

TB108

# TB108

Compact Excavator

Serial No.108202134~

Book No. AB5E012

## OPERATOR'S MANUAL

Original instructions

OPERATOR'S MANUAL

TAKEUCHI



**WARNING**

Read and understand these instructions.  
Failure to do so can cause injury or death.

**TAKEUCHI**



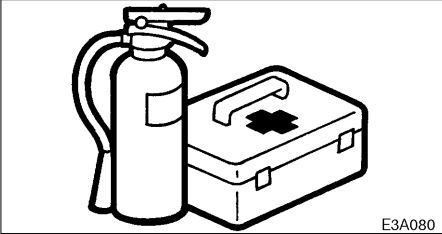
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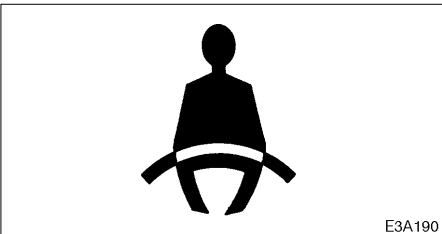
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**Provide a fire extinguisher and first aid kit**

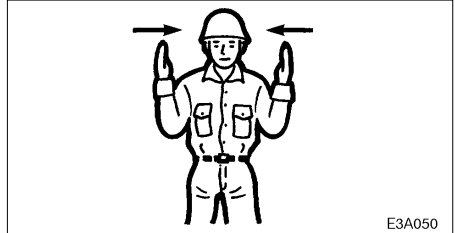
- Know where a fire extinguisher and first aid kit are located and understand how to use them.
- Know how to contact emergency assistance and first aid help.

**Never remove safety equipment**

- Make sure all protective guards, canopies, doors, etc., are in place and secure. Repair or replace damaged components before operating the machine.

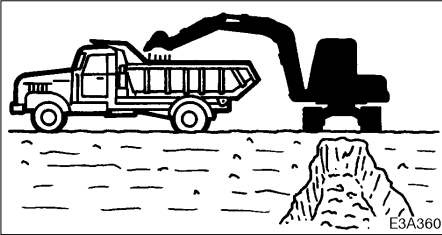


- Know how to use the safety lock lever, seat belt and other safety equipment and use them properly.
- Never remove any safety equipment except for service. Keep all safety equipment in good operating condition.

**Use a signal person and flagman**

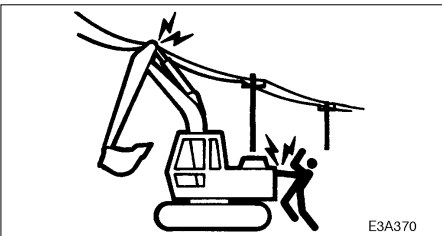
Know and use the hand signals required for particular jobs and make sure who has the responsibility for signaling.

- All personnel must fully understand all the signals.
- The operator shall respond to signals only from the appointed signal person, but shall obey a stop signal at any time from anyone.
- The signal person must stand in a clearly visible location when giving signals.

**Insure driver safety before loading trucks**

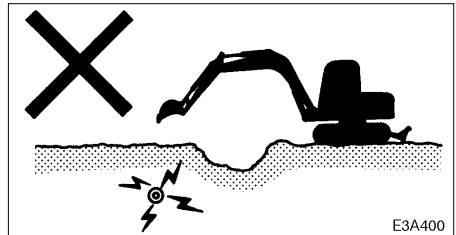
Do not load a truck unless the driver is in a safe place.

- Never swing or position the bucket over personnel or truck cabs.
- Load the truck from the rear.

**Keep a safe distance from electrical power lines**

Never approach power lines with any part of the machine and its load unless all local and national required safety precautions have been taken. Electrocutation and death can result from arcing, touching or even being close to a machine that is in contact with or near an electrical source.

- Maintain the maximum possible distance from power lines and never violate the minimum clearance.
- Always contact the nearest electric utility and determine jointly what specific precautions must be taken to insure safety.
- Consider all lines to be power lines and treat all power lines as energized even though it is known or believed that the power is shut off and the line is visibly grounded.
- Use a signal person to observe the approach of any part of the machine or load to the power line.
- Caution all ground personnel to stand clear of the machine and the load at all times.
- If the machine should come in contact with a live electrical source, do not leave the operator's seat. Do not allow anyone to approach or touch the machine.



- Be especially careful of buried high voltage power lines.



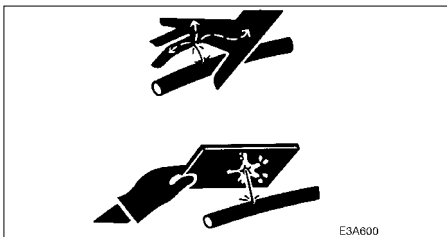
SAFETY

## Maintenance Precautions

### Be careful with fluids under pressure

Pressure can be maintained in the hydraulic circuit long after the engine has been shut down.

- Release all pressure before working on the hydraulic system.



- Hydraulic fluid under pressure can penetrate the skin or eyes and cause injury, blindness or death. Fluid escaping from a small hole can be almost invisible. Wear a safety goggles and heavy gloves and use a piece of cardboard or wood to search for suspected leaks. If fluid is injected into the skin, it must be removed within a few hours by a doctor familiar with this type of injury.

### Release all pressure before working on the hydraulic system

Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.

- Gradually loosen the vent plug to relieve tank pressure.
- Move all the control levers and pedals several times in all directions to release the pressure from the working equipment circuitry. (For link type controls)
- When removing plugs or screws or disconnecting hoses, stand to the side and loosen slowly to gradually release the internal pressure before removing.

### Be careful with grease under pressure



The track adjuster contains highly pressurized grease. If the tension is adjusted without following the prescribed procedure, the grease discharge valve may fly off, resulting in injury.

- Do not loosen the grease nipple.
- Loosen the grease discharge valve slowly.
- Do not put your face, arms, legs or body in front of the grease discharge valve.
- If no grease is expelled when grease discharge valve is loosened, there is a problem. Contact your nearest service outlet for repairs. DO NOT disassemble, as this is very dangerous.



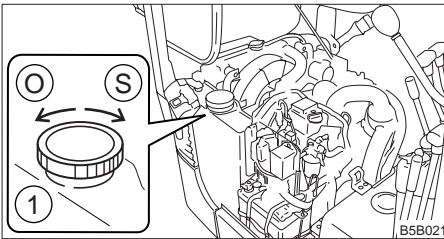
### Fuel Filler Cap



- Do not smoke or permit open flames while fueling or near fueling operations.
- Supply fuel in a well ventilated place and with the engine stopped.
- Clean up spilled fuel immediately.
- Do not fill the fuel tank to capacity. Allow room for expansion.
- Tighten the fuel filler cap securely.

### Opening and closing

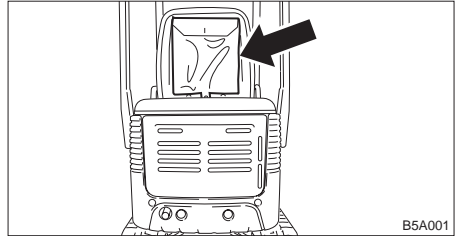
1. Open the engine hood.



⊙ : Open   ⊙ : Closed

2. Turn the fuel filler cap (1).

### Manual Case (option)





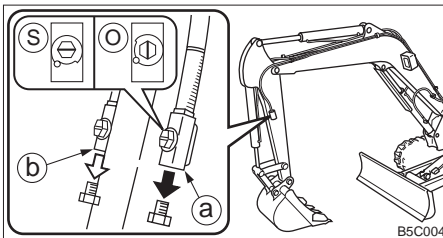
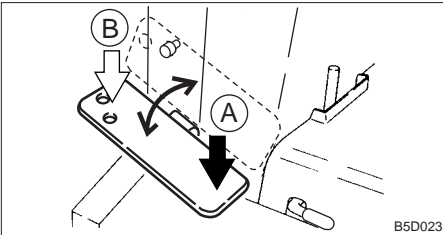
## Auxiliary Hydraulic Lines



Oil may spurt out if caps or filters are removed or pipes disconnected before releasing the pressure in the hydraulic system.

- When removing plugs or disconnecting hoses, release the internal pressure before removing.

These lines deliver the hydraulic oil necessary for operating a hydraulic breaker, crusher or other attachments.



Stop valve ..... (S) : Closed (O) : Open

## Connecting the Hydraulic Circuits

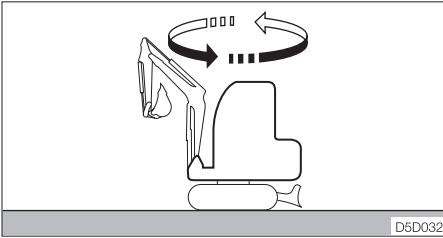
To connect the attachment hydraulic lines, use the following procedures:

1. Move the auxiliary pedal several times to relieve pressure on the lines.
2. Make sure the stop valves are closed.
3. Remove the plugs.
4. Connect the attachment hydraulic lines to ports (a) and (b).
5. Open the stop valves.
6. When connecting is complete, purge air from the hydraulic lines.
  - a. Start and run the engine at low idle with no load for 10 minutes.
  - b. With the engine running at low idle operate the auxiliary pedal repeatedly (approx. 10 times) to purge air from the hydraulic lines.
  - c. Stop the engine and wait for more than 5 minutes until bubbles escape from the hydraulic oil in the tank.

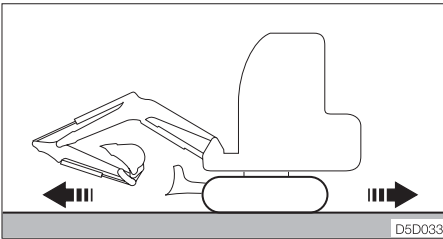
**IMPORTANT:** Follow the procedures for purging air as instructed by the attachment manufacturer if specified to do so.

7. Check for leaks.

Before dismantling the attachment, move the auxiliary pedal several times to relieve pressure on the lines and be sure to close the stop valves.



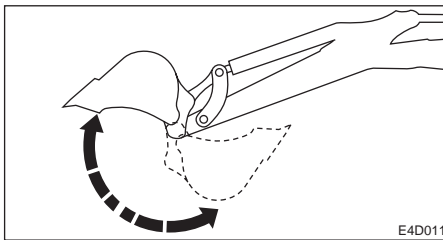
5. Slew slowly left and right several times.



6. Travel slowly forward and backward several times.

### Warming Up in Cold Weather

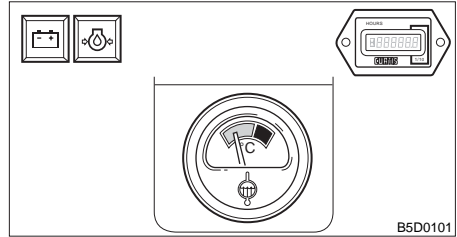
1. Perform the normal warm-up procedure. Refer to the previous page.



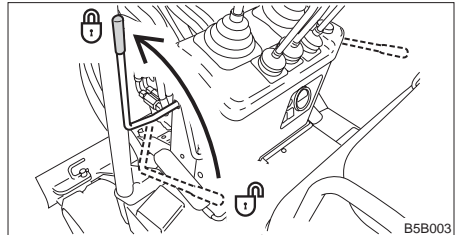
2. Set the bucket cylinder at the stroke end and keep it there.  
Do not do this for more than 30 seconds.
3. Repeat step 2 until the bucket operating speed is normal.

### Inspection After Warm-up

After warming up the engine and hydraulic oil, perform the checks and inspections described below, and repair if there is a problem.



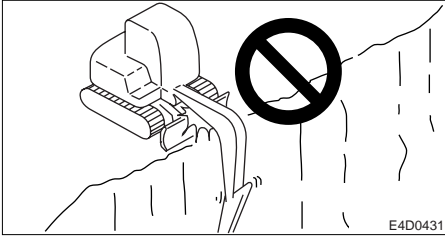
1. Check that the warning lamps and meters are as follows:
  - Are all the warning lamps off?
  - Is the water temperature gauge's needle within the green range?
2. Check that there are no irregularities in the exhaust color, sound and vibrations.



3. Raise the safety lock lever to engage the lock and check that the operating and travel levers are locked.



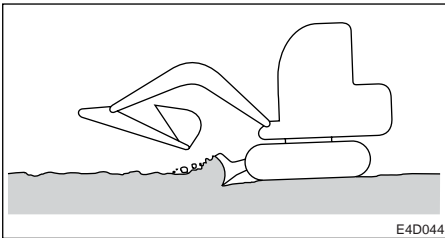
**Pay Attention to the Dozer Blade when Digging**



When digging deeply with the dozer blade positioned at the front, be careful that the boom cylinder and bucket do not hit the dozer blade.

Operate with the dozer blade at the rear whenever possible.

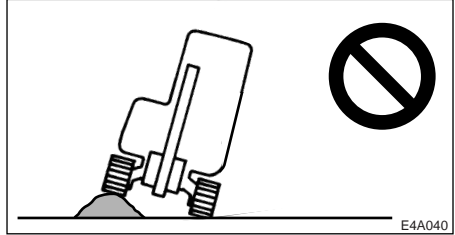
**Caution on Digging Down with the Dozer Blade**



This dozer blade is designed for simple earth pushing. Do not dig down deeply with the dozer blade. Doing so could damage the dozer blade and lower body.

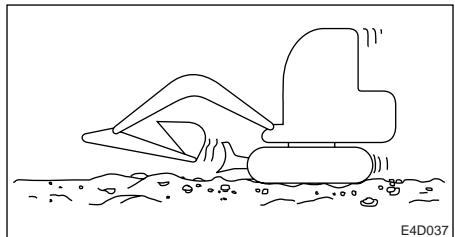
**Cautions on Operating**

**Cautions on Traveling**



Traveling over obstacles (rocks, stumps, etc.) may subject the body to strong shocks and result in damage. Avoid traveling over obstacles whenever possible. If you must do so, keep the hoe attachment near the ground, travel at low speed, and go over the obstacle at the center of the crawler.

**Cautions on Traveling in 2nd (High) Speed**



On uneven ground, travel at low speed and avoid accelerating, stopping or changing directions abruptly. Also, when traveling in 2nd speed, do so with the dozer blade at the front.

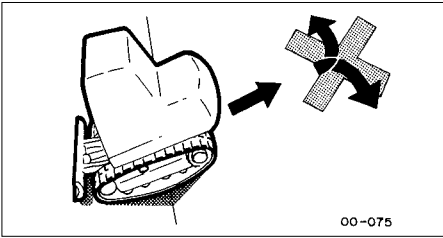
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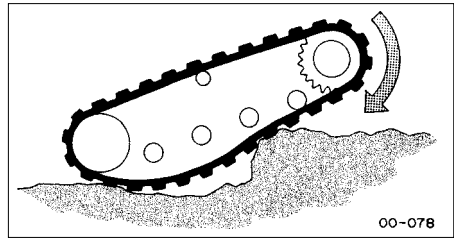
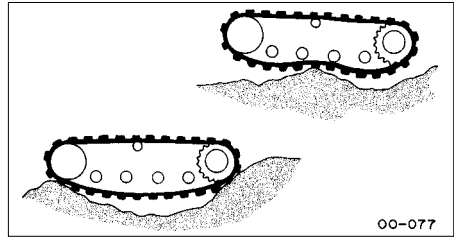


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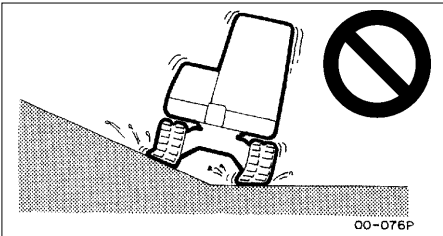
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- When climbing in reverse, do not change course at the point where the slope starts.



- Do not change directions when the crawler belts are slack as shown in the diagram.



- Avoid traveling with one crawler on a slope or projecting object and the other crawler on a flat surface (with the machine at a tilt of 10° or greater). Travel with both crawlers on flat surfaces.

**Fuel****Diesel Fuel Specifications**

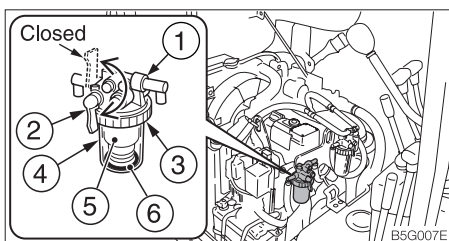
Diesel fuel should comply with the following specifications. The table lists several worldwide specifications for diesel fuels.

Diesel Fuel Specification	Location	Diesel Fuel Specification	Location
<b>ASTM D975 No. 1D S15, S500 No. 2D S15, S500</b>	USA	<b>ISO 8217 DMX</b>	International
<b>EN590:96</b>	European Union	<b>BS 2869-A1 or A2</b>	United Kingdom

Part	Type		Capacity Lit. (US. gal.)
<b>Fuel tank</b>	Diesel fuel	<p>Use a clean, Quality fuel for good performance and optimum engine life.</p> <ul style="list-style-type: none"> <li>● To prevent fuel flow problems in cold weather, use diesel fuel with a pour point of at least <math>-12^{\circ}\text{C}</math> (<math>10^{\circ}\text{F}</math>) below the lowest expected ambient temperature.</li> <li>● Minimum cetane number is 45. Low temperature or high altitude operation may require the use of fuel with a higher cetane number.</li> <li>● The sulfur content must not exceed 0.5% by volume. Less than 0.05% is preferred. For electronically controlled EGR engines, use fuel with sulfur content of less than 0.05%. A higher sulfur content fuel may cause sulfuric acid corrosion in the cylinders of the engines.</li> <li>● NEVER mix kerosene, used engine oil, or residual fuels with the diesel fuel.</li> <li>● Poor quality fuel can reduce engine performance and / or cause engine damage.</li> <li>● Fuel additives are not recommended. Some fuel additives may cause poor engine performance.</li> </ul>	8 (2.1)

**Inspecting the Water Separator**

**Stop the engine and allow the machine to cool down before performing inspection and maintenance.**



1. Open the engine hood.
2. Inspect the water separator (1).

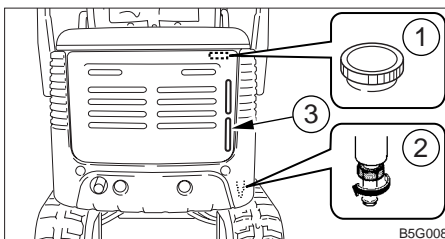
If the red indicator ring (6) is sunk to the bottom of the case (4), no water is mixed in.

If the red indicator ring (6) is floating, there is water up to the bottom of the ring. Drain the water and clean.

Refer to page 109 "Cleaning the Water Separator".

**Checking the Fuel Level**

- Do not smoke or permit open flames while fueling or near fueling operations.
- Stop the engine in a well-ventilated place when adding fuel.
- Clean up spilled fuel immediately.
- Do not fill the fuel tank to capacity. Allow room for expansion.
- Tighten the fuel filler cap securely.



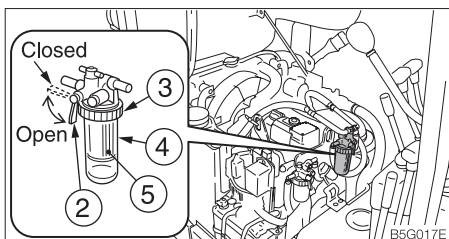
1. Check the fuel level using the sight gauge (3).
2. If the level is low, add fuel from the fuel port (1) while watching the sight gauge (3). Refer to page 39 "Fuel Filler Cap".



### Cleaning the Fuel Filter



- Do not smoke or permit open flames while handling fuel or working on the fuel system.
- Stop the engine in a well-ventilated place and allow it to cool down before performing maintenance.
- Clean up spilled fuel immediately.

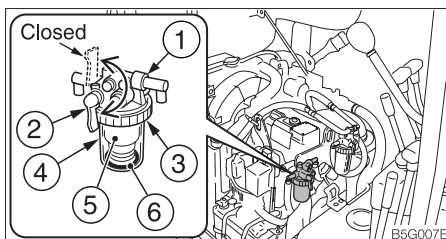


1. Open the engine hood.
2. Close the cock (2).
3. Loosen the ring (3), then remove the case (4) and element (5) and clean them.
4. Inspect the O-ring, and if there are any scratches or other irregularities, replace it.
5. Assemble the case (4) and element (5) and tighten the ring (3).
6. Open the cock (2) and bleed the air.  
Refer to page 129 "Bleeding the Air from the Fuel System".

### Cleaning the Water Separator



- Do not smoke or permit open flames while handling fuel or working on the fuel system.
- Stop the engine in a well-ventilated place and allow it to cool down before performing maintenance.
- Clean up spilled fuel immediately.



1. Open the engine hood.
2. Close the cock (2).
3. Loosen the ring (3), then remove the case (4), element (5) and indicator ring (6) and clean them.
4. Inspect the O-ring, and if there are any scratches or other irregularities, replace it.
5. Assemble the indicator ring (6), case (4) and element (5) and tighten the ring (3).
6. Open the cock (2) and bleed the air.  
Refer to page 129 "Bleeding the Air from the Fuel System".

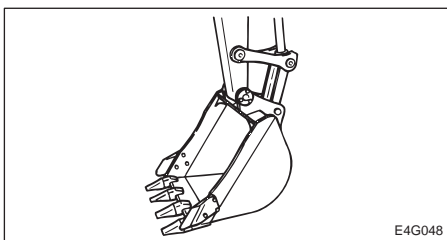


## Replacing the Bucket



- Before performing maintenance or repairs under the machine, set all working equipment against the ground or in the lowermost position.
- If maintenance must be performed with the engine running, always work as a two-person team with one person sitting in the operator's seat while the other works on the machine.
  - When performing maintenance, be sure to keep your body and clothing away from moving parts.
- Wear required appropriate equipment such as safety glasses and filter mask when using hammers, as metal fragments or other objects can fly and cause serious personal injury.
- When lining up the pin holes, always do so by sight. Your finger may be cut off if you stick it into the hole.

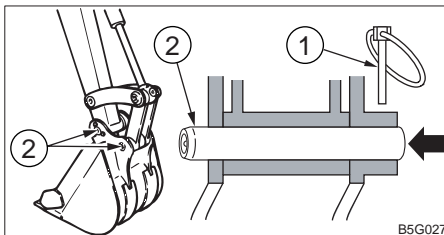
### Removal



1. Ground the bucket as shown on the diagram above in a stable position.

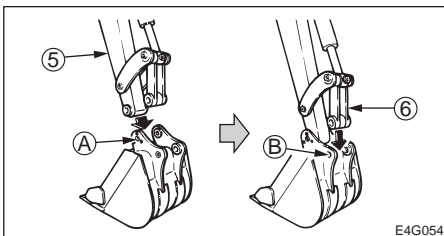
**Supplement:** When removing pins, set the bucket so that it is just gently against the ground. If it is strongly against the ground, the resistance will be great and it will be difficult to remove the pin.

2. Set the safety lock lever to the locked position and stop the engine.
3. Remove the ring of the lock pin (1) and remove the lock pin.



4. Hammer pin (2) out of the bucket.
5. Remove the bucket.

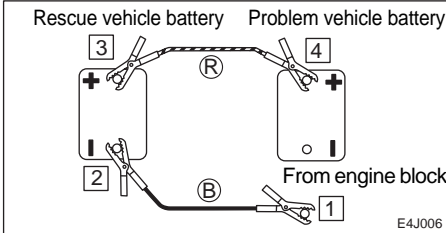
### Installation



1. Line up pin hole (A) in the bucket with the pin hole in the arm (5), and install the pin (2).
2. Operate the cylinder, line up pin hole (B) in the bucket with the pin hole in the link arm (6), and install the pin (2).

**Disconnecting the jumper cables**

Once the engine starts, disconnect the jumper cables following the connection procedure in reverse order.



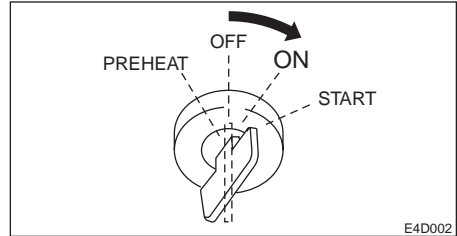
1. Disconnect the clip of jumper cable (B) from the problem vehicle's engine block.
2. Disconnect the other clip of jumper cable (B) from the rescue vehicle's "-" terminal.
3. Disconnect the clip of jumper cable (R) from the rescue vehicle's "+" terminal.
4. Disconnect the other clip of jumper cable (R) from the problem vehicle's "+" terminal.

**Recharging**

Have a Takeuchi sales or service outlet recharge batteries that have gone dead.

**Bleeding the Air from the Fuel System**

1. Add fuel.
2. Open the water separator and fuel filter cocks.



3. Turn the starter key to the ON position and hold it there for about 20 seconds.  
The automatic air bleeder bleeds the air from the fuel system.
4. Start the engine and inspect for fuel leakage.

**Supplement:** Air in the fuel system can make it difficult to start the engine and cause engine problems. Also bleed the air when the fuel tank is emptied.

**Machine Dimensions**

Units: mm (inches)

	<b>Standard Arm</b>	<b>Long Arm</b>
A	2710 (106.7)	2740 (107.9)
B	740 (29.1)	←
C	2110 (83.1) / 2195 (86.5)*	←
D	800 (31.5)	←
E	385 (15.2)	←
F	900 (35.4)	←
G	1220 (48.1)	←
H	900 (35.4)	←
J	180 (7.1)	←
K	160 (6.3)	←
L	790 (31)	825 (32.5)
M	440 (17.3)	←
N	340 (13.4)	←
P	900 (35.4)	←
Q	1920 (75.6)	1955 (77)
R	740 (29)	←
S	200 (7.9)	←
T	90°	←
U	90°	←
V	1375 (54.1)	←
W	680 (26.8)	←
X	680 (26.8)	←
Y	1080 (42.6)	1125 (44.3)
Z	880 (34.6)	915 (36.1)

\* Option: With Lift Eyes



## OPTIONS

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## Biodegradable oil

Biodegradable oil is a new type of hydraulic oil that is decomposed into carbon dioxide and water by microorganisms in the soil and water. It is highly safe for living organisms and offers advantages in terms of environmental protection.

- Recommended biodegradable oil: Mobile EAL Envirosyn 46H (an ester synthetic oil).  
When replacing the hydraulic oil with biodegradable oil, use the above or an equivalent oil. Note that other oils, even other brands of ester synthetic oils, may damage O-rings, packings and seals. Takeuchi products shipped with the optional biodegradable oil are shipped with the above brand of oil.
- When switching from a mineral oil to a biodegradable oil, the parking brake torque decreases by about 30%.

## Replacing the hydraulic oil with biodegradable oil

Mixing mineral oil with biodegradable oil will result in a decrease of the hydraulic oil's performance as well as a decrease in biodegradability and safety. The hydraulic oil system must be flushed as described below before supplying the biodegradable oil. This operation is dangerous and requires experience. Have it performed by a Takeuchi sales or service outlet.

### Flushing

- To be performed by a Takeuchi sales or service outlet
1. Drain the hydraulic oil (mineral oil) from the hydraulic tank and clean the inside of the tank and suction strainer.  
Refer to page 117 "Replacing the Hydraulic Oil and Cleaning the Suction Strainer".
  2. Remove the cylinder hoses and drain the hydraulic oil (mineral oil) from inside the cylinders.
  3. Supply new biodegradable oil to the hydraulic tank.
  4. Bleed the air from the pump and cylinders and pressurize the hydraulic tank.
  5. Operate the hydraulic devices for 30 minutes.
  6. Drain the biodegradable oil from the tank and cylinders.
  7. Replace the hydraulic oil return filter with a new filter.
  8. Repeat steps 3 and 4.
  9. Operate the hydraulic devices for 30 minutes.
  10. Drain the biodegradable oil from the tank and cylinders.
  11. Repeat steps 3 and 4.
  12. Operate the hydraulic devices for 1 hour.
  13. Drain the biodegradable oil from the tank and cylinders.
  14. Replace the return filter with a new filter.
  15. Repeat steps 3 and 4.
  16. Operate the hydraulic devices, then check for oil leakage.
- There is no need to flush the hydraulic oil system when switching from biodegradable to mineral hydraulic oil.

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