WARNING

When closing the window, lower it slowly and be careful not to get your hand caught.

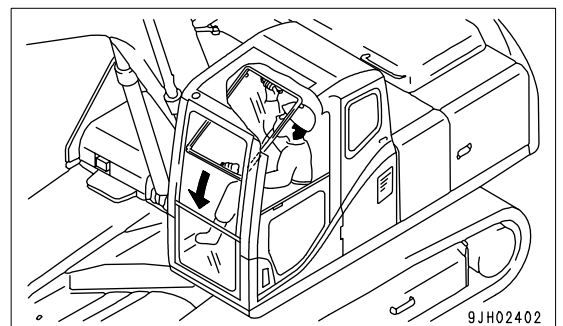
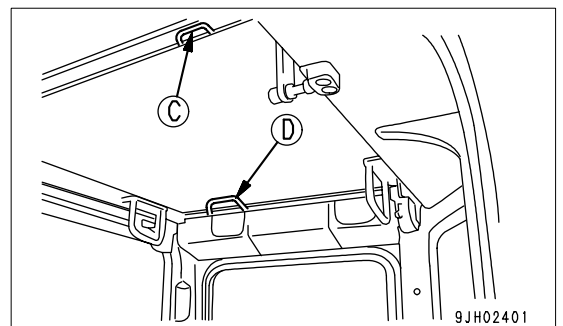
1. Stop the machine on level ground, lower the work equipment completely to the ground, then stop the engine.
2. Set the safety lock lever to the LOCK position without fail.



3. Grip left and right handles (A), and pull down lock lever (B) to release the lock.



4. Grip handle (C) at the bottom of the front window with your left hand and handle (D) at the top with your right hand, push to the front, then lower slowly.

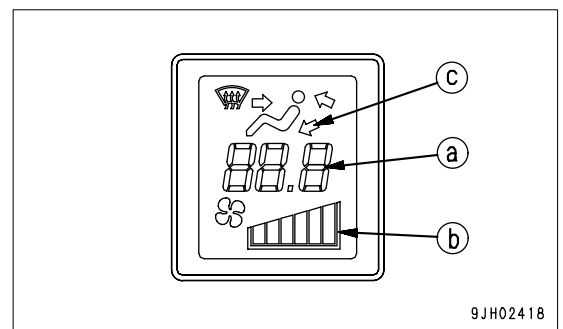
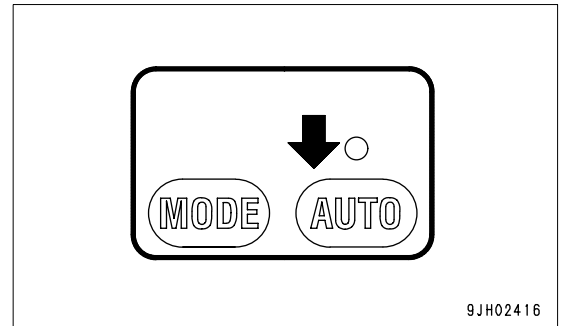


Method Of Operation

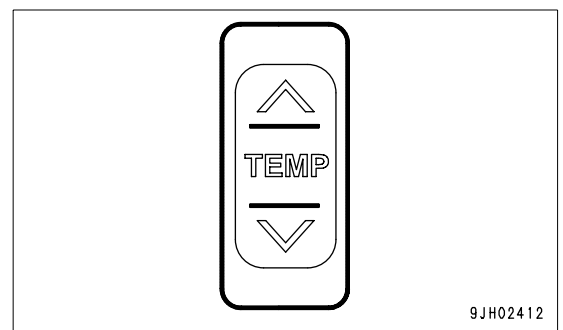
The air conditioner can be operated automatically or manually. Select the method of operation as desired.

Automatic Operation

1. Turn auto switch (5) ON.
 - The lamp at the top of switch (5) lights up.
 - The set temperature (a) and air flow (b) are displayed on the monitor.

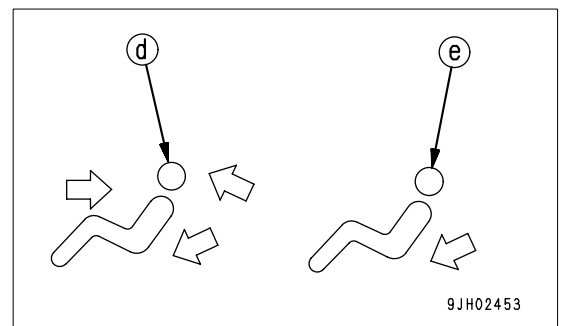


2. Use temperature set switch (3) to set to the desired temperature. The air flow, combination of vents, and selection of fresh or recirculated air is automatically selected according to the set temperature, and the air conditioner is operated automatically to provide the set temperature.



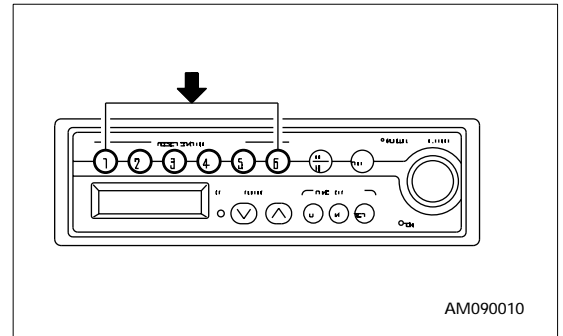
REMARK

When vent display monitor (c) displays (d) or (e), and the engine water temperature is low, the air flow is automatically limited to prevent cold air from blowing out.



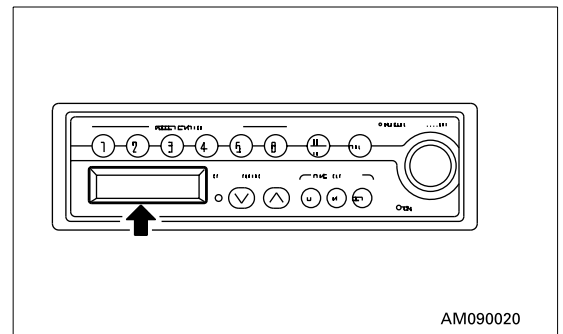
Preset Station Buttons (1, 2, 3, 4, 5, 6)

If these buttons (6) are set to the frequency of the desired broadcasting station, the station can be selected at a touch. For details of the method of presetting, see "Preset Station Buttons (3-58)".



Display

In this display (7), receiving band, frequency, preset No. and time are shown.



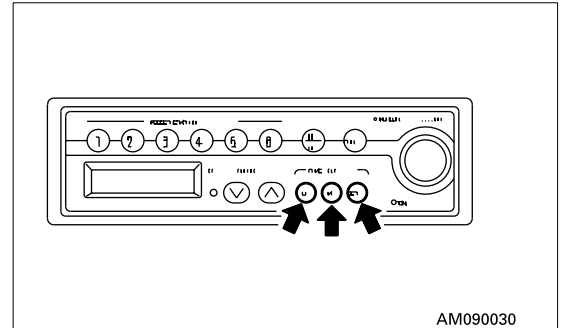
Time Reset Button

This button (8) is used to correct the time.

H: Hour

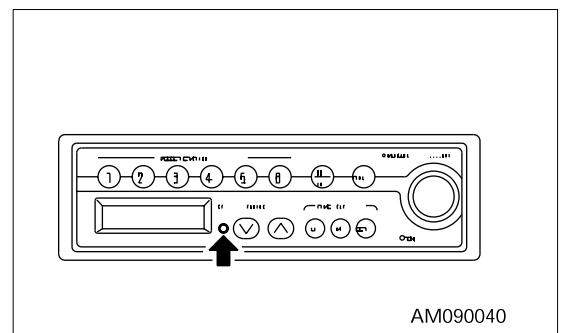
M: Minute

SET: Sets to start of hour (00 minutes)



Stereo Indicator (ST)

This lamp (9) lights up when a stereo broadcasting is picked up when receiving an FM broadcasting station.

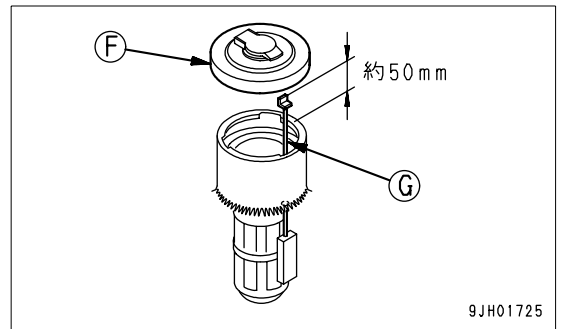
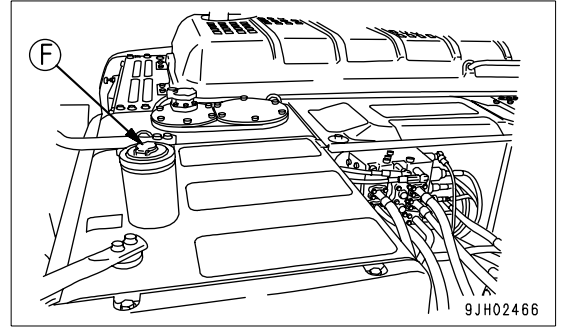


Check Fuel Level, Add Fuel

⚠ WARNING

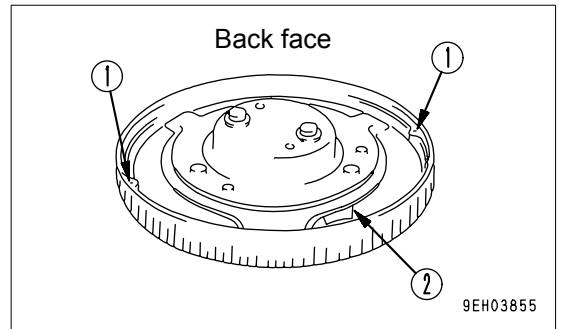
When adding fuel, never let the fuel overflow. This may cause a fire. If any fuel is spilled, wipe it up completely. Never bring flames near fuel because it is highly flammable and dangerous.

1. Open fuel filler cap (F) of the fuel tank.
2. If fuel filler cap (F) is opened, float gauge (G) rises to the fuel level. Check that the fuel tank is full. Check the fuel level visually and with float gauge (G).
3. If the fuel tank is not full, supply fuel through the fuel filler until float gauge (G) rises to the maximum position.
 - Fuel tank capacity: 280 liters (73 US gallons)
 - Position of tip of float gauge (G) when tank is full: Approx. 50 mm (2 inches) from top surface of fuel tank
4. After adding fuel, push float gauge (G) straight down with fuel filler cap (F). Be careful not to get float gauge (G) caught in the tab of fuel filler cap (F), and tighten fuel filler cap (F) securely.



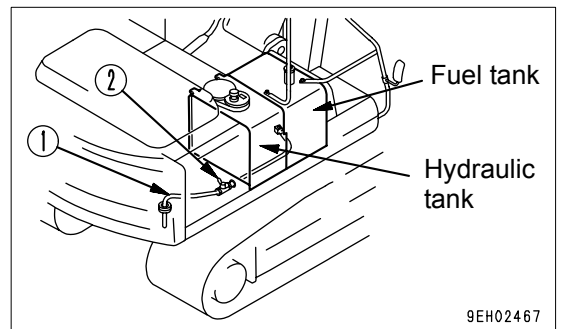
REMARK

If breather hole (1) in the cap is clogged, the pressure in the tank will drop and fuel will not flow. Clean the hole from time to time.



Drain Water And Sediment From Fuel Tank

1. Open the pump room door on the right side of the machine.
2. Set a container under drain hose (1) to catch the drained fuel.
3. Open drain valve (2) at the rear of the fuel tank and drain the water and sediment accumulated at the bottom of the tank together with the fuel.
4. When only clean fuel comes out, close drain valve (2).
5. Close the pump room door on the right side of the machine.



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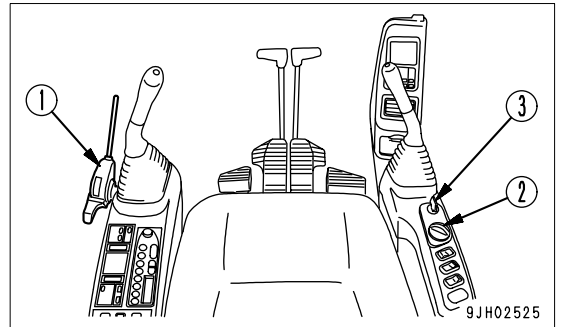
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STARTING ENGINE

Normal Starting

⚠ WARNING

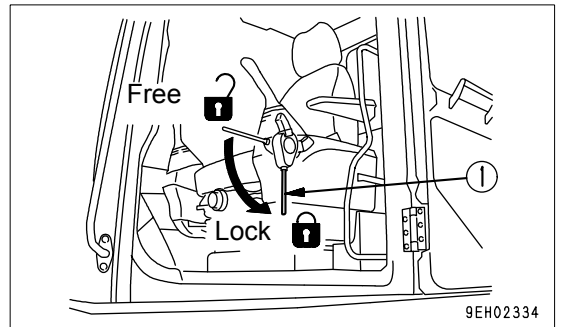
- Start the engine only after sitting down in the operator's seat.
- Do not attempt to start the engine by short-circuiting the engine starting circuit. Such an act may cause a serious bodily injury or fire.
- Check that there are no persons or obstacles in the surrounding area, then sound the horn and start the engine.
- Exhaust gas is toxic. When starting the engine in confined spaces, be particularly careful to ensure good ventilation.



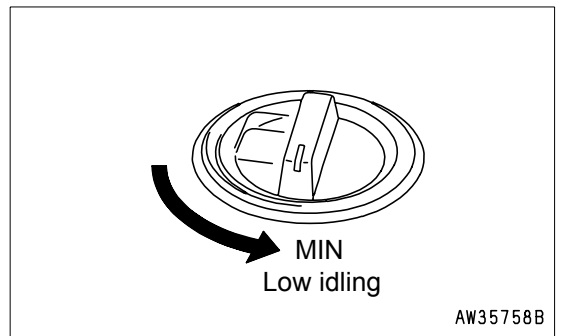
NOTICE

- Before starting the engine, check that the fuel control dial is at the low idling (MIN) position.
- If the fuel control dial is at the FULL position, the engine will accelerate suddenly and cause damage to the engine parts.
- Do not crank the starting motor continuously for more than 20 seconds.
- If the engine does not start, wait for at least 2 minutes before trying again.

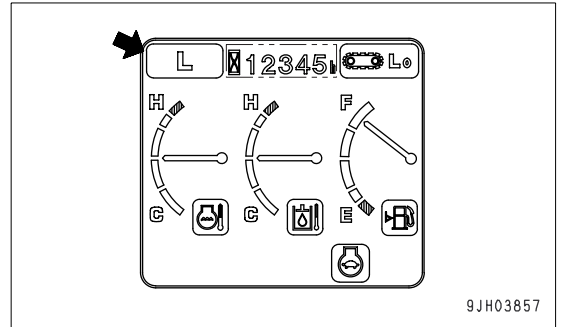
1. Check the safety lock lever (1) is at the LOCK position. If the safety lock lever is in the FREE position, the engine does not start.



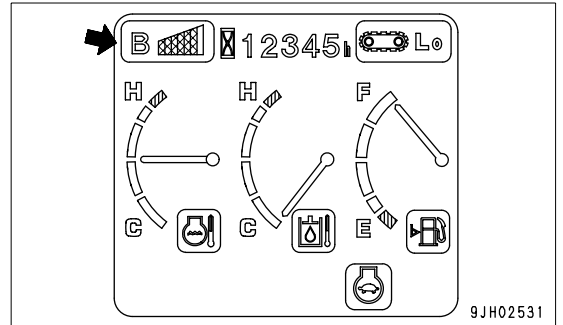
2. Set fuel control dial (2) at the low idling (MIN) position. If it is at the high idling (MAX) position, always change it to the low idling (MIN) position.



- 3) L mode
For fine-control operations



- 4) B mode
For breaker operations

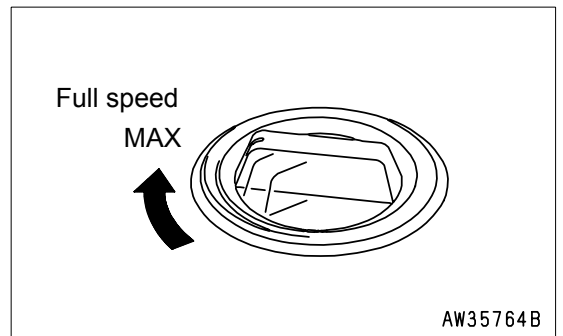


NOTICE

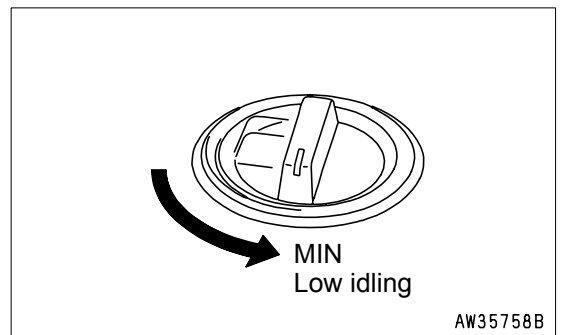
Canceling automatic warming-up operation

If it becomes necessary in an emergency to cancel the automatic warming-up operation or to lower the engine speed to low idling, do as follows.

- 1] Turn fuel control dial (2) to the full speed (MAX) position and hold it for 3 seconds.



- 2] When fuel control dial (2) is returned to the low idling (MIN) position, the engine speed will drop.



WORKING MODE

Working Mode

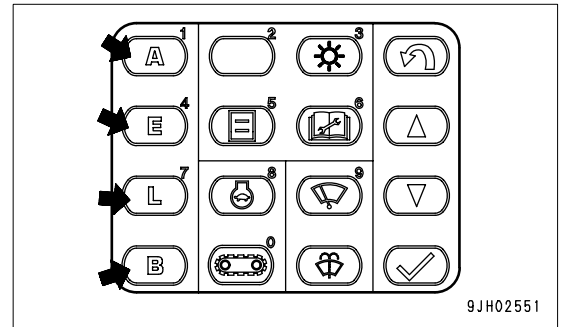
The mode selector switch can be used to switch the mode to match the operating conditions and purpose, thereby enabling work to be carried out efficiently.

Make effective use of each mode as follows.

When the starting switch is turned ON, the working mode is set to A mode.

Use the working mode switch to set the mode to the most efficient mode to match the type of work.

| Working mode | Applicable operations |
|--------------|--|
| A mode | Normal digging, loading operations (Operations with emphasis on productivity) |
| E mode | Normal digging, loading operations |
| L mode | When positioning work equipment exactly (fine-control operations) |
| B mode | Breaker operations |



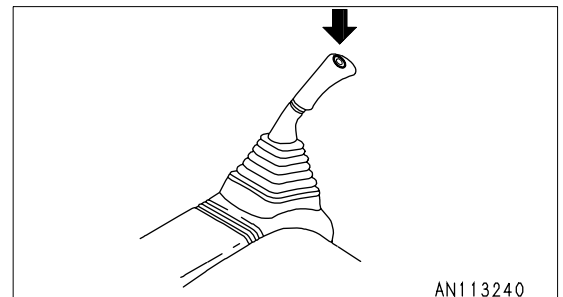
NOTICE

If breaker operations are carried out in the A mode, the hydraulic equipment may be damaged.

One-Touch Power Max. Switch

The one-touch power max. Switch can be used during operations to increase the power. Make effective use of this function whenever necessary in combination with the working mode.

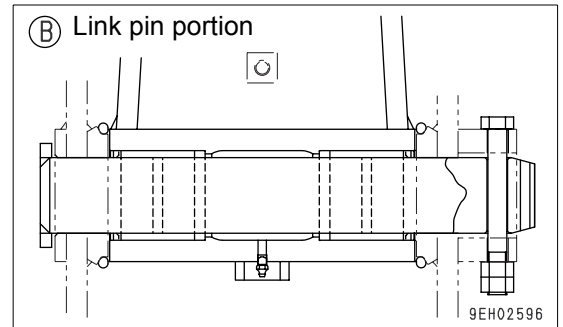
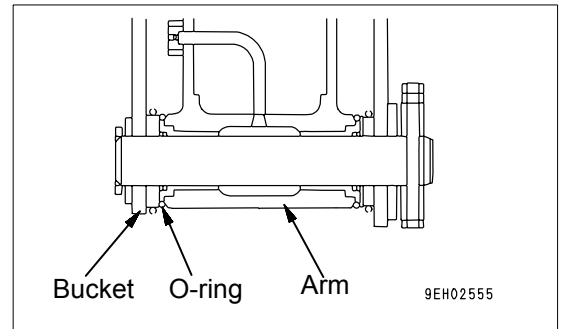
- Press the left knob switch and keep it pressed. The power is increased as long as the switch is being pressed. However, the increased power is automatically canceled after 8.5 seconds.
- This function is not actuated when the working mode is set to L mode or B mode.



REMARK

When reversing, do not install an O-ring. Keep the O-ring in a safe place until using it next.

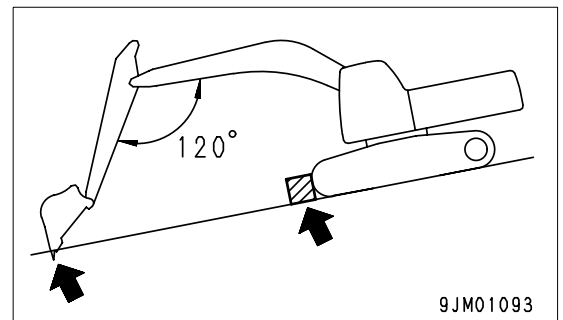
5. Install the stopper bolts and nuts for each pin, then grease the pin.



PARKING MACHINE

WARNING

- Avoid stopping suddenly. Give yourself ample room when stopping.
- When stopping the machine, select flat hard ground and avoid dangerous places. If it is unavoidably necessary to park the machine on a slope, insert blocks underneath the track shoes. As an additional safety measure, thrust the bucket into the ground.
- If the control lever is touched by accident, the work equipment or the machine may move suddenly, and this may lead to a serious accident. Before leaving the operator's compartment, always set the safety lock lever securely to LOCK position.



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.

NOTICE

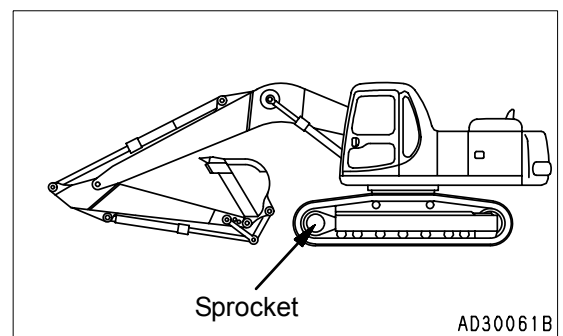
The lifting procedure applies to machines with standard specifications.

The method of lifting differs according to the attachments and options actually installed. In such cases, please contact your Komatsu distributor for information.

For details of the weight, see "SPECIFICATIONS (5-2)".

When lifting the machine, carry out the operation on flat ground as follows.

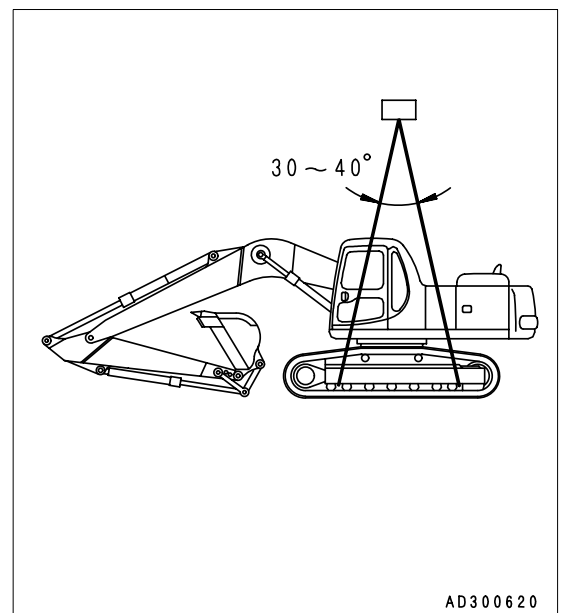
1. Start the engine, then swing the upper structure so that the work equipment is at the rear of the machine.
2. Extend the bucket cylinder and arm cylinder fully, then lower the work equipment to the ground as shown in the diagram on the right using the boom cylinder.
3. Stop the engine, check that there is nothing around the operator's compartment, then get off the machine.
Close the cab door and front glass securely.



4. Pass wire ropes between the 1st and 2nd track rollers from the front and between the 1st and 2nd track rollers from the rear.

However, for machines equipped with a full roller guard for the track roller, pass the wire rope under the track.

5. Set the lifting angle of the wire rope to 30° to 40°, then lift the machine slowly.
6. After the machine comes off the ground, check the hook condition and the lifting posture, and then lift slowly.



OTHER TROUBLE

Electrical System

- (): Always contact your Komatsu distributor when dealing with these items.
- In cases of abnormalities or causes which are not listed below, please contact your Komatsu distributor for repairs.

| Problem | Main causes | Remedy |
|--|---|---|
| Lamp does not glow brightly even when the engine runs at high speed | <ul style="list-style-type: none"> •Defective wiring, deterioration of battery | <ul style="list-style-type: none"> (•Check, repair loose terminals, disconnections, replace battery) Check fan belt tension, replace) |
| Lamp flickers while engine is running | <ul style="list-style-type: none"> •Loose fan belt | <ul style="list-style-type: none"> •Check fan belt tension, replace |
| Charge level monitor does not go out even when engine is running | <ul style="list-style-type: none"> •Defective alternator •Defective wiring | <ul style="list-style-type: none"> (•Replace) (•Check, repair) |
| Abnormal noise is generated from alternator | <ul style="list-style-type: none"> •Defective alternator | <ul style="list-style-type: none"> (•Replace) |
| Starting motor does not turn when starting switch is turned to ON | <ul style="list-style-type: none"> •Defective wiring •Defective starting motor •Insufficient battery charge | <ul style="list-style-type: none"> (•Check, repair) (•Replace) •Charge |
| Pinion of starting motor keeps going and out | <ul style="list-style-type: none"> •Insufficient battery charge •Defective safety relay | <ul style="list-style-type: none"> •Charge (•Replace) |
| Starting motor turns engine sluggishly | <ul style="list-style-type: none"> •Insufficient battery charge •Defective starting motor | <ul style="list-style-type: none"> •Charge (•Replace) |
| Starting motor disengages before engine starts | <ul style="list-style-type: none"> •Defective wiring, defective ring gear pinion •Insufficient battery charge | <ul style="list-style-type: none"> (•Check, repair) •Charge |
| Pre-heating monitor does not light | <ul style="list-style-type: none"> •Defective wiring •Defective heater relay •Defective monitor | <ul style="list-style-type: none"> (•Check, repair) (•Replace) (•Replace) |
| Oil pressure monitor does not light up when engine is stopped (starting switch at ON position) | <ul style="list-style-type: none"> •Defective monitor •Defective caution lamp switch | <ul style="list-style-type: none"> (•Replace) (•Replace) |
| Outside of electrical heater is not warm when touched by hand | <ul style="list-style-type: none"> •Defective wiring •Disconnection in electric heater •Defective operation of heater relay switch | <ul style="list-style-type: none"> (•Check, repair) (•Replace) (•Replace) |

Grease

- Grease is used to prevent twisting and noise at the joints.
- The nipples not included in the MAINTENANCE section are nipples used when overhauling, so they do not need grease.

If any part becomes stiff or generates noise after being used for a long time, grease it.

- Always wipe off all of the old grease that is pushed out when greasing.
Be particularly careful to wipe off the old grease in places where sand or dirt sticking in the grease would cause wear of the rotating parts.

Carrying out KOWA (Komatsu Oil Wear Analysis)

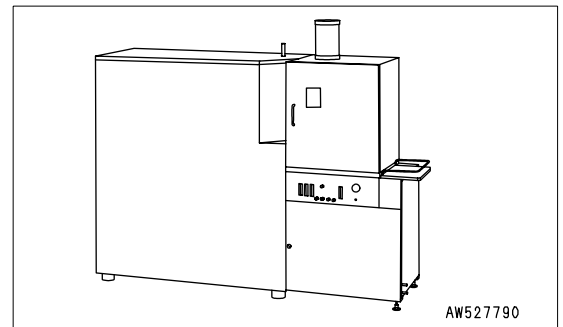
KOWA is a maintenance service that makes it possible to prevent machine failures and down-time. With KOWA, the oil is periodically sampled and analyzed. This enables early detection of wear of the machine drive parts and other abnormalities.

Periodic use of KOWA makes the following possible:

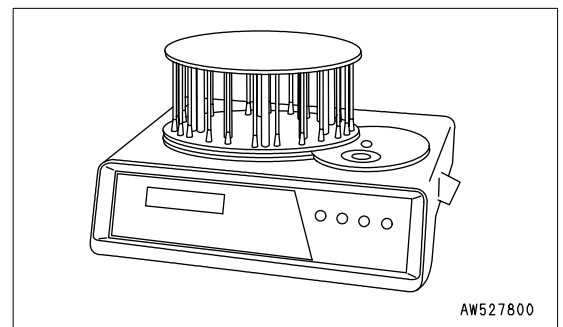
- It enables abnormalities to be detected early, leading to reduction of repair costs and machine downtime.
- It enables repair schedules to be planned, leading to improved machine availability.

KOWA analysis items

- Analysis of metal wear particles
This uses an ICP (Inductively Coupled Plasma) analyzer to measure the density of metal wear particles in the oil.



- Measurement of particle quantity
This uses a PQI (Particle Quantifier Index) measurer to measure the quantity of large iron particles in the oil.



Oil sampling

- Sampling interval
 - 250 hours: Engine
 - 500 hours: Other components
- Precautions when sampling
 - Make sure that the oil is well mixed before sampling.
 - Carry out sampling regularly at fixed intervals.
 - Do not carry out sampling on rainy or windy days when water or dust can get into the oil.

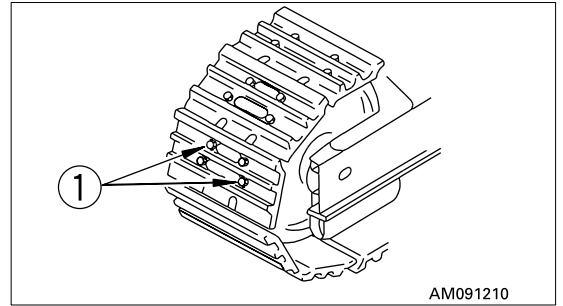
For further details of KOWA, please contact your Komatsu distributor.

SAFETY CRITICAL PARTS LIST

| No. | Safety critical parts for periodic replacement | Q'ty | Replacement interval |
|-----|--|------|---|
| 1 | Fuel hose (Fuel tank - Water separator) | 1 | Every 2 years or 4000 hours, whichever comes sooner |
| 2 | Fuel hose (Water separator - Fuel pump) | 1 | |
| 3 | Fuel return hose (Fuel injection pump - Fuel tank) | 1 | |
| 4 | Spill hose (Engine output connector - Fuel tank) | 1 | |
| 5 | Pump outlet hose (Pump - Control valve) | 2 | |
| 6 | Work equipment hose (Boom cylinder inlet) | 4 | |
| 7 | Work equipment hose (Bucket cylinder line - Boom foot section) | 2 | |
| 8 | Work equipment hose (Bucket cylinder inlet) | 2 | |
| 9 | Work equipment hose (Arm cylinder line - Boom foot section) | 2 | |
| 10 | Work equipment hose (Arm cylinder inlet) | 2 | |
| 11 | Additional attachment line hose (Boom foot section) | 2 | |
| 12 | Additional attachment line hose (Boom top section) | 2 | |
| 13 | Swing line hose (Swing motor inlet) | 2 | |
| 14 | Main suction hose | 1 | |
| 15 | Heater hose | 2 | |
| 16 | Travel line hose (Control valve - Swivel joint) | 4 | |
| 17 | Travel line hose (Swivel joint - Travel motor) | 4 | |
| 18 | Seat belt | 1 | Every 3 years |

CHECK AND TIGHTEN TRACK SHOE BOLTS

If the machine is used with track shoe bolts (1) loose, they will break, so tighten any loose bolts immediately.



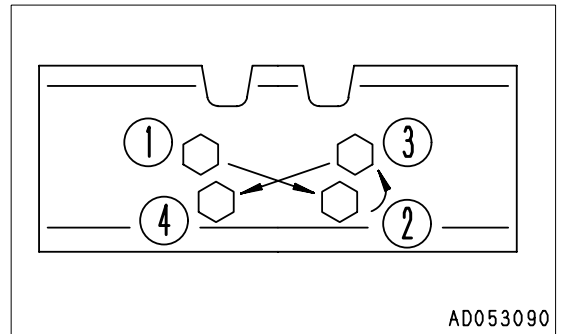
Tightening

Track shoe

1. First tighten to a tightening torque of 490 ± 49 N·m (361.4 ± 36.1 lbf-ft) then check that the nut and shoe are in close contact with the link contact surface.
2. After checking, tighten a further $120^\circ \pm 10^\circ$.

Order for tightening

Tighten the bolts in the order shown in the diagram on the right. After tightening, check that the nut and shoe are in close contact with the link mating surface.



CHECK AND ADJUST TRACK TENSION

⚠ WARNING

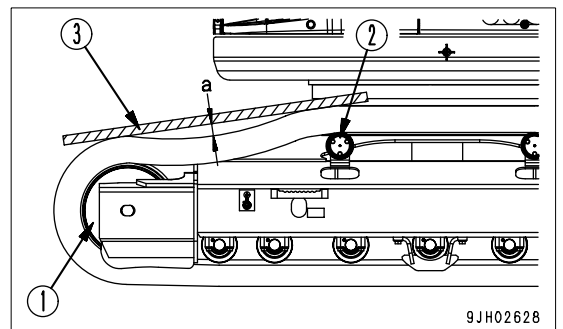
For details of starting the engine and operating the work equipment, see “BEFORE STARTING ENGINE (3-64)”, “STARTING ENGINE (3-77)”, “AFTER STARTING ENGINE (3-81)”, and “WORK EQUIPMENT CONTROLS AND OPERATIONS (3-96)” in the OPERATION section.

Wear on pins and bushings of the undercarriage will vary with working conditions and a type of soil, so inspect the track tension every now and then in order to maintain the standard tension.

For carrying out inspection and adjustment of track shoes, park the machine on the flat and solid ground.

Checking

1. Run the engine at low idling, then travel the machine forward for a distance equal to the track length on ground and stop the machine slowly.
2. Put on the track shoe straight wooden bar (3) which stretches from idler (1) to upper carrier roller (2).
3. Measure the maximum deflection between the bottom surface of the wooden bar and the top surface of the track shoe. Deflection a should be 10 to 30 mm (0.4 to 1.2 inches).



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

Method of Setting Machine At Angle

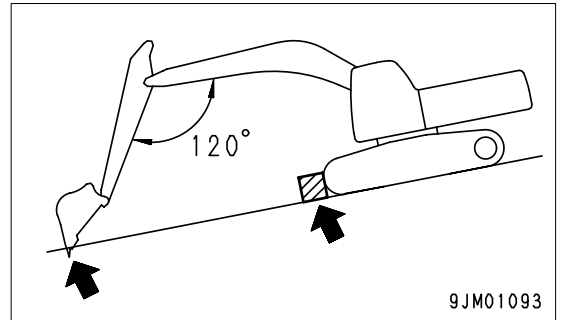
Method Using Slope

⚠ WARNING

Select a solid and smooth slope.

Always put blocks under the track to prevent the machine from moving, and dig the work equipment into the ground.

1. Stop the machine so that the work equipment is on the downhill side.
2. Put blocks under the track and dig the work equipment into the ground.



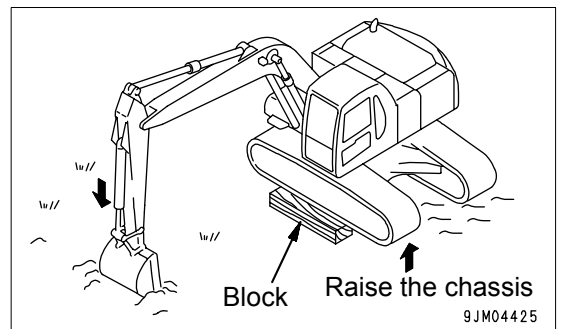
Method Using Block

⚠ WARNING

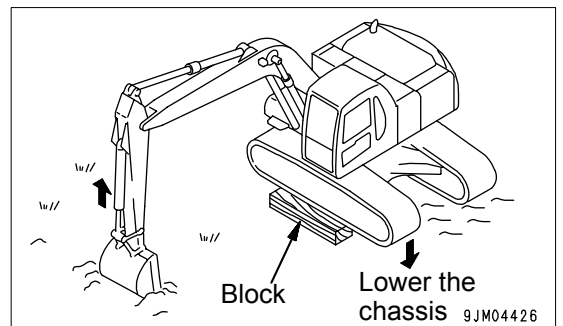
Select a firm flat place.

Put strong blocks under the undercarriage to stabilize the machine and be extremely careful when carrying out the operation.

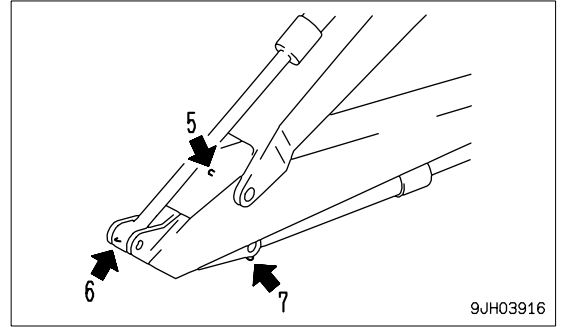
1. Raise the chassis with the boom and arm. When doing this, operate the levers slowly.
2. Insert a block securely between the ground surface and the raised track and make sure that the machine is stable.



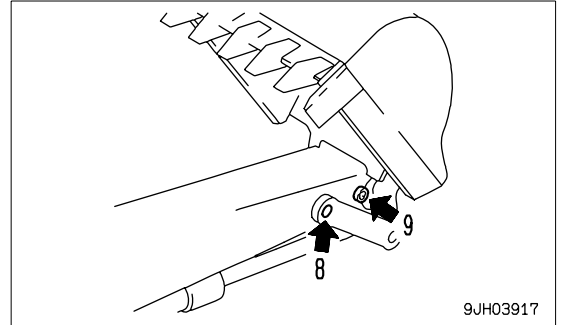
3. Raise the boom slowly and lower the machine. When doing this, check that the machine is always stable.



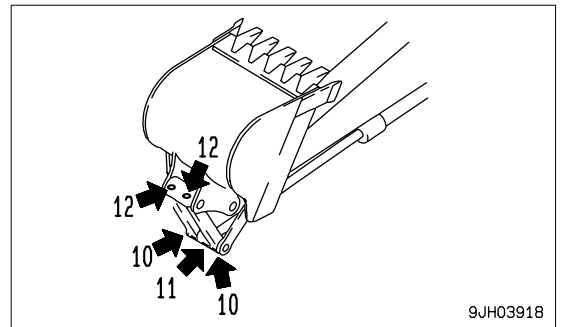
- (5) Boom - Arm coupling pin (1 point)
- (6) Arm cylinder rod end (1 point)
- (7) Bucket cylinder foot pin (1 point)



- (8) Arm-Link coupling pin (1 point)
- (9) Arm-Bucket coupling pin (1 point)

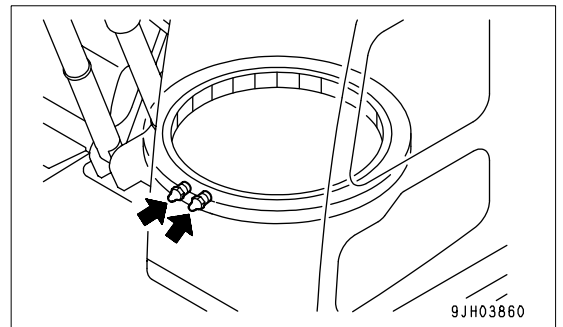


- (10) Link coupling pin (2 points)
- (11) Bucket cylinder rod end (1 point)
- (12) Bucket-Link coupling pin (1 point)



LUBRICATE SWING CIRCLE

1. Lower the work equipment to the ground.
2. Using a grease pump, pump in grease through the grease fittings shown by arrows.
3. After greasing, wipe off any old grease that was pushed out.



CHECK ALTERNATOR, STARTING MOTOR

The brush may be worn or the bearing may have run out of grease, so contact your Komatsu distributor for inspection or repair.

If the engine is started frequently, have this inspection carried out every 1000 hours.

CHECK ENGINE VALVE CLEARANCE, ADJUST

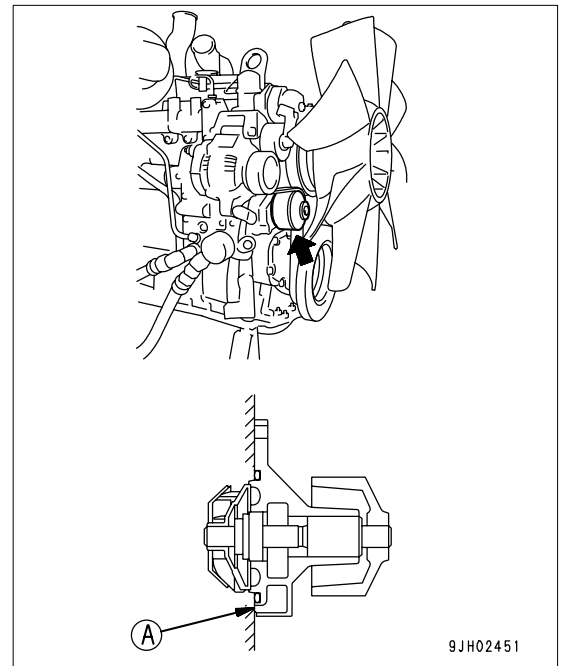
Special tools are needed for inspection and maintenance, please contact your Komatsu distributor.

EVERY 4000 HOURS MAINTENANCE

Maintenance for every 250, 500, 1000 and 2000 hours service should be carried out at the same time.

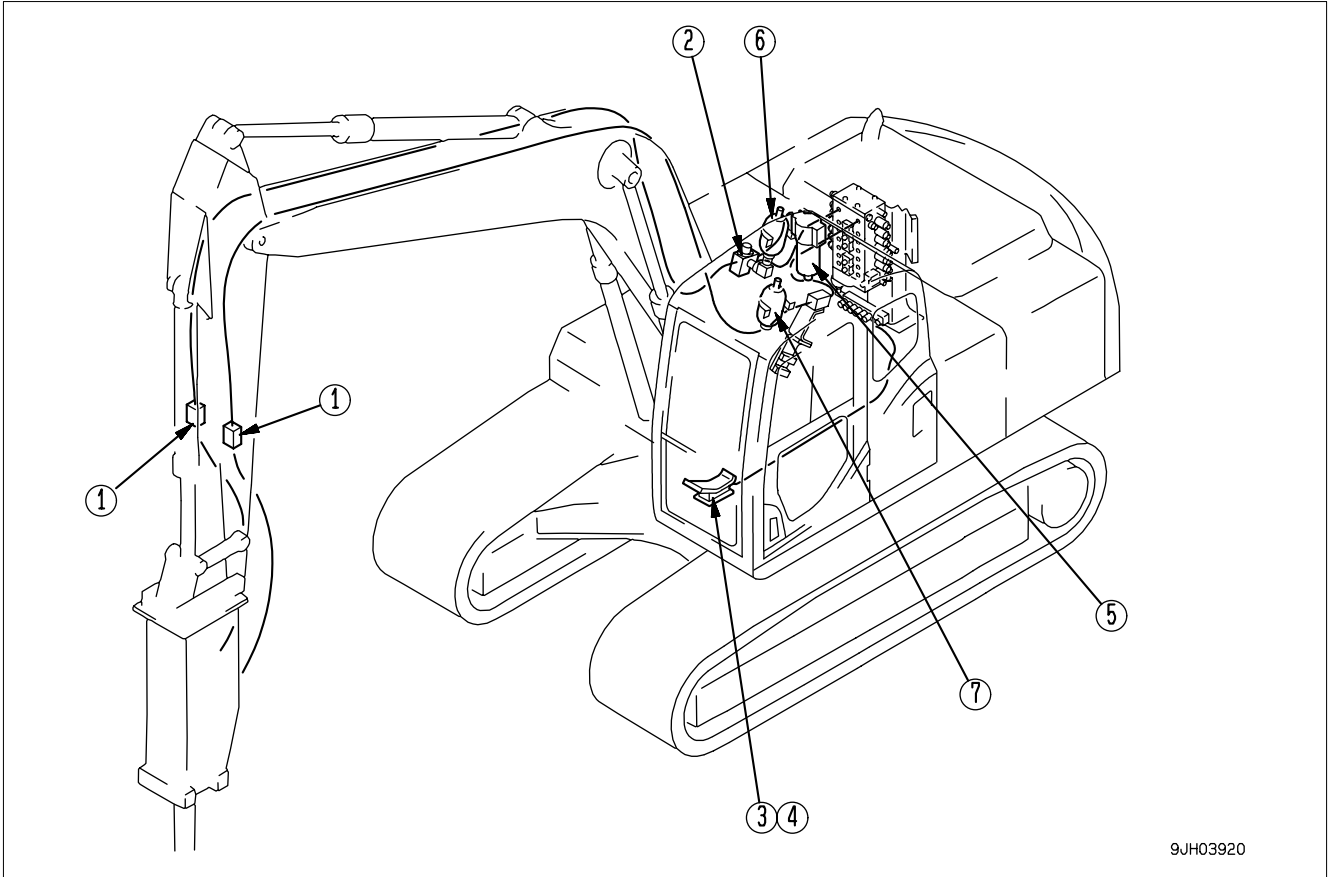
CHECK WATER PUMP

Since the pulley may have play, oil may leak, water may leak and the drain hole (A) may be clogged, contact your Komatsu distributor for inspection, overhaul or replacement.



MACHINE READY FOR ATTACHMENT (DELUXE HCU SYSTEM)

LOCATIONS



| | |
|------------------------------|---|
| (1) Stop valve | (5) Additional filter for breaker |
| (2) Selector valve | (6) Accumulator (low-pressure) |
| (3) Attachment control pedal | (7) Accumulator (high-pressure) (if equipped) |
| (4) Lock pin | |

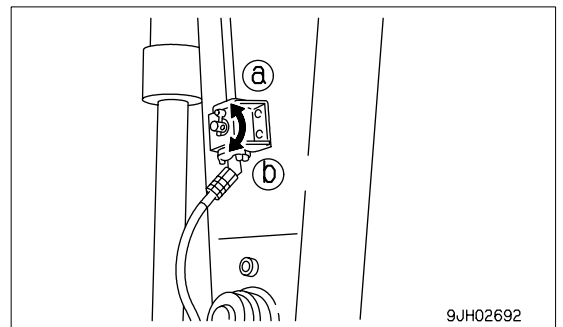
Stop Valve

This valve (1) stops the flow of the hydraulic oil.

(a) FREE: Hydraulic oil flows.

(b) LOCK: Hydraulic oil stops.

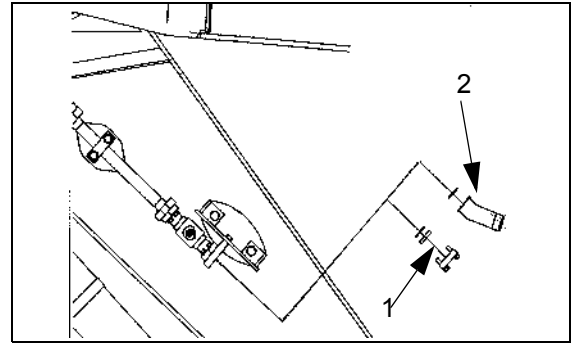
When removing or installing attachments, set this valve to the LOCK position.



HYDRAULIC CIRCUIT CONNECTION

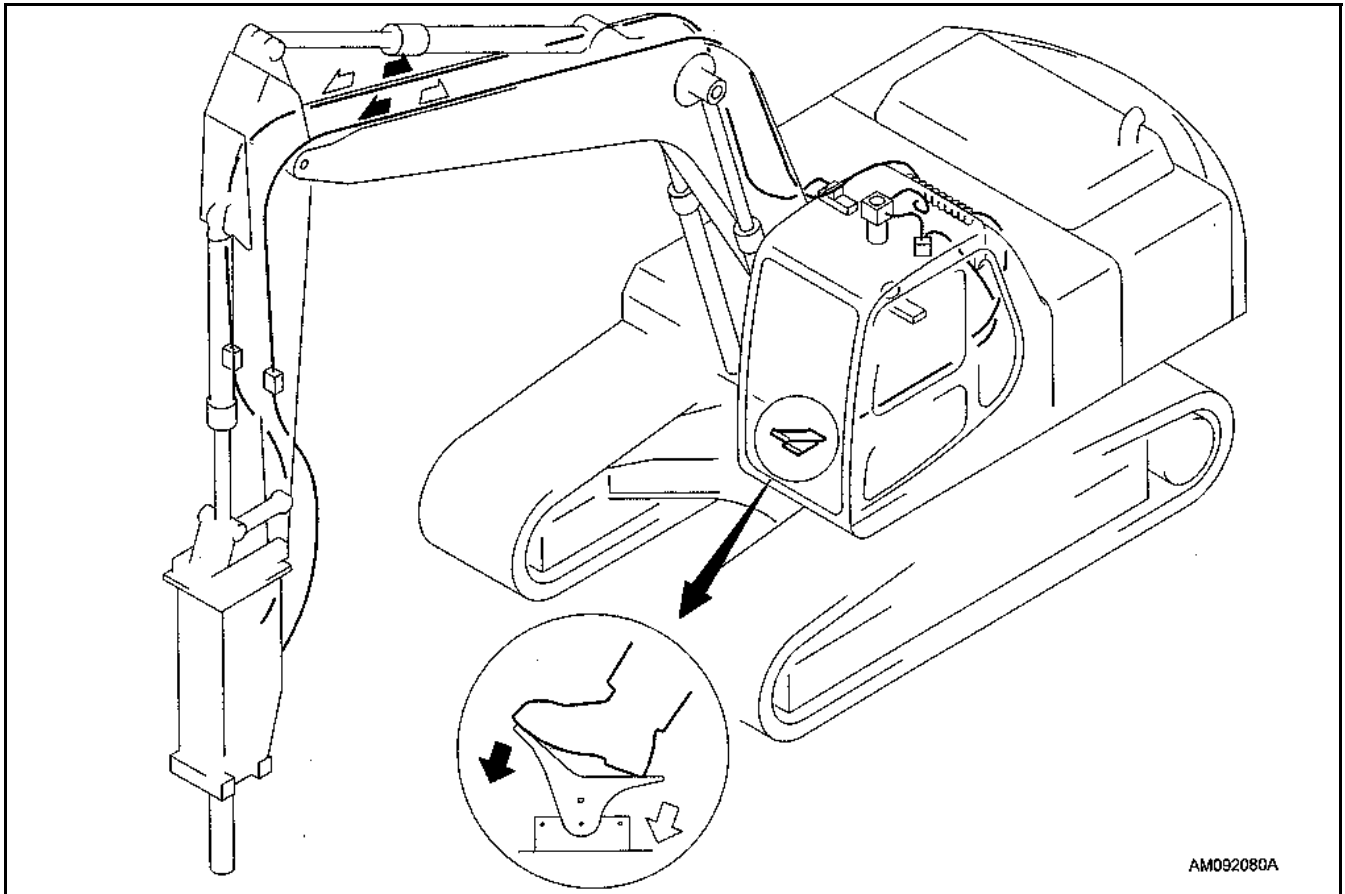
When connecting the attachment, connect the circuit as follows.

4. Remove blind plugs (1) at the end of the stop valve piping. (Two places on the left and right)
Be careful not to lose or damage any part that has been removed.
5. Connect attachment tubes (2) supplied by the attachment manufacturer to the end from which the plug removed in Step 1.



PATH OF OIL

The direction of operation of the pedal and the path of the oil are as shown in the diagram below.



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