

YANMAR

OPERATION & MAINTENANCE
MANUAL

EXCAVATOR

SV08-1A

S/N 14001 & Above

■ **Checking the electrical equipment**

 **CAUTION**

If a fuse blows out frequently, contact your dealer for assistance.

Check the fuses for damage, the wiring for poor connections or short circuits, and the battery terminals for corrosion or loose fits. Take corrective action.

Check the following items after the starter switch is turned to the "ON" position.

- 1) Check the monitor functions
 - Check the hourmeter function.
 - Check the engine oil pressure alarm lamp, battery charge alarm lamp and water temperature alarm lamp for lighting.
- 2) Check that all switches function correctly and lamps light correctly.
 - Operation of the boom light and switches.
- 3) Check the horn function.

13-1-3. Operating and checking instructions before starting up the engine

⚠ WARNING

- Do not touch the control levers accidentally. Otherwise, the implement or the machine may move unexpectedly, causing a serious accident.
- When leaving the operator's seat, be sure to place the lock levers securely in the lock position.
- Never operate the machine unless the ROPS bar is in its full upright and locked position to prevent bodily injury.

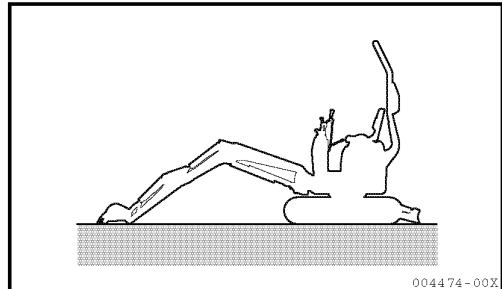
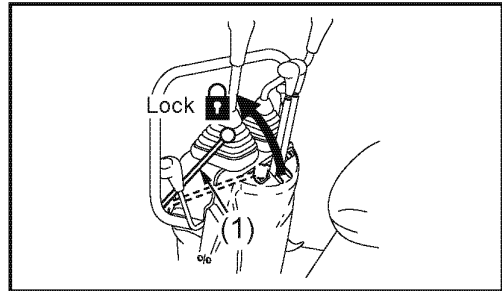
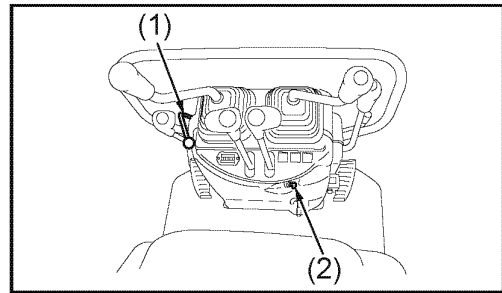
- 1) Check that the lock levers (1) are in the lock position.
- 2) Check that all other levers are in their appropriate positions.
- 3) Fasten the seatbelt snugly.
- 4) Insert the starter switch key into the starter switch (2) and set it to the "ON" position. Then check the following points:

[1] The buzzer will sound, and the following alarm lamps will go on or flash.

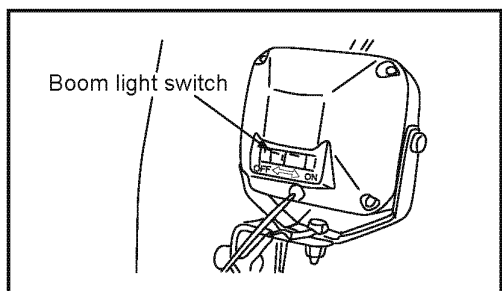
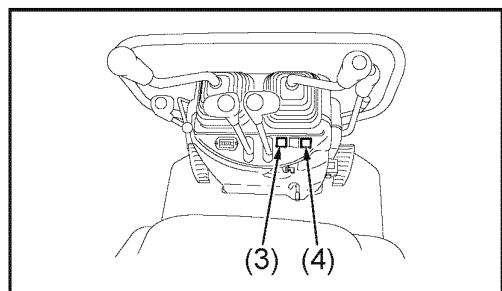
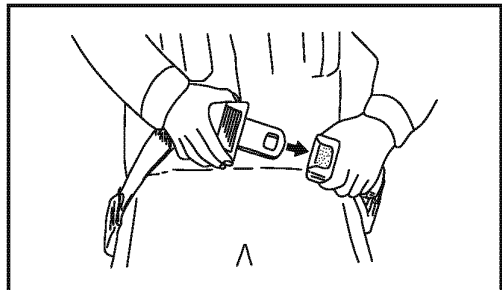
- Engine oil pressure alarm lamp (3)
- Battery charge alarm lamp (4)

If any of the alarm lamps does not go on or the buzzer does not sound, it may mean that an alarm lamp has blown out or is broken. Take corrective action, or consult your dealer for assistance.

[2] Slide the boom light switch to the right to check whether the boom light will go on. If it does not go on, the lamp might have blown out or might be broken. Take corrective action, or consult your dealer for assistance.



0044 74-00X



13-2. Starting up the engine

13-2-1. Normal start-up

⚠ WARNING

- First check that there are no people or obstacles around the machine.
Then sound the horn and start the engine.
- Be sure that you are seated on the operator's seat when starting the engine.
- When starting the engine in an enclosed place, be sure that there is adequate ventilation so that the exhaust gases can escape.

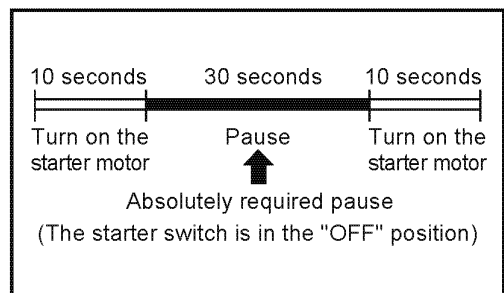
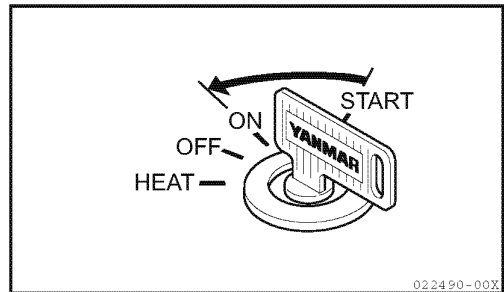
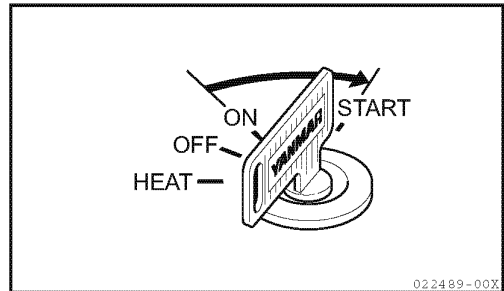
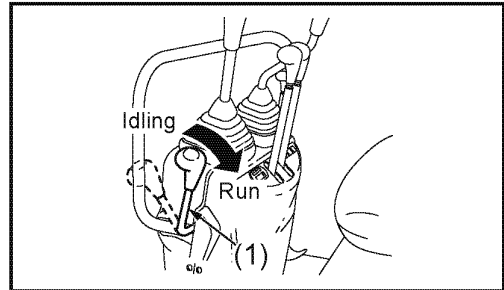
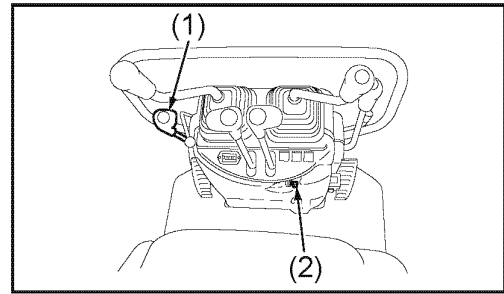
- 1) Pull the accelerator lever (1) back to the "RUN" position.
- 2) Turn the starter switch key in the starter switch (2) to the "START" position. The engine will start.
- 3) After the engine has started, let go of the starter switch key.
The starter switch key will return to the "ON" position by itself.

Note :
When the engine is warm, the engine can start up even if the accelerator lever is left in the "IDLING" position.

IMPORTANT

To protect the starter motor and the battery;

- Do not keep the starter switch key in the "START" position for more than 10 seconds.
- If the engine fails to start, do not attempt to start the engine immediately again, but set the starter switch to the "OFF" position and wait for approximately 30 seconds, then start the engine again.



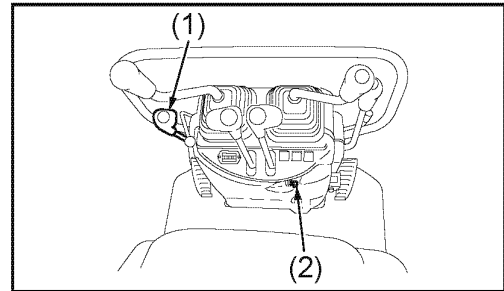
13-2-2. Starting the engine in cold weather

! WARNING

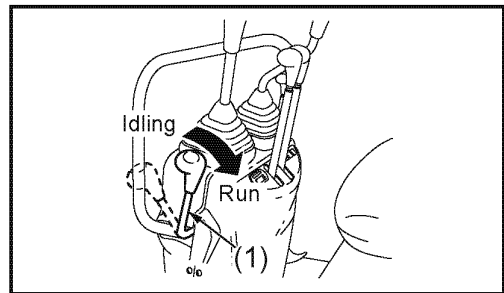
- First check that there are no people or obstacles around the machine.
Then sound the horn and start the engine.
- Be sure that you are seated on the operator's seat when starting the engine.
- When starting the engine in an enclosed place, be sure that there is adequate ventilation so that the exhaust gases can escape.

To start the engine when the outside air temperature is low, follow the steps below:

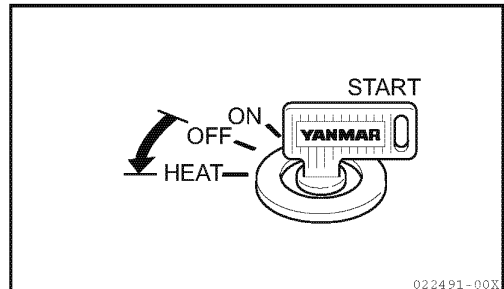
1) Pull the accelerator lever (1) back to the "RUN" position.



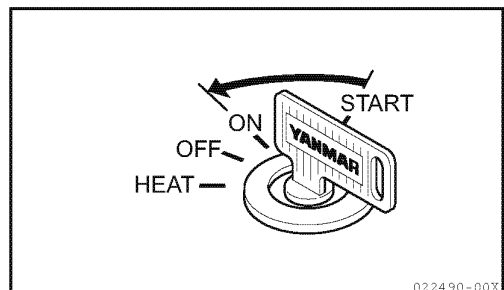
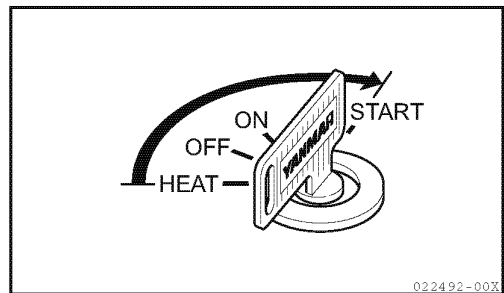
2) Turn the starter switch key in the starter switch (2) to the "HEAT" position and keep it there for approximately 10 to 15 seconds to preheat the intake air of the engine.



3) Turn the starter switch key in the starter switch (2) to the "START" position to start the engine.

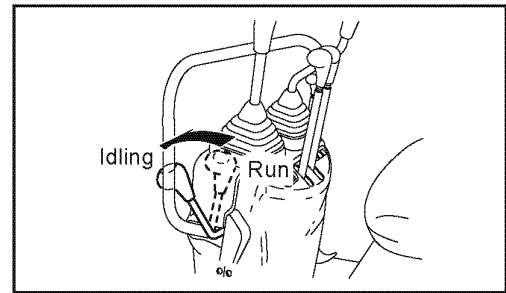


4) After the engine has started, let go of the starter switch key.
The starter switch key will return to the "ON" position by itself.



13. Operating Instructions

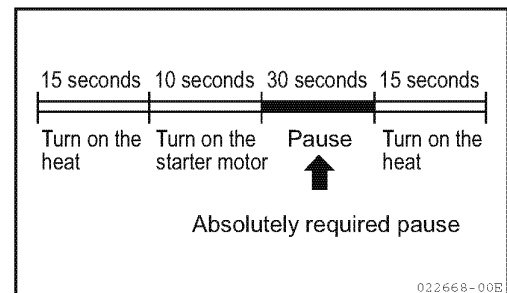
- 5) When the engine speed has increased, push the accelerator forward to the "IDLING" position immediately.



IMPORTANT

To protect the starter motor and the battery:

- Do not keep the starter switch key in the "START" position for more than 10 seconds.
- If the engine fails to start, do not start the engine immediately again, but set the starter switch to the "OFF" position and wait for approximately 30 seconds, then start the engine again.
- Traveling or operating the machine without adequate warming up in cold weather may adversely affect the machine performance.



13-3. Operating and checking instructions after starting the engine

! WARNING

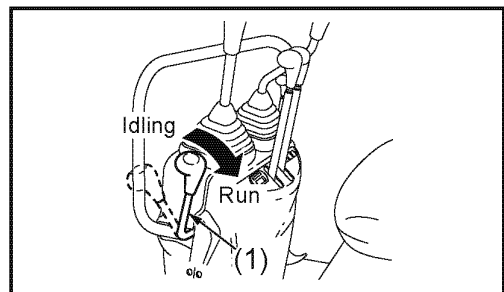
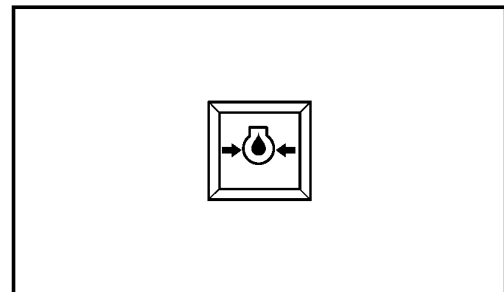
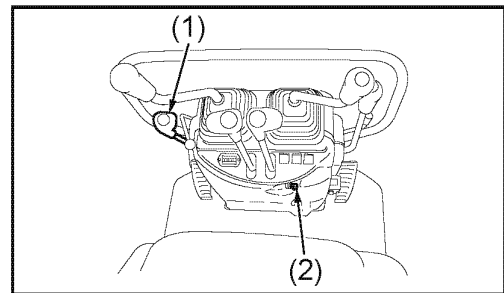
- **Emergency stop.**
If abnormal operation occurs, turn the starter switch key to the "OFF" position, to shut off the electrical system and the engine. Then ask your dealer to check the machine.
- **Be sure to warm up the engine.** If you operate the implement without full warm-up, the machine may not respond or operate properly, especially in cold weather.

IMPORTANT

- The proper hydraulic oil temperature is between 122°F and 176°F (50°C and 80°C).
If you have to operate the machine at a low hydraulic oil temperature, increase the hydraulic oil temperature to about 68°F (20°C) before operating the implement.
- In the event that you have to operate any control lever at a temperature lower than 68°F (20°C), operate it gently.
- Do not accelerate the engine rapidly until the engine warms up.

After starting the engine, do not start operating the machine immediately but follow this procedure:

- 1) Idle the engine to check that the engine oil pressure alarm lamp is off.
- 2) Pull the accelerator lever (1) to the midpoint between the "IDLING" and "RUN" positions, and run the engine with no load at medium speed for approximately five minutes.



13. Operating Instructions

- 3) Unlock the lock levers, and raise the bucket from the ground.
- 4) Operate the bucket and arm control levers slowly to move the bucket and arm cylinders to their stroke ends. Operate the bucket for thirty seconds and the arm for thirty seconds alternately for approximately five minutes to increase the hydraulic oil temperature to 68°F (20°C).

IMPORTANT

When moving the implement, be careful not to bump it against the machine or the ground.

- 5) After warming up the engine, check that the hourmeter and the monitor are in the following status. If there is anything abnormal, take corrective action.

- Hourmeter (4) Normal
- Engine oil pressure alarm lamp (1) Off
- Battery charge alarm lamp (2) Off
- Water temperature alarm lamp (3) Off

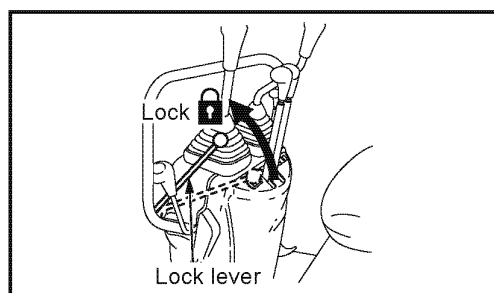
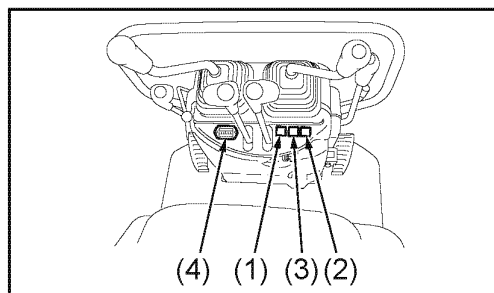
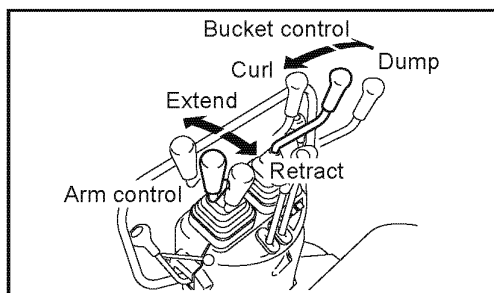
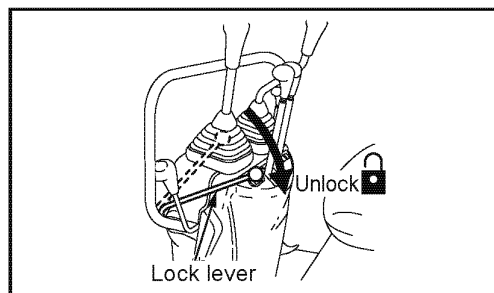
- 6) Check the exhaust gas color, the machine noise, and the vibration level for abnormality. If something is abnormal, take corrective action.

- 7) Place the lock levers to the "LOCK" position to confirm that the implement cannot be operated and the upperstructure cannot be swung with the left and right control levers.

- 8) Place the lock levers in the unlock position and operate the control levers to check that the implement can be operated and the upperstructure can be swung normally. If something is abnormal, take corrective action.

- 9) Check that no abnormal noise is heard from the hydraulic system. If any abnormal noise is heard, take corrective action.

Ask your dealer to resolve any problems identified in the steps 1) to 9) above.



13-4. Traveling

13-4-1. Folding the ROPS bar

⚠ WARNING

- Never operate the machine unless the ROPS bar is in its full upright and locked position to prevent bodily injury.
Never disengage the ROPS bar except:
 - When lifting the machine.
 - When moving the machine on a truck bed or similar means of transport.
 - When moving the machine under its own power from one location to another where height access is restricted.
- Keep clear of pinch-point when folding the ROPS bar to prevent bodily injury.
- Be careful with the ROPS bar since it is very heavy.

The ROPS bar can be folded down when the machine travels through a place of a limited height.

1. Folding the ROPS bar

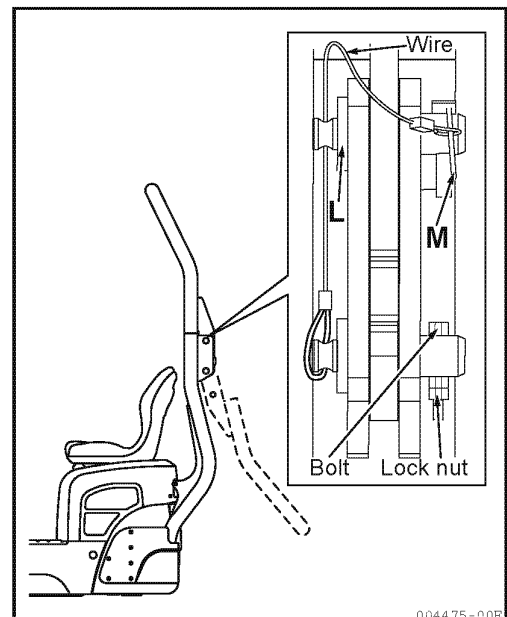
- 1) Remove the linchpin **M** and pull the linchpin **L** out.
Do this for the right and left sides.
- 2) Slowly fold back the ROPS bar.

2. Unfolding the ROPS bar

- 1) Slowly unfold the ROPS bar.
- 2) Insert the linchpin **L** and lock it with the linchpin **M** for each side.

Note :

Be careful not to get your finger or other part of your body caught in the moving part of the ROPS bar when handling it.



13-4-2. Traveling forward

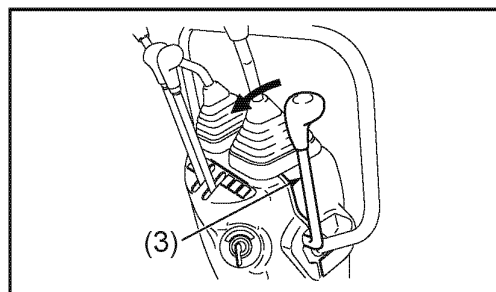
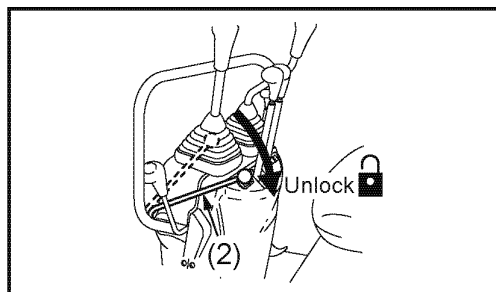
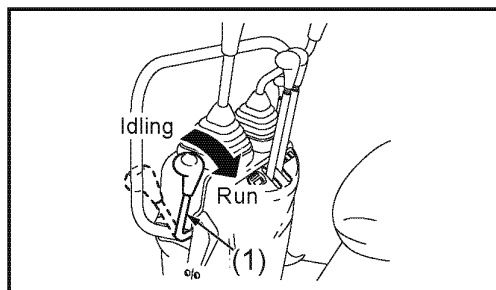
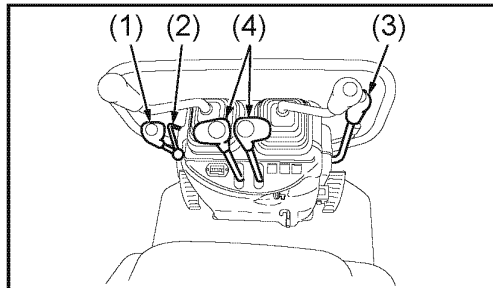
⚠ WARNING

- Always check the position of the blade before operating the travel levers.
When the blade is in the rear, the travel levers operate in reverse of normal operation.
- A signal person should be in attendance to give signals at sites which are dangerous or not clearly in view of the operator.
- Clear all people from the working area.
- Sound the horn before beginning travel, to alert the people near the machine.
- Clear obstacles from the path of the machine.
- Do not operate the travel levers rapidly while the engine is running at high speed. Otherwise, the machine may move unexpectedly, causing a serious accident.

1) Pull the accelerator lever (1) back to the "RUN" position to increase the engine speed.

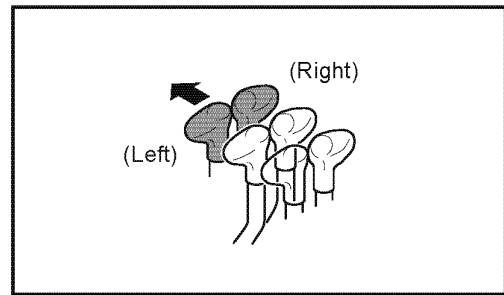
2) Place the lock levers (2) in the unlock position, and retract the implement to raise it 16 to 20 in. (40 to 50 cm) above the ground.

3) Pull back the blade lever (3) to raise the blade.

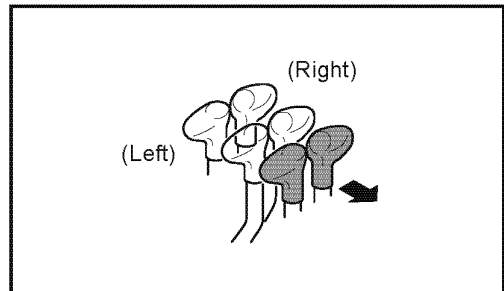


4) Operate the left and right travel levers (4) as follows:

- When the blade is in front;
Slowly push the travel levers (4) forward to move the machine forward.



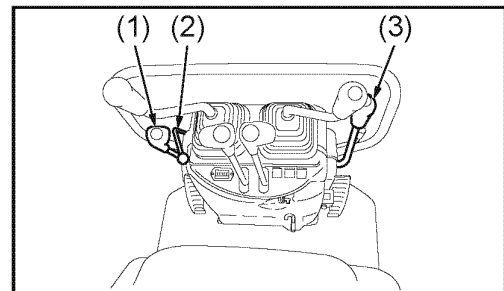
- When the blade is in the rear;
Slowly pull the travel levers (4) back to move the machine forward.



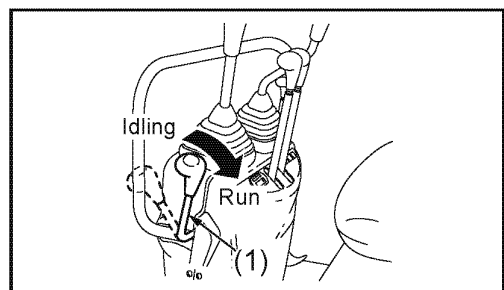
13-4-3. Traveling in reverse

⚠ WARNING

- Always check the position of the blade before operating the travel levers.
When the blade is in the rear, the travel levers operate in reverse of normal operation.
- A signal person should be in attendance to give signals at sites which are dangerous or not clearly in view of the operator.
- Clear all people from the working area.
- Sound the horn before beginning travel to alert the people near the machine.
- Clear obstacles from the path of the machine.
- There is a blind spot behind the machine. Make sure that no people are in the blind spot before traveling backwards.
- Do not operate the travel levers rapidly while the engine is running at high speed. Otherwise, the machine may move unexpectedly, causing a serious accident.

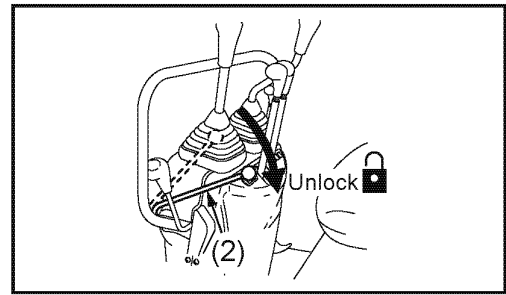


- 1) Pull the accelerator lever (1) back to the "RUN" position to increase the engine speed.

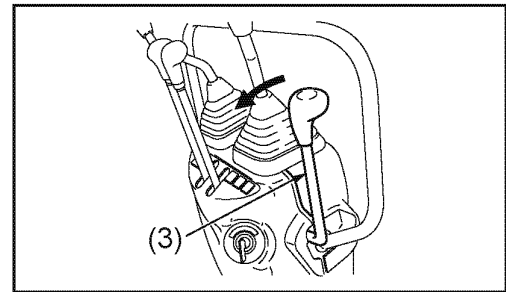


13. Operating Instructions

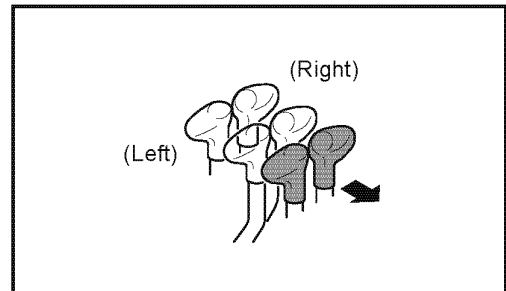
- 2) Place the lock levers (2) in the unlock position, and retract the implement to raise it 16 to 20 in. (40 to 50 cm) above the ground.



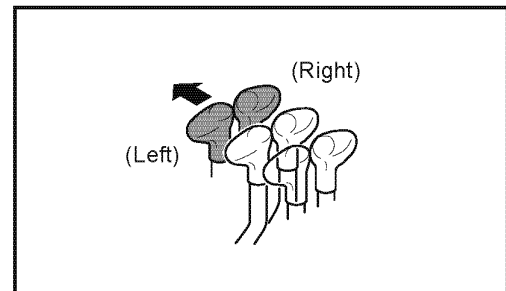
- 3) Pull back the blade lever (3) to raise the blade.



- 4) Operate the left and right travel levers as follows:
- When the blade is in front;
Slowly pull the travel levers back to move the machine backwards.



- When the blade is in the rear;
Slowly push the travel levers forward to move the machine backwards.



13-5. Steering

13-5-1. Steering (Turning the machine)

⚠ WARNING

Always check the position of the blade before operating the travel levers.

When the blade is in the rear, the travel levers operate in reverse of normal operation.

To steer the machine, operate the travel levers.

Do not turn the machine too sharply. Before spin-turning, always stop the machine first.

Operate the two travel levers (1) as follows:

■ Steering the machine when it is not traveling

To turn left, push the right travel lever forward and start traveling forward to the left. Pull the right travel lever back and start traveling in reverse to the left.

Note :

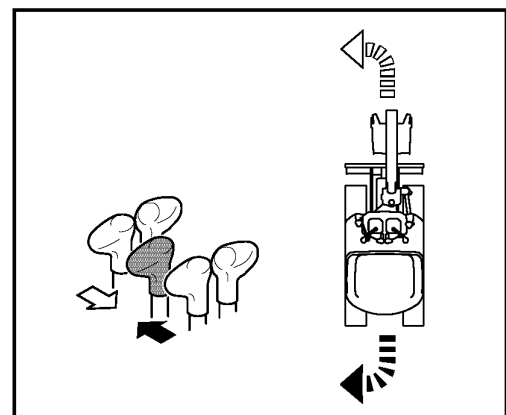
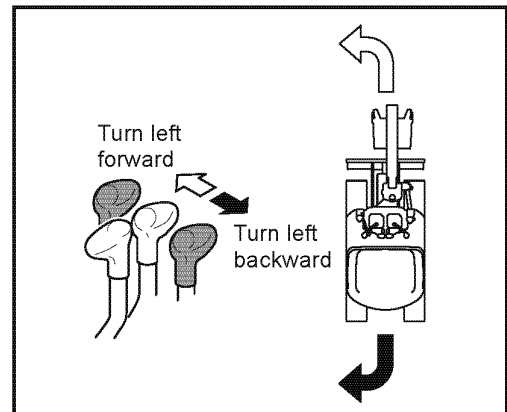
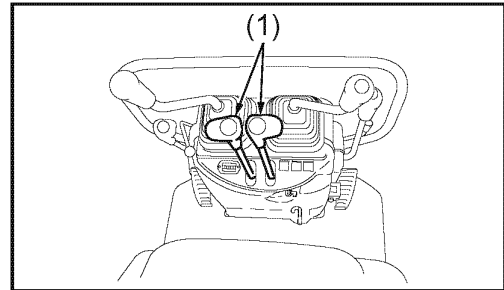
To turn right, operate the left travel lever in the same manner as above.

■ Steering the machine while traveling (the left and right travel levers are both tilted in the same direction)

To turn left, return the left travel lever to the neutral position.

Note :

To turn right, return the right travel lever to the neutral position.



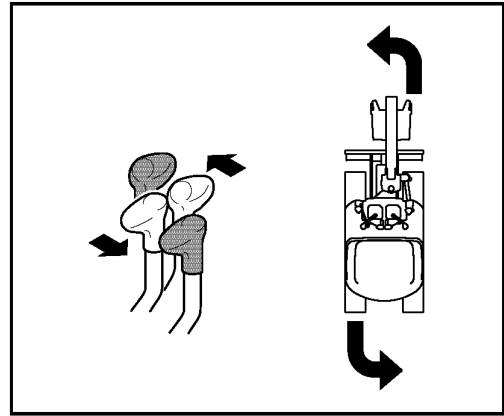
13. Operating Instructions

■ Spin-turning the machine when it is not traveling

To spin-turn left, push the right travel lever forward while pulling the left travel lever back.

Note :

To spin-turn right, push the left travel lever forward while pulling the right travel lever back.



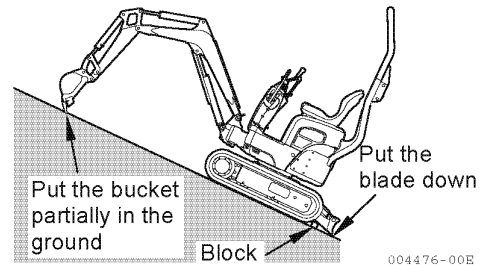
13-6. Stopping the machine

⚠ CAUTION

Do not stop the machine suddenly but provide a safety margin.

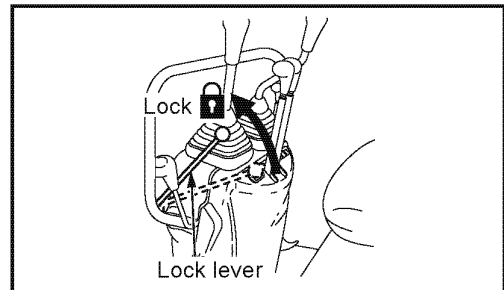
⚠ WARNING

- Park on solid, level ground.
- Do not park on a slope. If it is unavoidable to park on a slope, place solid blocks of wood behind the crawlers, place the blade on the ground, and dig the bucket into the ground.

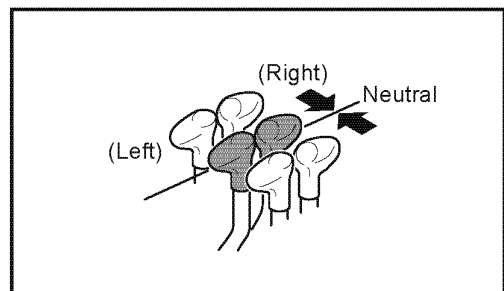
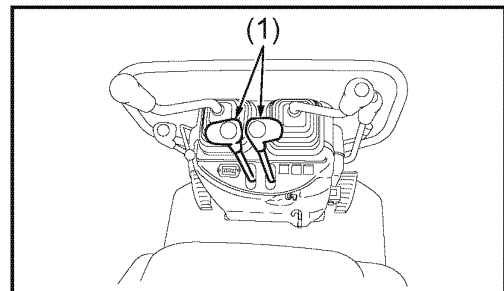


⚠ WARNING

- Do not touch the control levers accidentally. Otherwise, the implement or the machine may move unexpectedly, causing a serious accident.
- When leaving the operator's seat, be sure to place the lock lever securely in the lock position and remove the starter switch key.



- 1) Place the right and left travel levers (1) in the neutral position to stop the machine.



13-7. Swinging the upperstructure

⚠ WARNING

Before swinging, make sure that there are no people or obstacles within the swing range of the implement or the machine tail.

- 1) Before operating the left control lever for swing, pull the swing lock lever up to unlock the upperstructure.

IMPORTANT

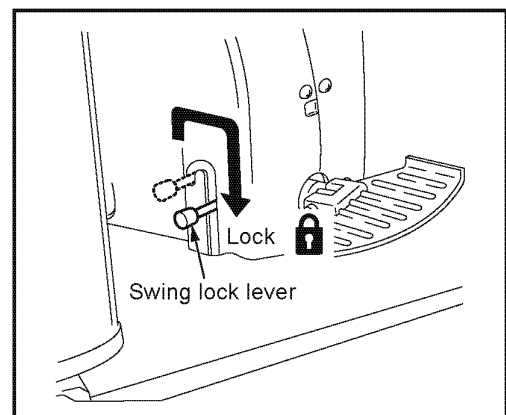
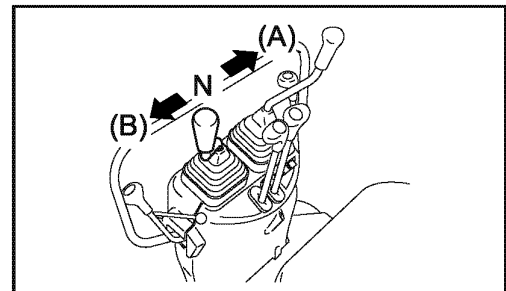
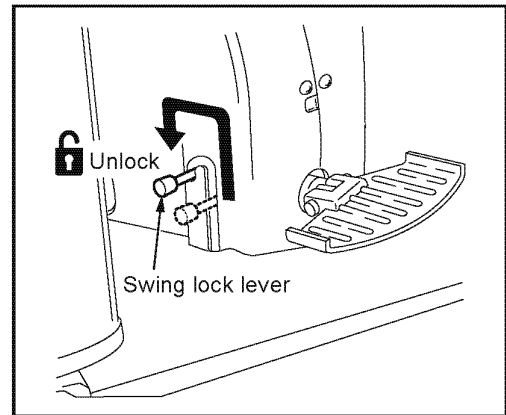
Be sure to check that the swing lock lever is in the unlock position before operating the control lever.

- 2) To swing the upperstructure, operate the left control lever as illustrated in the figure at the right.

(A) : Swing right

(B) : Swing left

- 3) When no swing operation is required, put the upperstructure in parallel with the track frame, then place the swing lock lever in the lock position to lock the upperstructure.



13-8. Operating the implement

! WARNING

- Check the area around the machine for safety and sound the horn before beginning to operate the machine.
- Never operate the machine unless the ROPS bar is in its full upright and locked position to prevent bodily injury.
- According to the switching of pattern change lever, control lever operation can be chosen in two patterns.
- To prevent accidental injury, never operate Excavator before confirming which lever pattern is set.
- Never operate or load excavator bucket with track gauge narrowed to prevent bodily injury.

13-8-1. Levers and pedal operation

Operate the machine using the right and left control levers, the boom swing pedal and the blade lever.

<STD Pattern>

- Control lever (L) : Operates arm and upperstructure swing.
- Control lever (R) : Operates boom and bucket.

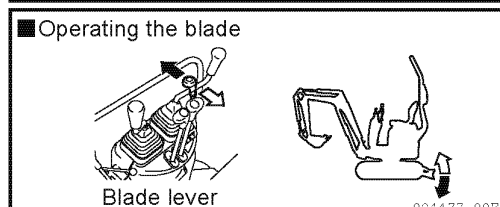
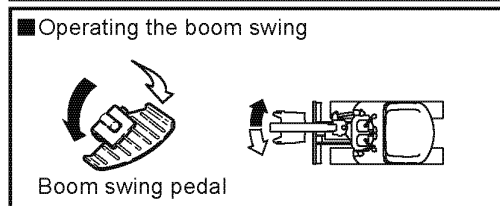
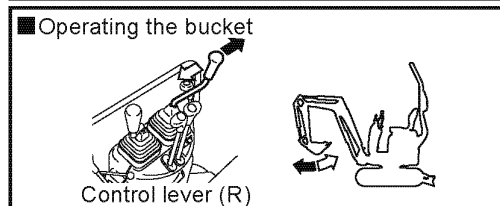
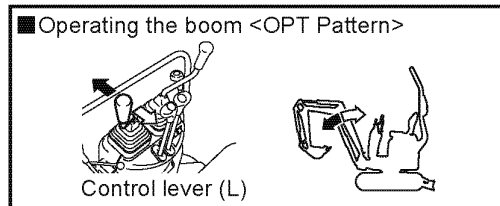
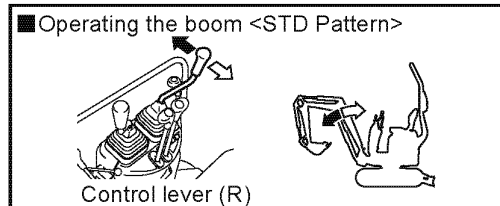
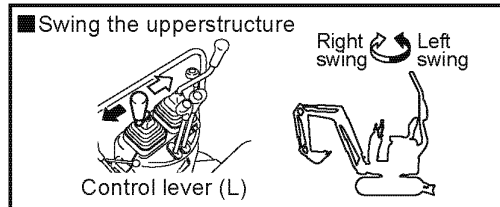
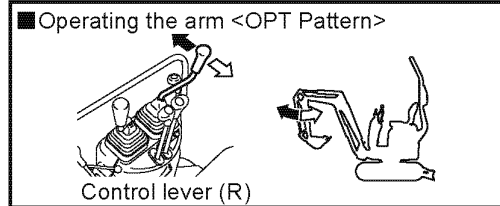
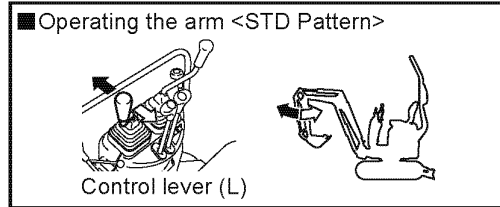
<OPT Pattern>

- Control lever (L) : Operates boom and upperstructure swing.
- Control lever (R) : Operates arm and bucket.

- Boom swing pedal : Operates boom swing.
- Blade lever : Operates blade.

The relationships between the operation of the control levers and the boom swing pedal, and the movement of the implement are shown in the illustrations at the right.

On releasing the control levers and the boom swing pedal, they will return to their neutral positions and the implement will stop moving.

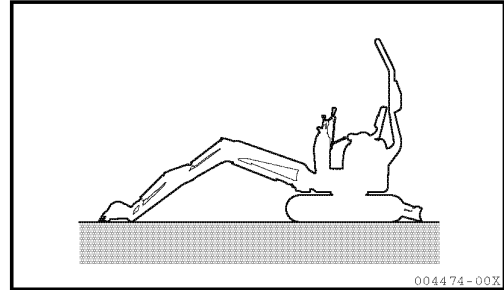


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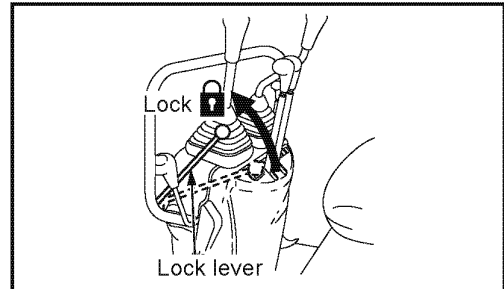
13. Operating Instructions

13-8-2. Changing the control lever pattern

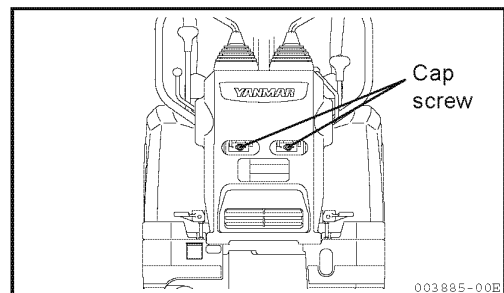
(1) Park the machine on level ground as shown to the right.



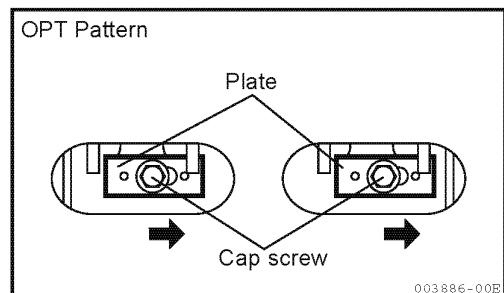
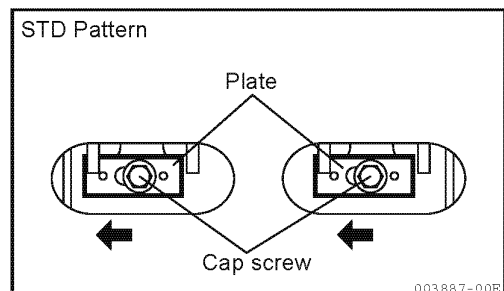
(2) Set the lock lever to the lock position.



(3) Remove the grommets from the front cover to loosen the cap screws. (Hex size : 12 mm)



(4) Move both plates to select the control lever pattern.



(5) Securely retighten the cap screws to 16.6 to 21.0 ft•lb.

(6) Reinstall the grommets.

(7) Confirm if both levers smoothly move and the implement is correctly operated.

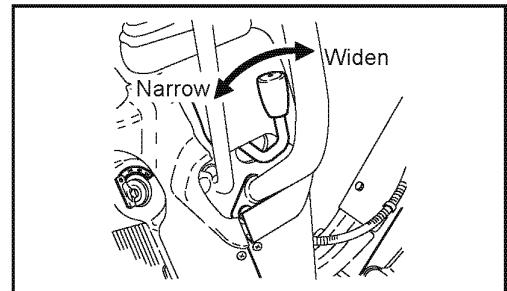
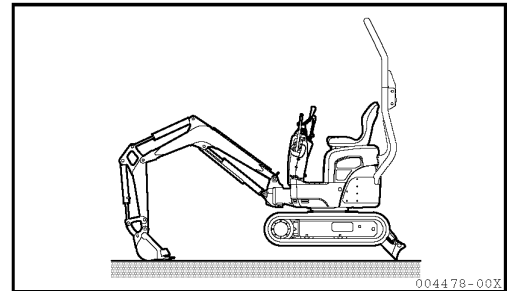
13-9. Operating the track gauge change

! WARNING

- Be sure to operate the track gauge change control lever at the middle engine speed to avoid hazard.
- When operating the track gauge change, the crawlers shift lengthwise and breadthwise. Always operate it from the operator's seat to prevent your body from putting between the crawler and the upperstructure, or nearby objects.
- Never operate the track gauge change control lever when the machine is in motion.

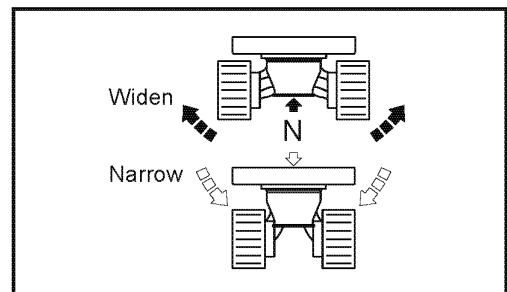
13-9-1. Changing the track gauge

- 1) Park the machine in a level place.
- 2) Swing the upperstructure so that the implement is on the opposite side of the blade.
- 3) Lower the blade fully, and then lower the implement slowly until the machine body is level above the ground.
- 4) Operate the track gauge change control lever until the crawlers stop shifting.
 - Push the lever forward to widen the track gauge.
 - Pull the lever back to narrow the track gauge.
- 5) After finishing the operation of the track gauge change, raise the blade slowly to put the crawlers on the ground, and raise the implement slowly.



Note :

To set the track gauge back to what it was, take the track gauge change operation following the above procedure.



13. Operating Instructions

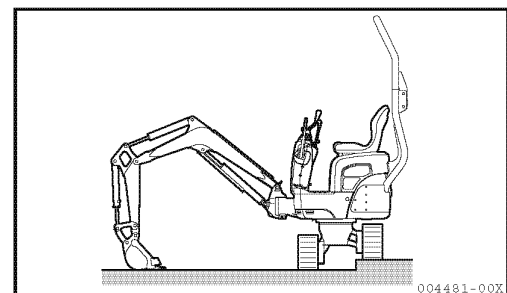
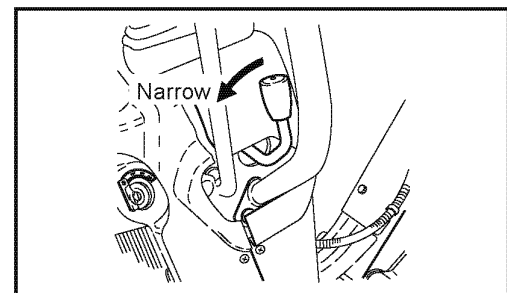
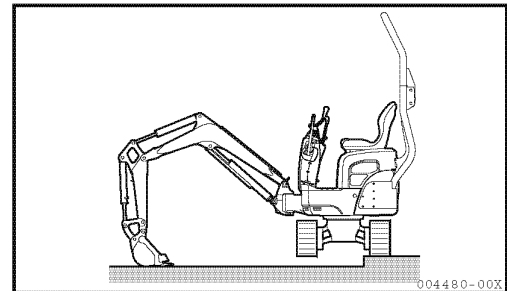
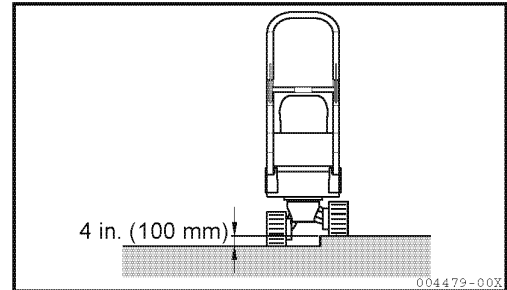
13-9-2. Leveling the machine at the place with a difference in level

The machine can stand level at the difference of 4 in. (100 mm) or less in level between the right and left crawlers.

- 1) When approaching the place with a difference in level, widen the track gauge to the maximum.
- 2) Swing the upperstructure slowly so that the implement is on the lower side of the level gap.
- 3) Lower the implement slowly to raise the crawler on the lower side of the level gap so that the machine body is level.
- 4) Pull back the track gauge change control lever to put the raised crawler down to the ground.
- 5) Make sure both crawlers are on the ground, and then raise the implement slowly.

Note :

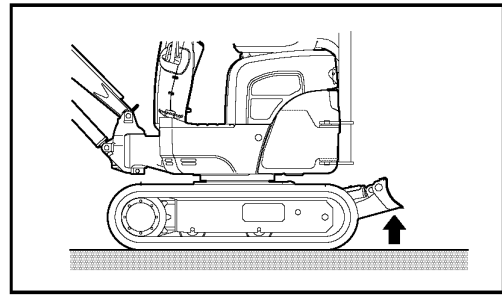
When working at the place with a difference in level, keep the blade up.



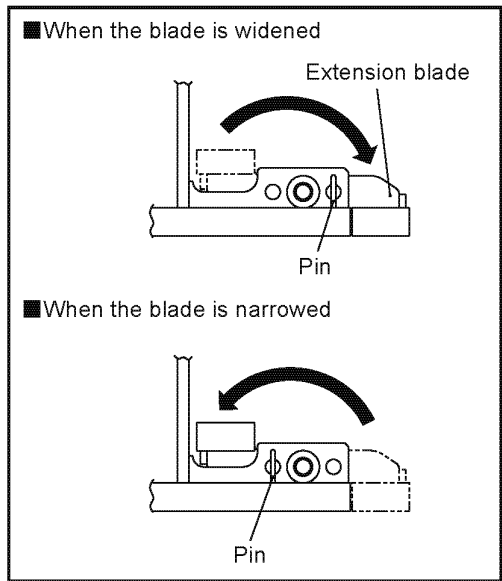
13-9-3. Changing the blade width

The blade width can be adjusted to 26.8 in. or 33.1 in. (680 mm or 840 mm) by changing the positions of the pin.

1) Raise the blade to its stroke end.

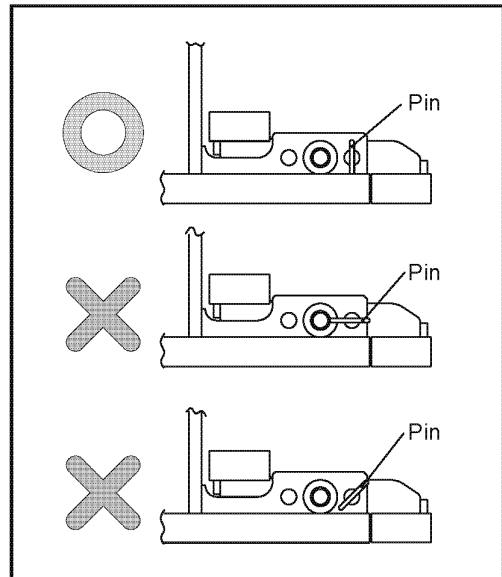


2) Change the positions of the pin as illustrated in the right figure and hold the extension blade to change the blade width.



IMPORTANT

Installing the pin improperly may cause the pin to fall off during work.



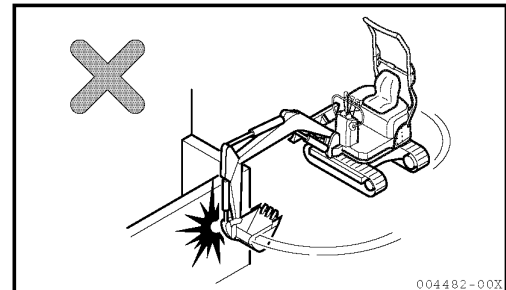
13-10. Precautions for operating the implement

! WARNING

- Do not operate the implement control levers while traveling. Stop traveling first and then operate the implement.
- Do not operate the implement on any rocky surface.

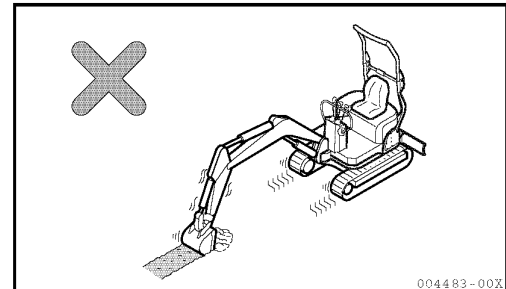
■ Do not use the implement's swing force

Do not level the ground or break down a wall by the use of swing force, and do not dig the bucket teeth into the ground while swinging. Doing these may cause the implement to be damaged.



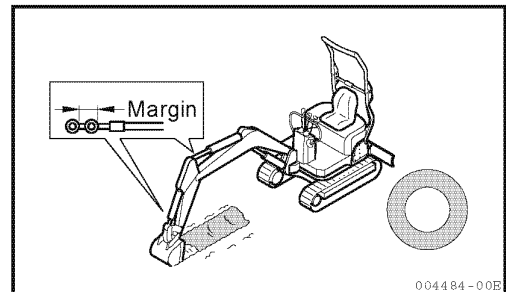
■ Do not use the implement's travel force

Do not excavate the ground by the use of travel force with the bucket teeth in contact with the ground. Doing this may cause excessive force to be imposed on the rear of the machine, shortening the machine life.



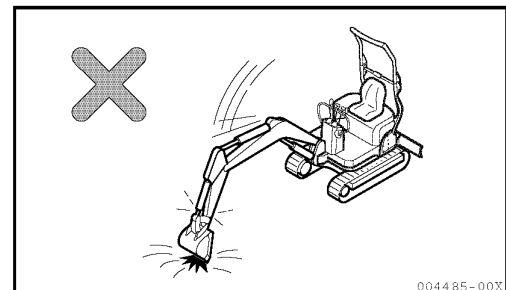
■ Take care not to operate the hydraulic cylinder to the stroke end.

Operating the hydraulic cylinder to the stroke end may impose an undue force on the stopper in the hydraulic cylinder, shortening the implement life. Operate with a small safety margin.



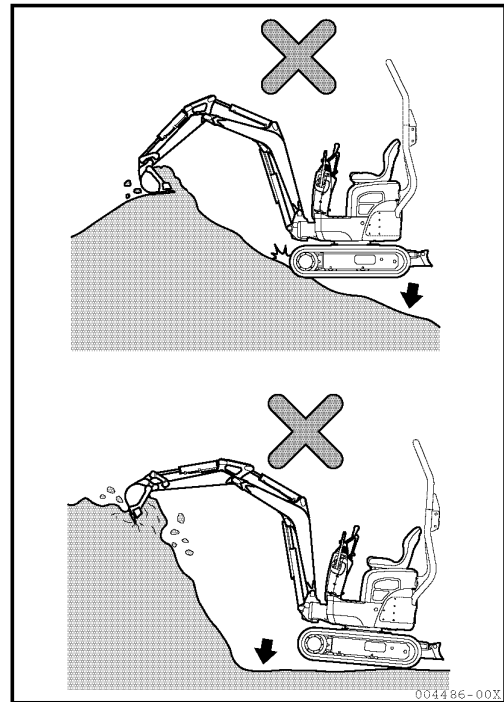
■ Do not operate the implement by using the dropping force of the bucket

Do not excavate the ground by using the dropping force of the bucket as a pickaxe or pile driver. Doing this may cause excessive force to be imposed on the rear of the machine, shortening the machine life and possibly causing a serious accident.



■ **Do not operate the implement by using the dropping force of the machine**

Do not excavate the ground by using the dropping force of the machine.

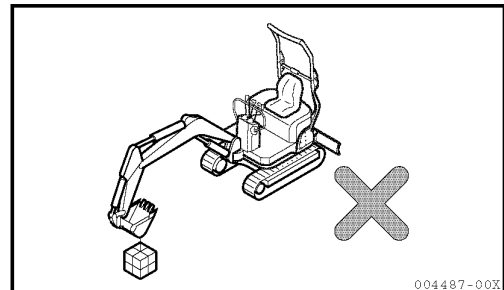


■ **Excavating a hard rock**

It is recommended that a hard rock first be broken into small pieces by other means. Doing so will prevent damage to the machine and will increase economy.

■ **Do not suspend a load unless you use a hooked bucket**

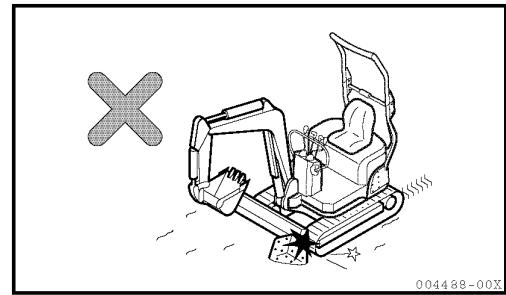
Suspending a load safely requires the use of a hooked bucket. Refer to Section "28. Handling the Hooked Bucket".



13. Operating Instructions

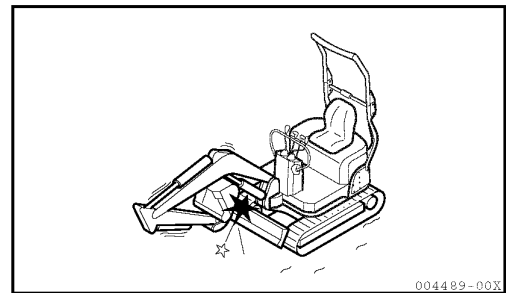
■ **Do not bump the blade against a large rock or boulder**

Do not bump the blade against a large rock or boulder. Doing so may cause the blade or the hydraulic cylinder to be damaged.



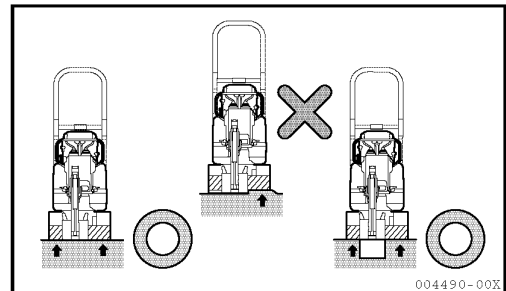
■ **Be careful when retracting the implement**

When retracting the implement for travel or transport, be careful that the bucket and the blade never bump against each other.



■ **Support the blade on both sides**

When you use the blade as an outrigger, support the blade on both sides.



■ **Be careful not to bump the blade when excavating**

When excavating the ground with the blade in front, never let the blade bump against the boom cylinder. Place the blade in the rear, when it is not being used.

